MARYLAND

HIGHWAY SAFETY IMPROVEMENT PROGRAM

2022 ANNUAL REPORT

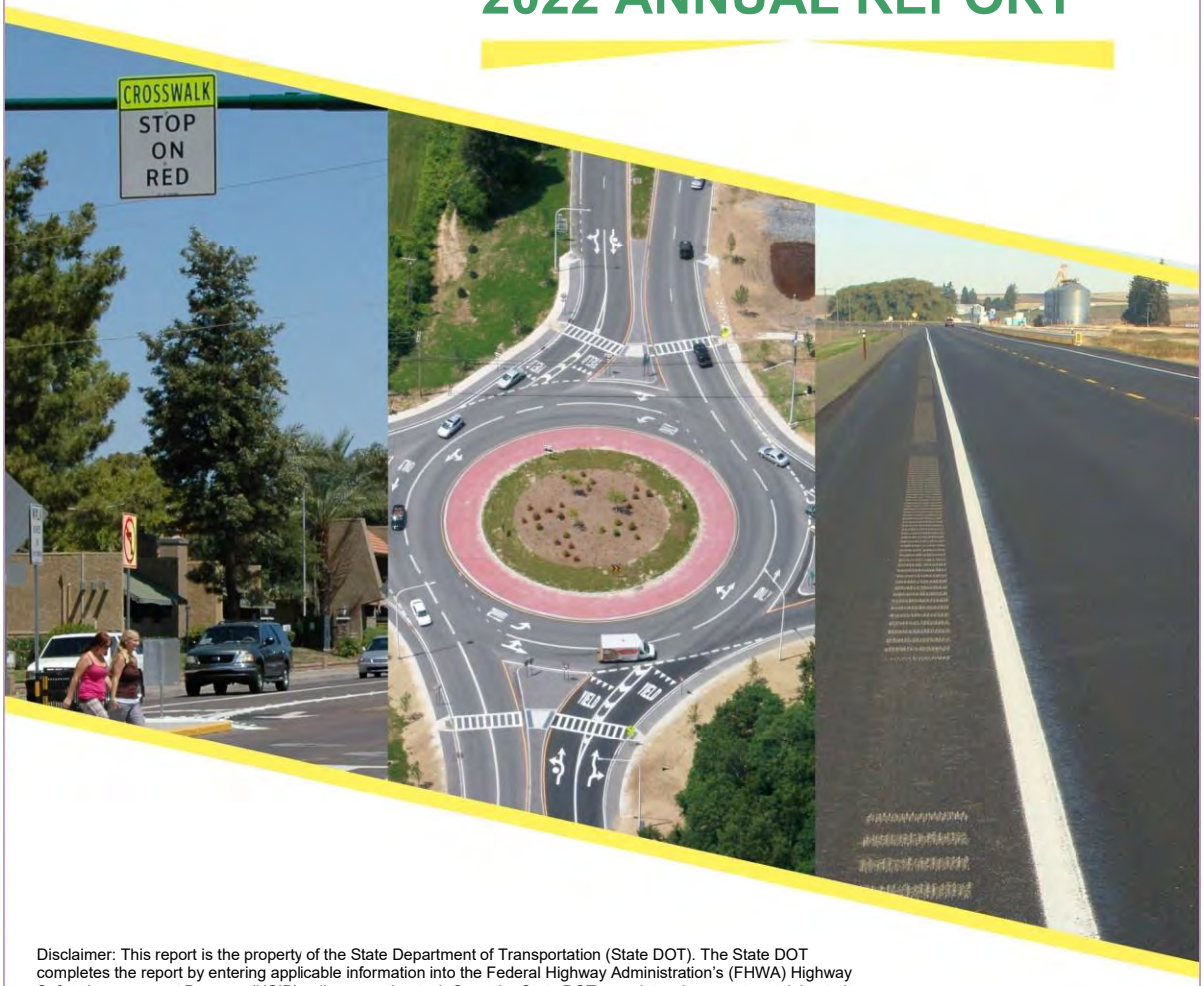

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Photo source: Federal Highway Administration

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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. 407 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 2021
• 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 the Planning, Engineering and Highway Safety Office portions of MDOT.
• HSIP is administered centrally via Statewide Competitive Application Process.
• Local roads were planned for HSIP funds in CY 2021 under the new program was established in 2020.
• 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 MDOT SHA selection committee. The criteria considered are Safety, Congestion, Operations and Local Support. This will be revised in the future.
• 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 2021.
• 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, lighting, intersection geometry and pedestrian-bicyclist access projects.
• The overview of safety trends indicates that the reported number of fatalities have increased from 558 (FARS) in 2017 to 562 (MD) in 2021 (annual format) and that the number of serious injuries (MD) have decreased from 3,347 in 2017 to 3,054 in 2021 (annual format). Please note that all 2020 FARS totals are preliminary at the time of this report. 2021 FARS totals are not available with state totals being used instead at the time of the report. Please also note that with the COVID-19 Pandemic in 2021 VMT dropped for about 6%, but the number of serious injuries didn’t drop at the same rate and the number of fatalities increased instead, compared with 2019 data. The impact of the Pandemic on fatal and serious injury crashes seems still

considerable and please use caution when analyzing safety performance in CY 2021.
• The overview of safety trends indicates that the reported number of non-motorized fatalities have increased from 128 (FARS) in 2017 to 132 (MD) in 2021 (annual format) and that the number of non-motorized serious injuries (MD) have decreased from 563 in 2017 to 493 in 2021 (annual format). Please see above note on 2020-21 FARS totals and impact of the COVID-19 Pandemic.
• 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.
• “To begin, the development team conducted one-on-one interviews with key traffic safety partners across Maryland. Safety partners included leaders from government agencies, education and outreach professionals, local law enforcement, and emergency services agencies. During the interviews, the team solicited insight into the status of traffic safety initiatives and current and future safety priorities for Maryland roadways.” “Information gathered from this safety partner survey helped refine goals, solicit new/updated action steps, identify emerging issues, and examine the progress of each SHSP Emphasis Area.” (2021-25 SHSP).
• Older Driver and pedestrian (65 and older) Fatalities decreased from 106 in 2014 to 75 in 2021 (FARS – annual numbers. 2021 FARS totals are preliminary at the time of this report). Serious Injuries decreased from 258 in 2014 to 256 in 2021 (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 serious 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 in January 2021.
• The years being covered by the current SHSP are 2021 to 2025.
• Maryland anticipates completing its next SHSP update by 2025.
• The status (percent complete) of MIRE fundamental data elements collection efforts are shown in tables in the annual report.
• 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 activity.
• Following in Federal law, 23 U.S.C. 148(i), an HSIP Implementation Plan was developed in CY 2022 to define strategies and projects that will result in Maryland reaching or making substantial progress toward achieving its Safety Performance Targets for FY2023 and beyond.

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, on implementing proven blanket safety improvements on a systematic basis, and on applying systemic approach to identify and improve areawide locations with low-cost, proven countermeasures proactively. Safety improvements include the installation of rumble strips and median barriers; upgrading signs, signals, and markings; improving lighting; 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 Maryland Department of Transportation State Highway Administration (MDOT SHA) typically identifies CSILs only on the state-maintained highway system. Several local jurisdictions use the accident data, which MDOT 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 MDOT SHA Administrator makes the final project selection.
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 MDOT 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.

Systemic countermeasures are applied in the Fund 76 Program. In addition, MDOT SHA is developing a Systemic Approach Program following the FHWA Systemic Safety Project Selection Tool. We identified statewide focus crash types and risk factors, screened and prioritized candidate locations, selected corresponding countermeasures, and prioritized systemic improvement projects for each facility type. The systemic projects are currently under review and will start to be implemented in the near future.
In Maryland about ¼ fatalities and serious crashes occurred on roadways maintained by local agencies and HSIP fund need to be allocated to them to improve traffic safety on local roadways. MDOT SHA developed the HSIP Local Fund Program and stared the application in FFY2021. Multiple projects from various Counties and Municipalities in Maryland were reviewed and selected by MDOT SHA for implementation.

Where is HSIP staff located within the State DOT?

Other-Planning and Engineering

How are HSIP funds allocated in a State?

- Central Office via Statewide Competitive Application Process

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

MDOT SHA just developed the HSIP Local Fund Program in recent years. Draft Guideline and application forms were provided to local agencies. Eligible Counties must have a Local Road Safety Plan (LRSP). Cities and municipalities can also participate through their county. For the first several years or the new program, we would support systemic improvement only and spot improvement will be eligible in later years. The application was due by May 15 each year and MDOT SHA reviewed and selected projects based on systemwide data, with emphasis on characteristics frequently present in severe crashes, and identified and prioritized locations across the roadway network for implementation. The selected local project will be supported with HSIP fund in the next federal fiscal year starting from October 1.

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

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

Describe coordination with internal partners.

Within the Maryland Department of Transportation (MDOT) the State Highway Administration (MDOT SHA) Office of Traffic and Safety (OOTS) and Office of Planning and Preliminary Engineering (OPPE) 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 2021. Part of MDOT 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 MDOT 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.

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

Describe coordination with external partners.

As stated in the 2021-2025 SHSP (Maryland Strategic Highway Safety Plan), stakeholder groups which included HSIP external partners participated in the development of the SHSP to identify, develop, and finalize strategies for the 2021-2025 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 Traffic Records Coordinating Committee's (TRCC).

Program Methodology

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

Yes
The HSIP manual is currently a draft and it is being updated to include process for funding local agencies.

Select the programs that are administered under the HSIP.

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

Program: Bicycle Safety

Date of Program Methodology:1/1/2010

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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: Horizontal Curve

Date of Program Methodology:1/1/2010

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

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

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes		

What project identification methodology was used for this program?

- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes		

What project identification methodology was used for this program?

- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency

- Crash rate
- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency
- Crash rate

- Relative severity index

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

Yes

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

Yes

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes		

What project identification methodology was used for this program?

- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Funding set-aside

What data types were used in the program methodology?

Crashes

- All crashes

Exposure

- Volume
- Other-Highway mileage

Roadway

- Roadside features

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes

- All crashes

Exposure

- Volume
- Other-Highway mileage

Roadway

- Functional classification

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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: Sign Replacement And Improvement

Date of Program Methodology:10/20/2020

What is the justification for this program?

What is the funding approach for this program?

What data types were used in the program methodology?

Crashes **Exposure** **Roadway**

What project identification methodology was used for this program?

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

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

How are projects under this program advanced for implementation?

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

Program: Skid Hazard

Date of Program Methodology:1/1/2012

What is the justification for this program?

- Addresses SHSP priority or emphasis area

What is the funding approach for this program?

Competes with all projects

What data types were used in the program methodology?

Crashes	Exposure	Roadway
• All crashes	• Volume • Other-Highway mileage	

What project identification methodology was used for this program?

- Crash frequency
- Crash rate
- 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?

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?

66

HSIP funds are used to address which of the following systemic improvements?

- Add/Upgrade/Modify/Remove Traffic Signal
- High friction surface treatment
- Install/Improve Lighting
- Install/Improve Pavement Marking and/or Delineation
- Install/Improve Signing
- Upgrade Guard Rails

What process is used to identify potential countermeasures?

- Data-driven safety analysis tools (HSM, CMF Clearinghouse, SafetyAnalyst, usRAP)
- Engineering Study
- SHSP/Local road safety plan

Does the State HSIP consider connected vehicles and ITS technologies?

Yes

Describe how the State HSIP considers connected vehicles and ITS technologies.

We have a Connected & Automated Vehicle (CAV) program in Maryland. One CAV/ITS projects is currently supported by HSIP fund.

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.

Project Implementation

Funds Programmed

Reporting period for HSIP funding.

Calendar Year

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

FUNDING CATEGORY	PROGRAMMED	OBLIGATED	% OBLIGATED/PROGRAMMED
HSIP (23 U.S.C. 148)	$36,816,495	$36,816,495	100%
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	$36,816,495	$36,816,495	100%

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

$31,035

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

$31,035

MDOT SHA developed a HSIP Local Fund Program in FFY2021. Several local safety projects were submitted to MDOT SHA by various Counties in FFY2021. MDOT reviewed and selected local projects eligible for HSIP. The selected local safety projects were in design or PS&E review stages with Local's own costs during CY2021.

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

$631,035

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

$631,035

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?

0%

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

None at this time.

General Listing of Projects

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

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
I-195 at MD 295 and MD170 Interchange Lighting Reconstruction	Lighting				$62351	$62351	HSIP (23 U.S.C. 148)			0					
I 68 AT Haystack Mountain - New and Upgraded Signing	Roadway signs and traffic control	Roadway signs (including post) - new or updated			$100000	$100000	HSIP (23 U.S.C. 148)			0					
Statewide Sign Condition Assessment and Retro-reflectivity Evaluation-Signing	Roadway signs and traffic control				$5099543	$5099543	HSIP (23 U.S.C. 148)			0					
MD 43 at Honeygo Boulevard	Intersection traffic control				$30600	$30600	HSIP (23 U.S.C. 148)			0					
US 40 Baltimore National Pike at Rolling Road	Intersection geometry				$400000	$400000	HSIP (23 U.S.C. 148)			0					
Traffic Safety Data Collection	Miscellaneous				$31035	$31035	HSIP (23 U.S.C. 148)			0					
US 40 Pulaski Hwy at MD 213	Intersection geometry				$405099	$405099	HSIP (23 U.S.C. 148)			0					
MD 228 Berry Road East Bound Left Turn At Western Parkway	Intersection geometry				$65626	$65626	HSIP (23 U.S.C. 148)			0					
MD 140 Baltimore Boulevard at MD 91 Emory Road	Intersection geometry				$499534	$499534	HSIP (23 U.S.C. 148)			0					
US 15 Catoctin Mountain Highway from MD 550 to Roddy Road	Intersection geometry				$751256	$751256	HSIP (23 U.S.C. 148)			0					
US 15 Catoctin Mountain Highway at Angleberger Rd	Intersection geometry				$1000000	$1000000	HSIP (23 U.S.C. 148)			0					
I-68 from WV State Line to Structure 110039 over MD 42 Traffic Barrier Upgrades	Roadside	Barrier end treatments (crash cushions, terminals)			$1560472	$1560472	HSIP (23 U.S.C. 148)			0					
US 1 (Washington Boulevard) at Kit Kat Road	Intersection geometry				$25024	$25024	HSIP (23 U.S.C. 148)			0					
US 1 Washington Boulevard at Four Locations Between PG County Line and Doctor Patel Drive	Pedestrians and bicyclists	Leading pedestrian interval			$130000	$130000	HSIP (23 U.S.C. 148)			0					
Statewide: HSIP Administrative and Screening Services	Miscellaneous				$600000	$600000	HSIP (23 U.S.C. 148)			0					

PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
MD 124 Quince Orchard Road and Russell Avenue	Intersection geometry				$345740	$345740	HSIP (23 U.S.C. 148)			0					
US29 From Lockwood Drive to Burnt Mills Road	Pedestrians and bicyclists	Install sidewalk			$343333	$343333	HSIP (23 U.S.C. 148)			0					
US 29 Columbia Pike At Stewart Lane	Intersection geometry				$350000	$350000	HSIP (23 U.S.C. 148)			0					
MD 223 at Floral Park Road/Piscataway Road	Intersection traffic control	Modify control – Modern Roundabout			$201248	$201248	HSIP (23 U.S.C. 148)			0					
MD 202 LARGO RD FROM MD 450 TO 56TH AVE	Intersection geometry				$931000	$931000	HSIP (23 U.S.C. 148)			0					
MD 210 from Swan Creek Road/Livingston Road to Palmer Road/Livingston Road – Traffic Control Device Safety Enhancements – Phase II	Intersection traffic control				$53809	$53809	HSIP (23 U.S.C. 148)			0					
US 50 Ocean Gateway from Lomax Street to Dutchman's Lane	Intersection geometry				$140000	$140000	HSIP (23 U.S.C. 148)			0					
US 40 Dual Highway from Eastern Boulevard to All Star Court	Pedestrians and bicyclists	Install sidewalk			$450000	$450000	HSIP (23 U.S.C. 148)			0					
MD 12 Snow Hill Road at Robins Avenue	Intersection geometry				$300000	$300000	HSIP (23 U.S.C. 148)			0					
US 50 Ocean Gateway at Old Railroad Rd	Intersection geometry				$653064	$653064	HSIP (23 U.S.C. 148)			0					
Mod/Install/Recon of Traffic Signals at Various Locations in District 4	Intersection traffic control	Modify traffic signal –other			$490890	$490890	HSIP (23 U.S.C. 148)			0					
Mod/Install/Recon of Traffic Signals - Statewide	Intersection traffic control	Modify traffic signal –other			$700014	$700014	HSIP (23 U.S.C. 148)			0					
High Friction Surface Treatment of Roadways at Various Locations Statewide	Roadway	Pavement surface – high friction surface			$5368660	$5368660	HSIP (23 U.S.C. 148)			0					
High Friction Surface Treatment of Roadways at Various Locations - Statewide	Roadway	Pavement surface – high friction surface			$300000	$300000	HSIP (23 U.S.C. 148)			0					
Modification / Installation / Reconstruction of Signing Statewide	Roadway signs and traffic control	Roadway signs (including post) - new or updated			$1063506	$1063506	HSIP (23 U.S.C. 148)			0					
Statewide Mod/Install/Recon/ of Signing	Roadway signs and traffic control	Roadway signs (including post) - new or updated			$381024	$381024	HSIP (23 U.S.C. 148)			0					

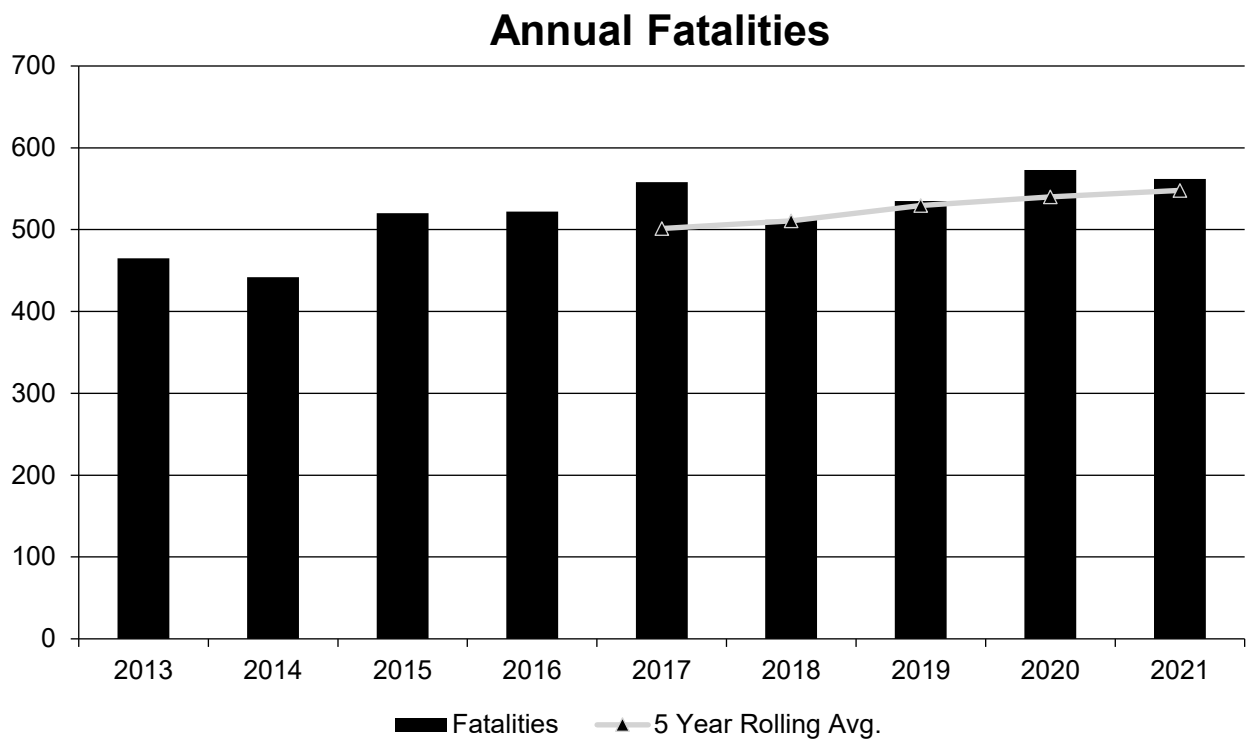
PROJECT NAME	IMPROVEMENT CATEGORY	SUBCATEGORY	OUTPUTS	OUTPUT TYPE	HSIP PROJECT COST($)	TOTAL PROJECT COST($)	FUNDING CATEGORY	LAND USE/AREA TYPE	FUNCTIONAL CLASSIFICATION	AADT	SPEED	OWNERSHIP	METHOD FOR SITE SELECTION	SHSP EMPHASIS AREA	SHSP STRATEGY
Install and/or Replace RPM's in Allegany, Garrett & Washington Counties – Various Locations	Roadway delineation	Raised pavement markers			$681452	$681452	HSIP (23 U.S.C. 148)			0					
ADA Sidewalk Upgrades in District 4 (Re-Advertisement)	Pedestrians and bicyclists	Install sidewalk			$3304064	$3304064	HSIP (23 U.S.C. 148)			0					
Mod/Install/Recon Lighting at Various Locations in Dorchester, Somerset, Wicomico, Worcester, Caroline, Cecil, Kent, Queen Anne's, Talbot, Baltimore	Lighting				$1778297	$1778297	HSIP (23 U.S.C. 148)			0					
MOD/INSTALL/RECON OF LIGHTING - DO, SO, WI, WO, CO, CE, KE, QA, TA, BA, HA	Lighting				$423360	$423360	HSIP (23 U.S.C. 148)			0					
Modification/Installation/Reconfiguration of Signing in District 3, 4 & 5	Roadway signs and traffic control	Roadway signs (including post) - new or updated			$911059	$911059	HSIP (23 U.S.C. 148)			0					
Traffic Barrier Upgrade at Various Locations in Caroline, Cecil, Kent, Queen Anne, and Talbot Counties	Roadside	Barrier - other			$30361	$30361	HSIP (23 U.S.C. 148)			0					
Thermoplastic Thinline Striping at Various Locations in Montgomery and Prince George's Counties	Roadway delineation	Longitudinal pavement markings - remarking			$1873469	$1873469	HSIP (23 U.S.C. 148)			0					
Thermoplastic Thin Striping at Various Locations in Baltimore & Harford Counties	Roadway delineation	Longitudinal pavement markings - remarking			$2268094	$2268094	HSIP (23 U.S.C. 148)			0					
Line Striping at Various Locations in Baltimore and Harford Counties	Roadway delineation	Longitudinal pavement markings - remarking			$1129128	$1129128	HSIP (23 U.S.C. 148)			0					
Line Striping at Various Locations in Montgomery and Prince George's Counties	Roadway delineation	Longitudinal pavement markings - remarking			$1584383	$1584383	HSIP (23 U.S.C. 148)			0					

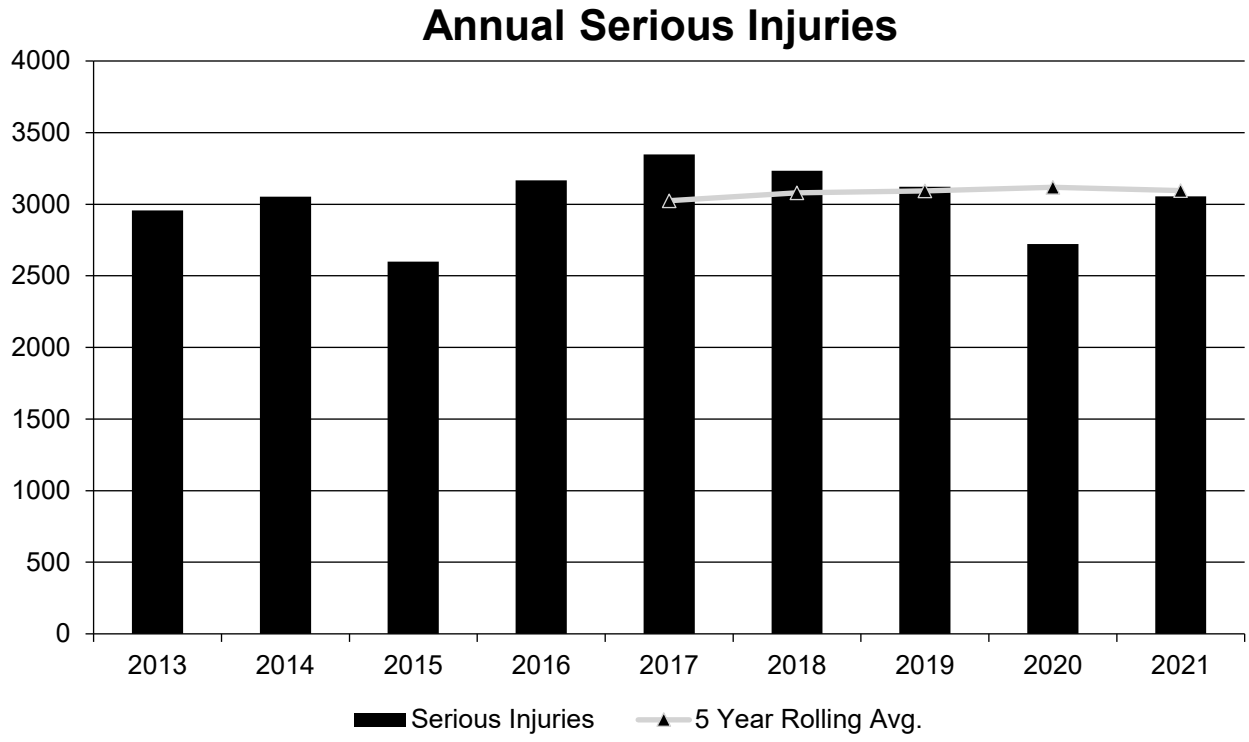
Safety Performance

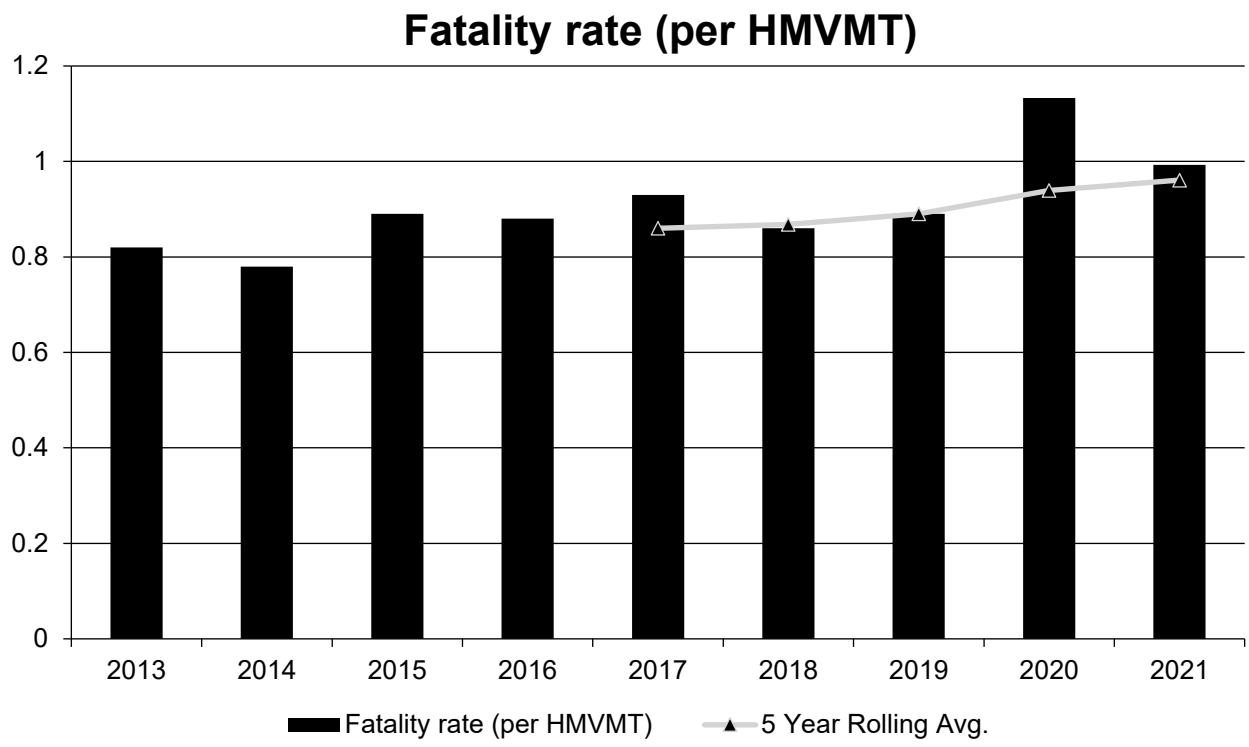
General Highway Safety Trends

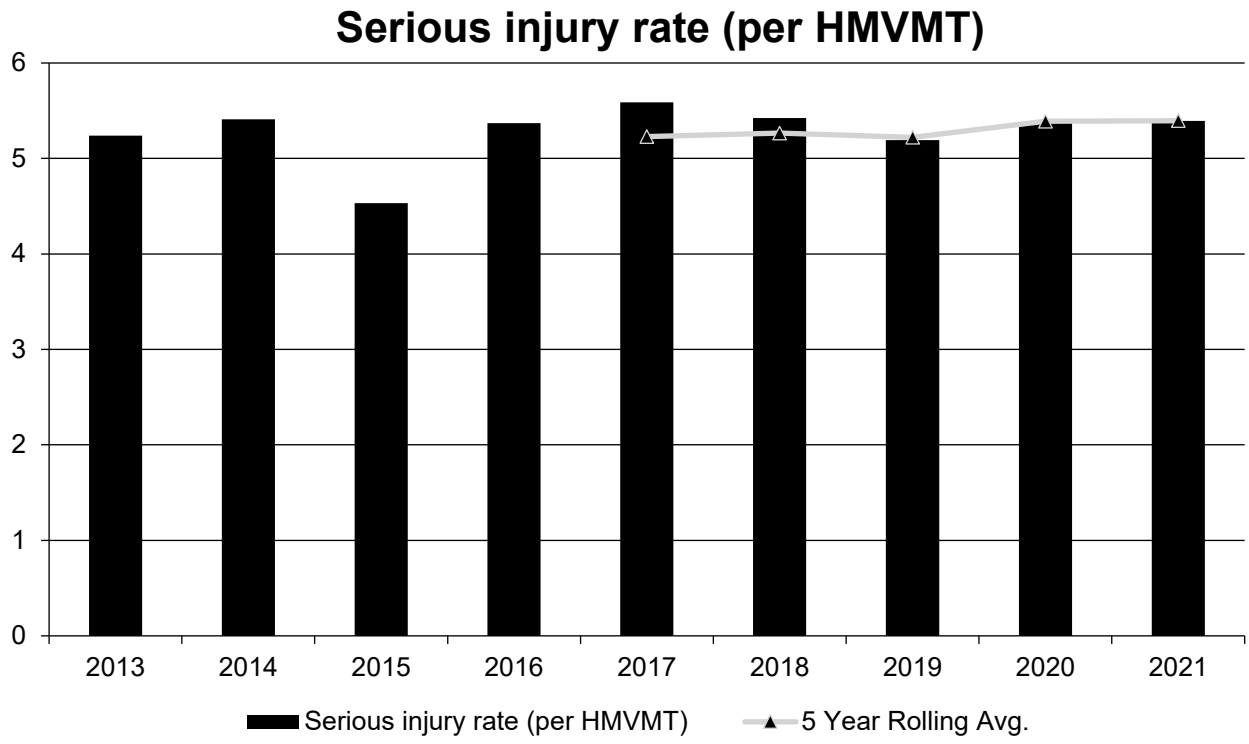
Present data showing the general highway safety trends in the State for the past five years.

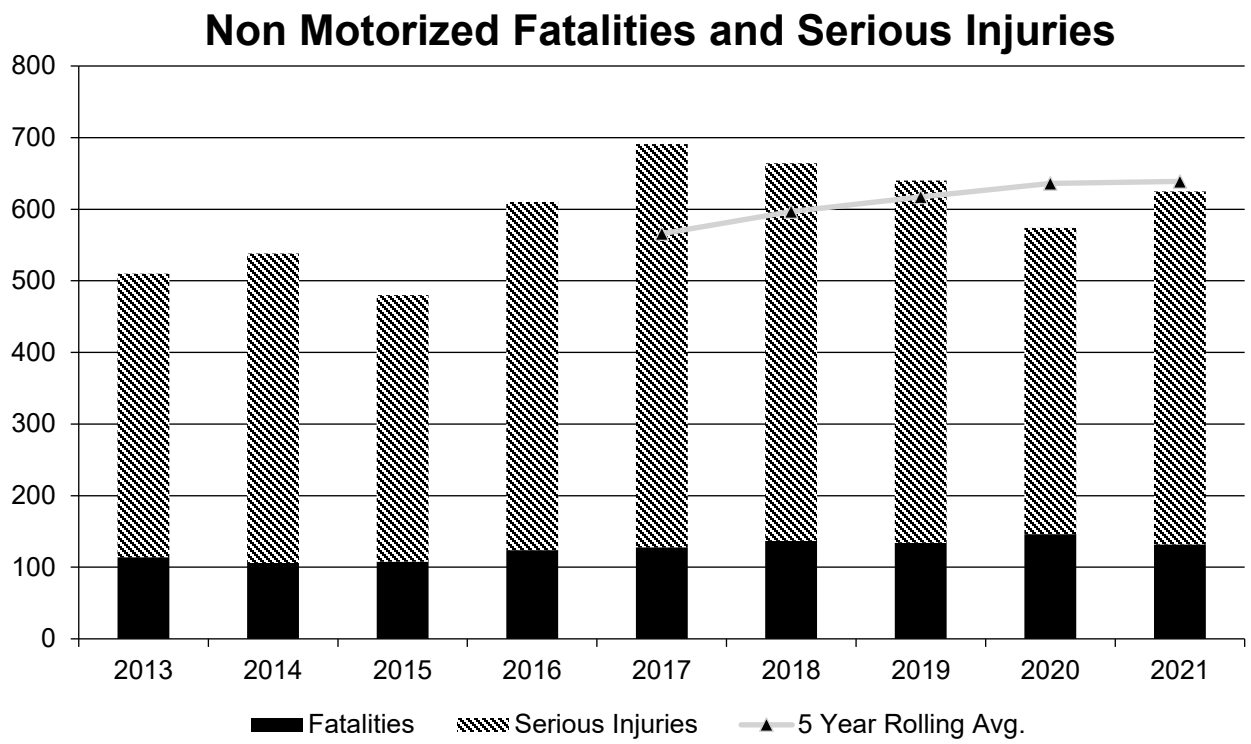
PERFORMANCE MEASURES	2013	2014	2015	2016	2017	2018	2019	2020	2021
Fatalities	465	442	520	522	558	512	535	573	562
Serious Injuries	2,957	3,053	2,598	3,167	3,347	3,233	3,122	2,722	3,054
Fatality rate (per HMVMT)	0.820	0.780	0.890	0.880	0.930	0.860	0.890	1.133	0.993
Serious injury rate (per HMVMT)	5.240	5.410	4.533	5.370	5.588	5.422	5.193	5.380	5.394
Number non-motorized fatalities	114	106	108	124	128	137	134	146	132
Number of non-motorized serious injuries	396	432	372	486	563	527	506	428	493


Annual Fatalities
700
600
500
400
300
200
100
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatalities
5 Year Rolling Avg.


Annual Serious Injuries
4000
3500
3000
2500
2000
1500
1000
500
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Serious Injuries
5 Year Rolling Avg.


Fatality rate (per HMVMT)
1.2
1
0.8
0.6
0.4
0.2
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Fatality rate (per HMVMT)
5 Year Rolling Avg.


Serious injury rate (per HMVMT)
6
5
4
3
2
1
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
Serious injury rate (per HMVMT)
5 Year Rolling Avg.



Describe fatality data source.

FARS

2013-2019 fatalities: FARS Final (updated since last year)
2020 and 2021 fatalities: State data

*State includes pedestrian type/non-motorist types 01, 02, 03 only. (Benchmark Reports/Profiles).

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

Year 2021

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	12.4	29.4	0.59	1.4
Rural Principal Arterial (RPA) - Other Freeways and Expressways	30.8	106.2	1.57	5.38
Rural Principal Arterial (RPA) - Other	6	11.4	1.19	2.27

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 Minor Arterial	33	110.4	1.92	6.42
Rural Minor Collector	27.8	100.2	1.8	6.45
Rural Major Collector	10.6	57	1.46	7.76
Rural Local Road or Street	15.6	74	0.91	4.33
Urban Principal Arterial (UPA) - Interstate	51.8	215.8	0.35	1.44
Urban Principal Arterial (UPA) - Other Freeways and Expressways	44.4	129.6	0.68	1.98
Urban Principal Arterial (UPA) - Other	150.8	723.6	1.48	7.07
Urban Minor Arterial	81.6	473	1.12	6.45
Urban Minor Collector	38	243.8	0.93	5.98
Urban Major Collector	5.8	37.8	0.82	5.38
Urban Local Road or Street	25.8	219.2	0.8	6.77

Year 2019

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	376.4	1,781		
County Highway Agency	106.8	738		
Town or Township Highway Agency				
City or Municipal Highway Agency	26.8	226.6		
State Park, Forest, or Reservation Agency				
Local Park, Forest or Reservation Agency				
Other State Agency	0	2.8		
Other Local Agency				
Private (Other than Railroad)				
Railroad				
State Toll Authority				
Local Toll Authority				
Other Public Instrumentality (e.g. Airport, School, University)	1.4	6.8		
Indian Tribe Nation				

Safety Performance Targets

Safety Performance Targets

Calendar Year 2023 Targets *

Number of Fatalities:485.9

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

Targets are derived from the 2021-2025 Strategic Highway Safety Plan (SHSP). Annual targets for the SHSP are set using a two-pronged approach. Targets that are experiencing a decreasing trend over time are set using five-year rolling averages and an exponential trend line without a fixed endpoint to calculate future targets. By removing the fixed endpoint, it is anticipated that more practical performance measure targets will be computed by following historically decreasing data patterns. For those targets experiencing increasing trends, however, projections are based on a 2% decrease from the 2016-2020 five-year average, continuing with a 2% decrease for each successive five-year average.

Current targets through 2021-2025 are set using a baseline five-year average of 2004-2008, updated to include trend changes in 2016-2020.

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:2323.8

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

Targets are derived from the 2021-2025 Strategic Highway Safety Plan (SHSP). Annual targets for the SHSP are set using a two-pronged approach. Targets that are experiencing a decreasing trend over time are set using five-year rolling averages and an exponential trend line without a fixed endpoint to calculate future targets. By removing the fixed endpoint, it is anticipated that more practical performance measure targets will be computed by following historically decreasing data patterns. For those targets experiencing increasing trends, however, projections are based on a 2% decrease from the 2016-2020 five-year average, continuing with a 2% decrease for each successive five-year average.

Current targets through 2021-2025 are set using a baseline five-year average of 2004-2008, updated to include trend changes in 2016-2020.

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:0.809

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

Targets are derived from the 2021-2025 Strategic Highway Safety Plan (SHSP). Annual targets for the SHSP are set using a two-pronged approach. Targets that are experiencing a decreasing trend over time are set using five-year rolling averages and an exponential trend line without a fixed endpoint to calculate future targets. By removing the fixed endpoint, it is anticipated that more practical performance measure targets will be computed by following historically decreasing data patterns. For those targets experiencing increasing trends, however, projections are based on a 2% decrease from the 2016-2020 five-year average, continuing with a 2% decrease for each successive five-year average.

Current targets through 2021-2025 are set using a baseline five-year average of 2004-2008, updated to include trend changes in 2016-2020.

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:3.815

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

Targets are derived from the 2021-2025 Strategic Highway Safety Plan (SHSP). Annual targets for the SHSP are set using a two-pronged approach. Targets that are experiencing a decreasing trend over time are set using five-year rolling averages and an exponential trend line without a fixed endpoint to calculate future targets. By removing the fixed endpoint, it is anticipated that more practical performance measure targets will be computed by following historically decreasing data patterns. For those targets experiencing increasing trends, however, projections are based on a 2% decrease from the 2016-2020 five-year average, continuing with a 2% decrease for each successive five-year average.

Current targets through 2021-2025 are set using a baseline five-year average of 2004-2008, updated to include trend changes in 2016-2020.

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:554.7

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

Targets are derived from the 2021-2025 Strategic Highway Safety Plan (SHSP). Annual targets for the SHSP are set using a two-pronged approach. Targets that are experiencing a decreasing trend over time are set using five-year rolling averages and an exponential trend line without a fixed endpoint to calculate future targets. By removing the fixed endpoint, it is anticipated that more practical performance measure targets will be computed by following historically decreasing data patterns. For those targets experiencing increasing trends, however, projections are based on a 2% decrease from the 2016-2020 five-year average, continuing with a 2% decrease for each successive five-year average.

Current targets through 2021-2025 are set using a baseline five-year average of 2004-2008, updated to include trend changes in 2016-2020.

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.

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

" To begin, the development team conducted one-on-one interviews with key traffic safety partners across Maryland. Safety partners included leaders from government agencies, education and outreach professionals, local law enforcement, and emergency services agencies. During the interviews, the team solicited insight into the status of traffic safety initiatives and current and future safety priorities for Maryland roadways.”
“Information gathered from this safety partner survey helped refine goals, solicit new/updated action steps, identify emerging issues, and examine the progress of each SHSP Emphasis Area.”[1]
The list of stakeholder safety partner agencies is as follows:
Advocates for Highway and Auto Safety
AAA Mid-Atlantic
AAA Foundation for Traffic Safety
Baltimore County Police Department
Baltimore Metropolitan Council

BWI Airport
Calvert County Police Department
Carroll County Department of Health
Carroll County Department of Public Works
Cecil County Department of Public Works
Chesapeake Region Safety Council-NSC
Crash Center for Research and Education
Federal Highway Administration
Federal Motor Carrier Safety Administration
Harford County Sheriff's Office
Howard County Fire & Rescue
Howard County Government
Johns Hopkins University
MADD
Maryland Department of Agriculture
Maryland Department of Health
Maryland Department of Transportation
Maryland Farm Bureau
Maryland Highway Safety Office
MD Institute for Emergency Medical Services
Maryland Motor Vehicle Administration
Maryland State's Attorneys' Association
Maryland State Police
Maryland State Highway Administration
Maryland Transportation Authority Police
Montgomery County Engineering and Planning
Montgomery County Police Department
Morgan State University
National Highway Traffic Safety Administration
Prime Engineering
Prince George's County Dept. of Public Works
Prince George's County Fire & Rescue
University of MD Medical Center
University of Maryland National Study Center
Washington College
Washington Regional Alcohol Program [2]
[1] Maryland Strategic Highway Safety Plan 2021-25 PG 3
[2] Maryland Strategic Highway Safety Plan 2021-25 Appendix A
The process stakeholders from SHSP were consulted to establish safety performance targets.

Does the State want to report additional optional targets?

No

Describe progress toward meeting the State's 2022 Safety Performance Targets (based on data available at the time of reporting). For each target, include a discussion of any reasons for differences in the actual outcomes and targets.

PERFORMANCE MEASURES	TARGETS	ACTUALS
Number of Fatalities	420.6	548.0
Number of Serious Injuries	2905.8	3095.6

Fatality Rate	0.742	0.961
Serious Injury Rate	5.075	5.395
Non-Motorized Fatalities and Serious Injuries	467.7	638.8

Motor vehicle crashes continue to present a major public health concern in the U.S. and in Maryland, representing a leading cause, or among the top ten causes, of death for all age groups under 65. Crash trends are largely attributable to corresponding fluctuations in vehicle miles traveled (VMT) resulting from economic upturns and downturns. For example, with increased Vehicle Miles Traveled (VMT) on Maryland roadways, the number of vehicles and drivers on the road creates greater exposure in environments, where risky driver behavior escalates negative outcomes.

Mirroring some national trends, Maryland experienced an increase of fatalities for three straight years (2018–2020), with a slight decrease in 2021. VMT over the years fluctuated with COVID restrictions and return to work outcomes, with historic lows in 2020 (16% decrease in VMT compared to 2019); and then a 12% increase in VMT in 2021 compared to 2020. 2021 VMT was still down by nearly 6% compared to pre-pandemic levels in 2019.

Maryland saw slight improvements in overall fatalities, non-motorist fatalities, and the fatality rate in 2021 compared to 2020. But serious injuries did tick up toward pre-pandemic levels.

Maryland has experienced a general downward trend in serious injuries for more than the past decade, though 2021 saw the first year-over-year increase since 2017. Some reasons for the fluctuations in serious injury trends can be attributed to changes in how law enforcement is trained and submitting injury severity information on the Maryland crash report (ACRS), but also improvements in patient care and vehicle technology.

Year-to-year fluctuations are a challenging measure to track and comment on as most trends, whether positive or negative, occur over longer periods of time and are affected by changes in national, state, and local policies; transportation investments; safer vehicles and newer technologies; and shifts in generational and cultural norms.

Maryland is not alone, with increases in pedestrian fatalities also noted nationally, indicating a larger trend throughout the country that is reflected at the state and local level. Mirroring national trends, Maryland has steadily experienced increases in fatalities and serious injuries in its most vulnerable road users—non-motorists (pedestrians and bicyclists). While Maryland does not have an exposure measure to determine precisely an increase in road use by pedestrians and bicyclists, Maryland has increased pedestrian and bicyclist facilities year after year and is experiencing similar trends in changes in transportation mode use seen nationally.

MDOT monitors these fluctuations and works diligently to prevent injuries and fatalities by implementing the strategies in the Maryland Strategic Highway Safety Plan (SHSP).

Applicability of Special Rules

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

No

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	2015	2016	2017	2018	2019	2020	2021
Number of Older Driver and Pedestrian Fatalities	123	116	89	73	100	86	75
Number of Older Driver and Pedestrian Serious Injuries	172	263	279	248	265	191	256

Evaluation

Program Effectiveness

How does the State measure effectiveness of the HSIP?

- Change in fatalities and serious injuries

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

Program Type: Wet Surface Crashes
Target Crash Type: Wet Road
2019 Fatalities - 70
2020 Fatalities – 91
2021 Fatalities – 69
2019 Serious Injuries - 368
2020 Serious Injuries – 371
2021 Serious Injuries – 343

For Wet Surface crashes, the Fatalities decreased for 1% and Serious Injuries decreased for 17% during the 2019-21 period.
Program Type: Left Turn Crashes
Target Crash Type: Left Turn
2019 Fatalities - 25
2020 Fatalities – 27
2021 Fatalities - 26
2019 Serious Injuries - 222
2020 Serious Injuries – 154
2021 Serious Injuries – 225

For Left Turn crashes, the Fatalities increased for 4% and Serious Injuries increase for 1% during the 2019-21 period.

Program Type: Angle Crashes
Target Crash Type: Angle
2017 Fatalities - 73
2018 Fatalities - 81
2019 Fatalities - 55
2017 Serious Injuries - 538
2018 Serious Injuries – 488
2019 Serious Injuries – 603

For Angle crashes, the Fatalities decreased for 12% and Serious Injuries increase for 11% during the 2019-21 period.

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

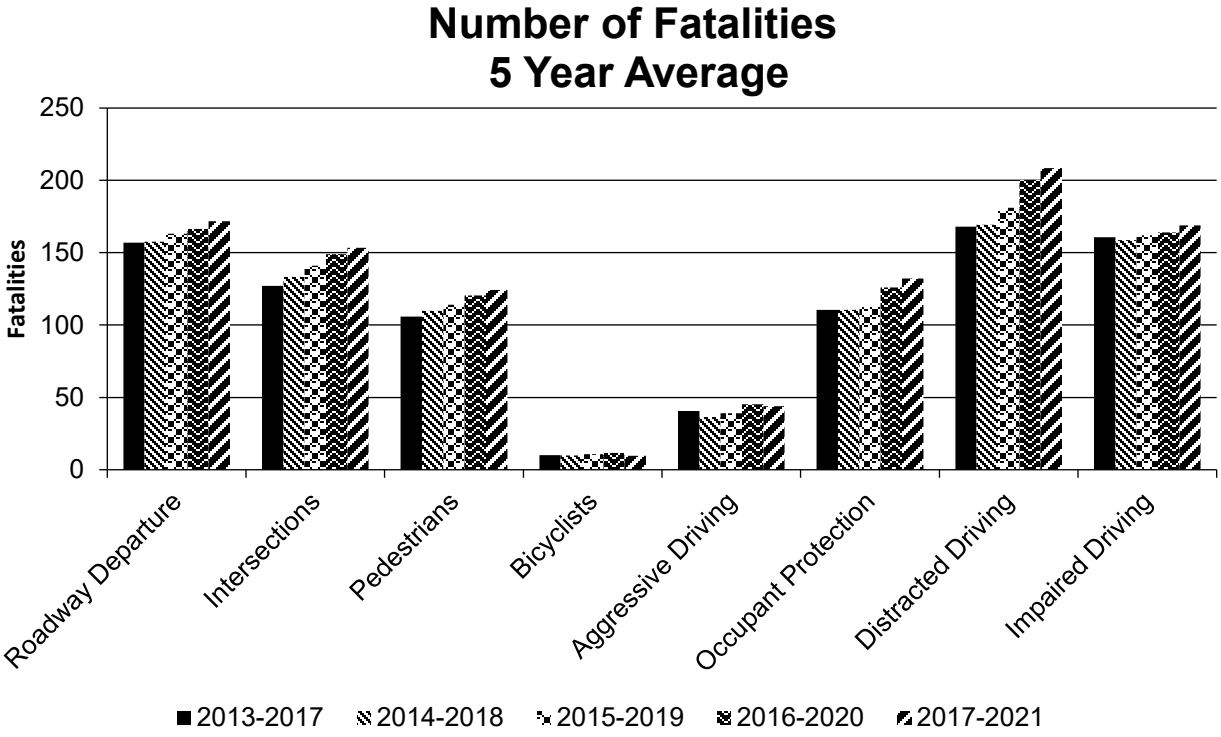
- Increased focus on local road safety

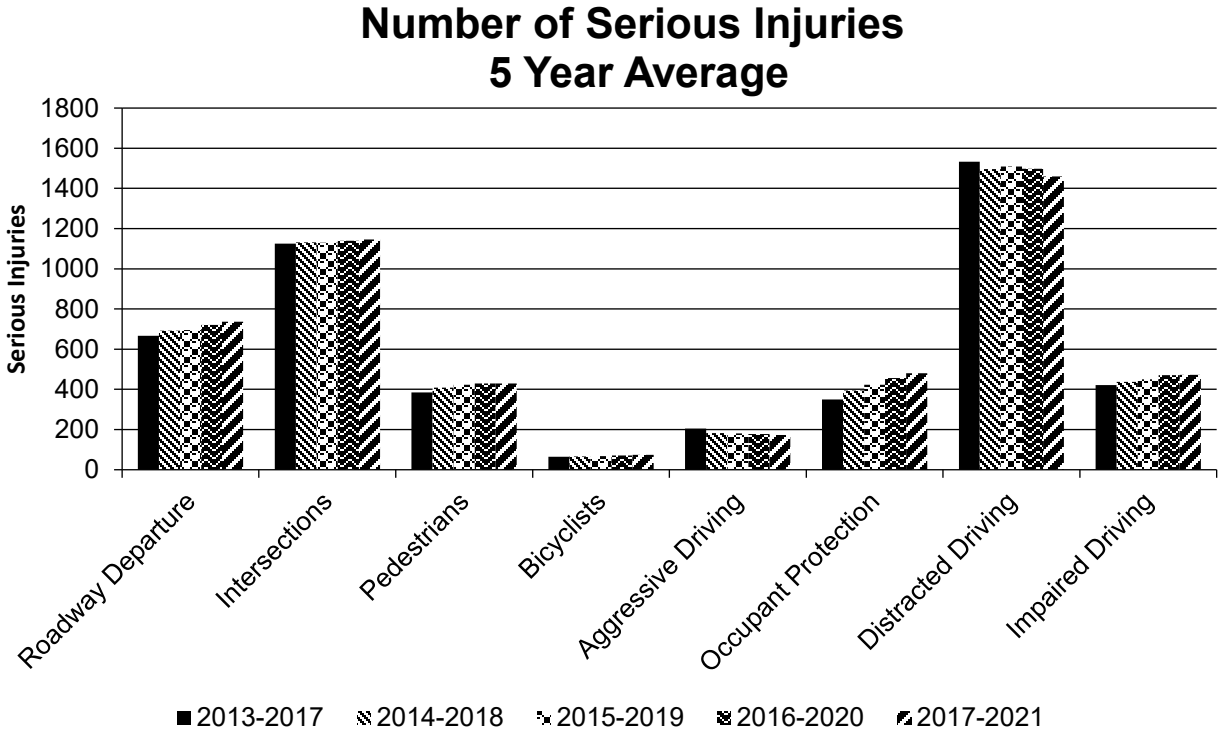
Effectiveness of Groupings or Similar Types of Improvements

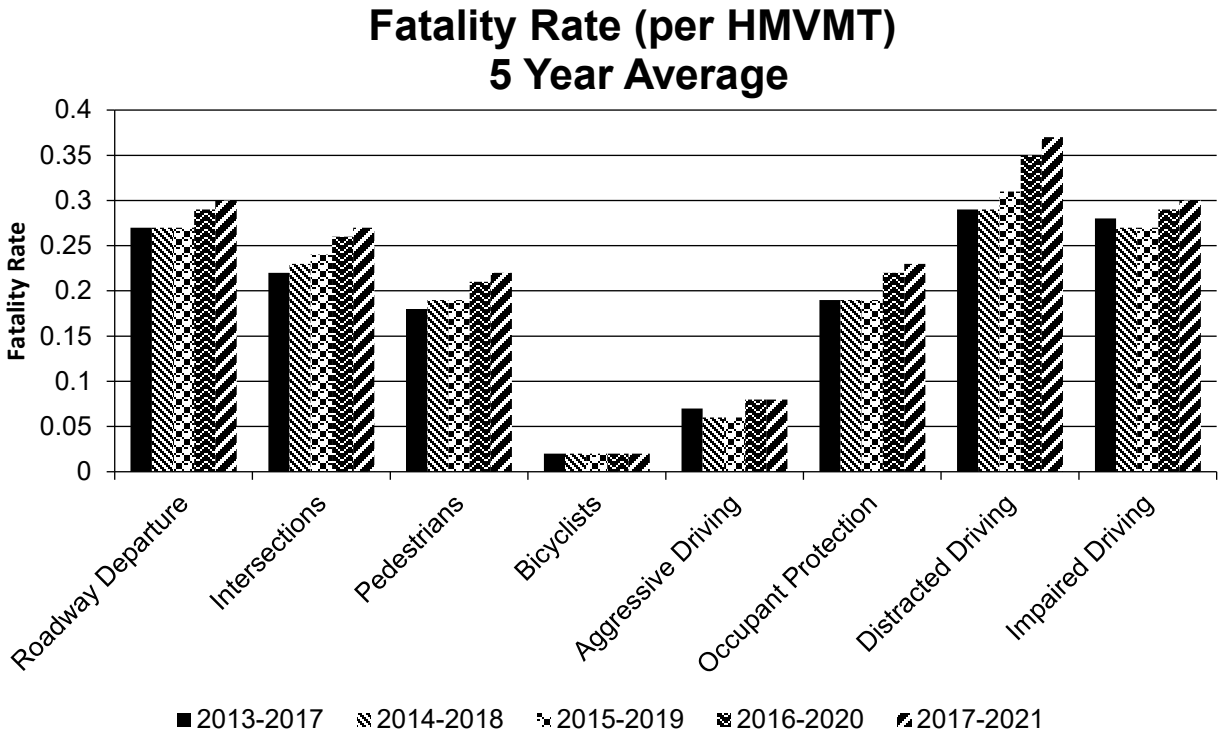
Present and describe trends in SHSP emphasis area performance measures.

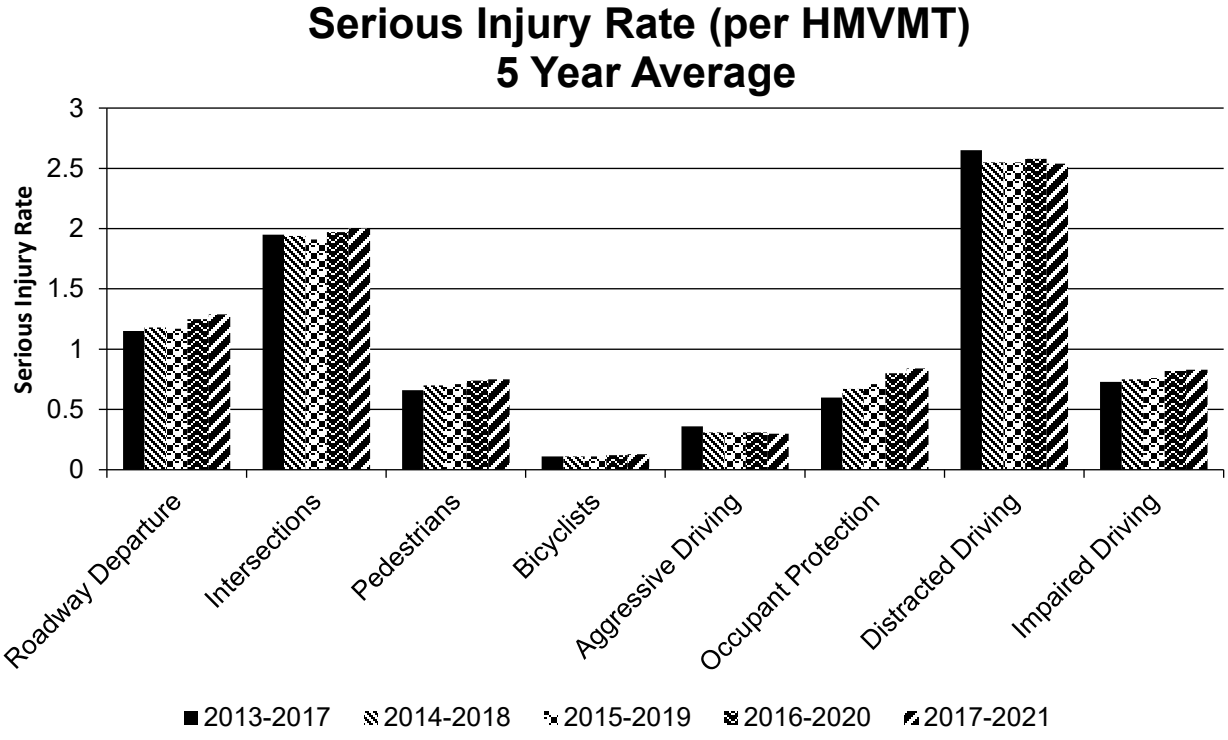
Year 2021

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)
Roadway Departure		171.8	736.8	0.3	1.29
Intersections		153.4	1,145.6	0.27	2
Pedestrians		124.2	428.6	0.22	0.75
Bicyclists		9.6	74.4	0.02	0.13
Aggressive Driving		44	173.6	0.08	0.3
Occupant Protection		132.2	481	0.23	0.84
Distracted Driving		208.4	1,459.6	0.37	2.54
Impaired Driving		169	472.8	0.3	0.83


Number of Fatalities
5 Year Average
Fatalities
250
200
150
100
50
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Aggressive Driving
Occupant Protection
Distracted Driving
Impaired Driving
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021


Number of Serious Injuries
5 Year Average
Serious Injuries
1800
1600
1400
1200
1000
800
600
400
200
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Aggressive Driving
Occupant Protection
Distracted Driving
Impaired Driving
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021


Fatality Rate (per HMVMT)
5 Year Average
Fatality Rate
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Aggressive Driving
Occupant Protection
Distracted Driving
Impaired Driving
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021


Serious Injury Rate (per HMVMT)
5 Year Average
Serious Injury Rate
3
2.5
2
1.5
1
0.5
0
Roadway Departure
Intersections
Pedestrians
Bicyclists
Aggressive Driving
Occupant Protection
Distracted Driving
Impaired Driving
2013-2017
2014-2018
2015-2019
2016-2020
2017-2021

Project Effectiveness

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

Compliance Assessment

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

01/31/2021

What are the years being covered by the current SHSP?

From: 2021 To: 2025

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

2025

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

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

ROAD TYPE	*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) [12]	100	100					100	100	100	100
	Route Number (8) [8]	100	100								
	Route/Street Name (9) [9]	100	100								
	Federal Aid/Route Type (21) [21]	100	100								
	Rural/Urban Designation (20) [20]	100	100					100	100		
	Surface Type (23) [24]	100	100					100	100		
	Begin Point Segment Descriptor (10) [10]	100	100					100	100	100	100
	End Point Segment Descriptor (11) [11]	100	100					100	100	100	100
	Segment Length (13) [13]	100	100								
	Direction of Inventory (18) [18]	100	100								
	Functional Class (19) [19]	100	100					100	100	100	100

ROAD TYPE	*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
	Median Type (54) [55]	100	100								
	Access Control (22) [23]	100	100								
	One/Two Way Operations (91) [93]	100	100								
	Number of Through Lanes (31) [32]	100	90					100	90		
	Average Annual Daily Traffic (79) [81]	100	98					55			
	AADT Year (80) [82]	100	100								
	Type of Governmental Ownership (4) [4]	100	100					100	100	100	100
INTERSECTION	Unique Junction Identifier (120) [110]			100	100						
	Location Identifier for Road 1 Crossing Point (122) [112]			100	100						
	Location Identifier for Road 2 Crossing Point (123) [113]			100	100						
	Intersection/Junction Geometry (126) [116]			100	100						
	Intersection/Junction Traffic Control (131) [131]			50	50						
	AADT for Each Intersecting Road (79) [81]			45	45						
	AADT Year (80) [82]			25	25						
	Unique Approach Identifier (139) [129]			100	100						
INTERCHANGE/RAMP	Unique Interchange Identifier (178) [168]					100	100				
	Location Identifier for Roadway at					100	100				

ROAD TYPE	*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
	Beginning of Ramp Terminal (197) [187]										
	Location Identifier for Roadway at Ending Ramp Terminal (201) [191]					100	100				
	Ramp Length (187) [177]					100	100				
	Roadway Type at Beginning of Ramp Terminal (195) [185]					100	100				
	Roadway Type at End Ramp Terminal (199) [189]					100	100				
	Interchange Type (182) [172]					100	100				
	Ramp AADT (191) [181]					100	100				
	Year of Ramp AADT (192) [182]					100	100				
	Functional Class (19) [19]					100	100				
	Type of Governmental Ownership (4) [4]					100	100				
Totals (Average Percent Complete):		**100.00**	**99.33**	**77.50**	**77.50**	**100.00**	**100.00**	**95.00**	**87.78**	**100.00**	**100.00**

*Based on Functional Classification (MIRE 1.0 Element Number) [MIRE 2.0 Element Number]

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 activity.

Optional Attachments

Program Structure:

MDOT SHA HISP_Version 3.0.docx
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.