Maryland
Triennial Highway Safety Plan
Federal Fiscal Years 2024 - 2026

Contents

Executive Summary

I am pleased to present Maryland's first Triennial Highway Safety Plan (3HSP) for Federal Fiscal Years (FFY) 2024-2026. This plan outlines the upcoming strategies, activities, and priority areas for the Maryland Highway Safety Office (MHSO), which is housed within MDOT's Motor Vehicle Administration (MDOT MVA), under the guidance of the MDOT MVA Administrator, Ms. Christine Nizer, who also serves as Maryland's Governor's Representative (GR) for Highway Safety.

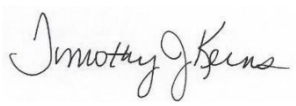
In 2022, the risky driving behaviors observed during the previous two years continued. Despite an overall return to normal operations and resultant increase in VMT to pre-pandemic levels, increases in speed, impairment, and distracted driving continued. As a result, 563 people died in traffic-related crashes on Maryland's roads. Unfortunately, this represented no change from the previous year. Additionally, pedestrian and bicycle fatalities continued to comprise one quarter of the state's roadway deaths and much work remains to reverse a recent national increase in roadway deaths.

The past year saw the state's highway safety programs adapt to the changes in procedures and activities resulting from the pandemic and begin preparing to meet the requirements of the new Bipartisan Infrastructure Law (BIL). Still following the strategies and action steps in Maryland's Strategic Highway Safety Plan (SHSP) the MHSO continued its focus on core emphasis areas such as impaired driving, speeding, occupant protection, distracted driving, and pedestrian and bicycle safety as well as new areas of focus such as autonomous vehicles. MHSO supported the development of more than 13 local highway safety plans, the state's seatbelt use rate rose back above 92 percent, and outreach activities resumed in the schools and communities. Maryland's SHSP provides the Safe System framework to support the collaborative efforts between MDOT modes and allied agencies. The SHSP continues to use a data-driven approach to set safety targets, to guide our investments, and to maximize the use of our resources to improve highway safety in the state.

As with the previous annual Highway Safety Plans, the SHSP will serves as a guiding document for this 3HSP. Both plans have been formulated through a close analysis of data along with the collaboration of diverse partners across the state. Also, additional efforts were established during the past year to identify underserved and at-risk communities, enhance public participation, and increase community engagement through the state. The information collected through this process will provide valuable input to this, and future 3HSPs. Strategies and projects outlined in this document have been selected for their ability to make the biggest impact toward accomplishing the goals set forth in the SHSP.

Maryland's network of highway safety partners is committed to raising the awareness of traffic safety issues and building a comprehensive and effective traffic safety program. I look forward to the implementation of the projects outlined in this 3HSP and continuing our work until there are zero deaths on Maryland roadways.

Sincerely,



Timothy J. Kerns, PhD

Highway Safety Plan

Organizational Structure

Serving as the Governor's Highway Safety Representative and Administrator of the MVA, Christine Nizer provides overall leadership for the state's highway safety program and builds support with other senior executive partners throughout state and local government as well as partner organizations. Dr. Tim Kerns, MHSO Director, reports directly to Administrator Nizer and manages a team of almost 25 professionals, with the assistance of Deputy Director, Myra Wieman.

The MHSO team also includes a Communications and Media Section Manager; a Content and Engagement Specialist, a Safety Programs Section; a Law Enforcement Services Section; a Partnership, Resources, and Outreach Section; and a Finance Section.

The Communications and Media Section Manager and Content and Engagement Specialist establish the strategic direction for MHSO communication efforts, including education/media campaigns, correspondence, and social media platforms. Working closely with office staff, MVA Communications, and other partners, the Communications Manager provides further exposure for highway safety efforts through public relations and earned media.

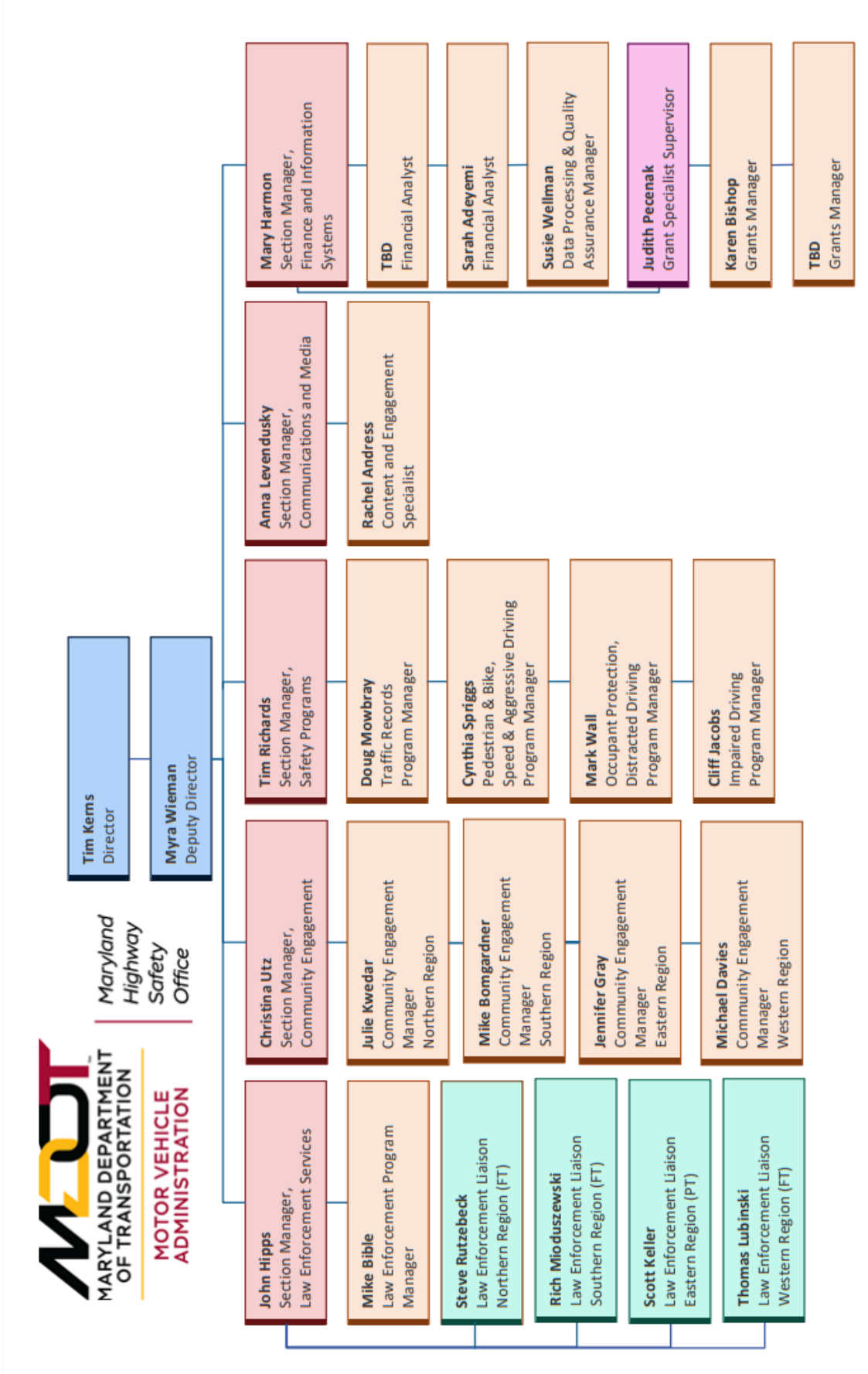
Safety Programs is comprised of a Section Manager and four Program Managers who specialize in Occupant Protection/Distracted Driving Prevention, Impaired Driving Prevention, Speeding/Aggressive Driving/ Pedestrian/Bicyclist Safety. This section also includes a Traffic Records Program Manager, who oversees the State Traffic Records Coordinating Committee (TRCC).

The Law Enforcement Services Section works directly with the police community across Maryland to increase and maintain support for highway safety and to assist in managing law enforcement-related highway safety grants. Led by a Section Manager, this section includes four Law Enforcement Liaisons (LELs) and a Law Enforcement Manager.

The Community Engagement Section includes a Section Manager and four Community Engagement Managers. This team has responsibility for engaging local highway safety partners and furthering the implementation of local Strategic Highway Safety Plans. The staff manages outreach programs for large employers, military installations, schools and universities, and young and older drivers.

Led by a Finance Section Manager, the Finance team oversees financial operations and grants administration. The Grants & Projects for Safety (GPS) E-Grants Management System allows for grant documentation and processing. The section has a grant specialist supervisor, one grant managers, two finance managers, and a data processing quality assurance specialist.

A full organizational chart for the MHSO is pictured below:


MARYLAND DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE ADMINISTRATION
Maryland Highway Safety Office
Tim Kerns
Director
Myra Wieman
Deputy Director
Mary Harmon
Section Manager, Finance and Information Systems
TBD
Financial Analyst
Sarah Adeyemi
Financial Analyst
Susie Wellman
Data Processing & Quality Assurance Manager
Judith Pecenak
Grant Specialist Supervisor
Karen Bishop
Grants Manager
TBD
Grants Manager
Anna Levendusky
Section Manager, Communications and Media
Rachel Andress
Content and Engagement Specialist
Tim Richards
Section Manager, Safety Programs
Doug Mowbray
Traffic Records Program Manager
Cynthia Spriggs
Pedestrian & Bike, Speed & Aggressive Driving Program Manager
Mark Wall
Occupant Protection, Distracted Driving Program Manager
Cliff Jacobs
Impaired Driving Program Manager
Christina Utz
Section Manager, Community Engagement
Julie Kwedar
Community Engagement Manager Northern Region
Mike Bomgardner
Community Engagement Manager Southern Region
Jennifer Gray
Community Engagement Manager Eastern Region
Michael Davies
Community Engagement Manager Western Region
John Hipps
Section Manager, Law Enforcement Services
Mike Bible
Law Enforcement Program Manager
Steve Rutzebeck
Law Enforcement Liaison Northern Region (FT)
Rich Mioduszewski
Law Enforcement Liaison Southern Region (FT)
Scott Keller
Law Enforcement Liaison Eastern Region (PT)
Thomas Lubinski
Law Enforcement Liaison Western Region (FT)

Highway Safety Planning Process

To accomplish its grants administration mission, the MHSO undertakes a 12-month process to complete its highly detailed Annual Grant Application (AGA) for the following FFY based on problem identification that encompasses the statewide challenges and local support. In addition to the AGA, the MHSO develops a 3HSP (every three years) to provide a framework for its programming.

The following table outlines the estimated planning calendar for the MHSO's AGA and 3HSP:

Month	Activity
Ongoing	• Provide edits and updates to 3HSP. • Identify partners, program goals and priorities, overall strategies, and direction of Maryland's traffic safety policies.
January	• Submit Annual Report by January 29. • Problem identification – review program data and targets to identify safety issues to be corrected with previous and new grant partners. • Debrief and analyze the previous year's program results with grant partners. • Apply funding formula and algorithms to allocate potential local funding to jurisdictional partners. • Open the MHSO grant application period.
February - March	• Convene grant-writing training and discussion sessions to assist potential grantees with grant submission. • Identify any gaps in existing problem-area strategies and request feedback as needed from stakeholders for further analysis. • Develop MHSO internal projects. • Begin drafting the HSP components (every three years).
April – May	• Determine estimated revenues and establish a draft AGA budget. • Review grants and make selections.
June	• Review selected grants with GR for approval. • Conduct MHSO final internal review of the AGA to verify compliance with federal requirements, competencies, and accuracy.
July	• Submit HSP (every three years) for approval to the GR and then to the National Highway Traffic Safety Administration (NHTSA) by July 1.
August	• Submit AGA for approval to the GR and then to the NHTSA by August 1.
September	• Notify chosen grant applicants and obtain final agreements. • Conduct pre- and post-award meetings with chosen grantees. • Problem identification – review new program data and targets to identify safety issues to be corrected and determine funding distribution and overall direction of the programs.
October – December	• Debrief and analyze the previous year's program results with MHSO teams. • Begin implementation of approved AGA as of October 1. • Develop Annual Report. • Continue conducting post-award meetings.

Problem Identification Process

The MHSO's HSP/AGA development process is designed to target highway safety problems by using relevant data sources, estimates of funding levels, identification of potential partners, and community/partner feedback. Potential grant programs are prioritized by their ability to address federal- and state-designated traffic safety priorities.

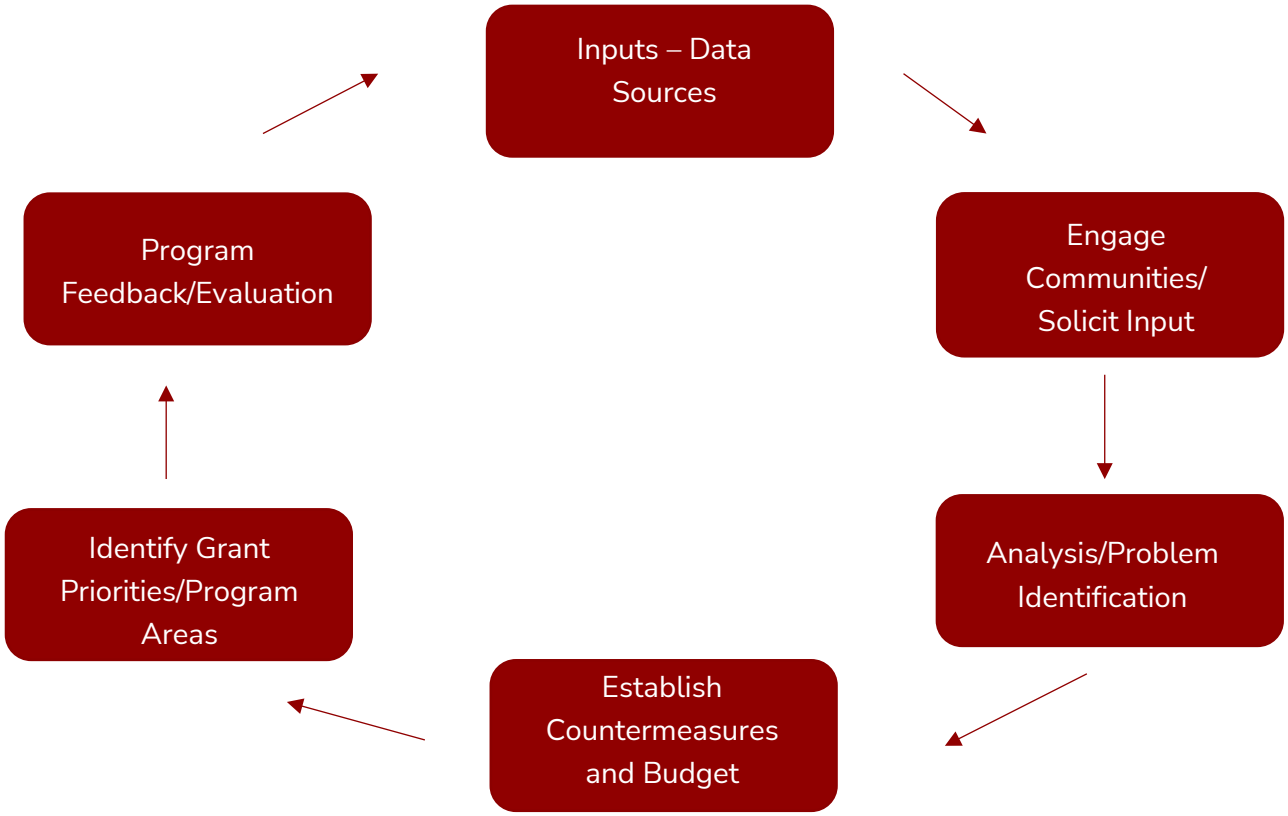
The purpose of the HSP/AGA problem identification process is to:

- Understand the scope of Maryland's traffic crash problems and causal factors through data and public participation
- Develop effective countermeasures to reduce or eliminate the problems
- Identify effective measures for continuing evaluation of changes in problem severity

The problem identification process used by the MHSO includes analysis of traffic safety data from established state and federal sources, with a special focus on those recommended in NHTSA's traffic records information system model, including the Maryland Crash Outcome Data Evaluation System (CODES). The MHSO manages this ongoing process, collecting, analyzing data and collecting public input uniformly over time. Accurate problem identification helps to quantify program decisions as managers establish statewide priority areas where the MHSO can most effectively focus its highway safety efforts and identify the partners best suited to implement safety projects.

An overview of the MHSO problem identification and programming process is depicted below:

Maryland Highway Safety Office Problem Identification/Programming Process



Data Sources & Processes

The sources of the MHSO's data include, but are not limited to:

- Maryland District Court – Citation/Adjudication data.
- MHSO Crash Data Dashboard – The new interactive Crash Data Dashboard developed by the Maryland Department of State Police (MDSP) and Motor Vehicle Administration's Highway Safety Office.
- Maryland Institute for Emergency Medical Services Systems (MIEMSS) – Emergency Medical Services (EMS) data information network; eMEDS.
- Maryland Trauma Registry – Trauma registry, injury data, and EMS databases.
- MDOT Motor Vehicle Administration (MVA) – Vehicle and driver information, including the state's driver license, vehicle registration, and citation/conviction files.
- MDOT State Highway Administration (SHA) – Crash data are obtained from SHA, which maintains a database derived from crash reports submitted to, and processed and approved by, the Maryland Department of State Police, along with data on average daily traffic counts and vehicle miles traveled (VMT). Starting in 2023, MHSO and all traffic safety partners are transitioning to use the MDSP Data Warehouse as its source for crash data. Historical data from SHA will still be utilized.
- Maryland Judiciary – Citation and Adjudication data.
- National Study Center (NSC) – CODES; observational seat belt use surveys.
- NHTSA – Federal Fatality Analysis Reporting System (FARS), and Fatality and Injury Reporting System Tool (FIRST).
- Office of the Chief Medical Examiner (OCME) – Medical examiner data.

Data elements in motor vehicle crash analysis can be classified in three general categories: people, vehicles, and roadway.

These categories may be further defined in subgroups and assigned relevant characteristics for ease and consistency of analysis, as shown in the following table:

Data Category	Subgroups	Details
Persons	Drivers, occupants, pedestrians	Age, gender, behavioral aspects, blood alcohol level
Vehicles	Passenger cars, trucks, buses, motorcycles, bicycles, etc.	Sedans, SUVs, convertibles, airbags, levels of protection
Roadway	Interstate, primary, secondary	Political subdivisions, lighting conditions, surface conditions

Data subgroups are reviewed to determine statistical over-representations, which can indicate traffic safety problems or potential problems among subgroups. A good example is the high percentage of crashes among teen drivers compared to the lower percentage of crashes among all drivers or other age groups. Further analysis then typically focuses on identifying subgroup characteristics (such as increased frequency or severity) or other factors suggested by the data when asking the traditional "who, what, where, why, and how" questions.

Low Income and Underserved Areas

In April 2023, a group of data experts including the National Study Center for Trauma and EMS, Washington College, and MHSO representatives formalized a model for determining underserved and low-income areas throughout the State of Maryland. The methodology for determining these communities included two sets of disadvantaged populations – socioeconomic disadvantaged and transportation safety disadvantaged. Variables within socioeconomic disadvantaged include Risk (alcohol retailers and cannabis dispensaries), Poverty, and Race (non-white). Variables within transportation safety disadvantaged include Violations (home location), Under 21/Over 65, and Crashes (location where occurred). This tool will lay the groundwork for ongoing engagement, identifying the most disadvantaged and priority audiences for future community engagement and outreach efforts.

Maryland Equity Composite Index
Socio-Economic and Transportation Disadvantage Indicator

After extended review of existing equity indicators related to transportation, MHSO defined the most desirable qualities of an equity index. First, the index should be as simple as possible and be based on a small number of components that represent different sides of the problem and are not highly correlated. Second, the index should be very intuitive, transparent, and easy to understand for diverse audiences. Third, the index components should be readily available, now and in the future. Fourth, the index should be specific and sensitive enough for practical purposes. For example, the index will not be very useful if all observational units (e.g., zip-codes), or none of them, are classified as “most disadvantaged areas.”

The State of Maryland has a very diverse population and geographical area. To reflect certain differences between rural and urban areas, the index is stratified by urban/rural areas. This means that urban area characteristics are compared to all urban areas in Maryland, and rural area characteristics are compared to all rural areas.

Socio-economic characteristics like poverty and race are very important on their own but must include transportation related components to address the priorities of the MHSO. This index has two parts: socio-economic disadvantage part and transportation safety part, intended to be combined for the overall equity index score, but can be separated as needed, depending on program scope and needs.

Zip code was selected as the unit of observation because it is an easily defined and readily available dimension for analysis and GIS mapping, can be tied in with Census Zip Code Tabulation Area (ZTA) information, and can be linked to the problem identification methodology that prioritizes at-risk locations and populations by zip code. The appropriate data for the index components on zip code level are also readily available.

The components of the index are described in the table below. The first part of the index is the Socio-Economic Disadvantage subindex with three components: poverty, race, and risk. Poverty is evaluated with US Department of Health and Human Services (HHS) federal poverty guidelines for percent of population with income less than 200% of federal poverty guidelines. This is a standard poverty measure which is easy to understand, and most equity indexes have this component. The race component is measured by percent of non-white population in a zip code. The third component of the subindex is a risk measure, or alcohol density equal to the number of liquor licenses per 10,000 population. The research on this and related measures (e.g.,

Foster et al., 2017) points to an increased risk in areas with accessible alcohol, like bars and restaurants, and there is a particularly increased risk of crime and drunk driving.

The Transportation Safety Disadvantage subindex has three components. The first one is the annual number of injury crashes (KABCO 2 through 5). The second component is the annual number of traffic stops with moving violations divided by population. The component will use the offender's zip code – where they live as opposed to where the offense occurs. The reason is to identify the areas where MHSO can implement educational countermeasures regarding moving violations. The third component is related to younger and older drivers as distinct demographics amongst licensed Maryland drivers. The measure includes the number of drivers under 21 and separately the number of drivers 65 or older. The two groups of drivers present potential traffic safety concerns among higher risk roadway users that need to be addressed. Each one has a weight of 0.5, so the total weight for this component is 1. Identifying such areas with large number of younger and/or older drivers will facilitate MHSO activities in these specific areas.

COMPONENTS OF THE INDEX **Unit of observation is 5-digit Zip Code**

		#	COMPONENT	SCORE Stratified by Rural/Urban Area
SOCIO-ECONOMIC DISADVANTAGE		**1**	**POVERTY** Percent of population with income less than 200% of federal poverty guidelines.	1=If greater than THRESHOLD for MD 0=otherwise
		2	**RACE** Percent non-white population.	1=If greater than THRESHOLD for MD 0=otherwise
		3	**RISK (alcohol density)**: Number of liquor licenses per 10,000 population.	1=If greater than THRESHOLD for MD 0=otherwise
			SOCIO-ECONOMIC DISADVANTAGE	
TRANSP ORTATIO		**4**	**CRASHES** Annual number of injury crashes (KABCO 2 through 5).	1=If greater than THRESHOLD for MD 0=otherwise

		5	**TRAFFIC VIOLATIONS (Citations)** Annual number of traffic stops with **moving violations** divided by population. Use **offender's zip code** – where they live as opposed to where the offense occurs.	1=If greater than THRESHOLD for MD 0=otherwise
		6	**YOUNGER AND MATURE DRIVERS** **A.** Percent of drivers under 21 and younger per 10,000 licensed drivers or pe population. **B.** Percent of drivers 65 and older per 10,000 licensed drivers or per population.	**A.** 0.5=If greater than THRESHOLD for MD 0=otherwise **B.** 0.5=If greater than THRESHOLD for MD 0=otherwise

Total Disadvantage Index, Score = 1+2+3+4+5+6
0=Not disadvantaged area to 6 = The most disadvantaged area

Socio-Economic Disadvantage Subindex, Score = 1+2+3
0=Not disadvantaged area to 3 = The most disadvantaged area

Transportation Safety Disadvantage Subindex, Score = 4+5+6
0=Not disadvantaged area to 3 = The most disadvantaged area

A zip code with a total score of 5 would reflect disadvantage problems for this area in 5 out of the 6 possible areas. There are 13 possible scores for a zip code: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, and 6. This wide range makes the index potentially very sensitive that can present a variety of levels of disadvantage on a zip code level.

METHODOLOGY

Period of time: the most recent annual data available by zip code.

Phase I. Collect Data for All 5-digit Zip Codes in Maryland.

Step 1. Poverty and race data from the Census.
Step 2. Number of liquor licenses, moving violations, young and older drivers.
Step 3. Denominators: population, AADT, VMT (depending on availability by zip code).
Step 4. Urban/Rural determination for zip codes.

Phase II. Computations

Step 1. Compute the six components for every Zip Code in Maryland based on Table 1.
Step 2. Compute different THRESHOLDs: median (50%), 75%, and 90% cut-off point (percentile) for each component, separately for Urban and Rural areas.

Phase III. Maryland Equity Composite Index (or Indicator)

Step 1. Compute the index using the 90% cut-off point.
If there is enough number of disadvantaged zip codes, this is the final index.

Step 2 (Optional).
If the number of zip codes is insufficient, create a new index using the 75% cut-off point.
If there is enough number of disadvantaged zip codes, this is the final index.

Step 3 (Optional).
If the number of zip codes is insufficient, create a new index using the 50% cut-off point.
This is the final index.

The methodology described above is based on two main tools.

First, the computation process is stratified by urban and rural areas, e.g., similar areas will be compared: urban to urban and rural to rural.

Second, the index methodology works with a specific threshold. For each of the components there is data for all zip codes. For example, the annual number of crashes with injuries for all zip codes. Then the zip codes are sorted by the number of crashes to estimate the threshold of 90% (90th percentile) which means the number of crashes below which are 90% of the zip codes and 10% of the zip codes have higher number of crashes. We will also compute the 75th and the median (50th percentile). The same procedure is applied for all components.

If a particular zip code has more crashes than the 90th percentile, this is designated as a transportation disadvantage area for crashes, and 1 point will be added to the score of this zip code.

The index is very flexible: in case the 90th percentile is too high a threshold, the threshold can be lowered to 75% and to 50% if necessary.

At the end, the index's total score will be very easy to understand by a wide range of program managers, planners, and traffic safety partners. For example, a zip code with a score of 6 would mean that this specific zip code is in the top 10% of zip codes on poverty, race, risk (alcohol density), number of crashes, number of moving violations, and younger and older drivers.

MHSO can also use the two subindexes for further evaluation. For example, two zip codes with an index totaling a score of 4 can be compared. One has 1 point on the socio-economic disadvantage and 3 points on transportation safety disadvantage. The other has 3 points on the socio-economic disadvantage and 1 point on transportation safety disadvantage. Remedies and solutions for the two zip codes may be quite different, which is where local information and area/site-specific program planning with knowledgeable partners will be critical.

Problem Analysis/Countermeasures Identification

Over-represented factors can be determined by comparing the rate of crashes for a subgroup or characteristic within a jurisdiction to the same rate in a comparable or larger jurisdiction. For example, if the percentage of adult vehicle occupants who do not use seat belts within a jurisdiction is greater than the statewide average, then that characteristic may be over-represented and is analyzed further. Such a case example might indicate a

need for additional or more focused countermeasures on seat belt usage in the identified jurisdiction. The following questions are among the most critical to data analysis and problem identification:

Question	Examples
Are high-crash locations identified?	Road sections, highways, streets, and Intersections.
Do we see recurring causes of crashes?	Impairment, speed, distractions, other traffic violations, weather, road conditions.
Which characteristics occur more frequently than would be expected—that is, which are over-represented?	Number of crashes involving 15- to 18-year-old-drivers versus other age groups, or number of alcohol crashes on a roadway segment compared to other causes.
Are there crash-severity factors to be considered?	Non-use of occupant protection devices (seat belts, motorcycle helmets), excessive speed.

The following table shows examples of information that may be applied in crash analysis:

Causal Factors	Crash Characteristics	Factors Affecting Severity
• violation of laws • loss of control • weather • alcohol involvement • roadway design	• time of day • day of week • age of driver • gender of driver	• non-use of occupant protection • position in vehicle • roadway elements (markings, guardrail, shoulders, surfaces) • speed

Ranking of program areas by their average annual number of crashes (overall, injury, and fatal), demographics, and spatial or other contributing factors, helps Maryland focus educational and enforcement efforts. Age, sex, and vehicle type (e.g., passenger vehicle, truck, commercial vehicle, motorcycle) are commonly used to focus educational efforts. Time of day, day of week, crash location, weather conditions, crash types, route types, and other contributing circumstances are used to help focus enforcement efforts.

The MHSO utilizes geo-spatial mapping technologies to help provide a visual perspective that adds geographical context to the analysis and consideration of highway safety problems affecting the state. With better understanding of the capabilities of mapping analysis software, more MHSO staff and partners are using these maps more effectively for improved identification and deployment of proven countermeasures and strategies that are used to drive statewide programs for marketing, awareness, and law enforcement. These mapping technologies and data provide a critical point of view for crashes in Maryland and are used to inform and aid the identification of problems and potential countermeasures more effectively.

Public Participation and Engagement

Introduction

In 2019, the Maryland General Assembly passed House Bill 855, making Maryland a Vision Zero state and setting a statewide goal of zero fatalities and zero serious injuries by 2030. While even one fatality on Maryland roadways in unacceptable, in accordance with guidelines provided by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration, the state's Strategic Highway Safety Plan (SHSP) for 2021-2025 has set more attainable objectives (see the Highway Safety Performance Measures).

The MHSO has traditionally placed a high priority on meaningful community engagement, as noted by an entire department dedicated to outreach and education. During COVID-19 State of Emergency, the state implemented a statewide-hiring freeze but in 2023, the department became fully staffed with five full-time professionals. In addition, the office employs four program managers that incorporate community engagement into their work plans and the Law Enforcement Liaison team who works side-by-side with both the program managers and community engagement personnel in the communities they serve.

Overall objective:

Consult and engage with local community organizations, citizens, and civic groups to identify highway safety concerns and solicit input for formulation of strategies and objectives in Maryland's Highway Safety Plans. Through the successful accomplishment of the Goals listed below, the Highway Safety Office will establish and exchange information and ideas which will allow community members to express their perspective, expectations, and concerns related to highway safety efforts as well as to obtain their 'buy-in' to the continued development of a Safe System approach. Where feasible, collaborative approaches to behavioral safety efforts will be incorporated, allowing the communities to share in the development and implementation of safety programs.

Engagement Planning

Public participation and community engagement (PP/CE) activities are not new to the MHSO. In previous years, numerous sub-recipients have completed projects where community groups offered valuable input that helped guide the overall project activities. Vulnerable road users have been a consistent group that shapes MHSO's plans and projects. While those processes will continue, they will be enhanced by a data driven approach that will help to identify specific at-risk population groups and geographic communities who can provide valuable input on existing highway safety programs and insight on future efforts that will resonate with these groups and help to reduce motor vehicle crashes, injuries, and fatalities in Maryland. As a result, the office will not rely on a one-size-fits-all methodology but rather place more emphasis on reaching groups in their own settings, scheduling outside of traditional business hours to solicit input from a greater audience, and becoming more proactive, seeking full representation from communities. As illustrated in Figure 1, the PP/CE planning process begins with a review of available data, a review of existing highway safety programs, identification and prioritization of areas of need, and several points of public engagement to help formulate appropriate strategies and Goals for inclusion in the final plan.

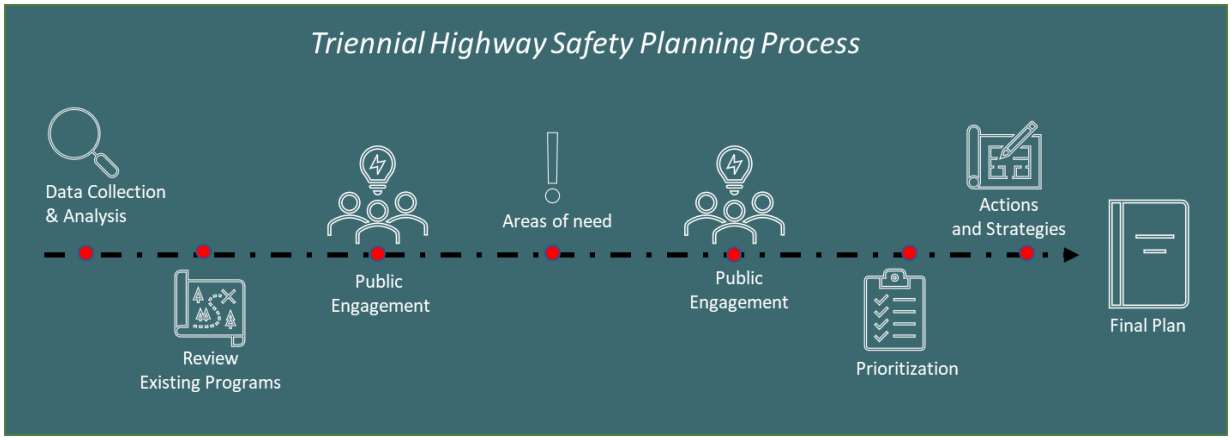


Figure 1 – Overall planning timeline for Community Engagement and Public Participation

Data Collection and Analysis/Community Identification

Determining communities that have been significantly impacted by traffic crashes, resulting in injuries and fatalities has, to date, been accomplished through a series of data outputs such as benchmark reports, a daily Fatality Summary Report that is broken down by person and county, and calculation of fatality rates using relevant denominators such as population, vehicle miles travelled, and licensed drivers. In addition, on demand reports are generated by the IT Quality Assurance Specialist and the Traffic Records Program Manager. At risk populations identified through this process include younger drivers, older drivers, drivers aged 21-25, and pedestrians. Additionally, impaired driving and speeding have also been identified as common characteristics in crashes. The tables below, identify the jurisdictions that are at or above the state average for crash rates within each category. These populations, initially defined using crash data, licensed driver data, and census data, will be addressed through MHSO's community engagement efforts. Further, specific geographic areas were identified using the U.S. DOT Equitable Transportation Community Explorer where fatality rates were classified as high and above average. As the 3HSP is fully developed, additional data sets and models will help refine specific population-based communities and geographic areas of focus (see Problem Identification Process).

2019 -2021 Teen driver (15-18) crash rates (per licensed driver)
Jurisdictions above the state average

Jurisdiction	Involved	Licensed Drivers	Rate (per 100)
Anne Arundel	713	8,291	8.6
Baltimore	1,062	9,342	11.4
Cecil	130	1,523	8.5
Charles	196	2,033	9.6

Dorchester	43	376	11.4
Garrett	43	437	9.8
Prince George's	717	5,673	12.6
St. Mary's	173	1,925	9.0
Somerset	19	180	10.6
Talbot	60	595	10.1
Washington	191	2,077	9.2
Wicomico	190	1,245	15.3
Worcester	149	800	18.6
Baltimore City	456	2,104	21.7
Statewide			**8.5**

Affected Community: Young drivers (age 15-18)

Goal: Reduce the 2019-2021 crash rate (by licensed driver) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in the table above are at or above the state average of 8.5.

Additional data: MHSO will engage drivers in the 15–18-year age range in the counties represented above. Additional data will be used to identify specific regions within the county.

Engagement Outcome: Through engagement with the community of young drivers, their parents/guardians, and their schools, MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to risky driving behavior.

A better understanding of these factors, which may be regionally specific, will inform the development of new teen driving programs, the improvement of existing programs, and may lead to increased partnerships with local organizations and agencies.

2019 -2021 Older drivers (65+) crash rates (per licensed driver)
Jurisdictions above the state average

Jurisdiction	Total Crashes	Licensed Drivers 65+ (FY22)	Rate (per 1000)
Anne Arundel	1,338	90,005	14.9
Baltimore	2,370	137,449	17.2

Charles	379	21,897	17.3
Prince George's	2,035	117,775	17.3
St. Mary's	234	15,714	14.9
Somerset	51	4,155	12.4
Talbot	162	10,908	14.9
Washington	379	26,333	14.4
Wicomico	379	16,992	22.3
Worcester	243	14,857	16.3
Baltimore City	1,519	55,013	27.6
Statewide			**14.8**

Affected Community: Mature drivers (ages 65+)

Goal: Reduce the 2019-2021 crash rate (by licensed driver) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in the table above are at or above the state average of 14.8.

Additional data: MHSO will engage drivers in the 65+ year age range in the counties represented above. Additional data will be used to identify specific regions within the county.

Engagement Outcome: Through engagement with the community of older drivers and their family members, MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to unsafe driving behaviors.

A better understanding of these factors, which may be regionally specific, will inform the development of new driving programs, the improvement of existing programs, and may lead to increased partnerships with local organizations and agencies. Additionally, community feedback will allow MHSO to better deliver educational programs and activities to specific localities.

2019 -2021 At risk drivers (21-25) crash rates (per licensed driver)
Jurisdictions above the state average

Jurisdiction	At Risk (21-25)	21-25	Rate
	Involved	**Licensed Drivers**	**(per 100)**
Anne Arundel	1,998	30,681	6.5

Baltimore	3,863	42,538	9.1
Cecil	339	5,427	6.2
Charles	616	9,323	6.6
Dorchester	93	1,337	7.0
Frederick	691	16,080	4.3
Garrett	99	1,506	6.6
Prince George's	4,323	43,125	10.0
Somerset	54	818	6.6
Talbot	131	1,831	7.2
Washington	486	8,140	6.0
Wicomico	523	5,061	10.3
Worcester	301	2,661	11.3
Baltimore City	3,634	19,254	18.9
Statewide			**7.3**

Affected Community: At-risk drivers (age 21-25)

Goal: Reduce the 2019-2021 crash rate (by licensed driver) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in table above are at or above the state average of 7.3

Additional data: MHSO will engage drivers in the 21–25-year age range in the counties represented above. Additional data will be used to identify specific regions within the county.

Engagement Outcome: Through engagement with the community of at-risk drivers, their family members, and their employers, MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to risky driving behaviors.

A better understanding of these factors, which may be regionally specific, will inform the development of new driving programs, the improvement of existing programs, and may lead to increased partnerships with local organizations and agencies. Additionally, community feedback will allow MHSO to better deliver educational programs and activities to specific localities.

2019 - 2021 Pedestrian crash rates (per population)
Jurisdictions above the state average

Jurisdiction	Pedestrians (No Bikes) Involved Crashes	Population	Rate
Anne Arundel	259	584,341	4.43
Baltimore	577	834,713	6.91
Dorchester	15	32,118	4.67
Montgomery	431	1,054,168	4.09
Prince George's	500	924,283	5.41
Washington	73	152,566	4.78
Worcester	46	52,621	8.74
Baltimore City	955	584,859	16.33
Statewide			**5.5**

Affected Community: Pedestrians on foot

Goal: Reduce the 2019-2021 crash rate (by population) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in table above are at or above the state average of 5.5

Additional data: MHSO will engage residents in the counties represented above. Additional data will be used to identify specific regions, specific age groups, and specific characteristics within the county.

Engagement Outcome: Through engagement with the local communities, MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to pedestrian collisions.

A better understanding of these factors, which may be regionally specific and may vary between drivers and pedestrians, will inform the development of new safety programs for both vulnerable road users and drivers. Additionally, community feedback will allow MHSO to better deliver educational programs and activities to specific localities.

2019 -2021 Impaired driver crash rates (by VMT)
Jurisdictions above the state average

Jurisdiction	Impaired Driving Total Crashes	VMT (millions)	Rate
Anne Arundel	700	5,789	12.10
Baltimore	893	8,028	11.12
Calvert	124	735	16.83
Caroline	48	399	11.94
Carroll	184	1,231	14.98
Cecil	176	1,263	13.96
Charles	212	1,224	17.34
Dorchester	60	344	17.33
Frederick	329	3,074	10.69
Harford	291	2,460	11.84
Kent	28	199	14.05
Prince George's	1,081	8,812	12.26
St. Mary's	157	889	17.66
Somerset	30	265	11.46
Wicomico	157	939	16.69
Worcester	191	840	22.75
Baltimore City	408	3,243	12.58
Statewide			**11.7**

Affected Community: Impaired drivers

Goal: Reduce the 2019-2021 crash rate (by VMT) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in table above are at or above the state average of 11.7

Additional data: MHSO will engage drivers in the counties represented above. Additional data will be used to identify specific regions within the county.

Engagement Outcome: Through engagement with the identified jurisdictions. MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to alcohol and drug impaired driving.

A better understanding of these factors, which may be regionally specific, will inform the development of new programs, the improvement of existing programs, and may lead to increased partnerships with local organizations and agencies. Additionally, community feedback will allow MHSO to better deliver educational programs and activities to specific localities.

2019 -2021 Speed related crash rates (by VMT)
Jurisdictions above the state average

Jurisdiction	Speed Related Total Crashes	VMT (millions)	Rate
Anne Arundel	988	5,789	17.07
Baltimore	1,444	8,028	17.99
Carroll	160	1,231	12.97
Charles	254	1,224	20.75
Frederick	396	3,074	12.87
Garrett	83	509	16.25
Howard	507	4,015	12.62
Montgomery	1,108	7,189	15.41
Prince George's	1,496	8,812	16.98
St. Mary's	183	889	20.62
Washington	337	1,975	17.08
Wicomico	129	939	13.78
Worcester	103	840	12.31

Statewide			**14.8**

Affected Community: Drivers who speed

Goal: Reduce the 2019-2021 crash rate (by VMT) by 10 percent for the 2024-2026 reporting period

At-risk jurisdictions: The jurisdictions listed in table above are at or above the state average of 14.8

Additional data: MHSO will engage drivers in the counties represented above. Additional data will be used to identify specific regions within the county.

Engagement Outcome: Through engagement with the identified jurisdictions. MHSO and their grantees will increase the understanding of underlying and contributing factors that contribute to speeding and reckless driving.

A better understanding of these factors, which may be regionally specific, will inform the development of new programs, the improvement of existing programs, and may lead to increased partnerships with local organizations and agencies. Additionally, community feedback will allow MHSO to better deliver educational programs and activities to specific localities.

Data Support

In 2023, MHSO launched an interactive crash data dashboard on the ZeroDeathsMD.gov website (ZeroDeathsMD.gov/CrashDashboard). This dashboard was created to provide more in-depth analysis to Maryland crash data and data transparency in motor vehicle crashes for the public. The tool enables visualization of the data through heat maps and the ability to see it in subsets rather than just static reports. Staff and subrecipients utilize this tool to determine crash trends at the local level.

In April 2023, a group of data experts including the National Study Center for Trauma and EMS, Washington College, and MHSO representatives formalized a model for determining underserved and low-income areas throughout the State of Maryland. The methodology for determining these communities included two sets of disadvantaged populations – socioeconomic disadvantaged and transportation safety disadvantaged. Variables within socioeconomic disadvantaged include Risk (alcohol retailers and cannabis dispensaries), Poverty, and Race (non-white). Variables within transportation safety disadvantaged include Violations (home location), Under 18/Over 65, and Crashes (location where occurred). Moving forward, this tool will supplement the existing datasets and lay the groundwork for ongoing engagement, identifying the most disadvantaged and priority audiences for future community engagement and outreach efforts. While the tool will be custom-built for MHSO and use state-specific, readily available traffic safety data in addition to socio-economic factors, the model borrows concepts and some of the framework from US DOT's Equitable Transportation Explorer. A more detailed description of the model can be found on page 11.

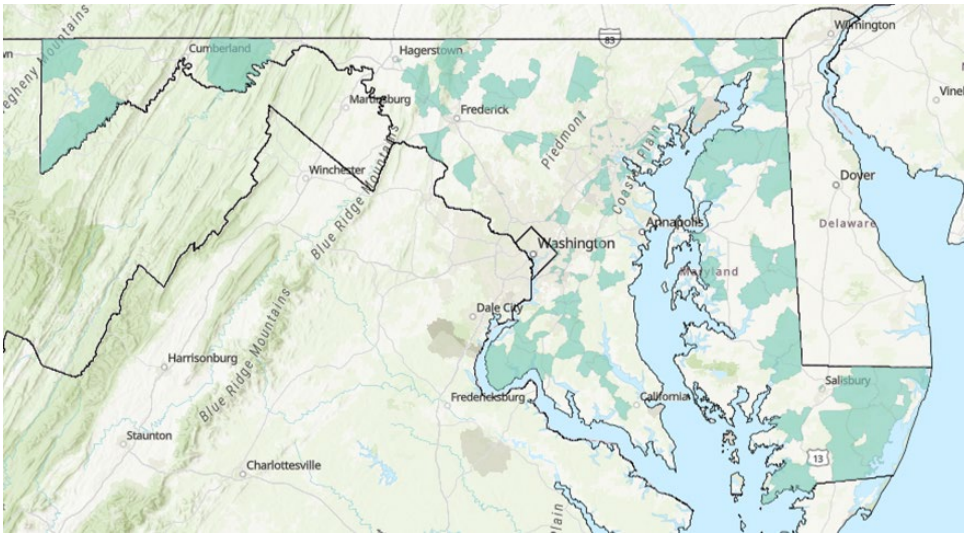


Figure 2. High fatality rate by census tract – 180.7+ fatalities per 100k population 2017-2021

128/1,475 census tracts

Source: USDOT Equitable Transportation Community Explorer

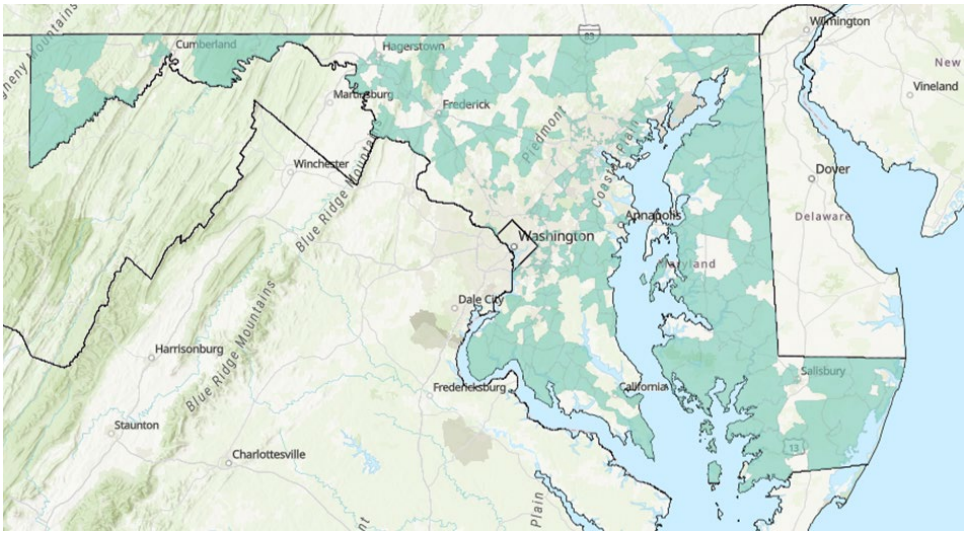


Figure 3. Above average/High fatality rate by census tract - 52.3 fatalities per 100k population 2017-2021

353/1,475 census tracts

Source: USDOT Equitable Transportation Community Explorer

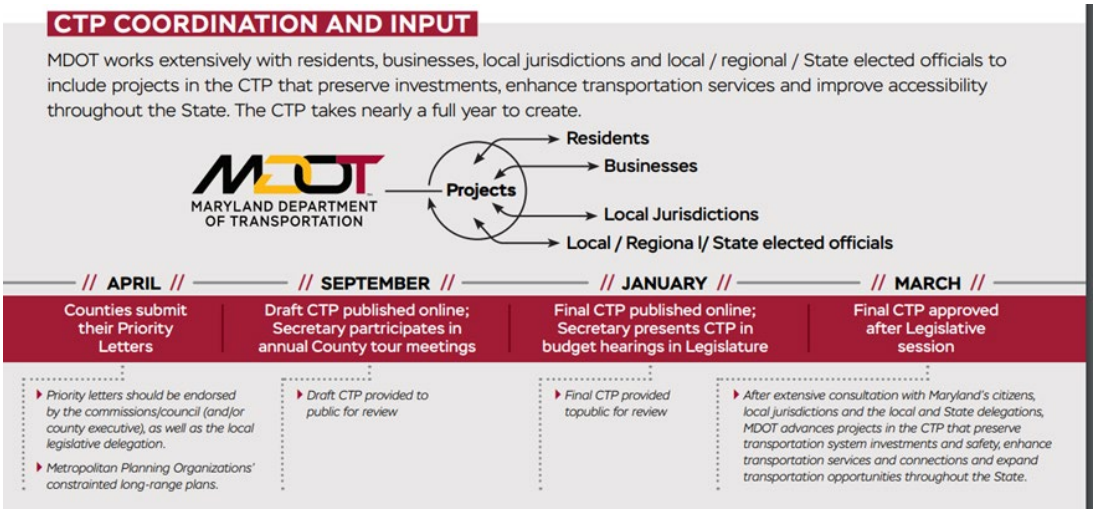
Engagement Outcomes

Engagement/input will be a part of the long-range 3HSP Engagement. Activities conducted to date helped form programmatic decisions during our grant review process. Applications that addressed underrepresented and low-income areas throughout Maryland were given higher priority. Quarterly and close-out reports, as required by every subrecipient, include survey results and participation rates for activities conducted in their regions. These survey results and participation rates helped contribute to our 3HSP planning. At each event, MHSO staff interact with the attendees to gauge their awareness of existing safety programs and messaging

and provide an opportunity for individuals to express their individual concerns about highway safety and offer suggestions for better synergy with their community.

A sampling of meaningful engagement to date, conducted with affected communities include:

- MDOT worked together with residents, local jurisdictions, and local and state elected officials to include projects in the Consolidated Transportation Program (CTP) that preserves investments and safety, enhances transportation services, and improves accessibility throughout the state. Community engagement sessions were held in all 23 counties and Baltimore City during daytime and evening hours. Attendees included staff from the county and local town roadway departments, local elected officials, planners, safety advocacy groups, Metropolitan Planning Organization staff, local health agencies, school system employees, and the general public. During the meetings, MDOT leaders shared statewide traffic safety issues along with local road safety projects and concerns. In addition, all meetings included a review of the latest traffic safety data available both for the state and for the local jurisdiction. Results of the jurisdiction's seatbelt survey were also shared. In advance of the sessions, information was publicized locally offering special assistance for persons with disabilities, limited English proficiency, or the hearing impaired. Results of the engagement opportunity included the development of many local strategic road safety plans that utilize data provided from MHSO to determine issues affecting their areas and applicable countermeasures. Affected communities' comments and views are published online and incorporated into the 3HSP. The below diagram shows the entire CTP coordination and input process.



- MHSO works closely with the two largest metropolitan planning organizations in Maryland, including the Baltimore Metropolitan Council (BMC) and the Metropolitan Washington Council of Governments in D.C. BMC holds public meetings for their long-range transportation plans in the seven Maryland jurisdictions under their authority. Sessions were conducted during evening hours to accommodate residents who are not available during work hours. Comments were documented by BMC staff and shared with MHSO for consideration and will be incorporated into the development of the 3HSP.
- MHSO and the MD Department of Health Kids in Safety Seats offered virtual car seat assistance programs throughout the State. These programs enable caregivers in remote areas of the State to receive customized assistance for installing a car seat, comparative to an in-person check. Non-English-speaking caregivers are offered an interpreter with advance notice. Following the check caregivers are

emailed two surveys (immediately following the check and five-months post check), a survey that asks questions such as child-related road safety concerns, confidence level for installing a seat on their own, and whether they would recommend the service to friends and families. The MD State Child Passenger Safety Co-Coordinators utilize this feedback to make changes to the program and for future planning.

- The Neighborhood Design Center (NDC) engages residents for greater consensus in pedestrian and bicyclist issues in Baltimore City and Prince George's County, the two counties with the highest pedestrian crash rates in the state. Through public exchange sessions, the Made You Look Toolkit, an accessible resource explaining how community members can take action to address pedestrian and bicyclist safety concerns in their own neighborhoods, was developed. MHSO works closely with the NDC to host a series of mid-year and year-end share back sessions to report on lessons learned, impact, and recommendations for the future.
- MHSO employs a staff of four community engagement managers and one community engagement section manager who provide traffic safety educational programs throughout the state. Many of these programs provide an opportunity for public participation where feedback is collected and recorded through an easily accessible document on a shared drive. Older driver presentations in conjunction with local police departments received the greatest amount of feedback including concerns with crossing streets safely, an increased amount of visible aggressive driving behaviors, and concern for lack of alternate transportation services when driving is no longer an option. This feedback, along with local law enforcement engagement/input will contribute to our long-range HSP.
- WBA Research, contracted by MHSO conducted a Road Safety Attitudes and Behavior survey to ascertain knowledge and degree of adherence to current driving laws and road safety best practices. The overarching goals of this research were to better understand who the target audience(s) were, what media channels were best in reaching the target audience(s), and what key messages were most important to relay to the target audience(s) that could lead to improved driving behavior, current driving laws and road safety best practices. An online panel survey among licensed Maryland residents aged 18-74 was the methodology utilized for faster data collection, anonymity for comfort level, and cost effectiveness. The majority of Maryland road users across all regions and demographic groups considered unsafe driving a major problem.
- Maryland's state-wide Strategic Highway Safety Plan (SHSP) has been the model for jurisdictions looking to create their own Local Road Safety Plan (LRSP). Utilizing the state's plan as a template, local partners can address concerns and problems unique to their territory. There are currently 13 active plans throughout the State with most of these plans led by local enforcement and engineering agencies. However, it is a multi-disciplinary team that also includes representatives from education, EMS, and community groups. Over the past year, MHSO staff have worked with the jurisdictional LRSP groups to develop and implement (as appropriate) the strategies identified through their local networks. Each plan was developed at the community level, incorporating feedback from local agencies and community members. Unlike the SHSP, the LRSPs can focus on the specific needs of their local jurisdiction. The group members work closely with each other so one solid connection in a jurisdiction will most likely open doors to the others. These groups have been and will continue to be utilized for HSP and SHSP feedback and planning.

- Maryland involved numerous stakeholders in the 2021-2025 SHSP, including public outreach, scheduled meetings with vested groups, and dedicated time during Emphasis Area Team Meetings to solicit comments. Utilizing a contractor with years of transportation safety experience, feedback was documented and incorporated into the final plan. The current SHSP was developed in 2020 and public participation was limited by the pandemic. After the process was completed, it was clear that that not all communities were represented in the feedback process and to provide effective safety programs going forward, the process will be re-evaluated. In the development of the 2026-2030 SHSP, the existing data tools, as well as those developed to support the 3HSP process, will be utilized to better engage identified communities.
- Partnering with the Children's Center of Washington County, in conjunction with Washington County Public Schools, communities voiced the need for formalized education on pedestrian and occupant protection for children. Utilizing a safety education campus, the school system transports thousands of children a year to a focused hands-on training program. Judy Centers, staffed with early learning professionals, help prepare children for school readiness. These centers are located at Title I schools in every Maryland County. MHSO staff working with these centers and utilizing a Spanish interpreter were able to help with car seat installations/questions and reach parents and caregivers as they dropped off and picked-up their children. The Maryland Department of Health Kids in Safety Seats (KISS) program offers car seat assistance through a volunteer network of organizations throughout the state. Low-cost purchase options for those who financially qualify enable an opportunity to engage with individuals in a safe and non-threatening environment. At each event, KISS staff interact with the participants on the importance of the correct use of safety seats. Information gathered from the participants and through the seat check process is used to inform future classes and provided valuable feedback for effectively targeting safety messaging.
- SADD, MADD, and staff from MHSO worked with high schools and teen-centered locations to hear concerns about preparing to drive and navigating roads safely as novice drivers. Non-traditional locations such as the Frederick County Carnival grounds brought a wide array of youth and teen input. Mock crashes conducted throughout the state allowed local partners to come together, discuss transportation safety issues within the community, and build an educational program that was brought directly to the high schools.
- Almost one-third of pedestrian crashes (31 percent) took place in Baltimore City which created an opportunity for multiple subrecipients to receive funding for innovative projects. The Baltimore City Department of Transportation, BYKE Collective, the Maryland Institute for EMS Systems, and Neighborhood Design Center hosted community workshops, worked with after school programs, and brought pop-up events to all age groups.
- Morgan State University, an HBCU and subrecipient, worked with students to determine all distracting sources of connected and automated vehicles utilizing the driving simulator housed at the Safety and Behavioral Analysis (SABA) Center on campus. They then created a program to educate students on distracted driving, potential distractions of CAV technologies, and methods to decrease the number of crashes caused by distracted driving.
- MHSO is currently working on implementing accessibility measures for deaf and hard of hearing motorcycle riders that are taking the MOTORS (Motor Officers Teaching Rider Safety) classes. Utilizing

interpreters and adding closed caption to the current videos were actions deemed necessary by working with the deaf and hard of hearing group.

- As the statewide population ages, older drivers over 65 will become more prevalent on roadways and present unique challenges that must be considered in safety planning. MHSO staff regularly attends senior expos which are held in every county of the state once a year.

Ongoing Engagement Planning

Future engagement efforts will provide sufficient opportunities for public engagement so that MHSO can better plan, implement, manage, and staff the highway safety grant program. Finding culturally competent partners to work with non-traditional partners will assure that all voices are heard and a broad spectrum of representation from the communities affected by traffic safety issues. Ongoing planning will consist of:

- ✓ Understanding community characteristics through data analysis
- ✓ Identifying new opportunities and understanding concerns
- ✓ Exploring alternatives
- ✓ Collaborating on an effective solution

A mindset change, from simply providing safety information to the public to a synergistic approach that will provide a level of ownership to the public and existing partners, will drive the efforts of the Highway Safety Office. Future engagement efforts will be driven by the goals listed below. As partnerships from underrepresented groups grow, there will be a better network of individuals to collaborate with on the next iteration of the SHSP (2026-2030).

Examining ways to simplify the grant application process and to work with the underserved who may not have wi-fi access, the disabled who can't utilize traditional programs, and non-profits with limited staff will be a top priority over the next three years. Specific accommodations for the audience including literacy levels, interpreters, captioning, ADA-compliant spaces, and those whose primary language is not English will be anticipated.

The Maryland Department of Transportation is asking for public input on its long-range Maryland Transportation Plan (MTP) that will guide the state's vision and corresponding policy and investment priorities for the next 20 years. The survey, delivered to the public in a variety of venues, includes numerous questions on traffic safety and thoughts on driving behaviors. This public input will be another tool for MHSO to understand local needs.

The initial Goals for public engagement have been to contribute to the development of Maryland's overall highway safety program. Through identification of the affected and potentially affected communities, including particular emphasis on underserved communities and communities overrepresented in the data provided by the Maryland Equity Composite Index and Socio-Economic and Transportation Disadvantage Indicator, consistent community engagement will be conducted going forward. MHSO will adjust countermeasures and funding levels across program areas to address the specific needs of these communities. The following goals will be used to enhance the reach and effect of existing programs.

Goal #1 – Increase engagement through faith-based community organizations and houses of worship with in-person and hybrid workshops, reinstatement of the Buckle Up Religiously program, and participation in events

that link law enforcement, communities, and safety professionals. Community feedback will be captured using an I-Pad and uploaded to a shared document for consideration and/or inclusion in the 3HSP.

Goal #2 – Increase engagement through community-based events such as National Night Out, PTA sponsored events, and athletic events to engage a broad spectrum of representatives from the community – going to where they live, work and play. Community feedback will be captured using an I-Pad and uploaded to a shared document for consideration and/or inclusion in the 3HSP.

Goal #3 – Utilize hands-on activities to engage communities that have not been reached in the past to encourage conversation and feedback. MHSO will utilize their rollover simulator, desktop driving simulator, robotic talking car, distracted and impaired goggles, paint bicycle, and wrapped educational trailer in various communities throughout the state. Community feedback will be captured using an I-Pad and uploaded to a shared document for consideration and/or inclusion in the 3HSP.

Goal #4 – Increase engagement through non-traditional meeting locations that offer neutral and informal space for community members to get project information, ask questions, and make comments. Community feedback will be captured using a survey mechanism.

Goal #5 – Continue consultation with individuals or organizations that represent people with disabilities, including but not limited to the deaf or hard of hearing, low vision and visually impaired. Community feedback will be captured by MHSO and partnering organizations using an I-Pad and uploaded to a shared document for consideration and/or inclusion in the 3HSP.

Goal #6 – Build upon current programs that reach underserved areas to solicit input on additional traffic safety related topics. Community feedback will be captured using an I-Pad and uploaded to a shared document for consideration and/or inclusion in the 3HSP.

Goal #7 – Build out the Emphasis Area Teams and DUI Task Force to include more community partners from underrepresented and low-income areas utilizing the comprehensive list of MD non-profits provided by NHTSA Region III.

Goal #8 – Through the law enforcement liaison program, work with law enforcement agencies that receive a subaward on community collaboration efforts related to their grants. Feedback from community collaboration will be documented through MD's Grants and Projects for Safety E-Grants Management System.

Public engagement will be incorporated, when feasible, into MHSO's programmatic decision-making process.

Problem Identification Priority Ranking Methodology (Crash Rates and Zip Codes)

Methodology is described in Appendix D

Process Participants

Maryland's strong partnerships with public and private entities at the federal, state, and local levels provide the foundation of broad perspectives, objectivity and balance needed to enhance highway safety and help ensure the overall effectiveness of state grant program strategies. The MDOT Secretary, MVA Administrator, MDTA Executive Director, Maryland State Police Superintendent and Maryland Department of Health Deputy

Secretary are active members of the SHSP Executive Council, having input on strategies and goals set forth through the SHSP's six Emphasis Areas:

- Speeding/Aggressive Driving
- Distracted Driving
- Highway Infrastructure
- Impaired Driving
- Occupant Protection
- Pedestrian and Bicyclist Safety

Enforcement, education, engineering, and emergency medical services form the "four Es," the nationally recognized pillars of highway safety countermeasures. In FFY 2023, MHSO staff and grantees will begin implementing the Safe System approach. MHSO staff members seek input from partner entities across all these disciplines to help lessen the number and severity of highway crashes and to help decrease the overall number of fatalities and injuries, along with severity of injuries, as they impact all six emphasis areas.

Below is a brief outline of Maryland's ongoing partnership circles and the types of contributions and synergies these committed and invaluable partners provide within Maryland's highway safety grants process:

- **Federal Government –** Agencies such as the NHTSA, the FHWA, and the FMCSA play key roles in problem identification, target-setting, development of countermeasures, grants management, development of education and media campaigns, and assistance to the MHSO with administrative oversight of Maryland's traffic safety grants program.

- **National Organizations –** Organizations representing national professional associations such as the Governors Highway Safety Association (GHSA), the International Association of Chiefs of Police (IACP), the National Sheriffs Association (NSA), American Association of Motor Vehicle Administrators (AAMVA), and AAA provide forums for idea formulation, discussion, and analysis of highway safety issues across the nation. These organizations also provide best practices and innovative strategies for dealing with certain highway safety issues. MHSO management is represented on many of these organizational boards and committees.

- **State and Local Governments** – All MDOT transportation modes take on significant roles in the MHSO programming model. Each integrates SHSP goals and priorities into business plans, as outlined within each of the SHSP emphasis areas, including coordination of effective media approaches to ensure consistent, effective, and timely messaging. Local government agencies contribute to the highway safety planning process through representation and input within SHSP Emphasis Area Teams (EATs) and, most important, the effective oversight and implementation of local grants programs. The MHSO also utilizes data provided by the Maryland Department of Health (MDH), the Maryland Institute for Emergency Medical Services Systems (MIEMSS), and the Statewide EMS Advisory Council.

- **Law Enforcement –** Law enforcement agencies at all levels, including professional organizations such as the Maryland Chiefs of Police Association (MCPA) and Maryland Sheriffs' Association (MSA), are

crucial to success in achieving the long-term goal of zero traffic fatalities. The highly visible enforcement of Maryland's traffic laws and ongoing participation in executing localized enforcement and training grants are critical to the ultimate success of the state's traffic safety strategies. Maryland also utilizes information gathered from the Maryland Police and Correctional Training Commissions (MPCTC).

- **Colleges, Universities, and Schools –** Maryland employs educational campaigns at all levels, from elementary school through higher education, to inform and guide behaviors of students, often beginning years before they can drive legally. Representatives from educational institutions regularly contribute to Maryland's SHSP EATs and grants review process, assisting with problem identification and countermeasures strategies, coordinate data and educational programs, and manage special grant-funded projects.

- **Court System –** The MHSO funds a Traffic Safety Resource Prosecutor (TSRP) who focuses solely on clarifying and assisting with traffic enforcement issues and prosecutions in ways designed to increase conviction rates of criminal drivers and to provide partners within the court system for adjudication support. This TSRP provides training to prosecutors and law enforcement officers and conducts outreach and assistance to judges, all to facilitate services to the Maryland Judiciary and create safer traffic environments on all roadways. A Statewide Judicial Outreach Liaison (SJOL) will be added in FFY 2024 to educate and provide outreach to Maryland judges and court officials.

The MHSO cultivates and fully utilizes its traffic safety partnerships to improve every aspect of its HSP and related policy and implementation decisions, engaging partners in strategy selection, problem identification, and the establishment of effective performance metrics for ongoing evaluation and planning needs. Throughout the grant year, the MHSO coordinates a wide range of activities and interactions with partner agencies, including governmental entities and private not-for-profit groups.

Communications among these partner agencies include regular contact and planning exchanges directly with the MHSO staff through inclusion in traffic safety task forces, SHSP EATs, scheduled planning meetings, conference calls, and individual interactions through correspondence such as email. Ongoing input and feedback from these partners are vital to establishing a clear direction for statewide strategies and complementary efforts throughout Maryland.

In some cases, agencies serve as direct grantees to the MHSO, with closely planned and monitored activities coordinated by those entities. For example, private and not-for-profit partners such as Mothers Against Drunk Driving (MADD) and the Washington Regional Alcohol Program (WRAP) have established programs to coordinate a variety of statewide impaired driving prevention activities through MHSO grants. As a matter of course, these entities are often consulted on initiatives, and they regularly provide valuable insight to the MHSO.

Similarly, organizations such as the MDH offer a variety of expertise and provide input on child passenger safety issues. Smaller partners are engaged in localized projects throughout the state, including efforts such as young driver education activities. These partners are instrumental in the success of local outreach efforts that also complement statewide traffic safety programming.

The MHSO also works frequently with partner entities that are not grantees, and input from these partners proves to be vital to the success of the MHSO's efforts. These partners include AAA Mid-Atlantic, National Safety Council, Maryland Shock Trauma, numerous community hospitals, faith-based organizations, service organizations such as Kiwanis Clubs, Maryland's public and private school system, ABATE of Maryland, private businesses, and representatives of the restaurant industry all serve as knowledge bases that help shape the MHSO's traffic safety messaging and outreach.

In addition, non-grantee partners prove to be valuable conduits through which the MHSO's messaging can be disseminated, and the MHSO works diligently to keep lines of communication open with all potential partners. Again, regular contact is maintained through a variety of methods including task forces and regular meetings and contacts, during all aspects of planning and implementation of the HSP.

Method for Project Selection

Strategies chosen by the MHSO and its partners are selected based on the anticipated success of the countermeasures outlined and on their proven effectiveness in meeting highway safety goals, which are based on analysis processes previously described above. In selecting strategies, countermeasures, and projects to best meet safety goals, the MHSO consistently utilizes the HSP and the SHSP, both of which are guided by in-depth data analysis.

The MHSO uses proven resources to help select evidence-based countermeasures, including NHTSA's Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices (Tenth Edition, 2020). In some instances, the MHSO utilizes additional countermeasures based on other federal and state research evidence. In each program area, countermeasures and requirements to show and prove their effectiveness are included.

Clear direction is provided to grantees with regard to how to connect grant proposals with key priorities to reduce serious injuries and fatalities. Proposed grant applications first are reviewed jointly by MHSO program managers and section managers with several objectives in mind:

- To ensure the application meets required criteria (eligibility, completeness) including "3 or more star" Countermeasure or sufficient evidence that justifies funding.
- To determine whether the traffic safety impact of proposed grant activities is likely to support established goals by ensuring that the identified problem is adequately outlined, that solutions and strategies are reasonable, that evidence-based resources can be expected to address noted problems, and that proposed solutions align with Maryland's SHSP
- To weigh the applicant's merits in terms of current activities and past performance
- To determine the appropriateness of the potential grantee to perform the activities

Determination of the application's potential to impact traffic safety goals is based on the applicant's demonstrated:

- ability to implement evidence-based strategies,
- commitment to sustain and consistently contribute to success of strategies,
- establishment of measurable outcomes for strategies,
- past project performance (if applicable), and

- ability to address the greatest demonstrable need or problem identified.

Proposals that target high-risk populations (ex. underserved/low-income communities) as noted in the Safe System approach, high-risk behaviors, and high-crash locations receive additional consideration, thus emphasizing the need for and use of measurable outcomes in defining application strategies and approaches.

Proposed strategies must demonstrate one or more of the following attributes:

- An evidence-based strategy of countermeasures supported by research
- A demonstration project, with clear evidence of data-driven safety needs identified
- A strong evaluation plan for the project that allows the grantee to assess the effectiveness of the activity at its conclusion

After grant applications are received, the MHSO's Grant Review Team (GRT) conducts a comprehensive review of the applications and described projects or programs. GRT members include:

- the MHSO's Director and Deputy Director,
- the MHSO's Finance Section Manager,
- the NHTSA's Region III Program Manager, and
- MHSO Program Managers, Section Managers, and LELs who present the grant applications to the GRT and provide background and assistance as needed.

The GRT conducts technical analysis of all proposed grant applications, based in part on the following criteria:

- Has a traffic safety-related problem been adequately identified and appropriately described in the problem statement?
- Does the proposal clearly address a strategy contained within the SHSP?
- Does the proposal clearly adopt a *Countermeasure That Works* strategy or published research?
- Does the proposal clearly show how the project is expected to address the problem along with expected outcomes?
- Did the applicant include a measurable evaluation plan?
- Are action steps clearly organized and well-defined, especially in terms of countermeasures to be used?
- Does each action step have a correlating measurable goal?
- Are timelines reasonable and achievable?
- Are considerations that might affect grantee performance identified and addressed?
- Is past performance reviewed and risk assessment completed?

During an application review, all aspects of the proposal are analyzed by the various GRT members and any portion of the prospective grantee's request for funding may be excluded. Projects that serve underserved communities will be given additional consideration. However, many projects are designed to benefit all residents of the state or a particular region. If a portion of the grant request is removed from consideration, the corresponding dollar amount is removed from the total request when calculating the award amount.

Responsibility for final recommendation and allocation of funds to any grantee rests with the MHSO's Director during grant review. All projects are reviewed to make sure that costs are allowable, allocable, and appropriate within funding limitations.

Following all team reviews of the applications and appropriate recommendations, the entire grant program proposal is presented for final approval to the GR for Maryland. The GR must then review and sign off on all strategies and grants proposed to be incorporated into the HSP.

The MHSO's final selection of grant proposals is based heavily upon the ability of proposed grant projects to address federal and state priorities for traffic safety programs or related priorities and needs outlined through the problem identification process. Considerable weight is also given to the communities that will be affected most by the activities provided. All grants funded are measured against goals set forth in the HSP and the SHSP, and all grants selected for funding are thus assured to be rooted in a strategy from the SHSP.

Development & Integration of Maryland's SHSP

On January 1, 2021, the new 2021–2025 Maryland SHSP went into effect. Legislation that went into effect on October 1, 2019, established new overall statewide traffic safety goals in terms of fatalities and serious injuries, which are now reflected in the current version of the SHSP. Under the GR's leadership, the MHSO provides the day-to-day coordination for Maryland's SHSP. The Maryland SHSP is governed by an Executive Council that includes:

- the MDOT Secretary,
- the MVA Administrator/GR,
- the SHA Administrator,
- the Secretary of the Maryland State Police (Superintendent),
- the Executive Director of the Maryland Institute for Emergency Medical Services Systems (MIEMSS), and
- the Executive Director of the Maryland Transportation Authority (MDTA).

In early 2020, Maryland contracted a Maryland-based, non-profit research organization dedicated to transportation safety to lead the 2021-2025 SHSP development effort. 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, emergency services agencies, community groups, and Emphasis Area Team (EAT) chairpersons. During the interviews, the team solicited insight into the status of traffic safety initiatives and current and future safety priorities for Maryland roadways. Questions focused on several topics including traffic safety needs in engineering, education, enforcement, and emergency medical services (the four Es of transportation safety); the utility of the current SHSP in the stakeholder's activities (including the progress and feasibility of existing action steps); the level of involvement in the ongoing Emphasis Area team meetings and activities; and their view of what should be included in the 2021-2025 SHSP.

The information gleaned from all the interviews aided in the development of an online survey that was distributed to a broader group of safety partners and community groups. 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.

After collecting information from the safety partner survey, the SHSP development team met with each EA team to present the plan for the development of the 2021-2025 MD SHSP, providing another opportunity to solicit the group's priorities. The conversation focused on the EA team's vision for the updated SHSP, related

goals, emerging traffic safety issues, measuring SHSP progress, and thoughts about how to maintain the relevance of the action plan throughout the 2021-2025 term.

The development team planned a safety partner workshop to further discuss and obtain consensus on strategies and action plans for the 2021-2025 SHSP in late March 2020. The onset of the COVID-19 pandemic — and restrictions placed on Maryland residents — resulted in virtual workshops to replace the in-person workshop. A virtual workshop was held for each EA and was attended by the EA team members and representatives from a variety of stakeholder groups including state and local government agencies, non-governmental organizations, private businesses and advocates, and law enforcement, among others.

After the workshops, a second online survey was distributed to attendees and community members to obtain feedback on the proposed Emphasis Area strategies and action steps developed through the previously described interviews, survey, and workshops. This feedback survey solicited opinions about priorities within the action plan, performance measure development and potential agencies that could spearhead or collaborate to carry out the EA action plans. Several more virtual meetings with the EA teams refined the strategies and action plans that would later be presented for approval.

The SHSP strategy and action plan development culminated with the delivery of findings from interviews, meetings, and workshops to the SHSP's Steering Committee (MHSO management) for feedback and approval for use in the 2021-2025 SHSP. Subsequently, the Executive Council, Steering Committee, and EA Team Chairpersons met to review the proposed strategies and action steps.

The 2021-2025 SHSP encompasses the essence of the previous plan and further incorporates systemic enhancements, innovation and implementation that is data driven. The result is an evidence-based approach that culminated in the confirmation of the plan's six EAs and six key groups.

Maryland's statewide SHSP has been the model for jurisdictions looking to create their own Local Road Safety Plan (LRSP). Utilizing the state's plan as a template, local partners can address concerns and problems unique to their territory. There are currently 16 active plans throughout the State with most of these plans led by local enforcement and engineering agencies. However, it is a multi-disciplinary team that also includes representatives from education, EMS, and community groups. Over the past year, MHSO staff have worked with the jurisdictional LRSP groups to develop and implement (as appropriate) the strategies identified through their local networks. Each plan was developed at the community level, incorporating feedback from local agencies and community members. Unlike the SHSP, the LRSPs can focus on the specific needs of their county. The group members work closely with each other so one solid connection in a jurisdiction will most likely open doors to the others. These groups have been and will continue to be utilized for HSP and SHSP feedback and planning.

Performance Plan

Highway Safety Program Target-Setting Process

For the 2021-2025 SHSP, a new methodology was applied to determine highway safety performance targets. Unlike the previous Toward Zero Deaths (TZD) design, annual targets for the SHSP are set using a two-pronged approach. Targets 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, targets are based on a 2% decrease from the most recent crash data (2017-2021 five-year average), continuing with a 2% decrease for each successive five-year average. This is to prevent setting targets higher than a baseline even if the exponential trend line points to an increase.

Current targets through 2024-2028 are set using an initial baseline five-year average of 2004-2008, updated to include trend changes in 2017-2021, For single-year targets, midpoints of the five-year average targets are used, e.g., the 2024 target is the midpoint of the rolling five-year average target for 2022-2026; the 2025 target is the midpoint of the rolling five-year average target for 2023-2027; and the 2026 target is the midpoint of the rolling five-year average target for 2024-2028.

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 Highway Safety Plan (HSP) and Highway Safety Improvement Program (HSIP) per federal requirement.

All traffic safety documents in the state of Maryland conform to this SHSP methodology, including the MHSO's Highway Safety Plan (HSP), SHA's Highway Safety Improvement Plan (HSIP), and SHA's Commercial Vehicle Safety Plan (CVSP). To comply with federal guidelines, annual targets for each of the SHSP's emphasis areas and each of the HSP program areas are also set using an exponential trend line and five-year rolling averages to calculate future targets.

Additionally, all planning documents developed by MHSO staff, and all State-level reporting use the SHSP target-setting methodology, such as MDOT's Attainment Report (AR) and the Maryland Department of Budget and Management's Managing for Results (MFR). Unless otherwise noted, all data are derived from SHA's Traffic Analysis Network Garage (TANG), based on crash reports submitted to and processed by the Maryland State Police through the Automated Crash Reporting System (ACRS). Data are subject to change.

Highway Safety Performance Measures

Maryland has highway safety performance targets that are quantifiable, data driven, and based on state crash data (unless noted otherwise, e.g., federally required fatalities, fatality rate, and non-motorist fatalities). Targets and performance measures are outlined in the following charts for overall statewide fatality and serious injury targets and similar measures and summaries for each of Maryland's safety programs which can be found in the Program Area sections that follow.

Overall Statewide Traffic Safety Targets and Measures for Maryland

The tables below outline recent performance for the five required safety targets from the Maryland SHSP involving reduction of fatalities and serious injuries due to traffic crashes:

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-1	**Traffic Fatalities**	FARS Annual (2021-ARF)	558	512	535	573	561
	Reduce total fatalities 11.4 percent to 485.0 (2024-2028 target) from 547.8 (2017-2021) by 2026.	5-Year Rolling Avg.	501.4	510.8	529.4	540.0	547.8
C-2	**Serious Injuries in Traffic Crashes**	State	3,347	3,233	3,122	2,718	3,054
	Reduce serious traffic injuries 37 percent to 1,953.7 (2024-2028 target) from 3,094.8 (2017-2021) by 2026.	5-Year Rolling Avg.	3,025.2	3,079.6	3,093.4	3,117.4	3,094.8
C-3	**Fatalities/100M VMT**	FARS Annual (2021-ARF)	0.930	0.860	0.890	1.130	0.990
	Reduce fatalities/100 MVMT 16 percent to 0.811 (2024-2028 target) from 0.960 (2017-2021) by 2026.	5-Year Rolling Avg.	0.862	0.870	0.892	0.938	0.960

Note: Below are the same measure for fatalities and the fatality rate as above but with state data as the source since NHTSA FARS is preliminary (2021 ARF).

		BASE YEARS (Historical Data)				
Additional Performance Measures (State Fatalities/Fatality Rate)– FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**

Overall Traffic Fatalities	State	558	512	535	573	563
Reduce overall traffic fatalities 11 percent from 548.2 (2017-2021) to 487.8 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	502.0	511.2	529.6	540.0	548.2
Overall Traffic Fatality Rate	State	0.932	0.859	0.890	1.133	0.994
Reduce the overall traffic fatality rate 16 percent from 0.961 (2017-2021) to 0.808 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	0.867	0.874	0.895	0.940	0.961

Additional measures as required by FHWA:

		BASE YEARS (Historical Data)				
Additional Performance Measures (FHWA/SHSP Federal Requirements)– FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
Serious Injury Rate	State	5.588	5.422	5.192	5.372	5.394
Reduce the serious injury rate 40 percent from 5.394 (2017-2021) to 3.242 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	5.230	5.265	5.221	5.389	5.394
Non-motorized fatalities and serious injuries	FARS + State	701	682	661	598	642
Reduce the non-motorized fatalities and serious injuries 13 percent from 656.8 (2017-2021) to 570.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	579.0	612.0	634.6	654.8	656.8

FY 2023

Performance Measure	Target Period	Target Year(s)	Target Value FFY23 HSP	Data Source/ FFY23 Progress Results	On Track to Meet FFY23 Target Y/N/In-Progress
C-1) Total Traffic Fatalities (FARS)	5 year	2019-2023	499.8	2017-2021 FARS ARF 547.8	N
C-2) Serious Injuries in Traffic Crashes (State)	5 year	2019-2023	2,249.6	2017-2021 State 3,094.8	N
C-3) Fatalities/VMT (FARS)	5 year	2019-2023	0.835	2017-2021 FARS ARF 0.960	N
Serious Injury Rate (State)	5 year	2019-2023	3.777	2017-2021 State 5.394	N
Non-motorized Fatalities and Serious Injuries (FARS + State)	5 year	2019-2023	605.8	2017-2021 FARS/State 656.8	N

2019-2023 Target Years: From the 2021-2025 SHSP Methodology, 2021-2025 Target (2023 mid-point).

Target: Reduce total fatalities 11.4 percent to 485.0 (2024-2028 target) from 547.8 (2017-2021) by 2026.

Outcome: Target not met. The 2017–2021 average number of traffic fatalities was 547.8, an increase from the 2016–2020 average of 540.0.

Target: Reduce serious traffic injuries 37 percent to 1,953.7 (2024-2028 target) from 3,094.8 (2017-2021) by 2026.

Outcome: Target not met. The 2017–2021 average number of serious traffic injuries was 3,094.8, a slight decrease from the 2016–2020 average of 3,117.4 (though higher than the years prior to 2020).

Target: Reduce fatalities/100 MVMT 16 percent to 0.811 (2024-2028 target) from 0.960 (2017-2021) by 2026.

Outcome: Target not met. The 2017–2021 average fatality rate was 0.960, an increase from the 2016–2020 average of 0.938.

Target: Reduce the serious injury rate 40 percent from 5.394 (2017-2021) to 3.242 (2024-2028 target) by December 31, 2026.

Outcome: Target not met. The 2017–2021 average serious injury rate was 5.394, an increase from the 2016–2020 average of 5.389.

Target: Reduce the non-motorized fatalities and serious injuries 13 percent from 656.8 (2017-2021) to 570.2 (2024-2028 target) by December 31, 2026.

Outcome: Target not met. The 2017–2021 average number of non-motorized fatalities and serious injuries was 656.8, an increase from the 2016–2020 average of 654.8.

Highway Safety Strategies and Projects

The MHSO awards grants to projects that address priority areas in Maryland's SHSP, along with target groups identified within those areas. These projects must demonstrate the greatest potential to succeed and ultimately help Maryland eliminate crash-related deaths and injuries. Grants must be compatible with the MHSO's mission, program directives, and eligibility criteria. Final awardees reflect agencies deemed most capable of addressing the strategies and projects that aid Maryland in achieving its targets and objectives.

The following sections contain descriptions of the MHSO's grant-funded programs. Each section provides:

- detailed and program-specific problem identification,
- a tie-in of the program's objectives and their relation to the Maryland SHSP,
- identified countermeasures,
- enforcement data (where applicable),
- details on national mobilizations and HVE campaigns (where applicable),
- details concerning program area grants (where applicable), and
- other relevant program area information.

Four categories of proven countermeasures are to be utilized, including those in:

- NHTSA's Uniform Guidelines for State Highway Safety Programs
- U.S. DOT, NHTSA (2020). Countermeasures that Work, Tenth Edition, DOT HS 813 097 (referred to in the HSP as Countermeasures that Work) (rated three Stars and above)
- Published evidence-based research that substantiates the proposed project or intervention
- Recommendations from NHTSA program assessments conducted in Maryland

Maryland's Evidence-Based Traffic Enforcement Program

The MHSO has developed policies and procedures to ensure that enforcement resources are used efficiently and effectively, with the greatest impact, to support the targets of the state's highway safety program as outlined in the SHSP. Maryland incorporates an evidence-based approach in its statewide enforcement program and all grants.

BIL requires that Maryland participate in at least three HVE campaigns that support national priorities. Although the MHSO implements more than three HVE campaigns, those that are officially a part of national priority areas are the May Click it or Ticket mobilization, the August impaired driving prevention mobilization, and a dual effort in November that supports a second Click it or Ticket wave and impaired driving prevention.

Data-Driven Problem Identification

Maryland's evidence-based traffic safety enforcement methodology uses an integrated enforcement approach utilizing checkpoint inspections and saturation patrols, each as outlined in NHTSA's Countermeasures that Work guiding document. The data-driven, HVE methodology includes enforcement of traffic laws pertaining to impairment, speeding, occupant restraint usage, and other safety issues, coupled with enforcement patrols that saturate specific areas, which are well-documented in local media and describe the effort as an impaired-driving or other appropriate campaign.

Such an effort typically includes uniformed law enforcement officers saturating a high-risk crash or incidence area and engaging the driving public by stopping as many violators as possible to serve as a deterrent to improper and dangerous driving. This highly visible approach provides a public perception of risk that driving without following the law can and will result in a traffic stop, resulting in a citation or an arrest in the case of impaired driving. This comprehensive statistical and partner-based approach, often in concurrence with associated national crackdowns or campaigns and mobilizations, helps Maryland provide continuous Specific and General Deterrence of improper and unsafe driving from the causal factors outlined above.

Implementation of Evidence-Based Strategies

In-depth, comprehensive enforcement efforts, combined with background and evidence provided on grant applications, guide Maryland's efforts to allocate funds to law enforcement agencies to conduct priority area-specific overtime enforcement services based on specific problem identification and recent statistical results.

The MHSO uses several sources of data to determine funding allocations. The state's 24 jurisdictions are divided into three groups based on average population over the most recent three-year period for which data is available. The most populous jurisdictions make up the top group and the least populated make up the third group. Within each group, crashes (serious injury and fatal) and citations (DUI, speed and unbelted) per vehicle miles traveled are calculated by jurisdiction.

Average ranks per jurisdiction are computed across crash and citation fields and applied to the previous year's funding allocations to determine revised funding proportions. Crash and enforcement data are used initially to determine the proper percentage of funding to be disbursed to jurisdictions within the groups. Subjective measures such as demographics, enforcement and outreach capacity, geographical considerations, seasonal fluctuations in traffic, and past performance are then used to refine the figures. From that process, each

jurisdiction receives a total allocation of funding to be used in the next fiscal year. The MHSO continues to work with its data consultants to ensure that funding allocations are based on the most recent data available and that formulas are accurate, reasonable, and achievable (a more detailed description of the allocations formula is found on pages 9-10). This methodology ensures that enforcement funding is allocated to the areas in greatest need and to the agencies that are most capable of implementing the appropriate countermeasures.

The MHSO uses both quantitative and qualitative criteria to measure the desired outcomes of the MHSO's law enforcement grant programs that utilize overtime enforcement funds, including those in the aggressive driving, distracted driving, impaired driving, occupant protection, and pedestrian safety program areas. The MHSO employs a monitoring system for law enforcement reporting data that engages law enforcement partners, grant managers and MHSO team members. In addition to the productivity of officers working overtime enforcement grants, an analysis of crashes, crash fatalities, and serious injuries is utilized by MHSO staff throughout the grant monitoring process. The MHSO's four LELs provide more direct contact with individual agencies across the state. By developing relationships with law enforcement managers and traffic supervisors, the LELs monitor project success closely and efficiently provide information, training, and outreach materials.

Through this comprehensive approach, the MHSO and its law enforcement partners continually follow up, evaluate, and adjust enforcement plans accordingly. This approach improves effectiveness, enhances understanding and support of programs, and utilizes highway safety resources as efficiently as possible.

Continuous Monitoring

To ensure law enforcement projects remain adaptable to any situation, various tracking mechanisms are utilized to enable MHSO program managers and law enforcement managers throughout Maryland to gain quick insights into the progress of each project. Monthly progress reports are required from each agency receiving grant funding to ensure an understanding of the goals and outcomes measuring outputs of each project. These reports must include data on the activities conducted, such as the times worked, the numbers of vehicle contacts, and the numbers of citations issued. This type of continuous monitoring allows for small or large adjustments as needed within each jurisdiction in enough time to provide for the most efficient use of resources.

Quarterly output evaluation and continuous feedback is maintained throughout the enforcement program between the MHSO and each law enforcement agency. This ensures continuous communication during the planning, implementation, monitoring, and evaluation phases of the project. The MHSO achieves this continuity by assigning an LEL to each law enforcement agency as their project manager. The Law Enforcement Services Section Manager, working in conjunction with the MHSO Director, develops, maintains, and cultivates professional relationships with top law enforcement executives across the state to build the required top-down support for traffic enforcement efforts.

Areas of Focus for FFY 2024 - 2026

Annually, the performance measures within individual program areas that were not met, as described in the Annual Report, will be areas of focus for the following FFY. The new SHSP that will be developed during the timeframe of 2024 – 2026 will be refined to better incorporate the principals and objectives of the Safe System Approach, and public participation and community engagement.

Additional funding will be provided to the Maryland Car Seat Assistance Program (CSAP) to allow low- /mid-income and minority populations that are within the ALICE (Asset Limited, Income Restrained, Employed) guidelines. Garrett and St. Mary's counties compliance checks will support projects previously funded through the Strategic Prevention Framework Grants. These counties will address alcohol sales and impaired driving in rural communities specifically.

Expanding campaigns in underserved categories such as agricultural and farming communities, will provide education for those road users with unique vulnerable exposure — large farm equipment that travels from farm to farm using Maryland roads.

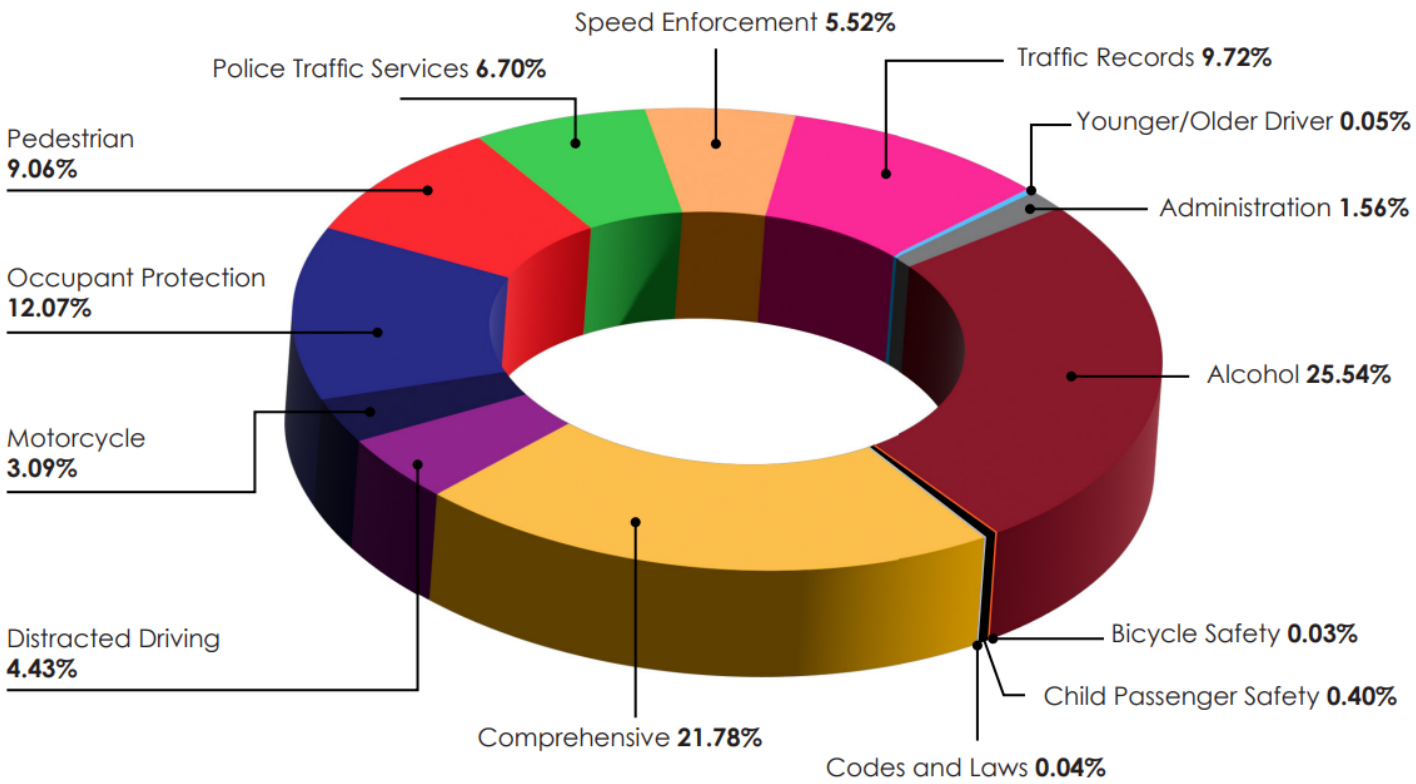
Neighborhood Design will expand the Made You Look project into Prince George's County by identifying high incident areas and then targeting safety and education efforts in those communities. Prince George's County is overrepresented in pedestrian related traffic fatalities. Neighborhood Design hosts regular feedback sessions to hear from community members about the implementation of the project.

Maryland will work to increase the number of local SHSPs through a vast network of city and county leaders, engineers, planners, law enforcement and citizens. Currently the state has 16 existing or in development local SHSPs. This expansion enables persons with a vested interest in traffic safety, beyond those at the state level, to create and implement a plan that addresses specific local issues.

As illustrated in the PPCE plan, these programs will be driven by data analysis.

Funding Sources

While specific allocation of funding for each program area and project will be described in the AGA, below is a chart that describes the general allocation of Maryland's highway safety funds by program area.



Federal requirements dictate that Maryland show the use of non-federal sources of funding dedicated to traffic safety programs. The following is a brief outline of the various funding sources used in support of Maryland's statewide efforts, along with descriptions of the involvement and specific activities of many of Maryland's public, private, and not-for-profit partner organizations:

Agency	Funding Source	Activities Funded
AAA	Private funds	Offers school and community-based programs such as School Safety Patrol and other traffic safety programs. Lobbies for highway safety legislation.
AARP	Private, non-Profit	AARP Smart Driver Training and other older driver training programs.
Maryland Department of Health, Alcohol and Drug Abuse Administration (ADAA)	State funds and other solicited/awarded federal funding sources	Support to the Maryland Strategic Prevention Framework and continued maintenance of the treatment and pharmacy data through the Statewide Automated Record Tracking system, the Prescription Drug Monitoring Program, and the Controlled Dangerous Substance Integration Unit.
Department of Public Safety and Correctional Services (DPSCS)	State funds	Responsible for the Criminal Justice Information (CJI) System for the Maryland criminal justice community, including the courts; local, state, and federal law enforcement agencies; local detention centers; state prisons; state's attorneys; and parole and probation officers. The CJI System provides official records on persons arrested and convicted in Maryland. Agency also houses the MPCTC, which oversee the certification of enforcement officers for the state.
District Court of Maryland (DCM) and Judicial Information Systems (JIS)	State funds	Responsible for formatting and printing Maryland Uniform Complaint and Citation forms, setting pre- payable fine amounts, adjudicating traffic cases, and maintaining disposition data.
Governor's Office of Crime Control and Prevention (GOCCP)	State and federal funds	Responsible for improving public safety and administration of justice, and reducing/preventing crime, violence, delinquency, and substance abuse. To these ends, it helps draft legislation, policies, plans, programs, and budgets. Administers enforcement and community safety grants. Publishes race-based traffic stop data analysis and race-based traffic stops data dashboard annually.
Health Services Cost Review Commission	State funds	Responsible for the regulation of hospital rates. Provides support and maintenance of the statewide integration system for all hospitals.
Local jurisdiction, and municipal Public Works and Transportation	Jurisdiction-specific, local and municipal funds	Support and maintenance of the collection of roadway data such as roadway maintenance, design, and other infrastructure information.

Agency	Funding Source	Activities Funded
Departments		
Maryland Chiefs of Police Association (MCPA)	Member dues, fees	Provides training and promotes professional standards for local enforcement officials. Association includes executive law enforcement officers, prosecutors, police legal advisers, members of the State Police Training Commission, private security directors, and interested citizens.
Maryland Department of Health– Kids in Safety Seats (KISS)	State funds	Administrative, technical and programmatic support for the KISS program, educational efforts aimed at the correct use of seat belts and child safety seats. These partners provide the training and certification of CPS technicians and instructors, and the promotion of child safety seat fitting stations.
Maryland Department of Health, Office of the Chief Medical Examiner	State funds	Support and continued maintenance of the collection of data on drivers involved in fatal crashes, and data provision to the Maryland State Police.
Maryland Department of Information and Technology (DoIT)	State funds	The designated state entity responsible for information technology across state agencies. Provides coordination for the purchase and management of all telecommunications devices and systems utilized by state agencies.
Motor Vehicle Administration's Maryland Highway Safety Office (General Funds)	State funds	State funds pay salary and benefits for the following MHSO positions: Director, Deputy Director, Finance Section Manager, two finance managers, and the Data Processing and Quality Assurance Specialist.
MDOT Motor Vehicle Administration (MVA)	State funds	MVA manages the State Ignition Interlock Program; monitors Maryland graduated drivers licensing laws; manages Medical Advisory Board and Motorcycle Safety Program; and supports systems for driver records, vehicle registrations and violations.
Health Services Cost Review Commission	State funds	Responsible for the regulation of hospital rates. Provides support and maintenance of the statewide integration system for all hospitals.
Local jurisdiction, and municipal Public Works and Transportation Departments	Jurisdiction-specific, local and municipal funds	Support and maintenance of the collection of roadway data such as roadway maintenance, design, and other infrastructure information.
Maryland Chiefs of Police Association (MCPA)	Member dues, fees	Provides training and promotes professional standards for local enforcement officials. Association includes executive law enforcement officers, prosecutors, police legal advisers, members of the State

Agency	Funding Source	Activities Funded
		Police Training Commission, private security directors, and interested citizens.
Maryland Department of Health – Kids in Safety Seats (KISS)	State funds	Administrative, technical and programmatic support for the KISS program, educational efforts aimed at the correct use of seat belts and child safety seats. These partners provide the training and certification of CPS technicians and instructors, and the promotion of child safety seat fitting stations.
Maryland Department of Health, Office of the Chief Medical Examiner	State funds	Support and continued maintenance of the collection of data on drivers involved in fatal crashes, and data provision to the Maryland State Police.
Maryland State Police, Maryland Transportation Authority Police, local jurisdiction, and municipal law enforcement agencies – Enforcement Mobilization Projects	State, local and municipal funds	Maryland State Police, Maryland Transportation Authority Police, local jurisdictions, and municipal funding for regular duty pay/benefits, office space, supplies and equipment, court overtime, vehicles, and vehicle use on state, local and municipal roadways. In addition, these partners provide support to Child Passenger Safety fitting stations throughout the state by training and certifying CPS Technicians and by conducting child safety seat inspections. They also support and maintain systems tracking traffic citations and arrests, used in project evaluation and analysis.
Maryland State's Attorneys' Association	Member dues, fees	Coordination of statewide efforts to improve prosecution and adjudication of DUI cases.
MDOT Maryland Transit Administration (MTA)	State and federal funds	Provides and supports accessible statewide public transportation networks and services that are customer-focused, safe, appealing, reliable, and efficient. Provides security and law-enforcement services, is a key provider of traffic safety information, and uses traffic records to determine day of week and hour of day for best customer service and safety enforcement opportunities. Engages in research, development, and implementation of roadside data-capture technology to expedite the flow and safety of mass transit customers.
Mothers Against Drunk Driving (MADD)	Private, non-Profit	School and community-based traffic safety information programs.
Office of Administrative Hearings (OAH) and courts in local jurisdictions	Jurisdiction, local and municipal funds	Support and maintenance of hearings for the opt-in option under a points assignment associated with mandates for repeat offenders.
Regional Integrated Transportation Information System,	State and federal funding	Support and maintenance of automated data sharing, dissemination, and archiving system to communicate information among agencies and to the public.

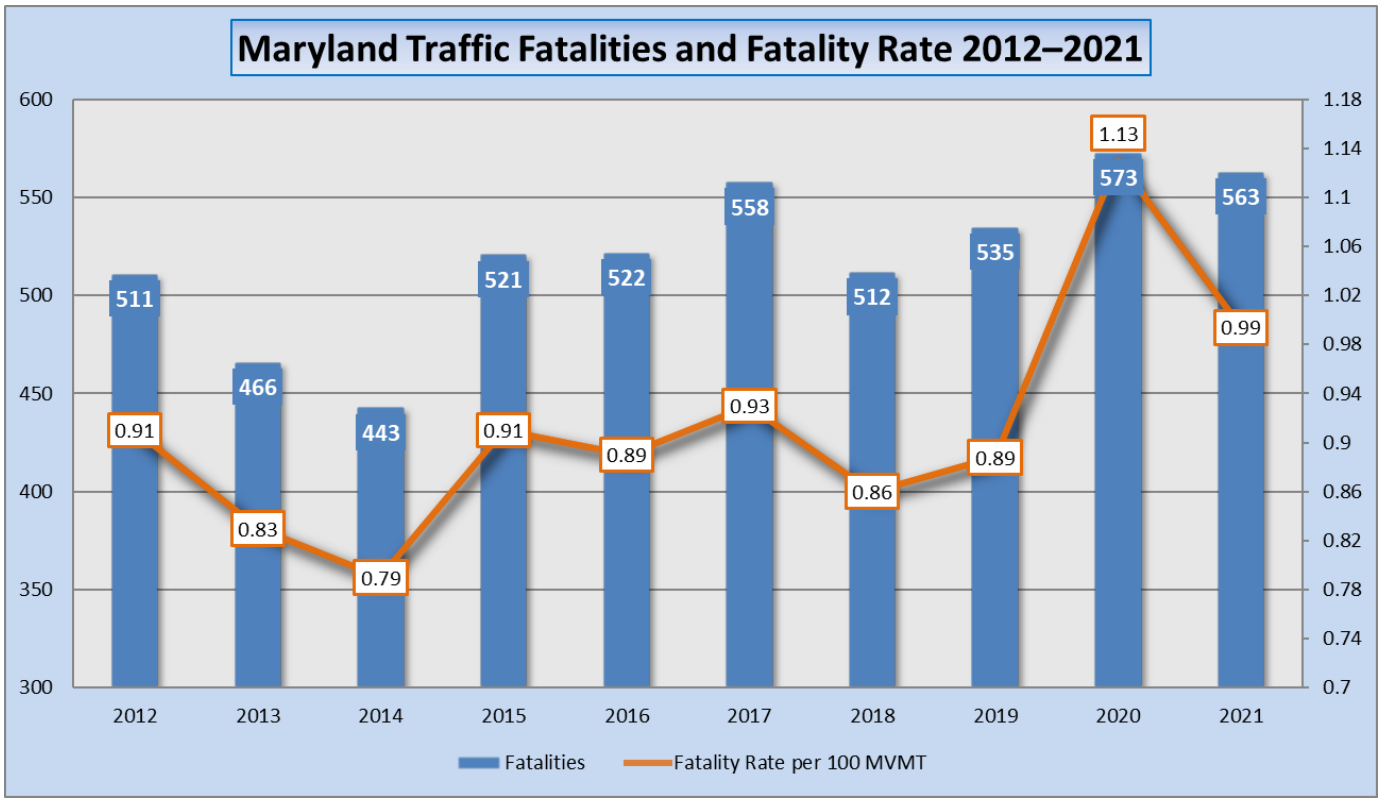
Agency	Funding Source	Activities Funded
Center for Advanced Transportation Technology Laboratory, University of Maryland		
Maryland State Police, Maryland Transportation Authority Police, local jurisdiction, and municipal law enforcement agencies – Enforcement Mobilization Projects	State, local and municipal funds	Maryland State Police, Maryland Transportation Authority Police, local jurisdictions, and municipal funding for regular duty pay/benefits, office space, supplies and equipment, court overtime, vehicles, and vehicle use on state, local and municipal roadways. In addition, these partners provide support to Child Passenger Safety fitting stations throughout the state by training and certifying CPS Technicians and by conducting child safety seat inspections. They also support and maintain systems tracking traffic citations and arrests, used in project evaluation and analysis.
Maryland State's Attorneys' Association	Member dues, fees	Coordination of statewide efforts to improve prosecution and adjudication of DUI cases.
MDOT Maryland Transit Administration (MTA)	State and federal funds	Provides and supports accessible statewide public transportation networks and services that are customer-focused, safe, appealing, reliable, and efficient. Provides security and law-enforcement services, is a key provider of traffic safety information, and uses traffic records to determine day of week and hour of day for best customer service and safety enforcement opportunities. Engages in research, development, and implementation of roadside data-capture technology to expedite the flow and safety of mass transit customers.
Mothers Against Drunk Driving (MADD)	Private, non-Profit	School and community-based traffic safety information programs.
Office of Administrative Hearings (OAH) and courts in local jurisdictions	Jurisdiction, local and municipal funds	Support and maintenance of hearings for the opt-in option under a points assignment associated with mandates for repeat offenders.
Regional Integrated Transportation Information System, Center for Advanced Transportation Technology Laboratory, University of Maryland	State and federal funding	Support and maintenance of automated data sharing, dissemination, and archiving system to communicate information among agencies and to the public.
University of Maryland School of Pharmacy	State funds and other solicited/awarded	Support and continued maintenance of Maryland Statewide Epidemiologic Outcomes Workgroup (SEOW) and the

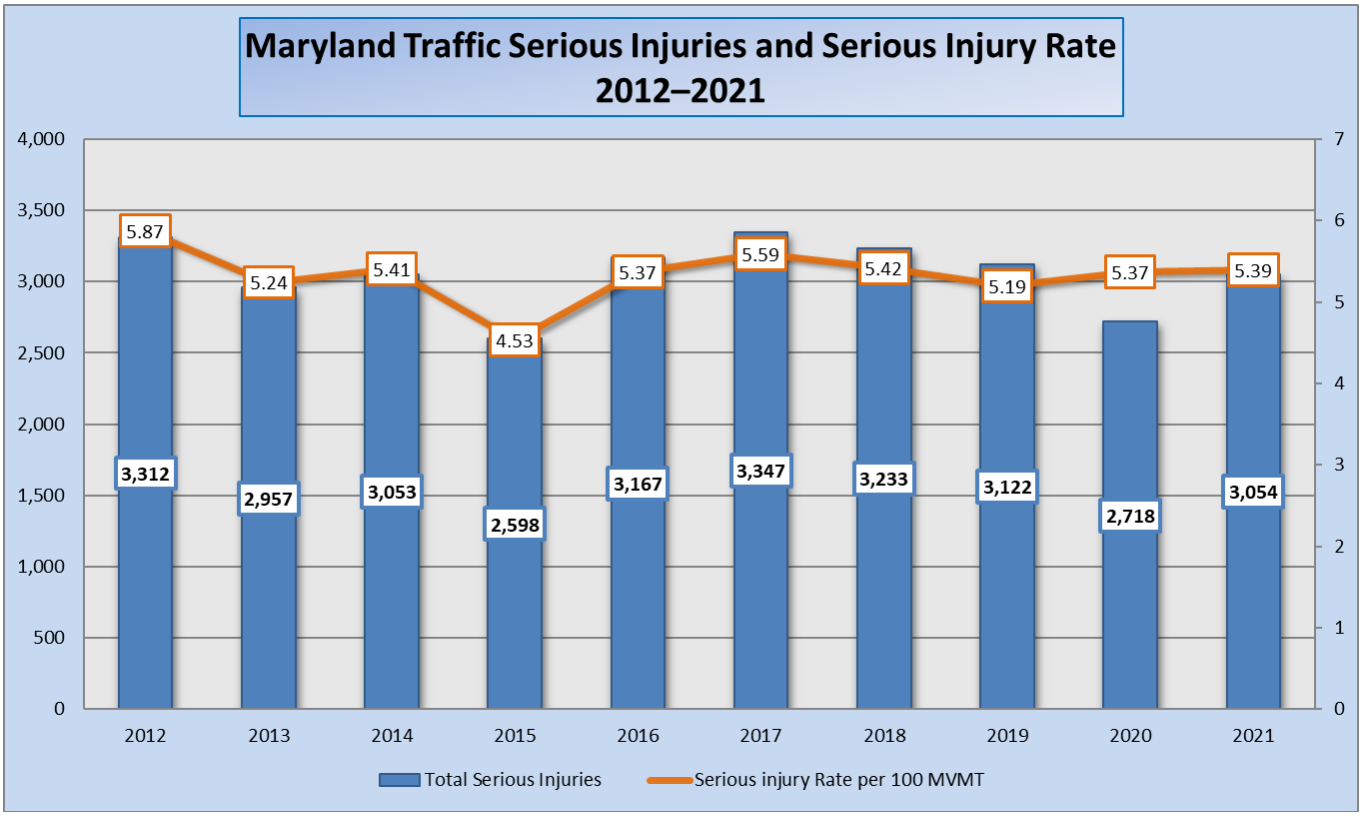
Agency	Funding Source	Activities Funded
	federal funding sources such as Substance Abuse and Mental Health Services Administration	Maryland Strategic Prevention Framework (MSPF) in 24 jurisdictions across the State.
Washington College	Private institution funds; other solicited/awarded federal funding sources	Direct support to highway safety programs incorporating geo-located traffic safety data.
Washington Regional Alcohol Program (WRAP)	Private, non- profit	School and community-based traffic safety information programs.

Maryland Statewide Crash Summary

In 2021, 563 people were killed—a 1.7 percent decrease from 2020—in 108,656 police-reported traffic crashes in Maryland, while 40,788 people were injured, and 80,048 crashes involved no apparent injury. In total, 343 drivers (269 vehicle drivers and 74 motorcycle operators), 137 non-motorists, and 83 passengers were killed on Maryland roads. The fatality rate for Maryland increased from 0.86 in 2018 to 0.89 in 2019 and 1.13 in 2020, before falling to 0.99 in 2021; however, the overall fatality rate has consistently been lower than the national fatality rates every year since 1992.

On average in 2021, one person was killed every 15 hours, 111 people were injured each day (4 injured every hour), and 297 police-reported traffic crashes occurred every day.





On average, crashes in the Baltimore and Washington metropolitan regions accounted for 90 percent of the state's annual crashes.[1] Approximately 20,000 crashes occurred in both Baltimore and Prince George's

counties in 2021, accounting for over 37 percent of all crashes reported statewide. Prince George's County was also the site of the greatest number of fatal crashes in Maryland in 2021.

Crashes occurred consistently through the year on Maryland's roadways, spread relatively evenly through the calendar year. On average, however, slightly fewer crashes occurred in January, February, March, and April. Crashes tended to increase significantly in May but occurred most frequently in October, November, and December. Regardless of the month, more crashes occurred on Fridays and during afternoon or early evening hours in Maryland. Approximately 10 percent of daily crashes occurred from midnight to 5 a.m..

Young adult drivers, ages 21 to 29, represented approximately one in every five drivers (19 percent) involved in Maryland crashes. These young adults also comprised a large share of injuries (23 percent) and deaths (22 percent) resulting from crashes on Maryland roadways.

Females accounted for one-third (32 percent) of drivers involved in crashes yet accounted for nearly half (48 percent) of the drivers injured. Males accounted for 68 percent of drivers involved in crashes yet accounted for over three-quarters (78 percent) of fatally injured drivers.

General Crash Factors (2017-2021 Averages)		
Factor	**Variable**	**Percentage**
Age (drivers)	21–34	29% of involved; 34% of injured; 33% of killed
Sex (drivers)	Male	48% of involved; 50% of injured; 78% of killed
Month	October–December (total crashes) May–July (injury crashes) August–October (fatal crashes)	Oct.–Dec., total crashes – 27% May–July, injury crashes –26% Aug. –Oct., fatal crashes – 30%
Day of Week	Friday (total and injury crashes) Saturday (fatal crashes)	Fri. total crashes – 16% Fri. injury crashes – 16% Sat. fatal crashes – 17%
Time of Day	2 p.m. – 7 p.m. (total/injury crashes) 9 p.m. – 4 a.m. (fatal crashes)	Total crashes – 34% Injury crashes – 36% Fatal crashes – 35%
Road Type	State Roads (IS, US, MD)	Total crashes – 47% Injury crashes – 53% Fatal crashes – 71%

Jurisdiction	Baltimore City; Baltimore, Montgomery, and Prince George's counties (total, injury, and fatal crashes)	Total crashes – 64% Injury crashes – 62% Fatal crashes – 49%

[1]Baltimore Metropolitan Region: Anne Arundel, Baltimore, Carroll, Harford, Howard, Queen Anne's, Baltimore City
Washington Metropolitan Region: Calvert, Charles, Frederick, Montgomery, Prince George's, St. Mary's

According to a recent (2022) Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use. Results from this survey are included in the problem identification sections for each relevant program area assessed, cited as the RSAB 2022 Survey.

Maryland Safety Program Areas – Problem Identification, Solutions, and Evaluation

Impaired Driving Program

Problem Identification

Impaired driving is defined as: at least one driver in the crash was reported to be under the influence of alcohol and/or drugs. (Please note that this number includes drug impairment and will not match alcohol-impaired fatality figures provided by NHTSA FARS.) Impairment is determined through the driver condition, blood alcohol content, substance use detected, and contributing factor fields on the Maryland crash report (MSP ACRS).

Between 2017 and 2021, nearly 16,000 persons were either killed or injured in a crash where drugs and/or alcohol were involved. The number of impaired driving crashes in 2021 increased by approximately 5 percent since 2020, though the 2021 total was still 5 percent below the number of impaired crashes that occurred in 2019. Despite the increase in total crashes, fatal crashes involving alcohol and/or drugs decreased by 11 percent since 2020, resulting in a 7 percent decrease in the number of fatalities.

While one in 42 crashes involving driver impairment resulted in a fatality in 2021, 29 percent of all fatal crashes in the state involved alcohol and/or drugs. Although every impaired driving crash does not result in a fatality, impairment is often a factor when a fatality does occur. This relatively high rate of occurrence and correlation between impaired driving and fatal crashes and fatalities on Maryland roadways has made impaired driving a crucial focus point for traffic safety and law enforcement professionals throughout the state.

With emerging trends related to impaired driving involving the use of drugs, whether licit or illicit, drug-involved crash statistics can be assessed for problem identification; however, the current Maryland crash report does not differentiate between types of drugs, amounts detected, or other related information that may indicate

impairment. Significant research and costs related to testing, investigations, and reporting must be assessed and implemented in order to have accurate drug-involved crash data. Until then, analyzing the few fields related to drug impairment on the crash report, between 2017-2021, there were an average of 1,610 driver drug involved crashes, with 30 fatalities and 873 injuries each year. Improved testing and reporting may give more insight and an accurate portrayal of the prevalence of drugs involved in motor vehicle crashes.

In 2021, Maryland law enforcement officers issued 38,535 citations for impaired driving (total of all citations issued, not total persons cited; in a single stop, an impaired driver may be cited for two or three violations), which translated to a total of 14,855 arrested drivers. This compared to 14,017 arrests in 2020 and 19,022 in 2019. Comparably, the MHSO and its SHSP EAT partners are interested in curbing drugged driving in Maryland. In 2021, there were 6,647 citations issued to drivers for operating a vehicle while impaired by drugs or controlled dangerous substances (CDS), compared to 6,629 written in 2020 and 7,683 written in 2019.

Additional analysis was conducted for repeat offenders to support legislation that has been introduced the past few years in Maryland. Arrests for 21.902 violations in the years 2015-2021: Overall, there were 120,935 drivers arrested during that time period. Of those, 7,771 (6.4%) were arrested twice. For those who were arrested twice during those 7 years, 2,103 received a PBJ on their initial arrest. The median time between first and second arrest was 21 months with 36% of the re-arrests occurring within 1 year. For the second arrests, 51% were then found guilty but 31% were either nolle pros (25%) or received another PBJ (6%). MHSO will continue to track these statistics and provide updates to support legislation in the future that will hopefully strengthen existing DUI laws and reduce the number of drunks drivers and especially repeat offenders on Maryland roadways.

Frequency of Impaired Crashes

For 2017 through 2021, impaired driving crashes (both total and injury) occurred consistently throughout the year, with a slight decrease from January through April. A higher percentage of fatal crashes involving impairment occurred in July and August. But, for the full seven-month period from April through October, incorporating the typical warm-weather driving months, more than half of all impaired driving crashes (59 percent), and about two in every three impaired fatal crashes (66 percent) occurred.

Approximately 8 percent of yearly impaired driving crashes occurred each month. Fifty-seven percent of all impaired crashes occurred on a Friday, Saturday, or Sunday, while crashes resulting in death or injury were highest on Saturdays and Sundays. Crashes began to increase from the late afternoon through the early morning hours and saw a dramatic fall after 3 a.m. Approximately 32 percent of fatal crashes occurred between midnight and 4 a.m.

In addition, 57 percent of impaired crashes occurred from Friday through early Sunday morning. More than two in three (68 percent) of all impaired crashes occurred from Thursday through Sunday.

Typical Profile of Impaired Driver/High-Risk Crash Locations

Fifty-seven percent of impaired drivers were 20–39 years old. In addition, impaired drivers in their twenties and thirties comprised 58 percent of injured and 56 percent of fatal impaired drivers.

Forty-two percent of impaired drivers and 41 percent of passengers killed in impaired crashes were not wearing a seat belt. In comparison, in all crashes across the state, 31 percent of drivers killed (and 39 percent of passengers) were not wearing their seat belts, indicating that impaired drivers are less inclined to buckle up. This combination of impaired driving and reduced usage of seat belts, particularly during late-night hours, indicates an opportunity for effective crossover or combined outreach efforts by the State, utilizing impaired and occupant protection messages. Additionally, use of this data set provides law enforcement the opportunity to combat impaired driving by implementing nighttime seat belt enforcement strategies.

These profiles together help define the most effective target focus of statewide education and media campaigns and enhanced enforcement efforts for both impaired driving and non-use of seat belts.

The most frequently noted driver demographic information and locations were male drivers, ages 20–39, driving between 8 p.m. and 4 a.m. in the jurisdictions of the nine counties above, plus Baltimore City, mainly on state and county roadways.

Impaired driving is 100% preventable; however, over the past five years in Maryland, nearly 800 people have been killed in crashes involving an impaired driver. When asked about the reason for not driving impaired, respondents in the RSAB 2022 Survey reported:

- Fear of harm to themselves (86%) or others (79%) was cited by respondents as top reasons for not driving impaired.
- However, more than 3% of those surveyed admitted to driving impaired in the past 30 days.
- 53% of drivers listed fear of arrest as influential on their decision to drive sober, yet more than 17,000 drivers were arrested for driving under the influence of drugs or alcohol in Maryland last year.

Priority Ranking

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Impaired	St. Mary's County	20659	Mechanicsville	20653	Lexington Park	20653	Lexington Park	20650	Leonardtown
		20653	Lexington Park	20659	Mechanicsville	20659	Mechanicsville	20619	California
		20650	Leonardtown	20619	California	20650	Leonardtown	20659	Mechanicsville
		20692	Valley Lee	20650	Leonardtown	20636	Hollywood	20653	Lexington Park
		20609	Avenue	20636	Hollywood	20619	California	20636	Hollywood
	Kent County	21620	Chestertown	21620	Chestertown	21620	Chestertown	21620	Chestertown
		21651	Millington	21635	Galena	21651	Millington	21635	Galena
				21661	Rock Hall	21661	Rock Hall	21651	Millington
				21651	Millington	21678	Worton	21661	Rock Hall
				21678	Worton	21635	Galena	21650	Massey
	Dorchester County	21631	East New Market	21613	Cambridge	21613	Cambridge	21613	Cambridge
		21869	Vienna	21643	Hurlock	21643	Hurlock	21643	Hurlock
		21659	Rhodesdale	21631	East New Market	21631	East New Market	21631	East New Market
				21869	Vienna	21869	Vienna	21869	Vienna
				21622	Church Creek	21659	Rhodesdale	21659	Rhodesdale
	Worcester County	21811	Berlin	21842	Ocean City	21842	Ocean City	21842	Ocean City
		21842	Ocean City	21811	Berlin	21811	Berlin	21811	Berlin
		21851	Pocomoke City	21851	Pocomoke City	21851	Pocomoke City	21813	Bishopville
		21872	Whaleyville	21872	Whaleyville	21863	Snow Hill	21851	Pocomoke City
		21829	Girdletree	21813	Bishopville	21813	Bishopville	21863	Snow Hill
	Charles County	20646	La Plata	20646	La Plata	20602	Waldorf	20646	La Plata
		20601	Waldorf	20601	Waldorf	20601	Waldorf	20601	Waldorf
		20602	Waldorf	20603	Waldorf	20603	Waldorf	20603	Waldorf
		20603	Waldorf	20602	Waldorf	20646	La Plata	20602	Waldorf
		20622	Charlotte Hall	20640	Indian Head	20640	Indian Head	20640	Indian Head
	Wicomico County	21804	Salisbury	21801	Salisbury	21804	Salisbury	21801	Salisbury
		21801	Salisbury	21804	Salisbury	21801	Salisbury	21804	Salisbury
		21830	Hebron	21837	Mardela Springs	21826	Fruitland	21850	Pittsville
		21837	Mardela Springs	21850	Pittsville	21875	Delmar	21849	Parsonsburg
		21856	Quantico	21875	Delmar	21849	Parsonsburg	21826	Fruitland
	Carroll County	21157	Westminster	21157	Westminster	21157	Westminster	21157	Westminster
		21074	Hampstead	21801	Salisbury	21784	Sykesville	21048	Finksburg
		21102	Manchester	21804	Salisbury	21158	Westminster	21784	Sykesville
		21158	Westminster	21158	Westminster	21074	Hampstead	21074	Hampstead
		21776	New Windsor	21784	Sykesville	21048	Finksburg	21158	Westminster
	Cecil County	21921	Elkton	21921	Elkton	21921	Elkton	21901	North East
		21904	Port Deposit	21901	North East	21901	North East	21921	Elkton
		21901	North East	21911	Rising Sun	21911	Rising Sun	21904	Port Deposit
		21903	Perryville	21904	Port Deposit	21903	Perryville	21903	Perryville
		21911	Rising Sun	21903	Perryville	21904	Port Deposit	21915	Chesapeake City
	Calvert County	20678	Prince Frederick	20657	Lusby	20657	Lusby	20678	Prince Frederick
		20736	Owings	20736	Owings	20678	Prince Frederick	20657	Lusby
		20639	Huntingtown	20678	Prince Frederick	20639	Huntingtown	20639	Huntingtown
		20657	Lusby	20639	Huntingtown	20732	Chesapeake Beac	20736	Owings
		20685	Saint Leonard	20754	Dunkirk	20685	Saint Leonard	20685	Saint Leonard
	Somerset County	21853	Princess Anne	21853	Princess Anne	21853	Princess Anne	21853	Princess Anne
		21871	Westover	21871	Westover	21817	Crisfield	21871	Westover
		21838	Marion Station	21822	Eden	21822	Eden	21822	Eden
		21817	Crisfield	21817	Crisfield	21871	Westover	21817	Crisfield
				21838	Marion Station	21838	Marion Station	21838	Marion Station
	Baltimore City	21223	Franklin	21224	Highlandtown	21206	Raspeburg	21225	Brooklyn
		21217	Druid	21230	Morrell Park	21225	Brooklyn	21224	Highlandtown
		21230	Morrell Park	21215	Arlington	21224	Highlandtown	21201	Baltimore
		21205	Baltimore	21213	Clifton	21229	Carroll	21215	Arlington
		21215	Arlington	21217	Druid	21215	Arlington	21229	Carroll
	Harford County	21009	Abingdon	21001	Aberdeen	21040	Edgewood	21014	Bel Air
		21001	Aberdeen	21009	Abingdon	21014	Bel Air	21040	Edgewood
		21014	Bel Air	21078	Havre De Grace	21001	Aberdeen	21085	Joppa
		21015	Bel Air	21085	Joppa	21009	Abingdon	21001	Aberdeen
		21154	Street	21015	Bel Air	21015	Bel Air	21009	Abingdon
	Frederick County	21704	Frederick	21701	Frederick	21702	Frederick	21701	Frederick
		21771	Mount Airy	21702	Frederick	21701	Frederick	21704	Frederick
		21788	Thurmont	21771	Mount Airy	21703	Frederick	21702	Frederick
		21701	Frederick	21703	Frederick	21771	Mount Airy	21771	Mount Airy
		21703	Frederick	21704	Frederick	21704	Frederick	21703	Frederick

Solution

The MHSO will continue to be an active participant in NHTSA's HVE national mobilizations in August, November, and December each year. Numerous other high- visibility enforcement waves will be determined by the MHSO. Law enforcement efforts are coordinated to support national mobilizations using data-driven media, community collaboration efforts, outreach, education, and HVE efforts. The MHSO's enforcement plans directly address the need for collaboration during national mobilizations. Law Enforcement community collaboration efforts include participation in National Night Out, Faith in Blue Days, and local fair displays. Refer to the PPCE plan for additional details.

In response to the Maryland voter's approval of adult-use cannabis legalization (Question 4 on the 2022 ballot), the Maryland General Assembly passed House Bill 556 and Senate Bill 516, which develop a framework for Adult-Use Sales to begin on July 1, 2023. Medicinal Cannabis has been legal since 2014. Maryland will be working actively to create a comprehensive campaign that includes messaging, education, outreach, enforcement, and community engagement. In addition to the comprehensive campaign, MHSO will work with other state partners including the Maryland Department of Health and Maryland Cannabis Administration (MCA) to establish consistent messaging surrounding the dangers of cannabis-impaired driving. By working with the MMCC, Maryland Medical Dispensary Association, Maryland Medical Wholesale Cannabis Trade Association which allows the MHSO to engage cannabis users and ensures the messaging being developed resonates with the users and is an appropriate representation.

Survey and statistical data indicate that statewide enforcement efforts such as DUI checkpoints and saturation patrols provide general deterrence and tend to encourage many drivers to alter their drinking behavior even as they remove impaired drivers from the roadways. Thus, such enforcement efforts are proven countermeasures to reduce impaired driving crashes.

The MHSO will continue to fund the State Police Impaired Driving Reduction Effort (SPIDRE), with teams dedicated to the Baltimore and Washington metro regions and will invest heavily in accompanying education and media components to prevent drivers from getting behind the wheel after consuming alcohol. The MHSO's campaign, Be the Driver, has two subthemes focused on impaired driving that encourages personal responsibility for drivers to either Be the SOBER Driver or Be the MAKE A PLAN Driver. Through focus group testing in the DC Metro, Baltimore Metro, Western, Southern, and Eastern Shore regions, MHSO received feedback on alternate subtheme tag lines to ensure the message is clear, concise and resonates with all Marylanders. The MHSO provides resources to encourage people to join the fight against impaired driving by providing or securing safe rides for friends.

Maryland will continue to utilize a Traffic Safety Resource Prosecutor (TSRP), and coordinates efforts with public and private partners, such as Mothers Against Drunk Driving (MADD) and the Washington Regional Alcohol Program (WRAP). In addition to the TSRP, the MHSO will fund a State Judicial Outreach Liaison (SJOL). This position greatly enhances the MHSO's outreach to judges in both circuit- and district-level courtrooms, particularly in relation to impaired driving case adjudication.

The MHSO will continue to target impaired driving prevention through collaborative partnerships among state and local government agencies, legislative and judicial leaders, regional authorities, community organizations and non-governmental organizations. Together, these groups are collaborating through Maryland's Impaired

Driving EAT with a mission to strengthen and enforce impaired driving laws, and to educate the public about the dangers of impaired driving. The Impaired Driving EAT oversees and ensures the implementation of Maryland's SHSP strategies related to impaired driving. This team will continue to address the complex issue of impaired driving through public meetings, targeted public information, education, enforcement efforts, and support of training and education for judges and prosecutors involved with the legal issues of impaired driving. The team is also tasked with fulfilling strategies ranging from increasing the effectiveness of enforcement to ensuring that data is received in a timely fashion.

MHSO requested an assessment of the Impaired Driving Program conducted in partnership with the NHTSA Region 3 Office that began in May 2023 and is currently in process at the time of submission. MHSO plans to use the recommendations from the assessment in the following manner: Through the team of experts, we will receive a report that compares our current program status to NHTSA's Program Advisory, an overview of our program's strengths and weaknesses, and recommendations for improvements that will reduce impaired driving in Maryland. Once the final report is reviewed and accepted, senior level management and the Impaired Driving Statewide Manager will create a work plan that addresses all recommendations and establish time frames for implementation. The report and chart of recommendations will be shared with the Impaired Driving Emphasis Area Team. Appropriate action steps will be added to the SHSP tracker, a tool established in 2021 for all emphasis areas that measures progress toward SHSP strategies and goals. Members of the Impaired Driving Emphasis Area Team will work together, under the direction of the Statewide Program Manager, to implement recommendations.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Impaired Driving.

Countermeasure:	3.2 Limits on Diversion and Plea Agreements
Effectiveness:	★★★★
Additional Supportive Research:	N/A
Cost:	$
Use:	As of 2006 there were 33 States that provided for diversion programs in State law or statewide practice. Local courts and judges in some additional States also offer diversion programs (NHTSA, 2006c). The Century Council (2008) documented diversion programs restrictions in several States. As of December 2014, there were 22 States that had laws limiting plea agreements in certain cases (NHTSA, 2016a).
Time:	Short
Performance Target:	C-5 (Appendix B)
Explanation:	Reducing plea agreements and alternative sentencing will increase the use of ignition interlock devices and other sanctions shown to reduce impaired driving behavior.
Allocated Funding Type:	402; 405d AL

Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	4.2 Alcohol Ignition Interlocks
Effectiveness:	★★★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	Medium
Time:	Medium
Performance Target:	C-5 (Appendix B)
Explanation:	All 50 States and the District of Columbia allow interlocks to be used for some DWI offenders (NHTSA, 2013a). In 30 States, the District of Columbia, and 4 California counties interlocks are mandatory for all convicted offenders, including first offenders (IIHS, 2017). Indiana, Montana, North Dakota, and South Dakota have no mandatory interlock requirements. Despite widespread laws, a relatively small percentage of eligible offenders have an interlock installed. However, interlock use has increased substantially over the past 10 years, from 146,000 in 2008 to 348,476 in 2017 (based on information supplied by interlock manufacturers; Robertson et al., 2018). Given the roughly 1.4 million arrests in the United States each year for DWI, the ratio of installed interlocks to arrests is approximately 1 in 5. Use of interlocks is substantially higher when they are required as a prerequisite to license reinstatement. For example, among DWI offenders in Florida who were subject to the State's interlock requirement, 93% installed interlocks once they qualified for reinstatement (Voas, Tippetts, Fisher, & Grosz, 2010). Similarly, an examination of effects of the incremental expansion of interlock laws in Washington State to cover all DUI offences found corresponding improvements in installation rates and recidivism with the implementation of each legislative change (McCartt et al., 2018). Use of interlocks is also higher when interlocks are offered as alternatives to home confinement via electronic monitoring (Roth et al., 2009). Through a combination of these measures, New Mexico installed interlocks in the vehicles of half of all convicted DWI offenders in 2007 – the highest level of penetration of any State (Marques et al., 2010). Finally, use of interlocks in a pilot program in California was higher in the four pilot counties that required interlocks for DWI offenders (42.4%) than in non-pilot counties (4.3%) (Chapman et al., 2015). The authors concluded that the main reason for this significant increase was due to the fact that interlock installation was

	mandatory in pilot counties, while interlock installation was optional in non-pilot counties.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	5.2 Mass Media Campaigns
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$$
Use:	High
Time:	Medium
Performance Target:	C-5 (Appendix B)
Explanation:	Most States use some form of alcohol-impaired-driving mass media campaign every year. These are essential to many deterrence and prevention countermeasures that depend on public knowledge to be effective.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	5.4 Alternative Transportation
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	Unknown
Time:	Short
Performance Target:	C-5 (Appendix B)
Explanation:	As of April 2019, the National Directory of Designated Driver Services website listed 1,042 participating transportation providers in 787 different Counties in 41 States. In a Traffic Injury Research Foundation multi-year survey of randomly selected American drivers 21 and older, 44% to 47%[1] said they were familiar with safe ride home programs (Vanlaar, Hing, Powell, & Robertson, 2017). Of these, 5% to 8% reported they always used such programs, and

	4% said they sometimes used them. On the other hand, 87% to 91% of respondents stated they had never used safe rides programs. In the second round of data collection, 19% of respondents stated that they had used a for-profit ride share service such as Lyft or Uber after drinking. Women were more likely to rely on designated drivers than ride share services or public transportation than men. Safe-ride-home programs were used more by younger drivers than older drivers and more in urban areas than rural. Ride service programs vary considerably by region; and some in operation in North America are outlined in Barrett et al. (2017). Additional information is available on the NHTSA Buzzed Driving campaign page at www.nhtsa.gov/campaign/buzzed-driving.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	6.3 Alcohol Vendor Compliance Checks
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	Unknown
Time:	Short
Performance Target:	C-5 (Appendix B)
Explanation:	Twenty-two States and the District of Columbia prohibit all alcohol purchase by underage youth. Another 24 States prohibit purchase other than for law enforcement purposes such as merchant compliance checks (APIS, 2018a). Although many jurisdictions conduct compliance checks of alcohol retailers at least occasionally, few jurisdictions do so frequently or regularly. One national survey conducted in 2010-2011 found that only 35% of all local LEAs reported conducting compliance checks, and only 55% of these agencies reported checking all establishments that sold alcohol (Erickson et al., 2014). Less than 1 in 4 of these agencies conducted checks more than twice a year. Seventy-six percent of State agencies reported conducting compliance checks; 59% of these reported checks at all establishments. Twenty-one percent of State agencies conducted checks more than twice a year.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	6.5 Youth Programs
Effectiveness:	★★
Additional Supportive Research:	https://www.proquest.com/openview/f93f3a4181ba7da992e4fef772a05de4/1?pq-origsite=gscholar&cbl=18750&diss=y
Cost:	Varies
Use:	High
Time:	Medium
Performance Target:	C-5; C-9 (Appendix B)
Explanation:	Youth programs of some type are conducted in most, if not all, States.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	7.1 Enforcement of Drug-Impaired Driving
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	Unknown
Time:	Short
Performance Target:	C-5 (Appendix B)
Explanation:	As of August 2014, all 50 States and the District of Columbia had drug evaluation and classification (DEC) programs, which are designed to train officers to become DREs (GHSA, 2015). As of December 2019, these programs have prepared more than 1,700 instructors and trained more than 9,800 officers (IACP, 2020a). During 2019 there were over 36,000 drug enforcement evaluations conducted by DREs as part of enforcement. This suggests drug-impaired driving arrests are not as common in comparison to arrests for alcohol-impaired driving. However, it should be noted that the number of drug-impaired-driving arrests cannot be known as many States only record “impaired-driving” arrests, and do not separate alcohol from drug arrests. Additionally, it is suspected, many arrests are a combination of drugs and alcohol. In DRE enforcement evaluations in 2019, cannabis was the most frequently identified drug category, followed by CNS stimulants, narcotic analgesics (opioids), and CNS depressants (IACP, 2020). Porath-Waller and Beirness (2014) investigated the validity of using SFSTs in detecting drug impairment among suspected drug-impaired drivers. Results of their study indicate CNS

	stimulants, CNS depressants, narcotic analgesics, and cannabis are significantly associated with impairment using SFST. Specifically, users of all drug types were significantly more likely to sway while balancing and use their arms to maintain balance on the one-leg-stand. Users of CNS depressants, CNS stimulants, and narcotic analgesics were significantly less likely to keep their balance while listening to test instructions on the walk-and-turn test. Finally, users of CNS depressants were significantly more likely to experience lack of smooth pursuit and distinct nystagmus at maximum deviation on the horizontal gaze nystagmus test.
Allocated Funding Type:	402; 405d AL
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iii)

Countermeasure:	V. Communications Program
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 4
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-5 (Appendix B)
Explanation:	Per NHTSA's Uniform Guidelines, NHTSA recommends that states should develop and implement communication strategies directed at supporting policy and program elements, specifically in collaboration and cooperation with driver education and training and highway safety partners, and should consider a statewide communications plan and campaign that: 1) Informs the public, especially parents, about State GDL laws; 2) Identifies audiences at particular risk and develops appropriate messages; 3) Provides culturally competent materials; 4) Informs parents/guardians and young drivers about the role of supervised driving and the State's GDL law; 5) Informs novice drivers about underage drinking and zero tolerance laws (in effect in all 50 States and the District of Columbia), such as including information in manuals for new drivers and including a question about the topic on the written test for a learner's permit; 6) Informs the public on the role of parental monitoring/involvement; and 7) Informs the public about State guidelines and regulation of driver education.
Allocated Funding Type:	402; 405d AL

Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(B)(i)

High-Visibility Enforcement

As outlined in the problem identification/solution, the Maryland Impaired Driving Enforcement Plan is based on crash and citation data that is analyzed and mapped for state, county, and municipal law enforcement agencies, to support impaired driving enforcement operations in the highest-risk areas for impaired crashes. This plan is intended to provide grant-funded overtime enforcement resources to state and local law enforcement agencies within a required framework for impaired-driving countermeasures during high-visibility enforcement periods, while maintaining year-round enforcement visibility, including occupant protection enforcement as appropriate during these periods.

Guidelines and performance measures included in the plan are directly tied to impaired driving grant funds and are monitored by the MHSO's four LELs and Law Enforcement Program Manager.

Documentation of efforts is captured in quarterly progress reports and law enforcement logs. The plan requires clear expectations, solid documentation of efforts, and continuing follow-up among law enforcement partners conducting impaired driving initiatives statewide.

Results of operations conducted on behalf of Maryland's Impaired Driving Enforcement Program are evaluated through process measures reported in the MHSO's grant system and are monitored by the LELs and the Impaired Driving Program Manager. Coordinated HVE efforts among local, municipal, and state police agencies are strongly encouraged toward the following impaired driving enforcement goals. Up to nine statewide impaired driving enforcement waves are organized throughout the year, including NHTSA's two national mobilizations (in August & November/December).

Key Aspects of Sobriety Checkpoints Key	Key Aspects of Highly Visible Saturation Patrols
• Low-manpower checkpoints are encouraged. • Unmanned or "phantom" checkpoints are considered a valuable tool and can be conducted. • Nighttime enforcement emphasis is critical. • Enforcement coupled with speed and seat belt enforcement as key factors is allowable/encouraged. • DUI enforcement using channelization and emphasis on seat belt observations is acceptable. • Using speed observation is an acceptable practice to identify impaired drivers.	• Saturation patrols should include no less than two patrol cars in a county (saturation can occur on separate roadways as needed). • Maryland State Police follow internal policy for saturation patrols. • Continuous communications efforts including signage, digital message boards and other efforts to inform drivers of saturation patrols in action (DUI Enforcement Zone, magnets, etc.), and including the use of social media and

• Data indicate that speed and non-seat belt use are key factors in identifying drunk drivers. Data by county relative to these factors is available.	press releases before and after patrols to raise awareness.

Evaluation

The MHSO evaluates traffic safety programs through output, impact, and outcome measures. Outcome measures include crash data, including fatality and serious injury data. All projects funded through the MHSO are required to include an effective evaluation component. Depending on the level of grant funds obligated and the project, impact or output measures are to be reported and evaluated throughout the grant cycle.

According to a recent Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use.

Impaired driving is 100 percent preventable; however, during the past five years in Maryland, nearly 800 people have been killed in crashes involving an impaired driver. When asked about the reason for not driving impaired, respondents reported: Fear of harm to themselves (86 percent) or others (79 percent) was cited by respondents as top reasons for not driving impaired; however, more than 3 percent of those surveyed admitted to driving impaired in the past 30 days; and 53 percent of drivers listed fear of arrest as influential on their decision to drive sober, yet more than 17,000 drivers were arrested for driving under the influence of drugs or alcohol in Maryland last year. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Ignition Interlock

The MHSO will utilize available funds to evaluate anticipated changes in the interlock law to close the loophole that allows diversion prior to conviction.

Outcome Measures

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-5	Alcohol and/or Drug Impaired Driving Fatalities	State	191	142	151	186	173
	Reduce alcohol and/or drug impaired driving fatalities 18 percent from 168.6 (2017-2021) to 138.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	162.6	159.4	162.8	163.8	168.6
(Appendix B)	Alcohol and/or Drug Impaired Driving Serious Injuries	State	497	466	487	452	455
	Reduce alcohol and/or drug impaired driving serious injuries 43 percent from 471.4 (2017-2021) to 270.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	413.6	429.4	445.8	467.2	471.4

FY 2023					
Performance Measure	Target Period	Target Year(s)	Target Value FFY23 HSP	Data Source/ FFY23 Progress Results	On Track to Meet FFY23 Target Y/N/In-Progress
C-5) Impaired (Alcohol and/or Drugs) Driving Fatalities (State)	5 year	2019-2023	145.8	2017-2021 State 168.6	N
Impaired (Alcohol and/or Drugs) Driving Serious Injuries (State)	5 year	2019-2023	315.8	2017-2021 State 471.4	N

Occupant Protection Program

Problem Identification

In Maryland during 2021, over 2,150 unbelted occupants of passenger vehicles or light trucks were injured or killed in crashes. Despite increases in observed belt use rates in Maryland and across the nation, 25 percent of all Marylanders killed in motor vehicle crashes were not wearing seat belts. Research has shown that seat belts, when used properly, reduce the risk of fatal injury to front-seat passengers by 45 percent and reduce the risk of moderate to critical injury by 50 percent.

In 2021, Maryland law enforcement agencies issued a total of 14,994 citations for seat belt use violations (which includes 1,938 child safety seat violations), reflecting decreases of 11 percent and 3 percent, respectively, since 2020. There were 16,833 belt use citations issued in 2020 (1,991 of which were for child safety seat violations) and 29,653 issued in 2019 (3,786 for child safety seat violations). The increase in the fine had been cited as a possible cause for fewer citations being written in previous years, or the issuance of a warning in lieu of a moving violation. Also cited had been the "Ferguson effect" where the tense climate of public interactions with, and increased scrutiny of, law enforcement may be affecting the number of vehicle stops. The MHSO will continue to analyze these data trends and work with its law enforcement partners to understand the changes seen in law enforcement interventions for traffic violations.

Frequency of Unrestrained Occupant Crashes

In 2021, there were 139 unrestrained occupants killed in crashes, and 384 unrestrained seriously injured occupants. These unbelted motor vehicle occupants represented 41 percent of all vehicle occupants fatally injured in crashes statewide and 25 percent of all statewide traffic fatalities. The seriously injured unbelted motor vehicle occupants represented 19 percent of all vehicle occupants seriously injured in crashes statewide and 13 percent of all seriously injured in the State in a traffic-related crash.

Maryland crashes involving unrestrained occupants have occurred rather consistently on average throughout the year. Over 55 percent of all crashes involving unrestrained occupants occurred in the six-month period from April through September, corresponding to typically warm weather driving periods.

Crashes with unrestrained occupants occurred consistently throughout the week but were more frequent on Friday and Saturday (one out of three). Thirty-nine percent of all fatal crashes with at least one unrestrained occupant occurred on Saturday or Sunday. Two-thirds of all unrestrained injury crashes happened between noon and midnight. Although 34 percent of all crashes with unrestrained occupants occurred between 7 p.m. and 6 a.m., 54 percent of all fatal crashes involving unrestrained occupants occurred during that time, which indicates that serious crashes involving unrestrained occupants are more likely to occur at nighttime.

More than 80 percent of all crashes involving unrestrained occupants occurred in nine jurisdictions – Anne Arundel, Baltimore, Cecil, Charles, Harford, Howard, Montgomery, Prince George's counties, and Baltimore City. These same locations accounted for 79 percent of all injury crashes involving unrestrained occupants, and 78 percent of fatal crashes involving unrestrained occupants.

Typical Profile of Unrestrained Occupants

Between 2017-2021, more than one half of all unrestrained occupants were male (58 percent), including those injured (56 percent), seriously injured (65 percent) and those who were killed (74 percent). The mean age for injured occupants was 27 and was 39 for fatally injured occupants. Among all unrestrained drivers, 67 percent were male, and the mean age was 37. Among all unrestrained passengers, 51 percent were male, and the mean age was 14.

Child Passenger Safety Results

Analysis of child passenger safety results for motor vehicle occupants under age eight indicated that, in 2021 in Maryland, 8213 children were involved in crashes, with 81.5 percent of those riding in the back seat and 45 percent were documented by law enforcement as either not using a child passenger safety seat (32 percent) or unknown if child passenger safety seat was used (13 percent). If children are reported as using any restraint other than an appropriate child safety seat, they are considered improperly restrained or unrestrained. Of the unrestrained and unknown if restrained, 83 percent were uninjured, and 17 percent were injured, with one child fatality of age seven or younger. Similarly, 83 percent of restrained children were uninjured, 17 percent were injured, and four were killed.

By age, restraint use was more common among younger children of child seat age (at least 67 percent up to age 4, and 46 percent at age five), while restraint use dropped among booster seat age children (33 percent at age six, and 24 percent at age seven).

Safety initiatives that have been effective in the past for other age groups, including education/awareness/training and enforcement efforts, are necessary for child passengers and should be considered for enhancement.

Observational Occupant Protection Survey Results

The 2022 front seat belt observational survey in Maryland was conducted following a revised sampling of the State roadways, resulting in 14 jurisdictions that will follow the NHTSA data collection protocol between 2022 and 2026. Based on data sampled in these jurisdictions, the overall observed seat belt usage rate for drivers and right front seat passengers in the State of Maryland in 2022, after weighting by probability of roadway selection and jurisdictional roadway specific vehicle miles traveled (VMT), was 92.7%. The 2022 usage rate represented a 1.3 percentage point increase over the previous year. The Statewide standard error of 0.6% was well below the NHTSA threshold of 2.5%, yielding a 95% confidence interval of 91.5% to 93.9% for the combined usage rate. These rates were based on observation of 33,674 vehicles and 42,203 occupants, representing decreases of 15.5% and 14.7% in the number of vehicles and occupants observed, respectively, in the 2021 survey.

Belt use was highest among passenger cars and SUVs relative to pick-up trucks (93.4% vs. 88.0%, respectively). Seat belt usage was also highest among all front seat occupants traveling on Primary roads relative to Secondary and Local roads (95.2% vs. 91.8% and 85.2%). Since 2021, the rates represented increases across the board for passenger cars/SUVs, pick-up trucks, and all three types of roadways.

Prince George's County (98.1%) had the highest usage rate among Maryland's 14 NHTSA jurisdictions, followed by Montgomery (96.3%), and Carroll (94.8%) counties. There were nine jurisdictions with rates of at

least 90%; Baltimore City (85.3%), Washington County (84.6%) and Charles County (80.6%) experienced the lowest rates. Overall, five of the 14 jurisdictions experienced an increase in combined usage rates over the past year. The large decrease in rates over the past year for Baltimore City may be partially due to the 2022 random sample of roadways. For occupants of passenger cars or SUVs, 10 jurisdictions had usage rates of at least 90%. Among occupants of pick-up trucks, three jurisdictions had a usage rate above 90% (Prince George's, Montgomery, and Carroll Counties), and two jurisdictions (Washington and Charles Counties) experienced rates below 80%. Unweighted analysis indicated that drivers had a slightly lower Statewide usage rate (92.8%) than front seat passengers (93.7%).

Seat belt usage could not be ascertained for 3.7% of all drivers and passengers. Unknown belt use was more prevalent in pick-up trucks (6.4%) than in passenger cars (3.2%), higher for drivers (4.6%) than for passengers (0.3%), and slightly higher on local roads (5.5%) compared to primary roads (3.0%) and secondary roads (4.3%).

Approximately 93.4% of all drivers and right front-seat passengers traveling in the 10 non-NHTSA jurisdictions were belted, representing a 3.2 percentage point increase over the past year (unweighted analysis). A slightly lower proportion of drivers (93.0%) than passengers (96.3%) were observed to be belted. In addition, higher usage rates were found in passenger cars or SUVs (94.8%) than in pick-up trucks (89.5%), and on Primary as opposed to Secondary or Local roadways. Eight of the non-NHTSA jurisdictions had a usage rate above 90%. For passenger cars or SUVs, usage rates were also at least 90% in eight jurisdictions, while usage rates among occupants of trucks were above 90% in six non-NHTSA jurisdictions. Kent County experienced the lowest rate among all vehicles. Seat belt usage could not be ascertained for 3.0% of all front-seat occupants.

Examination of individual record-level data, for the instance in which both a driver and passenger were observed in the front seat, indicated that 95.5% of passengers were belted when the driver was belted. However, if the driver was unbelted, only 41.5% of passengers were observed to wear their belt. This large difference in passenger belt use occurred in cars and SUVs (95.8% for belted drivers vs. 43.2% for unbelted drivers) as well as in trucks (93.0% for belted drivers vs. 34.0% for unbelted drivers). There was also an association with roadway classification, with the Secondary or Local roadways corresponding to a larger difference in passenger belt use between belted and unbelted drivers than the discrepancy seen on Primary roads. Data on cell phone usage by drivers were not presented, as only 169 drivers (0.5%) were observed using a hand-held cell phone.

An additional analysis was carried out to compare rural vs. urban jurisdictions and roadways among the 14 NHTSA jurisdictions. In 2022, the unweighted percent seat belt usage was higher in rural compared to urban jurisdictions for all vehicle types, whereas the 2021 rates were higher in the urban jurisdictions. When comparing the 2022 restraint use findings on roadways classified as being either rural or urban, rates in cars remained slightly higher on rural roads while rates in trucks were slightly higher on urban roads.

While Maryland has not conducted a rear seat evaluation in a few years, based on the most recent observation as well as statewide and national surveys, rear seat passengers are at high risk and are not buckling up at the same rate as front seat occupants. Unbelted backseat occupants had a 3.4 times greater risk of sustaining a

severe or fatal injury than those reported to be belted. 41% of backseat fatalities with known belt use were unbelted.

The last year a rear seat observation was conducted (2019), among all vehicles with a single back seat occupant, analysis of known belt use indicated that 78.3% were belted, with a best-case scenario of only 79.5% (e.g., if all unknowns represented belted occupants). When two individuals were seated in the rear, however, seat belt usage was found to be somewhat lower. Analysis of known cases demonstrated that both rear occupants were belted only 70.9% of the time, increasing to 72.3% in the best possible case. Therefore, further analysis was conducted to determine if there was a disproportion in rates according to passenger type (e.g., adult or child) and driver belt use.

The majority (93.5%) of drivers was belted, so ample sample sizes were available in this group to determine differences in belt use rates of adult and child back seat passengers. Among occupants with known belt use, 78.9% were belted, which differed for adults (58.5%) versus children (92.5%). Among vehicles with a single back seat occupant, analysis of known belt use indicated the adult passenger was much less likely to be belted than the child passenger (56.4% adult vs. 92.9% child), with the best possible scenario increasing rates to 60.5% for the adult and 93.1% for the child. Thus, despite the use of a seat belt by the driver, adult occupants of the back seat were far less likely to wear their seat belt. Children, however, experienced a higher usage rate.

Analysis of vehicles with an unbelted driver revealed similar differences in rates between adults and children. In addition, it was apparent that, although sample sizes were small, occupants were much less likely to wear their seat belts if the driver was not belted. Analysis of occupants with known belt use indicated that only 56.6% were belted, with a large difference in belt usage found for adults (20.0%) when compared with children (80.9%). For single occupants, usage rates dipped to 18.2% for the adult vs. 86.4% for the child and fell even further for double occupancy (0% for both adults and 54.5% for both children).

Jurisdiction	Seat Belt Rates
Allegany	94.7%
Anne Arundel	92.4%
Baltimore	91.4%
Calvert	95.4%
Caroline	89.9%
Carroll	94.8%
Cecil	87.7%
Charles	80.6%
Dorchester	93.8%
Frederick	92.8%
Garrett	90.1%
Harford	93.6%
Howard	92.9%
Kent	73.4%
Montgomery	96.3%

Prince George's	98.1%
Queen Anne's	86.8%
St. Mary's	90.7%
Somerset	98.9%
Talbot	97.1%
Washington	84.6%
Wicomico	97.2%
Worcester	98.8%
Baltimore City	85.3%

The perceived importance of and reported seat belt use among Maryland drivers appears to be widespread, but not universal. About two-thirds of RSAB 2022 Survey respondents said they always wear a seat belt while riding in the back seat of a vehicle. Exposure to unbelted occupants increases the risk of injury or death to others in the vehicle by 40% as they can become projectiles in the event of a crash.

- That percentage increases to 8% when the driver was traveling within 5 miles or 10 minutes of home.

While the 8% figure is a seemingly low percentage of survey respondents, short, routine trips can be some of the most dangerous. Most crash-related deaths happen within 25 miles from home and at speeds of less than 40 mph.

Priority Ranking

Program Area	Priority Jurisdictions (Injuries/Fatalities)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Unrestrained Occupants	Baltimore City	21205	Baltimore	21217	Druid	21206	Raspeburg	21225	Brooklyn
		21223	Franklin	21223	Franklin	21215	Arlington	21206	Raspeburg
		21215	Arlington	21202	Baltimore	21229	Carroll	21224	Highlandtown
		21217	Druid	21215	Arlington	21224	Highlandtown	21215	Arlington
		21229	Carroll	21218	Baltimore	21225	Brooklyn	21239	Northwood
	Baltimore County	21207	Gwynn Oak	21207	Gwynn Oak	21222	Dundalk	21237	Rosedale
		21220	Middle River	21222	Dundalk	21221	Essex	21208	Pikesville
		21222	Dundalk	21237	Rosedale	21220	Middle River	21207	Gwynn Oak
		21237	Rosedale	21234	Parkville	21234	Parkville	21221	Essex
		21221	Essex	21227	Halethorpe	21207	Gwynn Oak	21093	Lutherville Timonium
	Wicomico County	21801	Salisbury	21801	Salisbury	21804	Salisbury	21801	Salisbury
		21837	Mardela Springs	21804	Salisbury	21801	Salisbury	21804	Salisbury
		21850	Pittsville	21850	Pittsville	21826	Fruitland	21830	Hebron
		21804	Salisbury	21875	Delmar	21875	Delmar	21850	Pittsville
		21830	Hebron	21837	Mardela Springs	21850	Pittsville	21849	Parsonsburg
	Kent County	21651	Millington	21620	Chestertown	21620	Chestertown	21620	Chestertown
		21620	Chestertown	21651	Millington	21661	Rock Hall	21651	Millington
				21635	Galena	21651	Millington	21635	Galena
				21661	Rock Hall	21678	Worton	21661	Rock Hall
				21678	Worton	21635	Galena	21678	Worton
	Somerset County	21822	Eden	21853	Princess Anne	21853	Princess Anne	21853	Princess Anne
		21838	Marion Station	21838	Marion Station	21817	Crisfield	21822	Eden
				21871	Westover	21822	Eden	21871	Westover
				21817	Crisfield	21871	Westover	21817	Crisfield
				21822	Eden	21838	Marion Station	21838	Marion Station
	Dorchester County	21631	East New Market	21613	Cambridge	21613	Cambridge	21613	Cambridge
		21643	Hurlock	21643	Hurlock	21643	Hurlock	21869	Vienna
				21631	East New Market	21631	East New Market	21631	East New Market
				21869	Vienna	21869	Vienna	21643	Hurlock
				21622	Church Creek	21659	Rhodesdale	21659	Rhodesdale
	Garrett County	21550	Oakland	21550	Oakland	21550	Oakland	21550	Oakland
		21520	Accident	21531	Friendsville	21536	Grantsville	21536	Grantsville
		21531	Friendsville	21536	Grantsville	21561	Swanton	21541	McHenry
		21536	Grantsville	21520	Accident	21531	Friendsville	21531	Friendsville
		21561	Swanton	21538	Kitzmiller	21520	Accident	21561	Swanton

Solution

During the past decade, national fatality numbers and rates have been generally decreasing due to a combination of factors including improved education and awareness, driver training, and law enforcement activities, and perhaps most important, the improvement of vehicle designs to better protect passengers in crashes. These safer vehicle designs, featuring sophisticated air bag systems, anti-lock brakes, crush-proof structural designs, proximity warnings, and other measures, can only work most effectively if drivers and passengers are using approved restraints, such as seat belts and child safety seats that help occupants stay in the vehicle during crashes.

Chances of crash survival plummet when vehicle occupants are ejected during crashes, but chances of survival and injury reduction are greatly increased if restraints are used properly. Hence, Maryland will continue to vigorously support national and state policies on occupant protection, specifically the consistent use of proper restraints. The MHSO will continue to utilize the Be the Driver campaign, and occupant protection subtheme of Be the BUCKLED UP Driver to encourage motorists to buckle up, every seat, every ride. In addition to the

general creative for the campaign, the MHSO will utilize the "Bad Excuse" creative to specifically debunk four common reasons heard by law enforcement partners for motorists not wearing seat belts: "I'm only driving a couple of miles," "I drive a truck. I'm protected," "It rubs my neck. It's uncomfortable," and "My vehicle has airbags. I'm protected." Characters in the Be the Driver campaign were developed to resonate with community members, based on census data and feedback received from focus groups.

Maryland solicits input on occupant protection and child passenger safety issues through the state's Occupant Protection EAT. This feedback then is used to develop and coordinate the state's enforcement and education activity. Refer to the PPCE plan for additional details. Data-driven projects are developed under SHSP strategies and include education and media activities such as Click It or Ticket and additional enforcement of Maryland's seat belt laws.

Child Passenger Safety (CPS) efforts also form a key component of Maryland's Occupant Protection Program as the state continues to certify and support trained CPS technicians and instructors at fitting stations throughout the state, focusing on urban and rural jurisdictions and at-risk groups. Child safety seats are distributed through CPS partners and local health departments. Virtual car seat events also are available where in-person activities are limited.

Outreach is coordinated with hospitals and other CPS partners that continue to promote child passenger safety (both best practices and Maryland law) to care providers of children from birth to age eight. Effective October 1, 2022, a Maryland law now requires a person transporting a child under age two in a motor vehicle is required to secure the child in a rear-facing child safety seat that complies with applicable federal regulations until the child reaches the manufacturer's weight or height limit for the child safety seat. The MHSO will continue to educate Marylanders about the new law and best practices by engaging in conversation and responding to questions from across the state on social media and will continue promotion of finding the right seat for the children they are transporting.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Occupant Protection. The following countermeasures are pulled from *Countermeasures that work: A highway safety countermeasures guide for State Highway Safety Offices, 10th edition, 2020*:

Countermeasure:	6.2 Strategies for Child Restraint and Booster Seat Use
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	Varies
Use:	Unknown
Time:	Medium
Performance Target:	C-4 (Appendix B)
Explanation:	Communications and outreach campaigns directed at booster-seat-age children are likely common, but no summary is available.
Allocated Funding Type:	402; 405b

Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(ii)

Countermeasure:	7.2 Inspection Stations
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	High
Time:	Short
Performance Target:	C-4 (Appendix B)
Explanation:	Child restraint inspection stations have become common components of State and local child passenger safety programs. As of 2018 more than 10,000 inspection stations were registered with NHTSA (see www.nhtsa.gov/equipment/car-seats-and-booster-seats#installation-help-inspection for locations).
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(ii)

Countermeasure:	3.1 Supporting Enforcement
Effectiveness:	★★★★★
Additional Supportive Research:	N/A
Cost:	Varies
Use:	Medium
Time:	Medium
Performance Target:	C-4 (Appendix B)
Explanation:	All HVE programs include communications and outreach strategies that use some combination of earned media (news stories, social media) and paid advertising. Communications and outreach can be conducted at local, State, regional, or national levels.
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(ii)

Countermeasure:	1.1 State Primary Enforcement Seat Belt Use Laws
Effectiveness:	★★★★★
Additional Supportive Research:	N/A
Cost:	$
Use:	Medium
Time:	Short
Performance Target:	C-4; B-1 (Appendix B)
Explanation:	As of June 2019, there were 34 States and the District of Columbia that had primary belt use laws and 15 States had secondary enforcement laws. Only New Hampshire had no belt use law applicable to adults (GHSA, 2019a; IIHS, 2019a). However, some States only have primary enforcement for certain occupants (for instance drivers or people older than a specified age) and secondary enforcement for other occupants (for example, North Carolina's seat belt law is primary for drivers and front seat passengers 16 and older but secondary for rear seat passengers 16 and older). Twenty States do not have laws requiring the use of seat belts in the rear seat (GHSA, 2019a). More information on the effect of having no rear seat belt requirement is included in the "Other Issues" section below.
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(ii)

Countermeasure:	VI. Outreach Program
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 20
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-4 (Appendix B)
Explanation:	For Occupant Protection (Guideline 20), this project provides culturally relevant material and resources necessary to conduct occupant protection education programs, especially directed toward young people, in local school settings.
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(ii)

Countermeasure:	4.1 Strengthening Child/Youth Occupant Restraint Laws
Effectiveness:	★★★★★
Additional Supportive Research:	N/A
Cost:	$
Use:	High
Time:	Short
Performance Target:	C-4 (Appendix B)
Explanation:	As of November 2018, all but one State had enacted child restraint laws covering children through at least age 5 (South Dakota's law only covers children 4 and younger) (IIHS, 2019a, 2019b). However, a wide variation in age, height, and weight requirements exists among the laws of the States (GHSA, 2019b; IIHS, 2019a, 2019b).
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(ii)

Click it or Ticket

Under BIL, states must continue to support Click It or Ticket (CIOT), a nationwide seat belt enforcement and awareness mobilization effort. CIOT has been a successful seat belt enforcement campaign since the early 2000s, helping to increase Maryland's seat belt usage through a combination of media, grassroots education programs and targeted enforcement.

A list of agencies that participated in CIOT enforcement in FFY 2023 and are expected to participate in FFY 2024 can be found in the AGA.

Maryland's plan to support CIOT annually is as follows:

Anticipated Dates	Activity
December – April	Campaign pre-planning for May CIOT effort
May – June	Paid and earned media efforts based on dates outlined in NHTSA's communication calendar
May – June	Enforcement period based on MHSO's annual HVE calendar
June	Seat belt observation survey conducted
September	Annual seat belt use rate announced
November	Secondary CIOT wave around Thanksgiving

Additional Occupant Protection Programs in Maryland

Child Restraint Inspection Station Network

BIL continues the requirement that states have "an active network of child restraint inspection stations" throughout the state and requires that "the total number of inspection stations and/or inspection events service rural and urban areas and at-risk populations (e.g., low income, minority)." In FFY 2024, the MHSO will use a variety of data sources to determine the need for child restraint inspection stations including, but not limited to: the national census data (currently 2020), Equitable Transportation Community, and Maryland crash data.

In April 2023, a group of data experts including the National Study Center for Trauma and EMS, Washington College, and MHSO representatives formalized a model for determining underserved and low-income areas throughout the state. The methodology for determining these communities included two sets of disadvantaged populations – socioeconomic disadvantaged and transportation safety disadvantaged. Variables within socioeconomic disadvantaged include Risk (alcohol retailers and cannabis dispensaries), Poverty, and Race (non-white). Variables within transportation safety disadvantaged include Violations (home location), Under 18/Over 65, and Crashes (location where occurred). This tool will be utilized in FFY 2025 and beyond to identify where child passenger safety efforts should be focused.

According to 2020 Census Data, more than five million people live in the Baltimore and Washington metropolitan regions of Maryland, representing more than 82 percent of Maryland's population. These metropolitan regions include:

- Anne Arundel County
- Baltimore City
- Baltimore County
- Carroll County
- Frederick County
- Harford County
- Howard County
- Montgomery County
- Prince George's County

Maryland coordinates regular fitting stations in each of these jurisdictions. In addition to the stations in the Baltimore/Washington metropolitan regions, regular fitting and inspection stations are established in some counties of Southern Maryland and the Eastern Shore. Most locations host monthly events, and inspections also are scheduled by appointment across the state. Virtual car seat events are available statewide. Refer to the PPCE plan for determining future fitting station locations.

Current public access information, locations, and hours of operation for these child passenger safety seat inspection stations can be found on the following websites:

- NHTSA – https://www.nhtsa.gov/equipment/car-seats-and-booster-seats#installation-help- inspection
- SAFE KIDS – http://www.safekids.org/in-your-area/coalitions/maryland- state.html
- Kids in Safety Seats (KISS) – KISS is taking appointments for virtual services and in person appointments: https://phpa.health.maryland.gov/oehfp/kiss/Pages/Home.aspx

Child Passenger Safety Classes

The BIL continues to require the state to specify the number of CPS classes to be held, the location of those classes, and estimated number of students that will attend.

Recruitment, retention, and training of the state's CPS technicians are coordinated through a grant with the Maryland Department of Health's Kids in Safety Seats (KISS) program. As a component of this effort, KISS annually coordinates:

- Scheduling or assistance with six national child passenger safety certification courses throughout Maryland,
- Scheduling one CEU training,
- Scheduling one annual Renewal Course (dependent on interest from CPST),
- Scheduling one statewide instructor update,
- Scheduling one Special Needs Training,
- Scheduling 100 video car seat assistance appoints throughout the state,
- Maintaining technician re-certification, with a goal of retaining more than 50 percent among those eligible to re-certify, and
- Enabling technicians to enter sign-offs/CEU information at events.

Evaluation

The MHSO evaluates traffic safety programs through output and outcome measures. Outcome measures include crash data (fatality and serious injury). Projects funded through the MHSO are required to have an evaluation component. Depending on the level of grant funds obligated and the scope of the project, output measures are reported and evaluated throughout the grant cycle.

Law enforcement and media/communications partners are provided with additional analysis that support a more targeted approach within jurisdictions over-represented in this program area. Each year, data and analyses are provided in standard and by request (ad hoc) formats that support localized targeting of traffic safety initiatives.

According to a recent Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use.

The perceived importance of and reported seat belt use among Maryland drivers appears to be widespread, but not universal. About two-thirds of respondents said they always wear a seat belt while riding in the back seat of a vehicle. Exposure to unbelted occupants increases the risk of injury or death to others in the vehicle by 40 percent as they can become projectiles in the event of a crash. That percentage increases to 8 percent when the driver was traveling within 5 miles or 10 minutes of home.

While the 8 percent figure is a seemingly low percentage of survey respondents, short, routine trips can be some of the most dangerous. Most crash-related deaths happen within 25 miles from home and at speeds of less than 40 mph. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-4	Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions	State	117	1109	113	139	146
	Reduce unrestrained passenger vehicle occupant fatalities, all seat positions 33 percent from 124.8 (2017-2021) to 84.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	103.8	104.4	107.2	120.2	124.8
(Appendix B)	Unrestrained Passenger Vehicle Occupant Serious Injuries, All Seat Positions	State	425	442	421	432	434
	Reduce unrestrained passenger vehicle occupant serious injuries, all seat positions 33 percent from 430.8 (2017-2021) to 290.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	324.8	367.8	393.2	416.0	430.8

			2018	**2019**	**2020**	**2021**	**2022**
B-1	Observed Seat Belt Use for Passenger Vehicles, Front Seat Outboard Occupants (State Survey) (Percentage)	State Annual	90.3%	90.4%	89.9%	91.4%	92.7%
	Increase observed seat belt use for passenger vehicles, front seat outboard occupants by 3.5 percent from 92.7 percent in 2022 to 96.2 percent by December 31, 2026.						

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
C-4) Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions (State)	5 year	2019-2023	91.6	2017-2021 State 124.8	N
B-1) Observed Seat Belt Use for Passenger Vehicles, Front Seat Outboard Occupants (State Survey)	Annual	2023	93.6%	2022 92.7	Y
Unrestrained Serious Injuries (State)	5 year	2019-2023	311.9	2017-2021 State 430.8	N

B-1: The proposed seat belt use rate targets estimate a reduction in the number of observed unbelted motor vehicle occupants by at least 25 in each of the observation counties for each successive year. Targets were set based on the 89.9% belt used rate in 2020. (This has been updated from the previous HSP reporting which set the baseline at 92% from 2014. Since Maryland went below the baseline, a new baseline was set with new targets.)

Distracted Driving Program

Problem Identification

Distracted driving crashes are defined as at least one driver in the crash was reported to be distracted, defined by having values of either 'failure to give full time and attention' or 'cell phone in use' or 'inattentive' in the contributing circumstance field, or any of the following values in the driver distracted by field: looked but did not see; other electronic device (tablet, GPS, MP3 player, etc.); by other occupants; by moving object in vehicle; talking or listening on cellular phone; dialing cellular phone; adjusting audio and/or climate controls; using other device controls integral to vehicle; using device/object brought into vehicle (non-electronic); distracted by outside person, object, or event; eating or drinking; smoking related; other cellular phone related; lost in thought; or texting from a cellular phone.

Though the number of distracted driving crashes in 2021 increased by 12 percent from the previous year, the number of fatal crashes involving distracted driving remained the same (n=205). An average of more than 53,000 distracted driving crashes occurred on Maryland roads each year between 2017 and 2021. For this latest five-year period, distracted driving was a factor in an annual average of approximately one-half of all traffic crashes (48 percent), more than half of all injury crashes (53 percent), and well over one third of all fatal crashes (38 percent).

Approximately 31 percent of distracted driving crashes resulted in injury or death from 2017 to 2021. On average, more than 24,000 people were injured or killed per year because of distracted driving. In 2021, fatalities due to distracted driving slightly increased by 3 percent over the previous year.

In 2021, Maryland law enforcement officers issued 16,449 citations for handheld cell phone use and 797 citations for texting while driving. These numbers represent decreases of 10 percent and 15 percent, respectively, from those of the previous year. In 2020, there were 18,257 handheld cell phone citations issued along with 941 texting citations. In 2019, there were 31,034 handheld cell phone citations and 2,367 texting citations.

Between 2010 (the inception of the first law related to phone use while driving in Maryland) through 2021, over 248,000 drivers have been cited for these violations. A little more than 7% (18,253) were cited twice for these offenses, and nearly 2% were cited three or more times. In 2021, 88% of violations issued to drivers for handheld telephone or texting violations were found guilty, indicating that the vast majority of drivers cited choose to pre-pay the fine and admit guilt.

Frequency of Distracted Driving Crashes

Distracted driving crashes occurred consistently throughout the year and every day of the week. A slight increase occurred on Fridays before decreasing on Saturdays and Sundays. From day to day, the afternoon rush hour (3 to 6:59 p.m.; 29 percent) accounted for a significant proportion of distracted crashes, including injury crashes (30 percent).

MHSO and its partners look to a wealth of different datasets beyond crash data to determine the prevalence of these behaviors as factors in motor vehicle collisions in Maryland.

Typical Profile of Distracted Driver

Around 70 percent of distracted drivers were between the ages of 21 and 64. Distracted drivers between ages 21 and 39 accounted for about 43 percent of fatalities. Slightly more fatally injured distracted drivers were male (80 percent).

Although the use of a hand-held cell phone is the only citable offense for distracted driving in Maryland, there are multiple distractions that can lead to a crash. Drivers surveyed in the RSAB 2022 Survey admitted to the following distracted behaviors:

- Talking on a cell phone using a hands-free device while driving (61%),
- Actively searching for radio programming while driving (50%),
- Actively searching for or skipping through an audio stream while driving (47%),
- Programming a mobile GPS app or another GPS/guidance system while driving (46%),
- Feeling distracted by other vehicles (42%), and
- Using a mobile app while driving (excluding GPS) (37%).

Distracted driving contributes to more than one-third of motor vehicle fatalities in Maryland. Drivers are reminded to put the phone down and only focus on driving.

Nearly three-quarters (70%) of licensed drivers used a mobile device while driving for personal reasons in the past 90 days, according to a 2022 commissioned by Selective Insurance ("Selective") and Advocates for Highway and Auto Safety ("Advocates").[1]

The online survey found that nearly one in three Americans (31%) had either been in a crash or knew someone who had been in a crash involving distracted driving with a mobile device. Americans aged 18-44 are more likely to say they or someone they know has been in a car crash involving distracted driving with a mobile device (46%) compared to Americans aged 45+ (18%).

Starting in 2023, several distracted-driving-related questions will be included in the Maryland Behavioral Risk Factor Surveillance System (BRFSS), an ongoing telephone-based chronic disease surveillance program designed to collect data on the behaviors and conditions that place Maryland adults at risk for chronic diseases, injuries, and preventable infectious diseases.

Researchers from Morgan State University developed a survey in the state of Maryland to find out who gets distracted the most and what is the most distracted driving behavior. They found that teenagers (16 to 19 years old) get distracted the most among all age groups. Teenagers engage more times in distracted driving behaviors (such as texting, using handheld cell phone, reading, or updating social media, etc.) than other age groups. The most common distracted driving behaviors among older drivers (more than 65) are talking on the phone (hands-free), using GPS and eating and drinking. Handheld cell phone can cause the most distraction. Using a handheld cell phone while driving increases the probability of near crashes by 7.6 and distraction by 13 times. Also, using voice to text while driving increases the probability of distraction by 6.49 times.

Typical Distracted Driving Crash Locations

The Baltimore and Washington metropolitan areas accounted for nearly 86 percent of crashes related to distracted driving. Prince George's County accounted for 23 percent of the state's distracted driving fatal crashes.

The above figures represent a high-level accounting of distracted driving crashes in Maryland and the high-risk geographic areas; however, MHSO works with partners from the Washington College GIS Program on more detailed and localized geospatial analysis of distracted-driving-related data. For example, Zip Code Tabulation Analysis reports were provided by the Washington College GIS Program to identify Zip Code level areas of concern for education and outreach strategies (more detailed description in Appendix D for the priority ranking).

Analysis includes location of stop zip code, home location of person stopped zip code, and zip code counts by fatal, injury, and total crashes. The analysis allows program planners to sort incidents of crashes or stops by frequency and severity per Zip Code for all jurisdictions in Maryland, and the analysis includes census data related to these areas to help identify at-risk communities. Zip Code level data supports better geographic educational outreach through MHSO's Communications Program and its Community Engagement Team. As an example, rather than target a location with a high prevalence of crashes of cell-phone-related traffic stops, MHSO analyzed the drivers' license zip code information to determine areas where offenders reside rather than where they violate traffic laws.

[1] https://saferoads.org/2022/03/30/distracted-driving-survey-poll-advocates-selective-smartphone/

Washington College provides additional geospatial analysis on a request basis and supports any High Visibility Enforcement (HVE) efforts to require location-specific details by the appropriate geographical unit (e.g., census track, census block, jurisdiction, town/municipality, road segment, etc.).

Priority Ranking

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops Location)
Distracted	Baltimore City	21215	Arlington	21224	Highlandtown	21206	Raspeburg	21225	Brooklyn
		21202	Baltimore	21223	Franklin	21224	Highlandtown	21224	Highlandtown
		21205	Baltimore	21215	Arlington	21225	Brooklyn	21206	Raspeburg
		21211	Baltimore	21217	Druid	21229	Carroll	21201	Baltimore
		21214	Baltimore	21230	Morrell Park	21215	Arlington	21212	Govans
	St. Mary's County	20653	Lexington Park	20653	Lexington Park	20659	Mechanicsville	20653	Lexington Park
		20636	Hollywood	20650	Leonardtown	20653	Lexington Park	20659	Mechanicsville
		20650	Leonardtown	20619	California	20650	Leonardtown	20619	California
				20659	Mechanicsville	20636	Hollywood	20650	Leonardtown
				20636	Hollywood	20619	California	20636	Hollywood
	Wicomico County	21804	Salisbury	21801	Salisbury	21804	Salisbury	21801	Salisbury
		21850	Pittsville	21804	Salisbury	21801	Salisbury	21804	Salisbury
		21801	Salisbury	21850	Pittsville	21826	Fruitland	21850	Pittsville
		21837	Mardela Springs	21837	Mardela Springs	21875	Delmar	21875	Delmar
		21849	Parsonsburg	21826	Fruitland	21830	Hebron	21837	Mardela Springs
	Charles County	20601	Waldorf	20601	Waldorf	20602	Waldorf	20601	Waldorf
		20646	La Plata	20646	La Plata	20601	Waldorf	20603	Waldorf
		20617	Bryantown	20603	Waldorf	20603	Waldorf	20646	La Plata
		20664	Newburg	20602	Waldorf	20646	La Plata	20602	Waldorf
		20622	Charlotte Hall	20622	Charlotte Hall	20695	White Plains	20695	White Plains
	Dorchester County	21613	Cambridge	21613	Cambridge	21613	Cambridge	21613	Cambridge
		21631	East New Market	21631	East New Market	21643	Hurlock	21869	Vienna
		21643	Hurlock	21643	Hurlock	21631	East New Market	21631	East New Market
				21869	Vienna	21659	Rhodesdale	21643	Hurlock
				21659	Rhodesdale	21677	Woolford	21659	Rhodesdale
	Montgomery County	20814	Bethesda	20852	Rockville	20874	Germantown	20852	Rockville
		20817	Bethesda	20904	Silver Spring	20906	Silver Spring	20814	Bethesda
		20842	Dickerson	20910	Silver Spring	20878	Gaithersburg	20850	Rockville
		20877	Gaithersburg	20874	Germantown	20904	Silver Spring	20878	Gaithersburg
		20878	Gaithersburg	20906	Silver Spring	20902	Silver Spring	20877	Gaithersburg
	Worcester County	21811	Berlin	21842	Ocean City	21811	Berlin	21842	Ocean City
		21842	Ocean City	21811	Berlin	21842	Ocean City	21811	Berlin
		21863	Snow Hill	21851	Pocomoke City	21851	Pocomoke City	21863	Snow Hill
		21864	Stockton	21813	Bishopville	21863	Snow Hill	21851	Pocomoke City
		21851	Pocomoke City	21863	Snow Hill	21813	Bishopville	21872	Whaleyville
	Prince George's County	20705	Beltsville	20785	Hyattsville	20774	Upper Marlboro	20707	Laurel
		20748	Temple Hills	20745	Oxon Hill	20783	Hyattsville	20740	College Park
		20735	Clinton	20774	Upper Marlboro	20706	Lanham	20770	Greenbelt
		20745	Oxon Hill	20743	Capitol Heights	20707	Laurel	20705	Beltsville
		20747	District Heights	20748	Temple Hills	20772	Upper Marlboro	20748	Temple Hills
	Baltimore County	21136	Reisterstown	21227	Halethorpe	21222	Dundalk	21208	Pikesville
		21220	Middle River	21237	Rosedale	21117	Owings Mills	21237	Rosedale
		21222	Dundalk	21228	Catonsville	21234	Parkville	21093	Lutherville Timonium
		21236	Nottingham	21234	Parkville	21228	Catonsville	21207	Gwynn Oak
		21120	Parkton	21208	Pikesville	21220	Middle River	21204	Towson

Solution

Maryland developed a campaign called Be the FOCUSED Driver that reminds motorists to put the distractions away and only focus on driving. While cell phone use is the leading cause of distracted driving, other distractions including eating, tending to children, and adjusting music also are distractions that will be addressed by the campaign. The subtheme is part of the overarching campaign Be the Driver which has an 'always-on approach' with consistent messaging in market throughout the year. The campaign materials for Be the FOCUSED Driver are distributed to Maryland's traffic safety partners across the state during the national and state HVE mobilizations.

The MHSO will continue to target distracted driving prevention through collaborative partnerships among state and local government agencies, legislative and judicial leaders, regional authorities, community organizations and non-governmental organizations. Together, these groups are collaborating through Maryland's Distracted Driving EAT with a mission to strengthen and enforce distracted driving laws, and to educate the public about the dangers of distracted driving. The Distracted Driving EAT oversees and ensures the implementation of Maryland's SHSP strategies related to distracted driving. This team will continue to address the complex issue of distracted driving through public meetings, targeted public information, education, and enforcement efforts. Refer to the PPCE plan for additional details.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Distracted Driving.

Countermeasure:	VII. Public Information and Education
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 11
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	Appendix B – Distracted Driving
Explanation:	The MHSO has coordinated multiple internal program assessments over the past three years, including those for Occupant Protection and Pedestrian/Bicyclist Safety. In those assessments, recommendations were made to continue outreach to the general public regarding traffic safety issues and this program seeks to educate the public about how dangerous driving behaviors affect first responders and their safety. In the NHTSA Uniform Guidelines, Number 11, it states that public awareness and education about the EMS system are essential to a high-quality system. Each State should implement a public information and education (PI&E) plan to address. In addition, per the NHTSA Uniform Guidelines Number 11, each State should ensure that its EMS system has essential trained persons to perform required tasks. These personnel include: first responders (e.g., police and

	fire), prehospital providers (e.g., emergency medical technicians and paramedics), communications specialists, physicians, nurses, hospital administrators, and planners. This grant would seek to increase the training level of EMS clinicians and first responders in evaluating crash scenes, including accurate identification of seat belt use, and proper data documentation.
Allocated Funding Type:	402
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(vi)

Evaluation

The MHSO evaluates traffic safety programs through output and outcome measures. Outcome measures include crash data (fatality and serious injury). Projects funded through the MHSO are required to have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, impact or output measures are reported and evaluated throughout the grant cycle.

Law enforcement, engineering, and media/communications partners are provided with additional analysis that support a targeted approach within jurisdictions over-represented in this program area. Each year, data and analyses are provided in standard and by request (ad hoc) formats that support localized targeting of traffic safety initiatives.

According to a recent Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use.

Although the use of a hand-held cell phone is the only citable offense for distracted driving in Maryland, there are multiple distractions that can lead to a crash. Drivers surveyed admitted to the following distracted behaviors: talking on a cell phone using a hands-free device while driving (61 percent), actively searching for radio programming while driving (50 percent), actively searching for or skipping through an audio stream while driving (47 percent), programming a mobile GPS app or another GPS/guidance system while driving (46 percent), feeling distracted by other vehicles (42 percent), and using a mobile app while driving (excluding GPS) (37 percent).

The results of the BRFSS survey responses will support MHSO's Distracted Driving Program to identify behaviors, attitudes, and knowledge of Maryland drivers that can used for safety program planning and evaluation. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	FFY2024-2026 Highway Safety Plan – Additional Measures (MHSO and SHSP Emphasis Areas)		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
(Appendix B)	Distracted Driving Fatalities	State	220	189	196	216	222
	Reduce distracted driving fatalities 40 percent from 208.6 (2017-2021) to 124.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	168.0	169.4	181.0	200.2	208.6
(Appendix B)	Distracted Driving Serious Injuries	State	1,584	1,599	1,501	1,212	1,394
	Reduce distracted driving serious injuries 49 percent from 1,458.0 (2017-2021) to 743.9 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	1,594.8	1,553.8	1,507.2	1,495.2	1,458.0

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
Distracted Driving Fatalities (State)	5 year	2019-2023	140.9	2017-2021 State 208.6	N
Distracted Driving Serious Injuries (State)	5 year	2019-2023	940.1	2017-2021 State 1,458.0	N

Speeding and Aggressive Driving Program

Problem Identification

Speed-involved crashes are defined as at least one driver in the crash was reported to be speeding, defined by having values of either Exceeded Speed Limit or Too Fast for Conditions in the first or second contributing circumstance fields.

Aggressive driving crashes are defined as a crash in which a driver has one of the following values in both the primary and secondary contributing circumstance fields of the Maryland crash report: failed to yield right of way; failed to obey stop sign; failed to obey traffic signal; failed to obey other traffic control; failed to keep right of center; failed to stop for school bus; exceeded speed limit; too fast for conditions; followed too closely; improper lane change; improper passing; failure to obey traffic signs, signals, or officer; disregarded other road markings; other improper action; or operated motor vehicle in erratic/reckless manner.

In 2021, the number of fatal crashes involving aggressive driving decreased by 42 percent, resulting in 28 fewer fatalities than in 2020. The significant one-year decrease in fatalities and fatal crashes occurred even though the number of aggressive driving related crashes in 2021 increased by 300, or by 10 percent. During the latest five-year period, 2017 through 2021, aggressive drivers have been involved in an average of 3,840 crashes on Maryland roads each year. For the same five-year period, aggressive driving accounted for an annual average of 4 percent of all traffic crashes, 4 percent of all injury crashes, and 8 percent of all fatal crashes in Maryland. Aggressive driving was a factor in 5 percent of injuries and 8 percent of fatalities during the five-year period, and 4 percent of injuries and 6 percent of fatalities in 2021.

The number of fatal crashes involving speed decreased by 14 percent in 2021, resulting in 14 fewer fatalities than in 2020. The significant decrease in fatalities and fatal crashes occurred even though the number of speed-related crashes in the State in 2020 increased by 5 percent, from 7,568 to 7,947. Still, between 2017 and 2021, an average of 9,059 speed-related crashes occurred on Maryland roadways each year. For the same five-year period, speeding was involved in an annual average of 8 percent of all traffic crashes, 9 percent of all injury crashes, and 17 percent of all fatal crashes in Maryland. In addition, driver speed was a factor in 9 percent of injured persons and 17 percent of fatalities for the five-year period, and 8 percent of injuries and 17 percent of fatalities in 2021.

Frequency of Aggressive Driving Crashes

Aggressive driving crashes overall were most common between the months of October and December (27 percent). Injury crashes involving aggressive driving typically increased during May through July, with another increase in October. Maryland averaged 40 fatal aggressive driving crashes per year during the latest five-year period (2017-2021), with more fatal crashes tending to occur in May, August, and September. Over one-third of fatal crashes (35 percent) occurred during weekends (Saturday and Sunday). The afternoon rush hour time (2 to 6:59 p.m.) accounted for about 40 percent of aggressive driving crashes and injury crashes, with fatal crashes increasing into the late evening hours.

Typical Profile of Aggressive Drivers

Data revealed the common profile of an aggressive Maryland driver involved in a crash as male, ages 21 to 34 (36 percent), and generally using a seat belt restraint, except in fatal crashes where the aggressive driver killed was unrestrained in 33 percent of fatal crashes. Most of these drivers were involved in crashes in Anne Arundel, Baltimore, Howard, Montgomery, and Prince George's Counties, and Baltimore City; 75 percent of all aggressive driving crashes occurred in these six jurisdictions. This high-risk driver will be a major focus of statewide education and media campaigns, as well as increased enforcement efforts.

Among the 12 individual acts that comprise aggressive driving outlined in Maryland law, enforcement officers in 2021 cited 4,012 drivers for failing to yield, 25,307 for failing to obey traffic control devices (such as stopping for red lights and stop signs), and 9,607 drivers for lane violations. By comparison, in 2020 officers wrote 3,860 citations for failing to yield, 24,380 for failing to obey traffic control devices, and 9,153 drivers for lane violations.

Ongoing Enforcement Efforts

In 2021, Maryland law enforcement officers issued 601 citations statewide for aggressive driver violations, compared to 791 in 2020 and 822 in 2019. Difficulties exist in obtaining convictions for violating the aggressive driving statute because of the requirement that officers observe three separate driving violations to issue an aggressive driving citation. This requirement almost certainly contributes to the low number of citations written each year for aggressive driving in Maryland, since law enforcement officers are typically trained to take immediate action upon seeing a violation. Waiting to observe two or more additional offenses before taking enforcement action is counter-intuitive to officers. It is suspected that many of the aggressive driving citations are directly related to police pursuits.

Among the 12 individual acts that comprise aggressive driving outlined in Maryland law, enforcement officers in 2021 cited 4,012 drivers for failing to yield, 25,307 for failing to obey traffic control devices (such as stopping for red lights and stop signs), and 9,607 drivers for lane violations. By comparison, in 2020 officers wrote 3,860 citations for failing to yield, 24,380 for failing to obey traffic control devices, and 9,153 drivers for lane violations.

The prevention of aggressive driving through enhanced awareness, education, and enforcement strategies is critical to the reduction in crash-related fatalities and injuries. As such, prevention of aggressive driving in all its forms represents an increasing focus point for traffic safety professionals since these basic ‘rules of the road’ violations tend to cut across all types of highway crashes.

Excessive Speed

The number of fatal crashes involving speed decreased by 14 percent in 2021, resulting in 14 fewer fatalities than in 2020. The significant decrease in fatalities and fatal crashes occurred even though the number of speed-related crashes in the State in 2020 increased by 5 percent, from 7,568 to 7,947. Still, between 2017 and 2021, an average of 9,059 speed-related crashes occurred on Maryland roadways each year. For the same five-year period, speeding was involved in an annual average of 8 percent of all traffic crashes, 9 percent of all injury crashes, and 17 percent of all fatal crashes in Maryland. In addition, driver speed was a factor in 9 percent of injured persons and 17 percent of fatalities for the five-year period, and 8 percent of injuries and 17 percent of fatalities in 2021.

Frequency of Speed-Involved Crashes

Speed-involved crashes were most common during the months of December and January. Increases in injury crashes tended to occur from October through January. Excessive speed caused an average of 85 fatal crashes annually from 2017 through 2021, with 55 percent occurring from May through October. Speed-involved crashes, including injury crashes, occurred most likely on Thursdays and Fridays, and fatal crashes were most common from Saturday to Monday. The afternoon rush hour period from 2 to 6:59 p.m. accounted for a large

proportion (33 percent) of speed-involved crashes than any other part of the day. Fatal crashes were more likely to occur during the late-night hours of 9 p.m. to 3 a.m. (37 percent) than during any other 6-hour period of the day.

Typical Profile of Speeding Driver

Crash data showed the profile of the typical speeding Maryland driver involved in a crash as male, ages 21 to 34 (42 percent), and using a seat belt restraint, except in fatal crashes where 39 percent of speeding drivers killed were not restrained. Most of these drivers were involved in crashes in Baltimore, Prince George's, Montgomery, and Anne Arundel Counties, mainly urban areas. This high-risk driver, like all aggressive drivers, should be a major focus of statewide education and media campaigns, as well as increased enforcement efforts.

In 2021, Maryland law enforcement officers issued 139,797 citations to drivers for speeding violations, compared to 151,093 in 2020 and 182,169 in 2019. The number of speed-related citations issued in 2021 represent an 8 percent decrease from the previous year and a 23 percent decrease since 2019. (These figures do not include automated enforcement issuances.)

Speeding is a significant aggressive driving behavior and is estimated to be a contributing factor in more than one-third of all fatal crashes nationwide. Yet in the RSAB 2022 Survey:

- About 41% of drivers surveyed admitted to frequently or sometimes driving 15 MPH or more over the speed limit on a highway (55 MPH); and
- Another 37% of drivers admitted to driving 10 MPH or more over the speed limit on a residential street (30 MPH) in the past 30 days.

The probability of death or serious injury grows with impacts at higher speeds, doubling for every 10 MPH over 50 MPH that a vehicle travels. A pedestrian or bicyclist struck by a motorist driving 40 MPH is eight times more likely to die than a pedestrian or bicyclist struck at 20 MPH.

Priority Ranking

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Speed	St. Mary's County	20650	Leonardtown	20650	Leonardtown	20659	Mechanicsville	20659	Mechanicsville
		20659	Mechanicsville	20659	Mechanicsville	20653	Lexington Park	20653	Lexington Park
		20636	Hollywood	20619	California	20650	Leonardtown	20636	Hollywood
				20653	Lexington Park	20636	Hollywood	20650	Leonardtown
				20636	Hollywood	20619	California	20619	California
	Charles County	20601	Waldorf	20601	Waldorf	20602	Waldorf	20601	Waldorf
		20646	La Plata	20646	La Plata	20603	Waldorf	20603	Waldorf
		20602	Waldorf	20603	Waldorf	20601	Waldorf	20646	La Plata
		20603	Waldorf	20695	White Plains	20646	La Plata	20602	Waldorf
		20622	Charlotte Hall	20602	Waldorf	20640	Indian Head	20637	Hughesville
	Garrett County	21531	Friendsville	21550	Oakland	21550	Oakland	21536	Grantsville
		21536	Grantsville	21531	Friendsville	21536	Grantsville	21520	Accident
		21550	Oakland	21536	Grantsville	21531	Friendsville	21531	Friendsville
		21520	Accident	21561	Swanton	21561	Swanton	21561	Swanton
		21561	Swanton	21520	Accident	21520	Accident	21550	Oakland
	Baltimore County	21208	Pikesville	21237	Rosedale	21117	Owings Mills	21208	Pikesville
		21220	Middle River	21208	Pikesville	21234	Parkville	21093	Lutherville Timonium
		21207	Gwynn Oak	21234	Parkville	21207	Gwynn Oak	21237	Rosedale
		21222	Dundalk	21228	Catonsville	21220	Middle River	21207	Gwynn Oak
		21286	Towson	21227	Halethorpe	21221	Essex	21227	Halethorpe
	Montgomery County	20841	Boyds	20878	Gaithersburg	20874	Germantown	20878	Gaithersburg
		20842	Dickerson	20877	Gaithersburg	20906	Silver Spring	20850	Rockville
		20852	Rockville	20901	Silver Spring	20878	Gaithersburg	20874	Germantown
		20854	Potomac	20910	Silver Spring	20877	Gaithersburg	20877	Gaithersburg
		20855	Derwood	20814	Bethesda	20904	Silver Spring	20852	Rockville
	Wicomico County	21801	Salisbury	21801	Salisbury	21804	Salisbury	21830	Hebron
		21804	Salisbury	21804	Salisbury	21801	Salisbury	21850	Pittsville
		21830	Hebron	21875	Delmar	21826	Fruitland	21801	Salisbury
		21837	Mardela Springs	21830	Hebron	21875	Delmar	21837	Mardela Springs
		21849	Parsonsburg	21826	Fruitland	21830	Hebron	21804	Salisbury
	Washington County	21740	Hagerstown	21740	Hagerstown	21740	Hagerstown	21740	Hagerstown
		21713	Boonsboro	21713	Boonsboro	21742	Hagerstown	21742	Hagerstown
		21783	Smithsburg	21795	Williamsport	21713	Boonsboro	21783	Smithsburg
		21711	Big Pool	21742	Hagerstown	21783	Smithsburg	21795	Williamsport
		21750	Hancock	21722	Clear Spring	21795	Williamsport	21750	Hancock
	Anne Arundel County	21061	Glen Burnie	21061	Glen Burnie	21122	Pasadena	21401	Annapolis
		21076	Hanover	21401	Annapolis	21061	Glen Burnie	21061	Glen Burnie
		21108	Millersville	21090	Linthicum Heights	21401	Annapolis	21035	Davidsonville
		21122	Pasadena	21076	Hanover	21060	Glen Burnie	21076	Hanover
		21409	Annapolis	21122	Pasadena	21144	Severn	21144	Severn
	Prince George's County	20774	Upper Marlboro	20785	Hyattsville	20772	Upper Marlboro	20707	Laurel
		20743	Capitol Heights	20613	Brandywine	20774	Upper Marlboro	20785	Hyattsville
		20746	Suitland	20740	College Park	20707	Laurel	20740	College Park
		20772	Upper Marlboro	20772	Upper Marlboro	20783	Hyattsville	20770	Greenbelt
		20613	Brandywine	20774	Upper Marlboro	20706	Lanham	20772	Upper Marlboro

Solution

As an emphasis area of Maryland's SHSP, the MHSO's Speeding and Aggressive Driving Prevention Program continues to utilize data-driven education and enforcement strategies as primary methods for addressing speeding and aggressive motorists.

The largest component of the Speeding and Aggressive Driving Prevention Program is the Be the SLOW DOWN Driver subtheme of the MHSO's Be the Driver campaign, which is a combination of enforcement and education, during concentrated mobilizations, that seeks to eliminate the dangers posed by speeding and aggressive drivers.

Grant support for overtime enforcement is provided for multiple speeding and aggressive driving enforcement waves, as well as year-round HVE for select agencies. The target violators are speeding and aggressive drivers, and crash data related to speeding and aggressive driving related crashes determine locations for enforcement activities. Training and equipment purchases are provided as a component of many of these programs, along with media and education campaigns to address characteristics of speeding and aggressive driving. Refer to the PPCE plan for additional details.

Enforcement is a proven strategy that has been used to deter multiple risk behaviors including speeding. However, in recent years, speeding citations have declined significantly in Maryland with the exception of citations generated from automated speed camera enforcement. To prove the effectiveness of speed cameras, CrashCore has begun to identify the types of roadways and locations where speed cameras have the greatest impact and further examine factors that modify the effect of speed cameras. Roadway, economic and demographic factors will be considered in this study. This study began in FFY 2023 and will continue through FFY 2025. Results from this study will help provide direction for the Maryland legislature in future sessions to determine the halo effect of speed cameras.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Speeding and Aggressive Driving.

Countermeasure:	2.1 Automated Enforcement
Effectiveness:	★★★★★
Additional Supportive Research:	N/A
Cost:	$$$
Use:	Medium
Time:	Medium
Performance Target:	C-6 (Appendix B)
Explanation:	Red light camera systems are used extensively in other industrialized countries and were first employed in the United Sates in 1993 (National Campaign to Stop Red Light Running, 2002). As of September 2019 red light camera systems were being used in 341 communities in 22 States and the District of Columbia (GHSA, 2019; IIHS, 2019b). As of 2018 speed cameras were being used in approximately 137 jurisdictions in 14 States and the District of Columbia (GHSA, 2019; IIHS, 2019c). Speed cameras also are used extensively in other countries (Speed Camera Database, 2019; WHO, 2004).
Allocated Funding Type:	402
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(i)

Countermeasure:	4.1 Communications and Outreach Supporting Enforcement
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	Varies
Use:	Medium
Time:	Medium
Performance Target:	C-6 (Appendix B)
Explanation:	Most aggressive driving and speed enforcement programs have a communications and outreach component. At least half the States have a named public awareness campaign (Sprattler, 2012)
Allocated Funding Type:	402
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(i)

Countermeasure:	IV. Communication Program
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 19
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-6 (Appendix B)
Explanation:	This guideline supports the development of culturally relevant public awareness campaigns to educate drivers on the importance of obeying speed limits and the potential consequences of speeding.
Allocated Funding Type:	402
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(i)

Evaluation

The MHSO evaluates traffic safety programs through output, impact, and outcome measures. Outcome measures include crash data (fatality and serious injury). Impact measures can include driver surveys that are conducted before and after HVE campaigns to measure changes in Maryland driver behaviors, knowledge, and awareness. Projects funded through the MHSO are required to have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, impact or output measures are reported and evaluated throughout the grant cycle.

According to a recent Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use.

Speeding is a significant aggressive driving behavior and is estimated to be a contributing factor in more than one-third of all fatal crashes nationwide. Yet in the survey: About 41 percent of drivers surveyed admitted to frequently or sometimes driving 15mph or more over the speed limit on a highway (55mph); and another 37 percent of drivers admitted to driving 10mph or more over the speed limit on a residential street (30mph) in the past 30 days.

The probability of death or serious injury grows with impacts at higher speeds, doubling for every 10mph over 50mph that a vehicle travels. A pedestrian or bicyclist struck by a motorist driving 40mph is eight times more likely to die than a pedestrian or bicyclist struck at 20mph.

A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	FFY2024-2026 Highway Safety Plan – Additional Measures (MHSO and SHSP Emphasis Areas)		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-6	Speeding-Related Fatalities	State	107	76	76	110	96
	Reduce speeding-related fatalities 47 percent from 93.0 (2017-2021) to 48.9 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	91.2	84.4	81.4	89.2	93.0
(Appendix B)	Speeding-Related Serious Injuries	State	370	363	314	299	350
	Reduce speeding-related serious injuries 63 percent from 339.2 (2017-2021) to 125.1 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	409.2	373.4	346.8	348.2	339.2
(Appendix B)	Aggressive Driving Fatalities	State	55	32	39	61	33
	Reduce aggressive driving fatalities 39 percent from 44.0 (2017-2021) to 27.0 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	40.6	36.4	39.0	45.2	44.0
(Appendix B)	Aggressive Driving Serious Injuries	State	172	174	178	173	170
	Reduce aggressive driving serious injuries 57 percent from 173.4 (2017-2021) to 74.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	211.8	186.8	182.6	179.2	173.4

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**

C-6) Speeding-Related Fatalities (State)	5 year	2019-2023	59.3	2016-2021 State 93.0	N
Speed-Related Serious Injuries (State)	5 year	2019-2023	177.7	2017-2021 State 339.2	N
Aggressive Driving Fatalities (State)	5 year	2019-2023	30.7	2017-2021 State 44.0	N
Aggressive Driving Serious Injuries (State)	5 year	2019-2023	100.7	2017-2021 State 173.4	N

Motorcycle Safety Program

Problem Identification

Compared to the previous year, motorcycle-involved crashes in 2021 increased by 4 percent, though there were four fewer fatal crashes and three fewer fatalities during the same period. Between 2017 and 2021, an average of 1,322 motorcycle-involved crashes occurred on Maryland roads each year.

From 2017 through 2021 in Maryland, motorcycle-involved crashes accounted for 2 percent of injuries and 14 percent of fatalities. Thus, motorcycles are significantly over-represented in fatal crashes.

While a relatively low 6 percent of motorcycle crashes result in a fatality, the fact that 14 percent of all statewide fatalities involve a motorcycle is cause for concern among traffic safety experts. This significant involvement of motorcycles in fatal crashes and their effects on overall traffic fatalities in Maryland indicate the need for greater motorcycle safety efforts such as awareness, education, training, and enforcement.

Frequency of Motorcycle Crashes

Warmer weather is conducive to motorcycle riding, so it is not surprising that higher proportions of motorcycle-involved crashes occurred during the warm-weather months of May through September. Crashes were significantly more common during the weekend days, with more than half (55 percent) occurring Friday through Sunday. Motorcycle-involved crashes were most common between 2 and 8: 59 p.m. (55 percent).

Crash data in recent years have shown that more than 1 in 3 of fatal motorcycle crashes involved only the motorcycle. Inattention and speed are frequent causal factors in motorcycle crashes, with alcohol impairment a higher occurrence in fatal motorcycle crashes.

To identify high-risk jurisdictions for motorcycle-involved crashes, an analysis of crash rates per licensed motorcyclist (endorsement) was assessed.

2019-2021 Maryland Crash Rates

Jurisdiction	Motorcycle Total Crashes	Licensed Motorcyclists	Rate
Allegany	17	5,389	30.9
Anne Arundel	134	32,264	41.4
Baltimore	184	34,102	54.0
Calvert	21	7,716	27.2
Caroline	5	3,049	17.5
Carroll	36	15,097	23.8
Cecil	41	8,074	51.2
Charles	51	10,815	47.2
Dorchester	9	2,094	44.6
Frederick	73	18,795	39.0
Garrett	10	2,883	33.5
Harford	59	17,720	33.3
Howard	43	12,567	34.2
Kent	3	1,323	20.2
Montgomery	114	27,693	41.3
Prince George's	191	25,481	75.0
Queen Anne's	12	4,142	29.8
St. Mary's	35	1,276	276.9
Somerset	4	8,497	4.3
Talbot	5	2,329	21.5
Washington	53	11,243	47.1
Wicomico	38	5,285	72.5
Worcester	34	4,226	79.7
Baltimore City	122	9,726	125.8
Statewide	**1,295**	**271,786**	**47.65**

Typical Profile of Motorcycle Operator in Crashes

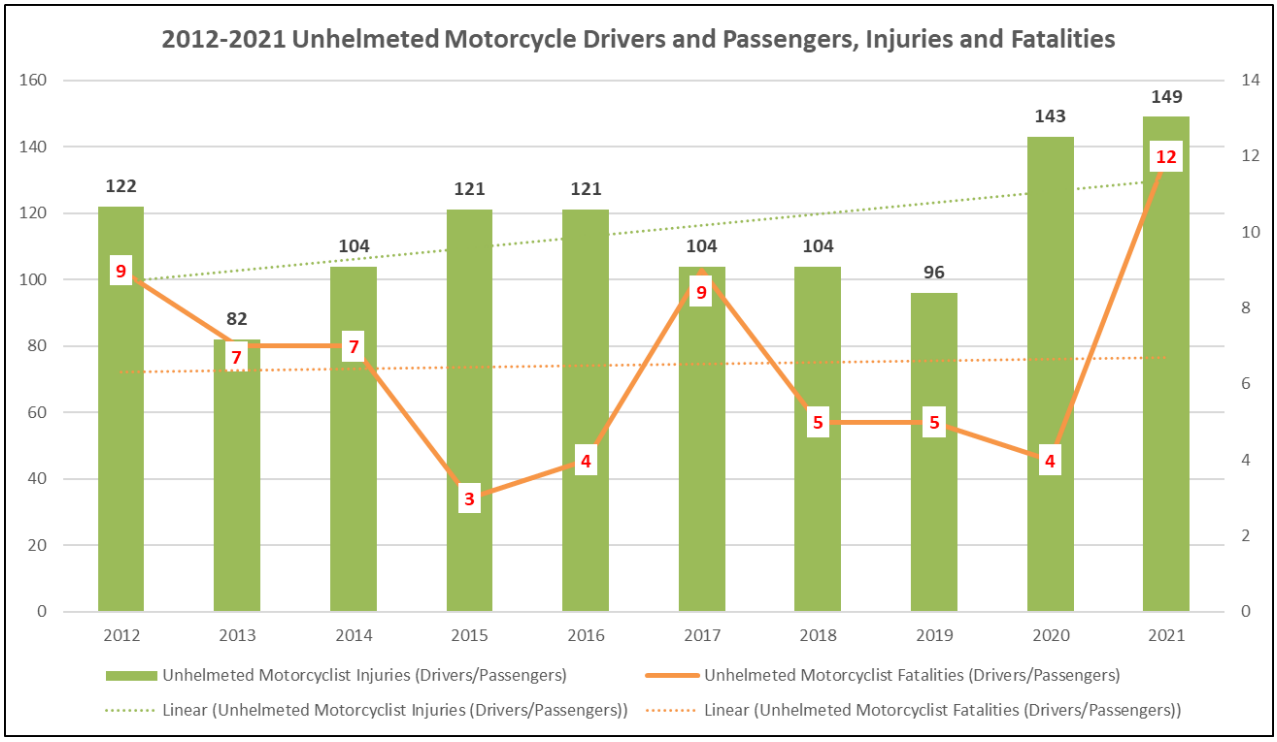
Crash data suggested the typical profile of Maryland motorcycle operators involved in a crash as male, ages 21 to 39 (44 percent), with more than two in every three wearing a safety helmet (71 percent). Most motorcycle crashes occurred in Baltimore and Prince George's Counties, mainly urban areas.

Helmet Law Violations in Maryland

Maryland has had a comprehensive mandatory helmet law for decades, but the accurate capturing of helmet use on the crash report may present some data challenges, particularly if the helmet was DOT-compliant.

Crash data for 2021 indicated that 15 percent of injured motorcycle operators in a crash were known to not be wearing a helmet and 15 percent of operator fatalities were unhelmeted, illustrating a concerning trend in recent years for unhelmeted motorcyclists in Maryland (and shown in the chart below).

In any crash involving a motorcycle, the motorcycle rider is at most risk for injury or death. For example, in 2017-2021, there was an average of 1,322 motorcycle-involved crashes each year in Maryland. With 2,224 total drivers involved (motorcyclists and other drivers), with 1,365 motorcycle drivers (61%). Of the 1,001 injured total drivers, 941 (94%) were the motorcycle driver.



Priority Ranking

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Motorcycle	Worcester County	21842	Ocean City	21842	Ocean City	21811	Berlin	21842	Ocean City
		21863	Snow Hill	21811	Berlin	21842	Ocean City	21811	Berlin
				21851	Pocomoke City	21863	Snow Hill	21872	Whaleyville
				21863	Snow Hill	21841	Newark	21863	Snow Hill
				21813	Bishopville	21851	Pocomoke City	21813	Bishopville
	Wicomico County	21804	Salisbury	21801	Salisbury	21804	Salisbury	21801	Salisbury
		21849	Parsonsburg	21804	Salisbury	21801	Salisbury	21804	Salisbury
		21801	Salisbury	21830	Hebron	21850	Pittsville	21830	Hebron
		21830	Hebron	21875	Delmar	21849	Parsonsburg	21850	Pittsville
		21874	Willards	21849	Parsonsburg	21826	Fruitland	21826	Fruitland
	St. Mary's County	20653	Lexington Park	20659	Mechanicsville	20659	Mechanicsville	20659	Mechanicsville
		20650	Leonardtown	20653	Lexington Park	20653	Lexington Park	20636	Hollywood
		20659	Mechanicsville	20619	California	20619	California	20653	Lexington Park
				20650	Leonardtown	20636	Hollywood	20619	California
				20636	Hollywood	20650	Leonardtown	20650	Leonardtown
	Charles County	20601	Waldorf	20603	Waldorf	20602	Waldorf	20601	Waldorf
		20646	La Plata	20646	La Plata	20603	Waldorf	20646	La Plata
		20603	Waldorf	20601	Waldorf	20601	Waldorf	20602	Waldorf
		20602	Waldorf	20602	Waldorf	20646	La Plata	20603	Waldorf
		20612	Benedict	20695	White Plains	20640	Indian Head	20695	White Plains
	Baltimore City	21202	Baltimore	21224	Highlandtown	21225	Brooklyn	21201	Baltimore
		21213	Clifton	21225	Brooklyn	21206	Raspeburg	21225	Brooklyn
		21215	Arlington	21215	Arlington	21224	Highlandtown	21224	Highlandtown
		21230	Morrell Park	21201	Baltimore	21229	Carroll	21230	Morrell Park
		21217	Druid	21230	Morrell Park	21216	Baltimore	21215	Arlington
	Cecil County	21921	Elkton	21921	Elkton	21921	Elkton	21901	North East
		21904	Port Deposit	21901	North East	21901	North East	21921	Elkton
		21901	North East	21911	Rising Sun	21911	Rising Sun	21904	Port Deposit
		21911	Rising Sun	21918	Conowingo	21903	Perryville	21903	Perryville
		21918	Conowingo	21904	Port Deposit	21918	Conowingo	21911	Rising Sun
	Calvert County	20657	Lusby	20678	Prince Frederick	20657	Lusby	20657	Lusby
		20676	Port Republic	20657	Lusby	20678	Prince Frederick	20736	Owings
		20685	Saint Leonard	20639	Huntingtown	20639	Huntingtown	20685	Saint Leonard
		20732	Chesapeake Beach	20736	Owings	20685	Saint Leonard	20678	Prince Frederick
		20736	Owings	20732	Chesapeake Beach	20736	Owings	20639	Huntingtown
	Carroll County	21158	Westminster	21157	Westminster	21157	Westminster	21157	Westminster
		21074	Hampstead	21158	Westminster	21784	Sykesville	21784	Sykesville
		21102	Manchester	21784	Sykesville	21158	Westminster	21048	Finksburg
		21157	Westminster	21074	Hampstead	21074	Hampstead	21158	Westminster
		21787	Taneytown	21102	Manchester	21048	Finksburg	21074	Hampstead
	Dorchester County	21869	Vienna	21613	Cambridge	21613	Cambridge	21613	Cambridge
		21622	Church Creek	21869	Vienna	21643	Hurlock	21643	Hurlock
		21643	Hurlock	21643	Hurlock	21631	East New Market	21631	East New Market
				21835	Linkwood	21869	Vienna	21869	Vienna
				21622	Church Creek	21648	Madison	21835	Linkwood
	Washington County	21740	Hagerstown	21742	Hagerstown	21740	Hagerstown	21740	Hagerstown
		21713	Boonsboro	21713	Boonsboro	21742	Hagerstown	21742	Hagerstown
		21750	Hancock	21783	Smithsburg	21795	Williamsport	21713	Boonsboro
		21742	Hagerstown	21750	Hancock	21713	Boonsboro	21783	Smithsburg
		21756	Keedysville	21782	Sharpsburg	21722	Clear Spring	21795	Williamsport
	Frederick County	21702	Frederick	21771	Mount Airy	21701	Frederick	21701	Frederick
		21771	Mount Airy	21702	Frederick	21702	Frederick	21702	Frederick
		21701	Frederick	21703	Frederick	21703	Frederick	21704	Frederick
		21703	Frederick	21704	Frederick	21771	Mount Airy	21703	Frederick
		21704	Frederick	21788	Thurmont	21769	Middletown	21771	Mount Airy
	Allegany County	21502	Cumberland	21502	Cumberland	21502	Cumberland	21502	Cumberland
		21521	Barton	21532	Frostburg	21532	Frostburg	21532	Frostburg
		21530	Flintstone	21521	Barton	21557	Rawlings	21557	Rawlings
				21539	Lonaconing	21530	Flintstone	21530	Flintstone
				21766	Little Orleans	21521	Barton	21562	Westernport
	Harford County	21009	Abingdon	21001	Aberdeen	21040	Edgewood	21014	Bel Air
		21014	Bel Air	21085	Joppa	21001	Aberdeen	21085	Joppa
		21017	Belcamp	21014	Bel Air	21009	Abingdon	21001	Aberdeen
		21001	Aberdeen	21047	Fallston	21085	Joppa	21015	Bel Air
		21015	Bel Air	21009	Abingdon	21014	Bel Air	21040	Edgewood
	Anne Arundel County	21061	Glen Burnie	21060	Glen Burnie	21122	Pasadena	21122	Pasadena
		21054	Gambrills	20711	Lothian	21061	Glen Burnie	21061	Glen Burnie
		21122	Pasadena	21054	Gambrills	21144	Severn	21401	Annapolis
		21401	Annapolis	21090	Linthicum Heights	21060	Glen Burnie	21037	Edgewater
		21076	Hanover	21076	Hanover	21401	Annapolis	21108	Millersville

Solution

Funded projects will help address motorcycle safety issues through partnerships among government agencies and stakeholder groups such as motorcycle dealers and motorcycle clubs. These partnerships involve scheduled outreach activities geared toward reducing motorcycle-involved crashes in areas where crash rates are highest.

A component of the Motorcycle Safety emphasis area is the Be the LOOK TWICE Driver subtheme of the MHSO's Be the Driver campaign. Media campaigns will be coordinated to increase awareness of motorcycle safety issues and will use a variety of communications techniques to reach targeted audiences. In addition to public information and education, adequate rider training and licensure are major components of Maryland's efforts to decrease motorcycle-involved crashes, in addition to improved enforcement of the state's traffic safety laws.

Numerous rider courses are offered through the Maryland Motorcycle Safety Program. The state's goals are to improve rider skill and to increase awareness levels and "share the road" among motorcyclists and other vehicle drivers. In FFY 2022, the MHSO assumed majority of the motorcycle rider outreach formerly conducted by the MDOT MVA, including other items that are used for training and outreach activities throughout the year. In addition, MD MOTORS (Motor Officers Training Other Riders Safety), a new motorcycle course developed by the Maryland State Police Motor Unit, in conjunction with motorcyclist input, launched in FFY 2022 with 11 initial classes and will be continued in the upcoming FFYs. The program continues to evolve and address additional request from the motorcyclist community, including new locations and accommodations for those with disabilities.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Motorcycle Safety.

Countermeasure:	IV. Motorcycle Rider Education and Training
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 3
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-7; C-8 (Appendix B)
Explanation:	Each comprehensive State motorcycle safety program should address the use of helmets (meeting Federal Motor Vehicle Safety Standard 218) and other protective gear, proper licensing, impaired riding, rider training, conspicuity, and motorist awareness. MD MOTORS focuses on a variety of rider training aspects, including proper riding techniques, communication, proper riding gear, and the use of helmets.

	Per Item IV under NHTSA's Uniform Guidelines for Motorcyclist Safety, a rider training program should encompass the following: 1)A source of program funding; 2) A State organization to administer the program; 3) A mandate to use the State-approved curriculum; 40 Reasonable availability of rider education courses for all interested residents of legal riding age and varying levels of riding experience; 5) A documented policy for instructor training and certification; 6) Incentives for successful course completion such as licensing test exemption; 7) A plan to address the backlog of training, if applicable; 8) State guidelines for conduct and quality control of the program; and 9) A program evaluation plan. MD MOTORS is a vital part of the MHSO's activities to provide active and effective rider training, communicating about safe riding, and education on proper riding gear. In addition, the program includes an evaluation component regarding program effectiveness and the knowledge gained by participants.
Allocated Funding Type:	402; 405b
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(A)(iv)

Evaluation

The MHSO evaluates traffic safety programs through output and outcome measures. Outcome measures include crash data (fatality and serious injury). Projects funded through the MHSO are required to have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, impact or output measures are reported and evaluated throughout the grant cycle. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**

C-7	Motorcyclist Fatalities	State	82	57	75	78	76
	Reduce motorcyclist fatalities 11 percent from 73.6 (2017-2021) to 65.3 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	70.2	69.4	71.2	72.8	73.6
C-8	Unhelmeted Motorcyclist Fatalities	State	17	9	7	6	15
	Reduce unhelmeted motorcyclist fatalities 13 percent from 10.8 (2017-2021) to 9.4 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	11.0	11.9	10.0	9.4	10.8
(Appendix B)	Motorcyclist Serious Injuries	State	320	398	277	314	329
	Reduce motorcyclist serious injuries 22 percent from 307.6 (2017-2021) to 238.8 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	275.0	285.0	286.6	301.4	307.6

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
C-7) Motorcyclist Fatalities (State)	5 year	2019-2023	66.9	2017-2021 State 73.6	N
C-8) Unhelmeted Motorcyclist Fatalities (State)	5 year	2019-2023	10.0	2017-2021 State 10.8	Y
Motorcyclist Serious Injuries (State)	5 year	2019-2023	252.1	2017-2021 State 307.6	N

Non-motorist (Pedestrian/Bicyclist) Safety Programs

Pedestrian-Involved Crashes

The incidence of pedestrian on foot-involved[1] crashes in Maryland in 2021 increased by 9 percent since 2020, but fatalities decreased by 3 percent (from 131 to 127 deaths) over the same period. Approximately 2,548 pedestrian-involved crashes occurred on Maryland roads in 2021, and an average of 2,962 such crashes occurred per year between 2017 and 2021.

For the same five-year period, pedestrians were involved in an annual average of 3 percent of all traffic crashes, 8 percent of injury crashes, and almost one-quarter (24 percent) of fatal crashes. Pedestrians involved in crashes accounted for 7 percent of injuries and 23 percent of all fatalities, although only 4 percent of pedestrian-involved crashes resulted in a fatality. These facts alone show cause for concern among safety professionals, as pedestrians are significantly over-represented in fatal crashes. The apparent risk to pedestrians involved in Maryland crashes calls for improved pedestrian safety as a major focus for traffic safety professionals across the State.

[1] ACRS Non-Motorist Type: Pedestrian (01)

Frequency of Pedestrian-Involved Crashes

Pedestrian-involved crashes tended to occur consistently through the first eight months of the year, but more than one-third of pedestrian-involved crashes (38 percent) occurred in the fall and early winter months, September through December, corresponding to the time of year when 41 percent of fatal pedestrian crashes occurred. October and November accounted for 20 percent of total pedestrian crashes, including 22 percent of fatal crashes.

Three in every four pedestrian-involved crashes (76 percent) occurred on a weekday, Monday through Friday. Forty-one percent of all pedestrian-involved crashes occurred Friday through Sunday, and nearly half of all fatal crashes (45 percent) took place from Friday through Sunday.

Over half (54 percent) of pedestrian-involved crashes occurred between the hours of 2 and 9:59 p.m. Over half of all fatal crashes involving pedestrians took place later in the evening, from 5 p.m. to 12:59 a.m. (60 percent).

Without a statewide, consistent metric for exposure for pedestrians equivalent to VMT, program planners are at a disadvantage in identifying high risk areas. In addition to crash rates, MHSO assessed the rates of pedestrian crashes per the next best proxy for exposure: population.

2019-2021 Maryland Crash Rates			
Jurisdiction	**Pedestrians (No Bikes) Involved**	**Population**	**Rate**
Allegany	18	69,347	2.60
Anne Arundel	259	584,341	4.43
Baltimore	577	834,713	6.91
Calvert	20	93,125	2.15

Caroline	9	33,432	2.69
Carroll	54	170,370	3.17
Cecil	34	103,336	3.29
Charles	48	165,673	2.90
Dorchester	15	32,118	4.67
Frederick	55	268,079	2.05
Garrett	4	28,880	1.39
Harford	74	258,497	2.86
Howard	82	329,851	2.49
Kent	3	19,350	1.55
Montgomery	431	1,054,168	4.09
Prince George's	500	924,283	5.41
Queen Anne's	17	50,437	3.37
St. Mary's	30	111,570	2.69
Somerset	5	25,298	1.98
Talbot	11	37,601	2.93
Washington	73	152,566	4.78
Wicomico	41	103,971	3.94
Worcester	46	52,621	8.74
Baltimore City	955	584,859	16.33
Statewide	**3,361**	**6,088,488**	**5.52**

Typical Profile of Pedestrians Involved in Crashes

The profile of Maryland pedestrians involved in overall crashes included ages 20–39, male, and being struck on the road but not in a crosswalk (30 percent), compared to fatal crashes where 54 percent of pedestrians were on the road and not in a crosswalk. Traditional school aged children (ages 5-19) were involved in 18 percent of pedestrian crashes and 6 percent of fatal crashes. By contrast, older age groups tended to be involved in more serious pedestrian crashes, often later at night. The age range of 40 to 59-year-olds accounted for over one in four (27 percent) of all pedestrians involved in crashes, but more than one in three (36 percent) of all pedestrian fatalities. Pedestrians of age 60 or older accounted for 17 percent of all pedestrians involved in crashes, but 25 percent of all pedestrian fatalities.

Twenty-seven percent of pedestrian crashes occurred on state-maintained roads, compared to 34 percent on county roads, and 14 percent in parking lots. In contrast, 73 percent of fatal crashes occurred on state-maintained roads (higher speeds), whereas 19 percent of pedestrian fatal crashes occurred on county roads (and less than 1 percent in parking lots).

Typical Locations of Pedestrian-Involved

Almost one-third of pedestrian crashes (31 percent) took place in Baltimore City, but these crashes accounted for only 14 percent of fatal crashes.

Fifty-six percent of all pedestrian-involved crashes occurred in six Maryland counties: Anne Arundel, Baltimore, Harford, Howard, Montgomery, and Prince George's. These same six counties accounted for two in every three fatal crashes involving pedestrians (66 percent). Four other counties exhibited disproportionate results in comparing total crashes with fatal crashes. The counties of Cecil, Charles, St. Mary's, and Worcester together accounted for nearly 5 percent of all pedestrian-involved crashes, but 8 percent of all fatal crashes involving pedestrians, an indicator of more serious crash situations occurring in these jurisdictions.

In 2021, 182 pedestrians were cited in Maryland for violating traffic laws, in comparison to 235 pedestrians cited in 2020, and 359 cited in 2019. Also, in 2021, 648 drivers were cited for violating pedestrian traffic laws, compared with 927 drivers cited in 2020, and 993 cited in 2019.

Pedalcyclist-Involved Crashes

The 2021 incidence of bicycle-involved (also referred to as pedalcyclist-involved, as the statistics described here are derived from the ACRS report non-motorist selections for 'bicyclist' and 'other pedalcyclist.' 'Other pedalcyclist may include variations of a self-propelled vehicle, such as a unicycle or recombinant bike.) crashes in Maryland increased by 2 percent when compared to 2020. However, bicycle-involved fatalities decreased from 16 in 2020 to 6 in 2021. From 2017-2021, an average of approximately 782 bicycle-involved crashes occurred on Maryland roadways each year. During the same period, bicycles were involved in an annual average of fewer than one in 100 (0.7 percent) of all statewide traffic crashes, 2 percent of statewide injury crashes, and 1.9 percent of statewide fatal crashes. Bicycle-involved crashes accounted for 1.5 percent of statewide injuries and 1.8 percent of statewide fatalities during the same period.

Bicycle crashes are more likely to involve younger than older riders. Approximately one-quarter (27 percent) of crashes in 2021 involved children of age 17 or under. By contrast, bicycle riders aged 20 to 29 accounted for 20 percent of all crashes and riders aged 50 to 64 accounted for 18 percent of all crashes.

Bicycle riders, like pedestrians, do not have the structural protection afforded by vehicles, are not as visible as other vehicles, and are not motorized (generally, though there are more electric bicycles on the road now, but they are still as vulnerable). These factors together put bicycles at a great disadvantage on roadways, especially where motorized vehicles are traveling at much higher rates of speed. From 2017-2021, more than half of all bicycle-involved crashes (58 percent) occurred on state, county, and federal roadways, but 86 percent of all fatal crashes involving bicycles occurred on the same roadways.

Frequency of Pedalcyclist-Involved Crashes

Bicycle crashes were more common from May through October, when 70 percent of all such crashes occurred, most likely due to warmer/drier weather encouraging greater use of bicycles for travel or commuting, as well as increased recreational riding.

Most fatal bicycle crashes (78 percent) occurred from May through November. Close to half (45 percent) of fatal bicycle-involved crashes occurred Friday through Sunday, although those same three days accounted for 40 percent of total crashes.

Approximately three in four bicycle-involved crashes (71 percent) and nearly half of fatal crashes (49 percent) occurred between noon and 9:59 p.m.

Typical Profile of Crash-Involved Pedalcyclist

Maryland crash data indicated a typical profile for a bicyclist involved in a crash as male between ages 10 and 29, with 42 percent of all bicyclists struck while riding in the roadway (25 percent with traffic and 9 percent against traffic). Riders of ages 10 to 29 accounted for 46 percent of all riders involved and injured in crashes and 25 percent of fatalities. Riders between ages 50 and 64 accounted for 18 percent of all riders involved in crashes and 19 percent of those who were injured, but 46 percent of bicycle fatalities.

Almost one-fourth (24 percent) of bicycle crashes occurred in Baltimore City, where 10 percent of fatal crashes occurred. Fifty-six percent of total bicycle crashes occurred in five counties: Anne Arundel, Baltimore, Montgomery, Prince George's, and Worcester Counties, and these same five counties accounted for 55 percent of fatal crashes.

Everyone is a pedestrian at some point, and it's important that everyone does their part to share the road. Pedestrians should always follow traffic rules and cross at designated pedestrian crossings wherever possible. In the RSAB 2022 Survey:

- 57% of respondents said they don't feel comfortable walking along or crossing roadways.
- However, 37% said they always utilize a crosswalk when available.

In 2020, 88 pedestrians were killed at locations other than crosswalks – including walking on the shoulder, in the median, or at an intersection not within the available crosswalk.

- 76% of cyclists who bike along roadways indicated in the survey that they follow the same rules of the road that they would in a car.
- 61% reported wearing bright or reflective clothing and/or outfitting their bikes with lights for riding in poor visibility situations.
- 52% of bicyclists who ride on roadways felt comfortable in a bike lane in the last 30 days.
- However, this drops to 38% when there is no bike lane available.

Priority Ranking: Pedestrian

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Pedestrian	Baltimore City	21215	Arlington	21201	Baltimore	21206	Raspeburg	21212	Govans
		21223	Franklin	21202	Baltimore	21212	Govans	21201	Baltimore
		21202	Baltimore	21215	Arlington	21214	Baltimore	21225	Brooklyn
		21217	Druid	21217	Druid	21229	Carroll	21224	Highlandtown
		21230	Morrell Park	21213	Clifton	21239	Northwood	21218	Baltimore
	Montgomery County	20902	Silver Spring	20902	Silver Spring	20906	Silver Spring	20814	Bethesda
		20850	Rockville	20910	Silver Spring	20877	Gaithersburg	20815	Chevy Chase
		20878	Gaithersburg	20906	Silver Spring	20902	Silver Spring	20906	Silver Spring
		20903	Silver Spring	20850	Rockville	20874	Germantown	20910	Silver Spring
		20906	Silver Spring	20852	Rockville	20878	Gaithersburg	20877	Gaithersburg
	Baltimore County	21222	Dundalk	21222	Dundalk	21234	Parkville	21234	Parkville
		21237	Rosedale	21221	Essex	21220	Middle River	21093	Lutherville Timonium
		21207	Gwynn Oak	21207	Gwynn Oak	21093	Lutherville Timonium	21221	Essex
		21221	Essex	21234	Parkville	21221	Essex	21133	Randallstown
		21227	Halethorpe	21244	Windsor Mill	21222	Dundalk	21030	Cockeysville
	Worcester County	21842	Ocean City	21842	Ocean City	21842	Ocean City	21842	Ocean City
		21811	Berlin	21811	Berlin	21811	Berlin	21811	Berlin
		21851	Pocomoke City	21863	Snow Hill	21851	Pocomoke City		
		21864	Stockton	21851	Pocomoke City	21863	Snow Hill		
				21864	Stockton	21813	Bishopville		
	Prince George's County	20745	Oxon Hill	20743	Capitol Heights	20740	College Park	20740	College Park
		20743	Capitol Heights	20783	Hyattsville	20770	Greenbelt	20782	Hyattsville
		20772	Upper Marlboro	20748	Temple Hills	20785	Hyattsville	20783	Hyattsville
		20740	College Park	20745	Oxon Hill	20721	Bowie	20742	College Park
		20746	Suitland	20747	District Heights	20708	Laurel	20743	Capitol Heights

Priority Ranking: Bicycle

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Bicycle	Baltimore City	21206	Raspeburg	21202	Baltimore	21215	Arlington	21201	Baltimore
		21211	Baltimore	21201	Baltimore	21225	Brooklyn	21225	Brooklyn
		21212	Govans	21224	Highlandtown	21218	Baltimore	21212	Govans
		21216	Baltimore	21215	Arlington	21239	Northwood	21217	Druid
				21218	Baltimore			21239	Northwood
	Worcester County	21811	Berlin	21842	Ocean City	21842	Ocean City	21842	Ocean City
		21842	Ocean City	21811	Berlin	21811	Berlin	21811	Berlin
		21864	Stockton	21851	Pocomoke City	21864	Stockton		
				21864	Stockton				
	Dorchester County	No fatalities.		21613	Cambridge	21613	Cambridge	21613	Cambridge
				21659	Rhodesdale	21643	Hurlock	21643	Hurlock
				21677	Woolford				
				21869	Vienna				
	Wicomico County	21801	Salisbury	21801	Salisbury	21804	Salisbury	21801	Salisbury
		21849	Parsonsburg	21804	Salisbury	21801	Salisbury	21804	Salisbury
				21826	Fruitland	21826	Fruitland	21826	Fruitland
				21837	Mardela Springs			21875	Delmar
				21830	Hebron				
	Montgomery County	20814	Bethesda	20814	Bethesda	20812	Glen Echo	20816	Bethesda
		20815	Chevy Chase	20850	Rockville	20850	Rockville	20814	Bethesda
		20877	Gaithersburg	20852	Rockville	20901	Silver Spring	20815	Chevy Chase
		20902	Silver Spring	20878	Gaithersburg	20902	Silver Spring	20871	Clarksburg
		20906	Silver Spring	20910	Silver Spring	20906	Silver Spring		
	Anne Arundel County	21113	Odenton	21061	Glen Burnie	21401	Annapolis	21113	Odenton
		21144	Severn	21401	Annapolis	20724	Laurel	21122	Pasadena
		21146	Severna Park	21122	Pasadena	21035	Davidsonville	21401	Annapolis
				21146	Severna Park	21060	Glen Burnie	21035	Davidsonville
				21403	Eastport	21113	Odenton	21060	Glen Burnie

Solution

Maryland has three principal campaigns for pedestrian and pedalcyclist safety in the Washington, D.C. and Baltimore metropolitan areas. The first one is the Be the Driver subtheme, Be the SHARE THE ROAD Driver. The campaign reminds all road users that no matter how you travel to your destination, we should work together to get there safely. This includes stopping for pedestrians, giving pedalcyclists at least three feet of space when passing and using crosswalks or intersections, and shows pedalcyclists (including a character riding an electric scooter) wearing helmets. The second campaign is known as Street Smart and has been historically focused on the metropolitan Washington, D.C. region, including Montgomery and Prince George's counties. The Street Smart campaign features a Testimonial Wall that travels around the region focusing on communities where pedestrian crashes are prevalent. The third effort, known as Look Alive has been adopted in the Baltimore metropolitan area. Again, focusing on communities where pedestrian crashes are prevalent. Pedestrian safety funds will be coordinated with all campaigns to coincide with media-centered awareness, education, and enforcement efforts. Utilizing pre- and post-campaign survey results, Look Alive continues to adapt to ensure the message is reaching the most vulnerable road users in the region. Local safety partners

and others distribute educational material throughout the year. The MHSO also supports National Walk to School Day events, designed to improve education and awareness for children and parents.

Maryland has an avid bicycling population and incorporates special planning into traffic safety activities to meet the needs of these road users. With infrastructure improvements as a key element of the SHSP, Maryland traffic safety officials seek to make the bicycling environment as safe as possible through infrastructure improvements, social media information, and the integration of bicycle safety messaging within statewide pedestrian safety campaigns and motorist safety materials.

The MHSO works closely with the State Highway Administration to improve messaging, education, and enforcement when pedestrian and bicyclist safety infrastructure changes are made in the community. These changes include the building of bike lanes, cross walks, sidewalks, and new Pedestrian Hybrid Beacon Signals.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Pedestrian and Bicyclist Safety.

Countermeasure:	3.1 Active Lighting and Rider Conspicuity
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$
Use:	High
Time:	Varies
Performance Target:	C-11 (Appendix B)
Explanation:	Most States have laws requiring use of active lights and reflectors on bikes ridden at night. There are no data on how frequently active lighting is used among those who bicycle after dark, but bicyclists involved in collisions at night appear to use lights infrequently. Use of bicycle reflectors is thought to be higher since they come pre-attached to bicycles at purchase, but these may be removed, or broken, after purchase, so use is not guaranteed. Nearly three-fourths of U.S. survey respondents who reported having ridden in the dark reported they took some measures, either using a bike headlight or reflective/fluorescent gear or clothing, to make themselves more visible (Schroeder & Wilbur, 2013). Most, if not all, athletic shoes contain some retroreflective material. Some athletic clothing also has retroreflective material. Bicycle helmets may have retroreflective elements. Some bicyclists may be seen wearing additional retroreflective materials, such as vests, jackets, arm bands, or rear-mounted reflective triangles located under their bicycle seats.
Allocated Funding Type:	402; 405h; SMDF; Bikeways

Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Countermeasure:	4.4 Enforcement Strategies
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$$
Use:	Low
Time:	Short
Performance Target:	C-10; C-11 (Appendix B)
Explanation:	Enforcement is largely a local option, and often is integrated into other police duties, so special enforcement efforts are difficult to isolate and track. However, the use of targeted pedestrian safety enforcement is on the rise. Several localities (including Chicago, Detroit, Miami, Pinellas County, Florida and Raleigh/Durham, North Carolina) and States such as New Jersey and New Mexico have, in the past few years, implemented training for LEOs and conducted targeted enforcement efforts for pedestrian safety. The Watch for Me NC campaign and another Florida enforcement program in Gainesville have been evaluated and are described below.
Allocated Funding Type:	402; 405h; SMDF; Bikeways
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Countermeasure:	4.1 Pedestrian Safety Zones
Effectiveness:	★★★★
Additional Supportive Research:	N/A
Cost:	$$$
Use:	Low
Time:	Medium
Performance Target:	C-10 (Appendix B)
Explanation:	Pedestrian zone programs are known to have been implemented in only a handful of cities. Properly designed and implemented pedestrian zone programs have been shown effective in reducing crashes and injuries for older pedestrians (Blomberg & Cleven, 1998), for impaired pedestrians (Blomberg & Cleven, 2000), and for child and adult pedestrian crashes in

	Miami-Dade County (Zegeer, Blomberg, et al., 2008; Zegeer, Henderson, et al., 2008) and in decreasing pedestrian fatalities (Dunckel et al., 2014).
Allocated Funding Type:	402; 405h; SMDF; Bikeways
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Countermeasure:	2.2 Safe Routes to School
Effectiveness:	★★★
Additional Supportive Research:	N/A
Cost:	$
Use:	High
Time:	Short
Performance Target:	C-1; C-11 (Appendix B)
Explanation:	SRTS efforts include a 3E approach to pedestrian and bicycle safety addressing engineering, education, and enforcement (programs can also include encouragement, evaluation, environment, engagement, and equity considerations). SRTS programs including education and training can be effective in teaching children and their parents how to evaluate and choose the safest routes for walking or bicycling to and from school, what safe behaviors are associated with walking and biking, and instilling the need to practice and model safe behaviors when walking, biking or driving around children walking/biking to school, how to use common engineering treatments to enhance their safety (sidewalks, crosswalks), the need to adhere to crossing guard direction, and to abide by traffic laws, especially in and around school zones.
Allocated Funding Type:	402; 405h; SMDF; Bikeways
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Countermeasure:	2.2 Bicycle Safety Education for Adult Cyclists
Effectiveness:	★
Additional Supportive Research:	NHTSA Pedestrian and Bicyclist Technical Assessment - recommendation from the Pedestrian and Bicyclist Technical Assessment states: "Evaluate the effectiveness of pedestrian and bicyclist safety improvements that have been implemented in Maryland and develop Maryland-specific Crash Modification Factors (CMFs) for these types of improvements." This study would show the preferred method of infrastructure treatments.

Cost:	$$
Use:	Low
Time:	Medium
Performance Target:	C-11 (Appendix B)
Explanation:	The goal of bicycle safety education for adult bicycle commuters is to improve knowledge of laws, risks, and cycling best practices, and to lead to safer cycling behaviors, including riding predictably and use of safety materials such as reflective clothing and helmets. This countermeasure can include educational material, tip sheets, and a pledge program for local agencies to adopt and disseminate.
Allocated Funding Type:	402; 405h; SMDF; Bikeways
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Countermeasure:	VI. Communications Program
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 14
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-10; C-11 (Appendix B)
Explanation:	The NHTSA Highway Safety Program Guideline No. 14 for Pedestrian and Bicycle Safety includes sections on Communications and Outreach. Specifically, both sections dictate that SHSOs are encouraged to integrate culturally relevant pedestrian and bicycle safety programs into local traffic safety injury prevention initiatives and local transportation plans, to provide culturally relevant materials and resources to promote pedestrian and bicycle safety education programs and ensure that State and community pedestrian and bicycle programs contain a comprehensive communication component to support program and policy efforts.
Allocated Funding Type:	402; 405h; SMDF; Bikeways
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(C)

Evaluation

The MHSO evaluates traffic safety programs through output and outcome measures. Outcome measures include crash data (fatality and serious injury). Projects funded through the MHSO must have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, output measures are reported and evaluated throughout the grant cycle.

Law enforcement, engineering and media/communications partners are provided with additional analysis that support a more targeted approach within jurisdictions over-represented in this program area. Data and analyses are provided in standard and by-request (ad hoc) formats that support localized targeting of traffic safety initiatives.

According to the Road Safety Attitudes and Behavior survey conducted by WBA Research on behalf of MDOT, the majority of Maryland road users across all regions and demographic groups consider unsafe driving a major problem. Yet, every year familiar factors contribute to roadway fatalities: speed, distractions, impairment by alcohol and drugs, and lack of seat belt use.

Everyone is a pedestrian at some point, and it's important that everyone does their part to share the road. Pedestrians should always follow traffic rules and cross at designated pedestrian crossings wherever possible. In the survey: 57 percent of respondents said they don't feel comfortable walking along or crossing roadways. However, 37 percent said they always utilize a crosswalk when available.

Seventy-six percent of cyclists who bike along roadways indicated in the survey that they follow the same rules of the road that they would in a car. 61 percent reported wearing bright or reflective clothing and/or outfitting their bikes with lights for riding in poor visibility situations. 52 percent of bicyclists who ride on roadways felt comfortable in a bike lane in the last 30 days. However, this drops to 38 percent when there is no bike lane available. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-10	Pedestrian (01 only) Fatalities	State	111	130	124	131	126
	Reduce pedestrian fatalities 13 percent from 124.4 (2017-2021) to 108.0 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	105.8	109.8	114.2	120.6	124.4

C-11	Bicyclist Fatalities	State	11	6	10	15	6
	Reduce bicyclist fatalities 14 percent from 9.6 (2017-2021) to 8.3 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	10.0	9.8	10.8	11.6	9.6
(Appendix B)	Pedestrian (01 only) Serious Injuries	State	475	465	426	360	414
	Reduce pedestrian serious injuries 13 percent from 428.0 (2017-2021) to 371.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	384.2	408.4	421.4	429.0	428.0
(Appendix B)	Bicyclist Serious Injuries	State	85	59	80	68	79
	Reduce bicyclist serious injuries 13 percent from 74.2 (2017-2021) to 64.4 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	64.8	66.2	68.0	71.4	74.2

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
C-10) Pedestrian Fatalities (State)	5 year	2019-2023	114.7	2017-2021 State 124.4	N
C-11) Bicyclist Fatalities (State)	5 year	2019-2023	8.9	2017-2021 State 9.6	Y
Pedestrian (01) Serious Injuries (State)	5 year	2019-2023	394.8	2017-2021 State 428.0	N
Bicyclist Serious Injuries (State)	5 year	2019-2023	65.4	2017-2021 State 74.2	N

Young and Mature Driver Safety Program

Problem Identification: Young-Driver Involved

Young drivers (ages 16-20) are at greater risk on roadways often simply due to a lack of experience behind the wheel. The unique challenges many of these drivers face must be considered in all planning and education efforts. Young drivers' relative inexperience may indicate less anticipation, slower reaction times, poor judgment, or risky behavior as compared to drivers 21 and older, and all these issues must factor into awareness, education, and enforcement efforts.

Note: MHSO has traditionally described a young driver as between the ages of 16-20; however, additional analysis and program focus has led to different variations in age groupings, such as teen drivers (15-18). Drivers under the age of 21 have similar risk characteristics but outreach may look different to these groups (e.g., high school programs vs. college programs). In Maryland, a person who is 15 and 9 months may obtain a learner's permit, therefore some statistics will include this age group, whereas other groupings will focus more on drivers who, while still limited by Graduated Licensing restrictions, may have more independence and exposure in driving.

For the five-year period from 2017 through 2021, the incidence of young-driver involved crashes increased by 9 percent in Maryland compared to 2012 to 2016, with 13,490 young-driver involved crashes having occurred on Maryland roads on average between 2017-2021 (compared to 12,402 in the previous five years).

From 2017 through 2021, young drivers were involved in an average of one in eight (12 percent) of all traffic crashes, 14 percent of injury crashes, and 10 percent of fatal crashes. Young driver-involved crashes accounted for 14 percent of injuries and 10 percent of fatalities.

In addition to young, or inexperienced drivers, program planning and outreach will focus on teen drivers (15-18), focusing on high-risk jurisdictions with high rates of teen-driver-involved crashes, particularly in jurisdictions with rates above the statewide rate: Baltimore City; Worcester, Wicomico, Prince George's, Dorchester, Baltimore, Somerset, Talbot, Garrett, Charles, Washington, St. Mary's, and Anne Arundel Counties.

2019-2021 Maryland Crash Rates			
Jurisdiction	**Teen Drivers (15-18) Involved**	**Under 16-18 Licensed Drivers**	**Rate (per 100)**
Allegany	55	694	7.9
Anne Arundel	713	8,291	8.6
Baltimore	1,062	9,342	11.4
Calvert	119	1,843	6.5
Caroline	44	572	7.7
Carroll	199	3,314	6.0
Cecil	130	1,523	8.5

Charles	196	2,033	9.6
Dorchester	43	376	11.4
Frederick	287	4,726	6.1
Garrett	43	437	9.8
Harford	312	4,240	7.4
Howard	273	5,636	4.8
Kent	16	223	7.2
Montgomery	702	13,892	5.1
Prince George's	717	5,673	12.6
Queen Anne's	70	1,029	6.8
St. Mary's	173	1,925	9.0
Somerset	19	180	10.6
Talbot	60	595	10.1
Washington	191	2,077	9.2
Wicomico	190	1,245	15.3
Worcester	149	800	18.6
Baltimore City	456	2,104	21.7
Statewide	**6,219**	**72,770**	**8.5**

According to the National Highway Traffic Safety Administration:

- 36 percent of all vehicle fatalities involving teen drivers occurred between 9 p.m. and 5 a.m.
- Data show a 22 percent increase in the average number of nighttime crashes per day involving teen drivers during the 100 Deadliest Days compared to the rest of the year.
- 29 percent of all motor vehicle deaths involving a teen driver were speed related.

According to the AAA Foundation 2021 Traffic Safety Culture Index, teen drivers ages 16-18 admitted to having engaged in at least one of the following risky behaviors in the past 30 days:

- Driving 10 mph over the speed limit on a residential street (39%)
- Driving 15 mph over the speed limit on a freeway (34%)
- Texting (28%)
- Red-light running (27%)
- Aggressive driving (25%)
- Drowsy driving (16%)
- Driving without a seatbelt (12%)
- Drinking enough alcohol to be over the adult legal limit (4%)
- Riding in a car driven by someone who has had too much alcohol (8%)
- Driving within an hour of having used marijuana (6%)

Frequency of Young-Driver Involved Crashes

Higher proportions of young driver involved crashes occurred during summer and fall months (May through October) when 54 percent of all such crashes and 59 percent of fatal crashes took place, perhaps reflecting greater exposure on roadways during summer breaks from high school and college.

Crashes involving young drivers were most common during weekdays, but Friday through Sunday accounted for 43 percent of all young driver involved crashes and 44 percent of fatal crashes. More than three in four (77 percent) of young drivers involved in crashes were of ages 18–20, and 80 percent of the fatally injured drivers were of age 18-20, reflecting the greater exposure of young drivers, particularly after Graduated Driver Licensing (GDL) restrictions are no longer applicable. Young drivers are inexperienced drivers, and inexperienced drivers are at greater risk.

Crashes involving young drivers were most common from 12 p.m. to 8:59 p.m., when 59 percent and 61 percent of total and injury crashes occurred, respectively, and when 41 percent of all fatal crashes occurred involving the age group. The fact that drivers ages 16 and 17 accounted for 23 percent of the crash-involved drivers in the age group would indicate the relative effectiveness of night-time driving restrictions imposed during the GDL process in Maryland, prohibiting young drivers from driving after midnight, when 21 percent of fatal young-driver involved crashes occurred (midnight to 5:59 a.m.).

Research indicates the importance of studying driving habits and patterns of young drivers to determine if these crash patterns of behavior and outcomes may be related.

Typical Profile of Crash-Involved Young Drivers

Crash data revealed the most typical profile of a young driver involved in a crash was male of ages 18 to 20 (28 percent were age 20) and using a seat belt restraint, except in fatal crashes where more than 1 in 3 young drivers killed were unrestrained (35 percent). Eighty-two percent of all driver fatalities in the 16-20-year age group were male drivers.

Most crashes involving young Maryland drivers (69 percent) occurred in Anne Arundel, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery, and Prince George's Counties. Fifty-eight percent of fatal crashes in the age group occurred in these eight counties. Baltimore City accounted for 10 percent of overall crashes involving young drivers, and 8 percent of all fatal crashes in the age group.

On a positive note, the number of impaired young drivers continues to decline, with declines in impaired young driver involved crashes and young driver DUI arrests.

Driver Age 16-20 Alcohol or Drugs Involved Crash Summary						
	2017	2018	2019	2020	2021	5 Year AVG.
Fatal Crashes	9	3	5	6	4	5
Injury Crashes	95	67	107	77	73	84
Property Damage Crashes	197	171	156	175	159	172
Total Crashes	301	241	268	258	236	261
Total of All Fatalities	9	4	6	7	5	6
Total Number Injured	147	94	199	126	125	138

The Maryland State Police (MSP) Chemical Testing for Alcohol Unit provides the MDOT MVA with an annual summary of statewide DWI arrests related to violations of TR § 21-902.The most recent information provided by the MSP indicates that 463 drivers under the age of 21 were arrested in CY2021. The following chart provides data on the number of arrests for TR § 21-902 that were made of drivers under the age of 21 for the past seven calendar years:

TR § 21-902	2015	2016	2017	2018	2019	2020	2021
Total Number of Drivers Under 21 Years of Age	172,538	182,052	187,445	190,004	190,095	177,285	181,035
Arrests of drivers under 21 for Driving Under the Influence of Alcohol and/or Drugs, TR § 21-902	716	711	661	532	535	521	463
Percentage of Total Drivers Under 21 that were arrested for § 21-902	0.41%	0.39%	0.35%	0.28%	0.28%	0.29%	0.26%

At-Risk Drivers (21-25)

Problem Identification: At-Risk-Driver Involved

Drivers ages 21-25 are at high risk on roadways despite their increased experience compared to young drivers (under 21) due to a larger exposure (77% more licensed drivers compared to those under 21 – 310,928 vs. 175,690), continuing brain development, and newly legal access to alcohol and cannabis.

For the five-year period from 2017 through 2021, the incidence of at-risk-driver involved crashes increased by nearly 2 percent in Maryland compared to 2012 to 2016, with 20,571 at-risk-driver involved crashes having occurred on Maryland roads on average between 2017-2021 (compared to 20,214 in the previous five years).

From 2017 through 2021, at-risk drivers were involved in an average of nearly one in five (19 percent) of all traffic crashes, 20 percent of injury crashes, and 18 percent of fatal crashes. At-risk-driver-involved crashes accounted for 22 percent of injuries and 18 percent of fatalities.

Over half of all at-risk driver overall and injury crashes occurred on state roads (IS, US, MD); however, three in four fatal crashes (74%) occurred on state roads, indicating that higher-speed roadways are more deadly for at-risk drivers.

Program planning and outreach will focus on jurisdictions with the highest rates of at-risk-driver involved crashes as illustrated below, with high rates in jurisdictions above the statewide rate: Baltimore City; Worcester, Wicomico, Prince George's, and Baltimore Counties.

2019-2021 Maryland Crash Rates			
Jurisdiction	**At Risk (21-25) Involved**	**21-25 Licensed Drivers**	**Rate (per 100)**
Allegany	141	3,067	4.6
Anne Arundel	1,998	30,681	6.5
Baltimore	3,863	42,538	9.1
Calvert	200	4,450	4.5
Caroline	95	2,835	3.4
Carroll	363	10,131	3.6
Cecil	339	5,427	6.2
Charles	616	9,323	6.6
Dorchester	93	1,337	7.0
Frederick	691	16,080	4.3
Garrett	99	1,506	6.6
Harford	705	14,596	4.8
Howard	831	19,886	4.2
Kent	33	806	4.1
Montgomery	2,563	58,208	4.4
Prince George's	4,323	43,125	10.0
Queen Anne's	152	2,893	5.3
St. Mary's	363	6,274	5.8
Somerset	54	818	6.6
Talbot	131	1,831	7.2
Washington	486	8,140	6.0
Wicomico	523	5,061	10.3
Worcester	301	2,661	11.3
Baltimore City	3,634	19,254	18.9
Statewide	**22,597**	**310,928**	**7.3**

Frequency of At-Risk-Driver Involved Crashes

Higher proportions of at-risk-driver involved crashes occurred during summer and fall months (May through October) when 52 percent of all such crashes and 55 percent of fatal crashes took place, perhaps reflecting greater exposure on roadways during warmer months, like the teen driver trends seen during the 100 deadliest days of summer.

Crashes involving at-risk drivers were evenly distributed throughout the weekdays, but Friday through Sunday accounted for 44 percent of all at-risk driver involved crashes and 52 percent of fatal crashes. Crashes involving at-risk drivers were most common from 12 p.m. to 8:59 p.m., when 54 percent and 56 percent of total and injury crashes occurred, respectively, and when 40 percent of all fatal crashes occurred involving the age group; however, one in three (34%) fatal crashes occurred between 10 p.m. and 3:59 a.m.

Typical Profile of Crash-Involved At-Risk Drivers

Crash data revealed the most typical profile of an at-risk driver involved in a crash was male (54% of all at-risk drivers; 50% of at-risk driver injuries, and 77% of at-risk fatalities), and using a seat belt restraint, except in fatal crashes where 1 in 3 at-risk drivers killed were unrestrained (32 percent).

Problem Identification: Mature-Driver Involved

As the statewide and national population ages, older drivers (ages 65 and older) will become more prevalent on roadways and can present unique challenges that must be considered in safety planning and education. Mature drivers may have slower reaction times and shorter sight distances, which factor into awareness, education, and enforcement efforts.

For the five-year period from 2017 through 2021, the incidence of older driver involved crashes increased by 17 percent compared to 2012 to 2016. There were 14,242 crashes involving older drivers on Maryland roads each year on average between 2017 and 2021.

From 2017 through 2021, older drivers were involved in an average of more than one in eight (13 percent) of all traffic crashes, 17 percent of injury crashes, and 16 percent of fatal crashes annually. Mature drivers were involved in crashes that accounted for one in six injuries (17 percent) and 16 percent of fatalities.

Frequency of Crashes Involving Mature Drivers

Mature driver involved crashes occurred consistently throughout the first half of the year, with slightly higher proportions during late fall and early winter (28 percent, October through December), possibly due to inclement weather and earlier onset of darkness. More than half of all fatal crashes in this age group (54 percent) occurred between July and December.

About one-third of all crashes (33 percent) and 31 percent of fatal crashes involving older drivers occurred on Thursday and Friday. Crashes involving older drivers were most common from 11 a.m. to 6:59 p.m., when 64 percent of all crashes and 57 percent of fatal crashes took place.

In order to prioritize high-risk jurisdictions for older driver involved crashes, an analysis of crash rates per licensed drivers 65 and older was assessed. Jurisdictions with high crash rates, especially over the statewide rate, will be prioritized: Baltimore City; Wicomico, Charles, Prince George's, Baltimore, Worcester, St. Mary's, Anne Arundel, and Talbot Counties.

2019-2021 Maryland Crash Rates			
Jurisdiction	**Mature Drivers Involved Total Crashes**	**Licensed Drivers 65+ (FY22)**	**Rate (per 1000)**
Allegany	130	13,516	9.6
Anne Arundel	1,338	90,005	14.9
Baltimore	2,370	137,449	17.2
Calvert	169	14,829	11.4
Caroline	68	6,297	10.8
Carroll	343	30,938	11.1
Cecil	244	17,157	14.2
Charles	379	21,897	17.3
Dorchester	100	6,820	14.6
Frederick	445	41,217	10.8
Garrett	65	6,513	9.9
Harford	526	44,546	11.8
Howard	458	47,433	9.6
Kent	42	5,298	7.9
Montgomery	1,730	159,636	10.8
Prince George's	2,035	117,775	17.3
Queen Anne's	123	10,561	11.6
St. Mary's	234	15,714	14.9
Somerset	51	4,155	12.4
Talbot	162	10,908	14.9
Washington	379	26,333	14.4
Wicomico	379	16,992	22.3
Worcester	243	14,857	16.3
Baltimore City	1,519	55,013	27.6
Statewide	**13,532**	**915,859**	**14.8**

Typical Profile of Crash-Involved Mature Drivers

Crash data outlined the typical profile of a older Maryland driver involved in a crash as male, between ages 65 to 79 (16 percent were 80 or older, in older driver involved only crashes) and using a seat belt restraint (86 percent, overall crashes; 87 percent injury crashes). Notably, in fatal crashes, the older drivers who were killed were unrestrained 24 percent of the time.

Most crashes (69 percent) involving older drivers occurred in the same eight counties outlined for young driver-involved crashes, including 62 percent of fatal crashes. Eleven percent of older driver involved crashes and 6 percent of fatal crashes occurred in Baltimore City.

Solution

The MHSO and its partners address the issue of young driver safety through parent involvement programs and driver instructional efforts. The MHSO raises awareness and educates young drivers and their parents through grant-funded programs at high schools and other venues with victim advocates, safety professionals and law enforcement. Young drivers (ages 16–20) are a core component within MHSO traffic safety initiatives and much of the collateral material and publicity surrounding the state's traffic safety marketing efforts are directed at young drivers via social media, educational and other outlets.

The needs of older drivers (age 65 or older) vary greatly, and Maryland is attentive to identifying older driver needs, evaluating their driving ability, and helping plan for their continued mobility. Older driver safety initiatives are carried out at the local level with significant input from the MHSO's Community Engagement Section. This team conducts CarFit sessions for older drivers in order to help them find their safest fit within their vehicle. The MHSO works closely with the MDOT MVA's Driver Safety Division on older driver education issues for statewide programming. MHSO staff also participate in the national Aging Road Users quarterly forum.

Countermeasure Strategies

The below countermeasure strategies will be used in the upcoming FFYs to address Young and Older Driver Safety.

Countermeasure:	V. Communications Program
Effectiveness:	N/A
Additional Supportive Research:	Uniform Guidelines for State Highway Safety Programs, Highway Safety Program Guideline No. 4
Cost:	N/A
Use:	N/A
Time:	N/A
Performance Target:	C-9 (Appendix B)
Explanation:	Per NHTSA's Uniform Guidelines, NHTSA recommends that states should develop and implement communication strategies directed at supporting policy and program elements, specifically in collaboration and cooperation

	with driver education and training and highway safety partners, and should consider a statewide communications plan and campaign that: 1) Informs the public, especially parents, about State GDL laws; 2) Identifies audiences at particular risk and develops appropriate messages; 3) Provides culturally competent materials; 4) Informs parents/guardians and young drivers about the role of supervised driving and the State's GDL law; 5) Informs novice drivers about underage drinking and zero tolerance laws (in effect in all 50 States and the District of Columbia), such as including information in manuals for new drivers and including a question about the topic on the written test for a learner's permit; 6) Informs the public on the role of parental monitoring/involvement; and 7) Informs the public about State guidelines and regulation of driver education.
Allocated Funding Type:	402
Grant Type:	Projects will be funded that incorporate public engagement, traffic safety data, affected communities, impacted locations, solicitation of proposals and that utilize this countermeasure.
Countermeasure Informed:	23 U.S.C. 402(a)(2)(B)(i)

Evaluation

The MHSO evaluates traffic safety programs through output and outcome measures. Outcome measures include crash data (fatality and serious injury). Projects funded through the MHSO are required to have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, output measures are reported and evaluated throughout the grant cycle. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Outcome Measures

			BASE YEARS (Historical Data)				
	PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan		**2017** **2013-2017**	**2018** **2014-2018**	**2019** **2015-2019**	**2020** **2016-2020**	**2021** **2017-2021**
C-9	Drivers Aged 20 or Younger-Involved Fatalities	State	54	54	46	56	61

	Reduce drivers aged 20 or younger-involved in fatalities 48 percent from 54.2 (2017-2021) to 28.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	48.8	51.0	52.4	53.4	54.2
(Appendix B)	Mature Driver-Involved Serious Injuries	State	508	518	512	381	429
	Reduce older driver-involved serious injuries 26 percent from 469.6 (2017-2021) to 348.8 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	474.2	484.6	482.2	484.8	469.6
(Appendix B)	Young (16-20) Driver-Involved Serious Injuries	State	426	384	407	345	376
	Reduce young (16-20) driver-involved serious injuries 58 percent from 387.6 (2017-2021) to 162.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	420.4	415.4	418.4	408.6	387.6

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
C-9) Drivers Ages 20 or Younger Involved in Fatal Crashes (State)	5 year	2019-2023	34.0	2017-2021 State 54.2	N
Mature Driver-Involved Fatalities (State)	5 year	2019-2023	83.4	2017-2021 State 90.4	Y
Mature Driver-Involved Serious Injuries (State)	5 year	2019-2023	385.1	2017-2021 State 469.6	N
Young Driver-Involved Serious Injuries (State)	5 year	2019-2023	217.0	2017-2021 State 387.6	N

Traffic Safety Information System Improvement Program

Refer to Traffic Records Strategic Plan (TRSP) in Appendix F for all components of the Traffic Safety Information System Improvement Program.

Police Traffic Service Program

Problem Identification

To develop successful and effective solutions that address traffic issues on the roadways themselves, law enforcement agencies need staff personnel who are highly motivated, educated, and trained to enforce traffic safety laws. They must be adept at identifying, analyzing, and solving problems that help preserve local resources or tend to benefit public or private agencies in their solution.

The Maryland Traffic Safety Specialist (TSS) Program provides a major recognition and feedback program for law enforcement officers who have received advanced levels of training and developed high levels of proficiency and expertise in areas of traffic safety. The TSS is the only program in the state that specifically tracks and recognizes the advanced training and proficiency of law enforcement officers in traffic safety.

Traffic safety in Maryland remains a primary public safety issue given the demands that confront law enforcement agencies, but, too often, traffic safety programs are not given a high priority by all public safety executives. Many local jurisdictions experience traffic safety problems that would benefit from local analysis and data-driven solutions. Likewise, as the need for more complete and accurate data continues to grow, there is a comparable need for training officers in the highly technical field of crash reconstruction.

By implementing its Leading Effective Traffic Enforcement Program (LETEP), the MHSO helps to systematically address many traffic safety and other public safety issues through a recognized training curriculum that makes traffic management a priority. Partner organizations such as the MSA and the MCPA recognize the training needs for law enforcement members that are not adequately met by state and local governments. Traffic safety is often neglected or diminished in importance, compared to what may seem more pressing law enforcement training issues experienced by individual agencies.

Solution

Throughout FFY 2023, the MHSO will support law enforcement training through grants and will collaborate with the MCPA, MSA, and the Maryland Police and Correctional Training Commission on training and officer recognition. The MHSO coordinates a Traffic Safety Specialist certification for law enforcement officers, and the program will continue to be expanded throughout the coming year.

The MSP, MDTA Police, and many local law enforcement agencies will receive funds for overtime enforcement to address the most pressing traffic safety challenges, using a data-driven approach. In addition, the MHSO will fund LETEP to improve and encourage strategic traffic safety thinking among law enforcement.

Evaluation

Maryland's traffic safety law enforcement grants track progress on the number of officers trained and ensures quality training. Evaluating these grants can be difficult as they rely mainly on an individual officer's ability to process and retain the information presented, as well as the ability to continue to implement training in

everyday enforcement situations. Nevertheless, the MHSO does conduct training appraisals to determine the value of the training, identify possible gaps, and determine required changes to a curriculum. Training does make a difference but general training funding in law enforcement budgets is extremely limited. By developing worthwhile traffic training (and recognition programs), the MHSO can dramatically influence the traffic enforcement culture and positively influence enforcement of Maryland's traffic safety laws. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Program Support

Problem Identification

Many projects that do not fall neatly into program focus areas are undertaken for their innate ability to help accomplish the goals of Maryland's overall traffic safety program, either alone or in conjunction with specific programs. For instance, the MHSO's Communications Program utilizes the problem identification statements from individual program areas as factors for creating and placing support messaging. The factors considered include audience demographics such as age, gender, ethnicity, and even the types of media availability within a target audience's reach and are utilized to shape media messages that support traffic safety programs.

Maryland places significant emphasis on the use of paid and earned media to positively impact enforcement operations and educational programs coordinated throughout the state. Maryland has two large Designated Market Areas (DMA) in the Baltimore and Washington, D.C. metropolitan areas, and two smaller DMAs in the Hagerstown and Salisbury areas. Many of the MHSO's campaigns utilize a mix of media, and the mix depends upon the target demographic and budgets within individual programs.

The Maryland Strategic Highway Safety Plan (SHSP) is a data-driven guide developed to identify behaviors and crash types that are most prevalent in Maryland and to provide strategies and action steps to reduce and prevent their occurrence. The MHSO's program managers, community engagement staff, and law enforcement liaisons focus their efforts on these program areas, specifically impaired driving, distracted driving, occupant protection, speed/aggressive driving, and pedestrian/pedalcyclist safety. These focus areas are well defined using Maryland crash data and through the establishment of outreach and education efforts. The focus areas provide significant opportunity to reduce fatalities and serious injuries on Maryland's roadways.

The programs funded through program support stress the importance of strong collaborations with state and local law enforcement agencies, support training of law enforcement officers and other highway safety partners and support the update of the state's SHSP and the development of local highway safety plans that can be tailored to the specific needs of local jurisdictions.

Solution

The MHSO funds projects that help achieve Maryland's traffic safety goals overall and within individual programs. Program support projects funded in FFYs 2024 - 2026 will include grants to support the staffing of the MHSO Program Managers, media and communications projects that augment HVE, technical support for the SHSP, the continued development of the MHSO's electronic grants management system, funding for the MHSO's planning and administration costs, and the salaries of Maryland's LELs.

Evaluation

Electronic media, outdoor advertising, and other forms of communication involving various traffic safety messages are used in awareness and education campaigns. Using a dedicated media contractor, messaging is designed and created to concisely deliver traffic safety information and messages to the intended demographic audiences. In every instance of media purchase, the MHSO expects and receives a full evaluation of the results of these media purchases and outreach efforts.

The types of evaluative components include number of paid airings; total impressions; TRP/GRP, reach, frequency, social media engagement, press releases/articles distributed/aired, and numbers of materials distributed. A new survey will be conducted in FFY 2024. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Preventing Roadside Deaths

Problem Identification

Preventing roadside deaths is related to Maryland's Move Over Laws, with the first law protecting emergency responders such as police, fire, and ambulance in effect starting October 1, 2010; then expanded to include tow trucks starting October 1, 2014; and finally expanded to any stopped, standing, or parked vehicle displaying warning signals starting October 1, 2022.

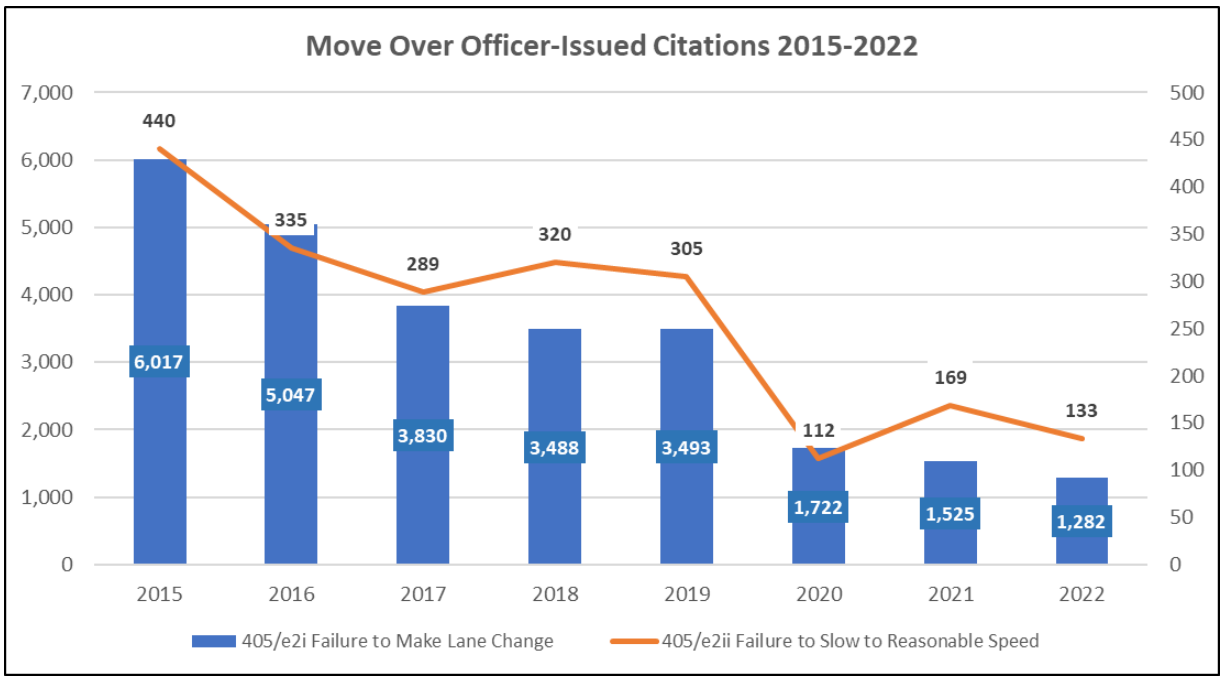
Examining this issue through traffic records data has proven to be a challenge for several reasons. Firstly, the Maryland Department of the State Police (MDSP) Automated Crash Reporting System (ACRS) has limited fields and variables by which to analyze crashes involving a vehicle, including the vehicle's occupants, often standing outside the vehicle due to an emergency situation, stopped or standing on the side of the road. Also, some attributes in a crash data field are open for interpretation, therefore some selected attributes would induce some assumptions without intensive additional analysis. An in-depth study of each individual crash report, with analysis to include the narrative, would be resource-intensive, as demonstrated through a recent sampling of reports using this methodology resulted in analysis that was no better or worse than MHSO's initial methodology.

To that end, currently there is no standard definition for a 'move over-related crash,' however, MHSO has developed a query of the crash data that may approximate (some of) the circumstances of such an incident, which includes looking at any vehicle on the shoulder (lane field) with the first or second harmful event equal to a parked vehicle. (There are no attributes for a vehicle to indicate whether warning signals are in use.) A previous query, before the October 2022 law expansion, included only emergency response vehicles.

With this limited query of the data, trends between 2017-2021 indicate there are on average 605 move over-related crashes each year in Maryland, with 3 fatalities and 106 injuries. Given the limitations of the crash data report, this is most likely an undercounting of this issue on Maryland roadways. MHSO will continue to work with MDSP to determine more refined ways to analyze the data and encourage updates to the crash report that will make such analysis easier, for example, a planned upgrade to ACRS in 2024 is expected to include more discernible attributes for non-motorists involved in these incidents (e.g., separate code for emergency responder in the non-motorist field). Additionally, working directly with law enforcement to understand how

they are trained to investigate such incidents and what their limitations are will provide additional insight into what can be gleaned from the crash data.

Secondly, while MHSO has access to citation data and can aggregate, summarize, and analyze the issuance of traffic violations related to the Move Over Laws, a deeper understanding of the trends has proven to be a challenge. Overall, in Maryland, all traffic enforcement and subsequent traffic violations have been on a precipitous decline for several years, particularly during the years with the advent of the Move Over laws. Declines in Move Over citations (as shown in the table below) track with similar trends for all moving violations in Maryland. Additionally, the Move Over traffic violations are very difficult for law enforcement to enforce consistently and safely, and require significant resources to implement (for example, requiring several officers to act as spotters and multiple personnel, including coordination with state highway personnel, to safely set up an intervention). Trends in issuance of citations may be related to improved driver behavior (motorists understanding and obeying the law) or may be affected by law enforcement resources and other related challenges, or both.



The citation references are to Maryland's transportation articles:

- 21 405 e2i Failure of driver to make lane change to available lane not immediately adjacent to stopped, standing, or parked vehicle on highway displaying (visual signals, hazard lights, road flares or other caution signals) which carries a fine of 110.00 and 1 point. If the violation contributed to a crash, the fine is 150.00 and 3 points. If the violation contributes to a death or serious injury, the fine is 750.00 and 3 points.

- 21 405 e2ii Failure of driver to slow to a reasonable and prudent speed while passing stopped, standing, or parked vehicle on highway displaying (visual signals, hazard lights, road flares or other caution signals) which carries a fine of 110.00 and 1 point. If the violation contributed to a crash, the fine

is 150.00 and 3 points. If the violation contributes to a death or serious injury, the fine is 750.00 and 3 points.

Some additional, though limited, insights can be gained from the citation data. For each traffic violation, there is a selection for whether it contributed to a crash, for example, in 2021, in all 1,525 issuances for failure to make a lane change, 13 (less than 1%) contributed to a crash, and in 2022, 22 violations (less than 2%) contributed to a crash.

A separate query of the ETIX data system shows that despite the declines in traffic violations issued to drivers for these offenses, officers were consistently issuing warnings. (Note: Totals for citations will not match the above table due to different sources – Maryland Judiciary vs. MDSP ETIX – and the inclusion of paper citations in Judiciary data.)

Year	Citations (e2i) Move Over	Citations (e2ii) Slow Down	Total Citations	Warnings (e2i) Move Over	Warnings (e2ii) Slow Down	Total Warnings
2020	1191	35	1226	4154	116	4270
2021	840	46	886	3902	128	4030
2022	772	37	809	4265	141	4406
Totals	2,803	118	2,921	12,321	385	12,706

MDSP has historically not widely released warning data (other than as required by law for race-based stops), but through a partnership with MHSO more of this information is being shared and subsequently analyzed, providing greater insight into traffic stops and traffic safety issues. While a warning has less consequence than a citation, it is a safety intervention and is an opportunity to educate the public about this critical issue in traffic safety.

A study was conducted from December 7-29, 2021, using an online panel sample. While it was conducted before the October 2022 expansion and the promotion of that expansion gaining traction in the public, one can assume some modest improvement in awareness that have not yet been measured, the findings from the 2021 study are still insightful and provide some baseline information to measure successful increases in awareness through program planning.

The research suggests that Maryland drivers lack true knowledge of Maryland's Move Over laws. The drivers surveyed were told that Maryland has several Move Over laws that govern when vehicles should move over or slow down for vehicles parked on the shoulder. When presented with a list of seven types of vehicles and asked to identify which the Move Over laws apply to, only 1% of the drivers surveyed chose the four correct answers and no others: Emergency vehicles (ambulance, fire truck, police), Tow trucks, Department of Public Works (DPW) vehicles (e.g., sanitation trucks, snowplows), and Utility trucks.

A higher proportion of residents (42%) did choose all the correct answers, but they also chose some that were incorrect.

- Emergency vehicles was the most frequently selected correct answer (90%).

- Vehicles that were in a crash was the most frequently selected incorrect answer (71%).

Once the Move Over laws were explained, the drivers surveyed were asked to what speed they would slow down if the speed limit was 55 mph, and they were in a situation where the Move Over laws would apply. More than two-thirds (69%) indicated they would slow down to a speed of 45 mph (24%), 40 mph (25%) or 35 mph (20%).

More than seven in ten Maryland drivers surveyed (72%) believe it is very or somewhat likely that they would be ticketed if they committed a violation of the Move Over Law. Drivers from Western/Eastern/Southern Maryland (84%) are especially likely to assume they would be ticketed.

Worth noting is that MHSO and its partners within MDOT met twice over the past couple of years with analysts from the Government Accountability Office (GAO) who continue to study this as a national issue. Through these discussions and subsequent reporting from the GAO, it is clear Maryland is not unique in its challenges in both analyzing this safety issue and educating the public to be more cognizant and change their behavior.

According to a recent survey conducted by the Associated General Contractors of America and software firm HCSS found that 55 percent of highway contractors said that motor vehicles had crashed into their construction work zones during the past year. The association polled over 900 highway construction firms for its 2023 work zone safety study.

According to the survey results, motorists are in greater danger from highway work zone crashes than construction workers. While 28 percent of contractors participating in the survey experienced crashes that resulted in injury to construction workers, more than twice as many firms – 59 percent – reported experiencing a crash in which drivers or passengers were injured.

Work zone crashes also are twice as likely to result in fatalities to drivers or passengers as construction workers. While 8 percent of contractors in the survey report that construction workers were killed in work zone crashes, some 16 percent of respondents said drivers or passengers were killed in those crashes.

Ninety-seven percent of contractors reported in the survey that highway work zones are either as dangerous, or more dangerous, than they were a year ago.

Solution

Funded projects will help prevent deaths and injuries from crashes involving motor vehicles striking other vehicles and individuals stopped at the roadside. Motorists who encounter a roadside emergency while traveling, including but not limited to, flat tires, mechanical issues, minor fender benders, may find themselves on the side of the road and at risk for these crashes.

Specific safety problems will be identified and addressed through selected projects. A plan will be submitted in the AGA that describes the method by which the MHSO will use the grant funds. Projects that will be considered include: the purchase and deployment of digital alert technology that is capable of receiving alerts regarding nearby first responders; an educational campaign for motorists regarding the safety of vehicles and

individuals stopped at the roadside; law enforcement costs related to enforcing MD laws to protect the safety of vehicles and individuals stopped at the roadside; programs to identify, collect, and report to State and local government agencies data related to crashes involving vehicles and individuals stopped at the roadside; and/or to pilot and incentivize measures including optical visibility measures, to increase the visibility of stopped and disabled vehicles.

As a subtheme of the Be the Driver campaign, MHSO will continue to share the '*What to Do During A Roadside Emergency*' 30 second and 60 second videos as well as online resources that outline options motorists have in the event of an emergency.

Evaluation

Projects funded through the MHSO are required to have an effective evaluation component. Depending on the level of grant funds obligated and the scope of the project, output measures are reported and evaluated throughout the grant cycle. Impact evaluation will be an ongoing process using information collected through community engagement and activities.

Performance Measures

Performance measures will be developed based on the specific activities of the projects funded.

Driver-Officer Safety Education

Problem Identification

Poor communication during traffic stops can lead to unnecessary risks for the involved parties. By educating drivers and law enforcement officers on appropriate behavior during a traffic stop the risk of adverse events for both drivers and law enforcement officers can be reduced.

Solution

The MHSO will implement programs that include certain information on law enforcement practices during traffic stops in driver education and training courses. Maryland will demonstrate that driver education and driver safety courses provided to individuals by educational and motor vehicle agencies of the State include instruction and testing relating to law enforcement practices during traffic stops, including: the role of law enforcement; legal rights of individuals concerning interactions with police; best practices for civilians during those interactions; consequences for failure of an individual or officer to comply; and how and where to file a complaint against or a compliment relating to an officer. Currently, information on Driver-Officer Safety Education can be found in modular nine of Maryland's Driver Education Curriculum, found in the AGA.

Evaluation

The MHSO will evaluate the Driver-Officer Safety Education programs using surveys, where feasible, to measure the knowledge obtained through the driver education course.

Performance Measures

Specific performance measures will be developed based on the specific activities of the projects funded.

Appendices and Attachments

Appendix A: Sources and Crash Data Definitions

Unless otherwise noted, all crash data are derived from the MDOT SHA, based on reports submitted and processed by the Maryland State Police Central Records Division (MSP CRD) through the ACRS.

For each crash definition labeled to include the word 'related,' the total number of persons in a crash with a driver exhibiting a particular behavior are included. For example, the number of older-driver related fatalities includes all those killed in a crash that involved a driver 65 or older. It is not a summary of drivers ages 65 or older killed in motor vehicle crashes.

- **Traffic Fatality** – A person who dies due to injuries sustained in motor vehicle crash (within 30 days of that incident) on Maryland roadways (also per American National Standard ANSI D.16). Maryland crash data does not include fatalities occurring on private roads, some areas in parking lots, and if a driver is determined to have suffered a medical event prior to the crash, to name a few exemptions. Refer to ANSI D.16 and the Maryland State Police for additional details on crash record policies and procedures.

- **Serious Injury** – Defined as injury severity 04, based on the KABCO scale, as determined by law enforcement.

- **Impaired Driving Crash (Driver Involved Alcohol and/or Drugs) (Post-2015, ACRS) –** At least one driver in the crash was reported to be under the influence of alcohol and/or drugs. (Please note that this number includes drug impairment and will not match alcohol-impaired fatality figures provided by NHTSA FARS. FARS also includes imputation to account for missing/unknown data.) Impairment is determined through the driver condition, blood alcohol content, substance use detected, and contributing factor fields on the Maryland crash report. A driver in a crash is considered impaired if the report indicates:
    - person condition of 'had been drinking,' 'using drugs,' or 'influenced by medications and/or drugs and/or alcohol;' or
    - blood alcohol concentration (BAC) between .01 and .50; or
    - substance use of 'alcohol contributed,' 'illegal drugs contributed,' 'medication contributed,' or 'combination contributed;' or
    - contributing circumstance of 'under the influence of drugs,' 'under the influence of alcohol,' 'under the influence of medication,' or 'under combined influence.'

- **Pedestrian on Foot** - A person involved in a crash and reported as a pedestrian using the 'pedestrian' (01 only) non-motorist type. Note: On crash summary reports, unless noted, non-motorist summaries include all ACRS non-motorist types.

- **Bicyclist/Pedalcyclist –** A person involved in a crash and reported as a bicyclist or pedalcyclist (using the non-motorist types 'bicyclist' and 'other pedalcyclist').

- **Unbelted Occupant** – Persons involved in a crash who were reported to be drivers or passengers of a motor vehicle (not a motorcycle or moped) and had the following safety equipment use attribute: none.

- **Distracted Driving Crash (Post-2015, ACRS) –** At least one driver in the crash was reported to be distracted, defined by having values of either 'failure to give full time and attention' or 'cell phone in use' or 'inattentive' in the contributing circumstance field, or any of the following values in the driver distracted by field: looked but did not see; other electronic device (tablet, GPS, MP3 player, etc.); by other occupants; by moving object in vehicle; talking or listening on cellular phone; dialing cellular phone; adjusting audio and/or climate controls; using other device controls integral to vehicle; using device/object brought into vehicle (nonelectronic); distracted by outside person, object, or event; eating or drinking; smoking related; other cellular phone related; lost in thought; or texting from a cellular phone.

- **Older/Mature Driver (Ages 65+) Crashes –** At least one driver in the crash was reported to be between the ages of 65 and 110.

- **Young Driver (Ages 16-20) –** At least one driver in the crash was reported to be between the ages of 16 and 20.

- **Motorcycle-involved Crashes –** Crashes involving at least one motorcycle, defined as a 'motorcycle' in the vehicle body type field.

- **Aggressive Driver Crashes (Post-2015) –** A crash in which a driver has one of the following values in both the first and second contributing circumstance fields of the Maryland crash report: failed to yield right of way; failed to obey stop sign; failed to obey traffic signal; failed to obey other traffic control; failed to keep right of center; failed to stop for school bus; exceeded speed limit; too fast for conditions; followed too closely; improper lane change; improper passing; failure to obey traffic signs, signals, or officer; disregarded other road markings; other improper action; or operated motor vehicle in erratic/reckless manner.

- **Speed-involved Crashes –** At least one driver in the crash was reported to be speeding, defined by having values of either 'exceeded speed limit' or 'too fast for conditions' in the first or second contributing circumstance fields.

Appendix B: NHTSA Core Performance Measure

To meet federal requirements as expressed in BIL, the required minimum set of core performance measures are included below. The source for all fatality and fatality rate baseline data is NHTSA's FARS most recently available data (federally required measures). All other data are derived from Maryland state data. All targets below are set using a five-year average and the exponential trend method described earlier. Additional sources include serious injury crash data derived from the MDOT SHA, based on reports submitted and processed by the Maryland State Police Central Records Division (MSP CRD) and through the ACRS; seat belt use rate

obtained from the annual Maryland Observational Surveys of Safety Belt Use; and seat belt citations, DUI arrests, and speeding citations obtained through MHSO's grant management reporting system. As with the SHSP, the end-year targets (by December 31, 2026) and single year targets are derived from the midpoint of the 5-year average for the years 2024–2028. Also included are performance measures that are included in the 2021-2025 SHSP, notable measures for infrastructure-related fatalities and serious injuries, and the subcomponents of infrastructure: intersections, work zones, and run-off-the-road crashes.

PERFORMANCE PLAN CHART – FFY2024-2026 Highway Safety Plan

			BASE YEARS (Historical Data)				
			2017	2018	2019	2020	2021
			2013-2017	2014-2018	2015-2019	2016-2020	2017-2021
C-1	Traffic Fatalities	FARS Annual (2021-ARF)	558	512	535	573	561
	Reduce total fatalities 11.4 percent to 485.0 (2024-2028 target) from 547.8 (2017-2021) by 2026.	5-Year Rolling Avg.	501.4	510.8	529.4	540.0	547.8
C-2	Serious Injuries in Traffic Crashes	State	3,347	3,233	3,122	2,718	3,054
	Reduce serious traffic injuries 37 percent to 1,953.7 (2024-2028 target) from 3,094.8 (2017-2021) by 2026.	5-Year Rolling Avg.	3,025.2	3,079.6	3,093.4	3,117.4	3,094.8
C-3	Fatalities/100M VMT	FARS Annual	0.930	0.860	0.890	1.130	0.990

	Reduce fatalities/100 MVMT 16 percent to 0.811 (2024-2028 target) from 0.960 (2017-2021) by 2026.	(2021-ARF) 5-Year Rolling Avg.	0.862	0.870	0.892	0.938	0.960
C-4	Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions	State	117	1109	113	139	146
	Reduce unrestrained passenger vehicle occupant fatalities, all seat positions 33 percent from 124.8 (2017-2021) to 84.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	103.8	104.4	107.2	120.2	124.8
C-5	Alcohol and/or Drug Impaired Driving Fatalities	State	191	142	151	186	173
	Reduce alcohol and/or drug impaired driving fatalities 18 percent from 168.6 (2017-2021) to 138.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	162.6	159.4	162.8	163.8	168.6
C-6	Speeding-Related Fatalities	State	107	76	76	110	96

	Reduce speeding-related fatalities 47 percent from 93.0 (2017-2021) to 48.9 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	91.2	84.4	81.4	89.2	93.0
C-7	Motorcyclist Fatalities	State	82	57	75	78	76
	Reduce motorcyclist fatalities 11 percent from 73.6 (2017-2021) to 65.3 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	70.2	69.4	71.2	72.8	73.6
C-8	Unhelmeted Motorcyclist Fatalities	State	17	9	7	6	15
	Reduce unhelmeted motorcyclist fatalities 13 percent from 10.8 (2017-2021) to 9.4 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	11.0	11.9	10.0	9.4	10.8
C-9	Drivers Aged 20 or Younger- Involved Fatalities	State	54	54	46	56	61
	Reduce drivers aged 20 or younger-involved in fatalities 48 percent from 54.2 (2017-2021) to 28.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	48.8	51.0	52.4	53.4	54.2
C-10	Pedestrian (01 only) Fatalities	State	111	130	124	131	126

	Reduce pedestrian fatalities 13 percent from 124.4 (2017-2021) to 108.0 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	105.8	109.8	114.2	120.6	124.4
C-11	Bicyclist Fatalities	State	11	6	10	15	6
	Reduce bicyclist fatalities 14 percent from 9.6 (2017-2021) to 8.3 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	10.0	9.8	10.8	11.6	9.6
B-1	Observed Seat Belt Use for Passenger Vehicles, Front Seat Outboard Occupants (State Survey) (Percentage) Increase observed seat belt use for passenger vehicles, front seat outboard occupants by 3.5 percent from 92.7 percent in 2022 to 96.2 percent by December 31, 2026.	State Annual	90.3%	90.4%	89.9%	91.4%	92.7%

End: NHTSA Required Measures

Additional Performance Measures (*State Fatalities/Fatality Rate*)– FFY2024-2026 Highway Safety Plan

		BASE YEARS (Historical Data)				
		2017	2018	2019	2020	2021
		2013-2017	2014-2018	2015-2019	2016-2020	2017-2021
Overall Traffic Fatalities	State	558	512	535	573	563
Reduce overall traffic fatalities 11 percent from 548.2 (2017-2021) to 487.8 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	502.0	511.2	529.6	540.0	548.2
Overall Traffic Fatality Rate	State	0.932	0.859	0.890	1.133	0.994
Reduce the overall traffic fatality rate 16 percent from 0.961 (2017-2021) to 0.808 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	0.867	0.874	0.895	0.940	0.961
Serious Injury Rate	State	5.588	5.422	5.192	5.372	5.394
Reduce the serious injury rate 40 percent from 5.394 (2017-2021) to 3.242 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	5.230	5.265	5.221	5.389	5.394
Non-motorized fatalities and serious injuries	FARS + State	701	682	661	598	642

Reduce the non-motorized fatalities and serious injuries 13 percent from 656.8 (2017-2021) to 570.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	579.0	612.0	634.6	654.8	656.8
Unrestrained Passenger Vehicle Occupant Serious Injuries, All Seat Positions	State	425	442	421	432	434
Reduce unrestrained passenger vehicle occupant serious injuries, all seat positions 33 percent from 430.8 (2017-2021) to 290.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	324.8	367.8	393.2	416.0	430.8
Aggressive Driving Fatalities	State	55	32	39	61	33
Reduce aggressive driving fatalities 39 percent from 44.0 (2017-2021) to 27.0 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	40.6	36.4	39.0	45.2	44.0
Aggressive Driving Serious Injuries	State	172	174	178	173	170
Reduce aggressive driving serious injuries 57 percent from 173.4 (2017-2021) to 74.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	211.8	186.8	182.6	179.2	173.4
Distracted Driving Fatalities	State	220	189	196	216	222

Reduce distracted driving fatalities 40 percent from 208.6 (2017-2021) to 124.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	168.0	169.4	181.0	200.2	208.6
Distracted Driving Serious Injuries	State	1,584	1,599	1,501	1,212	1,394
Reduce distracted driving serious injuries 49 percent from 1,458.0 (2017-2021) to 743.9 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	1,594.8	1,553.8	1,507.2	1,495.2	1,458.0
Alcohol and/or Drug Impaired Driving Serious Injuries	State	497	466	487	452	455
Reduce alcohol and/or drug impaired driving serious injuries 43 percent from 471.4 (2017-2021) to 270.2 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	413.6	429.4	445.8	467.2	471.4
Pedestrian (01 only) Serious Injuries	State	475	465	426	360	414
Reduce pedestrian serious injuries 13 percent from 428.0 (2017-2021) to 371.6 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	384.2	408.4	421.4	429.0	428.0
Speeding-Related Serious Injuries	State	370	363	314	299	350

Reduce speeding-related serious injuries 63 percent from 339.2 (2017-2021) to 125.1 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	409.2	373.4	346.8	348.2	339.2
Bicyclist Serious Injuries	State	85	59	80	68	79
Reduce bicyclist serious injuries 13 percent from 74.2 (2017-2021) to 64.4 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	64.8	66.2	68.0	71.4	74.2
Motorcyclist Serious Injuries	State	320	398	277	314	329
Reduce motorcyclist serious injuries 22 percent from 307.6 (2017-2021) to 238.8 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	275.0	285.0	286.6	301.4	307.6
Mature Driver-Involved Fatalities	State	93	85	105	91	78
Reduce older driver-involved fatalities 13 percent from 90.4 (2017-2021) to 78.5 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	91.4	94.4	98.2	95.6	90.4
Mature Driver-Involved Serious Injuries	State	508	518	512	381	429
Reduce older driver-involved serious injuries 26 percent from 469.6 (2017-2021) to	5-Year Rolling Avg.	474.2	484.6	482.2	484.8	469.6

348.8 (2024-2028 target) by December 31, 2026.						
Young (16-20) Driver-Involved Serious Injuries Reduce young (16-20) driver-involved serious injuries 58 percent from 387.6 (2017-2021) to 162.2 (2024-2028 target) by December 31, 2026.	State 5-Year Rolling Avg.	426 420.4	384 415.4	407 418.4	345 408.6	376 387.6
Infrastructure Fatalities Reduce infrastructure fatalities 10 percent from 326.4 (2017-2021) to 292.4 (2024-2028 target) by December 31, 2026.	State 5-Year Rolling Avg.	349 297.0	295 302.6	334 315.8	337 321.0	317 326.4
Infrastructure Serious Injuries Reduce infrastructure serious injuries 35 percent from 1,880.8 (2017-2021) to 1,222.7 (2024-2028 target) by December 31, 2026.	State 5-Year Rolling Avg.	2,044 1,862.6	2,003 1,882.0	1,897 1,872.2	1,590 1,882.6	1,870 1,880.8
Run-off-the-Road Fatalities Reduce run-off-the-road fatalities 25 percent from 172.4 (2017-2021) to 128.6 (2024-2028 target) by December 31, 2026.	State 5-Year Rolling Avg.	180 161.9	151 160.2	173 165.8	177 166.8	181 172.4

Run-off-the-Road Serious Injuries	State	765	785	714	683	750
Reduce run-off-the-road serious injuries 41 percent from 739.4 (2017-2021) to 434.7 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	686.6	699.6	697.8	723.2	739.4
Intersection Fatalities	State	155	133	154	173	153
Reduce intersection fatalities 13 percent from 153.6 (2017-2021) to 133.3 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	127.0	133.2	141.2	149.2	153.6
Intersection Serious Injuries	State	1,218	1,174	1,151	983	1,198
Reduce intersection serious injuries 36 percent from 1,144.8 (2017-2021) to 730.4 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	1,124.0	1,130.2	1,128.6	1,138.6	1,144.8
Construction/Work Zone Fatalities	State	14	11	8	8	6
Reduce construction/work zone fatalities 13 percent from 9.2 (2017-2021) to 8.0 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	9.0	9.2	8.8	9.2	9.2
Construction/Work Zone Serious Injuries	State	61	44	32	46	44

Reduce construction/work zone serious injuries 47 percent from 45.4 (2017-2021) to 23.9 (2024-2028 target) by December 31, 2026.	5-Year Rolling Avg.	52.0	52.2	45.8	45.2	45.4

Appendix C: NHTSA Core Performance Report

FY 2023					
Performance Measure	**Target Period**	**Target Year(s)**	**Target Value FFY23 HSP**	**Data Source/ FFY23 Progress Results**	**On Track to Meet FFY23 Target Y/N/In-Progress**
C-1) Total Traffic Fatalities (FARS)	5 year	2019-2023	499.8	2017-2021 FARS ARF 547.8	N
C-2) Serious Injuries in Traffic Crashes (State)	5 year	2019-2023	2,249.6	2017-2021 State 3,094.8	N
C-3) Fatalities/VMT (FARS)	5 year	2019-2023	0.835	2017-2021 FARS ARF 0.960	N
Serious Injury Rate (State)	5 year	2019-2023	3.777	2017-2021 State 5.394	N
Non-motorized Fatalities and Serious Injuries (FARS + State)	5 year	2019-2023	605.8	2017-2021 FARS/State 656.8	N
C-4) Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions (State)	5 year	2019-2023	91.6	2017-2021 State 124.8	N
C-5) Impaired (Alcohol and/or Drugs) Driving Fatalities (State)	5 year	2019-2023	145.8	2017-2021 State 168.6	N
C-6) Speeding-Related Fatalities (State)	5 year	2019-2023	59.3	2016-2020 State 93.0	N
C-7) Motorcyclist Fatalities (State)	5 year	2019-2023	66.9	2017-2021 State 73.6	N

C-8) Unhelmeted Motorcyclist Fatalities (State)	5 year	2019-2023	10.0	2017-2021 State 10.8	Y
C-9) Drivers Ages 20 or Younger Involved in Fatal Crashes (State)	5 year	2019-2023	34.0	2017-2021 State 54.2	N
C-10) Pedestrian Fatalities (State)	5 year	2019-2023	114.7	2017-2021 State 124.4	N
C-11) Bicyclist Fatalities (State)	5 year	2019-2023	8.9	2017-2021 State 9.6	Y
B-1) Observed Seat Belt Use for Passenger Vehicles, Front Seat Outboard Occupants (State Survey)	Annual	2023	93.6%	2022 92.7	Y
Aggressive Driving Fatalities (State)	5 year	2019-2023	30.7	2017-2021 State 44.0	N
Aggressive Driving Serious Injuries (State)	5 year	2019-2023	100.7	2017-2021 State 173.4	N
Distracted Driving Fatalities (State)	5 year	2019-2023	140.9	2017-2021 State 208.6	N
Distracted Driving Serious Injuries (State)	5 year	2019-2023	940.1	2017-2021 State 1,458.0	N
Impaired (Alcohol and/or Drugs) Driving Serious Injuries (State)	5 year	2019-2023	315.8	2017-2021 State 471.4	N
Unrestrained Serious Injuries (State)	5 year	2019-2023	311.9	2017-2021 State 430.8	N
Pedestrian (01) Serious Injuries (State)	5 year	2019-2023	394.8	2017-2021 State 428.0	N
Speed-Related Serious Injuries (State)	5 year	2019-2023	177.7	2017-2021 State 339.2	N
Bicyclist Serious Injuries (State)	5 year	2019-2023	65.4	2017-2021 State 74.2	N
Motorcyclist Serious Injuries (State)	5 year	2019-2023	252.1	2017-2021	N

				State 307.6	
Mature Driver-Involved Fatalities (State)	5 year	2019-2023	83.4	2017-2021 State 90.4	Y
Mature Driver-Involved Serious Injuries (State)	5 year	2019-2023	385.1	2017-2021 State 469.6	N
Young Driver-Involved Serious Injuries (State)	5 year	2019-2023	217.0	2017-2021 State 387.6	N
Infrastructure Fatalities (State)	5 year	2019-2023	295.9	2017-2021 State 326.4	N
Infrastructure Serious Injuries (State)	5 year	2019-2023	1,399.4	2017-2021 State 1,880.8	N
Run-off-the-Road Fatalities (State)	5 year	2019-2023	138.6	2017-2021 State 172.4	N
Run-off-the-Road Serious Injuries (State)	5 year	2019-2023	506.6	2017-2021 State 739.4	N
Intersection Fatalities (State)	5 year	2019-2023	141.7	2017-2021 State 153.6	N
Intersection Serious Injuries (State)	5 year	2019-2023	836.0	2017-2021 State 1,144.8	N
Construction/Work Zone Fatalities (State)	5 year	2019-2023	8.5	2017-2021 State 9.2	Y
Construction/Work Zone Serious Injuries (State)	5 year	2019-2023	29.1	2017-2021 State 45.4	N

Notes:

- 2019-2023 Target Years: From the 2021-2025 SHSP Methodology, 2021-2025 Target (2023 mid-point).
- B-1: The proposed seat belt use rate targets estimate a reduction in the number of observed unbelted motor vehicle occupants by at least 25 in each of the observation counties for each successive year. Targets were set based on the 89.9% belt used rate in 2020. (This has been updated from the previous HSP reporting which set the baseline at 92% from 2014. Since Maryland went below the baseline, a new baseline was set with new targets.)

Appendix D: Problem Identification Priority Ranking Methodology (Crash Rates and Zip Codes)

Starting with the FFY2024-FFY2026 HSP, the MHSO has revised the process for identifying and prioritizing geographic areas in its program planning. For each SHSP and HSP program area, rates are developed using the most recent available crash data (2019-2021) and the vehicle miles traveled (VMT) for all 24 jurisdictions in Maryland.

Fatal and injury crash data are calculated with VMT to determine the rates, and each jurisdiction is ranked from highest rate to lowest. Jurisdictions with crash rates above the statewide rate for that program area are consider priority jurisdictions.

Next, a similar method is used to identify the zip codes within each jurisdiction with the highest number of fatalities and injuries, and the most traffic violations (for that specific area). The top five (5) zip codes are determined to be the highest priority. Depending on resources and funding, partner participation, and other program planning factors, additional zip codes may be prioritized beyond the top 5, starting with the areas with the next highest number of injuries and fatalities and traffic violations.

Analysis of traffic safety outcomes and outputs (crashes and citations) by zip codes allows MHSO to use the U.S. Census Zip Code Tabulation Area (ZTA) information to better understand the demographics of each zip code identified as at-risk through this methodology. ZTA information includes, but is not limited to gender, age, race, and ethnicity, which is critical information to support program and project planning that considers the diverse socio-demographic needs and experiences of affected communities.

Additionally, GIS analysis is available specific to partner needs and high visibility enforcement (HVE) campaigns. While this problem identification process helps MHSO and its partners identify the most at-risk populations and locations in Maryland jurisdictions, additional analysis is provided to further identify roadways, e.g., one-mile road segments, intersections, and other geospatial areas based on project needs and scope.

Calculated Rate Tables (Example)

Jurisdiction	Speed Related Injury/Fatal Crashes	VMT (millions)	Rate
Allegany	19	773	2.41
Anne Arundel	273	5,789	4.72
Baltimore	446	8,028	5.56
Calvert	25	735	3.36
Caroline	14	399	3.51
Carroll	37	1,231	3.03
Cecil	35	1,263	2.77
Charles	76	1,224	6.21
Dorchester	13	344	3.68
Frederick	112	3,074	3.63
Garrett	29	509	5.77

Harford	74	2,460	2.99
Howard	107	4,015	2.67
Kent	4	199	2.01
Montgomery	372	7,189	5.18
Prince George's	392	8,812	4.44
Queen Anne's	17	959	1.74
St. Mary's	60	889	6.75
Somerset	6	265	2.27
Talbot	9	627	1.38
Washington	102	1,975	5.15
Wicomico	48	939	5.15
Worcester	37	840	4.37
Baltimore City	140	3,243	4.31
Statewide	**2,445**	**55,781**	**4.38**

Calculated Rate Sorted

St. Mary's	6.75
Charles	6.21
Garrett	5.77
Baltimore	5.56
Montgomery	5.18
Wicomico	5.15
Washington	5.15
Anne Arundel	4.72
Prince George's	4.44
Statewide	4.38
Worcester	4.37
Baltimore City	4.31
Dorchester	3.68
Frederick	3.63
Caroline	3.51
Calvert	3.36
Carroll	3.03
Harford	2.99
Cecil	2.77
Howard	2.67

Allegany	2.41
Somerset	2.27
Kent	2.01
Queen Anne's	1.74
Talbot	1.38

Zip Code Tabulation Analysis Examples

ZIPCODE1	ZIPName	Jurisdiction	sum_injuries
21237	Rosedale	Baltimore County	479
21740	Hagerstown	Washington	399
21208	Pikesville	Baltimore County	364
21061	Glen Burnie	Anne Arundel	337
21234	Parkville	Baltimore County	334
20785	Hyattsville	Prince George's	327
20613	Brandywine	Prince George's	320
21228	Catonsville	Baltimore County	316
20878	Gaithersburg	Montgomery	308
21227	Halethorpe	Baltimore County	299
21117	Owings Mills	Baltimore County	279
21401	Annapolis	Anne Arundel	279
20740	College Park	Prince George's	257

ZIPCODE1	ZIPName	Jurisdiction	sum_injuries
20650	Leonardtown	St. Mary's	168
20659	Mechanicsville	St. Mary's	137
20619	California	St. Mary's	130
20653	Lexington Park	St. Mary's	115
20636	Hollywood	St. Mary's	44
20634	Great Mills	St. Mary's	41
20624	Clements	St. Mary's	17
20670	Patuxent River	St. Mary's	13
20620	Callaway	St. Mary's	11
20609	Avenue	St. Mary's	10

Program Area	Priority Jurisdictions (Injury/Fatal)	Priority Zip Codes (Fatalities)	Town Name (Fatalities)	Priority Zip Codes (Injuries)	Town Name (Injuries)	Priority Zip Codes (Traffic Stops - Offender Home)	Town Name (Stops - Home)	Priority Zip Codes (Traffic Stops - Stop Location)	Town Name (Stops - Location)
Speed (Example)	St. Mary's County	20650	Leonardtown	20650	Leonardtown	20659	Mechanicsville	20659	Mechanicsville
		20659	Mechanicsville	20659	Mechanicsville	20653	Lexington Park	20653	Lexington Park
		20636	Hollywood	20619	California	20650	Leonardtown	20636	Hollywood
		No additional fatalities.		20653	Lexington Park	20636	Hollywood	20650	Leonardtown
				20636	Hollywood	20619	California	20619	California

Key

Program Area: Highway Safety Plan/Strategic Highway Safety Plan Program/Emphasis Area.

Priority Jurisdictions: Based on the three-year average (2019-2021) number of program-area-specific injury and fatal crashes, a ranking of jurisdictions with a rate per VMT that is above the statewide rate. In this example, the statewide rate per VMT for speed-related injury and fatal crashes is 4.38. St. Mary's rate is 6.75.

Note: This methodology was developed using the best available data; however, a few points need to be made concerning the limitations in the data, particularly with vehicle miles traveled (VMT), which is collected and annually reported by MDOT-SHA following FHWA requirements. One limitation is in calculating rates for Worcester County, an Eastern Shore County with many vacation destination areas for warmer weather visitors. The population of Worcester County is modest compared to other jurisdictions but swells seasonally from a residential population of approximately 53,000, with around 7,000 in the vacation hotspot Ocean City, whereas during the summer months it is around 345,000 summer vacationers, and 8 million visitors annually. The crash rates are derived from the number of fatal and injury incidents per Worcester County residential population, not seasonal populations, therefore the overrepresentation of crashes in Worcester County is affected by this limitation. Nevertheless, the risk to residents and visitors alike is similar to other areas in the state, and program planning considers when populations are highest and most at risk. For example, Worcester County ranks high in impaired driving crash rates, most likely due to the seasonal behavior of visitors and drivers related to alcohol consumption. While the rate is higher for Worcester County compared to the statewide rate, the highest risk is in the summer months and that is when resources are deployed to address safety concerns.

Another jurisdiction with limitations related to VMT is Baltimore City. While MDOT-SHA has excellent data on state-maintained roads within City limits, travel on local roads that are maintained by the Baltimore City Department of Transportation is estimated by MDOT-SHA and may not reflect precise travel patterns and volume within the City, affecting the rates derived from using the official VMT submitted to FHWA. Nevertheless, Baltimore City also is an area that includes a sizable population (over 600,000) as well as seasonal, or event-based, fluctuations because of cultural and sports-related activities attracting visitors from outside of the City, presenting risk to residents and visitors alike. Program planning considers local-based knowledge in identifying locations and populations for safety outreach efforts.

Priority Zip Codes (Fatalities): Based on the Zip Code Tabulation Analysis (provided by the Washington College GIS Program) which is a 2016-2020 sum of all fatalities by zip code, ranked from highest to lowest for each jurisdiction. The top five (5) zip codes are selected unless there are no fatalities within that zip code.

Priority Zip Codes (Injuries): Based on the Zip Code Tabulation Analysis is a 2016-2020 sum of all injuries (KABCO 2-4) by zip code, ranked from highest to lowest for each jurisdiction. The top five (5) zip codes are selected.

Priority Zip Codes (Traffic Stops – Offender Home): Based on the Zip Code Tabulation Analysis which is a 2015-2020 sum of all program area-specific traffic violations by zip code, ranked from highest to lowest for each jurisdiction. Zip codes are derived from the driver license information of the offender. The top five (5) zip codes are selected.

Priority Zip Codes (Traffic Stops – Stop Location): Based on the Zip Code Tabulation Analysis which is a 2015-2020 sum of all program area-specific traffic violations by zip code, ranked from highest to lowest for each jurisdiction. Zip codes are derived geospatially based on the GPS coordinates provided by the officer. The top five (5) zip codes are selected. Counts of stops will not equal the total stops per year, per location due to missing location information in ETIX (zip codes areas are generated using the GPS (X/Y) field on the citation, which is not a required field and is missing in more than half of all citations written.)

Note about citations: Analysis of law enforcement traffic stops may be influenced by the available resources and priorities within individual departments as much as, or possibly more than, actual driver behavior. In other words, counts of stops within a geographic area are indications of traffic violations related to driver behavior in that area, but proportionally, or compared to other areas, the number of stops may be more indicative of law enforcement priorities related to policies and resource availability.

Appendix E: Racial Profiling Data Legislation for Maryland

Racial Profiling Data Collection 1906

Projects the State will undertake during the FFY to maintain and allow public inspection of statistical information on the race and ethnicity of the driver for each motor vehicle stop made by a LE officer on all public roads except those classified as local or minor rural roads.

In 2001, the Maryland General Assembly passed § 25-113 of the Transportation Article. The statute, which requires data collection on every law eligible traffic stop in Maryland, aims to provide information about the pervasiveness of racial profiling. Since 2002, Maryland law enforcement agencies have collected and reported traffic stop data according to the legislation.

In August 2011, the Governor's Office of Crime Prevention, Youth, and Victim Services provided funding to the Maryland State Police to create a modification of the E-TIX (Electronic Traffic Information Exchange) interface, which includes a reporting entry database that allows for all law enforcement agencies to submit traffic stop records electronically. Using free DeltaPlus software, any agency can submit data on each individual traffic stop, which then gets stored by the Maryland State Police who has a repository on all traffic stop data in the state.

In 2019, Chapters 625 and 626 (House Bill 301/Senate Bill 417) required the permanent data collection and reporting related to race-based traffic stops by law enforcement in Maryland. It also required the Governor's Office of Crime Control and Prevention to post the race-based traffic stop data in a location easily accessible to the public, and the public must be able to easily filter the data collected during the prior year.

The filterable data display, titled Race-Based Traffic Stop Data Dashboard, includes traffic stop data from 135 law enforcement agencies in Maryland over the last five years with the most recent data collected during the 2021 calendar year. (2022 is currently being processed as of the writing of this plan.) Data reflected in the dashboard is reported by law enforcement agencies in Maryland to the Maryland Department of State Police.

Transportation Article § 25–113(f)(2) requires the Maryland Statistical Analysis Center to post race-based traffic stop data on its website in a location that is easily accessible to the public with a filterable data display of all data collected under this section for the previous calendar year. The filterable data display, titled Race-Based Traffic Stop Data Dashboard, includes traffic stop data from 135 law enforcement agencies in Maryland over the last five years with the most recent data collected during the 2021 calendar year. It also allows users to select one or more data measures to view results.

Note: Maryland law does not require this information to be gathered on all stops (per NHTSA 1906 requirements), only certain eligible stops per law (e.g., does not include stops based on radar > speed). The dashboard is limited to the following:

Stop Reason
13 (Registration)
16 (License Violations)
21.11 (Misc. Rules)
21.13 (Registration)
21.14 (Toll Violations)
21.2 (Signs, Signals, and Markings)
21.3 (Right side of road, Passing)
21.4 (Right of Way)
21.5 (Pedestrian Rules and Rights)
21.6 (Turning, Signals, and Stopping)
21.7 (Special Stops)
21.8 (Moving Violations)
21.9 (Reckless Driving or Fleeing)
22 (Equipment)
99 (All other stops)

However, through partnerships with the Maryland Department of State Police, the Maryland Judiciary, the National Study Center for Trauma and EMS (University of Maryland, Baltimore), and Washington College, MHSO does have access to all traffic stops and is working on updated agreements to access these data for more comprehensive analysis, including warning data.

In May 2023, the National Study Center was awarded a mid-year FFY2023 grant to begin the initial phase of 1906-funded analysis. The NSC will describe the current processes for collecting and analyzing race-based traffic stop/citation information and perform preliminary analysis on the currently available data. This will include processes and data of the Maryland State Police (MSP), local Law Enforcement (LE) agencies, and the Governor's Office of Crime Control and Prevention (GOCCP). In addition, the NSC will verify and describe any gaps in the systems that would adversely affect NHTSA's intent to collect race-based information on all traffic stops. Final recommendations will include potential changes to data elements and data collection policies, as well as proposals for further data analysis. Upon the completion of this assessment (July 30, 2023), MHSO will consider the next phase for 1906-funded analysis and training opportunities.

While Maryland posts the data online, there is still much unknown about the quality of the data (accuracy, completeness). See the Discussion section of the 2018 report: http://goccp.maryland.gov/wp-content/uploads/traffic-stop-report-2018.pdf GOCCP stopped providing this report when the dashboard was made public. The data are presented with no information about its quality. This project, and subsequent as-yet formalized phases, will seek to understand the limitations in this and similar datasets that may be of potential use for further traffic safety analysis, with traffic stops and potential disparities in risk and outcomes as it relates to equity and underserved communities.

The Maryland Highway Safety Office seeks to understand more about race-based stops because traffic enforcement and HVE are a significant component of its Highway Safety Plan. Additionally, understanding traffic safety through an equity perspective, which includes the effect on underserved communities, is an evolving priority in MHSO planning; therefore, MHSO intends to look at many traffic safety issues through the lens of race and ethnicity, with the first step being to evaluate existing datasets for their potential in additional analysis and program planning. Without understanding the potential and limitations of the data, misinterpretation of the data could prove to be counter effective to any future projects.

Appendix F: Maryland Traffic Records Strategic Plan (2021 – 2025)

Traffic Records Strategic Plan 2021–2025

5/31/2023

MARYLAND TRCC

MARYLAND DEPARTMENT OF TRANSPORTATION

MOTOR VEHICLE ADMINISTRATION

Maryland Highway Safety Office

Contents

Traffic Records Coordinating Council Overview

Maryland has a clear mission to prevent deaths and injuries on our streets and highways. Many steps have been taken toward meeting this goal, but many challenges remain. Reaching our goal of zero deaths and injuries will require a diverse group of stakeholders—state and local agency partners, nongovernmental organizations, as well as the public—to work collaboratively on issues of common concern.

The Maryland Traffic Records Coordinating Committee (TRCC) is an interagency effort that is based on a model from the United States Department of Transportation (USDOT). The TRCC is a working group of data owners, managers, and users representing six traffic records system components (crash, roadway, citation/adjudication, driver, vehicle, and injury surveillance) and uses six data quality performance measures (timeliness, completeness, accuracy, accessibility, integration, uniformity) to evaluate progress. For nearly two decades, the Maryland TRCC has served as a central point of coordination for the traffic safety community in achieving the vision of zero traffic-related deaths. The TRCC Charter describes the Vision and Mission Statement, as well as the purpose and duties of the Committee.

VISION

Safe Maryland roads free of traffic fatalities and injuries.

MISSION

To use effective management principles and emerging technologies to improve the quality, timeliness, and availability of traffic records data and systems to enable the Maryland traffic safety community to identify and resolve traffic safety issues thereby achieving Maryland's goal of zero traffic-related deaths.

PURPOSE

The Maryland Traffic Records Coordinating Committee is responsible for reviewing and assessing the status of Maryland's Traffic Safety Information System Improvement Program and its components. The TRCC will:

- oversee the development and update of a strategic plan that serves the public and private sector needs for traffic safety information;
- learn about technologies and other advancements necessary to improve the traffic safety information system;
- promote, support, and assist in the coordination and implementation of needed or desired system improvements; and
- provide a forum for the exchange of information regarding safety data among the traffic safety community.

DUTIES

Maryland's TRCC shall:

- ideally have authority to review any of the State's highway safety data and traffic records system components and any changes to such systems before the changes are implemented;
- consider and coordinate the views of organizations in the State that are involved in the collection, administration, and use of highway safety data and traffic records system components, and represent those views to outside organizations;
- review and evaluate new technologies to keep the highway safety data and traffic records system current; and
- approve annually the membership of the TRCC, any change to the State's multi-year Strategic Plan, and performance measures to be used to demonstrate quantitative progress in the

accuracy, completeness, timeliness, uniformity, accessibility, or integration of a core highway safety database.

The TRCC's vision and strategies comprises the strategic plan. The outlined strategic plan determines the Maryland Traffic Records community's direction over the next five years—where it intends to go, how it is going to get there, and evaluative measures to determine its level of success.

TRCC Structure

The TRCC is an interagency, intergovernmental working group focused solely on Maryland's traffic records system. Maryland's TRCC includes an Executive Council, Technical Council, and special committees that serve on an as-needed basis.

The **Executive Council** is an assembly of agency leaders or senior officials designated by the agency leader from member organizations that are custodians of Maryland's traffic records system components, formally invited by the Governor's Highway Safety Representative. The Executive Council supports the Traffic Records vision, mission, and five-year Traffic Records Strategic Plan (TRSP), assisting in advisory, policy, and/or economic capacities. The identified members meet as designated in the charter twice-annually to direct Maryland's efforts.

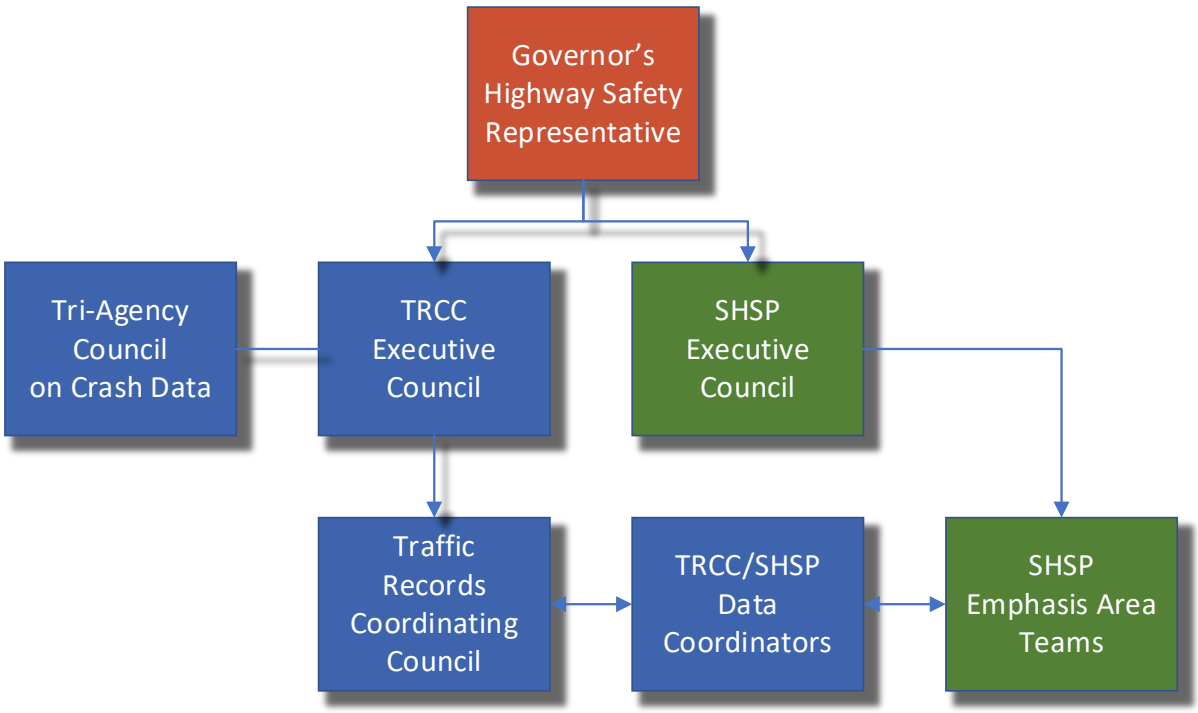
Currently, the Administrator of the Maryland Department of Transportation (MDOT) Motor Vehicle Administration (MVA) is designated as Maryland's Governor's Highway Safety Representative and, in that role, also serves as the chairperson of the TRCC. The MDOT MVA Highway Safety Office (MHSO) is responsible for the day-to-day leadership and coordination of the TRCC as designated through the TRCC Charter. MHSO is dedicated to saving lives and preventing injuries by reducing motor vehicle crashes through the implementation of the Strategic Highway Safety Plan (SHSP). Maryland's TRCC fills a critical role in the SHSP by providing the data necessary to create a comprehensive data-driven plan. Maryland is firmly committed to upholding the federal mandate outlined in the Comprehensive Statewide Safety Data Planning Process indicating that "all decisions will be based upon data."

Technical Council members are composed of subject matter experts from the data custodial agencies who are familiar with and have access to their agency's traffic records system database. Technical Council members are appointed by their respective Executive Council member and serve at the discretion of their agency. This group meets bi-monthly throughout the year. This Council also includes other traffic safety stakeholders, such as research organizations, academic institutions, and federal and local partners and data users.

TRCC special committees are identified and formed as necessary to carry out the work of the TRCC. Such committees have included a GIS Subcommittee, a crash data task force, and the Maryland Traffic Records Forum committee.

Additionally, Maryland's Technical Council includes SHSP Data Coordinators who serve as members of each of the SHSP Emphasis Area Teams to ensure that all data needs are appropriately met. They are invited to all Technical Council meetings and encouraged to provide SHSP updates and share information with the Emphasis Area Teams, serving as liaisons and a bridge across the two major traffic safety plans in Maryland, the SHSP and TRSP.

Figure 1: Maryland's TRCC Structure



Members of Maryland's TRCC represent the six data systems and subsystems critical to the collection, management, and analysis of traffic safety data. Outlined in Table 1 are the executive partners that oversee and represent Maryland's traffic records system components.

Table 1: Maryland's Traffic Records System and Executive Council Members

Data System	Icon	Agency(ies)
Crash		Maryland State Police MDOT State Highway Administration (SHA)
Citation/Adjudication		Maryland State Police (MSP) Maryland District Court
Driver		MDOT Motor Vehicle Administration (MVA)
Vehicle		MDOT Motor Vehicle Administration (MVA)
Roadway		MDOT State Highway Administration (SHA)
Injury Surveillance System • **pre-hospital emergency medical services (EMS)** • **trauma registry** • **emergency department**		Maryland Institute for Emergency Medical Services Systems (MIEMSS) Maryland Health Services Cost Review Commission (HSCRC) Maryland Department of Health (MDH)

• **hospital discharge** • **mortality data**		
Technical Systems (Overall Support)	Department of INFORMATION TECHNOLOGY	Maryland Department of Information Technology (DoIT)
Policy and Management (e.g., Data Governance)	MDOT MARYLAND DEPARTMENT OF TRANSPORTATION	Maryland Department of Transportation (MDOT) – The Secretary's Office (TSO)
TRCC Management	MDOT MARYLAND DEPARTMENT OF TRANSPORTATION MOTOR VEHICLE ADMINISTRATION Maryland Highway Safety Office	MDOT MVA Highway Safety Office (MHSO)

Background

State highway safety programs rely on accurate, accessible, complete, integrated, uniform, and timely traffic records data to guide and support their efforts to reduce highway crashes, injuries, and fatalities. In the Safe, Accountable, Flexible and Efficient Transportation Equity Act (SAFETEA) of 2005, Congress recognized this need and provided grant funding to help states establish and maintain comprehensive safety data improvement programs.

This funding is continued under the Fixing America's Surface Transportation Act of 2015 (FAST Act) in the State Traffic Safety Information System Improvements Grant program (23 CFR § 1300.22). To qualify for funding for traffic records system improvements under the FAST Act, each State's designated highway safety office must submit a Traffic Records Strategic Plan (TRSP) to the United States Department of Transportation, National Highway Traffic Safety Administration (NHTSA).

The MDOT MVA Highway Safety Office manages the state's traffic records program and is coordinator for the statewide Traffic Records Coordinating Committee (TRCC), which oversees the development and implementation of the TRSP.

The 2021–2025 TRSP addresses each of the traffic records system components identified in NHTSA's *Traffic Records Program Assessment Advisory*, and identifies critical actions, performance measures, and resources needed (legislative, organizational, or budgetary) to efficiently and effectively reach the plan's goals. Recommendations for improvements identified in Maryland's 2019 NHTSA Traffic Records Program Assessment are incorporated so that Maryland's traffic records system will meet or exceed national ideals.

This plan builds on the *2011–2015 Traffic Records Strategic Plan* and the *2016–2020 Traffic Records Strategic Plan*.

2011–2015 TRSP

To develop 2011–2015 plan, the State conducted reviews of existing systems and programs. The results of these reviews helped to identify strengths of Maryland's traffic records system as well as to develop priorities for improvements.

In 2010, Maryland completed a Traffic Records Program Assessment in partnership with NHTSA. The Traffic Records Program Assessment is a technical assistance tool offered by NHTSA to state highway safety offices that uses nationally recognized experts to compare the state's traffic records program with a set of performance standards established by NHTSA and the Governors Highway Safety Association (GHSA).

Also in 2010, Maryland completed a Federal Highway Administration (FHWA) Crash Data Improvement Program (CDIP), an intensive evaluation of the crash data system that evaluates methods and technologies for collection, management, sharing, and analysis of crash data. The recommendations from both the Traffic Records Program Assessment and CDIP Reports were used to develop the objectives for the 2011–2015 TRSP.

2016–2020 TRSP

To assess progress toward the State's goals and to prepare for the 2016–2020 TRSP, a follow-up Traffic Records Program Assessment was completed in December 2014. Under federal regulations for traffic records funding (§405(c)), states must include all recommendations from the most recent Traffic Records Program Assessment in the TRSP. The Assessment-generated recommendations are broad and allow states to further refine goals. All recommendations from the 2014 Assessment are included and highlighted in each section below and used as examples in the Appendix.

The 2016–2020 TRSP was developed to align with the new Maryland SHSP (2016–2020). The alignment of the two major traffic safety plans further strengthened the collaboration and coordination between Maryland's traffic records data and traffic safety program communities. The process of developing strategies in both the TRSP and the SHSP were similar, and each SHSP Emphasis Area Team developed strategies with a vision and understanding of the need for data to carry out action steps and evaluate strategies. In parallel, the TRSP strategies were written in consideration of the end users, such as the Emphasis Area Team members, who need traffic safety data to implement and evaluate the success of the implemented strategies.

2021–2025 TRSP

With the adoption of the new plan, the 2016–2020 Plan is concluded. To continue to assess progress toward the State's goals and determine the priorities for the 2021–2025 TRSP, a Traffic Records Program Assessment was completed in September 2019.

Congress has recognized the benefit of independent peer reviews for State traffic records data systems. These assessments help States identify areas of high performance and areas in need of improvement in addition to fostering greater collaboration among data systems. To encourage States to undertake such reviews regularly, the Fixing America's Surface Transportation Act (FAST ACT) legislation requires States to conduct or update an assessment of its highway safety data and traffic records system every five years to qualify for §405(c) grant funding. The State's Governor's Representative for Highway Safety must certify that an appropriate assessment has been completed within five years of the application deadline.

2019 Traffic Records Assessment Results Summary

The Traffic Records Program Assessment is built upon the assessment completed five years ago. Since the 2014 assessment, Maryland has worked diligently in all areas of the traffic records system and was commended by NHTSA for the strides made toward improving traffic data systems and the plans for continued future improvements. Maryland was specifically commended regarding our efforts in data integration. Maryland's Traffic Records Program *meets the Advisory ideal* in this regard and should serve as a model for other States seeking to meet the Advisory ideal in this module.

Out of 328 assessment questions, Maryland met the Advisory ideal for 190 questions (58%), partially met the Advisory ideal for 67 questions (20%) and did not meet the Advisory ideal for 71 questions (22%).

Within each assessment module, Maryland met the ideal outlined in the Traffic Records Program Assessment Advisory 88% of the time for Traffic Records Coordinating Committee Management, 27% of the time for Strategic Planning, 60% of the time for Crash, 56% of the time for Vehicle, 71% of the time for Driver, 50% of the time for Roadway, 34% of the time for Citation and Adjudication, 61% of the time for EMS/Injury Surveillance, and 100% of the time for Data Use and Integration.

TRCC Strategic Planning Process

A Traffic Records Strategic Plan Steering Committee was formed in November 2019 to guide the development of the 2021–2025 TRSP. Members were strategically identified to ensure all components of the Maryland Traffic Safety Information System Improvement Program and data owners were represented in the planning process.

Maryland's plan:

(i) specifies how existing challenges in the State's highway safety data and traffic records system were identified;
(ii) prioritizes, based on the identified highway safety data and traffic records system deficiencies, the highway safety data and traffic records system needs and goals of the State;
(iii) identifies performance-based measures to evaluate progress toward those goals;
(iv) specifies how the §405(c) grant funds and any other funds of the State will be used to address needs and goals identified in the multiyear plan; and
(v) includes a current report on the progress in implementing the multiyear plan that documents progress toward the specified goals.

The Traffic Records Strategic Plan Steering Committee used several different processes to develop the 2016–2020 TRSP to ensure the requirements defined by Congress and established by NHTSA were met. During the strategic development sessions, ground rules were established and an overarching review plan established. A formal consensus-building technique (Nominal Group Technique) was used by the steering committee to develop specific procedures for the review of each section of the system components. The technique included:

1. Generating ideas – Silent individual thought and notes.
2. Recording ideas – Round-robin sharing/brainstorming of ideas for recording without discussion or debate.
3. Discussing ideas – Open discussion to express understanding, logic, importance.
4. Voting on ideas – Individual voting of top five: most important ranking five, least important rank one.
5. Finalizing the list – Decide if additional rounds of voting were needed to expand or finalize the recommended list.

A set of constructs for each section of the plan were shared for discussion and consideration, including idealistic objectives, recommendations and considerations from Maryland's 2014 Traffic Records Program Assessment, and a set of objectives that had been included and were part of the most recent strategic plan.

The Steering Committee then shared a set of proposed strategies with the full Traffic Records Coordinating Committee membership. These members then reached consensus using the Delphi Technique where each member prioritized Maryland's strategies and submitted votes for tally. A final prioritized list was generated and the resulting sections were presented to both the Technical and Executive Councils for formal acceptance. The resulting work and formal components of the Traffic Safety Information System are outlined in the included sections: TRCC Management, Data Use and Integration, Crash, Vehicle, Driver, Roadway, Citation and Adjudication, and Injury Surveillance Systems.

TRSP Organization

Each section of the TRSP includes a description of the area, target audience, and a list of strategies prioritized by the members of Maryland's Traffic Records community.

The TRCC is responsible for implementing the plan and tracking progress toward these goals. The TRCC will:

- Prioritize traffic records improvement projects with TRCC members annually.
- Identify and leverage an annual minimum of one federal fund/assistance program.
- Identify and incorporate two strategies annually that address the timeliness, accuracy, completeness, uniformity, integration, or accessibility of the six core data systems.
- Prioritize the use of all funds to address efforts identified in the strategic plan to enhance state traffic records data improvement systems.
- Ensure federally allocated funds are spent in an efficient and effective manner.
- Develop a process to examine data and data systems to identify and document challenges.
- Identify, prioritize, and implement at least one annual training effort to improve the State traffic records data system and provide technical assistance as needed to partners.
- Identify and prioritize performance-based measures and corresponding metrics for the six core data systems annually.
- Identify and integrate state and local needs and assets through an annual survey.
- Identify and prioritize technological advancements to improve the State traffic records data systems.

Traffic Records Program Assessment—NHTSA Recommendations

To continue to assess progress toward the State's goals and determine the priorities for the 2021–2025 TRSP, a follow-up Traffic Records Program Assessment was completed in September 2019. Under federal regulations for traffic records funding (405(c)), states must include all recommendations from the most recent Traffic Records Program Assessment in the TRSP.

The Maryland 2021–2025 TRSP incorporates recommendations and considerations from the 2019 NHTSA Assessment, from FHWA's Maryland State Roadway Safety Data Capability Assessment Action Plan (January 2019), and from the TRCC Technical and Executive Councils, and the 2021-2025 TRSP must be ratified for submission to NHTSA by July 1, 2020.

TRCC Recommendation

- None.

Strategic Planning Recommendation

- None.

Crash Recommendations

- Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the interfaces with the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.

Vehicle Recommendations

- Improve the data quality control program for the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the interfaces with the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.

Driver Recommendations

- Improve the data quality control program for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the interfaces with the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.

Roadway Recommendations

- Improve the applicable guidelines for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the data quality control program for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.

Citation /Adjudication Recommendations

- Improve the data quality control program for the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the interfaces with the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.

EMS/Injury Surveillance Recommendations

- Improve the data quality control program for the Injury Surveillance systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.

Federal Inclusion Criteria

Throughout the five-year plan, the TRCC Program Manager is expected to provide NHTSA with regular updates on the progress of the State's plan. NHTSA Regional Program Managers are to be included during the planning and implementation processes to satisfy their interest in assuring that States are collecting the best data possible that in turn allows them to make appropriately informed decisions at the federal level.

Additionally, paramount to Maryland's Traffic Records Strategic Plan during the five-year cycle is the consideration, support, and guidance from other federal partners (e.g., legislative, organizational, budgetary, or other) in improving the state safety data initiatives. The Appendix has additional detail on ways the State has and may continue to pursue the possibility of receiving federal safety program funds.

Monitoring and Updating the Strategic Plan

The Traffic Records Strategic Plan is developed with a five-year vision and goal-setting process. The plan will remain in place for five years before undergoing a complete re-evaluation and revision. However, progress for each strategy and Assessment recommendation will be monitored by the TRCC Technical Committee on a quarterly basis and evaluated on an annual basis to identify issues or note success. Once a strategy is complete, it will remain in the plan but effort and resources will be focused to another project in the plan as determined by the TRCC.

Traffic Records System Components and Strategies

The Advisory identifies three major sections of a state traffic records system:

1) Traffic Records System Management
   a) Traffic Records Coordinating Committee (TRCC)
   b) Strategic Planning

2) Data Use and Integration

3) Traffic Records System Components
   a) Crash Data
   b) Vehicle Data
   c) Driver Data
   d) Roadway Data
   e) Citation and Adjudication
   f) Injury Surveillance
      i) Pre-hospital (EMS)
      ii) Trauma Registry
      iii) Emergency Department
      iv) Hospital Inpatient
      v) Vital Records

Traffic Records System Management (TRCC and Strategic Planning)
Description
The Traffic Records Coordinating Committee coordinates all traffic records system components (crash, roadway, citation/adjudication, driver, vehicle, injury surveillance) using data quality performance measures (timeliness, completeness, accuracy, accessibility, integration, uniformity) to advance the Maryland traffic safety community in achieving the vision of no traffic-related deaths.

Target Customers
TRCC Council Chairs and Facilitator

Prioritized Strategies

1. Conduct and publish a complete traffic records system inventory with data definitions, flow diagrams for each component system, a brief description of each data system and set, to include who owns the data and contact information, any limitation on the use of the data, and for what the data system is best used.
2. Prioritize strategic plan responsibilities using annual timelines.
3. Catalog and publish data release policies and/or data sharing agreements from all partners with traffic records data, specifically identifying rules that allow intra- and inter-agency access, and public access.
4. Review and prioritize federal data element requirements—Model Minimum Uniform Crash Criteria Guideline (MMUCC), National Emergency Medical Services (EMS) Information System (NEMSIS), and Model Inventory of Roadway Elements (MIRE)—to enhance State traffic records data improvement systems.
5. Institutionalize the evaluation of TRCC responsibilities:
   a. Monitor annual progress of the TRCC strategic plan.

    b. Track agency policy decisions that impact the State's traffic records system.
    c. Document progress through Council Meeting agendas/minutes.
6. Improve performance measure monitoring and oversight at the TRCC. Assign responsibility to performance measure owners for reporting to the membership at each meeting.
7. Establish regular quality control reporting and enhance the review of technical and training needs of traffic records system end users, expanding to a wider range of stakeholders and end-user needs.
8. Ensure the annual addenda to the five-year plan are robust and detailed enough to meet the federal grant reporting requirements and provide the State with the necessary oversight and monitoring of its traffic records system progress.
9. Improve performance measures contained within the Strategic Plan by adding meaningful goals and baselines in addition to establishing quarterly monitoring at the TRCC.

Data Use and Integration

Description

Data integration refers to the establishment of connections between the six major traffic records system components (crash, vehicle, driver, roadway, citation and adjudication, and injury surveillance). Integrated datasets enable users to:

- conduct analyses and generate insights impossible to achieve if based solely on the contents of any singular data system;
- add detail to the understanding of each crash event, the roadway environment, and the people and vehicles involved; and
- efficiently expand the information available to decision-makers while avoiding the expense, delay, and redundancy associated with collecting the same information separately.

Benefits of Integrated Data

1. Lower costs to achieve a desired level of data content and availability.
2. Support for multiple perspectives in data analysis and decision-making.
3. Expanded opportunities for data quality validation and error correction.
4. Additional options for exposure data to form rates and ratio-based comparisons.
5. Enhanced accuracy and completeness of data describing crash events, the roadway environment, and the involved people and vehicles.
6. Increased relevance of information available for legislative and policy analysis.
7. Increased support for advanced methods of problem identification, countermeasure selection, and evaluation of program effectiveness.

Target Customers

Data analysts (end users), policymakers, and general public

Prioritized Strategies

1. Implement data governance guidelines for data release and availability.
2. Provide ongoing access to traffic records data and analytic resources for problem identification, priority setting, and program evaluation with analytical partner support.
3. Integrate data from traffic records system components to satisfy specific analytical inquiries.
4. Provide timely access to data analyses and interpretation upon request.
5. Make outputs from state data linkage systems available to state and local decision-makers to influence data-driven policy and reform.
6. Make outputs from state data linkage systems available to the general public.

7. Make integrated data outputs from data linkage systems available for research abiding by data security agreements.
8. Provide training sessions, presentations, webinars, and technical support to partners on all products and services provided by analysis resources (e.g., grant-funded university- or college-based analysts) in addition to GIS techniques and processes for traffic safety related datasets.

Crash Data

Description

The crash data system is the keystone of a state's traffic records system. The crash data not only hold the basic information critical to developing and deploying effective traffic safety countermeasures, but they also serve as the hub through which other systems are connected.

The crash file documents the characteristics of a motor vehicle crash and provides the following details about each incident:

- Who: Information about the drivers, occupants, and non-motorists involved in a crash (e.g., license status, age, sex).
- What: Information about the type of vehicle involved in a crash (e.g., make, model, body type, vehicle registration).
- When: Information detailing the time a crash occurred (e.g., time of day, day of week).
- Where: Information about the crash location (e.g., location name, lat/long coordinates, type, attributes).
- How: Information describing the sequence of events and circumstances related to a crash from the first harmful event through the end of a crash and its consequences (e.g., damage, injury).
- Why: Information about the interaction of various systems that may have contributed to the crash occurrence (e.g., weather, light conditions, driver actions, non-motorist actions) and/or the crash severity.

Through data linkages, the crash data assist in the identification of types of roadways, vehicles, and individuals involved in a crash. Crash data are also used to guide engineering and constructions projects, prioritize law enforcement activity, select/evaluate safety countermeasures, and to analyze emergency response and how to maximize the level of care, survivability, and analysis of related injuries.

Target Customers

Data users, owners, executives in traffic records-related agencies

Prioritized Strategies

1. Provide a narrative description of the process by which the Model Minimum Uniform Crash Criteria Guideline (MMUCC) was used to identify what crash data elements and attributes are included in the crash database and police crash report.
2. Develop and release documentation on changes made to the Automated Crash Reporting System (ACRS) and related databases based on the latest MMUCC recommendations, and MSP and TRCC input.
3. Convert reporting systems and reports to account for changes in fields, codes, and definitions in ACRS.
4. Develop and maintain a data dictionary that includes American National Standards Institute (ANSI) D-16 and ANSI D-20 definitions, which include rules of use, rules exceptions, and identify those data elements that are populated through linkages to other traffic records system components.

5. Develop and maintain a comprehensive data quality management protocol to monitor collection, submission, processing, posting, and maintenance of crash data.
6. Define and provide a list of data elements for property-damage-only (PDO) crash submission criteria for the statewide crash system and implement a short-form crash report for minor PDO crashes
7. Define and provide a list of data elements that are populated in the crash system through linkages to other traffic records system components (e.g., the driver file, the vehicle file, the roadway inventory, or Statewide mapping system). (MMUCC mapping).
8. Develop crash data system performance measures and monitor at least annually.
9. Provide feedback to law enforcement agencies regarding incomplete and inaccurate data submitted through ACRS.
10. Develop a comprehensive crash data reporting training program with an emphasis on crash data completeness and accuracy.
11. Improve the interface between the crash and roadway data systems, ensuring MSP and law enforcement agencies have the most up-to-date roadway files from MDOT SHA.
12. Establish policy and procedures for the timely submission of crash reports from local law enforcement agencies to MSP through the ACRS system.
13. Incorporate federal agency crash reports into the state system (e.g., National Park Police).
14. Link crash data with EMS records to help integrate crash with Trauma Registry, Hospital, and Vital Records.
15. Develop improved data visualization tools used to access the crash data.

Driver and Vehicle Data

Description

Driver: The driver data system ensures that each person licensed to drive has one identity, one license to drive, and one record. The driver file maintains information on all out-of-state or unlicensed drivers convicted of traffic violations within state boundaries.

Vehicle: The vehicle data system is an inventory of titling and registration data for each vehicle under the State's jurisdiction. The inventory ensures that a descriptive record is maintained and made accessible for each vehicle and vehicle owner operating on public roadways.

Target Customers

Law enforcement, driver and vehicle data managers/collectors, driver safety program managers and researchers, Commercial Driver License (CDL) employers, federal agencies, judicial system

Prioritized Strategies

1. Implement MDOT MVA Customer Connect system modernization to unify core MDOT MVA business systems to enable premier customer service, enhanced safety and security and improve driver and vehicle data quality.
    - Implement real-time National Motor Vehicle Title Information System (NMVTIS) checks for all vehicle titling transactions.
    - Capture novice drivers' training histories, drivers' traffic violations, driver improvement training histories, and original dates of issuance for all permits, licenses, and endorsements in the driver system.
2. Continue participation in the Performance and Registration Information Systems Management (PRISM) program.

3. Continue participation in the State-to-State verification service in all driver license transactions and develop performance measures to monitor system performance and compliance with program standards.
4. Evaluate the feasibility of including Blood Alcohol Concentration (BAC) information on the driving record either by interface with external data systems or by manual process, including resources required to implement this action in a reasonable timeframe.
5. Develop quality management systems that list performance measures for timeliness, accuracy, completeness, uniformity, accessibility, and integration.
6. Maintain an updated data dictionary for the driver and vehicle systems and provide updates to Maryland's traffic records inventory.
7. Develop performance measures to ensure that critical and essential administrative actions are being added to driving records accurately and within expected timeframes.
8. Maintain updated data processing flow diagrams for critical driver and vehicle transactions that detail data inputs, validation steps, interfaces with external data systems, and time necessary to complete each element of the transaction.
9. Enhance interfaces between the driver and vehicle systems with other components of the traffic records system.
10. Develop performance measures for vehicle systems and report regularly to the TRCC.
11. Develop and adopt a comprehensive data management program for the driver system that includes the development of performance standards for data accuracy, completeness, uniformity, accessibility, and integration.
12. Increase capability to monitor impaired driving offenders through driver system interfaces and integration with other data systems to ensure that offenders are properly identified and that subsequent license sanctions, conviction information, and follow-up activities are completed and recorded on the driver history.
13. Develop and provide driver and vehicle system data quality management reports to the TRCC for regular review and ensure driver and vehicle system managers participate in TRCC meetings.

Roadway Data

Description

The State's roadway data system comprises data collected by the State, such as State-maintained roadways and some local roadways, as well as data from local sources, such as county and municipal public works agencies and Metropolitan Planning Organizations (MPOs).

Target Customers

Traffic engineers, MDOT SHA – OHD (Office of Highway Design) (Highway Safety Manual - HSM) and DSED (Data Services Engineering Division), data users (reporting systems needing GPS info – MSP crash)

Prioritized Strategies

1. Maintain process flow diagrams and written narrative details that outline data submission, returning and resubmission requirements and local agency procedures, in the traffic records inventory.
2. Improve the data quality control program for the roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory and the Roadway Safety Data Capability Assessment (RSDC).

- Assist the roadway system custodian with developing quality management systems that list performance measures for timeliness, accuracy, completeness, uniformity, accessibility, and integration.
- Reduce the frequency of missing or blank data fields on State-maintained roadways in the inventory to less than 5%.
- Pursue high level of detail on all segments as well as either intersections or curves on State-maintained roadways.

3. Maintain a data dictionary for the roadway system, incorporating the Model Inventory of Roadway Elements (MIRE) elements and include this detail as part of the traffic records inventory.
4. Improve the State roadway system to meet federal guidelines itemized in All Roads Network of Linear-Referenced Data (ARNOLD).
    - Capture all public roadways using a compatible uniform location referencing system in the roadway system by collaborating with county partners) to eliminate redundancy.
    - Maintain an enterprise roadway information system.
    - Maintain interfaces between roadway information systems.
    - Expand the Model Inventory of Roadway Elements (MIRE) data elements collected to improve analyses to develop and track potential countermeasures and identification of safety problems.
5. Develop and maintain interfaces between the roadway information systems and the other components of the traffic records system.
6. Incorporate specific, quantifiable, and measurable improvements for the collection of MIRE fundamental data elements (FDE) to ensure access to a complete collection of the MIRE FDEs of all public roads by September 30, 2026.
    - Evaluate the status of MIRE FDE collection efforts, including fundamental data elements currently maintained or not maintained in the roadway inventory as well as the public roads for which the FDEs are collected.
    - Document the appropriate data collection methodology.
    - Coordinate with other Maryland agencies at the state and local level.
    - Develop prioritization criteria for collecting MIRE FDEs on all public roads.

Additional Strategies Based on Recommendations from FHWA's RSDC Assessment:

1. Continue with the One Maryland One Centerline (OMOC) project that facilitates the complete inventory for all roadway elements.
2. Continue with the ESRI Roads and Highways implementation.
3. Continue data collection efforts for the safety data items—Bicycle/Pedestrian, Lighting, Work Zone, Structural Maintenance Zone Classification, and Guard Rails.
4. Develop a standardized set of performance measures that are reported more frequently for data managers, collectors, and data users.
5. Reduce the amount of time required for submission of as-built plans and/or for updating the database to achieve a goal of 1-3 months from completion of the roadway change. Roadway segment, traffic volume, intersection, interchange, ramp data are all on annual cycles with a typical time lapse of one year.
6. Continue the development of the change management model to help with tracking changes to the State roadway file.
7. Continue the OMOC project to move closer to 100% accuracy in the inventory. The State currently maintains a high level of accuracy (upwards 90%).

8. Provide feedback to law enforcement agencies on crash reporting to allow the State to identify fields that require better validation edits which will help collect better data on input.
9. Adopt more reliable methods for network screening. Traditional methods are prone to error and require similar levels of data as the more reliable methods. The level of analytic capabilities required to adopt more reliable methods is higher than for traditional methods, but the payoff in improved validity leads to the identification of sites with more potential for safety improvement.
10. Attempt to obtain crash data from federal parks and military installations.
11. Continue to develop asset inventories of interest.
12. Ensure the data are accessible to all potential users (not siloed), from an asset management perspective.
13. Develop and implement Agile Assets or another similar inventory tool would be useful to support this need for all public roads.
14. Develop a complete inventory and safety-project tracking mechanism for all public roads.
15. Ensure that the needs of new/infrequent users are addressed by agency policies and procedures. The State iMap address most needs for data accessibility. However, there is an opportunity to allow for electronic exchanges to provide data to users on a regular interval.
16. Continue the development of data documentation with the OMOC project. The State does have data dictionaries available. This could be expanded to guidance on data quality (where applicable).
17. Incorporate user satisfaction surveys as a potential measure of accessibility.
18. Draft policies that address the challenges in the data management policy.
19. Empanel a data governance group (e.g., asset management committee) charged with developing data governance processes.
20. Develop a Data Business Plan for managing core data programs in each agency/division.
21. Publish a Data Governance manual/handbook.
22. Establish formal policies for approval of all new data management initiatives.
23. Review policies, standards, goals, and targets periodically to ensure that user' needs are addressed sufficiently and that the state's standards evolve in response to changing needs.
24. Identify new opportunities to integrate datasets, e.g., obtain the bicycle and scooter crash data from local agencies and continue to encourage use of integrated data in safety analysis.
25. Continue with the development of the OMOC project to move towards a fully integrated statewide enterprise system for safety analysis of all public roads.
26. Continue improvements to the automated assignment of crash data locations, e.g., consider making manual adjustments to crashes beyond fatal crash reports.
27. Continue to develop and complete initiatives to identify and address essential safety data gaps and periodically assess and refine data quality improvement processes.
28. Enhance coordination efforts for safety performance with MPOs and other stakeholders within the State by:
    - Apply the evidence-based approach across multiple planning cycles. Conduct periodic reviews and refine the process and targets as needed.
    - Develop practices to strengthen performance-based planning and programming decisions.
29. Continue to expand capabilities to predict the impact of planned and programmed Highway Safety Improvement (HSIP) projects on future safety performance.
30. Develop scenario analysis capability that supports testing of various project mixes and assumptions.

31. Expand the capability to access and review pertinent data on external factors likely to impact future safety performance, including but not limited to socioeconomic data (population, demographics, jobs, etc.), vehicle miles traveled (VMT), revenues.
32. Refine the capability to predict the impact of planned and all programmed TIP and/or TIP projects (other than those in the HSIP) on future safety performance.
33. Develop the advanced scenario analysis capability with the ability to estimate future safety performance for different sets of projects, program elements, and varying assumptions about external factors.

Citation and Adjudication Data

Description

For traffic records purposes, the goal of the citation and adjudication data systems is to collect all information relevant to traffic-related citations in a central, statewide repository (and linked to appropriate federal data systems) so the information can be analyzed by authorized users to improve and promote traffic safety.

Target Customers

Law enforcement, driver licensing system, Court system to include Drug and DUI Courts, MDOT SHA

Prioritized Strategies

1. Implement a citation tracking system (from issuance to disposition).
    - Include violations issued to commercial drivers/vehicles in the tracking system and make that information available to administrative stakeholders.
    - Support Federal Motor Carrier Safety Administration (FMCSA) requirements for recording, reporting and adjudicating of CDL violations and licensing status, to include medical certification and appropriate endorsements
    - Support the interfaces to connect needed data from the court system, driver licensing, crash, and large trucks/commercial vehicles with the other components of the traffic records system.
    - Include BAC results on the driver history.
2. Maintain and improve the data dictionaries for the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.
3. Maintain the abilities to track DUI citations, administrative driver penalties and sanctions, juvenile offenders, court payments and appearances, deferral and dismissal of citations, record purging, and data governance.
4. Develop quality management systems that list performance measures for timeliness, accuracy, completeness, uniformity, accessibility, and integration.
5. Establish an effective process to ensure paper citations are submitted to the District Court accurately and within expected timeframes by law enforcement.
6. Expand the use of the State's e-citation system to all eligible state law enforcement agencies and officers and to federal partners.
7. Maintain process flow diagrams and written narrative details that outline data submission, returning and resubmission requirements for the citation/adjudication system, including all levels of courts, and include in traffic records inventory.
8. Expand the deployment and functionality of electronic citation capabilities as the standard for the State.

9. Improve the accuracy and collection of vehicle make, model, and violation location on traffic citations.
10. Expand the functionality of Delta Plus through the development of additional modules for collection and analysis of the data by members of the traffic records community.
11. Increase automation of updates to driver records from court adjudication data.
12. Enhance interfaces between Court, Citation, Crash, Vehicle and Driver data systems.

Injury Surveillance Data

Description

The injury surveillance data system tracks the frequency, severity, and nature of injuries sustained in motor vehicle crashes; enables the integration of injury data with the crash data; and makes this information available for analysis that supports research, prevention, problem identification, policy-level decision-making, efficient resource allocation, and program evaluation.

This section incorporates:

- pre-hospital emergency medical services (EMS);
- trauma registry;
- emergency department;
- hospital discharge; and
- mortality data (e.g., death certificates, medical examiner reports).

Target Customers

Traffic records community, Injury Surveillance System managers, Emergency Medical Services community

Prioritized Strategies

1. Maintain process flow diagrams, written narrative details that outline data submission, returning and resubmission requirements for each of the core injury surveillance systems (EMS, Emergency Department, Hospital Discharge, Trauma Registry, Vital Records), and data dictionaries, and include these items in the traffic records inventory.
2. Ensure injury surveillance system data are available for analytical purposes.
3. Assist each of the injury surveillance system components with developing quality management systems that list performance measures for timeliness, accuracy, completeness, uniformity, accessibility, and integration.
4. Develop training, data collection manuals, and validation rules addressing high frequency errors in each injury surveillance data system component.
5. Document and ensure quality control processes are in place to assess completeness, accuracy, timeliness, integration, accessibility, and uniformity for each of the core injury surveillance systems (EMS, Emergency Department, Hospital Discharge, Trauma Registry, and Vital Records). Update records at least once every three years.
6. Track documented findings from quality control methods and lists regarding completeness, accuracy, timeliness, integration, accessibility, and uniformity.
7. Develop corresponding training, data collection manuals, and validation rules addressing high frequency errors for each performance area.
8. Assist partnering agencies with implementation of quality assurance and improvement procedures for collecting, editing, error checking, and submitting reports.

Benchmarking and Goal Setting

To follow Maryland's Traffic Records logic model, outputs (short-term and intermediate outcomes) for the six traffic records attributes (accessibility, accuracy, completeness, integration, uniformity, timeliness) will be established and tracked annually. These measures serve as benchmarks against which Maryland can track performance and current status of each system component.

Maryland strives to identify performance measures and performance attributes for each traffic records system component. Included measures will be assessed on a yearly basis using accepted best practice standards. A yearly summary of progress will be included as an addendum to this plan.

Prioritization Process

Projects overseen by the TRCC, especially those receiving federal grant funding, will be prioritized using a points system and Four Box Analysis process.

Points for each project are to be assigned using the following questions:

1. How difficult is the project in terms of infrastructure, territorial, and policy issues?
2. How significant will the project impact the traffic record system if successful?
3. How expensive will the project be? (a weighted cost x reliability of estimate maybe appropriate)
4. Are improvements to one system necessary in order to better another?

Table 2: Four Box Analysis

High Payoff – Low Risk or Cost Good Opportunity High Priority	High Payoff – High Risk or Cost Moderate Opportunity Middle Priority
Low Payoff – Low Risk or Cost Moderate Opportunity Middle Priority	Low Payoff – High Risk or Cost Poor Opportunity Low Priority

Projects will be monitored throughout the year and tracked accordingly.

Implementation Process

Strategies in the TRSP will be monitored during TRCC Technical Council meetings, TRCC Executive Committee Meetings, and annually in a progress performance report. Appropriate action steps and related projects will be tracked annually and reported in the Highway Safety Plan. Performance measures will be developed and tracked annually by the TRCC and included in the Highway Safety Plan.

Appendices

Appendix 1: Maryland Traffic Records Strategic Planning Steering Committee
Appendix 2: Federal Partners: Supporting Resources
Appendix 3: Update to 2014 Traffic Records Assessment Recommendations
Appendix 4: Update to 2019 Traffic Records Assessment Recommendations
Appendix 5: Performance Measures
Appendix 6: MIRE FDE
Appendix 7: Maryland's Traffic Safety Information System Improvement Program (FFY2024)
Appendix 8: Performance Measures Progress Calculations
Appendix 9: Emergency Medical Systems (EMS) and Trauma Registry Performance Measures
Appendix 10: Funding Sources

Appendix 1: Maryland Traffic Records Strategic Planning Steering Committee
A special thanks to the dedicated members of Maryland's Traffic Records Strategic Planning Steering Committee. With their commitment to the Maryland Traffic Records System, we are pleased to present the Maryland Strategic Plan.

David Balthis, Maryland Institute for Emergency Medical Services Systems
Brian Browne, District Court of Maryland
Jason Cantera, Maryland Institute for Emergency Medical Services Systems
First Sergeant Christopher Corea, Maryland State Police
Oscar Ibarra, Maryland Health Services Cost Review Commission
Dr. Timothy Kerns, MDOT MVA Highway Safety Office
Georgette Lavetsky, MHS, Maryland Department of Health (MDH)
Sean Lynn, Washington College GIS Program
Freemont Magee, Maryland Institute for Emergency Medical Services Systems
Carole Mays, Maryland Institute for Emergency Medical Services Systems
Peter Moe, MDOT Motor Vehicle Administration
John New, Maryland Institute for Emergency Medical Services Systems
Michel Sheffer, MDOT State Highway Administration
Monique Wilson, MDH Vital Statistics Administration

Steering Committee Facilitator
Kimberly Auman, University of Maryland Baltimore, National Study Center for Trauma & EMS

State Traffic Records Coordinator
Douglas Mowbray, MDOT MVA Highway Safety Office

Appendix 2: Federal Partners: Supporting Resources

Federal Partners: Supporting Resources			
Type of Assessment or Analysis	**Responsible Federal Partner**	**Description**	**Date Last Completed**
Traffic Records Assessment	National Highway Traffic Safety Administration	Peer evaluations of state traffic records system capabilities. A report out includes ratings, recommendations, and considerations that the state may consider in working to improve their traffic records system.	September 2019
Drivers Education Assessment	National Highway Traffic Safety Administration	Serves to guide all novice teen driver education and training programs in states striving to provide quality, consistent driver education and training.	August 2010
Impaired Driving Program Assessment	National Highway Traffic Safety Administration	A mechanism to assess the impaired-driving problem in the state, document the existing system, recommend improvements, and garner both political and public support to fund and implement improvements.	TIRF, Spring 2021; Spring/Summer 2023
Occupant Protection Program Assessment	National Highway Traffic Safety Administration	This assessment is to help states in a review of the occupant protection programs and to offer suggestions for improvement.	January 2020
Crash Data Improvement Program (CDIP)	Federal Highway Administration	CDIP is intended to provide states with a means to measure the quality of the information within their crash database. Originally, CDIP was established to help familiarize the collectors, processors, maintainers, and users with the concepts of data quality and how quality data helps to improve safety decisions.	July 2010
Roadway Data Improvement Program (RDIP)	Federal Highway Administration	RDIP is to help transportation agencies improve the quality of their roadway data to support safety initiatives. It provides traffic safety professionals a tool to assist them in identifying, defining, measuring, and ultimately improving the quality of the data within their roadway databases.	N/A
Roadway Safety Data Capability Assessment (RSDP)	Federal Highway Administration	RSDP is a collaborative effort between FHWA and states to develop robust, data-driven safety capabilities. RSDP includes a variety of projects aimed at improving the collection, analysis, management, and expansion of roadway data for use in safety programs and decision-making. FHWA uses information gathered from the states to identify common themes and	April 2012; January 2019

		critical gaps to develop a national gap analysis and action plan.	
Motor Carrier Safety Assistance Program	Federal Motor Carrier Safety Administration	Grants to improve the crash and inspection upload accuracy for Commercial Motor Vehicle Crashes in the State of Maryland in support of the Compliance Safety and Accountability (CSA) safety rating.	Ongoing (Consultant on staff with SHA Motor Carrier Division)
Highway Performance Monitoring System/All Roads Network of Linear Reference Data	Federal Highway Administration	Each state shall establish a safety data system covering all public roads, including non-State-owned public roads and roads on tribal land in the state in a geospatial manner. In other words, state highway agencies will have a geospatially enabled public roadway network or base map.	N/A
Go Teams	National Highway Traffic Safety Administration	Traffic Records GO Teams provide resources and assistance to state traffic records professionals as they work to better their traffic records data collection, management, and analysis capabilities. GO Teams are small groups of one to three subject matter experts designed to help states address traffic records issues.	Crash Data System Assistance, March-June 2021
Pedestrian and Bicycle Safety Program Assessment	National Highway Traffic Safety Administration	Examines significant components of a State's pedestrian safety program. Each State, in cooperation with its political subdivisions, should have a comprehensive pedestrian and bicycle program that educates and motivates its citizens to follow safe pedestrian and bicycle practices. A combination of legislation, regulations policy, enforcement, public information, education, incentives, and engineering is necessary to achieve significant, lasting improvements in pedestrian and bicycle crash rates, and to reduce resulting deaths and injuries.	April/May 2022

Appendix 3: Update to 2014 Traffic Records Assessment Recommendations

Note: Included for historical purposes. All recommendation updates will be based on the 2019 Assessment.

MARYLAND TRAFFIC RECORDS ASSESSMENT RECOMMENDATIONS DECEMBER 2014								
REC LABEL	**RECOMMENDATION**	**Not Addressed**	**No Progress**	**Pending Action**	**Some Progress**	**Significant Progress**	**Complete**	**Notes**
SP1	Strengthen the TRCC's abilities for strategic planning that reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			Incorporated TRA recommendations and considerations into TRSP. Some of the action items in the TRSP have been complete or are ongoing, but an inventory has not been complete.
Crash1	Improve the procedures/process flows for the Crash data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			Improvements were made to the ACRS supervisor screen, but the ACRS Task Force has been disbanded. MMUCC 5 was thoroughly reviewed and recommendations and improvements are under consideration by MSP.
Crash2	Improve the interfaces with the Crash data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			Informal discussions have happened to develop a crash and EMS interface, but logistics have not been finalized. The state roadway file is still being planned for incorporation into the crash data system.
Crash3	Improve the data quality control program for the Crash data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.				✓			Improvements were made to the ACRS supervisor screen, but the ACRS Task Force has been disbanded. MSP continues to train users on ACRS, but there is no formal program to track, train, and improve the crash data.
Vehicle1	Improve the applicable guidelines for the Vehicle data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.			✓				The MDOT MVA Customer Connect system modernization, set to deploy in 2020, incorporates many systems improvements related to vehicle transactions.

REC LABEL	RECOMMENDATION	Not Addressed	No Progress	Pending Action	Some Progress	Significant Progress	Complete	Notes
Vehicle2	Improve the data quality control program for the Vehicle data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.			✓				MDOT MVA has established an Office of Data Management to support initiatives to implement a comprehensive vehicle data quality monitoring system.
Driver1	Improve the description and contents of the Driver data system that reflect best practices identified in the Traffic Records Program Assessment Advisory.			✓				As a part of the driver data system element of the Customer Connect system modernization, new system documentation is being developed consistent with best practices.
Driver2	Improve the data quality control program for the Driver data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.			✓				MDOT MVA has established an Office of Data Management to support initiatives to implement a comprehensive driver data quality monitoring system.
Roadway1	Improve the procedures/process flows for the Roadway data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.					✓		As the Maryland Centerline project is finalized, documentation of the procedures and processes are being developed. Maryland completed a Roadway Safety Data Capability Assessment with high marks.
Roadway2	Improve the data quality control program for the Roadway data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.					✓		Through the Maryland Centerline project, quality control mechanisms are being implemented for all roadway data.

REC LABEL	RECOMMENDATION	Not Addressed	No Progress	Pending Action	Some Progress	Significant Progress	Complete	Notes
Citation1	Improve the data dictionary for the Citation and Adjudication systems that reflects best practices identified in the Traffic Records Program Assessment Advisory.				✓			The court system is in the final phases of a comprehensive upgrade (Maryland Electronic Courts – MDEC) to bring all levels of court onto the same data platform.
Citation2	Improve the interfaces with the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			The court system is in the final phases of a comprehensive upgrade MDEC to bring all levels of court onto the same data platform.
ISS1	Improve the interfaces with the Injury Surveillance systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		The EMS and Trauma Registry systems are interfacing using the ImageTrend Field Bridge.
ISS2	Improve the data quality control program for the Injury Surveillance systems that reflects best practices identified in the Traffic Records Program Assessment Advisory.					✓		All 24 jurisdictions in Maryland are on the electronic Maryland EMS Data System (eMEDS)platform so all EMS data undergo the same quality control program within that software.

2014 Assessment Recommendations

	Number	%
Not addressed	0	0%
No progress	0	0%
Pending Action	4	29%
Some Progress	6	43%
Significant Progress	4	29%
Complete	0	0%
Total	14	100%

June 5, 2019 status

Appendix 4: Update to 2019 Traffic Records Assessment Recommendations (FFY2024 HSP Submission)

MARYLAND TRAFFIC RECORDS ASSESSMENT RECOMMENDATIONS September 2019								
REC LABEL	**RECOMMENDATION**	**Not Addressed**	**No Progress**	**Pending Action**	**Some Progress**	**Significant Progress**	**Complete**	**Notes**
Crash1	Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		MSP Central Records Division (CRD) continues to provide feedback to local law enforcement agencies on issues with reporting elements such as off-road and missing BAC. MSP plans to upgrade ACRS with recommendations from the TRCC and MMUCC 5. ACRS 2.0 is tentatively scheduled for launch in January 2024. Significant changes to fields and attributes will benefit the quality of the data. MSP and MDOT-SHA are working on a "feedback loop" to incorporate edits or suggested changes made by SHA analysts into the MSP Data Warehouse. The recent launch of a Fatal Crash Dashboard presented more opportunities for examining the quality of the crash data and developing recommendations for improvements. The inclusion of United States Park Police fatal crash records in the MSP Data Warehouse has been a significant QC-focused effort.
Crash2	Improve the interfaces with the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			MSP and SHA continue to work together to update ACRS with the most recent roadway inventory information to have improved location information and the ability to integrate other roadway attributes into the crash database. The data will not interface (live) with the SHA roadway data, but rather be integrated

								into ACRS. No other interface initiatives are planned currently.
Vehicle1	Improve the data quality control program for the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		In October 2022, MDOT MVA initiated a data quality improvement effort to review and update critical data elements in its vehicle records. A comprehensive scan of all 13.6 million vehicle records identified 2,242,817 vehicles with incorrect or incomplete data for vehicle make, model, model year, and fuel type, based on VIN decode. In a scan for level of electric/hybrid level, 1,183,700 vehicle records were updated. These data quality improvement efforts were discussed at quarterly TRCC meetings. MDOT MVA has also developed a business intelligence solution to measure the transaction time for front-facing and back office vehicle transactions to identify opportunities for improving the flow of vehicle-related transactions
Vehicle2	Improve the interfaces with the Vehicle data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		MDOT MVA continues to refine and improve its unified enterprise system for driver and vehicle records, Customer Connect, including interface data exchanges with external partners through web services, with licensed dealers and other businesses via specific web portals, and public customers through enhancements to the MyMVA internet interface. Weekly change bulletins are distributed to all staff noting enhancements and changes to the internal and external interfaces. In the coming year, MDOT MVA will upgrade the enterprise to "Core 21" which will

								enable further enhancements to vehicle systems interfaces.
REC LABEL	**RECOMMENDATION**	**Not Addressed**	**No Progress**	**Pending Action**	**Some Progress**	**Significant Progress**	**Complete**	**Notes**
Driver1	Improve the data quality control program for the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		MDOT MVA monitors data quality through AAMVA CDLIS and SPEX data quality reporting with specific performance standards for timeliness and accuracy. Updates on these performance measures are discussed during quarterly meetings of the TRCC Technical Committee. As part of the enterprise system upgrade, all driver-related records are stored within the same system, including impaired driving violations (both administrative and criminal), related sanctions and remediation/diversion programs such as ignition interlock, and the reinstatement of licenses revoked for alcohol violations.
Driver2	Improve the interfaces with the Driver data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		MDOT MVA continues to refine and improve its unified enterprise system for driver and vehicle records, Customer Connect, including interface data exchanges with external partners through web services, with businesses and medical professionals via specific web portals, and public customers through enhancements to the MyMVA internet interface. Weekly change bulletins are distributed to all staff noting enhancements and changes to the internal and external interfaces. In the coming year, MDOT MVA will upgrade the enterprise to "Core 21" which will

								enable further enhancements to vehicle systems interfaces.
Roadway1	Improve the applicable guidelines for the Roadway data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.					✓		MDOT SHA has developed an ArcGIS Hub Portal for distribution of roadway datasets, and is accessible here: https://data-maryland.opendata.arcgis.com/pages/mdot
Roadway2	Improve the data quality control program for the Roadway data system that reflects best practices identified in the Traffic Records Program Assessment Advisory.					✓		MDOT SHA continues to improve QC processes and is working to ensure the roadway files are accessible and useful.
REC LABEL	**RECOMMENDATION**	**Not Addressed**	**No Progress**	**Pending Action**	**Some Progress**	**Significant Progress**	**Complete**	**Notes**
Citation1	Improve the data quality control program for the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.				✓			The District Court is working with MSP and local law enforcement agencies have developed processes to reduce errors entering the system. The Court is continuing to streamline the process. The goal is to reach 99% error free. MSP implemented a checkbox when there is no license which reduced the number of issues with assumed missing data. National Resources Police citation data will be submitted.
Citation2	Improve the interfaces with the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.			✓				No new interfaces have since been developed; still working on system functionality issues.

ISS2	Improve the data quality control program for the Injury Surveillance systems that reflects best practices identified in the Traffic Records Program Assessment Advisory.					✓		For the Injury Surveillance System components, Emergency Medical Services and Trauma Registry, each have been assigned all six Advisory data quality control measurements (including goals, baselines and measurements). These were developed in conjunction with respective user groups and address Motor Vehicle Crash related patients directly or indirectly. Appendix 9 illustrates the many improvements and steady progress for the data derived from NEMSIS-compliant patient run records.

2019 Assessment Recommendations

	Number	%
Not addressed		0%
No progress		0%
Pending Action	1	9.%
Some Progress	2	18%
Significant Progress	8	73%
Complete		0%
Total	11	100%

Updated as of May 2023

Appendix 5: Performance Measures

System			
EMS	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Ensure that all data access requests for electronic Maryland EMS Data System® (eMEDS® -- the State's patient care reporting system) data/information are reviewed for appropriateness (non-confidentiality adherence) and facilitated within 30 days of request.	Number of Data Access Committee (DAC) related approved EMS data requests completed within 30 days over the total number of Data Access Committee related approved EMS data requests. Baseline is 95%. Goal is to maintain 95% or greater during the SFY 2021.	See Appendix 9.
Accuracy	Reduce the % Potential Motor Vehicle Crash (MVC) Transports with "Blank" Cause of Injury responses: Statewide CY 2017 Baseline – 18%	Number of MVC dispatch code records with a "Blank" Cause of Injury" over the total number MVC dispatch code records (by Emergency Medical Services Operational Program {EMSOP}). Baseline is 18% statewide average. Goal is to maintain an individual EMSOP average of 10% or less for all EMSOPS.	Accuracy: MVC Cause of Injury Blanks: **2.0 percent improvement**
Completeness	Increase the number of eMEDS® records that employ the use of the Computer-Aided Dispatch (CAD) data interface downloads. Increase the % match of patient account number in the Shock Trauma Center Toxicology database to the HSCRC Hospital and ED database. Increase the completeness percentage of MVC Cause on Injury data in eMEDS.	Number of eMEDS® records with CAD downloads over the total number of records. Baseline is 96%. Goal is to maintain 96% or greater during the SFY 2021. Increase from 87%-88% in 2015-2016 (the most recent years for which we have available data) to 95% by the year 2025. Increase the completeness percentage of MVC Cause on Injury data in eMEDS from 92% in 2017 to 99% in 2025.	See Appendix 9.

Integration	Increase the percent of eMEDS that match existing records within Chesapeake Regional Information System for Patients (CRISP, the State's health information exchange).	Number of eMEDS records provided to CRISP resulted in a match of a record within CRISP. Baseline is 81%. Goal is to maintain 81% or greater during the SFY 2021.	See Appendix 9.
Timeliness	Reduce the amount of time from unit dispatch until an eMEDS® record is properly marked completed by the clinician.	The statewide goal is to have an eMEDS® report properly marked completed within 24 hours or less of a unit's dispatch. A per jurisdiction baseline will be established and measured monthly with a jurisdictional goal of 95% of all calls being properly marked complete within 24 hours or less.	See Appendix 9.
Uniformity	Ensure compliance with the National Emergency Medical Services Information System (NEMSIS) standard data elements and responses through successful periodic submission to NEMSIS.	Number of eMEDS® records successfully submitted to NEMSIS over the total number of records submitted first time. Baseline is 100%. Goal is to maintain 100% during the SFY 2021.	See Appendix 9.
Trauma Registry	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Ensure that all data access requests for Maryland Trauma Registry (MTR) data/information are reviewed for appropriateness (non-confidentiality adherence) and facilitated within 30 days of agreement of request.	Number of Data Access Committee (DAC) related approved MTR data requests completed within 30 days of agreement over the total number of Data Access Committee related approved MTR data requests. Baseline is 95%. Goal is to maintain 95% or greater during the SFY 2021.	See Appendix 9.
Accuracy	Code of Maryland Regulations (COMAR) 30.08.05.21.I - Inter-Rater Reliability (IRR) monitoring of the trauma data entered	COMAR 30.08.05.21.I - The Trauma Registry shall have a plan to ensure IRR of the data entered into the MTR at individual trauma centers. Ongoing	See Appendix 9.

	into the MTR to ensure the quality, reliability, and validity.	review and evaluation shall ensure the quality, reliability, and validity of the institution's MTR registry data. A State baseline for IRR (15-20 trauma center records monthly) will be determined over SFY 2021; the minimum goal is 95% and a 99% stretch, to assess accuracy gaps at the data abstraction level.	
Completeness	Reduce the percentage of missing/unknown values in data elements (Patient Age-years, Glasgow Coma Score, Systolic Blood Pressure, Injury Severity Score) used for the calculation of Trauma Injury Severity Scores (TRISS).	Utilize the report, "Percent Date Completeness for Specific Data Elements" to identify qualifying records which TRISS elements are below a baseline of 86%. The goal is 95% for all elements, during the SFY 2021.	See Appendix 9.
Integration	Maryland trauma center submissions to the National Trauma Data Bank (NTDB) are included in the overall NTDB data repository.	Yearly comparisons of Maryland trauma centers with the rest of NTDB submittals nationwide. The baseline was Calendar Years 2010-2015 and comparing years thereafter to baseline and current year. Any differences that MIEMSS deems necessary will be investigated further.	See Appendix 9.
Timeliness	Verification of trauma records no later than 6 weeks after the end of each quarter.	All trauma patient records shall be submitted both quarterly and annually. Verification of counts and data element completeness shall be within six weeks after the end of each quarter. The goal is 100%.	See Appendix 9.

Uniformity	Ensure Maryland Trauma Registry (MTR) compliance with the National Trauma Data Bank (NTDB) standard data elements and responses through successful periodic submission to NTDB.	Each trauma center submits directly to the NTDB. MIEMSS currently does not receive feedback about the number of records successfully submitted on the first round. We are exploring a way to obtain this data over SFY 2021. The goal is 95%.	See Appendix 9.
ED/Inpatient Records	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Increase the number of users that report successfully accessing emergency department or inpatient discharge data for research purposes.	Increase the percent of data users to 85% from approx. 85 requests/year by 2021. Note: working with CRISP and other partners on this task- the outcome would be potentially more research done using hospital discharge data.	No reported updates.
Accuracy	Minimize the number of resubmissions for error corrections each quarter.	Reduce the error threshold from 10 % to 5 % for final quarterly submissions by 2022 (to be effective January 2021).	No reported updates.
Completeness	Reduce the percentage of missing/unknown values in data elements that do not have a state-level validation rule.	Reduce the percent of errors for important variables by 2-3% from an average of 6%.	No reported updates.

Integration	Increase the percentage of records with a traffic crash E-code and MAIS>1 that link to crash reports. Increase the percentage of records with an EMS transport that link to the EMS file.		No reported updates.
Timeliness	Reduce the number of days from the end of the quarter to when the file is ready for research/dissemination.	Reduce data processing time by 5 days by streamlining processing programs and edit checks July 2020, October 2020 and January 2021 - Data can be shared with external users sooner.	No reported updates.
Uniformity	Increase compliance with the most recent Uniform Billing Standard.		No reported updates.
Roadway	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Increase the number of local engineering users that report successfully accessing state roadway data for research purposes.	Increase the number of local engineering users that report successfully accessing state roadway data for research purposes from 40% to 100% by December 31, 2025.	No reported updates.
Accuracy	Increase the percentage of correct/accurate values in data elements that do not have a state-level validation rule.	Increase the percentage of correct/accurate values in data elements that do not have a state-level validation rule from 75% to 100% by December 31, 2025.	Data freely available and published here annually: https://data-maryland.opendata.arcgis.com/pages/mdot Data cleanup complete and any errors identified are promptly corrected.
Completeness	Increase the percentage of Baltimore City streets and/or alleys captured in the state file.	Increase the percentage of Baltimore City streets and/or alleys captured in the state file from 70% to 100% by December 31, 2025.	County and City data from DoIT for NG911 purposes if conflated to OMOC quarterly. Near 100% completeness.

Integration	Increase the percentage of crash reports with location information that matches the state roadway file.	Increase the percentage of crash reports with location information that matches the state roadway file from 50% to 85% by December 31, 2025.	Working with MSP to provide data replacement for ACRS. This should raise accuracy to goal or higher.
Timeliness	Reduce the number of days needed to incorporate roadway changes/additions to the state file.	Reduce the number of days needed to incorporate roadway changes/additions to the state file from 365 to fewer than 90 days by December 31, 2025.	DoIT NG911 data is conflated quarterly, and we add state roadway project data before road open using drone derived imagery.
Uniformity	Increase compliance with the Model Inventory for Roadway Elements guidelines and Fundamental Data Elements—Number of MIRE Fundamental Data Elements for Non-Local (based on functional classification) Paved Roads; Number of MIRE Fundamental Data Elements for Local (based on functional classification) Paved Roads; Number of MIRE Fundamental Data Elements for Unpaved Roads.	Increase the percentage of MIRE Compliant FDEs in the state file from 80% to 100% by December 31, 2025.	Local roadway data will remain the issue with completeness as the local jurisdictions do not capture and MDOT SHA is not funded to capture. HSIP dollars may help fill gap and provide incentive for all parties
<u>Crash</u>	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Increase the number of users that report successfully accessing crash report data from RAVEN/Washington College/National Study Center.	Increase the percentage of customers (data users) who report satisfaction in the timeliness of the data analysis request fulfillment, and the comfortability level in the use of the data.	Washington College conducts an annual survey of RAVEN users and GIS analysis customers. Closing out the FFY2022, 52 customers responded to a survey regarding their access and understanding of the data provided and 94.57% reported overall satisfaction, up from 92.09% in FFY2021.

Accuracy	Increase the percentage of crash reports with a citation number that matches the corresponding record numbers in the citation file (indicate an association with a crash (PD, PI, fatal)). Decrease the number of crash reports marked as "off road." Increase the percentage of crashes with longitude and latitude coordinates (i.e., x/y) with values inside the state of Maryland (where the crashes would have had to occur). Maintain a "good" rating in accuracy for commercial vehicle crashes uploaded to the FMCSA SAFETYNET database.	Increase the citation issued flag response rate in the Crash file from 91% in 2018 to 99% by 2025. Increase the valid driver date of birth captured in the Crash file from 82% complete in 2018 to 95% complete by 2025. Decrease the proportion of cases with an invalid vehicle year in the crash-related Vehicle file from 6% in 2018 to 1% by 2025. Decrease the number of crash reports marked as "off road" from 19.75% in 2018 to less than 5% by 2025.	The number of crash reports marked as "off-road" continue to improve with the most recent measure showing a .18% decrease compared to the previous time period.
Completeness	Reduce the percentage of missing/unknown values on crash reports that should have a citation number (as identified in the citation file). Maintain a "good" rating in completeness for commercial vehicle crashes uploaded to the FMCSA SAFETYNET database.	Missing/invalid driver DOB, age, sex, drivers license number	No progress reported.
Integration	Increase the percentage of injury (KABCO 2-5) crash records that link to an EMS record.		No progress reported.
Timeliness	Reduce the number of days from the end of the quarter to when the data is posted on the Open Data Portal. Achieve and maintain a "good" rating in timeliness for commercial vehicle crashes		No progress reported.

	uploaded to the FMCSA SAFETYNET database.		
Uniformity	Increase compliance with the Model Minimum Uniform Crash Criteria and ANSI D.16.		No progress reported.
Citation/Adjudication	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Determine through a survey the usefulness and timeliness of appropriate users accessing and using JPORTAL data.		No updates reported.
Accuracy	Increase the percentage of citations that indicate an association with a crash (PD, PI, fatal) that will match a corresponding crash record (citation number listed on crash report).	Decrease the proportion of invalid case license numbers in the Citation file from 3% in 2018 (approximately 15,000 records) to 1% by 2025.	No updates reported.

Completeness	Reduce the percentage of missing/unknown values on crash reports that should have a citation number (as identified in the citation file). Reduce the number of missing x/y coordinates on citations issued to motorists. Percent cases in the Citation database with missing gender. Percent cases in the Citation database with missing DOB (Age).	Reduce the number of missing x/y coordinates on citations issued to motorists. Decrease the proportion of invalid case license numbers in the Citation file from 3% in 2018 (approximately 15,000 records) to 1% by 2025. Decrease the percent of missing genders in the citation /adjudication database. Decrease the percent of missing age (DOB) in the citation /adjudication database.	Completeness, Stops Outside of Maryland: **83 fewer records outside Maryland state boundaries** Completeness, Percentage of Mappable Stops: **0.22% decline in mappable stops [no progress]** Completeness, Percentage of Mappable Citations: **0.41% decline in mappable citations [no progress]** Completeness, Percentage of Missing x/y coordinates for stops: **0.66% decrease**
Integration	Increase the percentage of citations given to Maryland drivers that may be linked to the correct driver record.		No updates reported.
Timeliness	Reduce the amount of time between the violation being issued and inclusion in the court file (and available to judges).		No updates reported.

Uniformity	Improve the uniformity of coding traffic violation information in citations database.	Increase the correct coding of citations issued for alcohol and/or drug use in the Citation file from 30% in 2018 to 75% by 2025. Increase the uniformity of missing license data. The current percentage will be determined using the 2018 data and a goal will be set.	No updates reported.
Driver	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Increase the number of users that report successfully accessing driver record data electronically, including law enforcement, courts, employers and individuals.		No progress reported.
Accuracy	Reduce the rate of validation errors for critical driver record transactions.		CDLIS Measures. See table in Appendix 8. % of withdrawal messages returned in error by the CDLIS Central Site: decreased by 96.5% % of messages sent to update MPR PII returned in error: decreased by 66.9% % of Delete Driver messages returned in error: decreased by 99.0% % of Negate messages returned in error: decreased by 90.3%

Completeness	Reduce the percentage of missing/unknown values in critical driver records, including actions for commercial driver licenses/commercial vehicle-related offenses.		No progress reported.
Integration	Increase the number of systems that are integrated to produce real-time transactions/record updates.		No progress reported.
Timeliness	Increase the percentage of error records that are corrected and resubmitted within 24 hours.		% of convictions sent successfully within the 10-day federal time limit: increased by 0.3% % of withdrawals sent successfully within the 10-day federal time limit: increased by 32.9%
Uniformity	Increase the number of vehicle data elements that are entered automatically after validation and improve consistency among driver-related fields in that are entered into the vehicle data system manually.		No progress reported.
Vehicle	**Performance Measure Statement**	**Measure (Baseline/Goal)**	**Outcome**
Accessibility	Increase the number of users that report successfully accessing vehicle registration data electronically, including law enforcement, courts, employers and individuals.		No progress reported.

Accuracy	Increase the percentage of records with values that are compliant with system standards for critical elements in the vehicle file (e.g., vehicle body type and fuel type).		No progress reported.
Completeness	Reduce the percentage of missing/unknown/mismatched values in the vehicle file (e.g., vehicle body type and fuel type).		No progress reported.
Integration	Increase the percentage of vehicle records that successfully link to external data systems.		No progress reported.
Timeliness	Increase the percentage of vehicle transactions posting to the state file within 30 days of the sale of vehicle.		No progress reported.
Uniformity	Increase the number of vehicle data elements that are entered automatically after validation and improve consistency among vehicle-related fields in that are entered into the vehicle data system manually.		No progress reported.

Appendix 6: MIRE FDE

Project Evaluation: 49. MIRE fundamental data elements

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.

(*Confirmed as up-to-date, Mike Sheffer, May 5, 2023*)

	NON-LOCAL PAVED ROADS - SEGMENT		NON-LOCAL PAVED ROADS - INTERSECTION		NON-LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**
ROADWAY SEGMENT										
Segment Identifier (12)	100	100					100	100	100	100
Route Number (8)	100	100								

	NON-LOCAL PAVED ROADS - SEGMENT		NON-LOCAL PAVED ROADS - INTERSECTION		NON-LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**
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								
One/Two Way Operations (91)	100	100								

	NON-LOCAL PAVED ROADS - SEGMENT		NON-LOCAL PAVED ROADS - INTERSECTION		NON-LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**
Number of Through Lanes (31)	100	90					100	90		
Average Annual Daily Traffic (79)	100	98					50	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)			85	85						
Intersection/Junction Traffic Control (131)			50	50						
AADT for Each Intersecting Road (79)			25	25						

	NON-LOCAL PAVED ROADS - SEGMENT		NON-LOCAL PAVED ROADS - INTERSECTION		NON-LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**
AADT Year (80)			25	25						
Unique Approach Identifier (139)			75	75						
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				
Interchange Type (182)					100	100				
Ramp AADT (191)					100	100				

	NON-LOCAL PAVED ROADS - SEGMENT		NON-LOCAL PAVED ROADS - INTERSECTION		NON-LOCAL PAVED ROADS - RAMPS		LOCAL PAVED ROADS		UNPAVED ROADS	
MIRE NAME (MIRE NO.)	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**	**STATE**	**NON-STATE**
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**	**72.5**	**72.5**	**100.00**	**100.00**	**89.44**	**87.78**	**100.00**	**100.00**

Appendix 7: Maryland's Traffic Safety Information System Improvement Program (FFY2024)

Problem Identification

Hardware, software, personnel, and procedures that capture, store, transmit, analyze, and interpret traffic safety data are critical components to Maryland's traffic records system. The datasets managed by this system include crash, driver licensing and history, vehicle registration and titling, commercial motor vehicle, roadway, injury control, citation/adjudication, and EMS/trauma registry data.

Maryland employs a two-tiered Traffic Records Coordinating Committee (TRCC), with both General (or technical) and Executive Councils, comprised of data owners, data managers, and data users with oversight and interest in the datasets listed above. MHSO staff serves on the TRCC General Council and subcommittees, and advises the TRCC Executive Council, which oversees and approves the Maryland Traffic Records Strategic Plan (TRSP).

The MHSO's Traffic Records Program Manager coordinates updates to TRSP and leads the implementation of recommendations provided in the 2019 NHTSA Traffic Records Assessment, including the development of performance measures for all six systems in the traffic records system. The current TRSP (2021–2025) is aligned with the 2021–2025 Maryland Strategic Highway Safety Plan (SHSP), and members from both the Executive and Technical Councils frequently discuss related topics and meet twice a year in back-to-back meetings. The Traffic Records Program Manager serves as a Data Strategy Lead and/or Action Step Lead for all SHSP Emphasis Area Teams (EATs).

Solution

The accurate collection and timely dissemination of traffic records information are crucial to ensuring positive results from projects and strategies within the five-year plan. Data elements form the informational backbone for all the MHSO's programs and the SHSP itself. All activities, from enforcement to education, rely on good data, and the MHSO's focus is to provide effective data support and analysis for programs that can help the State meet traffic safety goals in reducing crashes and resulting injuries and fatalities.

Maryland's Traffic Records Executive Council's leadership goal is to develop a comprehensive statewide traffic records system that provides traffic safety professionals with reliable, accurate, and timely data to inform decisions and actions for implementing proven countermeasures and managing and evaluate safety activities to resolve traffic safety problems. The traffic records system encompasses the hardware, software, personnel, and procedures that capture, store, transmit, analyze, and interpret traffic safety data. This system is used to manage basic crash data from all law enforcement agencies, along with information on driver licensing and history, vehicle registration and titling, commercial motor vehicles, roadways, injury control efforts, citation and adjudication activities, and the EMS/trauma registry.

Maryland's Traffic Records Executive Council provides policy leadership to the TRCC and its efforts to continually review and assess the status of Maryland's traffic safety information system and its components. The TRCC oversees the development and update of the Traffic Records Strategic Plan to

serve public- and private-sector needs for traffic safety information, to identify technologies and other advancements necessary to improve the system, and to support the coordination and implementation of system improvements.

The MHSO participates on all levels of the TRCC through its own staff and through a grant-funded project at the National Study Center for Trauma and EMS (NSC) called the Maryland Center for Traffic Safety Analysis (MCTSA), a more comprehensive, expert staff-based approach to provide services based on the Crash Outcome Data Evaluation System (CODES) and other traffic records data and to meet the wide and varied needs of the MHSO and its partners.

MHSO staff members work with subject matter experts from the MCTSA project to help manage the TRSP, and the MHSO continues the CODES program. These are some of the ways in which the MHSO relies on its many partner agencies to make data accessible for highway safety planning, as it employs various systems and programs, with the help of State agencies and grantees, to collect, maintain and analyze internal data information.

The mission to provide data and analytical support to traffic safety professionals at the local, State, regional, and national levels drive the direction of the Traffic Records Program. Projects to be considered for funding by the Traffic Safety Information System Improvement Program must adhere to goals and objectives within the TRSP and provide support for the data needs of the traffic records community.

Action Plan
Traffic safety information system projects funded for FFY 2024 are listed below, each referencing the TRSP strategy and the NHTSA Traffic Records Program Assessment recommendation addressed:

Proposed Projects

Project Agency: Maryland Highway Safety Office (Staffing: Traffic Records Program Manager)
Program Area: Traffic Records **Project Funds / Type:** 405C
Countermeasures: NHTSA Countermeasures That Work (2015, 8th Edition)
SHSP Strategies: • Use the collection, analysis and evaluation of data on all roads in Maryland to identify distracted driving safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration). • Use the collection, analysis and evaluation of data on all roads in Maryland to identify impaired by alcohol and drugged driving emphasis area safety issues, target audiences and locations of concern, as well as support the improvement of data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration) of impaired driving related data. • Use the collection, analysis and evaluation of data on all roads in Maryland to identify occupant protection (OP) safety issues, target audiences and locations of concern, as well as support the

improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).

- Use the collection, analysis and evaluation of data on all roads in Maryland to identify pedestrian and bicycle safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify speed and aggressive driving related issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).

TRSP Strategies:

- Prioritize strategic plan responsibilities using annual timelines.
- Catalog and publish data release policies and/or data sharing agreements from all partners with traffic records data, specifically identifying rules that allow intra- and inter-agency access, and public access.
- Review and prioritize federal data element requirements—Model Minimum Uniform Crash Criteria Guideline (MMUCC), National Emergency Medical Services (EMS) Information System (NEMSIS), and Model Inventory of Roadway Elements (MIRE)—to enhance State traffic records data improvement systems.
- Institutionalize the evaluation of TRCC responsibilities:
    - Monitor annual progress of the TRCC strategic plan.
    - Track agency policy decisions that impact the State's traffic records system.
    - Document progress through Council Meeting agendas/minutes.
- Improve performance measure monitoring and oversight at the TRCC. Assign responsibility to performance measure owners for reporting to the membership at each meeting.
- Establish regular quality control reporting and enhance the review of technical and training needs of traffic records system end users, expanding to a wider range of stakeholders and end-user needs.
- Ensure the annual addenda to the five-year plan are robust and detailed enough to meet the federal grant reporting requirements and provide the State with the necessary oversight and monitoring of its traffic records systems progress.
- Improve performance measures contained within the Strategic Plan by adding meaningful goals and baselines in addition to establishing quarterly monitoring at the TRCC.

Assessment Recommendation:

- Strengthen the TRCC's abilities for strategic planning that reflect best practices identified in the Traffic Records Program Assessment Advisory.

Project Description: Funds are used to staff one full-time position at the Maryland Highway Safety Office to be the Statewide Traffic Records Coordinator.

Project Agency: University of Maryland Baltimore, NSC

Program Area: Traffic Records
Project Funds / Type: 405C

Countermeasures: NHTSA Countermeasures That Work (2015, 8th Edition)

SHSP Strategy:

- Use the collection, analysis and evaluation of data on all roads in Maryland to identify distracted driving safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify impaired by alcohol and drugged driving emphasis area safety issues, target audiences and locations of concern, as well as support the improvement of data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration) of impaired driving related data.
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify occupant protection (OP) safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify pedestrian and bicycle safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify speed and aggressive driving related issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).

TRSP Strategies:

- Catalog and publish data release policies and/or data sharing agreements from all partners with traffic records data, specifically identifying rules that allow intra- and inter-agency access, and public access.
- Review and prioritize federal data element requirements—Model Minimum Uniform Crash Criteria Guideline (MMUCC), National Emergency Medical Services (EMS) Information System (NEMSIS), and Model Inventory of Roadway Elements (MIRE)—to enhance State traffic records data improvement systems.
- Institutionalize the evaluation of TRCC responsibilities:
    - Monitor annual progress of the TRCC strategic plan.
    - Track agency policy decisions that impact the State's traffic records system.
    - Document progress through Council Meeting agendas/minutes.
- Improve performance measure monitoring and oversight at the TRCC. Assign responsibility to performance measure owners for reporting to the membership at each meeting.
- Establish regular quality control reporting and enhance the review of technical and training needs of traffic records system end users, expanding to a wider range of stakeholders and end-user needs.
- Improve performance measures contained within the Strategic Plan by adding meaningful goals and baselines in addition to establishing quarterly monitoring at the TRCC.
- Provide ongoing access to traffic records data and analytic resources for problem identification, priority setting, and program evaluation with analytical partner support.
- Provide training sessions, presentations, webinars, and technical support to partners on all products and services provided by analysis resources (e.g., grant-funded university- or college-based analysts) in addition to GIS techniques and processes for traffic safety related datasets.
- Develop improved data visualization tools used to access the crash data.

Assessment Recommendations:

- Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
- Improve the data quality control program for the Injury Surveillance systems that reflects best practices identified in the Traffic Records Program Assessment Advisory.

Project Description: This project supports data analysis to the MHSO and statewide and partners, and administrative support for MHSO's Traffic Records Program.

Performance Measure: Accessibility: Increase the number of users that report successfully accessing crash report data from National Study Center.

Project Agency: Washington College GIS Program

Program Area: Traffic Records
Project Funds / Type: 405C; 402

Countermeasures: NHTSA Countermeasures That Work (2015, 8th Edition)

SHSP Strategy:

- Use the collection, analysis and evaluation of data on all roads in Maryland to identify distracted driving safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify impaired by alcohol and drugged driving emphasis area safety issues, target audiences and locations of concern, as well as support the improvement of data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration) of impaired driving related data.
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify occupant protection (OP) safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify pedestrian and bicycle safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify speed and aggressive driving related issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).

TRSP Strategies:

- Provide ongoing access to traffic records data and analytic resources for problem identification, priority setting, and program evaluation with analytical partner support.
- Integrate data from traffic records component systems to satisfy specific analytical inquires.
- Provide timely access to data analyses and interpretation upon request.
- Make outputs from state data linkage systems available to state and local decision-makers to influence data-driven policy and reform.
- Make outputs from state data linkage systems available to the general public.
- Make integrated data outputs from data linkage systems available for research abiding by data security agreements.

- Provide training sessions, presentations, webinars, and technical support to partners on all products and services provided by analysis resources (e.g., grant-funded university- or college-based analysts) in addition to GIS techniques and processes for traffic safety related datasets.
- Develop improved data visualization tools used to access the crash data.

Assessment Recommendations:

1. Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory.
2. Improve the data quality control program for the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory.
3. Improve the interfaces with the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.

Project Description: This project will focus on strategies that will improve the ability to use data-driven analysis to reduce crashes and deaths on Maryland roads. This project also includes attendance at conferences to promote highway safety projects and practices in Maryland, and provides training sessions, presentations, webinars, and technical support to MHSO staff, LEA partners, EA teams, etc. on all products/services provided by Washington College, in addition to GIS techniques and processes for traffic safety related datasets.

Performance Measure: Accessibility: Increase the number of users that report successfully accessing crash report and citation data from RAVEN/Washington College.

Project Agency: Crash Center for Research and Education (CORE)

Program Area: Traffic Records
Project Funds / Type: 402

Countermeasures: NHTSA Countermeasures That Work (2015, 8th Edition)

SHSP Strategy:

- Use the collection, analysis and evaluation of data on all roads in Maryland to identify distracted driving safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify impaired by alcohol and drugged driving emphasis area safety issues, target audiences and locations of concern, as well as support the improvement of data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration) of impaired driving related data.
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify occupant protection (OP) safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify pedestrian and bicycle safety issues, target audiences and locations of concern, as well as support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, and integration).
- Use the collection, analysis and evaluation of data on all roads in Maryland to identify speed and aggressive driving related issues, target audiences and locations of concern, as well as

support the improvement of the data quality (timeliness, accuracy, completeness, uniformity, accessibility, integration).
TRSP Strategies: • Provide ongoing access to traffic records data and analytic resources for problem identification, priority setting, and program evaluation with analytical partner support. • Integrate data from traffic records component systems to satisfy specific analytical inquires. • Provide timely access to data analyses and interpretation upon request. • Make outputs from state data linkage systems available to state and local decision-makers to influence data-driven policy and reform. • Make integrated data outputs from data linkage systems available for research abiding by data security agreements. • Provide training sessions, presentations, webinars, and technical support to partners on all products and services provided by analysis resources.
Assessment Recommendations: 4. Improve the data quality control program for the Crash data system to reflect best practices identified in the Traffic Records Program Assessment Advisory. 5. Improve the data quality control program for the Citation and Adjudication systems to reflect best practices identified in the Traffic Records Program Assessment Advisory. 6. Improve the interfaces with the Citation and Adjudication systems that reflect best practices identified in the Traffic Records Program Assessment Advisory.
Project Description: The Predicting Outcomes in Traffic Injuries and Fatalities (POTIF) forecasting tool includes four models developed to predict fatalities, injuries and PDO crashes, based on human, vehicle, and physical and economic factors. This interactive tool can be used to exercise predictive models to explore interventions and their estimated impact on serious and fatal injury counts in Maryland at both state and jurisdiction levels. The results can be used by policymakers, behavioral and highway safety personnel to prioritize safety interventions to save lives and reduce casualties in Maryland most effectively.
Performance Measure: Accessibility: Increase the number of users that report successfully accessing crash report and citation data from POTIF.

Evaluation

Goals are prioritized for appropriate components of the traffic records information system, with objectives developed based on the periodic assessments, ongoing TRCC evaluation and input, and other state agency-identified needs. The TRCC sets performance measures for priority objectives identified in the TRSP, which are reviewed regularly throughout each year. Systems are evaluated for quantitative progress, such as improved timeliness and completeness, with reports submitted to NHTSA at least annually. Additionally, MHSO grants are evaluated during and after implementation through grantee reporting using proven process evaluation measures.

Appendix 8: Performance Measures Annual Progress Calculations (FFY2024)

1. Crash Data: Accuracy: The percentage of off-road crashes which were not actually off-road crashes reduced .18 % in the most recent assessment of the crash data.

Measure of the quality control (QC) process at the MSP. ACRS “off-road” crashes are meant to be a selection for officers to indicate a crash occurring on a non-trafficway (e.g., parking lots, private road) but officers have been selecting “off-road” for vehicles that run off the roadway (crash starting on a trafficway). Through QC processes at MSP, to include an automated selection of reports marked off-road, to a manual review of crash reports, and a communications procedure from the training unit, Maryland has been able to improve the accuracy of its crash data by reducing the percentage of crashes erroneously marked as off-road.

Query Language:

```
SELECT round(count(A.ReportNumber)/tot_crashes * 100 ,2) PERCENTAGE_2015
FROM ACRS_QUEUE A,  (SELECT count(ReportNumber) tot_crashes FROM acrs_QUEUE d WHERE
type_id=2 and CRASH_DATE between '01-APR-YEAR' and '01-APR-YEAR' )
where type_id=2 and CRASH_DATE between '01-APR-YEAR' and '01-APR-YEAR'
and STATUS_ID in ('03','04')
GROUP BY tot_crashes;
```

```
PERCENTAGE_2015
---------------
        36.26

PERCENTAGE_2016
---------------
        19.51

PERCENTAGE_2017
---------------
        19.75

PERCENTAGE_2018
---------------
        14.88
```

PERCENTAGE_2019

16.96

PERCENTAGE_2020

18.25

PERCENTAGE_2021

14.17

PERCENTAGE_2022

12.08

```
SELECT round(count(A.ReportNumber)/tot_crashes * 100 ,2) PERCENTAGE_2022
FROM ACRS_QUEUE A,  (SELECT count(ReportNumber) tot_crashes FROM acrs_QUEUE d WHERE
type_id=2 and CRASH_DATE between '01-APR-22' and '01-APR-23' )
where type_id=2 and CRASH_DATE between '01-APR-22' and '01-APR-23'
and STATUS_ID in ('03','04')
GROUP BY tot_crashes;
```

PERCENTAGE_2023

11.9

2. Citation Data:
   a. Completeness, Stops Outside of Maryland: **83 fewer records outside Maryland state boundaries**
   b. Completeness, Percentage of Mappable Stops: **0.22% decline in mappable stops**
   c. Completeness, Percentage of Mappable Citations: **0.41% decline in mappable citations**
   d. Completeness, Percentage of Missing x/y coordinates for stops: **0.66% decrease**

ETIX Citation/Stop Location Analysis April 1st 2021 to March 31st 2022				
Citation/Stop Data	**Location In Maryland**	**Outside of Maryland's Boundaries**	**No XYS**	**Total**
Raw Citation Data with Updated XYs	305,770		352,262	658,371
Raw Stop Data with Updated XYs	154,956	136	153,872	308,964

ETIX Citation/Stop Location Analysis April 1st 2022 to March 31st 2023				
Citation/Stop Data	**Location In Maryland**	**Outside of Maryland's Boundaries**	**No XYS**	**Total**
Raw Citation Data with Updated XYs	273,305	245	320,164	593,714
Raw Stop Data with Updated XYs	134,544	53	134,865	269,462

Reduction of Stops Located Outside of Maryland	
April 1st 2021 to March 31st 2022	136
April 1st 2022 to March 31st 2023	53
	83

Updated Percentage for Mappable Stops	
April 1st 2021 to March 31st 2022	50.15%
April 1st 2022 to March 31st 2023	49.93%
	-0.22%

Updated Percentage for No Xys (STOPS ONLY)	
April 1st 2021 to March 31st 2022	23.37%
April 1st 2022 to March 31st 2023	22.72%
	-0.66%

Updated Percentage for Mappable Citations	
April 1st 2021 to March 31st 2022	46.44%
April 1st 2022 to March 31st 2023	46.03%
	-0.41%

2. EMS Data:
    a. Accuracy: MVC Cause of Injury Blanks: **2.0 percent improvement**

eMEDS records related to Motor Vehicle Crash (MVC) transports represent roughly 30% on average annually all injury transports. This category for EMS transport is second only to falls (45.6%). A cooperative relationship has been maintained between the Maryland Department of Transportation's Highway Safety Office (MHSO), the TRCC, and the Maryland Institute for Emergency Medical Services Systems (MIEMSS) for the achievement of a mutually important common goal in the reduction of motor vehicle crash related patient morbidity and mortality. Additionally, both agencies value the importance of timely, complete, and accurate data as it pertains to the prehospital patient assessment, care, and outcome. However, data collection for all incident responses has become extensive and multi-faceted for responding personal with the growth of the electronic Maryland Emergency Medical Services Data System (eMEDS®).

	April 1, 2019 to March 30, 2020		April 1, 2020 to March 30, 2021		April 1, 2021 to March 30, 2022		April 1, 2022 to March 30, 2023	
Maryland EMS Operational Programs (EMSOP)	**Total Potential MVC Transports**	**% Potential MVC Transports with "Blank" Cause of Injury**	**Total Potential MVC Transports**	**% Potential MVC Transports with "Blank" Cause of Injury**	**Total Potential MVC Transports**	**% Potential MVC Transports with "Blank" Cause of Injury**	**Total Potential MVC Transports**	**% Potential MVC Transports with "Blank" Cause of Injury**
B	400	6.0%	337	7.4%	368	1.9%	389	2.1%
D	904	6.2%	655	13.1%	772	3.1%	756	4.0%
BA	5,122	32.5%	3,074	31.3%	3,907	31.7%	4,568	31.9%
BB	1,459	13.8%	1,102	14.4%	1,178	9.8%	1,495	6.8%
BC	6,494	46.2%	4,357	43.3%	4,566	44.5%	4,756	42.3%
E	236	8.1%	201	8.5%	163	3.7%	241	1.2%
F	638	11.1%	501	11.4%	452	11.3%	517	6.8%
G	1,300	10.8%	800	13.4%	875	6.3%	1,153	8.3%
I	1,149	11.3%	844	13.2%	924	9.2%	1,155	6.1%
J	948	10.0%	691	11.9%	710	8.0%	843	9.1%
K	5,808	15.5%	4,495	16.0%	4,982	11.2%	5,297	9.3%
L	205	3.4%	177	5.1%	161	3.1%	180	2.8%
M	994	13.2%	779	13.5%	831	13.5%	928	8.2%
N	189	12.7%	154	9.1%	95	6.3%	170	4.1%
O	438	7.5%	313	9.6%	349	4.0%	383	3.7%
Q	819	2.4%	806	4.8%	595	0.3%	757	0.4%
R	650	11.2%	412	16.3%	475	6.5%	636	5.5%
S	271	12.9%	187	9.1%	269	3.3%	272	3.7%
T	114	8.8%	75	13.3%	78	6.4%	74	1.4%
U	437	26.5%	328	16.8%	174	17.2%	310	11.9%
V	251	9.6%	207	12.6%	224	5.4%	248	3.2%
W	907	9.9%	723	10.1%	613	2.4%	536	2.6%
X	5,400	17.1%	4,409	18.7%	4,193	15.3%	4,427	11.7%
Y	3,251	14.3%	2,241	16.9%	2,318	12.9%	2,631	10.6%
Z	93	8.6%	78	20.5%	68	2.9%	79	3.8%
Grand Total	**38,477**	**21.5%**	**27,946**	**21.0%**	**29,340**	**18.4%**	**32,801**	**16.4%**

3. MVA Driver Records: Submission to CDLIS

During the performance period (April 1, 2021 – March 31, 2022, compared to April 1, 2022 – March 31, 2023), MDOT MVA reports improvement in three out of eleven AAMVA CDLIS data quality measures for which complete data are available.

- Timeliness: % of convictions sent successfully within the 10-day federal time limit: increased by 0.3%
- Timeliness: % of withdrawals sent successfully within the 10-day federal time limit: increased by 32.9%
- Accuracy: % of withdrawal messages returned in error by the CDLIS Central Site: decreased by 96.5%
- Accuracy: % of messages sent to update MPR PII returned in error: decreased by 66.9%
- Accuracy: % of Delete Driver messages returned in error: decreased by 99.0%
- Accuracy: % of Negate messages returned in error: decreased by 90.3%

Maryland CDLIS Data Quality Tracker TRSP FFY24 Summary					
Measure	**Description of Measure**	**Baseline Period (4/21-3/22)**	**Performance Period (4/22-3/23)**	**% Change**	**Improved ?**
Conviction Timeliness	% of Convictions Sent Successfully within the 10-day federal time limit	88.10%	88.39%	0.3%	**Y**
Conviction Error Rate	% of conviction messages returned in error by the CDLIS Central Site	0.50%	0.54%	7.8%	N
Withdrawal Timeliness	% of Withdrawals Sent Successfully within the 10-day federal time limit	60.60%	80.52%	32.9%	**Y**
Withdrawal Error Rate	% of withdrawal messages returned in error by the CDLIS Central Site	30.10%	1.05%	-96.5%	**Y**
Duplicate Resolution Timeliness	Number of Duplicates Resolved outside the 10-day federal time limit	4	7	64.6%	N
Transfer Resolution Timeliness	Number of Transfers Resolved outside the 10-day federal time limit	3	3	8.3%	N
Driver History Errors	Number of history errors returned by the CDLIS Common Validation Processor	78	89	13.5%	N
MPR PII Update Error Rate	% of messages sent to update MPR PII that were returned in error	3.90%	1.29%	-66.9%	**Y**
MPR SOR Update Error Rate	% of messages sent to update the MPR SOR and ST/DLN that were returned in error	2.60%	3.57%	37.3%	N
Pointer Deletion Error Rate	% of Delete Driver messages returned in error	8.00%	0.08%	-99.0%	**Y**
Negates Error Rate	% of Negate messages returned in error	6.00%	0.58%	-90.3%	**Y**
Prepared by MDOT MVA Office of Data Management		Data Source: CDLIS Timeliness and Data Accuracy Summary Workbook			

Appendix 9: Emergency Medical Systems (EMS) and Trauma Registry Performance Measures

Emergency Medical Services (EMS)

Accessibility

Performance Measure Statement	Measure (Baseline/Goal)
Ensure that all data access requests for electronic Maryland EMS Data System® (eMEDS® - the State's patient care reporting system) data/information are reviewed for appropriateness (non-confidentiality adherence) and facilitated within 30 days of request.	Number of Data Access Committee (DAC) related approved EMS data requests completed within 30 days over the total number of DAC related approved EMS data requests. **Baseline** is 95%. **Goal** is maintain 95+% during the SFY 2024.

Met Performance Measure:

X Yes _____ No

Notes:

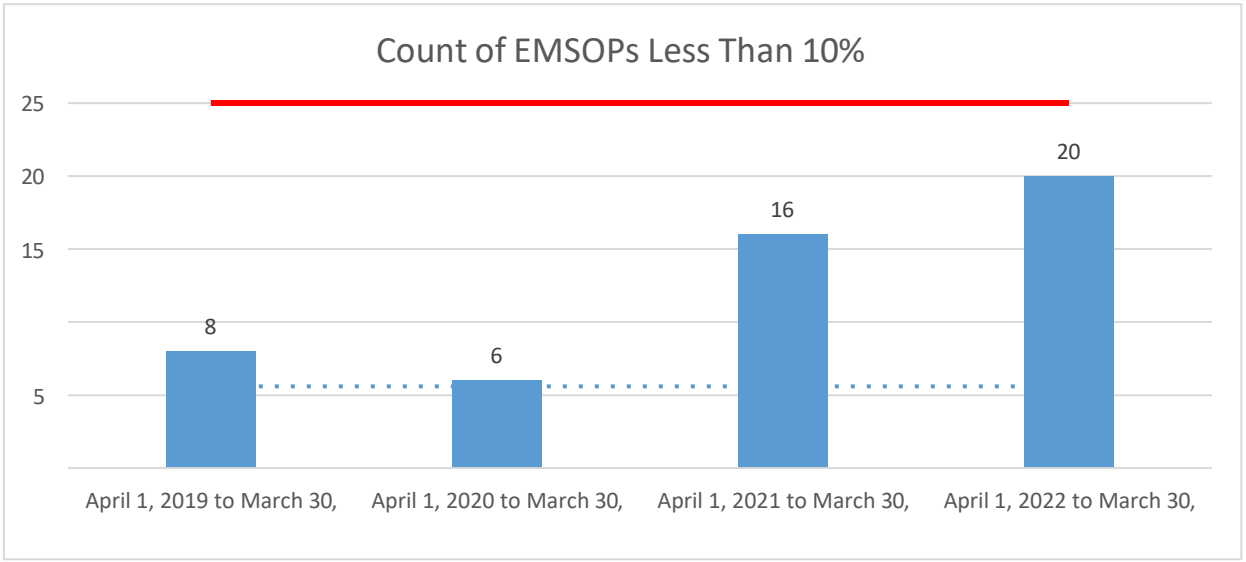
- Percentage Compliance Goal is 95+%: Currently 100%
- MIEMSS continues to meet this performance measure. Once a data request is approved MIEMSS supplies requested data within the 30 days. It was noted, that while MIEMSS works with a data requestor on confirming details of their request (e.g. approved IRBs, payment, signatures on agreements), we begin working on collecting and packaging the data in anticipation of delivery.

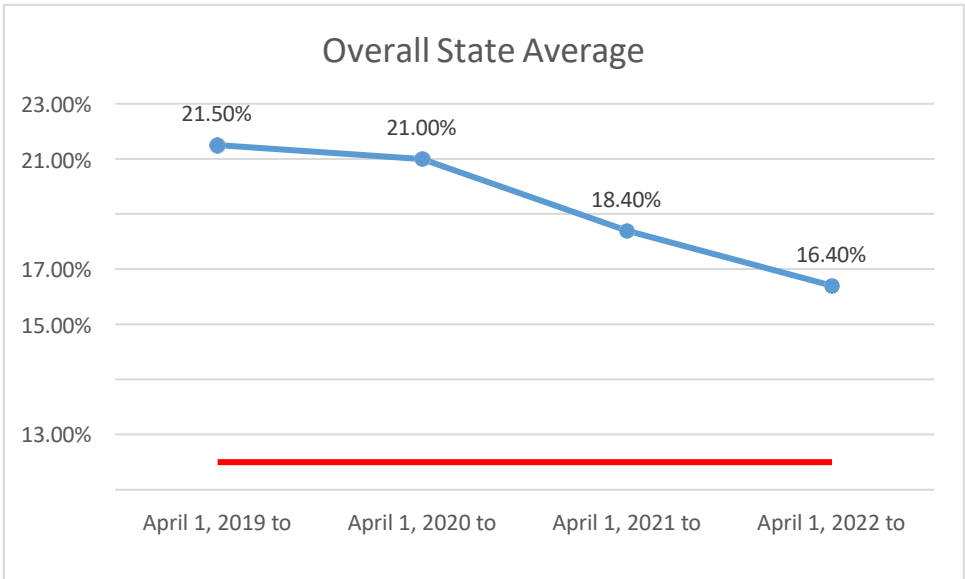
Accuracy

Performance Measure Statement	Measure (Baseline/Goal)
Reduce the % Potential Motor Vehicle Crash (MVC) Transports with "Blank" Cause of Injury responses: Statewide CY 2017 Baseline – 18%	Number of MVC dispatch code records with a "Blank" Cause of Injury" over the total number MVC dispatch code records by Emergency Medical Services Operational Program (EMSOP). **Baseline** is 18% statewide average. **Goal** is maintain an individual EMSOP average of 10% or less for all EMSOPS.

Met Performance Measure:

_____ Yes __X__ No





Notes:

- Continues to show improvement over time.

Maryland EMS Operational Programs (EMSOP)	April 1, 2019 to March 30, 2020		April 1, 2020 to March 30, 2021		April 1, 2021 to March 30, 2022		April 1, 2022 to March 30, 2023	
	Total Potential MVC Transports	% Potential MVC Transports with "Blank" Cause of Injury	Total Potential MVC Transports	% Potential MVC Transports with "Blank" Cause of Injury	Total Potential MVC Transports	% Potential MVC Transports with "Blank" Cause of Injury	Total Potential MVC Transports	% Potential MVC Transports with "Blank" Cause of Injury
B	400	6.0%	337	7.4%	368	1.9%	389	2.1%
D	904	6.2%	655	13.1%	772	3.1%	756	4.0%
BA	5,122	32.5%	3,074	31.3%	3,907	31.7%	4,568	31.9%
BB	1,459	13.8%	1,102	14.4%	1,178	9.8%	1,495	6.8%
BC	6,494	46.2%	4,357	43.3%	4,566	44.5%	4,756	42.3%
E	236	8.1%	201	8.5%	163	3.7%	241	1.2%
F	638	11.1%	501	11.4%	452	11.3%	517	6.8%
G	1,300	10.8%	800	13.4%	875	6.3%	1,153	8.3%
I	1,149	11.3%	844	13.2%	924	9.2%	1,155	6.1%
J	948	10.0%	691	11.9%	710	8.0%	843	9.1%
K	5,808	15.5%	4,495	16.0%	4,982	11.2%	5,297	9.3%
L	205	3.4%	177	5.1%	161	3.1%	180	2.8%
M	994	13.2%	779	13.5%	831	13.5%	928	8.2%
N	189	12.7%	154	9.1%	95	6.3%	170	4.1%
O	438	7.5%	313	9.6%	349	4.0%	383	3.7%
Q	819	2.4%	806	4.8%	595	0.3%	757	0.4%
R	650	11.2%	412	16.3%	475	6.5%	636	5.5%
S	271	12.9%	187	9.1%	269	3.3%	272	3.7%
T	114	8.8%	75	13.3%	78	6.4%	74	1.4%
U	437	26.5%	328	16.8%	174	17.2%	310	11.9%
V	251	9.6%	207	12.6%	224	5.4%	248	3.2%
W	907	9.9%	723	10.1%	613	2.4%	536	2.6%
X	5,400	17.1%	4,409	18.7%	4,193	15.3%	4,427	11.7%
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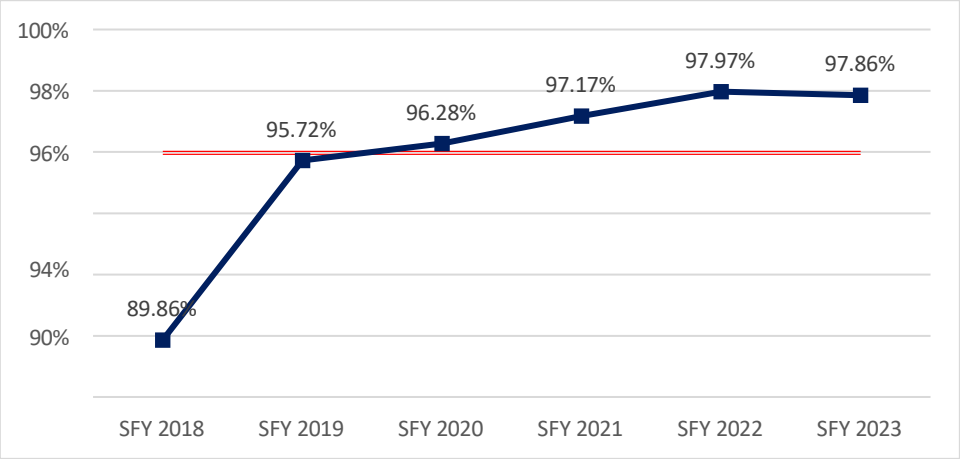
Z	93	8.6%	78	20.5%	68	2.9%	79	3.8%
Grand Total	**38,477**	**21.5%**	**27,946**	**21.0%**	**29,340**	**18.4%**	**32,801**	**16.4%**

Completeness

Performance Measure Statement	Measure (Baseline/Goal)
Increase the number of eMEDS® records that employ the use of the Computer-Aided Dispatch (CAD) data interface downloads.	Number of eMEDS® records with CAD downloads over the total number of records. **Baseline** is 96%. **Goal** is maintain 96% or greater.

Met Performance Measure:

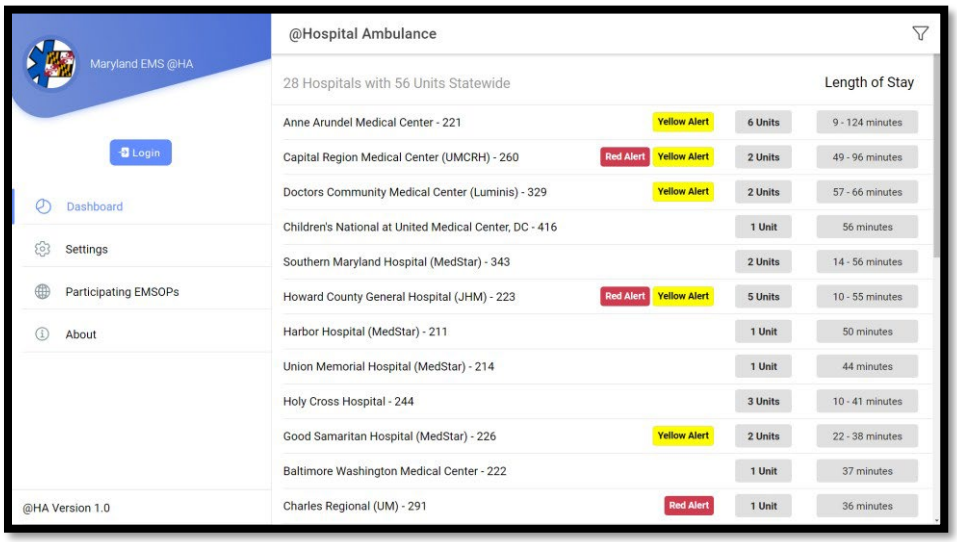
__X__ Yes _____ No



Note: SFY23 is July 1 to March 31

Notes:

- MIEMSS developed a custom application At Hospital Ambulances (@HA) to measure ambulance activity at hospitals. Jurisdictions must report specific data points in their CAD feed to ImageTrend in order for that information to be present in @HA in a timely manner. A beneficial outcome has been jurisdictions have modified and/or improved the data in their CAD file which also increases clinicians use of the CAD download as part of completing their PCR.

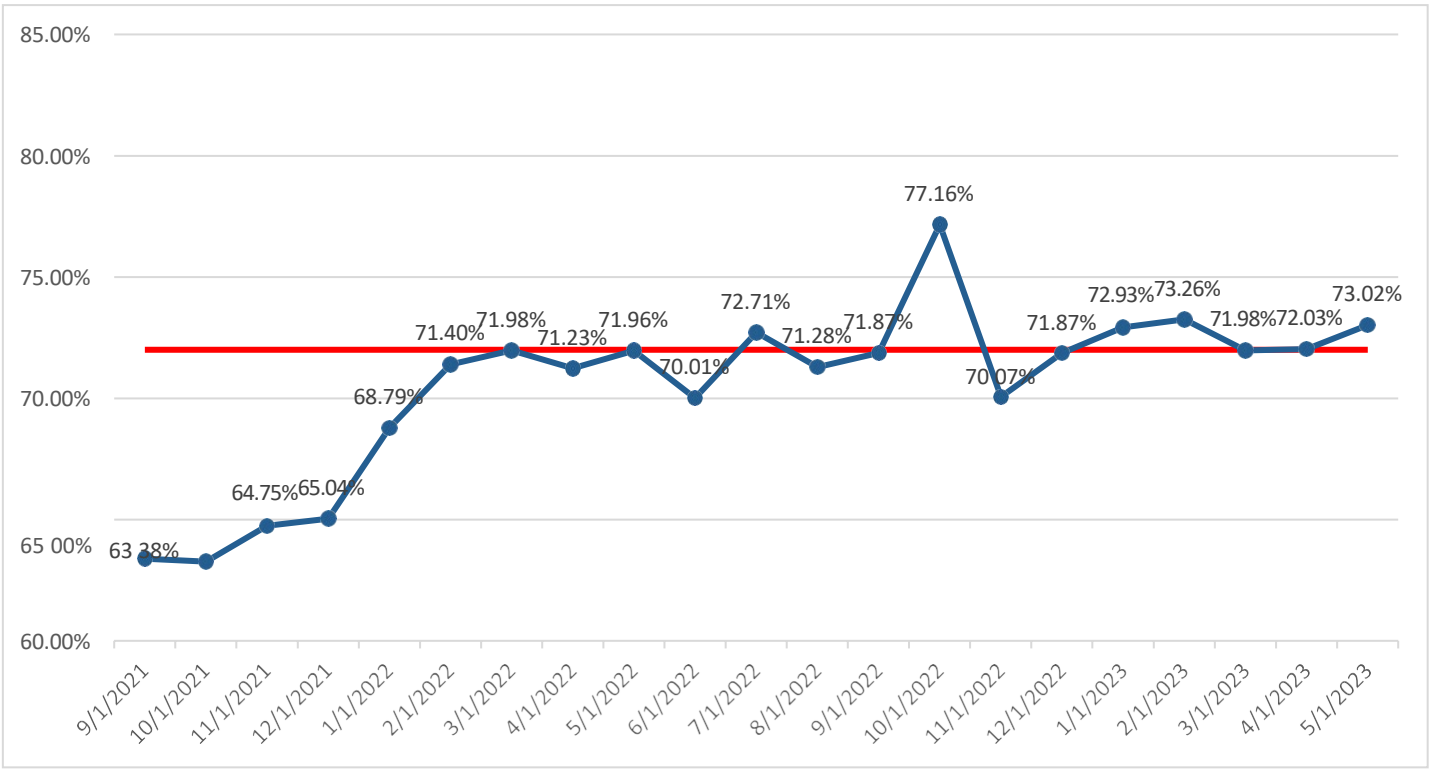

Maryland EMS @HA
Login
Dashboard
Settings
Participating EMSOPs
About
@HA Version 1.0
@Hospital Ambulance
28 Hospitals with 56 Units Statewide
Length of Stay
Anne Arundel Medical Center - 221
Yellow Alert
6 Units
9 - 124 minutes
Capital Region Medical Center (UMCRH) - 260
Red Alert
Yellow Alert
2 Units
49 - 96 minutes
Doctors Community Medical Center (Luminis) - 329
Yellow Alert
2 Units
57 - 66 minutes
Children's National at United Medical Center, DC - 416
1 Unit
56 minutes
Southern Maryland Hospital (MedStar) - 343
2 Units
14 - 56 minutes
Howard County General Hospital (JHM) - 223
Red Alert
Yellow Alert
5 Units
10 - 55 minutes
Harbor Hospital (MedStar) - 211
1 Unit
50 minutes
Union Memorial Hospital (MedStar) - 214
1 Unit
44 minutes
Holy Cross Hospital - 244
3 Units
10 - 41 minutes
Good Samaritan Hospital (MedStar) - 226
Yellow Alert
2 Units
22 - 38 minutes
Baltimore Washington Medical Center - 222
1 Unit
37 minutes
Charles Regional (UM) - 291
Red Alert
1 Unit
36 minutes

Integration

Performance Measure Statement	Measure (Baseline/Goal)
Increase the percent of eMEDS that match existing records within Chesapeake Regional Information System for Patients (CRISP, the State's health information exchange).	Number of eMEDS® records provided to CRISP resulted in a match of a record within CRISP. **Baseline** is 72%. **Goal** is to maintain 72% or greater

Met Performance Measure:

X Yes _____ No



Notes:

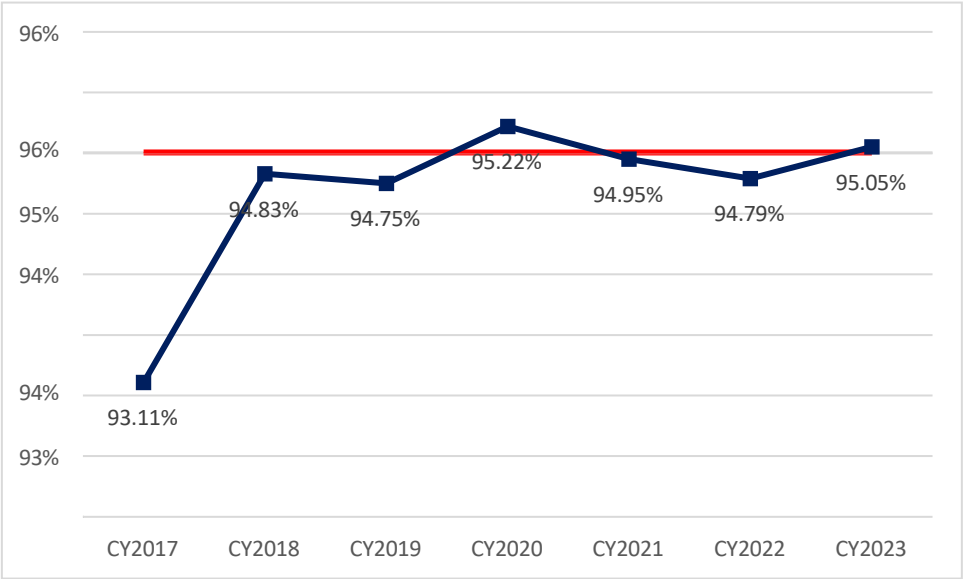
- Matching rate will never be 100%. New patients will always be introduced into the CRISP system as patients being treated are never going to be same patients previous treated.
- Baseline and Goal Updated from 81%. Previous data pull included those reports sent to CRISP where it matched to a "patient" with generic matching information (i.e. John Doe, Homeless Baltimore Cnty). Approx. 8.65% of records sent meet this type of match. New data pull excludes these types of matches as it doesn't match to an individual person in the CRISP system. Therefore, our bassline and goal is reduced by 9%
- Current match rate for EMS data is 73.02%

Timeliness

Performance Measure Statement	Measure (Baseline/Goal)
Reduce the amount of time from unit dispatch until an eMEDS® record is properly marked completed by the clinician.	The statewide goal is to have an eMEDS® report properly marked completed within 24 hours or less of a unit's dispatch. A per jurisdiction baseline will be established and measured monthly with a jurisdictional goal of 95% of all calls being properly marked complete within 24 hours or less.

Met Performance Measure:

__X__ Yes _____ No



Note: CY23 only Qtr1 Reported

Notes:

- There is a slight improvement over the previous calendar year. There is inconsistency across the EMSOPs in marking a report complete (Marked as Finished), which is the status used in evaluating this PM.
- 12 EMSOPs have over 75% of their records not using the Marked as Finished feature within the application. Therefore, these EMSOPs are excluded from the count on which the PM is based.
- Further evaluation of the CY2022 data shows indicates that 15 of the reporting EMSOP are above the 95% performance measure.
- Intend to reach out to the EMSOPs to get their perspective and see what can be done to improve their utilization of the Marked as Finished status.

Uniformity

Performance Measure Statement	Measure (Baseline/Goal)
Ensure compliance with the National Emergency Medical Services Information System (NEMSIS) standard data elements and responses through successful periodic submission to NEMSIS.	Number of eMEDS® records successfully submitted to NEMSIS over the total number of records submitted first time. **Baseline** is 100%. **Goal** is maintain 100% during the SFY 2024.

Met Performance Measure:

X Yes _____ No

Notes:

- Percentage Compliance Goal >= 100%: Currently 100%
- Records submitted are accepted. If there are issues with our submission NEMSIS would reach out to MIEMSS and would work to correct the issues.

Trauma Registry

Accessibility

Performance Measure Statement	Measure (Baseline/Goal)
Ensure that all data access requests for Maryland Trauma Registry (MTR) data/information are reviewed for appropriateness (non-confidentiality adherence) and facilitated within 30 days of agreement of request.	Number of Data Access Committee (DAC) related approved MTR data requests completed within 30 days of agreement over the total number of Data Access Committee related approved MTR data requests. **Baseline** is 95%. **Goal** is maintain 95+% during the SFY 2024.

Met Performance Measure:

X Yes _____ No

Notes:

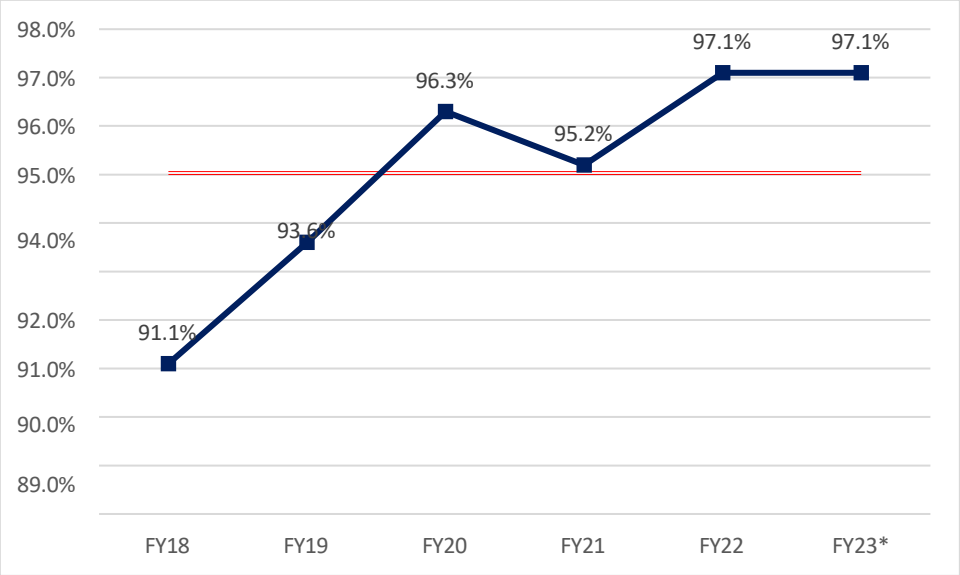
- Percentage Compliance Goal is 95+%: Currently 100%
- MIEMSS continues to meet this performance measure. Once a data request is approved MIEMSS supplies requested data within the 30 days. It was noted, that while MIEMSS works with a data requestor on confirming details of their request (e.g. approved IRBs, payment, signatures on agreements), we begin working on collecting and packaging the data in anticipation of delivery.

Accuracy

Performance Measure Statement	Measure (Baseline/Goal)
Code of Maryland Regulations (COMAR) 30.08.05.21.I - Inter-Rater Reliability (IRR) monitoring of the trauma data entered into the MTR to ensure the quality, reliability, and validity.	COMAR 30.08.05.21.I - The Trauma Registry shall have a plan to ensure IRR of the data entered into the MTR at individual trauma centers. Ongoing review and evaluation shall ensure the quality, reliability, and validity of the institution's MTR registry data. A State baseline for IRR (15-20 trauma center records monthly) will be determined over SFY 2021; the minimum goal is 95% and a 99% stretch, to assess accuracy gaps at the data abstraction level.

Met Performance Measure:

__X__ Yes _____ No



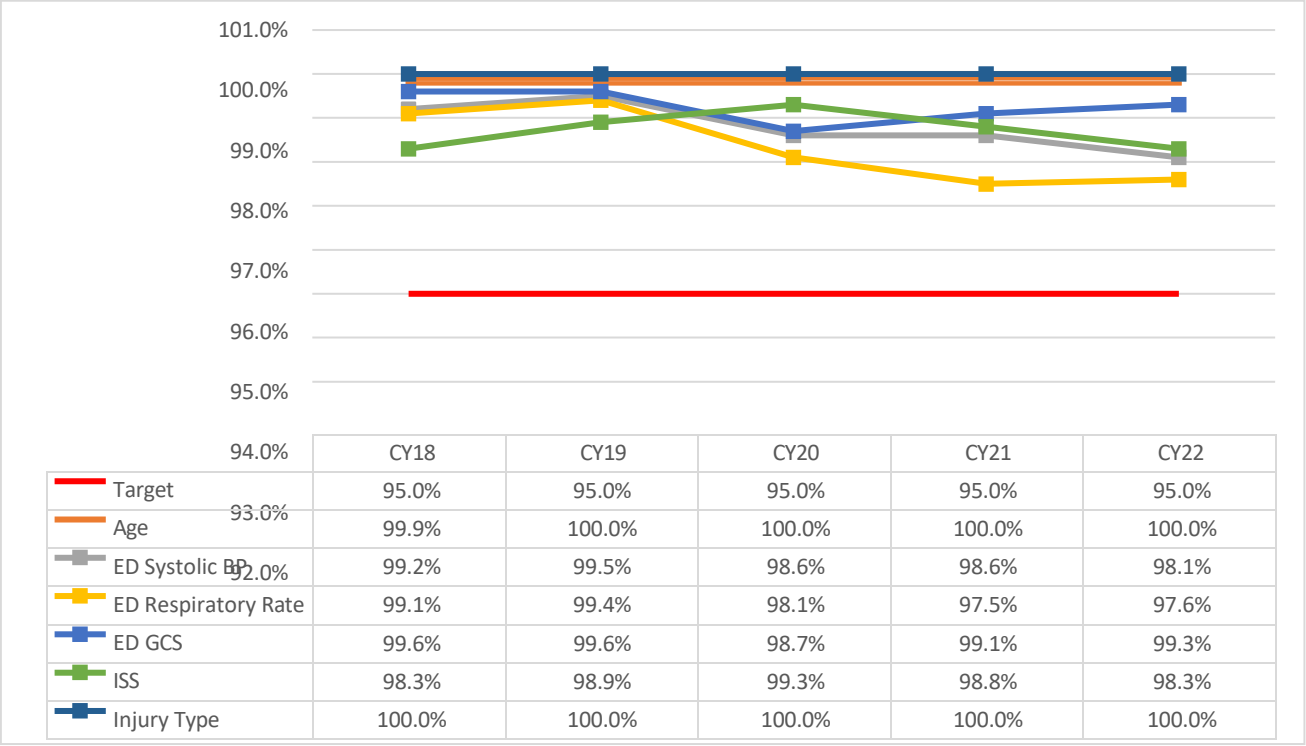
*Note: *FY23 only Qtr1 & Qtr2 Reported*

Completeness

Performance Measure Statement	Measure (Baseline/Goal)
Reduce the percentage of missing/unknown values in data elements (Patient Age-years, Glasgow Coma Score, Systolic Blood Pressure, Injury Severity Score) used for the calculation of Trauma Injury Severity Scores (TRISS).	Utilize the report, "Percent Date Completeness for Specific Data Elements" to identify qualifying records which TRISS elements are below a baseline of 86%. **Goal** is 95% for all elements, during the SFY 2024.

Met Performance Measure:

X Yes _____ No



	CY18	CY19	CY20	CY21	CY22
Target	95.0%	95.0%	95.0%	95.0%	95.0%
Age	99.9%	100.0%	100.0%	100.0%	100.0%
ED Systolic BP	99.2%	99.5%	98.6%	98.6%	98.1%
ED Respiratory Rate	99.1%	99.4%	98.1%	97.5%	97.6%
ED GCS	99.6%	99.6%	98.7%	99.1%	99.3%
ISS	98.3%	98.9%	99.3%	98.8%	98.3%
Injury Type	100.0%	100.0%	100.0%	100.0%	100.0%

Notes:

- Percentage Compliance Goal is 95+%: Currently 98.8%
- For the six (6) measures, we have a measurement of greater than 95% compliance for each.
  - Age (years)
  - ED Systolic Blood Pressure (BP)
  - ED Respiratory Rate
  - ED Glasgow Coma Score (GCS)
  - Injury Severity Score (ISS)
  - Injury Type

Integration

Performance Measure Statement	Measure (Baseline/Goal)
Maryland trauma center submissions to the National Trauma Data Bank (NTDB) are included in the overall NTDB data repository.	Yearly comparisons of Maryland trauma centers with the rest of NTDB submittals nationwide.

Met Performance Measure:

X Yes _____ No

Notes:

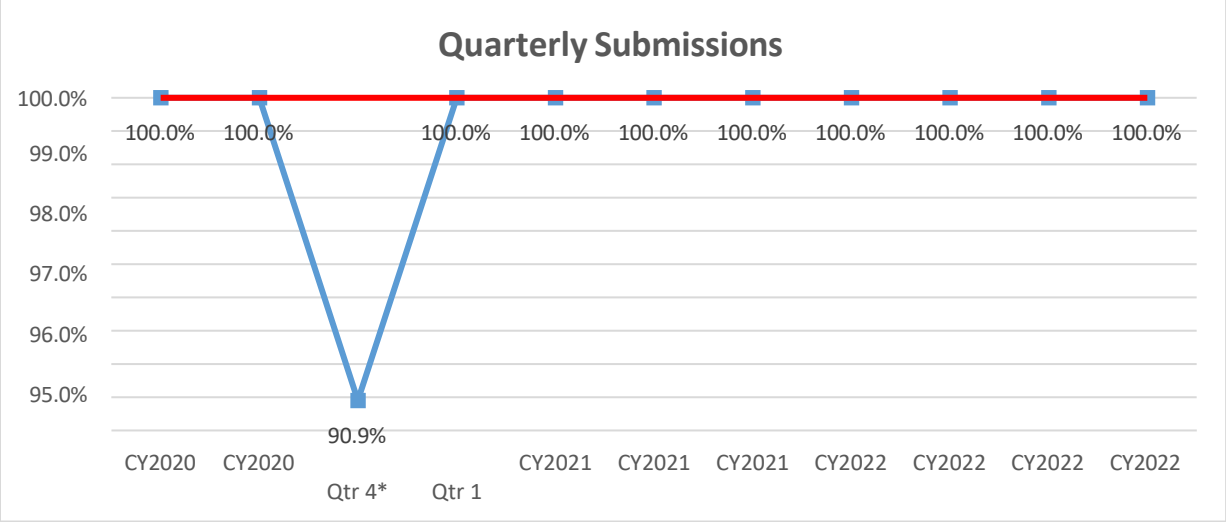
- We are meeting this measure with 100% across the board due to a process change within the Trauma Registry. The Trauma Registry now has an inclusion button with an ITDX report check that produces errors prior to NTDB submission. This allows the centers to correct their data prior to submission to the NTDB. This measure will remain at 100 percent compliance for the foreseeable future.

Timeliness

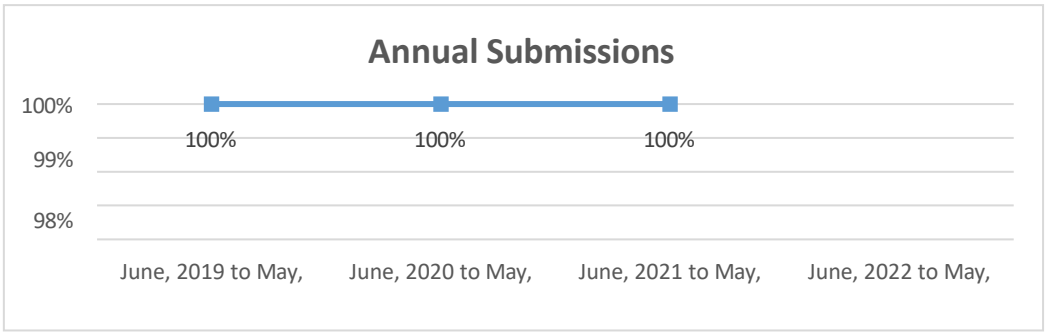
Performance Measure Statement	Measure (Baseline/Goal)
Verification of trauma records no later than 6 weeks after the end of each quarter.	All trauma patient records shall be submitted both quarterly and annually. Verification of counts and data element completeness shall be within six weeks after the end of each quarter. The goal is 100%.

Met Performance Measure:

X Yes _____ No



**During CY2020, MIEMSS moved to a new version of the Maryland State Trauma Registry (ESO Gen 6). Only one center was slightly delayed as a result of the transition. That center's data was submitted a short while later.*



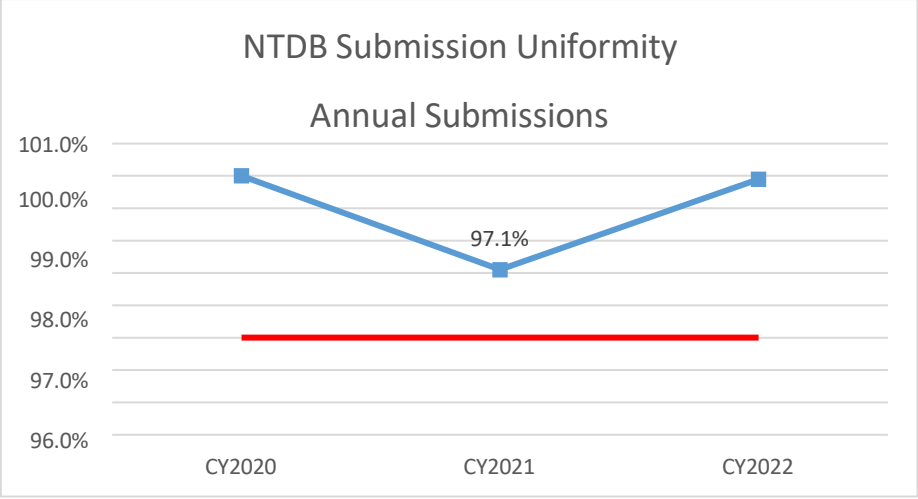
Data not available for Annual Submissions (June 2022 to May 2023). Reporting deadline is July 2023.

Uniformity

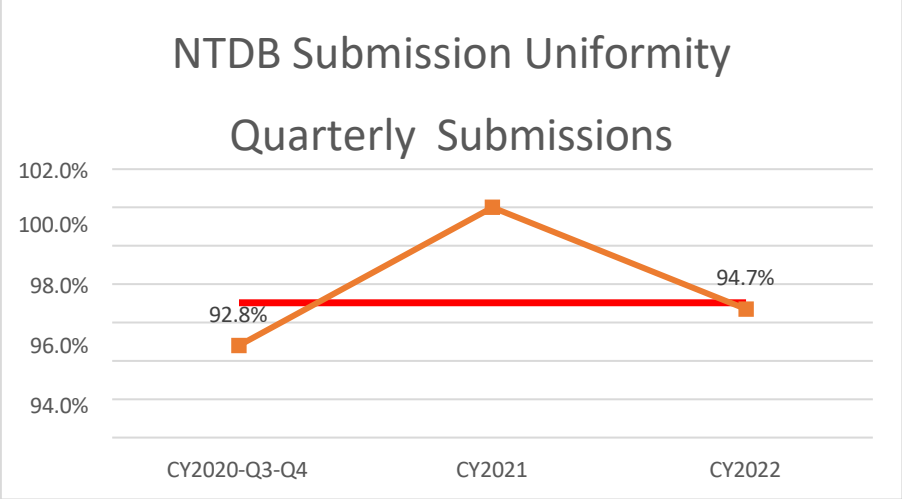
Performance Measure Statement	Measure (Baseline/Goal)
Ensure Maryland Trauma Registry (MTR) compliance with the National Trauma Data Bank (NTDB) standard data elements and responses through successful periodic submission to NTDB.	Each trauma center submits directly to the NTDB. MIEMSS currently does not receive feedback directly from the NTDB. Each hospital reports the number of records successfully submitted to MIEMSS. We are exploring a way to obtain this data over SFY 2021. The goal is 95%.

Met Performance Measure - ANNUAL:

Annual		Quarterly	
X Yes	____ No	____ Yes	X No



Note: CY2022, reporting one (1) facility.



Note: CY2022: Two (2) facilities reported first 3 quarters. Three (3) reported all quarters.

Notes:

- There are eleven (11) designated trauma centers in the State of Maryland. Of these centers, six (6) report annually and five (5) report quarterly.
    - Annual Reporting Centers:
        - American College of Surgeons (ACS) NTDB requires annual data submission.
        - In CY2022 Maryland has met the measure. However, only one (1) facility has reported at the time of this report. This annual ACS report deadline has been extended due to software issues at the national level. The new reporting deadline is July 14, 2023.
    - Quarterly Reporting Centers:
        - Quarterly Submission are made by ACS-TQIP Centers – TQIP collects more data points (performance measures) than the general NTDB and requires more frequent submissions.

###

Appendix 10: FFY2023-2024 TRSP Projects with Funding Sources

#	Project	Funding
	• Maryland Center for Traffic Safety Analysis (MCTSA) (National Study Center for Trauma and EMS)	NHTSA 405c
	• Seat Belt Observation Project (NOPUS Analysis) (National Study Center for Trauma and EMS)	NHTSA 405b
	• Implementation of Web Based Crash Forecasting Application and Approaches to Reach Zero Deaths in MD (Crash CORE/National Study Center)	NHTSA 402
	• Toxicology Sampling (Drugged Driving Data Project) (National Study Center for Trauma and EMS) • Impaired Driving Analysis and SPIDRE Support (Washington College) • DRE Database Development in Delta Plus (MSP ITD)	NHTSA 405d
	• Traffic Records Program Manager/MHSO TRCC Coordinator Position	NHTSA 405c
	• Traffic Records Data Improvement and Accessibility (Washington College)	NHTSA 405c
	• Maryland Safety and Crash Analysis Network (MSCAN)	State Funding; FHWA HSIP
	• Customer Connect (Driver and Vehicle Systems, MDOT-MVA)	Maryland State Funds
	• CDLIS, State State/SPEXS (MDOT-MVA)	Maryland State Funds
	• PRISM (MDOT MVA) • FMCSA Facial Recognition Pilot Program (MDOT MVA)	FMCSA
	• SAFETYNET Data Management (SHA Motor Carrier Division)	FMCSA
	• Commercial Vehicle Crashes Dashboard Development (Washington College and SHA Motor Carrier Division)	FMCSA
	• Race/Ethnicity and Traffic Stops in Maryland (NSC)	1906

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