



Goal Ensure a Safe, Secure, and Resilient Transportation System

Maintaining the safety and security of the transportation system is a critical mission for MDOT

OBJECTIVES:

- Reduce the number of lives lost and injuries sustained on Maryland's transportation system
- Provide for the secure movement of people, goods, and data
- Provide a resilient multimodal system by anticipating and planning for changing conditions and hazards whether natural or man-made
- Improve roadway clearance times and facilitate efficient and coordinated responses to emergency and disaster events throughout the transportation system



Working toward achieving a safe, secure, and resilient transportation system is one of MDOT's top priorities. The Department's employees work tirelessly to ensure the safe movement of people and goods. MDOT and its Transportation Business Units (TBUs) continue to focus on important issues like reducing speeds and traffic fatalities on Maryland roadways, ensuring that personal and other data remain protected as state services move to online platforms, and repair and retrofit transportation infrastructure to mitigate potential impacts from natural or man-made disasters.

All TBUs are working together to reduce the number of lives lost on Maryland roadways. Traffic fatalities in Maryland have decreased from 573 in 2020 to 563 in 2021. Further, MDOT SHA has been developing Maryland's first statewide Pedestrian Safety Action Plan (PSAP), which applies a data-driven approach to identify, prioritize, and recommend strategies to address pedestrian and bicycle safety needs.

Speeding accounts for almost 9,400 crashes and more than 4,200 injuries each year in Maryland. To raise awareness of safe driving practices, MDOT MVA's Maryland Highway Safety Office (MHSO) expanded the *Be the Driver* campaign to include additional topics such as *Move Over* and *What to Do in a Roadside Emergency*. In response to the growing number of roadside fatalities, these campaigns focus on educating motorists on how to stay safe when they encounter an emergency while driving, as well as providing information on the expansion of the Move Over Law, which requires vehicles to move over or slow down for all vehicles with hazard lights on the side of the road since October 2022. Additional resources and tips for safe driving behavior are listed on Maryland's Zero Deaths website. These include practical advisories and accompanying statistics for distracted driving, impaired driving, pedestrian and bicycle safety, wearing a seatbelt, speeding, and child passenger safety.

Considering high speeds on the roadways, it is particularly important to maintain the highway system in a state of good repair and have a reliable

response effort in place to clear incidents. MDOT SHA's Coordinated Highways Action Response Team (CHART) and the MDTA's Vehicle Recovery Units respond to crashes and help stranded motorists. In 2021, CHART responded to 65,839 incidents and disabled vehicles events on Maryland roads. MDTA responded to 6,187 disabled vehicle events and a total of 29,936 incidents on MDTA roads in 2021. The Statewide Operations Center (SOC) in Hanover, which was renovated in 2021, provides 24 hours a day, seven days a week, monitoring of roadways and serves as a comprehensive command and control facility.

Ensuring work zone safety and mobility is another critical component of Maryland's strategy to curb traffic fatalities and serious injuries. MDOT SHA sets policies, technical guidelines, and trainings for interpreting and implementing federal and state safety measures to protect employees on the job.

The State Freight Plan, State Rail Plan, and Rail Grade Crossing State Action Plan include strategies that MDOT is implementing towards improving motorist, truck, and rail safety statewide. Outreach and partnership with local jurisdictions on issues like truck parking are key to improving safety while supporting economic development and supply chain resiliency statewide.

In addition to a coordinated effort to provide a safe and secure transportation system, Maryland continues to implement technology upgrades that are enabling residents to access available services online more easily. In December 2021, MDOT MVA completed its information technology (IT) modernization known as Customer Connect, which enables customers to connect their driver and vehicle accounts in one place. Similarly, a new queueing and online appointment portal called MDOT MVA Appointment Scheduler allows customers to select from a list of services and receive prompt attention at the designated appointment time, which has reduced wait times significantly and enhanced the customer experience.

ANNUAL NUMBER OF TRAFFIC FATALITIES AND INJURIES ON ALL ROADS IN MARYLAND AND ON TRANSIT FACILITIES

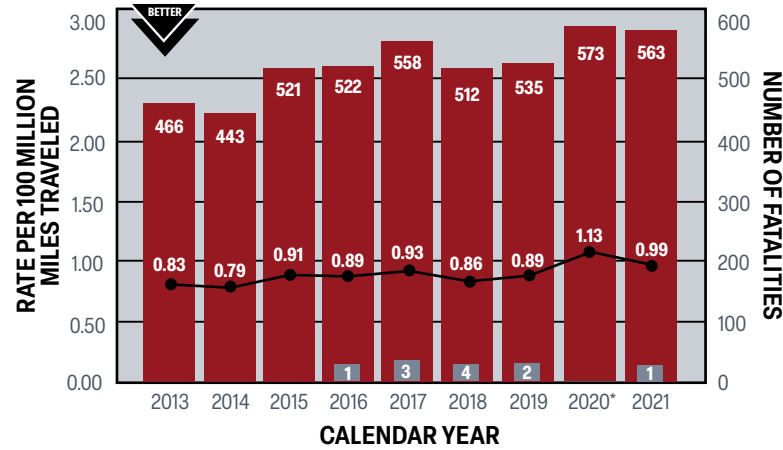


The safety of the transportation system impacts all residents and visitors. Making transportation safer is a top priority of MDOT, with the ultimate goal of eliminating traffic and transit deaths. MDOT uses several measures to track the safety of the transportation system. The measures include fatalities, serious injuries, and the type of users injured or killed in crashes, such as pedestrians and bicyclists.

WHY DID PERFORMANCE CHANGE?

- Overall fatalities in Maryland decreased 1.7% while the fatality rate decreased by 12.3%, despite a 12% increase in Vehicle Miles Traveled (VMT) between 2020 and 2021; 2021 VMT was still down by nearly 6% compared to pre-pandemic levels in 2019; trends in Maryland and nationally have demonstrated anomalous outcomes in relation to VMT and fatality trends
- With drivers returning to Maryland roads, increases in overall crashes, injuries, and serious injuries occurred in 2021 compared to 2020, but remain down compared to pre-pandemic years such as 2019 and earlier years when injury crashes were generally trending downward
- While many fatalities and crashes occur on state-maintained roadways, a significant number of crashes happen on locally maintained roadways; achieving Vision Zero in Maryland means achieving zero fatalities and serious injuries in each jurisdiction; currently, Maryland has 12 local safety plans implemented, with another six under development
- Based on observation studies, 2022 seat belt use rates increased to 92.7%, a 1.3% increase from 2021; a higher rate of seat belt usage may have contributed to the slight decline in fatalities seen in the last year; preliminary 2022 fatalities indicate we are on par with the pace of 2021 fatalities

ANNUAL NUMBER OF FATALITIES

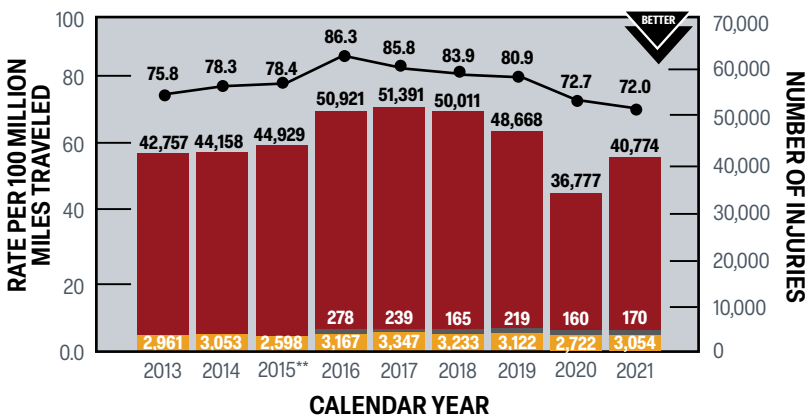


■ Annual number of traffic fatalities on all roads in Maryland (including MDTA-owned roads)
 ● Traffic fatality rate per 100 million miles traveled on all roads in Maryland
 ■ Annual number of transit passenger fatalities

TARGET: ≤ 0.858 traffic fatality rate on all roads in Maryland by 12/31/2022, ≤ 4 transit fatalities per year by 12/31/2022, ≤ 476.6 fatalities on all roads in Maryland per year by 12/31/2022

*2020 data have been revised from previous report.

ANNUAL NUMBER OF PERSONAL INJURIES*



■ Annual number of personal injuries on all roads in Maryland
 ● Personal injury rate per 100 million miles traveled on all roads in Maryland
 ■ Annual number of serious personal injuries on all roads in Maryland
 ■ Annual number of transit passenger personal injuries

TARGET*:** ≤ 2,537.8 serious personal injury rate on all roads in Maryland by 12/31/2022, ≤ 5,073 serious injury rate of transit passengers on all facilities in Maryland by 2022

*2019 and 2020 data have been revised from previous report.

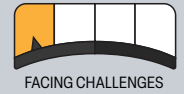
**Changes to law enforcement crash data collection has affected serious injury statistical reporting, since the implementation of the Automated Crash Reporting System (ACRS) on January 1, 2015.

***MDOT MTA establishes safety targets outside of the SHSP.

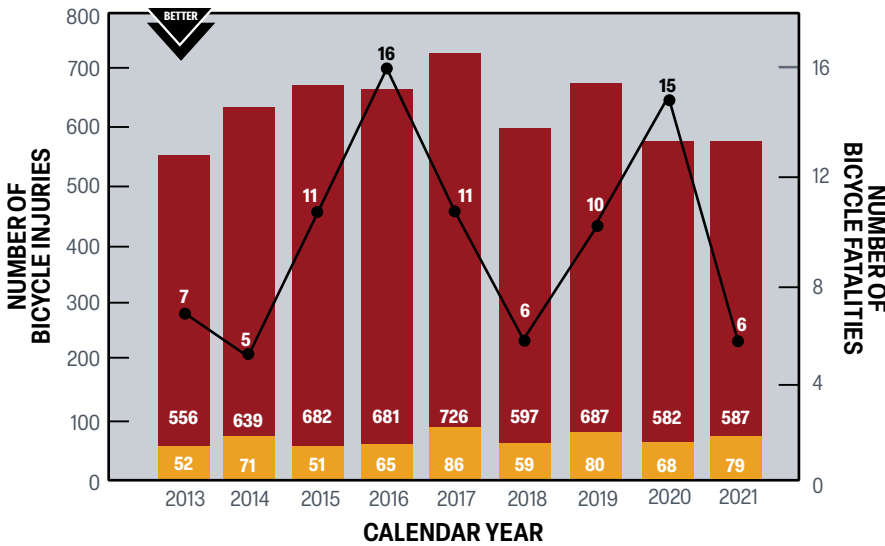
WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- The 2021-2025 Maryland Strategic Highway Safety Plan (SHSP) builds on the experience, efforts, and successes of previous SHSPs and utilizes a data-driven approach to build effective strategies, create action steps, and establish performance measures to help achieve our goal of zero roadway deaths
- Maryland uses a multi-disciplinary approach to crash prevention and severity mitigation, including strategies that address roadway design, driving behaviors, technology, and policies by working with our wide network of partners across the state; partners who carry out this work include, but are not limited to, academic institutions and staff, agricultural professionals, engineers, first responders, government officials, law enforcement, policymakers, public health professionals, and traffic planners
- In 2022, MDOT MTA finalized their Safety Management System (SMS) transition plan and have begun an organization wide transition; SMS is a top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls, it includes systematic procedures, practices, and policies for the management of safety risk

NUMBER OF BICYCLE AND PEDESTRIAN FATALITIES AND INJURIES ON ALL MARYLAND ROADS



NUMBER OF BICYCLE FATALITIES AND INJURIES



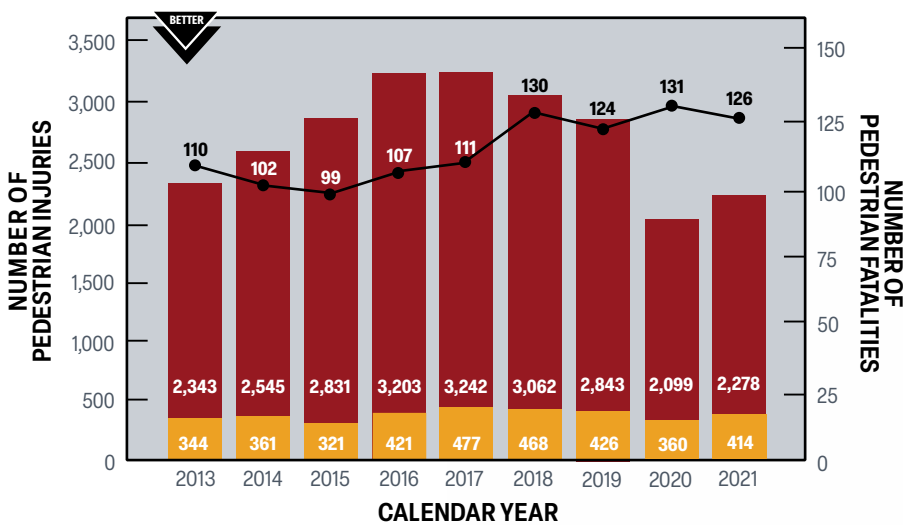
■ Number of bicycle injuries on all roads in Maryland
● Number of bicycle fatalities on all roads in Maryland
■ Number of serious bicycle injuries on all roads in Maryland

TARGET: ≤ 9.0 bicycle fatalities per year (based on a rolling five-year average) by 12/31/2022, ≤ 65.7 serious bicycle injuries per year by 12/31/2022 (2020-2024 mid-year average target)

WHY DID PERFORMANCE CHANGE?

- ▶ Pedestrian fatalities declined by 3.8% though non-motorist deaths represent nearly one in four of all traffic fatalities, and the most recent five-year average (2017-2021) had 17% more fatalities than the previous five-year period (2012-2016)
- ▶ Pedestrian serious injuries increased by 15% in 2021 compared to 2020, and the most recent five-year average (2017-2021) had 21% more serious injuries than the previous five-year period (2012-2016)
- ▶ Bicyclist fatalities declined 60% with six fatalities in 2021 compared to 15 in 2020, though serious injuries increased by 16% and the most recent five-year average (2017-2021) had 21% more serious injuries than the previous five-year period (2012-2016)
- ▶ Mirroring national trends, Maryland has experienced steady increases in fatalities and serious injuries in its most vulnerable road users—non-motorists (pedestrians and bicyclists)
- ▶ Throughout the pandemic, more people chose, or were forced, to walk or bike more than in previous years, which could be contributing to a shift in exposure and risk to non-motorists

NUMBER OF PEDESTRIAN FATALITIES AND INJURIES*



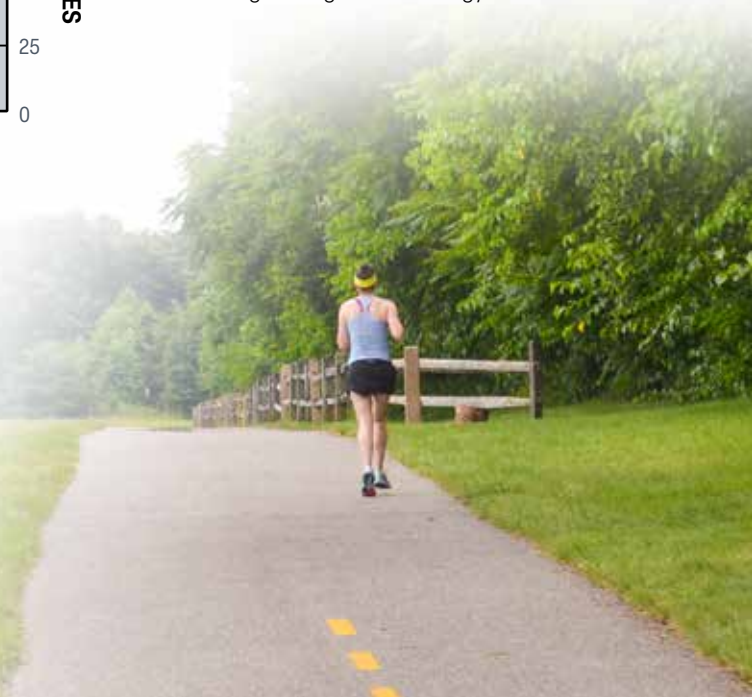
■ Number of pedestrian injuries on all roads in Maryland
● Number of pedestrian fatalities on all roads in Maryland
■ Number of pedestrian serious injuries on all roads in Maryland

TARGET: ≤ 11.7 pedestrian fatalities per year by 12/31/2022 (2020-2024 mid-year average target), ≤ 385.6 pedestrian serious injuries per year by 12/31/2022 (2020-2024 mid-year average target)

*2019 and 2020 data have been revised from previous report.

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- ▶ MDOT SHA has been developing Maryland's first statewide PSAP, which applies a data-driven approach to identify, prioritize, and recommend strategies to address pedestrian and bicycle safety needs
- ▶ MDOT monitors these trends and works diligently to prevent non-motorist injuries and fatalities by implementing the strategies in the SHSP Pedestrians and Bicyclists Emphasis Area; these strategies cover topic areas including data, enforcement, infrastructure, legislation and policy, outreach, and vehicle engineering and technology



OBJECTIVE: Provide for the secure movement of people, goods, and data

With the growing reliance on app-based mobility solutions and online shopping, transportation security is emerging as a critical point of emphasis for transportation owners and operators. As people become more reliant on mobile applications and remote fare payment, the secure exchange of private data and banking information is a critical step in ensuring these modal options and information are widely available. MDOT continues to work with its partners to ensure data security. MDOT MPA, along with its partners, began using facial

recognition technology for disembarking passengers at the Port of Baltimore as it expands its cruise operations. In 2021, MDOT SHA completed the \$5.6 million renovation and reimagining of its State Operations Center (SOC), which allows for more efficient responses to safety threats within the transportation system. Additionally, as a result of the COVID-19 pandemic, MDOT MVA permanently moved to an appointment-only operation and expanded online services, including an entire revamp to their website.

MDOT-WIDE OVERALL PERCEPTION OF SAFETY: CRIME AND SAFE MOVEMENT

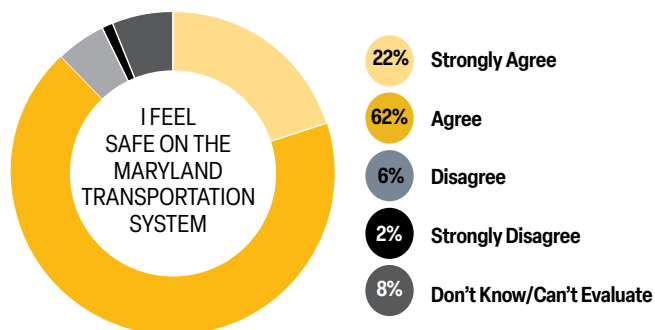


Transportation agencies primarily track safety statistics such as fatalities and serious injuries. However, another vital component of safety is the perception of safety from crime. Perception of safety varies significantly across gender, race, age, and ability. To collect data on this subject, MDOT conducts an annual survey of users to assess their perception of safety. Understanding perception of safety is imperative because people may avoid trips that they do not perceive to be safe, which could result in missing school, medical appointments, or work. Examples of influences on perception of safety include lighting, trash, proximity to people, and graffiti. Perception of safety is just as important in providing access to the transportation system through infrastructure, such as crosswalks and sidewalks. Improving the perception of safety on the Maryland transportation system requires the coordination of several public agencies, including but not limited to the many TBUs and offices throughout MDOT.

PERCEPTION OF SAFETY ON THE MARYLAND TRANSPORTATION SYSTEM (2021 DATA)

(Including BWI Marshall Airport, Port, Roads, Transit)

MDOT SURVEY QUESTION



* The survey data reported is 2020 Survey data; survey data reporting is delayed by a year due to the survey for the current year not being closed/completed at the time of publishing. 2021 survey data will be published in the 2023 Attainment Report.

WHY DID PERFORMANCE CHANGE?

- MDOT MTA joined the American Public Transit Association (APTA) National Safety Pledge to keep operators and passengers safe through the pandemic

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT MTA will remain focused on adhering to constantly evolving best practices and continue to address safety concerns, public perception, and opportunities to improve safety and security for operators and passengers



PREVENTABLE INCIDENTS PER 100,000 VEHICLE MILES



MDOT MTA has developed a baseline from which to target preventable incidents on transit to reduce fatalities and injuries, increase efficiency, and provide a safer ride to customers.



CALENDAR YEAR	2015	2016	2017	2018	2019	2020	2021*	2022	TARGET
PREVENTABLE INCIDENTS PER 100,000 VEHICLE MILES									
Local Bus	1.43	1.54	1.54	1.44	1.76	1.50	0.07	0.07	1.50
Light Rail	0.14	0.24	0.02	0.03	0.37	0.03	0.01	0.01	0.25
Baltimore Metro	0.00	0.06	0.06	0.02	0.01	0.01	0.02	0.02	0.06
Paratransit/Taxi Access	0.79	1.04	1.04	0.77	1.32	1.10	0.02	0.02	1.00

*2021 data have been revised from previous report.



WHY DID PERFORMANCE CHANGE?

- MDOT MTA works with operators to collect their safety observations and analyze safety trends including near-misses to improve safety
- MDOT ensures all necessary personnel receive emergency preparedness training through the National Incident Management System (NIMS) and the Incident Command System (ICS)

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- Organization-wide implementation of SMS processes and policies, including mandatory training for all MDOT MTA staff on SMS principles; SMS is a top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls; it includes systematic procedures, practices, and policies for the management of safety risk
- The Sustainability Plan sets goals and performance measures for fostering wellness among employees, enhancing the customer experience, and maintaining assets in a state of good repair; MDOT MTA has acted upon many of the plan recommendations and is tracking performance measures actively

OBJECTIVE: Provide a resilient multimodal system by anticipating and planning for changing conditions, and hazards whether natural or man-made

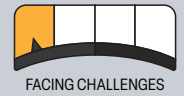
Enhancing Maryland's transportation system's resilience involves preparing for, adapting to, withstanding, and rapidly recovering from all threats whether environmental, human caused, or technological. MDOT is working on reducing its vulnerabilities and improving its response and recovery times and processes. Personnel at several TBU Operations Centers track all incidents and dispatch emergency responders to deal with the situation. The 2021 update of the MDOT SHA SOC provided a technology refresh and physical reconfiguration to meet next-generation Transportation Systems Management and Operations (TSMO) requirements, making responses quicker and more efficient.

MDOT and its employees maintain all essential services and manage to prevent incidents and crashes before they happen. Appropriate MDOT personnel continue to be trained under the National Incident Management System (NIMS) and the Incident Command System (ICS), which provide an integrated approach to incident, crisis, and consequence management. According to MDTA, the average response time for messaging on unplanned events or crashes, excluding anomalies, was 2.8 minutes.

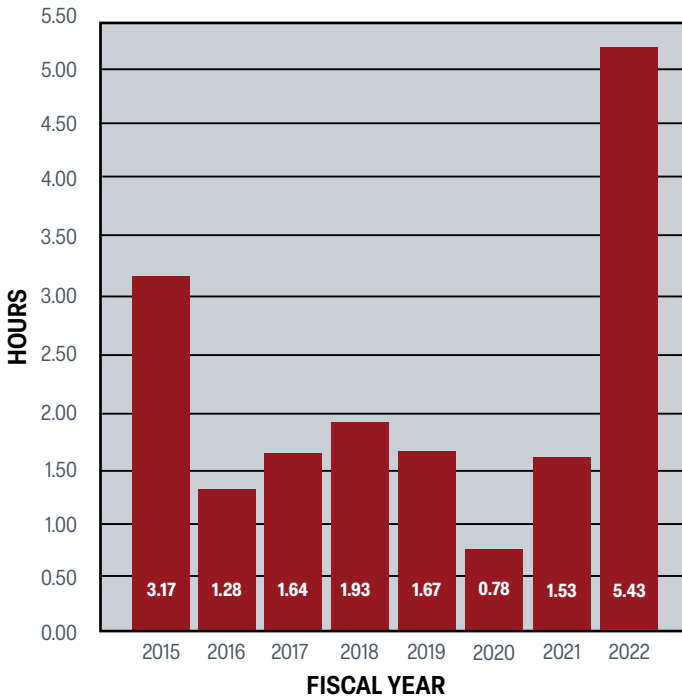


OBJECTIVE: Improve roadway clearance times and facilitate efficient and coordinated responses to emergency and disaster events throughout the transportation system

RESTORING TRANSPORTATION SERVICES: AVERAGE TIME TO RESTORE NORMAL OPERATIONS AFTER A WEATHER EVENT



Inevitably, even the best designed transportation system experiences delays due to weather. Maryland experiences snow and ice in the winter that requires a comprehensive response to clear roadways. MDTA, MDOT MAA, and MDOT SHA include operations teams that respond to snow and ice events. The goal of snow and ice removal is to minimize the impacts of an event before it occurs and restore the system to full operations as soon as possible.



TARGET: 4 hours or fewer to regain bare pavement

WHY DID PERFORMANCE CHANGE?

- In 2022, MDOT SHA regained bare pavement in approximately 5.5 hours, which is higher than the five-year average, and higher than the target of four hours
- With limited internal and contract staffing in some areas of the state that received above average snowfall for a few winter events this season, specifically the Eastern Shore and Southern Maryland, it took longer to regain bare pavement than typical for an average winter event, which raised the overall time to regain bare pavement statewide
- MDOT SHA had a significant turnover in employees responsible for snow removal, causing an increase in time to clear roads

WHAT ARE FUTURE PERFORMANCE STRATEGIES?

- MDOT SHA is hosting one-day hiring events in an attempt to develop a candidate pool for field maintenance personnel to minimize the impact of employee turnover
- MDOT SHA is conducting Federal Motor Carrier Safety Administration training every other month to aid in obtaining Commercial Driver's License for new employees
- MDOT SHA expanded its Direct Liquid Application (DLA) program and now has at least one route in each of the seven districts across the state, with many districts having three or more routes
- MDOT SHA has 34 loader scales as of October 2022 and will continue to expand their use at salt storage facilities that use state loaders to achieve greater accuracy in salt inventory management
- MDOT SHA upgraded its Automatic Vehicle Location (AVL) system in all winter snow fighting equipment, which will allow for increased equipment analytics and more accessible roadway information in the future
- MDOT SHA plans to continue in-person salt management training for field staff responsible for clearing the roadways during winter operations, which will educate the new employees on sensible salt application and practical winter operations
- MDOT SHA will continue to expand the use of rubber plow blades with ceramic inserts to aid in the clearing of more snow and ice from the roadway, and therefore reduce salt use

