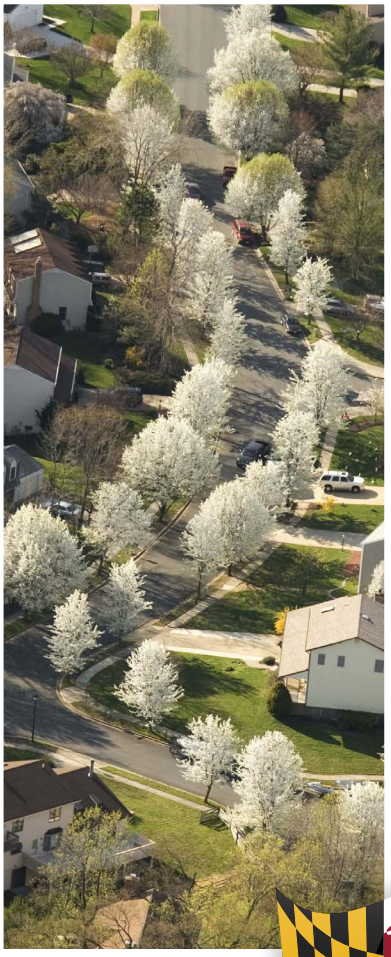
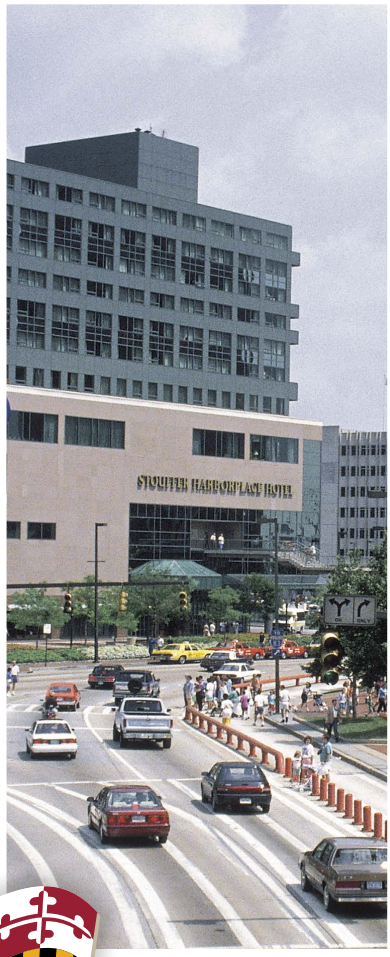




MARYLAND
STRATEGIC HIGHWAY SAFETY PLAN
2016-2020

June 2017

Letter from the Transportation Secretary

Safety is the foundation of every single project and initiative we deliver for the citizens of Maryland. Our mission, *Toward Zero Deaths*, is our ultimate traffic safety goal. We continue to make significant strides to save lives on our roadways. In 2014, Maryland reduced the number of traffic fatalities to 443, which is the lowest number since 1948. This historically low number clearly demonstrates what we can do when we work together to improve traffic safety and save lives. We believe the development and implementation of the Maryland Strategic Highway Safety Plan (SHSP) continues to contribute to this reduction in fatalities and serious injuries.

This 2016–2020 SHSP continues the legacy of previous safety action plans with a detailed framework for the next chapter of transportation safety in Maryland. We are focused on performance measures and effective strategies to achieve long-term goals. The 2016– 2020 SHSP was designed to move Maryland closer to cutting roadway fatalities in half by 2030 and eventually ending traffic fatalities and serious injuries on our roadways.

Achieving these goals will require a sustained and steadfast commitment from State and local agencies and key safety partners. SHSP stakeholders are crucial to improving roadway safety in Maryland through implementing the strategies and action steps related to the "Four Es of Safety" (Engineering, Enforcement, Education, and Emergency Medical Services). In addition, developing new partnerships will be a vital part of our continued success in emerging roadway safety areas, including vehicle connective technologies and traffic safety culture.

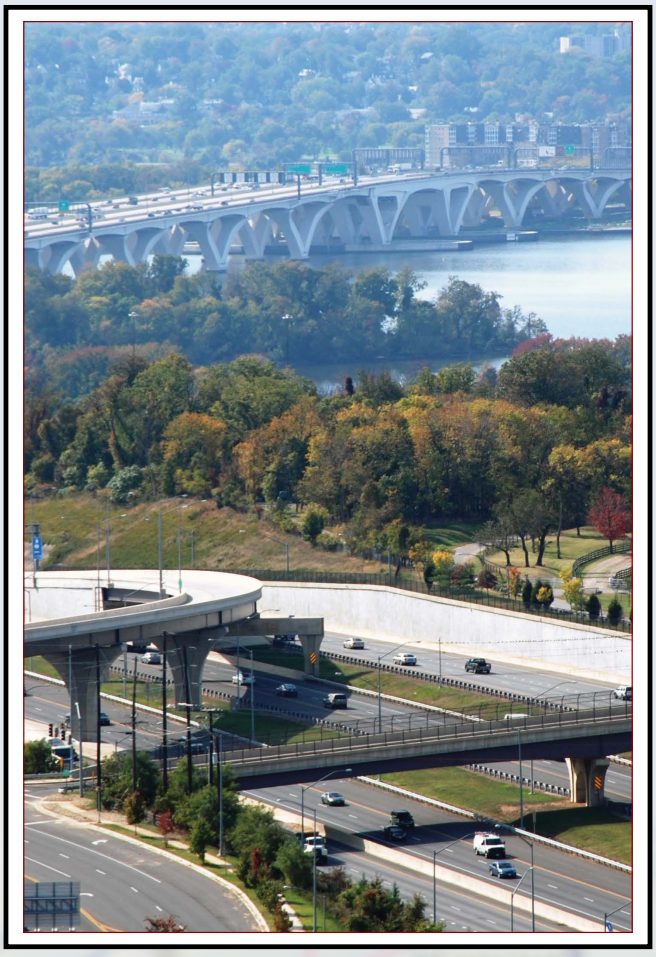
The Maryland SHSP Executive Council wishes to thank the Maryland Department of Transportation's Highway Safety Office (MHSO) and SHSP Emphasis Area Teams for their support and guidance in developing the 2016 – 2020 SHSP. Their tireless work in developing meaningful and actionable safety strategies will enable successful implementation during the next five years and beyond.

We invite you to join us to make a difference in the lives of citizens and visitors to Maryland in our quest to drive Maryland *Toward Zero Deaths*. By improving transportation safety, we will make a difference in the lives of drivers and passengers, pedestrians, bicyclists, and motorcyclists.

Thank you,

Pete K. Rahn
Transportation Secretary

October 2015



Transportation Safety Overview

Over the past five years, an average of 502 deaths and 3,702 serious injuries occurred each year on Maryland state and locally owned public roadways.[1] Each of these severe outcomes is not just a number, but an actual person – one who suffered a trauma or lost his or her life unnecessarily. In addition to the impact on individuals, each roadway fatality and serious injury affects multiple family members, friends, and coworkers. Most of us have been directly affected by a severe traffic crash. In the United States, as well as in Maryland, motor vehicle crashes are a major cause of death and disability.

To combat these unnecessary tragedies, Maryland leaders continue to build partnerships with government agencies, private citizens, traditional safety advocates, and nontraditional partners. The Maryland Department of Transportation's (MDOT) Highway Safety Office (MHSO) and State Highway Administration (SHA) have adopted the *Toward Zero Deaths (TZD)* approach. TZD is a data-driven effort to reduce fatalities and serious injuries by developing strong leadership in organizations that directly impact highway safety.

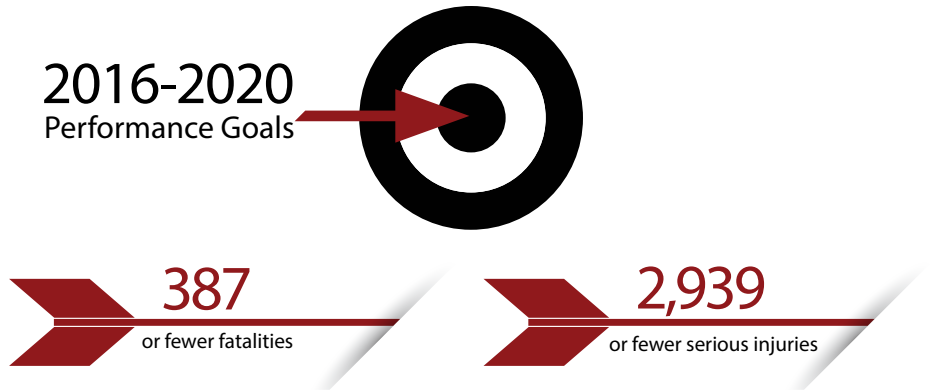
ZERO
TOWARD ZERO DEATHS
MARYLAND
EVERY LIFE COUNTS

The results of implementation are being measured against established performance targets. From 2009 to 2013, which includes implementation of the previous Strategic Highway Safety Plan (SHSP), the number of annual traffic fatalities in Maryland decreased by 15.3 percent. Though every fatality is tragic, every life saved is an accomplishment to be celebrated as the TZD vision moves closer to reality.

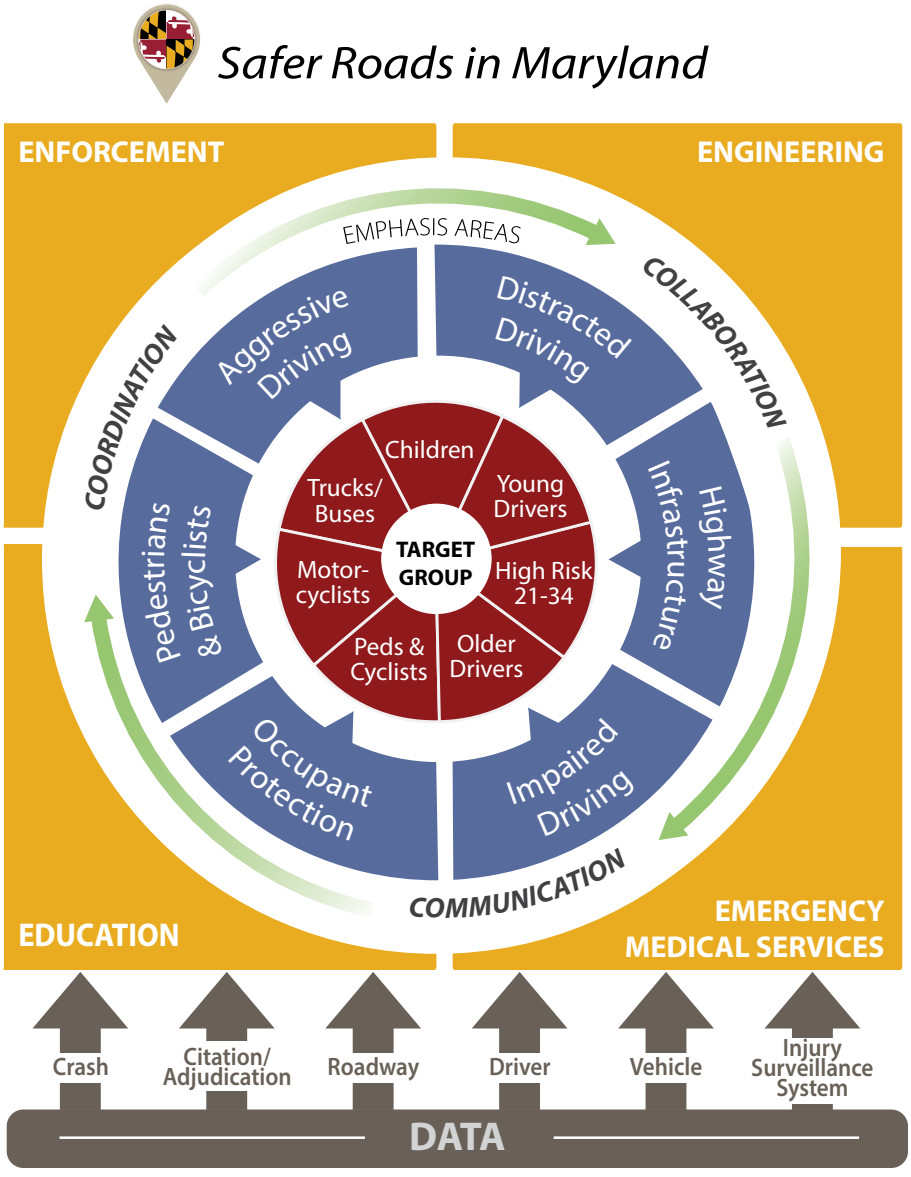
1 Data from 2009-2013

2016-2020 Strategic Highway Safety Plan

The 2016-2020 SHSP uses a focused approach on specific emphasis areas (EAs) and incorporates systemic safety implementation to complement the location-focused approach of the previous SHSP. Safety leaders convened a wide range of stakeholder groups to develop the new plan, and they participated in a series of meetings to confirm the final list of emphasis areas, develop strategies, and begin working on action steps to meet the new performance targets.



The framework below provides a visual description of Maryland's SHSP vision and process and is an enhancement of the previous SHSP Matrix. The foundation of the SHSP is data. Safety data systems are used throughout the plan's life cycle to develop and implement strategies and to evaluate progress toward the goal. The Four Es of Safety - Enforcement, Engineering, Education, and Emergency Medical Services - serve as the cornerstones of the plan. These stakeholder communities are represented on emphasis area teams that form the basis of the SHSP strategies. Coordination, collaboration, and communication power the engine that drives the six EA Teams. Their efforts are focused on target groups identified at the center of the figure. Bicyclists and pedestrians are both an emphasis area and target group; these users are vulnerable to the actions of other road users while also at risk due to their own actions.




95 NORTH
Ft. McHenry Tunnel
TOLL TUNNEL
395 TO ML King Blvd
Downtown
EXIT ONLY

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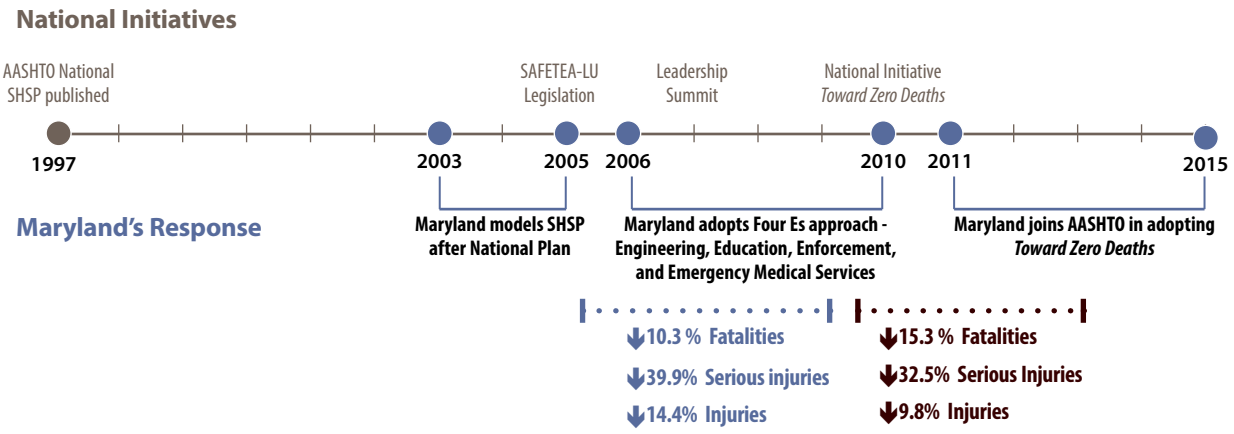
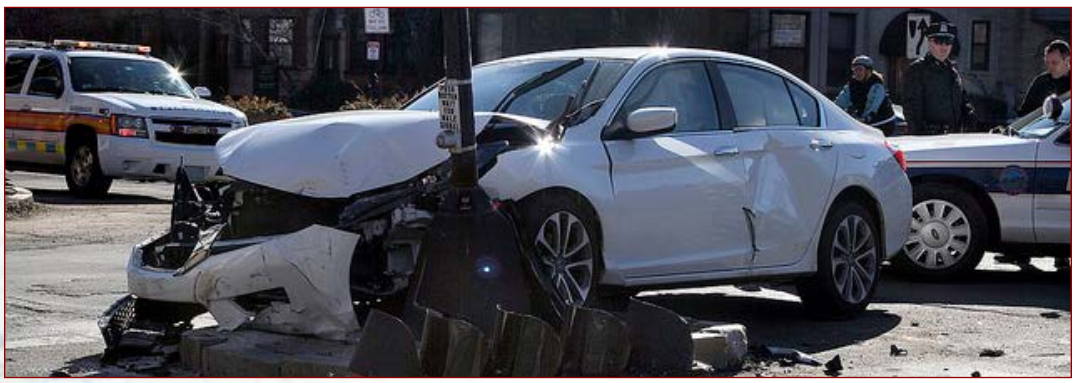
Maryland's SHSP has evolved over the years with changes based on results, prevailing legislation, and federal guidance. Maryland consults with the federal government to apply new processes and affirm content updates during each revision. As shown in the figure below, Maryland has sponsored and developed three SHSPs since 2006 with each iteration built upon previous experiences and results. Based on these evolving approaches over time, Maryland has achieved success in reducing fatalities and serious injuries. The SHSPs of the past provide a solid foundation upon which future plans can be built.

SHSP Timeline Overview



2003-2005 SHSP

The first Maryland SHSP was modeled after the American Association of State Highway and Transportation Officials (AASHTO) national plan and focused on the State's transportation safety problems in 23 program areas, including multiple strategies to reduce fatalities and serious injuries on Maryland's roadways.

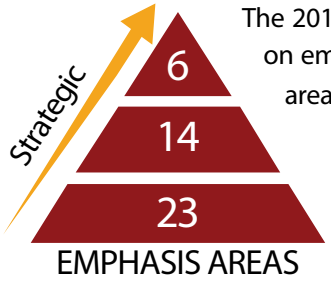


2006-2010 SHSP

In 2006, Maryland updated the SHSP based on the process recommended by the 2005 Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) legislation. The result was a statewide, comprehensive safety plan that provided a coordinated framework for establishing statewide goals, targets, and key emphasis areas developed in consultation with federal, state, local, and private-sector safety stakeholders.

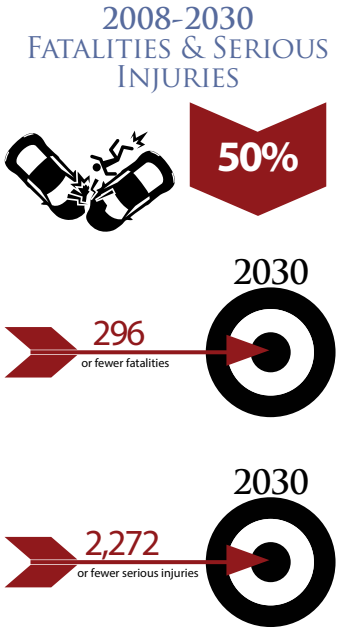
2011-2015 SHSP

In 2010, Maryland joined many other states and AASHTO in adopting the *Toward Zero Deaths* (TZD) national vision. Through a Governors Proclamation, Maryland launched its TZD campaign, which has been adopted by the Maryland Chiefs of Police Association, the Maryland Sheriff's Association, the Maryland EMS Board, and the Maryland Association of County Health Officers. Maryland has set a goal of reducing motor-vehicle related fatalities and injuries by one-half of the 2008 baseline by 2030, with an eventual goal to achieve zero traffic deaths.



The 2011 SHSP, with this goal in mind, was updated to focus more strategically on emphasis areas likely to yield results. Maryland reduced its SHSP emphasis areas to six, each of which adopted fatality and injury reduction targets.

2016-2020 SHSP



Maryland maintains the TZD approach by developing interim targets to reduce fatalities by at least 50 percent in the next two decades (from 592 in 2008 to 296 in 2030).

Considering the federal guidelines detailed in Moving Ahead for Progress in the 21st Century (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, Maryland executives collaborated on revisions to the target-setting methodology. The initial TZD goal remains: 296 fatalities or fewer by 2030. The annual targets for each of the SHSP's six emphasis areas are set using an exponential trend line connecting the historical data to the 2030 goal. Five-year averages are used to calculate projections, and the targets for each individual year are taken from the midpoint of the five-year average (e.g., 2017 annual interim target = midpoint of the 2015-2019 average). The same methodology was used for serious injury targets. However, it should be noted that due to significant declines in serious injuries in recent years, the use of historical trends currently puts the State at or below current targets. Finally, this same method was 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. *(See pages 24-25)*.

All traffic safety documents in the state of Maryland conform to these methodologies, including the SHSP, the MHSO's Highway Safety Plan (HSP), the SHA's Highway Safety Improvement Plan (HSIP), and the SHA's Commercial Vehicle Safety Plan (CVSP). Additionally, all planning documents developed by the MHSO staff and all State-level reporting to the Governor use the SHSP emphasis-area fatality and serious injury target-setting methodology.

Unless otherwise noted, all data are derived from the SHA's Safety Information Databases (SHA-SID) and Traffic Analysis Network Garage (TANG) based on crash reports submitted to, and processed by, the Maryland State Police Central Records Division (MSP-CRD) utilizing the Enhanced Maryland Automated Accident Reporting System (eMAARS) and the Automated Crash Reporting System (ACRS). Data are subject to change. Effective January 1, 2015, all law enforcement agencies were mandated by the MSP to submit all crash reports via ACRS.

SHSP Development. Maryland began updating the SHSP by convening the Maryland Highway Safety Summit over a three-day period in February 2014. Approximately 300 safety stakeholders from a wide variety of organizations and disciplines attended the event, which served as a springboard to developing the 2016-2020 SHSP. The event was a successful culmination of more than a year's worth of planning and coordination.

The Summit carried a theme of "Connecting the Dots," emphasizing the need for collaboration across the Four Es to meet Maryland's transportation safety targets. Members of the SHSP Executive Council attended the Summit, and their participation helped set the tone and framework for the 2016-2020 SHSP planning process. Partners were engaged in a wide variety of topics and new ideas, and their experiences were infused into SHSP Emphasis Area (EA) Teams.

Maryland's safety leaders held a 2016-2020 SHSP kick-off meeting with key stakeholders in September 2014 to outline a process to develop the new SHSP and performance measure methodology. The roles and responsibilities of the Executive Council and the EA Teams were presented along with the proposed timeline for SHSP development. Speakers reviewed Maryland's progress to date, the SHSP's target setting methodology, and strengths and weaknesses of the current plan. The group nominated chairs and co-chairs of the EA Teams.

The 2016-2020 SHSP takes the essence of the previous plan (a focused approach on specific emphasis areas) and incorporates systemic safety implementation to complement the location-focused approach of the previous SHSP. The result is an evidence-based approach that starts with asking the question, "What do the data tell us?" The answer can lead to lasting change. The analysis of EAs and target groups culminated in the development of the plan's six EAs and seven target groups, as illustrated in the figure below.

Stakeholders. A wide range of stakeholder groups – including federal, state and local government agencies, nongovernmental organizations, regional authorities, and individual advocates – participated in the development of the SHSP.[2] Each EA Team – which includes regional and local agencies – held at least two facilitated discussions to identify, develop, and finalize strategies for the 2016-2020 SHSP.[3] Each EA Team wrestled with difficult decisions regarding how to cover the essentials of transportation safety while remaining strategic and focused on the most vital needs. This list of stakeholder safety partners is available in Appendix A.

Emphasis Area Strategy Development. The Executive Council met in January 2015 to hear the EA Team chairs and co-chairs present their existing strategies, proposed revisions, and any challenges and opportunities that emerged from the planning process. The Executive Committee and the Steering Committee at large provided feedback to the chairs and co-chairs and approved their strategies. One change made for the 2016-2020 SHSP is the addition of bicyclists to the Pedestrian EA. Pedestrians and bicyclists are critical target groups within the Maryland SHSP, so combining them into a single EA will help stakeholders address the safety needs of these non-motorized road users.

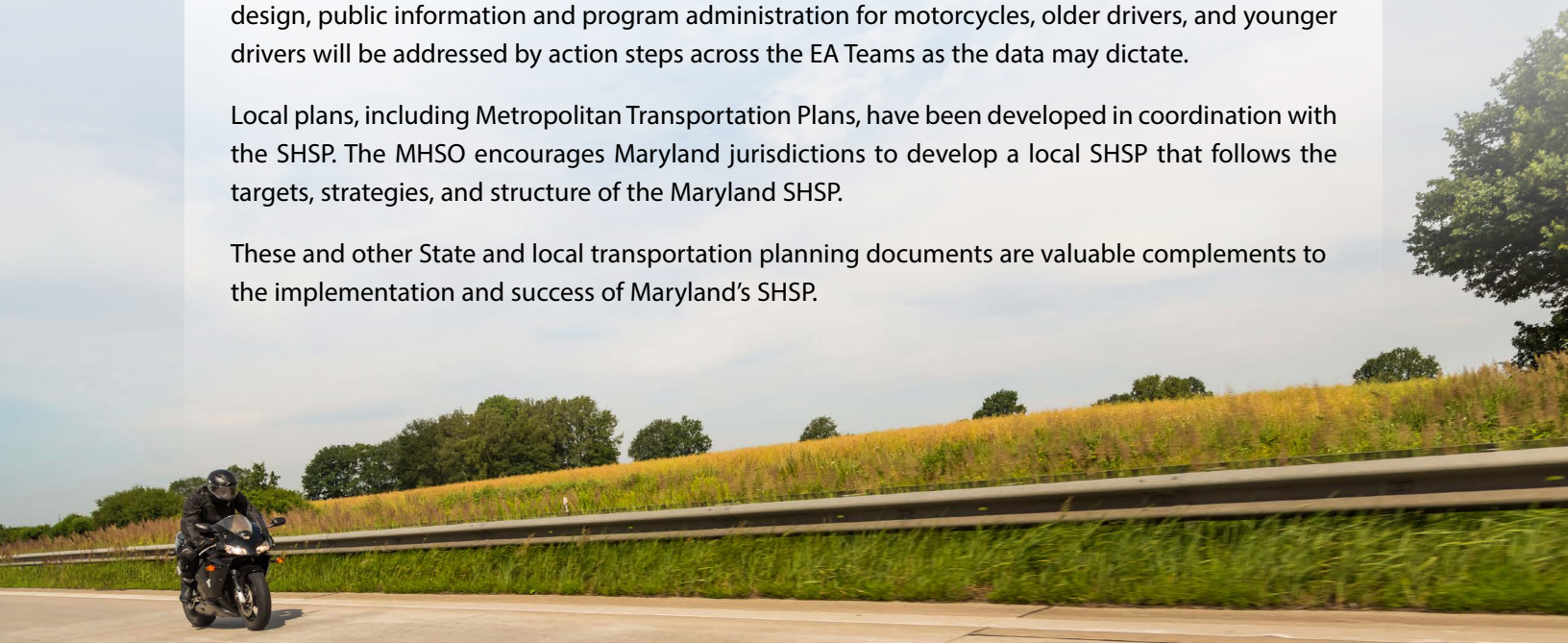
Links to Other Maryland Safety Plans

Specific goals and targeting methodology in the HSIP, CVSP, HSP, and the safety components of the Statewide Transportation Improvement Program (STIP) are consistent with Maryland's SHSP.[4]

Additionally, the MDOT's Motor Vehicle Administration (MVA) has developed a *Motorcycle Safety Programs Action Plan,* an *Older and Medically At-Risk Drivers – Strategic Program Action Plan,* and a *Young Drivers Strategic Plan*. Specific action steps related to enforcement, education, roadway design, public information and program administration for motorcycles, older drivers, and younger drivers will be addressed by action steps across the EA Teams as the data may dictate.

Local plans, including Metropolitan Transportation Plans, have been developed in coordination with the SHSP. The MHSO encourages Maryland jurisdictions to develop a local SHSP that follows the targets, strategies, and structure of the Maryland SHSP.

These and other State and local transportation planning documents are valuable complements to the implementation and success of Maryland's SHSP.



2 23 US Code 148(a)(12)(A) – *http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/html/USCODE-2011-title23-chap1-sec148.htm*

3 23 US Code 148(a)(12)(E) – *http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/html/USCODE-2011-title23-chap1-sec148.htm*

4 23 US Code 148(a)(12)(H)) – *http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/html/USCODE-2011-title23-chap1-sec148.htm*

2.

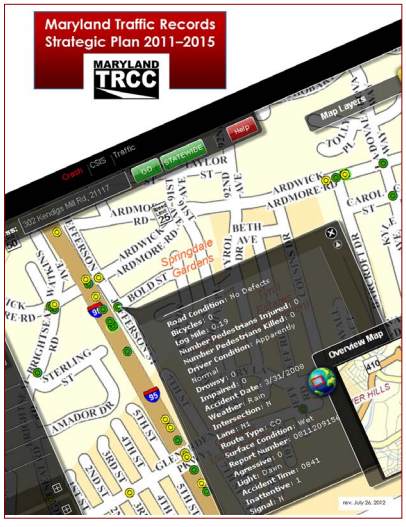
2.1 Traffic Records and Information Systems

In an effort to advance Maryland's traffic safety community in achieving the vision of zero traffic-related deaths, the State established the Traffic Records Coordinating Committee (TRCC). The TRCC's mission is to coordinate all traffic records system components (crash, roadway, citation/adjudication, driver, vehicle, and injury surveillance) using data quality performance measures (timeliness, completeness, accuracy, accessibility, integration, and uniformity). The TRCC exists and operates as part of the statewide support for the SHSP.[5] The combined efforts of policy leaders, decision makers, and technical experts of the TRCC are crucial to improving and continuing the availability of critical data to EA Teams and all stakeholders contributing to SHSP strategy implementation. Maryland maintains traffic records information systems in compliance with federal recommendations and State requirements to support stakeholder needs and the management of Maryland's highway safety programs. Quality data analysis is critical for EA Teams to properly identify target groups, adapt and refine countermeasures, and evaluate the effectiveness of implemented strategies. To ensure consistent and appropriate support of the SHSP, a dedicated Data Coordinator has been assigned to each EA Team to coordinate all data needs within that team.

Traffic Records Strategic Plan

The TRSP aims to improve the quality, timeliness, and availability of traffic records data and systems that enable practitioners to improve safety.

MHSO manages both a Traffic Records Strategic Plan (TRSP) and the SHSP. As a follow-up to the completion of a Traffic Records Assessment in December 2014, the TRCC is in the final stages of developing a new five-year TRSP to coincide with the 2016–2020 SHSP. This purposeful alignment further strengthens the connection between Maryland's traffic records data and its traffic safety programs as each plan is written in coordination with the other. The process of developing strategies in both the TRSP and the SHSP is similar. Each SHSP EA Team develops strategies with a vision and understanding of the need for data to carry out and measure selected actions, and the TRCC develops strategies in consideration of the end users, such as the EA Team members.

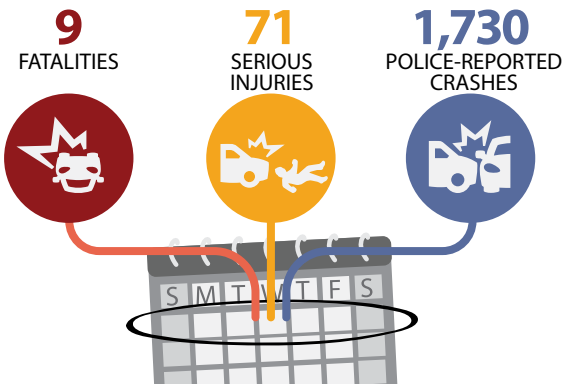


5 This is required under Highway Safety Programs, MAP-21 Section 31102

2.2 Maryland Crash History

From 2009 to 2013, an average of 502 people were killed each year in traffic crashes in Maryland, and an average of 3,207 people were seriously injured. On average, one person was killed every 18 hours; someone was seriously injured every 2.5 hours; and a reported crash occurred every six minutes.

One Week in Maryland



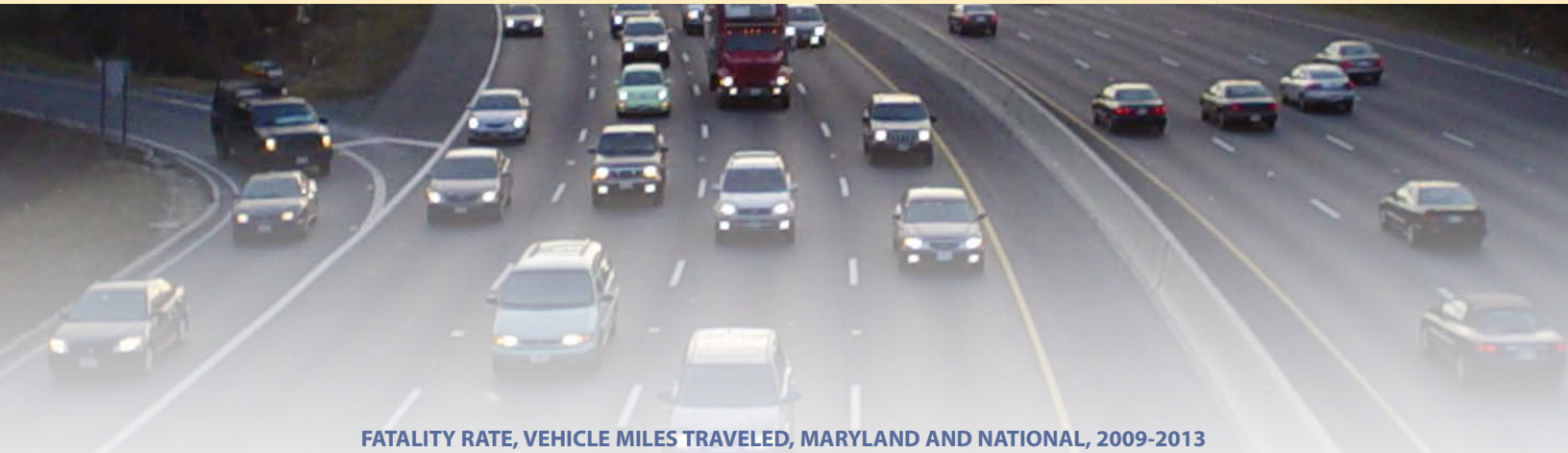
Since 2009, positive downward trends have been experienced in fatalities and serious injuries as shown in the following table:

STATEWIDE FATALITIES AND SERIOUS INJURIES

	2009	2010	2011	2012	2013	Five Year Avg	% Change from 2009 to 2013
Fatalities	550	496	488	511	466	**502**	**-15.3%**
Serious Injuries	4,383	4,051	3,809	3,312	2,957	**3,702**	**-32.5%**

SOURCE: Maryland Highway Safety Office Benchmark Report

The five-year fatality rate trend for Maryland decreased from a high of 0.989 fatalities per 100 million vehicle miles traveled (VMT) in 2009 to a low of 0.825 in 2013. The overall fatality rate also has been consistently lower than the national fatality rate for every year since 1992. Total VMT increased by slightly less than one percent to 56.5 billion between 2012 and 2013.



FATALITY RATE, VEHICLE MILES TRAVELED, MARYLAND AND NATIONAL, 2009-2013

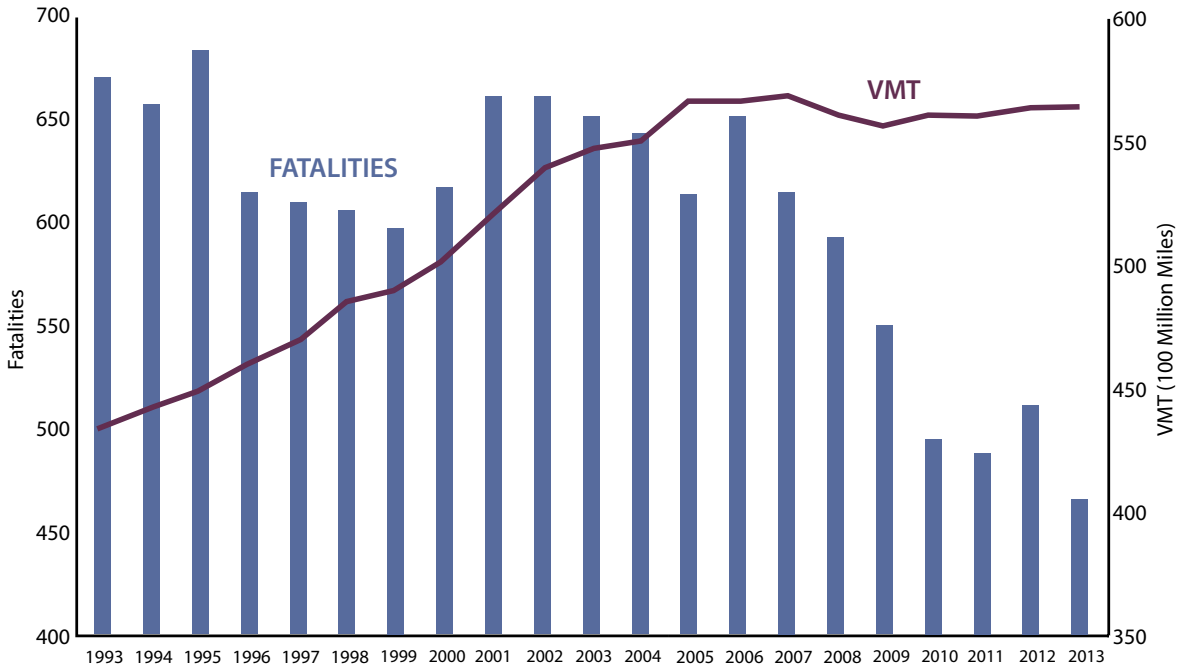
YEAR	VMT (100 Million Miles)	FATALITIES*	FATALITY RATE*	NATIONAL FATALITY RATE**
2009	556	550	0.989	1.15
2010	562	496	0.882	1.11
2011	560	488	0.870	1.10
2012	564	511	0.906	1.14
2013	565	466	0.825	N/A
5-yr Avg	561	502	0.894	N/A

*Source: SHA-SID/ eMAARS and ACRS

**Source: NHTSA, Fatality Analysis Reporting (FARS)

The figure below displays both the rise in VMT and the decrease in fatalities over the 20-year period from 1993 to 2013:

Maryland VMT and Traffic Fatality Trends for State and Local Roadways



3.

Use of Effective Strategies and Countermeasures: Emphasis Areas

The Maryland SHSP describes a program of strategies to minimize or eliminate traffic-related fatalities and serious injuries.[6] Priority has been given to those strategies that can significantly reduce roadway fatalities and serious injuries in the six identified SHSP EAs (in no particular order):

- **Aggressive Driving**
- **Distracted Driving**
- **Impaired Driving**
- **Occupant Protection**
- **Highway Infrastructure**
- **Pedestrians and Bicyclists**

As described in the following sections, the Maryland SHSP Executive Council considered a variety of key factors when determining strategies for the SHSP EAs, including the highway safety elements of engineering, education, enforcement, and emergency medical services, applied to both infrastructure and non-infrastructure emphasis areas, as appropriate.[7]

6 23 US Code 148(a)(12)(F) – Highway safety improvement program. *http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/html/USCODE-2011-title23-chap1-sec148.htm*

7 23 US Code 148(a)(12)(C) – Highway safety improvement program. *http://www.gpo.gov/fdsys/pkg/USCODE-2011-title23/html/USCODE-2011-title23-chap1-sec148.htm*

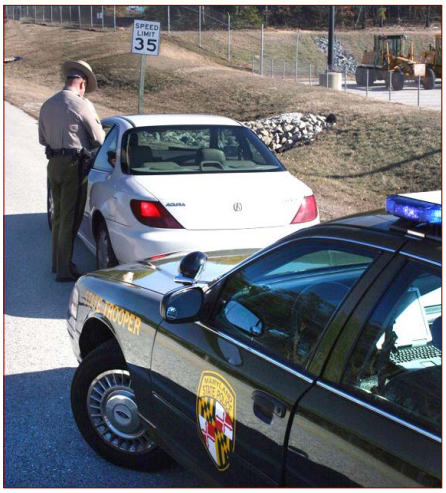
3.1 Aggressive Driving

An average of 51 fatalities and 336 serious injuries occurred each year in traffic crashes involving an aggressive driver. Traffic congestion, distracted drivers, speeding, and following too closely are just a few factors that can lead to aggressive driving behavior.

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

- Failed to yield right-of-way
- Failed to keep right of center
- Too fast for conditions
- Failed to obey other traffic control
- Failed to obey traffic signal
- Improper passing
- Disregarded other road markings
- Failure to obey traffic signs, signals, or officer
- Failed to obey stop sign
- Failed to stop for a school bus
- Followed too closely
- Exceeded speed limit
- Improper lane change
- Other improper action
- Wrong way on a one way street
- Operated motor vehicle in erratic/reckless manner

Education and awareness play important roles in reducing aggressive driving behavior. Creating a broader understanding of the behaviors that are associated with aggressive driving can lead to reductions in these types of crashes and associated fatalities and injuries. Enforcement also play a strong role. More than 1.2 million motor vehicle moving-violation citations are issued annually throughout the State; nearly one-quarter are speeding violations.



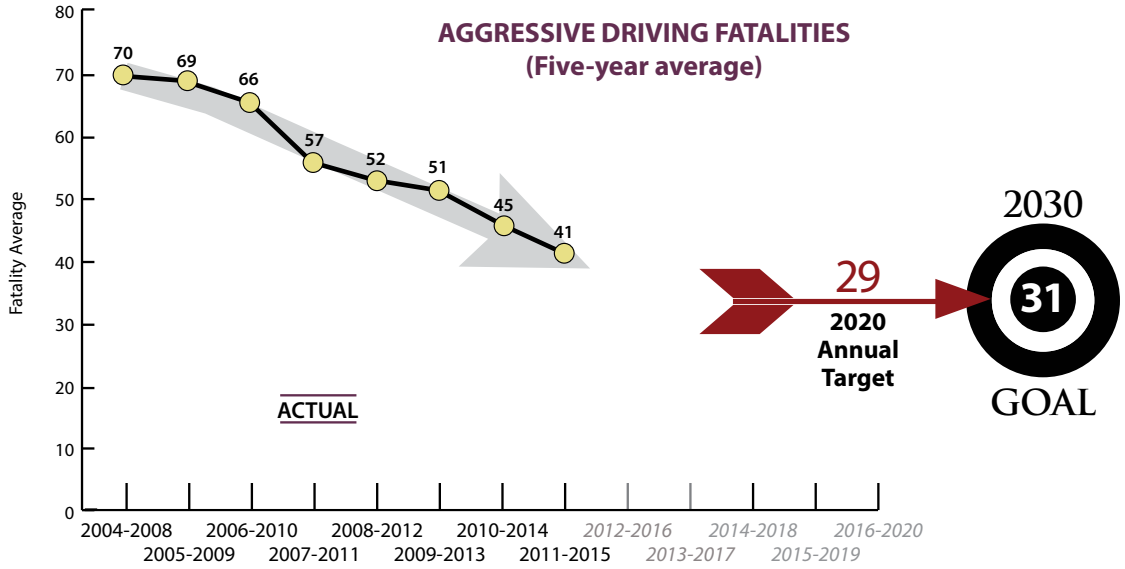
The Aggressive Driving EA Team fosters coordination among transportation agencies, safety professionals, and law enforcement to help reduce the number of aggressive driving related fatalities and serious injuries.

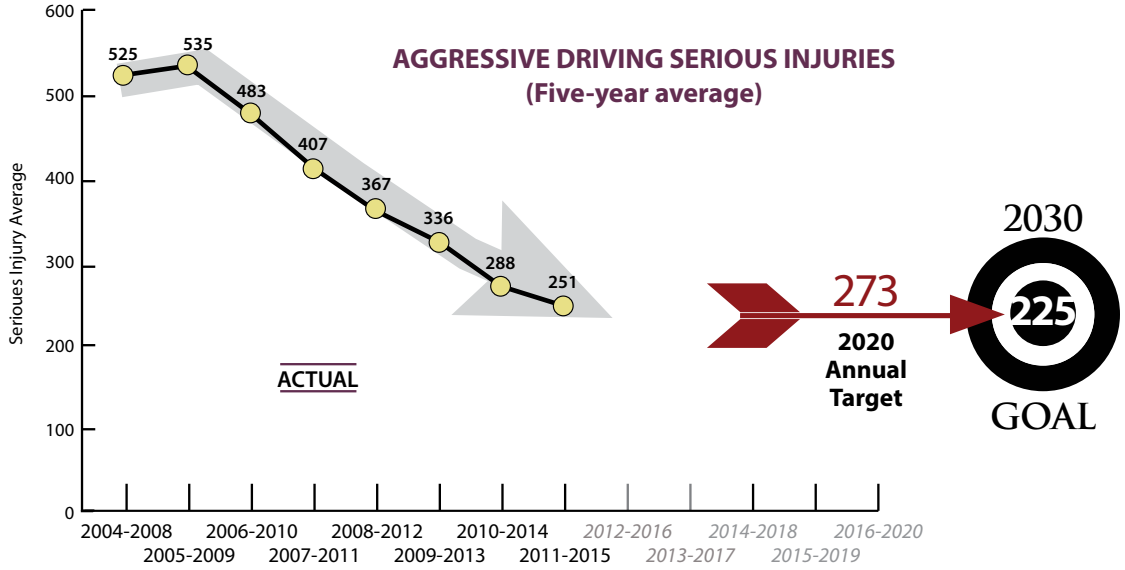
3.1.1 Performance Targets

The Aggressive Driving EA Team, in cooperation with the SHSP Executive Council, is responsible for meeting or exceeding the following performance targets:

Fatality Target: Reduce the number of aggressive driving related fatalities on all roads in Maryland from the five-year average (2004-2008) of 70 to 29 or fewer by December 31, 2020.

Serious Injury Target: Reduce the number of aggressive driving related serious injuries on all roads in Maryland from the five-year average (2004-2008) of 525 to 273 or fewer by December 31, 2020.





3.1.2 Emphasis Area Strategies

To accomplish the performance targets, the Aggressive Driving EA Team will implement the following strategies:

1. Use data-driven approaches to identify driver behaviors and target audiences to focus on aggressive and speed-related enforcement, education, engineering, and emergency services.
2. Develop and implement aggressive driving enforcement practices.
3. Identify and implement effective engineering and technological solutions to reduce aggressive driving.
4. Conduct public awareness, training, and media programs aimed at reducing aggressive driving.
5. Promote and support legislation and adjudication to reduce aggressive driving.

3.2 Distracted Driving

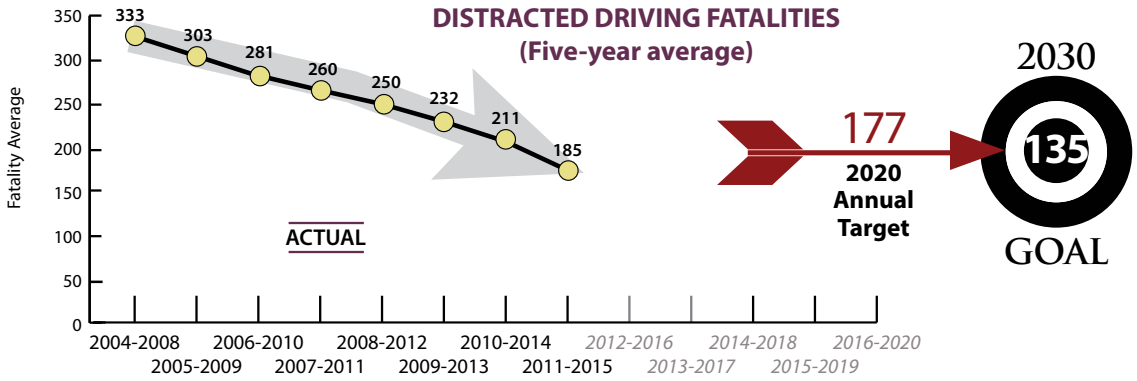
In Maryland an average of 232 people were killed each year and 2,348 seriously injured in crashes involving a distracted driver. Driver distraction has joined alcohol and speeding as a leading factor in fatal and serious injury crashes. A distracted driving crash occurs when a driver shifts attention away from the driving task due to a number of things, including adjusting a radio, attending to a child, or using a cell phone (e.g., talking, texting, or other use).

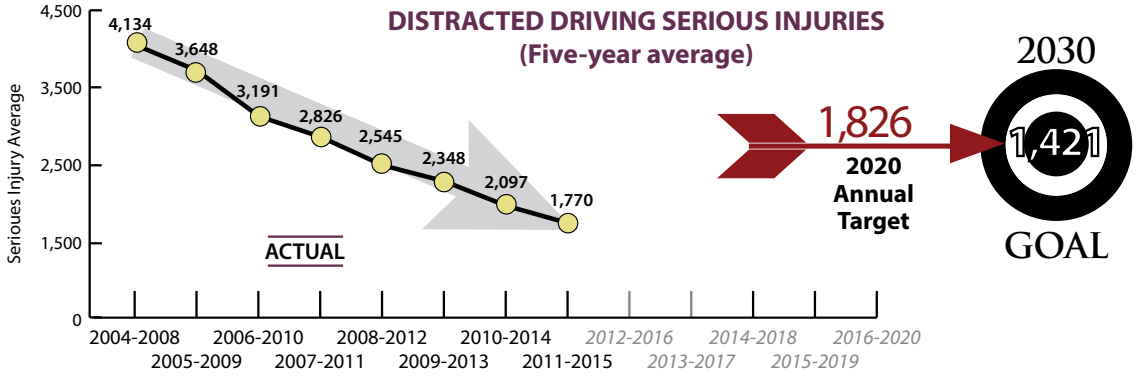
3.2.1 Performance Targets

The Distracted Driving EA Team, in cooperation with the SHSP Executive Council, will be responsible for meeting or exceeding the following performance targets:

Fatality Target: Reduce the number of distracted driving related fatalities on all roads in Maryland from the five-year average (2004 to 2008) of 333 to 177 or fewer by December 31, 2020.

Serious Injury Target: Reduce the number of distracted driving related serious injuries on all roads in Maryland from the five-year average (2004-2008) of 4,134 to 1,826 or fewer by December 31, 2020.





3.2.2 Emphasis Area Strategies

To accomplish the performance targets, the Distracted Driving EA Team will implement the following strategies:

1. Evaluate and improve data quality for problem identification and program evaluation purposes.
2. Enhance and improve enforcement of distracted driving laws.
3. Integrate and foster the use of technologies and engineering applications to address distracted driving infrastructure.
4. Conduct outreach initiatives including, but not limited to, education, training, and media programs to reduce distracted driving.
5. Evaluate and recommend legislation and/or regulations that address distractive behavior while driving.

3.3 Impaired Driving

An average of 160 people lost their lives and 530 were seriously injured in crashes involving an impaired driver.

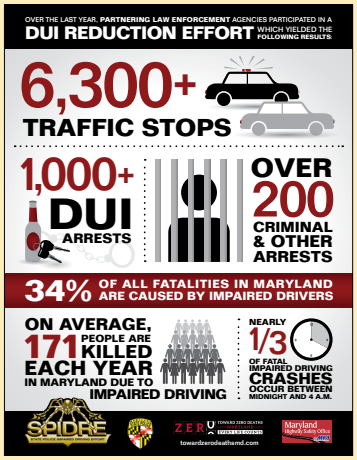
According to NHTSA's Fatal Analysis Reporting System (FARS), drivers are considered to be alcohol-impaired when their blood alcohol concentration (BAC) is 0.08 grams per deciliter (g/dL) or higher. Thus, any fatality occurring in a crash involving a driver with a BAC of 0.08 or higher is considered to be an alcohol-impaired driving fatality. In Maryland, an impaired driving crash as indicated on the Maryland crash report is determined by the investigating officer based on the driver's condition, BAC, and/or substance use detection. It will include any level of alcohol in the system and/or drug impairment. Therefore Maryland impaired driving targets are different than the targets based on FARS data. Targets for both State- and federally-defined impaired driving are included herein to maintain continuity with previous Maryland SHSPs and to maintain the link with other State plans that exclusively use State crash data as the source for problem identification and program evaluation.

3.3.1 Performance Targets

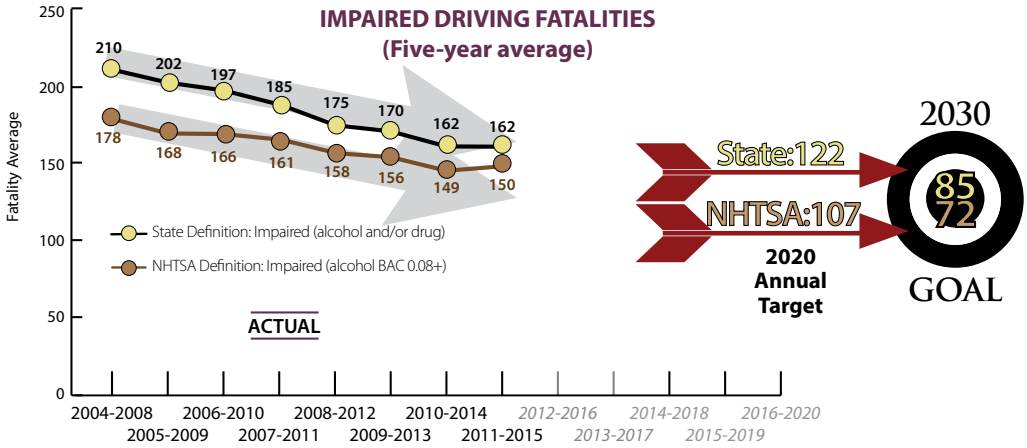
The Impaired Driving EA Team, in cooperation with the SHSP Executive Council, will be responsible for meeting or exceeding the following performance targets:

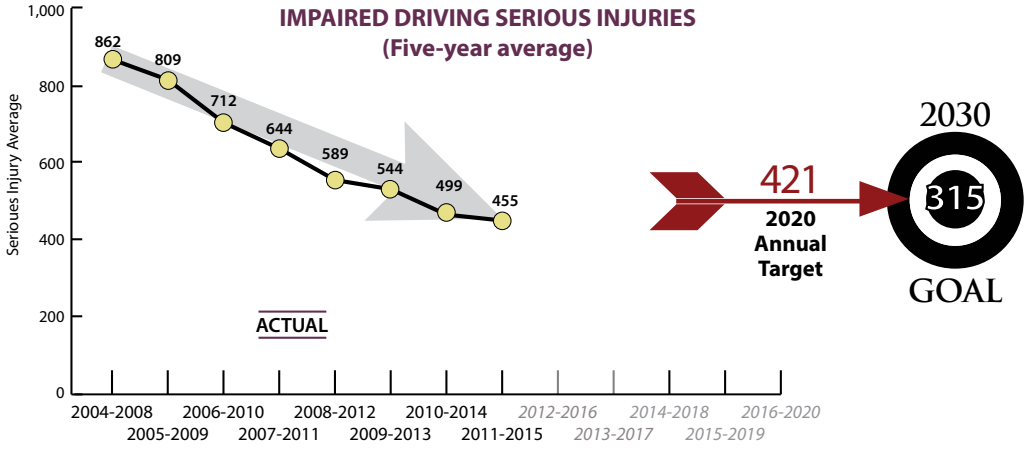
State-Defined Impaired Driving Fatality Target: Reduce the number of State-defined (alcohol/drug) impaired driving related fatalities on all roads in Maryland from the five-year average (2004-2008) of 210 to 122 or fewer by December 31, 2020.

NHTSA-Defined Impaired Driving Fatality Target: Reduce the number of NHTSA-defined (BAC 0.08) impaired driving related fatalities on all roads in Maryland from the five-year average (2004-2008) of 178 to 107 or fewer by December 31, 2020.



Impaired Driving Serious Injury Target: Reduce the number of impaired (alcohol/drug) driving related serious injuries on all roads in Maryland from the five-year average (2004-2008) of 862 to 421 or fewer by December 31, 2020.





3.3.2 Emphasis Area Strategies

To accomplish the performance targets, the Impaired Driving EA Team will implement the following strategies:

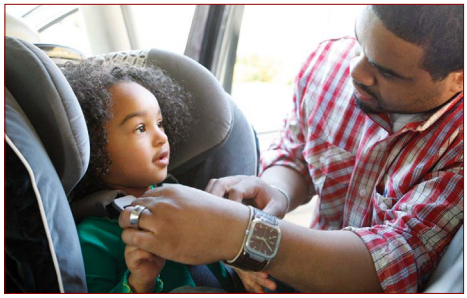
1. Improve the availability, quality, collection, and use of data to support impaired driving enforcement, adjudication, programs, and initiatives.
2. Enhance and improve enforcement of impaired driving laws.
3. Enhance and improve the prosecution and adjudication of impaired driving cases.
4. Investigate and foster the use of technologies and best practices to support impaired driving countermeasures.
5. Conduct outreach initiatives including, but not limited to, education, training, and media programs, to reduce impaired driving.
6. Investigate and promote policies and legislation aimed at reducing impaired driving.

3.4 Occupant Protection

An average of 166 unrestrained motorists were killed in Maryland traffic crashes each year, and an average of 315 were seriously injured. Non-use of personal restraint or protective equipment typically is not a contributing factor to a crash occurring, but when a crash does occur, the severity of personal injury is affected greatly by the use or non-use of safety equipment designed for occupant protection.

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

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



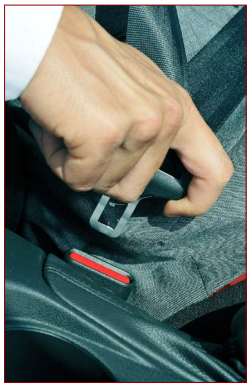
In 2014 the state of Maryland seat belt usage rate was recorded at 92.1 percent, up from 90.7 percent in 2013.

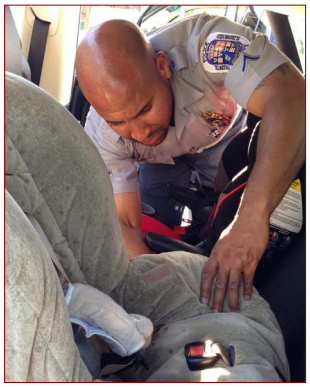
3.4.1 Performance Targets

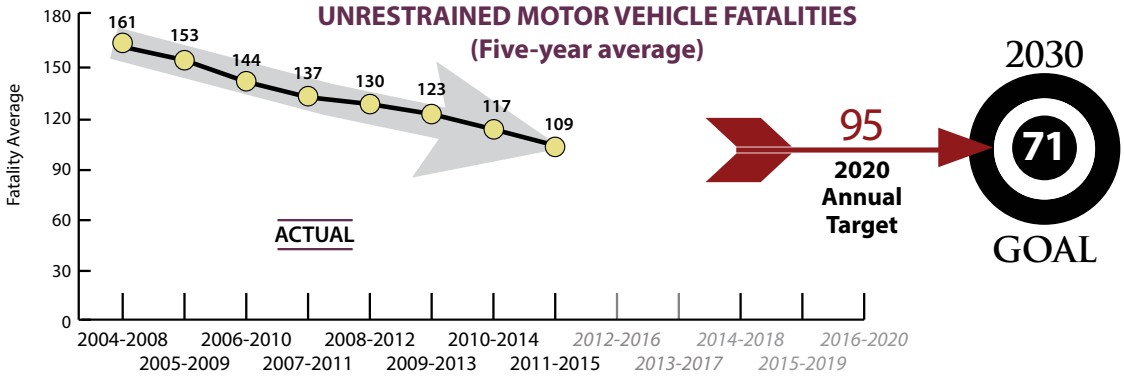
The Occupant Protection EA Team, in cooperation with the SHSP Executive Council, will be responsible for meeting or exceeding the following performance targets:

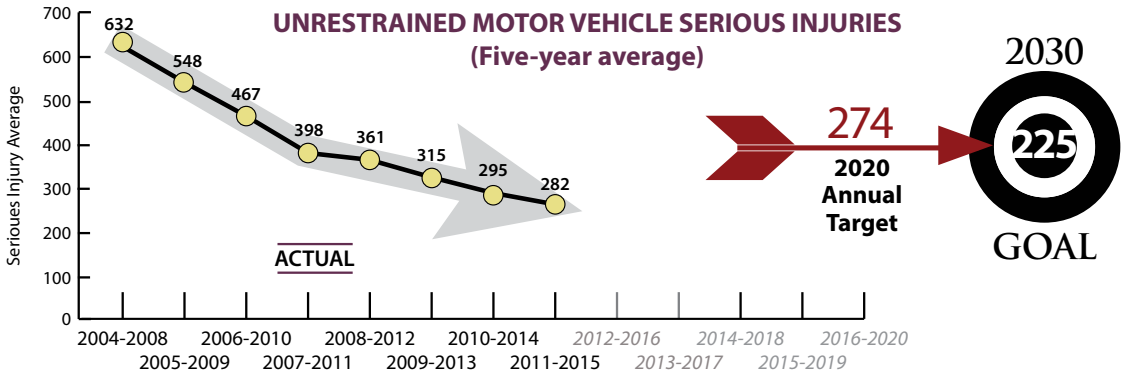
Fatality Target: Reduce the number of unrestrained-occupant motor vehicle fatalities on all roads in Maryland from the five-year average (2004-2008) of 161 to 95 or fewer by December 31, 2020.

Serious Injury Target: Reduce the number of unrestrained-occupant motor vehicle serious injuries on all roads in Maryland from the five-year average (2004-2008) of 632 to 274 or fewer by December 31, 2020.









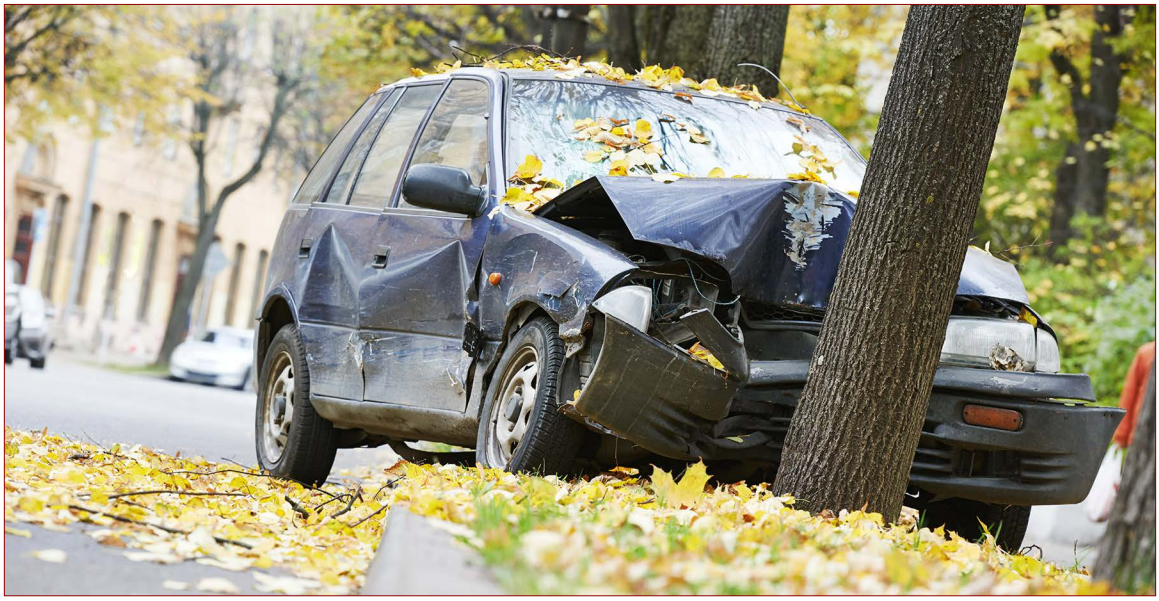
3.4.2 Emphasis Area Strategies

To accomplish the performance targets, the Occupant Protection EA Team will implement the following strategies:

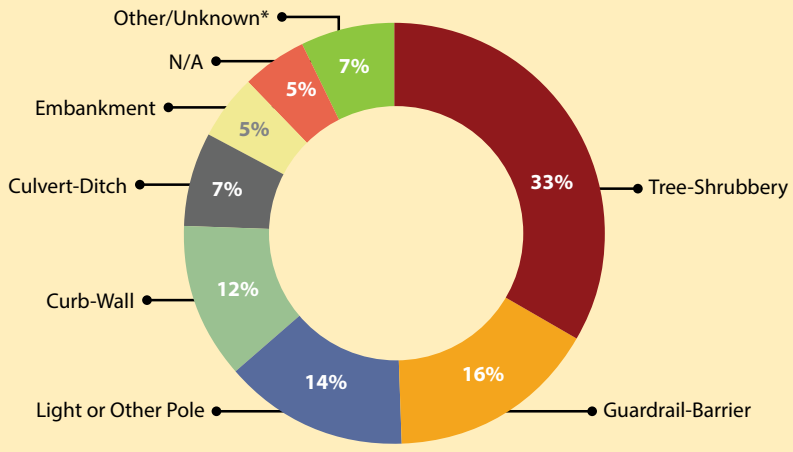
1. Improve the timeliness, accuracy, completeness, uniformity, accessibility, and integration of occupant protection related data.
2. Enhance and improve enforcement of adult and child occupant protection laws.
3. Implement adult and child occupant protection public awareness and education, training, and media campaigns.
4. Evaluate and recommend legislation and/or regulations to advance occupant protection for all ages.

3.5 Highway Infrastructure

An average of 276 fatalities and 2,169 serious injuries occurred in crashes involving infrastructure-related issues. Intersection-related and run-off-the-road crashes are the prime indicators of roadway infrastructure opportunities for improvement. Work-zone crashes also are included in this emphasis area.



Distribution of Fixed Objects Struck in Run-Off Road Fatalities on All Maryland Roadways — 2009-2013



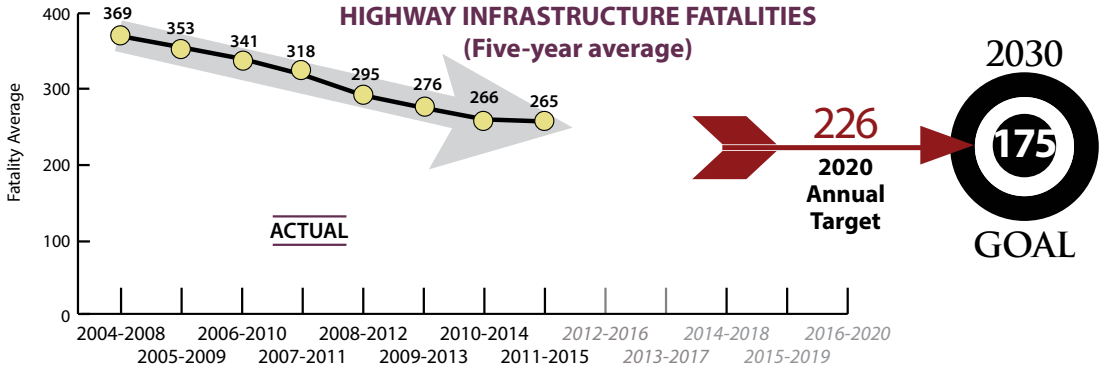
* "Other/Unknown" includes Bridge Overpass, Building, Crash Attenuator, Fence, and Sign Post.

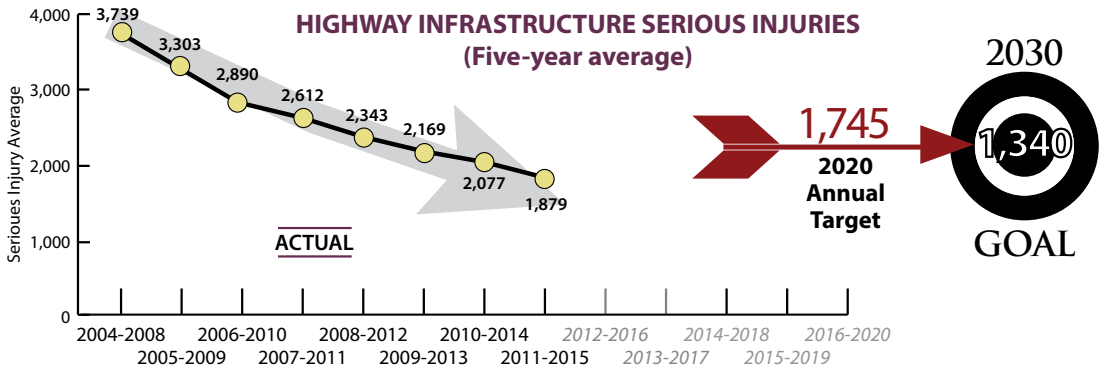
A ***Run-Off-the-Road Crash*** is defined as a crash where the first event was recorded as striking a fixed object or running off the road, or the location of the crash was reported as off-road or in the median. An average of 180 fatalities and 906 serious injuries occurred in run-off-the-road crashes each year from 2009 to 2013.

Intersection Crashes are those crashes reported as occurring in an intersection or being intersection-related (i.e., in a traffic situation resulting from an intersection). An average of 103 fatalities and 1,320 serious injuries occurred in intersection-related crashes each year from 2009 to 2013.

Work-Zone Crashes are those crashes reported as occurring in a work zone in the standard crash report. They can include construction, maintenance, and utility work zones. From 2009-2013 Maryland had an average of six fatalities and 48 serious injuries in work-zone related crashes annually.

This safety problem is spread across both the State and local roadway networks (with approximately 70 percent of fatalities occurring on the State-owned system), and the approach to address these crashes must include empowering local jurisdictions.





3.5.1 Performance Targets

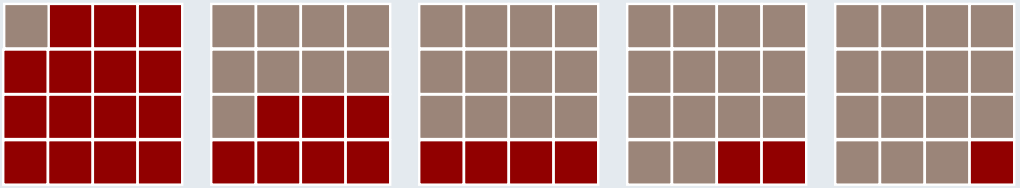
The Highway Infrastructure EA Team, in cooperation with the SHSP Executive Council, will be responsible for meeting or exceeding the following performance targets:

Fatality Target: Reduce the number of infrastructure-related fatalities on all roads in Maryland from the five-year average (2004-2008) of 369 to 226 or fewer by December 31, 2020.

Serious Injury Target: Reduce the number of infrastructure-related fatalities on all roads in Maryland from the five-year average (2004-2008) of 3,739 to 1,745 or fewer by December 31, 2020.

Maryland Severity Index

The technique used in calculating the Crash Severity Index and prioritizing Candidate Safety Improvement Locations (CSIL) is based on information from the police crash report form. The Crash Severity Index is a weighted crash frequency adjustment to account for crash severity.



The Crash Severity Index is the primary tool used to prioritize locations, and it will be considered for Highway Infrastructure EA Strategies 1 and 2 below.

3.5.2 Emphasis Area Strategies

To accomplish the performance targets, the Highway Infrastructure EA Team will implement the following strategies:

1. Identify intersections where the Crash Severity Index is high and implement safety improvements.
2. Identify and target safety improvements along corridors where the Crash Severity Index is high and address roadway elements that contribute to crashes.
3. Develop and implement system-wide improvements to reduce the number and severity of infrastructure-related crashes (e.g., intersection-related, run-off-the-road, work-zone related, etc.).
4. Identify, develop, and implement system-wide improvements that address the safety of vulnerable user groups (e.g., bicyclists, pedestrians, motorcyclists, older and younger drivers, etc.).
5. Identify and implement recommended safety initiatives for commercial motor carriers.

3.6 Pedestrians and Bicyclists

On average, 105 pedestrians were killed and 362 were seriously injured each year in Maryland traffic crashes. In addition, an average of seven bicyclists were killed and 68 were seriously injured each year. Non-motorized road users tend to be the most vulnerable, and the proportion of fatalities and serious injuries involving pedestrians and bicyclists has increased over time.

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

3.6.1 Performance Targets

The Pedestrians and Bicyclists EA Team, in cooperation with the SHSP Executive Council, will be responsible for meeting or exceeding the following performance targets:

Pedestrians

Fatality Target: Reduce the number of pedestrian fatalities on all roads in Maryland from the five-year average (2004-2008) of 103 to 78 or fewer by December 31, 2020.

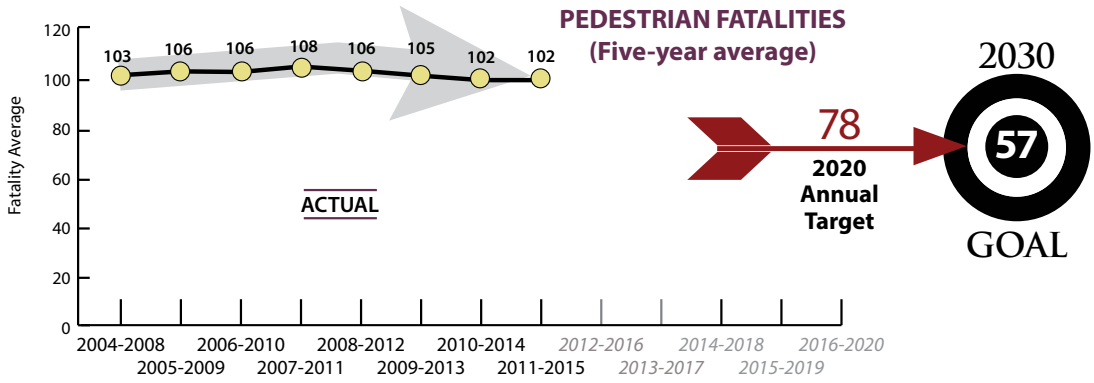
Serious Injury Target: Reduce the number of pedestrian serious injuries on all roads in Maryland from the five-year average (2004-2008) of 492 to 293 or fewer by December 31, 2020.

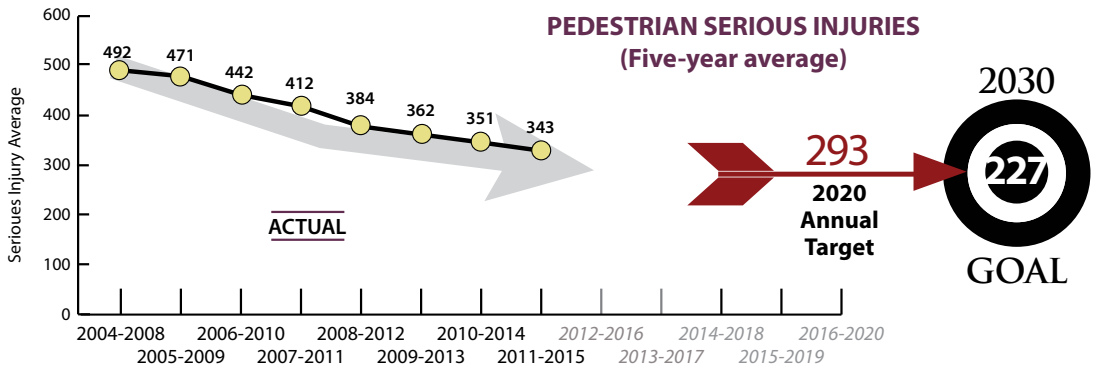
Since the number of pedestrian fatalities has remained relatively constant in recent years, applying an exponential trend is not feasible. Instead, a two-percent reduction was applied to each year to establish the pedestrian fatality goals.

Bicyclists

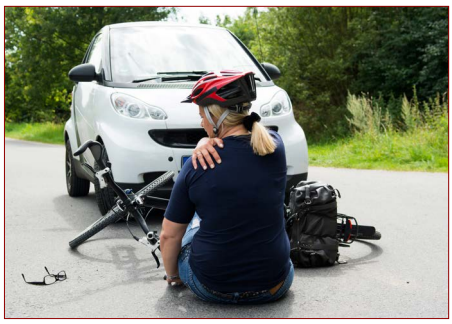
Fatality Target: Reduce the number of bicycle fatalities on all roads in Maryland from the five-year average (2004-2008) of 8 to 5 or fewer by December 31, 2020.

Serious Injury Target: Reduce the number of bicycle serious injuries on all roads in Maryland from the five-year average (2004-2008) of 81 to 52 or fewer by December 31, 2020.



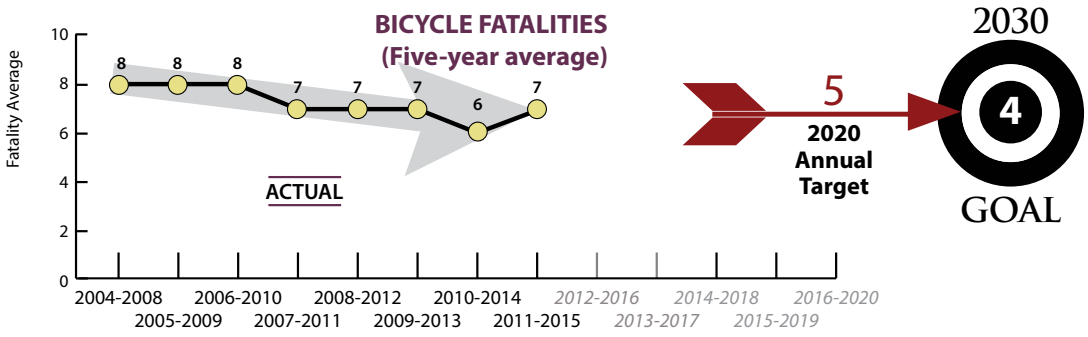


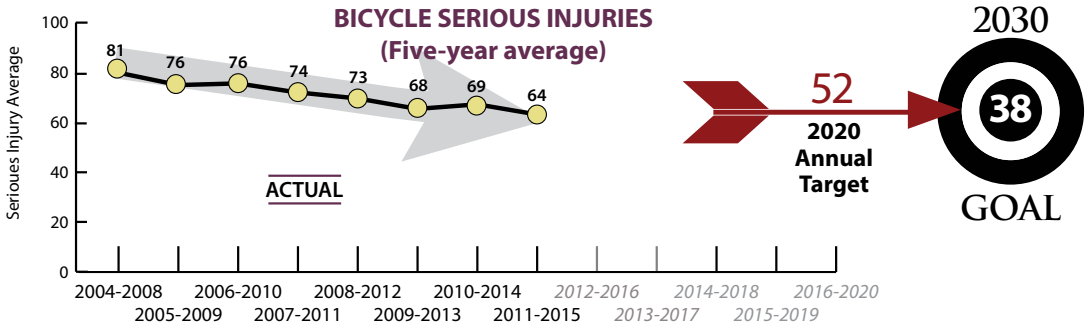
3.6.2 Emphasis Area Strategies



To accomplish these targets, the Pedestrians and Bicyclists EA Team will implement the following strategies:

1. Identify and target pedestrian and bicycle safety issues, populations, and locations of concern through the collection, analysis and evaluation of data and information.
2. Promote safe behaviors of all road users appropriate for the environment through education and enforcement initiatives.
3. Create and improve roadway environments for walking and bicycling through implementation of engineering treatments, land-use planning, and system-wide countermeasures.
4. Create and improve pedestrian and bicycle safety culture in Maryland including the promotion and implementation of legislation and training of professionals and stakeholders about best safety practices.
5. Develop, apply, and promote technological approaches, including those in vehicles and emergency response equipment, in order to better prevent and reduce the severity of collisions involving pedestrians and bicyclists.
6. Identify and promote safe driving and pedestrian behaviors for all motorists and public-safety professionals at the scene of emergency events.





4.

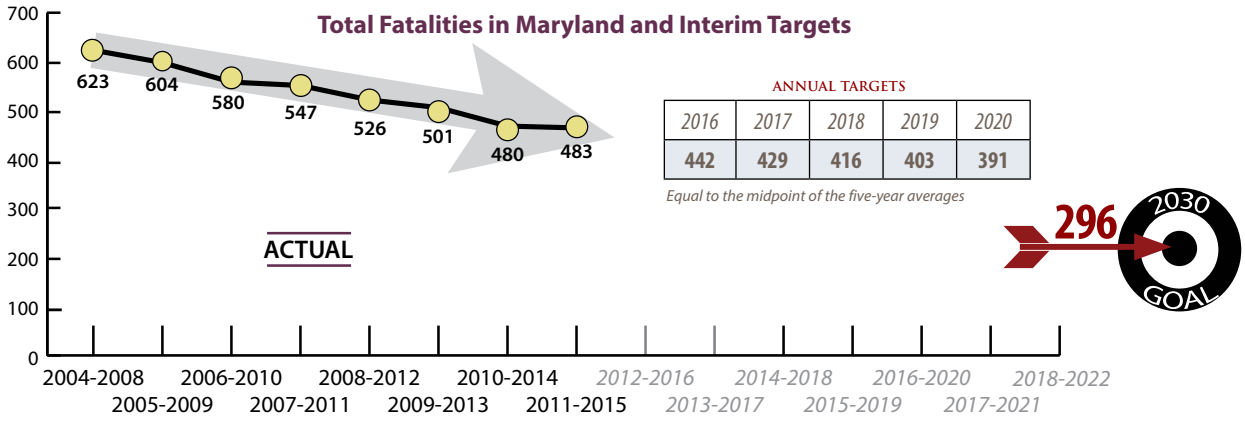
The five required Safety Performance Measures from the Federal Highway Administration (FHWA) below have been incorporated into the Maryland SHSP. It is important to note that the base year numbers and targets will not match our overall visionary goals (halving fatalities and serious injuries by 2030) nor the base year numbers and targets for each emphasis area in the SHSP. This is due to differences in data definitions between the NHTSA Fatality Analysis Reporting System (FARS) and the State crash data system. The source for all fatality data is the most recently available FARS data, and serious injury data was obtained through State data. All federally required performance measures below are set using a five-year average and exponential trend method described on page 3.

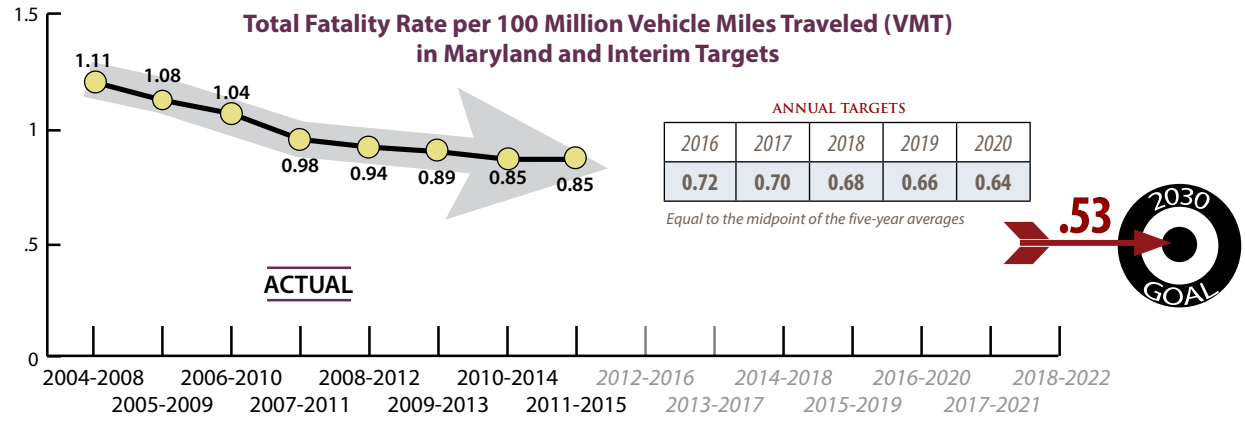
The Maryland SHSP establishes the following reduction targets through December 31, 2020, for all Maryland roads.

Five-year Average (2004-2008) and 2020 Performance Targets

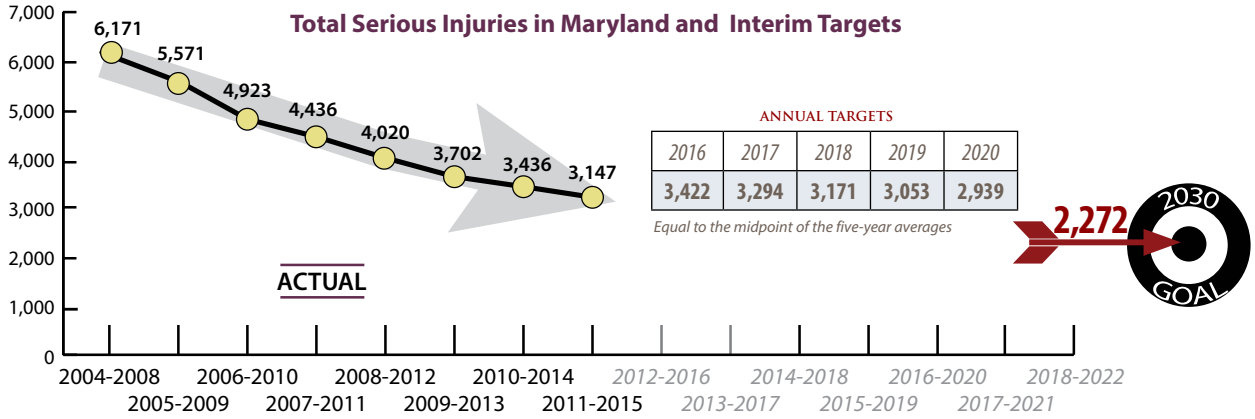
Fatalities	Serious Injuries
623 ➔ 391	6,171 ➔ 2,939
Fatality Rate	**Serious Injury Rate**
1.11 ➔ 0.64	10.97 ➔ 5.23

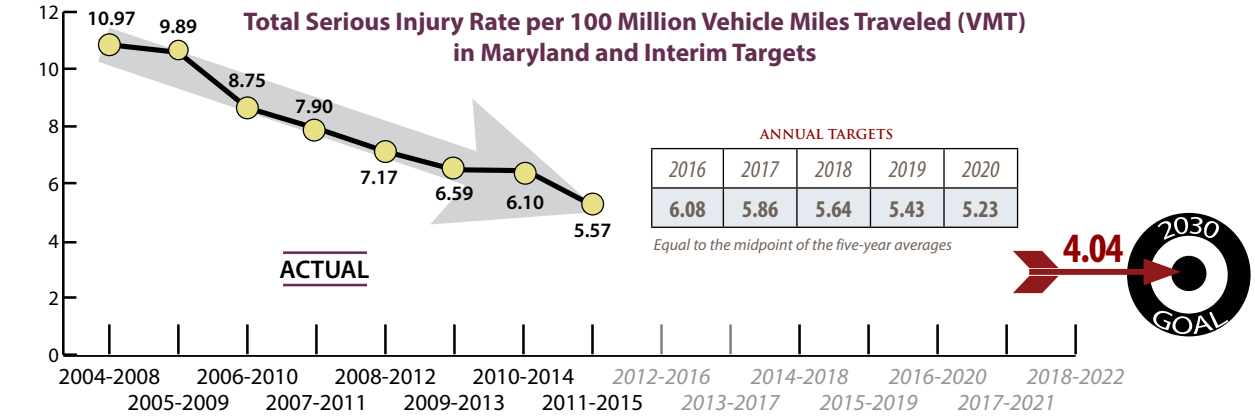
Non-Motorized Fatalities and Serious Injuries
685 ➔ 433

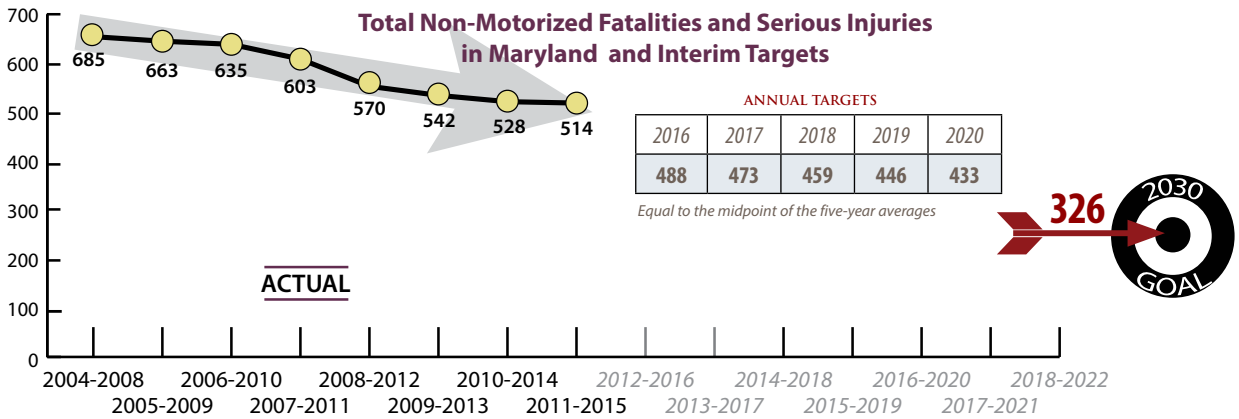




The targets for serious injuries and serious injury rate were set in accordance with the TZD approach used for the fatalities and fatality rates. This methodology originally used the number of serious injuries observed in 2008 to set the 2030 goal. Since the 2030 goal remains unchanged, the significant decline in serious injuries observed in recent years resulted in minimal reductions needed during the intervening years to reach the 2030 goal.







5.

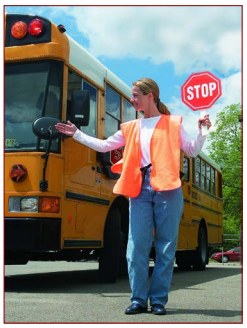
SPECIAL VEHICLES AND ROADWAY ENVIRONMENTS

Along with the six emphasis areas, special vehicles and roadway environments are of particular interest to the SHSP Executive Council and safety stakeholders due to their unique safety needs. Crashes involving these vehicles can pose an increased risk to occupants and other road users, and the ramifications may reach beyond safety to economic issues.

Commercial Motor Vehicles. The number of commercial motor vehicles (CMVs) is increasing on roadways across Maryland. Between 2009 and 2013, CMVs were involved in seven percent of all traffic crashes in Maryland, and 11 percent of fatal crashes involved a CMV.

Strategies include partnering with the Federal Motor Carrier Safety Administration (FMCSA) to help promote their efforts to improve CMV safety from a driver and vehicle perspective; educating road users and motor carriers on CMV regulations and visibility issues; and initiating appropriate infrastructure countermeasures with CMVs in mind.

School Buses and Bus Stops. Though school bus crashes are relatively rare compared to other vehicle involvement, when a school bus crash occurs it has the potential to harm multiple children. More prevalent is pedestrians (often school children) being hit by school buses. NHTSA indicates that most of the children killed in crashes involving school buses are hit in a zone within 10 feet of the bus, either by the bus itself, or a passing vehicle. Strategies include educating roadway users, parents and children about school bus laws and regulations and enforcement of stop sign/signal/arm violations.



Transit Buses and Bus Stops. Transit buses and bus stops have unique safety needs with potential conflicts between vehicles, transit buses, and pedestrians. Due to the number of occupants riding a bus, the potential for multiple harmful outcomes should be considered when improving safety for these road users. Strategies include support for safe transit stops and enforcement of laws and regulations for bus drivers. Partners include the Maryland Transit Administration and the Federal Transit Administration.

Motorcycles. From 2009 to 2013, an average of 70 traffic fatalities and 306 serious injuries involved a motorcycle. Several factors have contributed to increased motorcycle miles driven in recent years, including increased fuel prices in the late 2000s and popularity among certain age groups (i.e. Baby Boomers). Common attributes in motorcycle crashes include alcohol-impaired operators, lack of helmet use, and aggressive driving. Failure to share the road and yield to motorcyclists are common contributing factors for vehicle drivers who collide with motorcyclists.

Strategies include expanded public information and education and training programs for motorcyclists and other road users. These are addressed through the MVA's Motorcycle Safety Action Plan.

Rail-Highway Grade Crossings. According to the inventory maintained by the Federal Railroad Administration, there are 633 public at-grade, 628 private at-grade, and 22 pedestrian at-grade rail crossings in Maryland. Crashes at rail-highway grade crossings can occur between trains, motor vehicles, and pedestrians, though the number of incidents in Maryland is low.

Maryland has made a continuous effort to improve safety for the traveling public at rail-highway crossings. Efforts include the installation of new flashing light signals, with or without gates, and the replacement of outdated components at existing active warning-device installations.

One concern nationally is that approximately half of rail-highway grade crossing crashes occur at active crossings (i.e. those with flashers, extra signing, and/or gates), leading to a conclusion that human behavior is a primary contributing factor.

6.

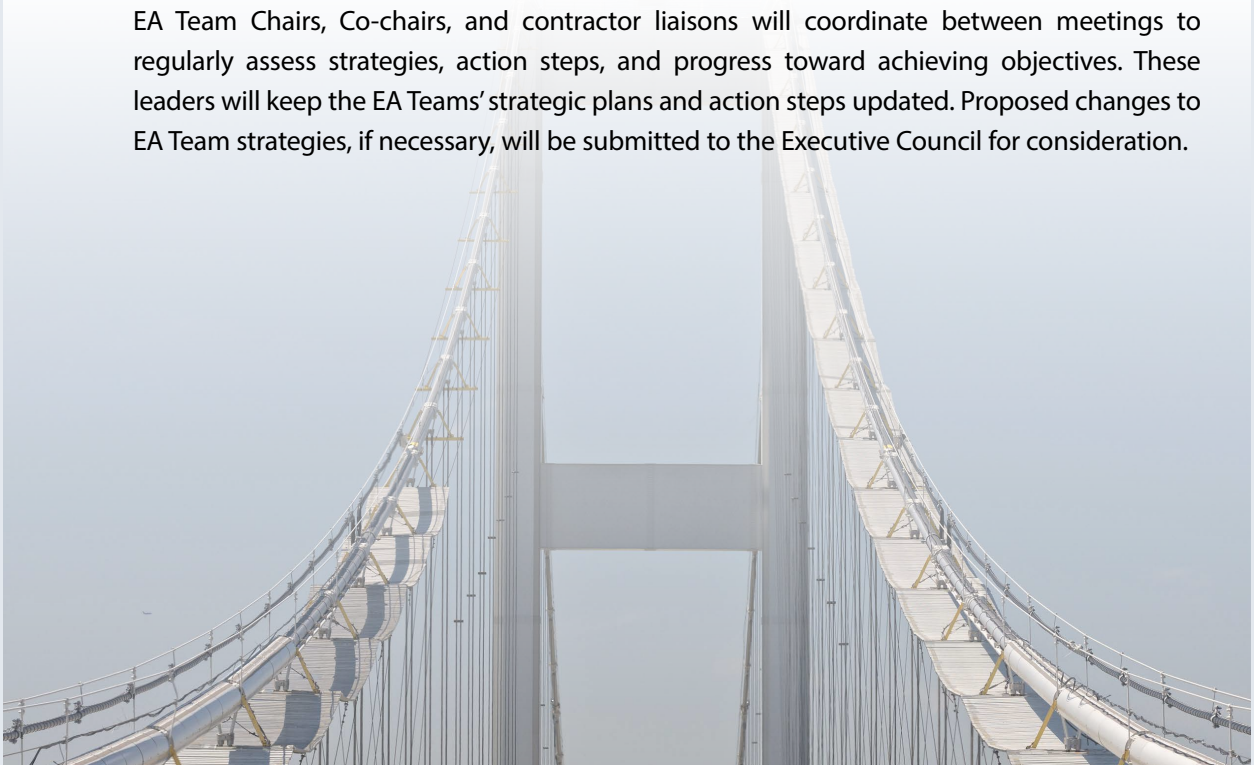
Implementation of the 2016-2020 SHSP will involve the collaborative work of professionals representing the disciplines of transportation planning, engineering and operations; public outreach and education; law enforcement; and emergency medical services. Each of these disciplines has a critical role to play in defining the optimal combination of countermeasures to continue to reduce the number and severity of traffic crashes.

The Administrator of the MVA has been designated as the Governor's Highway Safety Representative. While the SHSP is the strategic road map for saving lives on Maryland highways, the Maryland Highway Safety Office (MHSO) is responsible for day-to-day leadership, administration, and coordination of traffic safety efforts. Through the administration of federal highway safety grant programs, both the MHSO and the SHA implement statewide and local programs.

EA strategies will drive implementation, and each strategy will be supported by a series of action steps. The EA Teams will choose and update these actions as needed. The EA Team strategic plans will continue to identify the key steps, schedule, and responsible organization to move each strategy from planning to full implementation and evaluation.

EA Teams will meet quarterly for the duration of this SHSP, and the main agenda item for each EA Team meeting will be tracking action steps completed to date, identifying the progress of measurable objectives, and assigning actions to be completed in advance of the next meeting.

EA Team Chairs, Co-chairs, and contractor liaisons will coordinate between meetings to regularly assess strategies, action steps, and progress toward achieving objectives. These leaders will keep the EA Teams' strategic plans and action steps updated. Proposed changes to EA Team strategies, if necessary, will be submitted to the Executive Council for consideration.



7.

Maryland's SHSP Executive Council will evaluate the SHSP on a regular and recurring basis, ensure the accuracy of the data, and prioritize proposed strategies. Maryland will establish an evaluation process to analyze and assess results achieved by the implementation of SHSP strategies and action steps.

The most important evaluation measure will be the reduction in fatalities on Maryland roadways to 394 or fewer by 2020 to continue progress to the interim TZD goal of 296 or fewer in 2030.

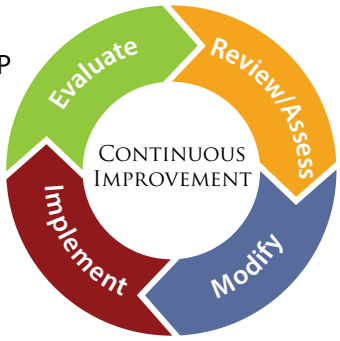
Additional items to be monitored by the SHSP Executive Council include:

- **Output Measures:** Emphasis Area strategy implementation
- **Outcome Measures:** Emphasis Area performance targets

7.1 Evaluation Process

During SHSP development, Maryland paid particular attention to performance measures and how progress will be determined.

The Executive Council will conduct an annual review to track SHSP implementation and monitor progress. The Council will confirm the validity of the emphasis areas and strategies and address SHSP process and performance issues that can be improved during implementation of the 2016-2020 SHSP. For example, if an SHSP goal or target is not met, the results may suggest a strategy is ineffective or not fully or correctly implemented.



On a quarterly basis, the Executive Council will review EA Team strategy implementation and performance targets. Based on available data and reports from EA Teams, the Executive Council will assign actions to encourage implementation success. Results from each evaluation (quarterly EA Team strategy review and annual SHSP evaluation) will be used to modify strategies and their implementation through action steps.

7.2 Update Schedule

This SHSP will cover the period from January 1, 2016, through December 31, 2020. The SHSP Executive Council will solicit support to produce the next version of the SHSP (2021-2025) in 2019, with work commencing in late 2019 and early 2020 to complete the update.


MILFORD


Frederick
Columbia
Baltimore
MARYLAND
Wheaton
Bethesda
Silver
Spring
Annapolis
Herndon
Sterling
Arlington
Washington D.C.

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Appendix B: Glossary

Aggressive Driving Related Crash: 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 device; failed to keep right of center; failed to stop for school bus; wrong way on one way; 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.

Bicyclist Crash: All persons involved in a crash with a person reported as a bicyclist or pedalcyclist (using the "bicyclist" or "other pedalcyclist" type). Bicycle crashes are defined as those involving a bicyclist or other pedalcyclist.

Distracted Driving Related Crash: 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" 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.

Emergency Event: Any event that requires or involves first responder or roadway assistance, such as traffic stops, traffic crashes, disabled vehicles, or other fire and police activity.

Fatality: Defined as injury severity 05, based on the KABCO scale, as determined by law enforcement. Must be a person who dies due to injuries sustained in a motor vehicle crash (within 30 days of that incident) on Maryland traffic ways, as defined by the Maryland State Police, with guidance from ANSI D16.1 Manual on Classification of Motor Vehicle Traffic Accidents.

Highway Infrastructure Related Crash: Run-off-the-road crashes, intersection-related crashes, and work-zone crashes. Since an individual crash may encompass one, two, or all three components (i.e. intersection crash in a work zone), the sum of fatalities/serious injuries across all three components will exceed the total provided for Highway Infrastructure.

High Risk Rural Road: A statewide listing of all roads, including non-state highways inventoried as SHA functional class 7 (Rural Major Collector), 8 (Rural Minor Collector) or 9 (Rural Local) with fatal and/or incapacitating injury crash frequency of 4 or more police reported crashes within a ½-mile section during a 3-year period.

Impaired Driving Related Crash: The Maryland definition of an impaired driving crash is at least one driver in the crash is determined to be impaired by the investigating officer as indicated through the driver condition, BAC, substance use detected and contributing factor fields on the Maryland crash report. Note that this number includes drug impairment; therefore, it will not match alcohol-impaired fatality figures provided by FARS, which measures only those drivers with a recorded BAC greater than 0.08.

Intersection Related Crash: Crashes reported as occurring in an intersection or being intersection related. "Intersection related" is not a location type but a judgment about the effects of intersections and their traffic controls upon traffic and crash causation. If the crash is deemed to have occurred as a result of backed-up traffic from an intersection (presumably at a non-intersection location) the junction relationship is "intersection related."

Motorcycle Crash: All persons in a crash involving at least one motorcycle, defined as a "motorcycle" body type. Operators and passengers on the motorcycle itself are included.

Motorist: Driver or passenger of a vehicle.

Older Driver Related Crash: All persons in a crash where at least one driver in the crash was reported to be between the ages of 65 and 110.

Pedestrian Crash: All persons involved in a crash with a person reported as a pedestrian on foot (using the "pedestrian" person type and "pedestrian on foot" pedestrian type).

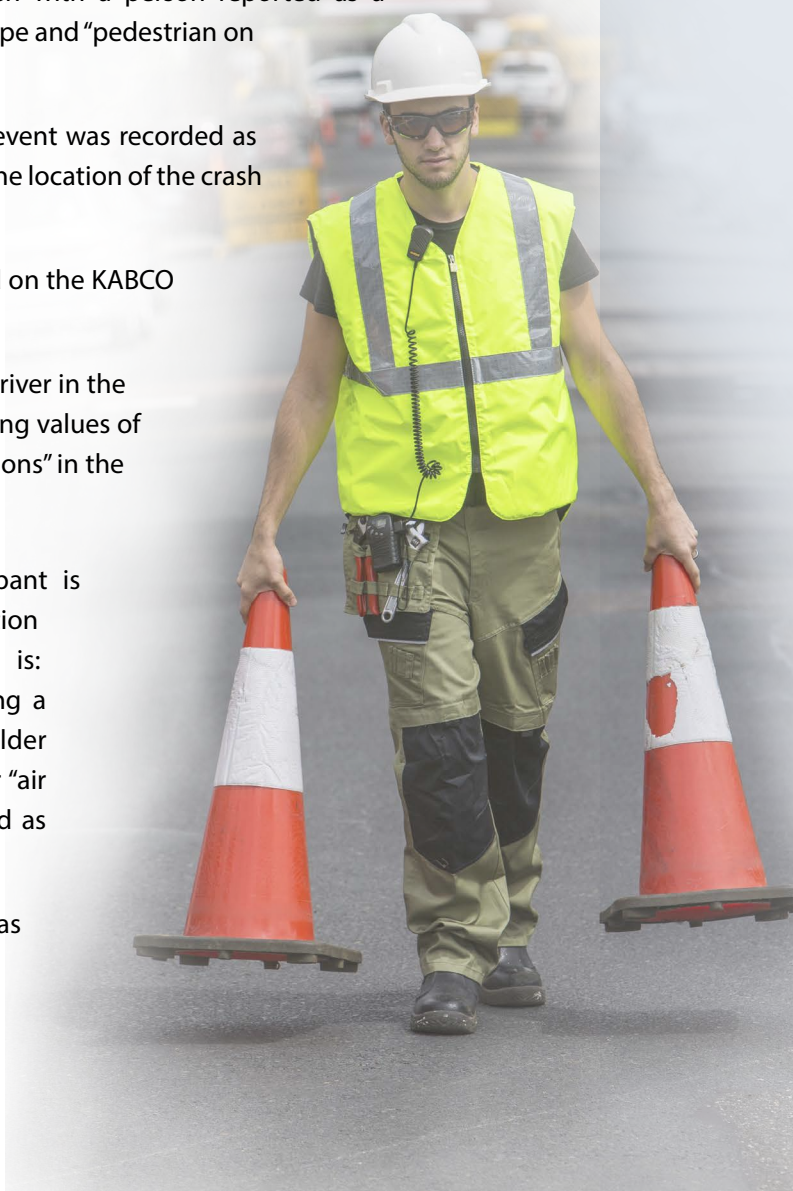
Run-off-the-Road Crash: Crashes where the first event was recorded as "striking a fixed object" or "running off the road" or the location of the crash was reported as "off-road" or "in the median."

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

Speed Related Crash: A crash where 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.

Unrestrained Occupant: An unrestrained occupant is defined as a passenger-vehicle (automobile, station wagon, van, SUV, pickup truck) occupant who is: less than eight years of age recorded as not using a "child/youth restraint;" eight years of age or older recorded as not using a "lap and shoulder belt" or "air bag and belt;" or where restraint use was recorded as using "none," or "air bag only."

Work-Zone Crash: Crashes reported by the officer as "Yes" for Construction/Maintenance Zone.



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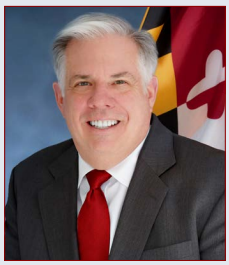

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MARYLAND
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MARYLAND STATE POLICE

Revised June 2017