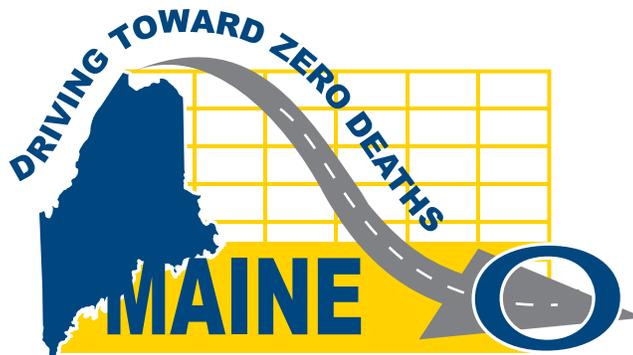


Maine's 2022 Strategic Highway Safety Plan





MaineDOT





STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Janet T. Mills
GOVERNOR

Bruce A. Van Note
COMMISSIONER

December 13, 2022

RE: Maine's update to the " Strategic Highway Safety Plan (SHSP)"

This letter indicates our support for the 6th edition of Maine's Strategic Highway Safety Plan (SHSP). This newest version of the SHSP addresses behavioral, enforcement, engineering, and emergency response aspects and for the first time includes elements of the Safe System Approach to highway safety. It represents great teamwork between our offices and many other highway safety partners. The plan reflects many updates and outlines data driven strategies developed to improve safety on our highways.

Maine experiences about 33,000 crashes each year that, too often, have devastating personal impacts. Maine has experienced a recent 5-year annual average of about 156 crash deaths and thousands of injuries. While progress has been made in reducing the number of serious injuries over the levels seen 10 and more years ago, the number of fatalities has increased in Maine and nationwide in the past several years. When combined the overall trend in fatalities and serious injuries is improving, but we need to do more to more to reduce Maine's highway fatalities.

Crashes are almost always preventable and the SHSP is developed to outline the major common areas of safety concern. The goal of Maine's SHSP is to identify key transportation safety issues and to develop effective action plans that would improve public safety. The Plan is a core resource to guide investment decisions toward programs and identify countermeasure strategies that will best achieve a significant reduction in highway fatalities and serious injuries.

Coordinated and focused safety efforts must continue. This plan requires ongoing attention, and it is important to continually discuss, assess, update, and implement safety strategies outlined in the SHSP. Maine supports the national goal of Driving Toward Zero Deaths.

Sincerely yours,

Bruce A. Van Note
Commissioner
Maine Department of Transportation

Michael Sauschuck
Commissioner
Maine Department of Public Safety

Shenna Bellows
Secretary of State
Department of the Secretary of State



U.S. Department
of Transportation
**Federal Highway
Administration**

Maine Division

December 30, 2022

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SENT ELECTRONICALLY

In Reply Refer To:
HDA-ME

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Subject: 2022 Update to Maine Department of Transportation's Strategic Highway Safety Plan

Dear Secretary Bellows and Commissioners Van Note and Sauschuck:

This letter serves as the Federal Highway Administration's (FHWA) approval of the process used to update Maine's Strategic Highway Safety Plan (SHSP) as provided in the December 21, 2022, submission from Mr. Robert Skehan, MaineDOT Safety Engineer. We recognize and appreciate that several State agencies and other safety stakeholders from across Maine continue to work collaboratively to improve transportation safety throughout Maine. These relationships and their benefits are evidenced by this year's updated Strategic Highway Safety Plan.

The Highway Safety Improvement Program (HSIP) is a core Federal-aid program under the Infrastructure Investment and Jobs Act (IIJA) (P.L. 117-58, also known as the "Bipartisan Infrastructure Law" (BIL)). Legislated under 23 U.S.C. §148, the HSIP requires each State to develop a Strategic Highway Safety Plan which is then updated at least once every five years.

The purpose of a Strategic Highway Safety Plan is to assist states in identifying key transportation safety needs and to guide investment decisions toward those strategies that have been shown to achieve significant decreases in highway fatalities and serious injuries, along with

reductions in their subsequent costs to society. Maine's updated SHSP is the guiding document that identifies data-driven strategies and countermeasures to reduce fatalities and serious injuries on Maine roads. Maine's SHSP promotes the identification of common goals while fostering collaboration between state agencies and safety stakeholders.

Current guidance on both the HSIP and SHSP (including information on the SHSP Review Process) can be found on FHWA's FAST Act website at:
<https://safetytest.fhwa.dot.gov/legislationandpolicy/fast/>.

We thank you and your staffs for your support and efforts in updating this SHSP. Our collective efforts continue to improve transportation safety across Maine. Should you have any questions, please contact me at 207-512-4911, or Patrick Adams, our Safety & Operations Specialist, at 207-512-4919.

Sincerely yours,



Todd D. Jorgensen
Division Administrator

cc:

Rachel LeVee, FHWA
Jennifer Williams, FHWA
Joyce Taylor, MaineDOT
Robert Skehan, MaineDOT
Lauren Stewart, Maine BHS
Cathy Curtis, Maine BMV
Daniel Demille, NHTSA
Eric Adair, FMCSA



U.S. Department
of Transportation
**Federal Highway
Administration**

**DRIVE
RESPONSIBLY**



**BE CAREFUL
ON THE ROAD**

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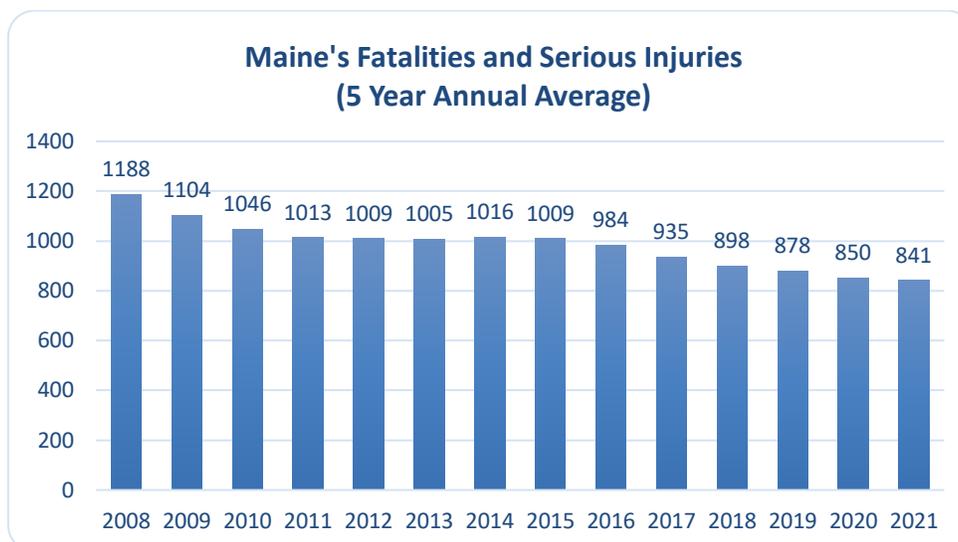
Introduction

Almost every other day a person loses their life in a Maine vehicle crash. Crashes occur on our roads nearly one hundred times a day. When looking at the underlying factors related to these frequent and tragic events, we consistently find that these occurrences are almost always preventable. Maine's Strategic Highway Safety Plan (SHSP) is a major component and requirement of the federal Highway Safety Improvement Program (HSIP) but more importantly it provides a road map as we work towards Maine's overall safety goal of preventing deaths and serious injuries on our highway system.

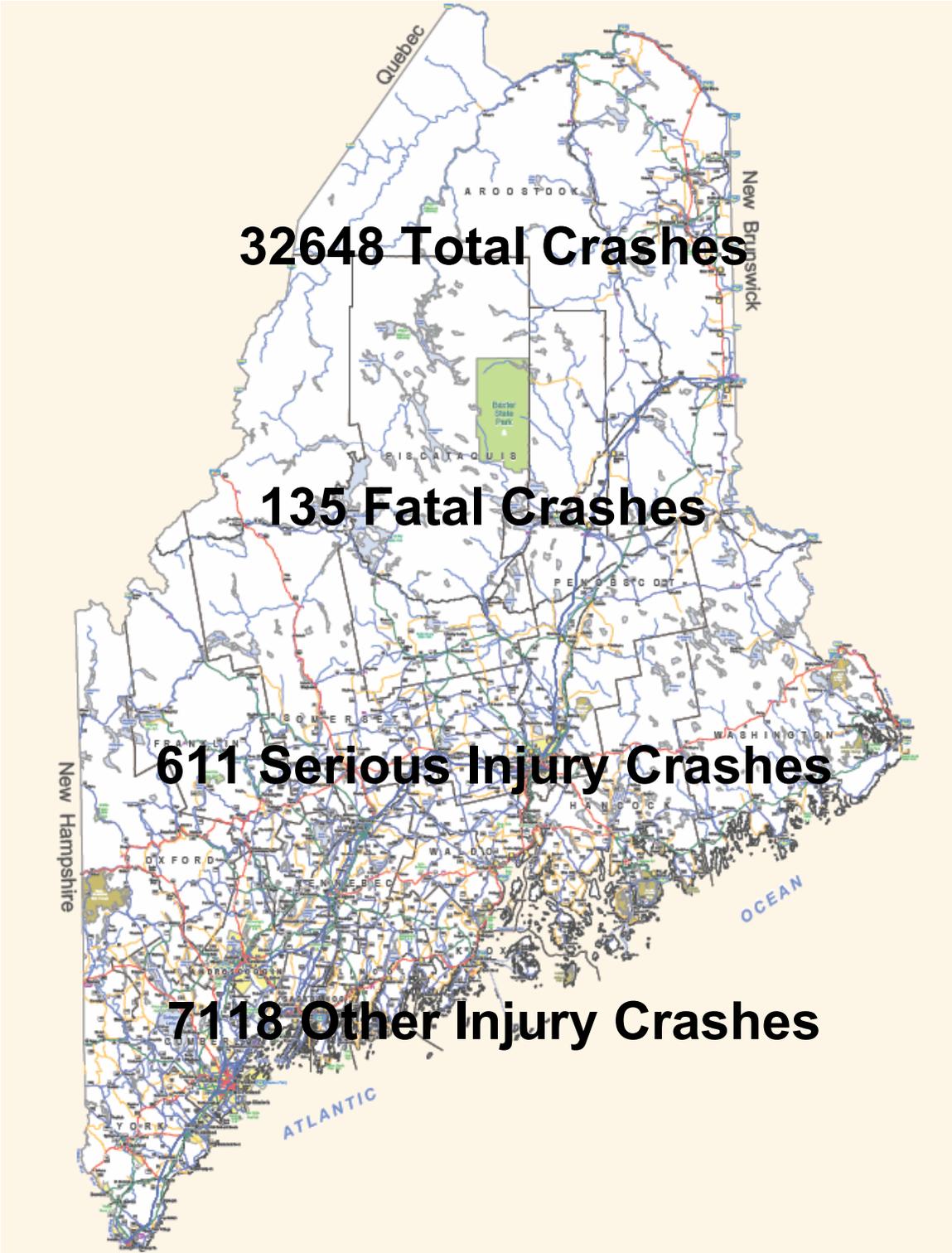
The intent of the SHSP is to:

- Improve travel safety for ALL transportation system users
- Address all aspects that influence safety: Enforcement, Engineering, Education, Emergency Services
- Coordinate the safety improvement efforts of various agencies and stakeholders
- Guide investment decisions towards strategies and countermeasures with the most potential to reduce fatalities and serious injuries
- Provide an avenue for partners to have ongoing communications/network
- Enhance data-sharing...focus areas and strategies are data driven
- Resource sharing among safety stakeholders and partners
- Document that communicates to all that Maine does have a coordinated plan that guides the development of other plans such as our Highway Safety Plan, Highway Safety Improvement Program, and Commercial Vehicle Safety Plan

Maine's first FHWA-approved Strategic Highway Safety Plan was published in 2005 and consisted of four focus areas and two additional topical areas to keep on the "safety radar". Frequent updates to Maine's plan have continued over the years building upon the successes of earlier plans by adjusting strategies and identifying new focus areas to expand our plan as the data revealed where improvements were needed. The result of these efforts can be seen in the following graph which illustrates steady progress in reducing the number of fatalities and serious injuries on Maine's public highways over the years.



Maine 2021 Crash Counts



What's New In 2022?

Serious Injuries on Maine's Highways

The 2022 update of Maine's Strategic Highway Safety Plan continues our commitment to Driving Towards Zero Deaths but acknowledging and evaluating the often life-changing impacts of serious injuries on those who use our transportation system is an important addition to this year's update. Each of our 2022 focus areas will have updated charts which include serious injury crash trends in addition to fatal crash data.

Safe System Approach

In January of 2022, the United States Department of Transportation published their National Roadway Safety Strategy which reaffirmed their commitment to the goal of "Zero Deaths" on America's highways and adopted The Safe System Approach as the guiding paradigm to address roadway safety.

Historically Maine's SHSP has been organized around the "4 E's of Highway Safety" - Enforcement, Engineering, Education, and Emergency Services. While the overall 2022 SHSP strategies continue to address these important areas, the Safe System Approach looks at highway safety through a slightly different lens.

According to USDOT, there are **six principles** that form the basis of the Safe System approach: deaths and serious injuries are unacceptable, humans make mistakes, humans are vulnerable, responsibility is shared, safety is proactive, and redundancy is crucial.

5 Safe System Elements:

- **Safer Road Users** – Encouraging safe, responsible driving and behavior by people who use our highways
- **Safer Vehicles** - Expanding vehicle systems and technologies that help to prevent crashes and minimize the impact of crashes on vehicle occupants and others
- **Safer Speeds** - Promoting safer speeds through context-appropriate roadway design, appropriate speed-limit setting, targeted education and outreach, and enforcement
- **Safer Roads** - Designing roadway environments to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users
- **Post-Crash Care** – Increase the likelihood that those injured in crashes survive through expedient access to emergency medical care and protecting first responders on-scene through robust traffic incident management practices

In this 2022 update, focus area champions strived to identify a mix of strategies encompassing two or more of the safe system elements listed above. This is a straightforward means of ensuring redundancy in our approach to solving Maine's highway safety issues.

Added a New Work Zone Safety/Traffic Incident Management Focus Area

Hundreds of crashes occur each year in Maine work zones, resulting in several fatalities and many injuries. Workers in these areas are vulnerable as are vehicle occupants, pedestrians, and bicyclists as they navigate through these areas. In the 2022 SHSP Update we've included a Work Zone/Traffic Incident Management focus area to explore strategies designed to increase the safety of those involved in building and maintaining Maine's aging infrastructure or responding to incidents that occur on our highways.

A Snapshot Look at Focus Areas

Statewide crash trends of strategic interest are summarized below with the latest 2021 results shown. All crash types are important, and strategic effort in any focused safety area has merit. The priority focus areas below continue to be Maine’s chief areas of safety concern in terms of fatalities and serious injuries. If effective strategies are implemented, attention to these focus areas would have the most impact in reducing crashes and their resulting injuries and death on our highways. Including serious injuries in this year’s SHSP update snapshot illustrates that though we have made progress in some areas, work still remains in each of these areas to achieve our safety goals in Maine.

A SNAPSHOT LOOK AT FOCUS AREA PERFORMANCE								
FOCUS AREA	Current Performance Period				Change in 5 Year Annual Average Counts			
	5 Year Annual Average Counts (2017-2021)				(2017-2021) versus (2012-2016)			
	Annual Crashes	Annual Suspected Serious Injuries (A)	Annual Fatalities (K)	Annual Fatalities Plus Serious Injuries	Net Total Crashes	Net Serious Injuries (A)	Net Fatalities (K)	Net Fatalities Plus Serious Injuries
All Crashes	33,361	683.8	156.4	840.2	1947.0	-150.4	5.4	-145.0
Lane Departure	9318.8	379.4	107.8	487.2	-39.2	-63.6	3.8	-59.8
Illegal/Unsafe Speed	3870.6	134.2	42.8	177.0	-554.4	-48.2	-5.2	-53.4
Occupant Protection		141.4	54.6	196.0		-13.8	-7.4	-21.2
Younger Drivers (16-24 YO)	9586.8	91.0	23.4	114.4	-430.0	-27.0	-11.8	-38.8
Impaired Driving	1309.6	127.2	45.8	173.0	59.6	-5.2	3.8	-1.4
Distracted/Inattentive	3444.2	84.0	11.6	95.6	188.2	-1.8	0.6	-1.2
Mature Drivers (65+ YO)	6507.4	73.2	38.4	111.6	877.4	0.8	0.4	1.2
Motorcycles	512.6	116.2	25.0	141.2	-67.4	-17.8	5.0	-12.8
Winter Driving	5295.2	60.2	11.0	71.2	-640.8	-37.2	-2.0	-39.2
Intersections	8738.6	161.0	22.6	183.6	-192.4	-29.2	2.6	-26.6
Commercial Vehicles	1194.2	44.6	19.6	64.2	138.6	-4.6	3.2	-1.4
Pedestrians	261.2	45.2	14.0	59.2	-14.8	-7.2	2.0	-5.2
Bicycles	170.4	18.8	2.0	20.8	-182.6	-6.4	1.0	-5.4
Large Animals	5887.6	11.0	1.2	12.2	1514.8	0.8	-0.8	0.0
Work Zones	305.6	4.4	1.4	5.8	-13.4	-1.2	0.8	-0.4

Recent Performance

Better
 Similar
 Worse

The table shows that despite an increase in average annual total crashes between the two performance periods, serious injuries have been reduced in nearly all focus areas despite an increase in fatalities in many of those same areas. Maine’s population has been aging for many years resulting in a median age that’s one of the highest in the nation. This change is likely reflected in the performance comparison above with Mature Drivers (65+ YO) being the one focus area with increases in all crash and injury counts.

Focus Areas Champions

Dennis Emidy (MaineDOT)	Lane Departure
Chief Jared Mills (Augusta Police Department)	Illegal/Unsafe Speed
Thomas Reagan (Maine Bureau of Highway Safety)	
Erica Davis (Maine Bureau of Highway Safety)	Occupant Protection
Nick Brown (Maine Bureau of Highway Safety)	Younger Drivers
Seth Allen (Maine State Police)	Impaired Driving
Jeremy Morin (Maine Bureau of Highway Safety)	
Tom Baran (AAA, Northern New England)	Distracted Driving
Nathan McLaughlin (Maine Bureau of Highway Safety)	
Chantel Plummer (Maine Bureau of Highway Safety)	Mature Drivers
Chris Ireland (Maine Bureau of Motor Vehicles)	Motorcycles
John Kohler (Maine Bureau of Motor Vehicles)	
Greg Stone (Maine Turnpike Authority)	Winter Driving
Steve Landry (MaineDOT)	Intersections
Brian Parke (Maine Motor Transport Association)	Large Trucks
Patrick Adams (MaineDOT/FHWA)	Pedestrians & Bicycles
Eric Ham (MaineDOT)	Large Animals
Robert Skehan (MaineDOT)	Work Zones/Incident Management
J. Sam Hurley (Maine Emergency Medical Services)	Emergency Services
Lauren Stewart (Maine Bureau of Highway Safety)	Traffic Records

SHSP Coordination

Robert Skehan (MaineDOT)	Engineering Strategies
Lieutenant Bruce Scott (Maine State Police)	Enforcement Strategies
Lauren Stewart (Maine Bureau of Highway Safety)	Behavioral Strategies
Shawn MacDonald (MaineDOT)	SHSP Data and Charting

Metropolitan and Regional Planning Organization Members

Chris Chop (PACTS)(GPCOG)	Southern District
Stephanie Carver (KACTS)(SMPDC)	Southern District
Larry Allen (ATRC)(AVCOG)	Western District
Sara Devlin (BACTS)	Northern District
Crystal Hitchings (SCEC)	Eastern District

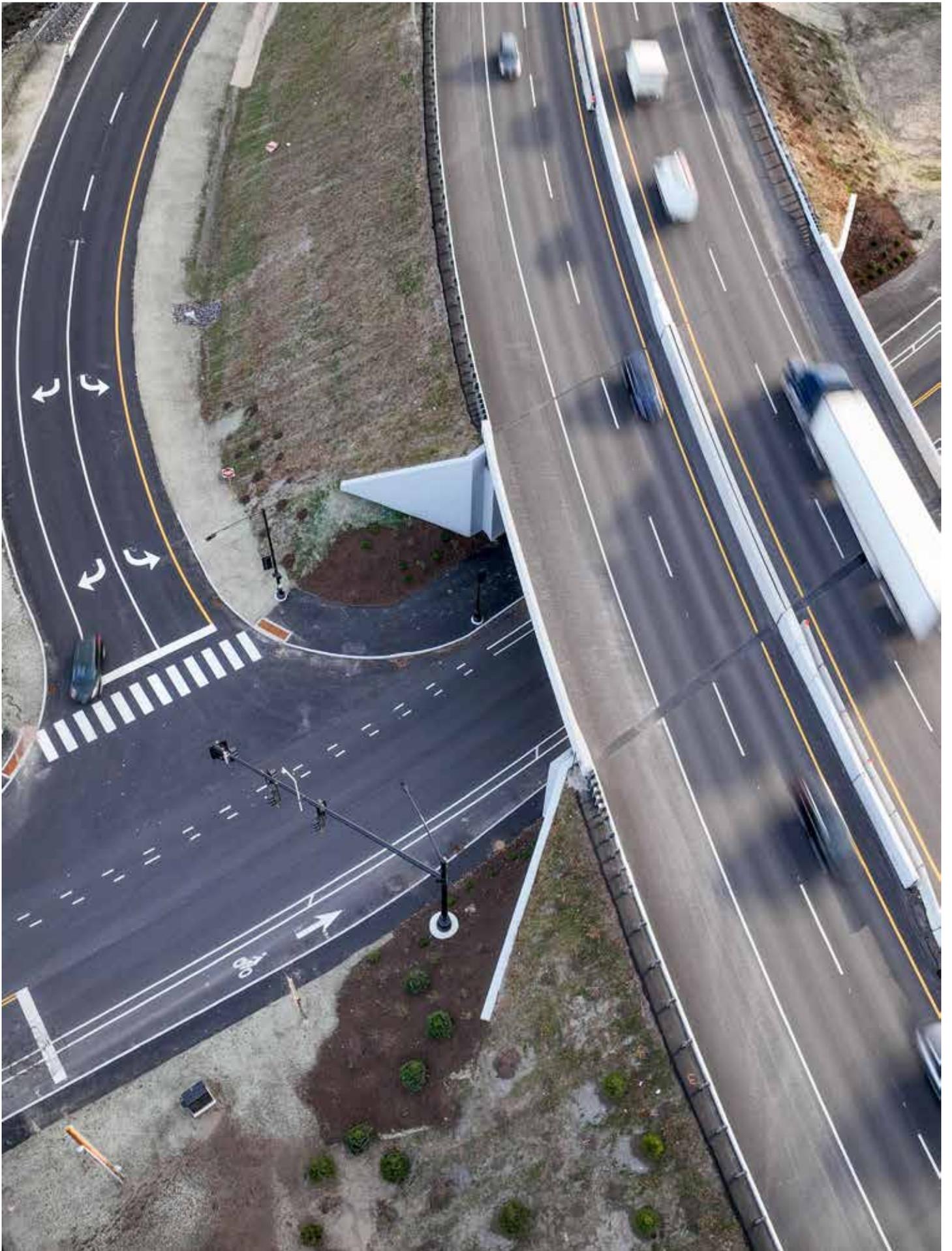


Additional Contributing Strategic Safety Partners

- County and Municipal Law Enforcement
- Federal Highway Administration
- Federal Motor Carrier Safety Administration
- Maine Center for Disease Control
- Maine Department of Education
- Maine Department of Inland Fisheries and Wildlife
- Maine Office of Substance Abuse and Mental Health Services
- Maine State Police
- Maine Transportation Safety Coalition
- Maine Tribal Representatives
- Metropolitan Planning Organizations
- National Highway Transportation Safety Administration
- Regional Planning Organizations

Glossary for Acronyms Used in Focus Area Strategy Tables

AAA	American Automobile Association of Northern New England
BCM	Bicycle Coalition of Maine
BHS	Maine Bureau of Highway Safety
BMV	Maine Bureau of Motor Vehicles
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carriers Administration
IF&W	Maine Department of Inland Fisheries and Wildlife
MaineDOT	Maine Department of Transportation
MCJA	Maine Criminal Justice Academy
MMTA	Maine Motor Transport Association
MPOs	Municipal Planning Organizations
MSP	Maine State Police
MSS	Maine Secretary of State
MTA	Maine Turnpike Authority
MTSC	Maine Transportation Safety Coalition
NHTSA	National Highway Traffic Safety Administration
RPOs	Regional Planning Organizations
VHB	Vanasse Hangen Brustlin, Inc.



Maine's SHSP Update Process

Maine's Strategic Highway Safety Plan (SHSP) has seen a number of updates since its first release in 2005. It has always been a collaborative effort involving various state agencies, other safety stakeholders, and our federal partners. New strategic focus areas and champions have been added over the years to coordinate the strategic direction of road safety mitigation opportunities. This ongoing collaborative approach recognizes that road safety is not one dimensional – that there are behavioral aspects along with physical location facets that need to be collectively considered. This statewide coordinated effort is not just a document. The listed team of SHSP Focus Area Champions meets regularly through participation in the Maine Transportation Safety Coalition, and in addition, are often in continuing, more informal discussions about state safety needs and moving the safety agenda ahead. In most cases, the identified 'Lead' in each of the listed strategies is the primary funding source for the predominant strategies in our plan. Maine's SHSP strategies have been crafted to also serve as actions. Unless otherwise specified, the timeline for all of our listed strategies/actions is Ongoing.

Some of the strategies in Maine's SHSP have separate dedicated task forces that meet to push ahead on pragmatic steps to improve safety. The product of those efforts helps create some of the strategies you find in the following topical SHSP sections. Other strategies reflect those included in Maine's Bureau of Highway Safety's *Highway Safety Plan*. At MaineDOT, there is a Highway Safety & Mobility Committee that engages leaders and staff throughout the Department to make sure they are invested in resolving safety issues through work plan development and ensures that Highway Safety Improvement Program projects identified in the Statewide Transportation Improvement Program are consistent with and address SHSP priorities. We continue to promote a culture of safety throughout the Department.

During this most recent SHSP update process, we have again taken a data driven approach. Strategic areas have been selected based on leading crash and fatality trends. Together, these strategies represent a diverse list of traffic safety issues. Often, in any single crash, several of these focus area factors may be at play – e.g., a young driver who was speeding and distracted while unbelted – a total of 4 focus areas compounding the potential for a serious crash event.

Maine has very good traffic data systems that include police crash data, Fatal Analysis Reporting System, and road infrastructure characteristics. There is good data and analysis sharing amongst agencies through Maine's Traffic Records Coordinating Committee. This data sharing also contributes to data quality as data from one source validates data from another.

Developing the 2022 SHSP content was a combined effort of focus area champions who are in contact with other stakeholders connected to that select focus area to make sure best strategies are identified, reflect current needs, and follow current best practices. In that regard, some strategies were added such as Work Zones, some deleted, and some strategic areas were amplified based on predicted positive safety performance impact. It is also important that identified strategies are implementable and effective. For any safety focus areas that have had significant adverse trends, strategic activities were redefined and strengthened. Maine's SHSP is designed to be a working document subject to revision as the need arises.

Progress made on implementing these strategies is discussed through agency updates at the quarterly Maine Transportation Safety Coalition meetings and documented through the development and submittal of Maine's annual Highway Safety Plan, HSIP Report, and Commercial Vehicle Safety Plan.



Safety Performance Measures

The Fixing America’s Surface Transportation Act or “FAST Act” includes provisions on safety performance target-setting requirements.

Safety Performance Management Measures (Safety PM) Final Rules implement the performance management requirements to assess serious injuries and fatalities on all public roads.

The Safety PM Final Rule establishes five performance measures as the five-year rolling averages for:

1. Number of fatalities
2. Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
3. Number of serious injuries
4. Rate of serious Injuries per 100 million VMT
5. Number of Non-motorized fatalities and non-motorized serious injuries

The first four performance measures are shared by MaineDOT, the Maine Bureau of Highway Safety, and Maine’s four Metropolitan Planning Organizations (MPO). The fifth performance measure is a requirement for MaineDOT and the MPOs.

The Safety PM Final Rule also establishes the process for state departments of transportation and Metropolitan Planning Organization to establish and report their safety targets. It also includes the process that FHWA will use to assess state DOTs progress toward meeting their safety targets.

Together, these regulations will improve data; foster transparency and accountability; and allow safety progress to be tracked locally, statewide and at the national level. They will inform state DOTs and MPOs planning, programming, and decision-making for the greatest possible reduction in fatalities and serious injuries.

Safety performance targets are set each year. Below are Maine’s safety performance targets for 2023.

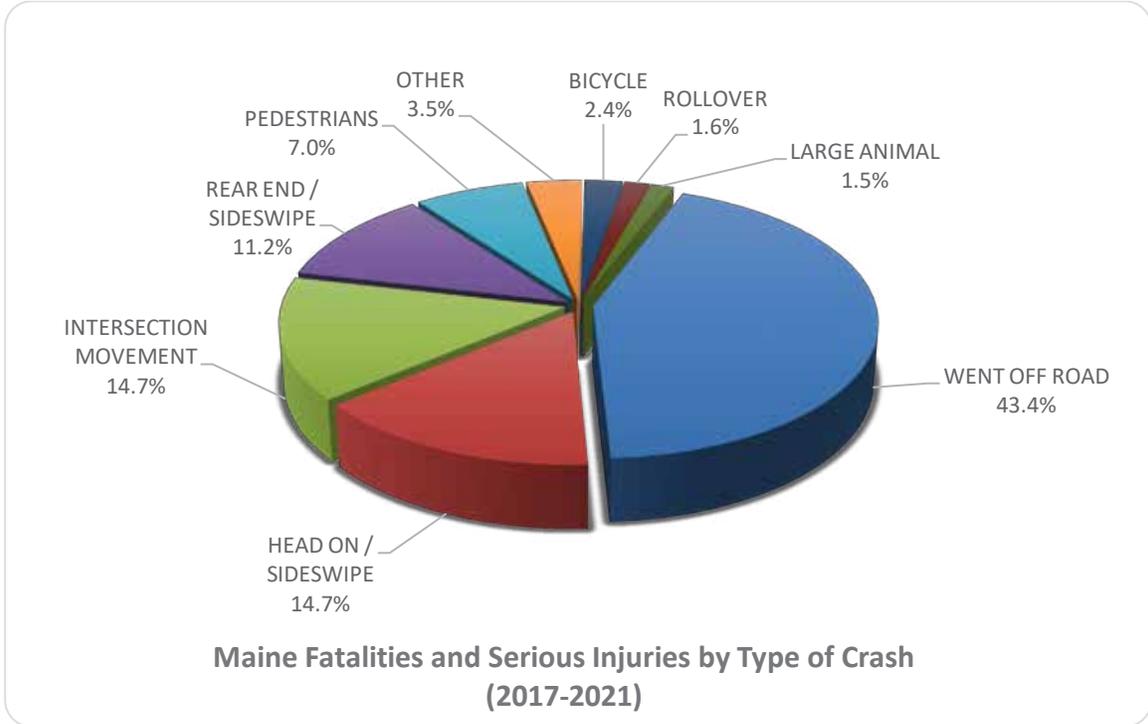
Maine 2023 Statewide Safety Performance Targets	2023 Target (5 Year Average)
Number of Fatalities	160
Number of Serious Injuries	710
Rate of Fatalities	1.12
Rate of Serious Injuries	4.80
Number of Non-Motorized Fatalities and Serious Injuries	85

These targets were coordinated and agreed to by MaineDOT and the Maine Bureau of Highway Safety after careful consideration of past performance and projections of future performance informed by Maine’s 2022 crash experience to date, traffic volume changes, and socioeconomic factors.

The 2023 fatality number and rate targets match our 2022 targets, while the remaining three were set lower than our 2022 targets to reflect the positive trend we’ve observed in reducing Maine’s serious injuries over time.

2022 SHSP Focus Areas

In the past five years, the distribution of Maine’s fatal and serious injuries by type of crash has remained largely consistent with our earlier performance though progress in some areas. The following chart illustrates the percentages of fatal and serious injuries from 2017-2021 by type of crash:



Went Off Road and Head On/Sideswipe (Lane Departure) crashes continue to be the leading crash type resulting in fatalities and serious injuries in Maine followed by Intersection crashes, but crashes involving vulnerable users (pedestrians, bicycles) continue to represent a disproportionate share of fatalities and serious injuries when compared to total crashes in which they are involved. Other crash types not specifically selected as focus areas are often the result of driver behavior.

Maine’s 2022 SHSP Focus Areas

• Lane Departure	• Motorcycles
• Illegal/Unsafe Speed	• Winter Crashes
• Occupant Protection	• Intersection Crashes
• Young Drivers (16-24 Years Old)	• Large Trucks and Commercial Buses
• Impaired Driving	• Pedestrians/Bicycles
• Distracted Driving	• Large Animals
• Mature Drivers (65+ Years Old)	• Work Zones/Traffic Incident Management
	• Emergency Medical Services

It should be noted that an individual crash, fatality, or serious injury can fall into more than one focus area within this document.

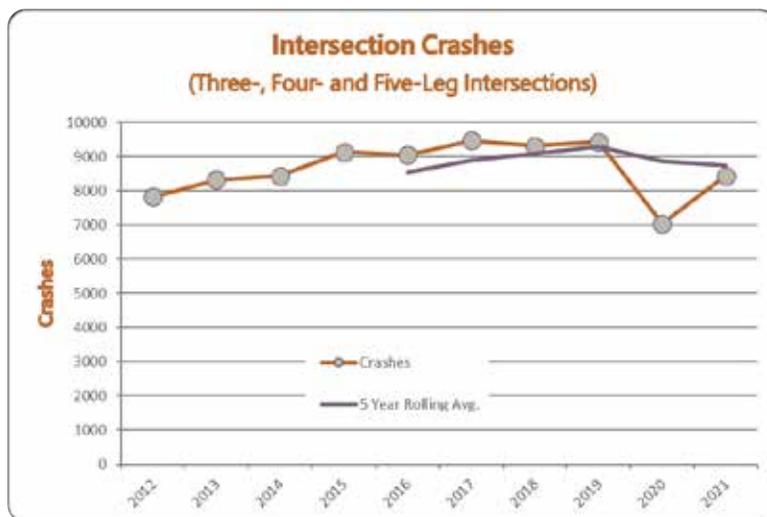
An example:

A 68-year-old impaired driver is killed when their vehicle leaves the roadway and strikes a tree. They were driving alone. The responding law enforcement officer determines the driver was not wearing their seatbelt and exceeding the posted speed limit at the time of the crash.

In this scenario, the single crash and resulting fatality would be represented in the Lane Departure, Illegal/Unsafe Speed, Impaired Driving, Occupant Protection, and Mature Drivers focus area charts and statistics.

2022 SHSP Focus Area Charts

In this SHSP update, we are including two main charts for each focus area:

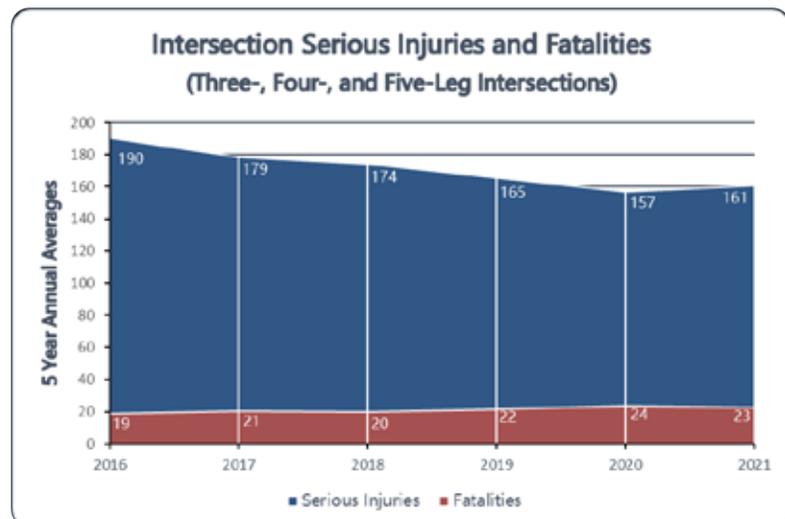


A **crash-based** chart showing the annual number of crashes for the focus area along with a 5-year rolling average (also called a 5 Year Annual Average – 5YAA.)

The purpose of these charts is to show the frequency of these crashes over time.

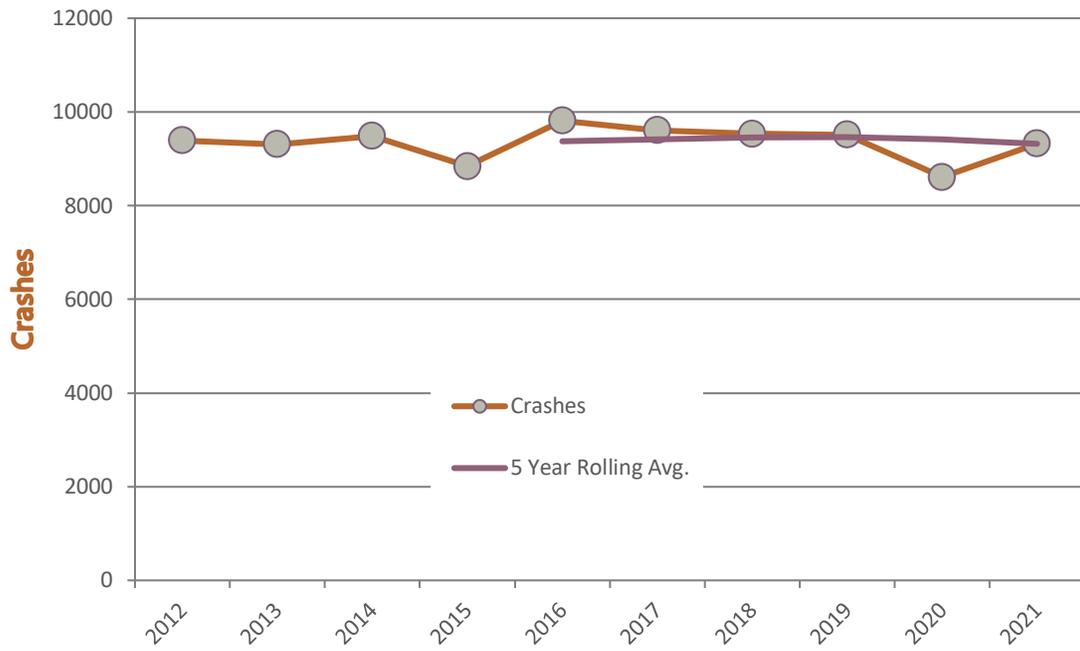
A **person-based** chart showing the 5-year annual averages for fatalities and serious injuries for the focus area.

The purpose of these charts is to show the severity of these crashes over time.

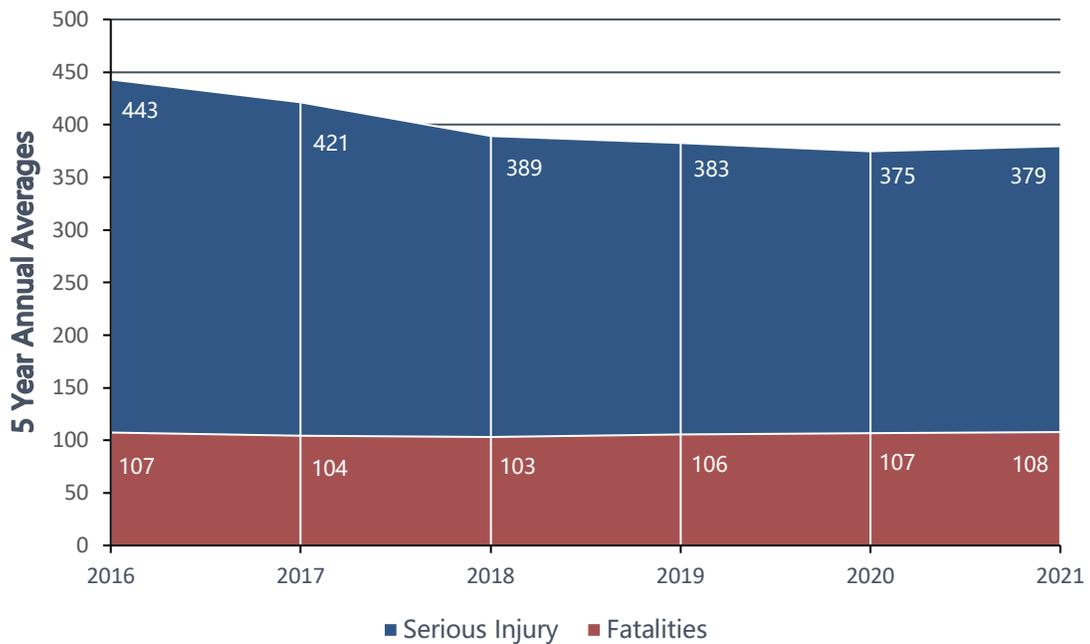


Crash and injury data can vary significantly on a year-to-year basis. 5-year annual averages are used to mitigate this variation and help to discern trends in the data.

Lane Departure Crashes



Lane Departure Fatalities and Serious Injuries



Lane Departure

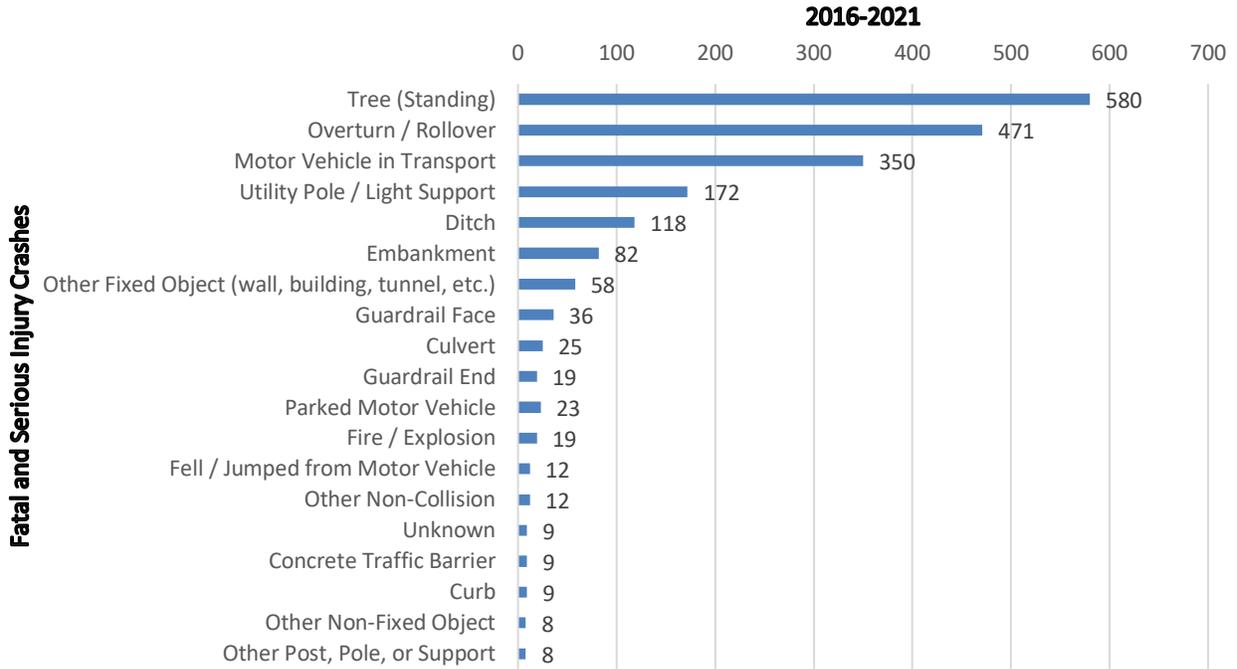
A lane departure crash is the outcome of what happens when a vehicle leaves its designated lane and is involved in either a head-on or went off road crash. The results are devastating whether the errant vehicle collides head-on with an oncoming vehicle or slams into a fixed object, rolls over, or has some other severe impact.

Lane departure is Maine's most frequent fatal crash type.

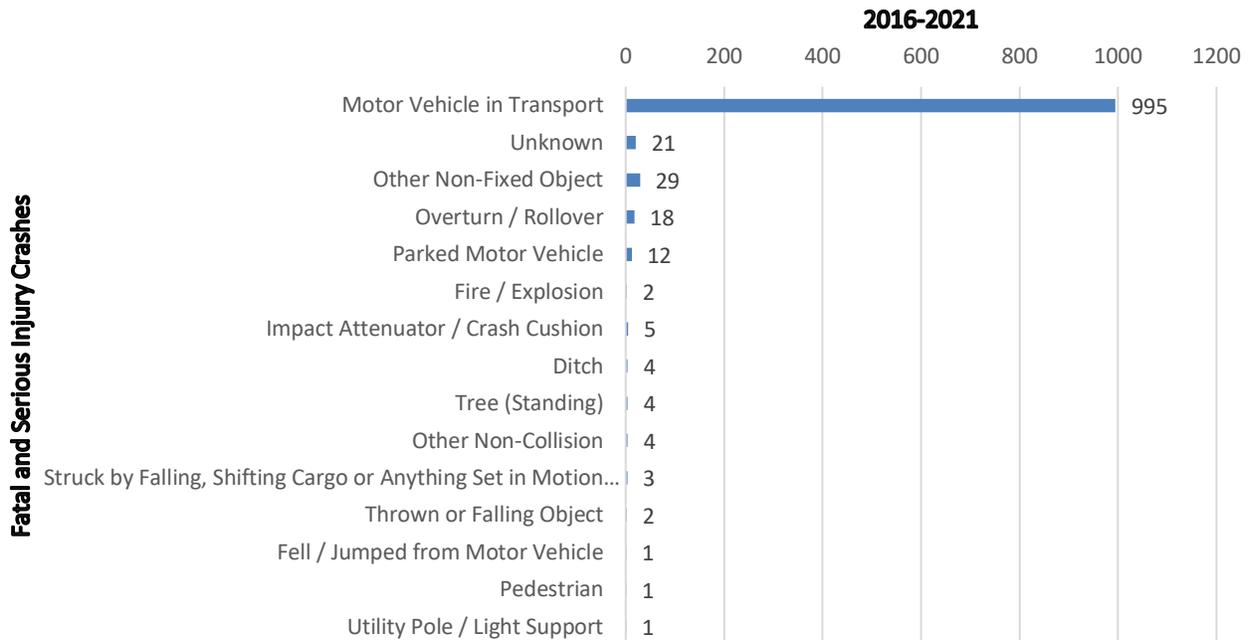
- Lane departure (LD) crashes account for about 30% of Maine's crash total (5-year annual average)
- An average of 390 serious injuries and 106 fatalities resulted from LD crashes. These numbers representing about 60% of Maine's total serious injuries and about 70% of Maine's total fatalities
- On Maine's highest priority corridors that have the highest traffic volumes (about 60% of annual VMT) and posted speed limits over 45 miles per hour, head-on collisions are the deadliest crash type with went off road a close 2nd. These two crash types make up just over 60% of the fatalities on these high-speed corridors
- LD crashes have high severity. For example, a fatality occurs in 5 out of 1,000 crashes on average for all crash types; for went-off-the-road the rate increases to 9 fatalities out of 1,000 crashes. For head-on, the rate is 38 fatalities in every 1,000 crashes
- 31% of LD fatalities were speed related (Drove Too Fast for Condition or Exceeded Posted Speed Limit)
- Most fatalities do NOT occur on major or interstate highways. 57% of LD fatalities occur on these non-major highway road classes: major collectors (28%), minor collectors (9%) and local roads (20%)



Went Off Road by Most Harmful Event



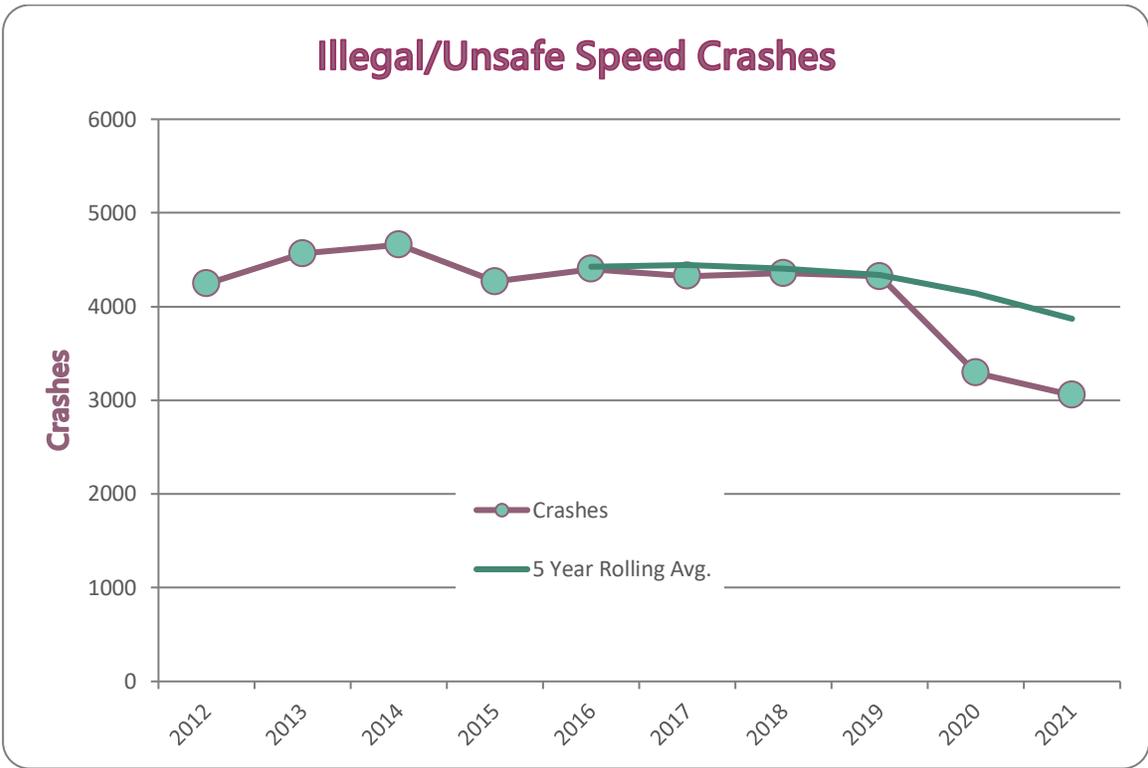
Head-On by Most Harmful Event



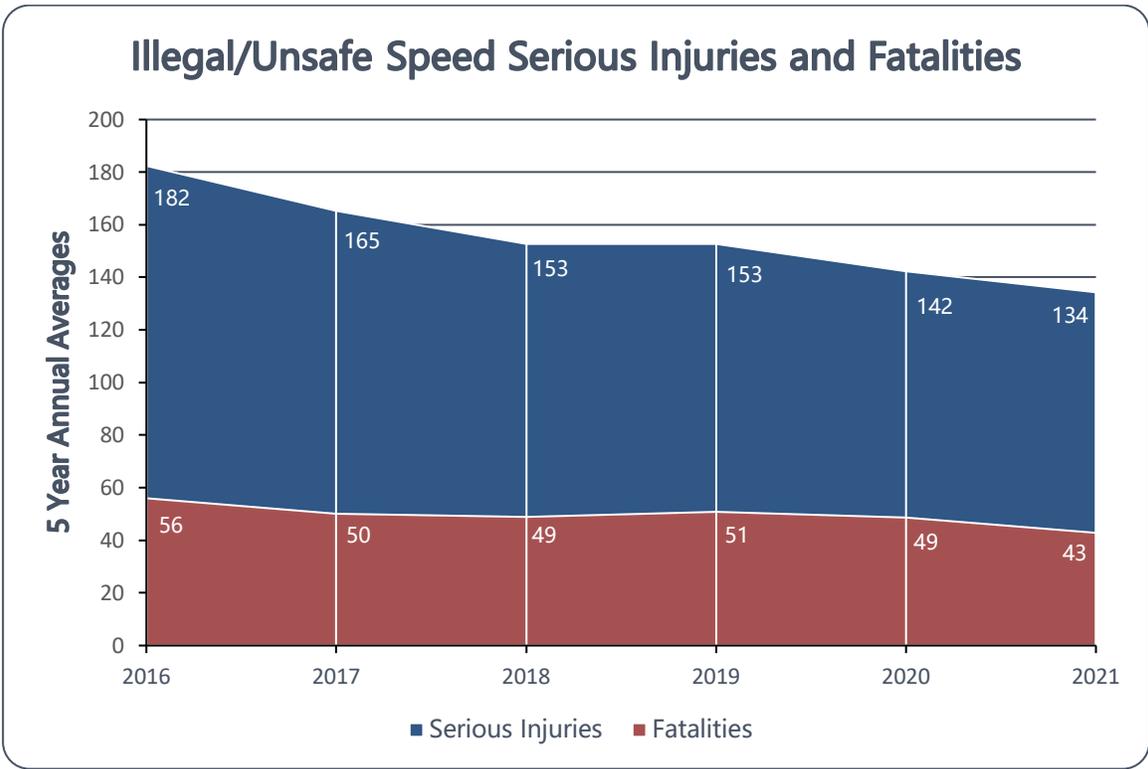
Lane Departure Strategies

ID	Strategy/Activity	Lead	Safe Systems
LD-1	Identify and evaluate key corridors that experience the highest incidence of lane departure crashes through network screening in accordance with the Highway Safety Manual	MaineDOT	roads
LD-2	Reduce interstate head-on crashes by continuing systemic installation of median cable guardrail (begun in 2009)	MaineDOT	roads
LD-3	Identify priority areas where edge line and center line rumble strips should be installed to reduce went-off-road and head-on crashes. Continue to identify additional corridors for treatment	MaineDOT	roads
LD-4	Enhance speed and distracted driving enforcement by targeting high incidence locations	MSP / County and Municipal Enforcement Agencies	speeds
LD-5	Elevate “safety” thinking into MaineDOT project planning procedures through the use of road safety audits and corridor analysis to help prioritize future safety needs	MaineDOT / MPOs / RPOs	roads
LD-6	Identify locations with high potential for wrong-way crashes, particularly interstate ramps, and mitigate this risk with appropriate countermeasures	MaineDOT / MSP	roads
LD-7	Evaluate high friction surface treatments	MaineDOT	roads
LD-8	Integrate lane departure safety evaluations into MaineDOT’s paving planning	MaineDOT	roads
LD-9	Use safety edge treatment on key corridors to minimize sudden drop-offs and vehicle transition issues from the shoulder to the travel lane	MaineDOT	roads
LD-10	Explore went-off-road crash countermeasures on curves	MaineDOT	roads
LD-11	Improve clear zones on corridors with high risk factors for went-off-roadway crashes or excessive shading during winter months	MaineDOT	roads
LD-12	Coordinate efforts of MaineDOT with local municipalities through continuing the Local Technical Assistance Program (LTAP) and other municipal outreach	MaineDOT / MPOs / RPOs	roads, users
LD-13	Continue to explore pavement markings and sign enhancement opportunities and measure their effectiveness	MaineDOT	roads
LD-14	Include lane departure messages in broader outreach and media efforts	MaineDOT / BHS	users
LD-15	Continue review of guardrail and end treatment safety performance. Update MaineDOT policies, qualified products list, and installations as needed	MaineDOT	roads

Illegal/Unsafe Speed Crashes



Illegal/Unsafe Speed Serious Injuries and Fatalities



Illegal/Unsafe Speed

This category includes crashes that result from speed in excess of posted speed limits or that occur when road or weather conditions dictate a lower, prudent speed. Speed is cited as a factor in an average of 4,400 crashes/year. Speed and speed-related are the leading causes of fatal crashes in Maine. Speed is of great concern because it also frequently leads to other driver errors and results in serious injury crashes. *With speed comes kinetic energy, which directly impacts the injury levels of crashes.* It is so important that “Safe Speeds” has been designated as one of the five elements of the Safe System Approach to highway safety.

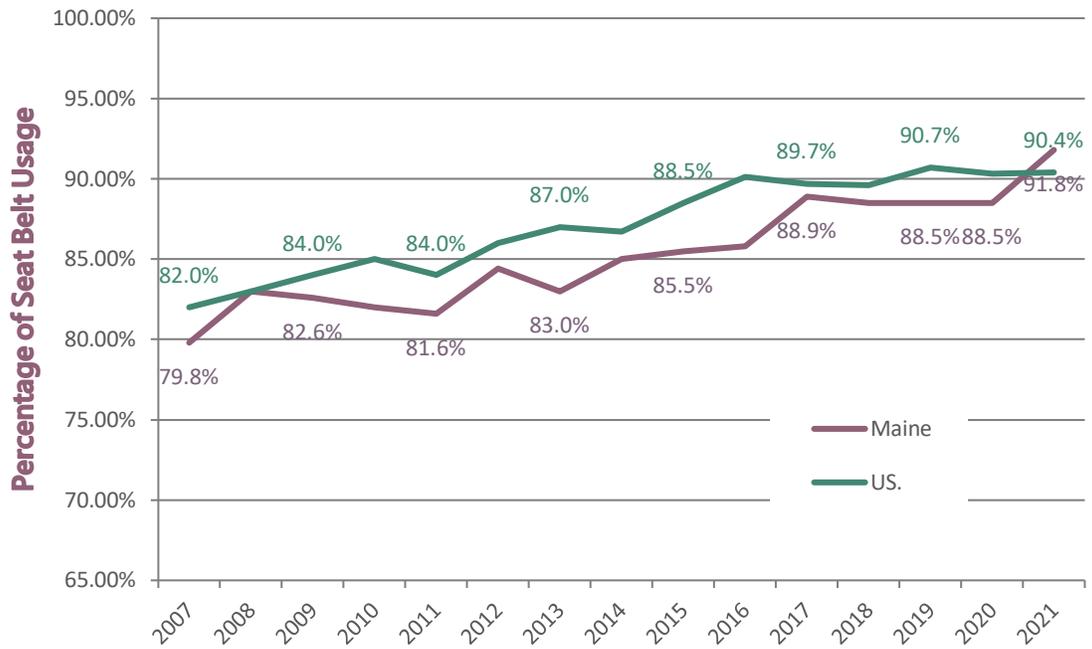
Speed limits are designed for drivers to safely maneuver the roads and provide sufficient time to stop if there is an unexpected event. Furthermore, the dangers associated with speeding are compounded by winter driving conditions which often last from November until March or April. Failure to adjust speed for weather-related road conditions contributes to a significant number of crashes.

Speed-related crashes account for 14% of total crashes, 27% of all serious injuries and 34% of total fatalities. Adjusting speed for weather-related road conditions is a problem. Unsafe speed was noted annually in 3,000 crashes on snowy, slushy, or icy road surfaces, and another 500 occurred on wet road surfaces.

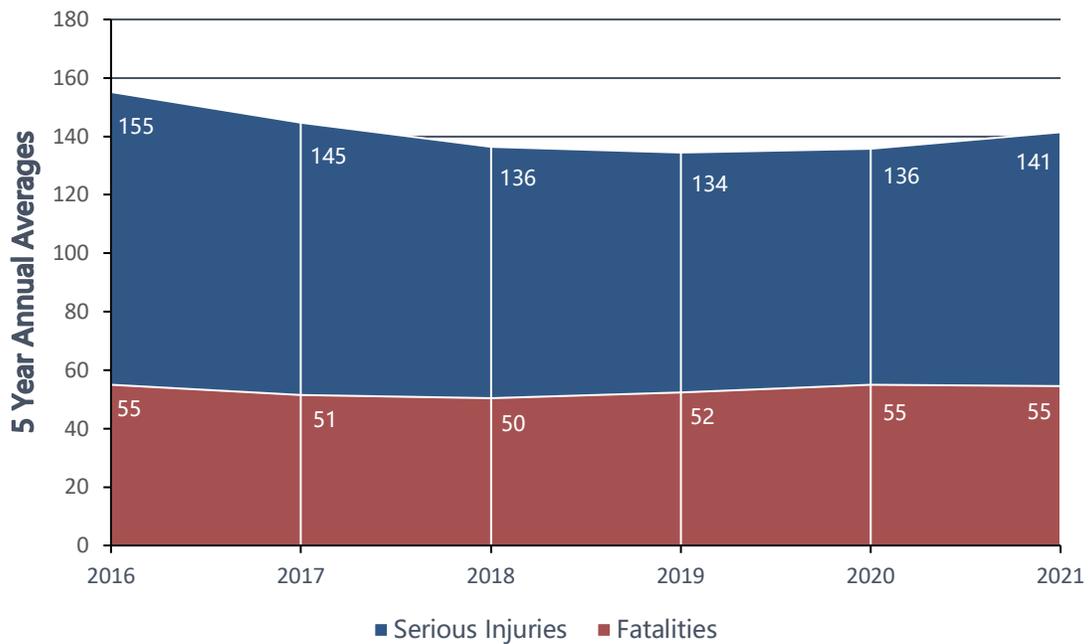
Illegal/Unsafe Speed Strategies

ID	Strategy/Activity	Lead	Safe Systems
SP-1	Enhance speed enforcement efforts by targeting high incident locations	MSP / County, Municipal law Enforcement Agencies / BHS	speeds
SP-2	Conduct a data-driven speed enforcement campaign	BHS	speeds, users
SP-3	Continue to produce public service announcements	BHS	users
SP-4	Utilize portable dynamic speed feedback trailers and portable post-mounted speed feedback signs	MaineDOT / Municipalities	speeds, users
SP-5	Identify opportunities where enhanced advance warning and flagger paddle signing can be used	MaineDOT	speeds, users
SP-6	Leverage changeable message signs to reinforce focused speed enforcement campaigns	MaineDOT / BHS	users
SP-7	Support municipal and county speed enforcement by seeking grant funding	BHS	speeds
SP-8	Provide LED speed limit signs where there are reductions in posted speed limits on limited highways	MaineDOT	roads, speeds
SP-9	Include traffic-calming features in road design at select locations such as village gateway treatments on approaches to village areas on high-speed rural highways	MaineDOT	roads, speeds
SP-10	Utilize portable rumble strips at select high speed/ high volume work zone locations	MaineDOT / MTA	roads, speeds
SP-11	Provide technical assistance and guidance for local traffic-calming initiatives	MaineDOT / Municipalities	roads, speeds

Seat Belt Usage - Maine and United States



Unbelted Serious Injuries and Fatalities



Occupant Protection

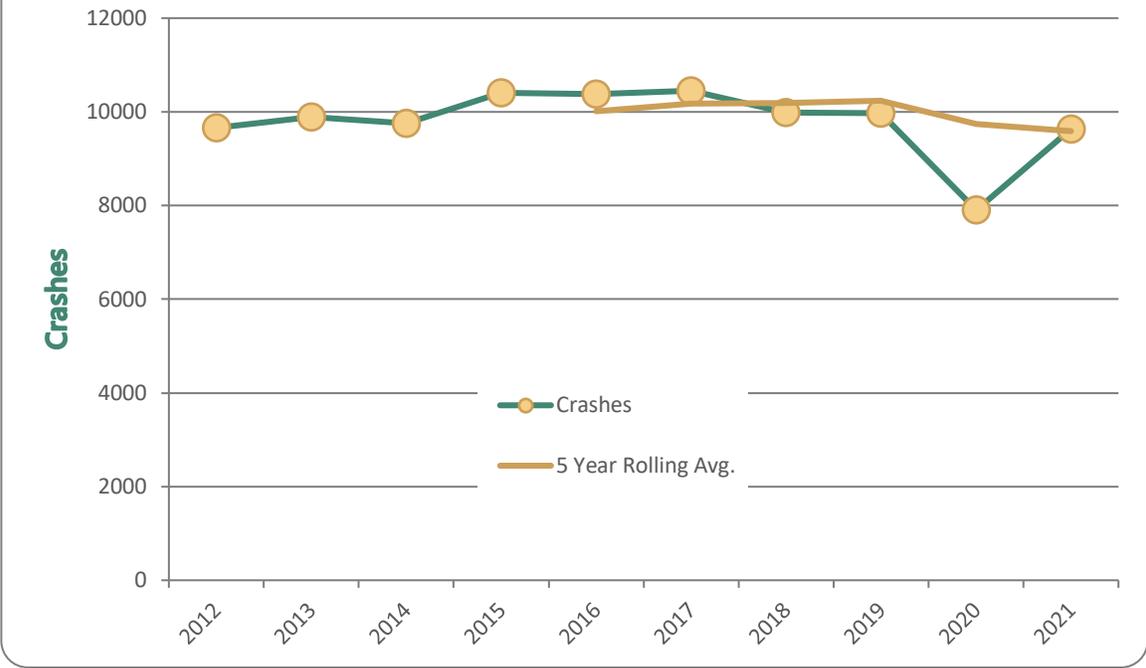
Maine’s primary seat belt law has gained more compliance, but many unbelted fatalities still occur. Buckling up helps keep drivers safe and secure inside their vehicle, whereas not buckling up can result in being totally ejected from the vehicle in a crash. Efforts to increase Maine’s seat belt use rates include a mandatory seat belt law for adults that went into effect in 1996 and a primary enforcement law that went into effect in 2007. In 2021, Maine’s belt usage rate was higher than the national average for the first time. In 2022, Maine’s seat belt usage rate has increased to 93.4%. This rate is higher than the national use rate of 90.4% in 2021.

Not using seat belts does impact the fatality results in some of the other crash topic sections. Seat belts are the best defense against impaired, aggressive, and distracted drivers. In 2020, there were 60 unbelted fatalities in passenger vehicles. This is 50% of the 120 motor vehicle crash passenger fatalities.

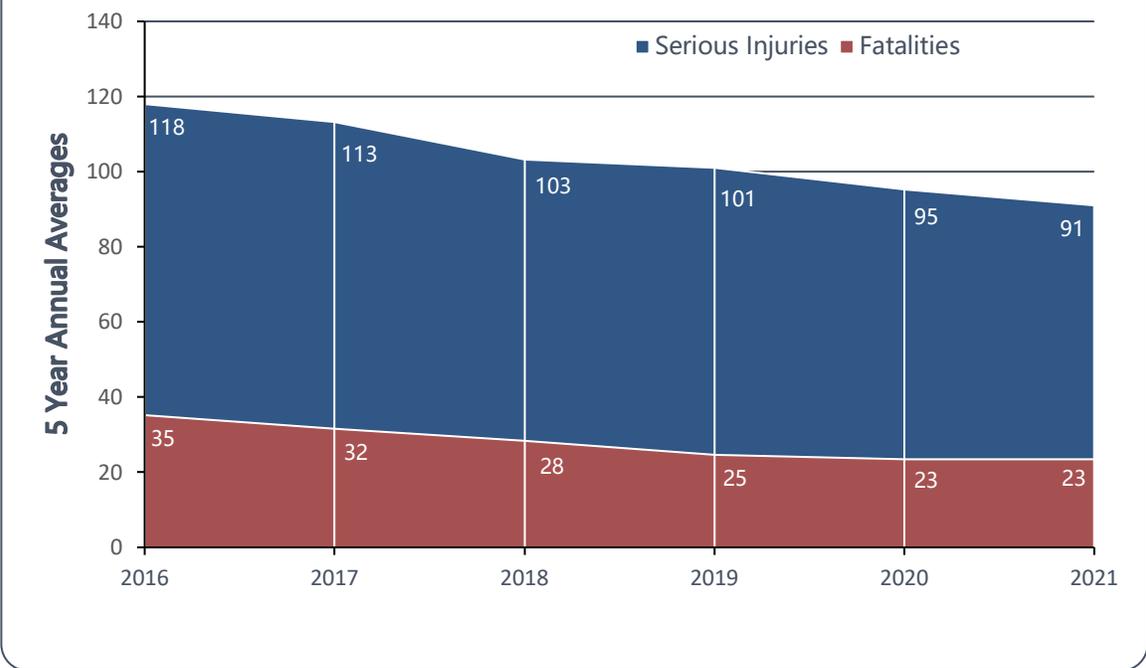
Occupant Protection Strategies

ID	Strategy/Activity	Lead	Safe Systems
OP-1	Participate in the “Click It or Ticket” high visibility enforcement campaigns	BHS / Law Enforcement Agencies	users
OP-2	The Maine State Police TOPAZ Team will strive to increase seat belt compliance and decrease unrestrained fatalities as staffing permits	BHS / MSP	users
OP-3	Conduct Child Passenger Safety Technician and Instructor Training	BHS	users, vehicles
OP-4	Conduct Child Passenger Safety Basic Awareness Training	BHS	users
OP-5	Conduct periodic observational seat belt survey and child occupant seat belt survey	BHS	users
OP-6	Utilize changeable message signs to reinforce “Buckle Up - No Excuses” and other focused safety belt enforcement campaigns	MaineDOT / BHS	users
OP-7	Utilize the seat belt convincer unit to educate young vehicle occupants on the importance of seat belt use	BHS	users
OP-8	Conduct Law Enforcement Child Passenger Safety Basic Awareness Course at MCJA	BHS / MCJA	users

Younger Driver Crashes (Ages 16-24)



Young Driver Serious Injuries and Fatalities (16-24)



Younger Drivers

Younger drivers are defined here as those between the ages of 16 and 24. The youngest of those drivers, aged 16 to 18, have safety vulnerabilities due to driving inexperience and other factors. The next age tier of young drivers, while slightly more experienced, may also be subject to risk taking, and at age 21, can legally consume alcohol.

From Memorial Day, May 30th and running straight through Labor Day, September 5th is known as the “100 Deadliest Days of Summer.” It is the time of year when we see the most activity on our roads and highways. School is out, kids are working summer jobs, people are traveling to vacation destinations, and enjoying all that Maine has to offer in the summer. Between 2019 – 2021 there were a total of 173 fatalities, and 16 of them were younger drivers.

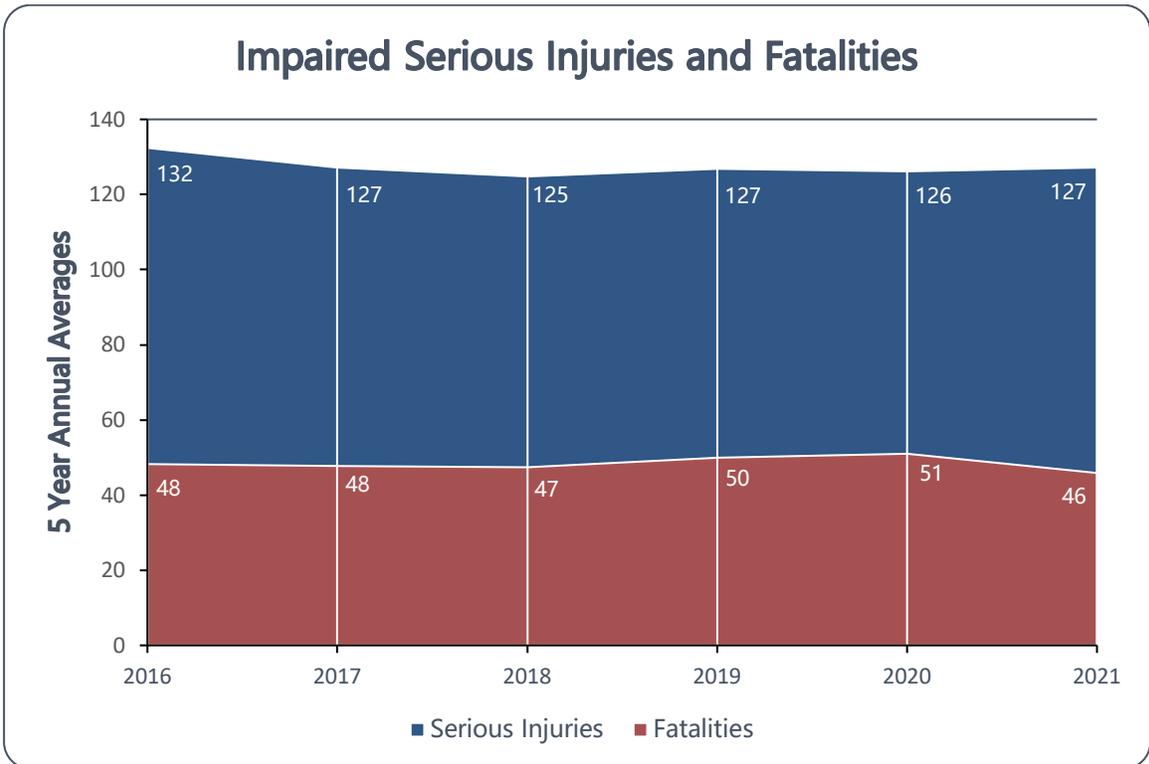
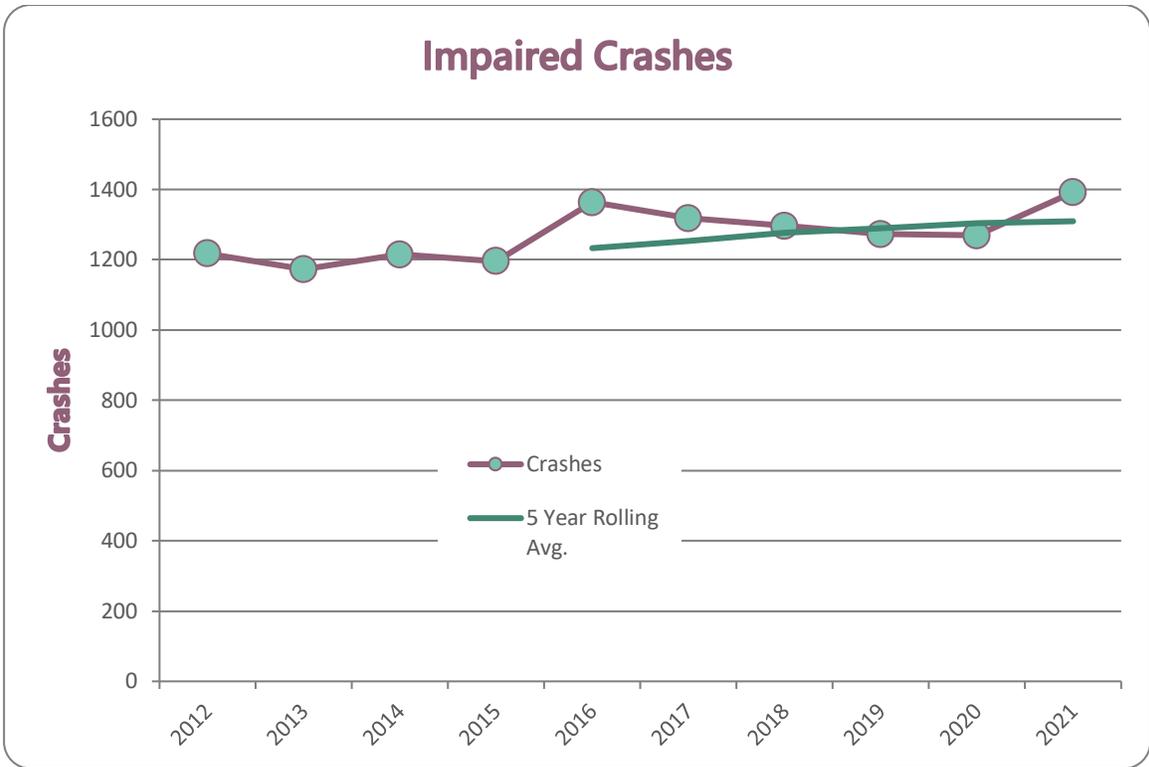
From the 2019 Youth Risk Behavior Survey, here are some teen driver safety findings:

- Nationally, 6.5% of students rarely or never wore a seat belt when riding in a car driven by someone else. Maine had a 4.6% rate
- During the 30 days before the survey, in the US 39% texted or e-mailed while driving a car or other vehicle
- During the 30 days before the survey, 4.1% of students had ridden one or more times in a car driven by someone who had been drinking alcohol in Maine

According to data from the Maine Bureau of Highway Safety, the most fatalities among teens occurred between 2020 and 2021 within the last five years. 51% of the 92 fatalities that have occurred within this time period were unbelted, 58% were during the nighttime hours, and 27% were impaired. The good news is that between 2016 and 2020 young drivers, only made up 6.5% of the total fatal crashes.

Younger Driver Strategies

ID	Strategy/Activity	Lead	Safe Systems
YD-1	Seek out new methods to increase the safety of teen drivers and their teenage passengers such as Graduated Driver Licensing (GDL)	BHS / BMV	users
YD-2	Integrate a diversity of partners and stakeholders to participate in the Young Driver Safety Committee (YDSC) activities	BHS / BMV	users
YD-3	Increase parental involvement in developing a safe teen driver program. Provide parent-focused education regarding teen driver issues	BHS / BMV	users
YD-4	Develop an interactive teen driver awareness outreach program	BHS	users
YD-5	Support driver education with community events to engage young drivers and their parents on how to keep young drivers safe	AAA / BMV / BHS	users
YD-6	Support driver educators by providing instructor training, professional development opportunities, and driver education summits	AAA / BMV / BHS	users
YD-7	Develop a younger driver education video presentation to ensure consistent and accurate education for young drivers statewide	BHS / MSP / BMV / AAA	users



Impaired Driving

Maine’s alcohol-related fatalities were 60% of the total fatalities during the mid-1970s to 1980. This improved to a level of around 20% in 2002/2003. Since then, the percent of alcohol-related fatalities rose to about 28%.

Maine’s alcohol-related fatality rate is equal to the Fatality Analysis Reporting Systems (FARS) national rate of 28% as reported in 2015. This strategic focus area also includes attention to drug-related issues, which will include marijuana with Maine’s adult use cannabis legalization in 2017. Presence of other drugs in drivers obviously presents safety concerns as well.

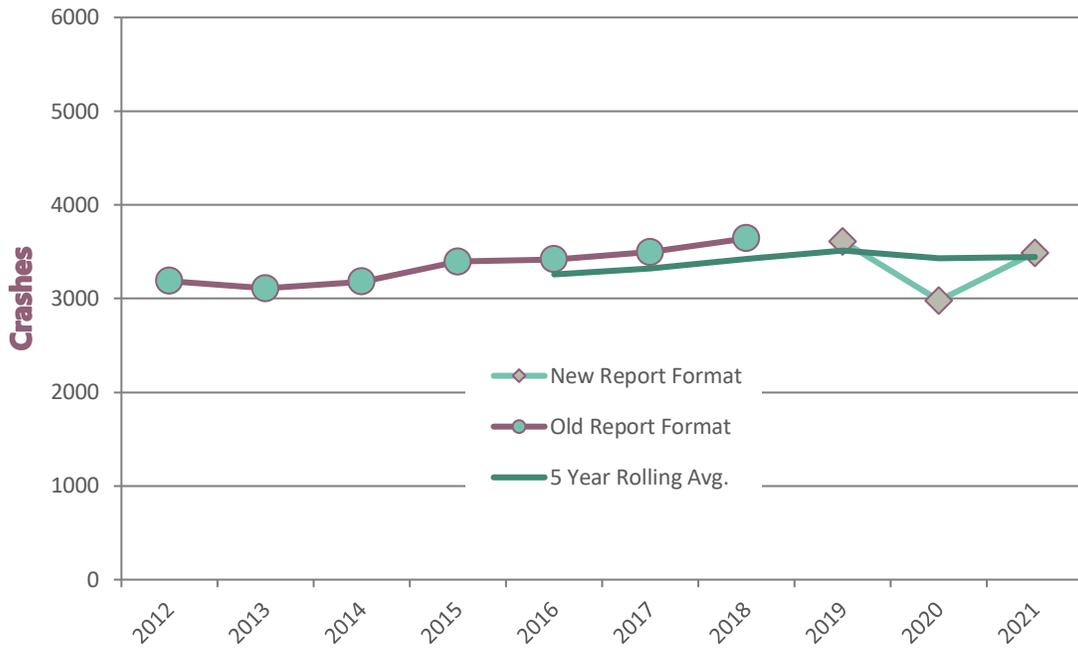
Impaired Driving Strategies

ID	Strategy/Activity	Lead	Safe Systems
ID-1	Enhance deterrence through High-Visibility Enforcement (Saturation Patrols) and Publicized Sobriety Checkpoints. These strategies will be utilized to increase public awareness of alcohol and/or drug-impaired driving.	MSP / MaineDOT / MTA / BHS / Municipal Law Enforcement Agencies	users
ID-2	Regional Impaired Driving Enforcement (RIDE) Teams focus their efforts during the time and days identified by data-analysis of alcohol and drug related crashes in the counties identified as high crash areas	BHS / Selected Sheriff's Offices	users
ID-3	State Police Impaired Driving Reduction Enforcement Team (SPIDRE) is used to increase publicized sobriety checkpoints and impaired driving high-visibility saturation patrols. They also focus on scheduled events where there is a significant potential for impaired drivers	BHS / MSP	users
ID-4	The Roadside Testing Vehicle (RTV) benefits and supports all Maine law enforcement agencies at their sobriety checkpoints, including those scheduled by RIDE Teams	BHS	users
ID-5	Impaired Driving Enforcement Campaigns: NHTSA's "Drive Sober or Get Pulled Over" and "Drive Sober, Maine" are designed to further address the impaired driving problem in Maine based on an analysis of crash and fatality data involving motorists impaired by drugs and/or alcohol	BHS	users
ID-6	Provide specialized law enforcement training in an effort to aid in detection, apprehension, and prosecution of	BHS	users

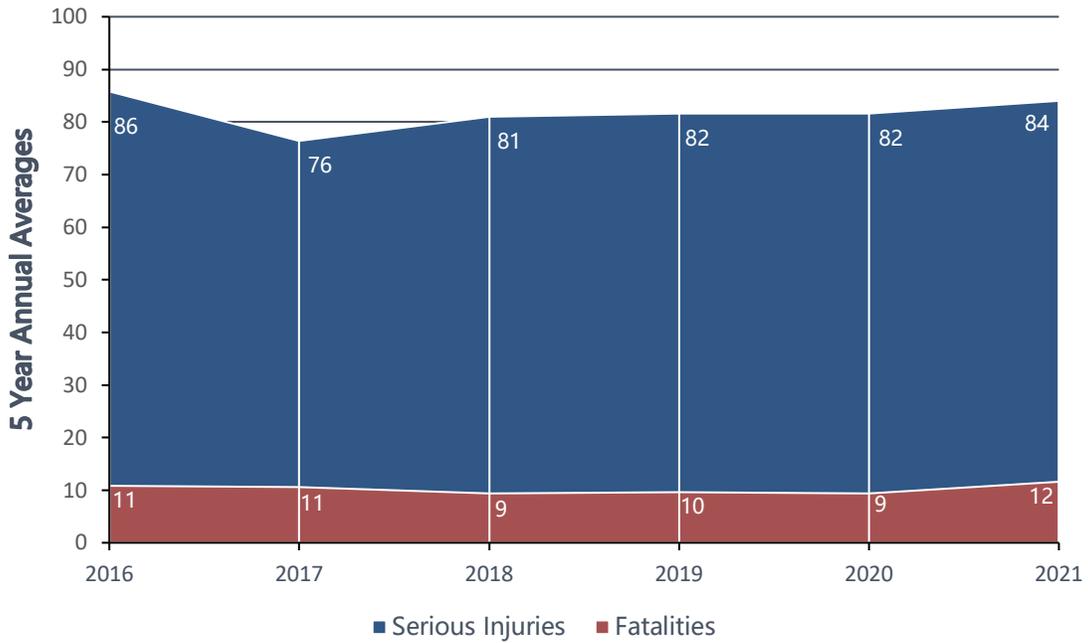


	motorists suspected of operating under the influence of alcohol and/or drugs		
ID-7	Conduct periodic Impaired Driving Summits in Maine with the goal/strategy being to generate a significant amount of earned media and the after-event surveys provide useful recommendations for ongoing annual summits in Maine	BHS / AAA	users
ID-8	DHHS/HETL Chemists provide blood alcohol & drug testing, and they continue developing optimized testing methods for the analytical blood and urine drug testing programs	BHS	users
ID-9	Continue law enforcement training in Advanced Roadside Impaired Driving Enforcement (ARIDE). The ARIDE program is offered to experienced patrol officers who desire better awareness of OUI drug cases	MCJA / BHS	users
ID-10	Traffic Safety Resource Prosecutors (TSRPs) provide training, education, and technical support to traffic crimes prosecutors and law enforcement personnel throughout Maine. Traffic crimes and safety issues do include alcohol and/or drug impaired driving highway safety issues	BHS	users
ID-11	Forensic Phlebotomists (Law Enforcement Officers only) are specialized officers that assist in the efforts of gathering crucial evidence in impaired driving cases. Law enforcement agencies often have trouble obtaining qualified personnel to draw blood within a time frame that is required for effective OUI prosecution	BHS / Selected Police and Sheriff Agencies	users
ID-12	Continue Maine's Impaired Driving Task Force activities	BHS	users

Distracted Driving Crashes



Distracted Driving Serious Injuries and Fatalities



Distracted Driving

While vehicles and highways have never been safer, crashes and fatalities continue to climb.

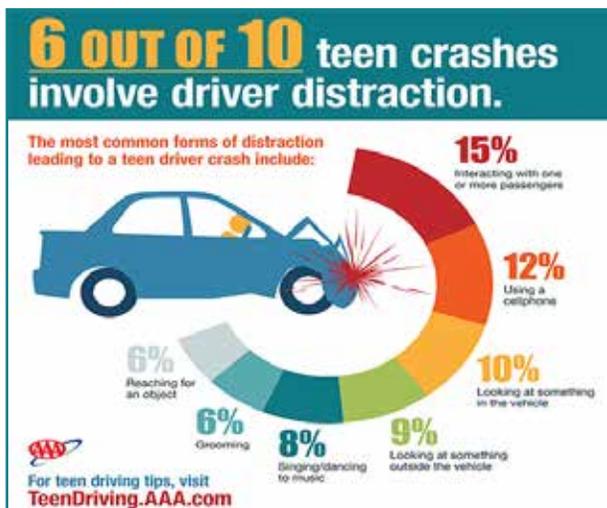
Research released from the AAA Foundation for Traffic Safety finds that even though 96 percent of drivers say texting/emailing while driving is a serious or very serious threat to their safety, 39 percent admit to having read a text or email while driving in the past month and 29 percent admit to typing one.

According to NHTSA, one of every ten fatal crashes in the U.S. involves distraction. NHTSA reported that in 2020 there were 3,142 deaths.

3,142 LIVES LOST IN CRASHES INVOLVING DISTRACTED DRIVERS IN 2020 — THAT'S 3,142 TOO MANY
8 % FATAL CRASHES IN 2020 THAT INVOLVED DISTRACTED DRIVERS
29,000 + APPROXIMATE NUMBER OF PEOPLE WHO DIED IN CRASHES INVOLVING DISTRACTED DRIVERS FROM 2012-2020

Source: NHTSA

The data is an increase from the 2814 reported deaths in 2018. NHTSA's research further found that distracted driving, which included the use of wireless devices such as cell phones, contributes to between 4,000 and 8,000 crashes every day in the United States. In a year, they contribute to as many as one-half of the 6 million U.S. crashes reported annually. Distractions take a motorist's attention off driving, which can make a driver miss critical events, objects, and cues or abandon control of a vehicle, all potentially leading to a crash. Distracted drivers put not only themselves at risk, but everyone else using the road.



YOUNG DRIVERS ARE PARTICULARLY SUSCEPTIBLE TO ENGAGING IN DISTRACTED BEHAVIORS. Due to their inexperience, teen drivers are at a higher risk of crashes. According to the AAA Foundation Traffic Safety Culture Index, about 35 percent of teen drivers aged 16-18 admitted to having engaged texting while driving.

Traffic crashes are the leading cause of death for U.S. teens ages 16-19. Six teens are killed each day in crashes that are entirely preventable. Per miles driven, teen drivers are nearly three times more likely than drivers aged 20 and older to be killed in a crash. With evolving vehicle technology and "hands free" laws, it is important to

recognize that distractions are real and safety misconceptions are plentiful. The AAA Foundation for Traffic Safety has led efforts to better understand "cognitive driver distractions", showing that dangerous mental distractions exist even when drivers keep their hands on the wheel and the eyes on the road. Most recently the AAA Foundation found that unsafe mental distractions from technology use while driving, such as sending a phone or voice command, can persist up to 27 seconds after the actual use of the device has ended.

MENTAL DISTRACTION –WHAT WE KNOW.

Mental distractions can dangerously affect driver behind the wheel. Just because a driver's eyes are on the road and hands are on the wheel does not mean they are safe. Hand-free is not risk free. A joint study from the AAA Foundation for Traffic Safety and University of Utah confirms that voice-activated technologies can cause

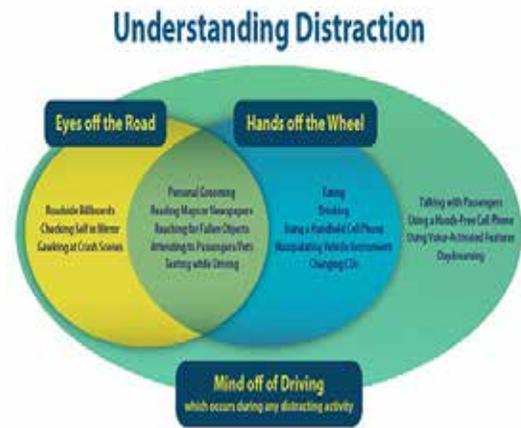
significant distractions and impair driving. After testing the in-vehicle information systems of 10 cars and the voice assistants of 3 smartphones, researchers found that all of them were cognitively taxing enough to be potentially dangerous—even up to 27 seconds after drivers finished using them.

MENTAL DISTRACTION – WHAT IT MEANS.

Attention is key to safe driving, yet many technologies can cause drivers to lose focus of the road ahead. Hands-free and voice-command features, increasingly common in new vehicles, may create mental distractions that unintentionally provide motorists with a false sense of security about their safety behind the wheel. Not all technology is created equal, and some vehicles infotainment and smartphone systems can be frustrating and misinterpret your voice command creating another layer of confusion.

DISTRACTION – WHAT CAN BE DONE?

Maine is dedicated to promoting road safety and reducing driver distraction through public education, enhancing laws and collaboration with law enforcement and highway engineering. Well-established safety research and decades of experience with other traffic safety issues suggest that changing dangerous behavior involves a variety of approaches, including well-written laws with substantial penalties for violations, highly visible enforcement, and public education.



Maine’s crash reporting system went through a significant update in 2011, including how distracted driving crash data is captured. In the pre-2011 crash report, there was a contributing factor, “drivers distracted by” section that indicates very specific distractions such as “electronic communications devices” (cell phone, pager, etc.). A driver would usually need to self-report the distracted activity, or a credible witness would need to report it. The general intention aspect was no longer captured, so there is a significant drop in what is reported for distracted driving. The reporting change was instituted to better categorize the types of distractions that lead to crashes.

In 2009, Maine enacted a distracted driver’s law that includes this definition:

“Operation of a motor vehicle by a person who, while operating the vehicle, is engaged in an activity: That is not necessary to the operation of the vehicle; and that actually impairs, or would reasonably be expected to impair, the ability of the person to safely operate the vehicle. “

In 2011, the following texting-specific Maine law was added:

“A person may not operate a motor vehicle while engaging in text messaging.”

In 2019, Maine enacted a hands-free law:

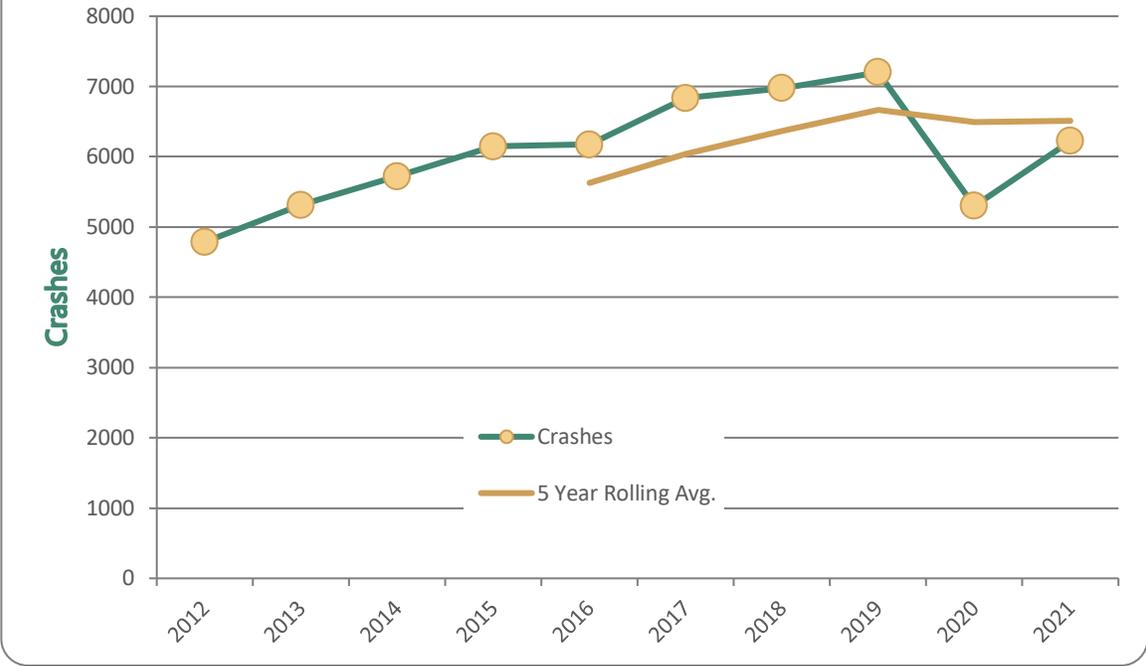
“ Prohibiting the operator of a motor vehicle from holding any electronic device not part of the operating equipment of the motor vehicle, unless specifically exempted.”

Distracted Driving Strategies

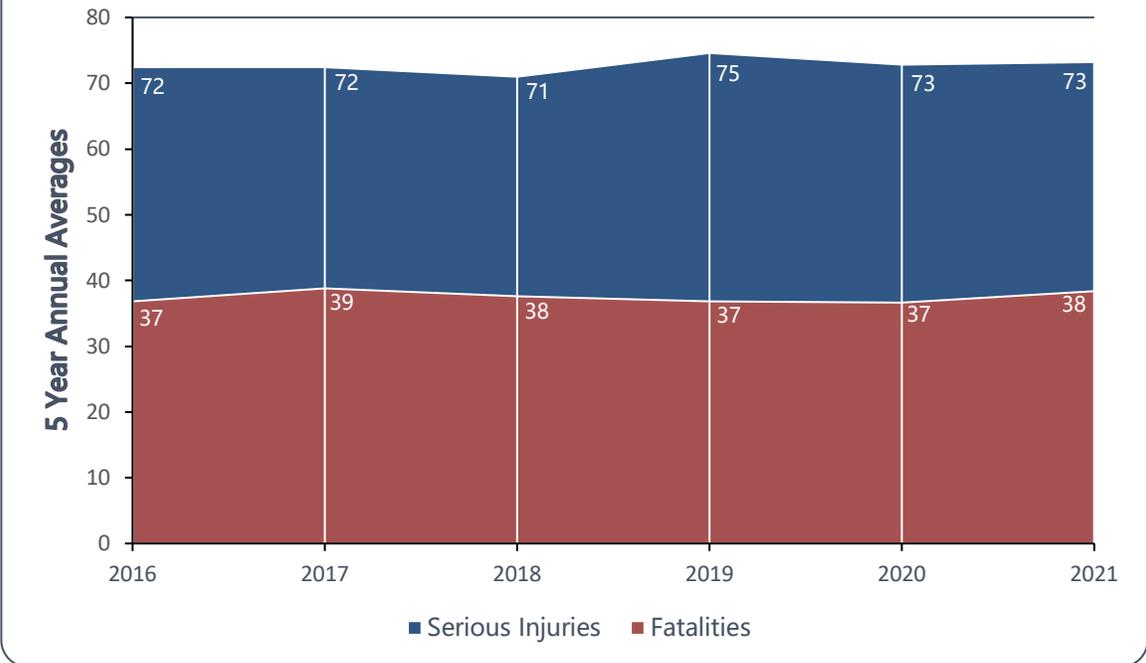
ID	Strategy/Activity	Lead	Safe Systems
DD-1	Increase public awareness of the dangers of distracted driving	BHS / AAA	users
DD-2	Provide simulated distracted driving education	BHS	users
DD-3	Conduct high visibility distracted driving enforcement	BHS / Law Enforcement Agencies	users
DD-4	Support the enforcement community in its efforts to curb distracted driving	BHS	users
DD-5	Continue Maine’s Distracted Driving Observational Survey(s)	BHS	users
DD-6	Identify and install Centerline Rumble Strips as a systemic safety countermeasure	MaineDOT	roads



Mature Driver Crashes (Ages 65+)



Mature Driver (65+) Serious Injuries and Fatalities



Mature Drivers (65+ Years Old)

Maine is the “oldest” state by median age (44.2) and the fourth oldest by percent of population over 65 (17.7%). The latter is expected to rise to 26.3% by 2030. A senior driver is defined as any driver over the age of 65. This group experiences more crashes per mile driven than any other age group except young drivers. Additionally, a crash involving a senior driver is 1.7 times more likely to lead to serious injury or death than those involving a driver between the age of 25 and 65. Many factors contribute to these outcomes including gradually diminishing physical, sensory, and cognitive capabilities, often exacerbated by medications and specific conditions; and increased physical frailty.

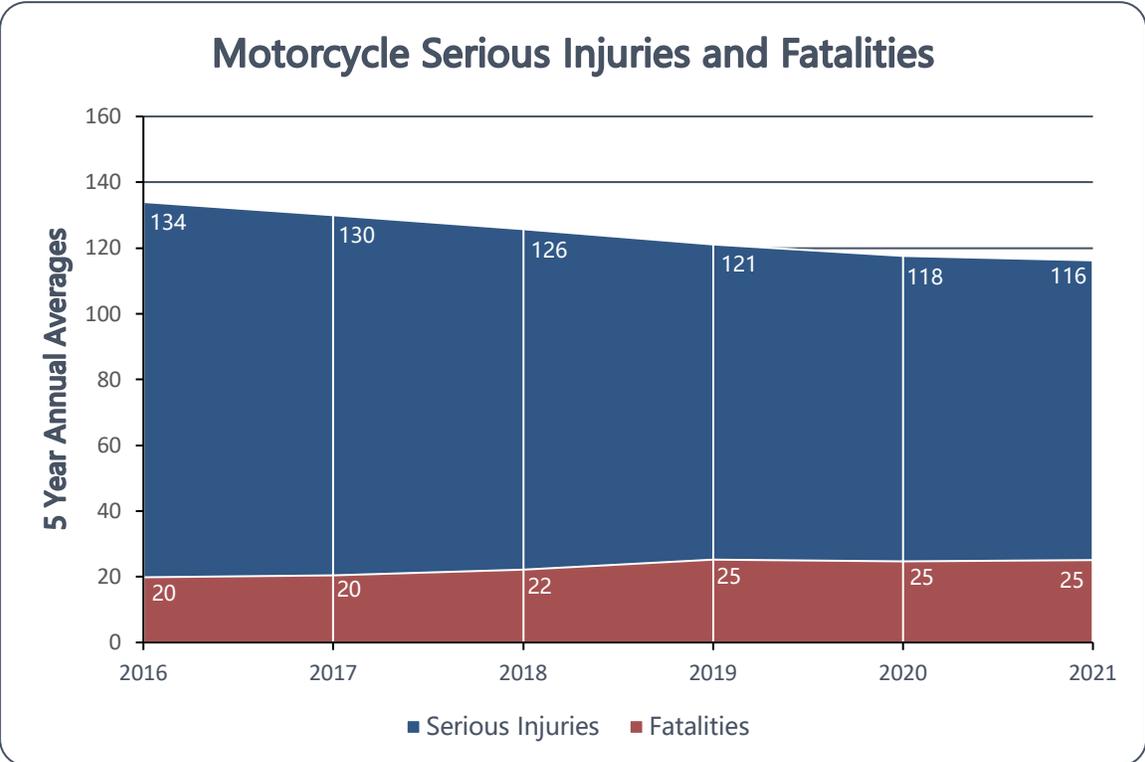
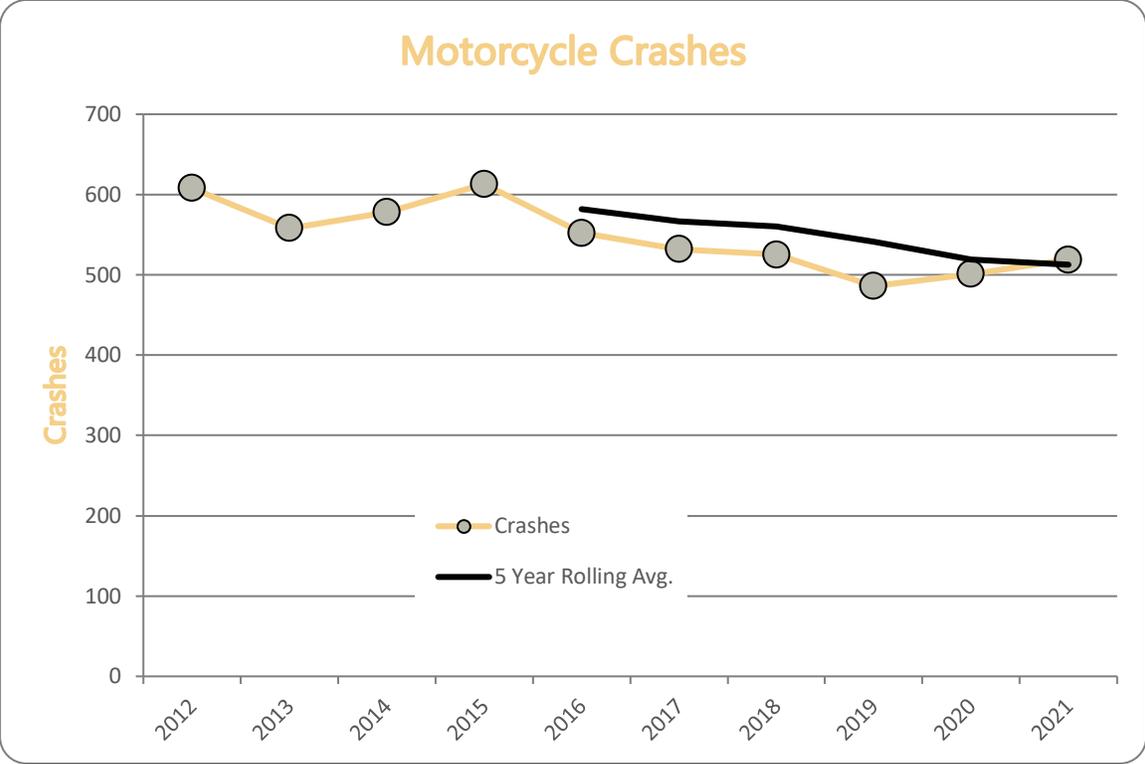
Mature drivers have been involved in an average of about 6100 crashes per year over the past decade. Leading crash characteristics are different than those for younger drivers. They include:

- Inattentiveness
- Failure to keep in proper lane
- Failure to yield the right of way
- Failure to obey traffic signs, traffic control devices, or safety zone laws
- Drowsy, sleepy, asleep, or fatigued

Mature Driver Strategies

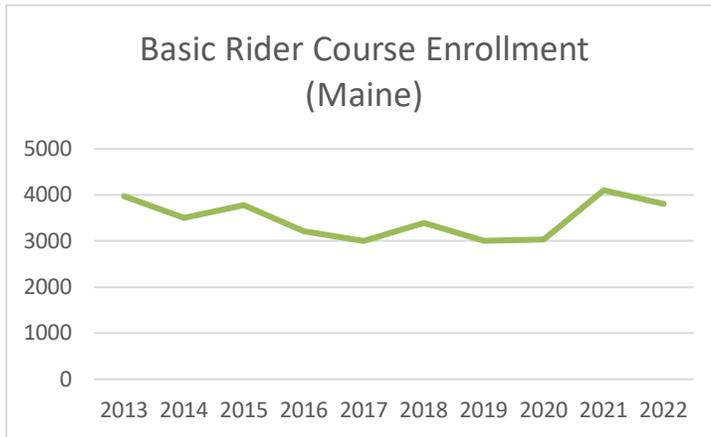
ID	Strategy/Activity	Lead	Safe Systems
MD-1	Provide BMV Medical Review Unit Staff with medical training/education to improve the review of medically referred drivers	MSS / BMV	users
MD-2	Identify opportunities for improving sign letter sizes and reflectivity	MaineDOT	roads
MD-3	Provide educational materials for physicians, nurses, care takers and other to distribute	BHS / BMV	users
MD-4	Create a program to help train Law Enforcement and health care providers on what to look for in Mature Drivers	BHS / BMV	users





Motorcycles

The state of Maine offers motorcyclists a wide variety of amazing venues to enjoy, and motorcycle use has been on the rise in recent years. Unlike vehicle operators, however, motorcyclists are more vulnerable to serious injury during crashes. Speed, alcohol, and lack of helmet use continue to be the top three contributors to serious injury and fatalities for motorcycle riders in Maine.



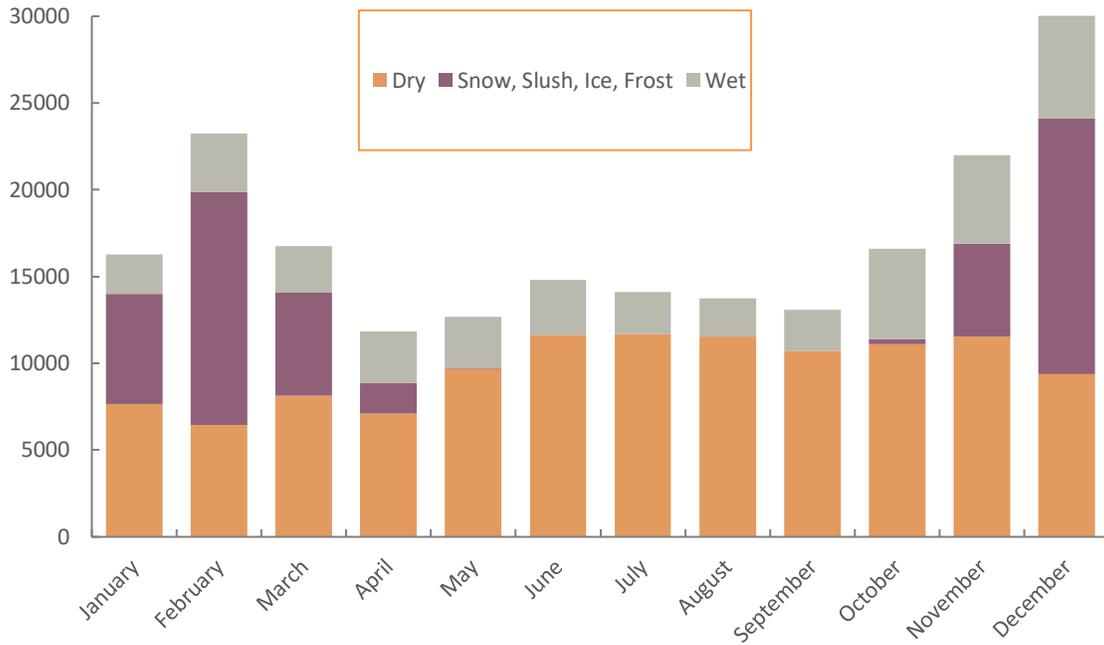
Maine established the requirement for motorcycle training in 1986, and enrollment in training has been steady since 2013. Despite this level of enrollment, 14 of the 30 motorcycle fatalities through November 1, 2022, involved motorcyclists who had not completed earned their motorcycle endorsement.

A significant percentage of motorcycle fatalities also involve crashes with other vehicles. Increased attempts to educate and train the driving public on road-sharing considerations are needed.

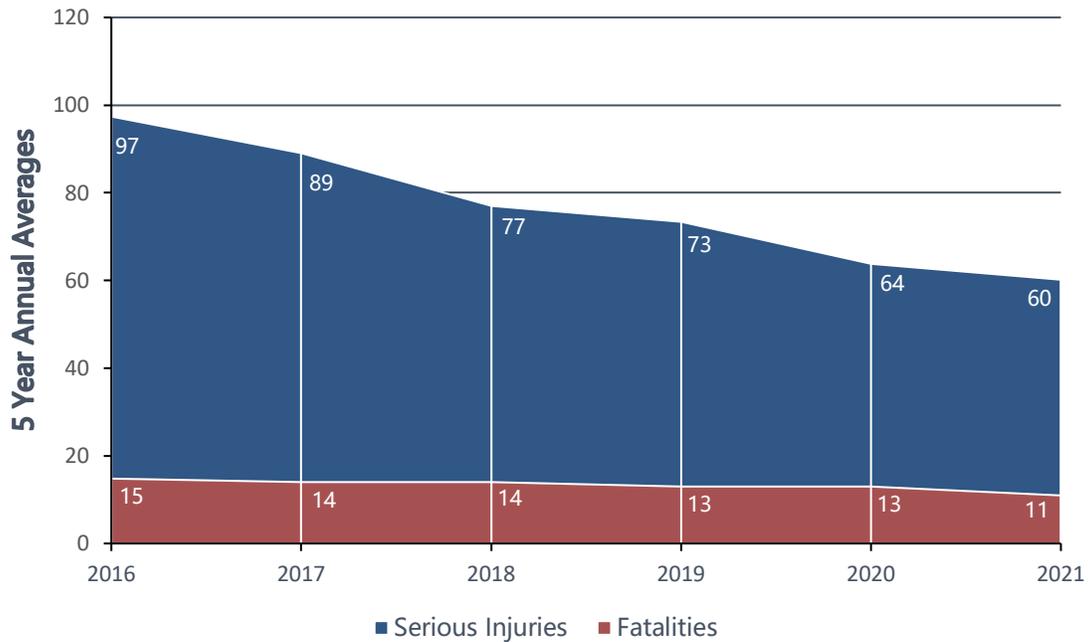
Motorcycle Strategies

ID	Strategy/Activity	Lead	Safe Systems
MC-1	Increase participation in the mandatory novice rider hands-on motorcycle education course	BMV	users
MC-2	Pro-actively engage motorcycle riding community to share safety trends	BMV	users
MC-3	Implement MSF Basic Rider Course version e1 x 11 as the state standard	BMV / BHS	users
MC-4	Increase sight distance at intersections to improve drivers' ability to see motorcycles	MaineDOT / Municipalities	roads
MC-5	Establish Motorcycle Safety Task Force	BHS / BMV	all
MC-6	Develop legislation to incentivize basic and advanced rider course participation	BMV	users
MC-7	Refresh NHTSA assessment and Implement NHTSA recommendations where feasible	BHS / BMV	all
MC-8	Develop legislation to revise penalties for riding a motorcycle without an endorsement	BMV	users
MC-9	Insert a robust module on vehicle / motorcycle interaction into "How to Drive" curriculum	BMV / AAA	users

Maine Crashes by Roadway Condition (2017-2021)



Winter Roads Serious Injuries and Fatalities



Winter Crashes

5,400 winter crashes account for nearly 20% of Maine’s annual crashes. The months of January and February have the greatest amount of snowfall. However, crash activity is highest in December as drivers adjust to wintry road surfaces, and the ice, snow, and slush conditions. Run-off-road and head-on collisions on wintry roads double in proportion to those on dry roads. This indicates the degree of vehicle control issues at that time. Not surprisingly, police crash reports cite driver “unsafe speed” three times as often when wintry road conditions exist.

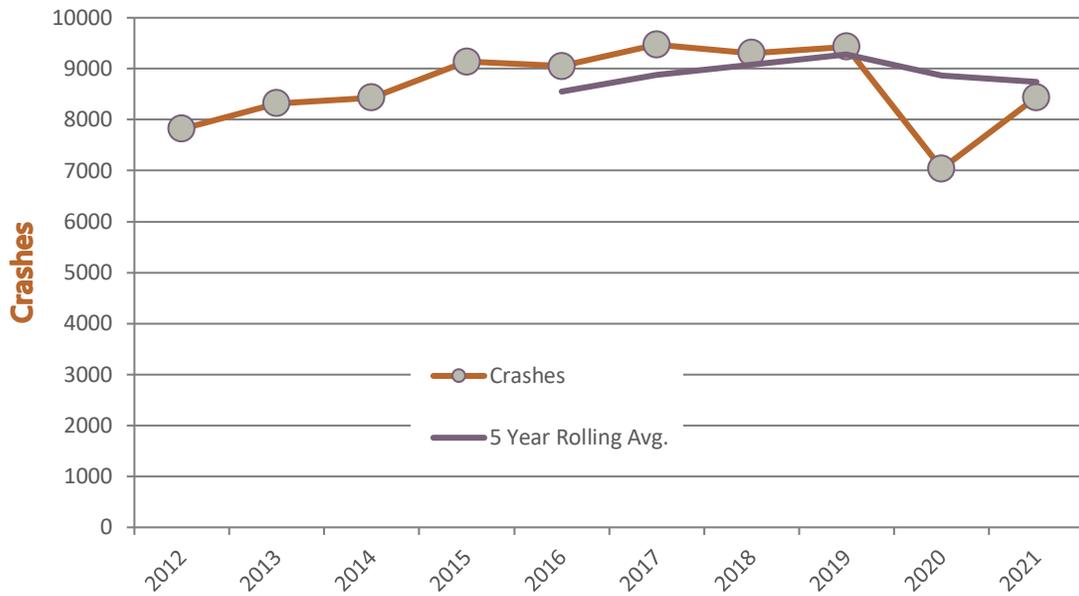
*A five-year annual average was selected in an attempt to compensate for the year-to-year variability of storm numbers, intensity, location, and timing. Long term trends are a better indicator for measuring success in this area.

Winter Driving Strategies

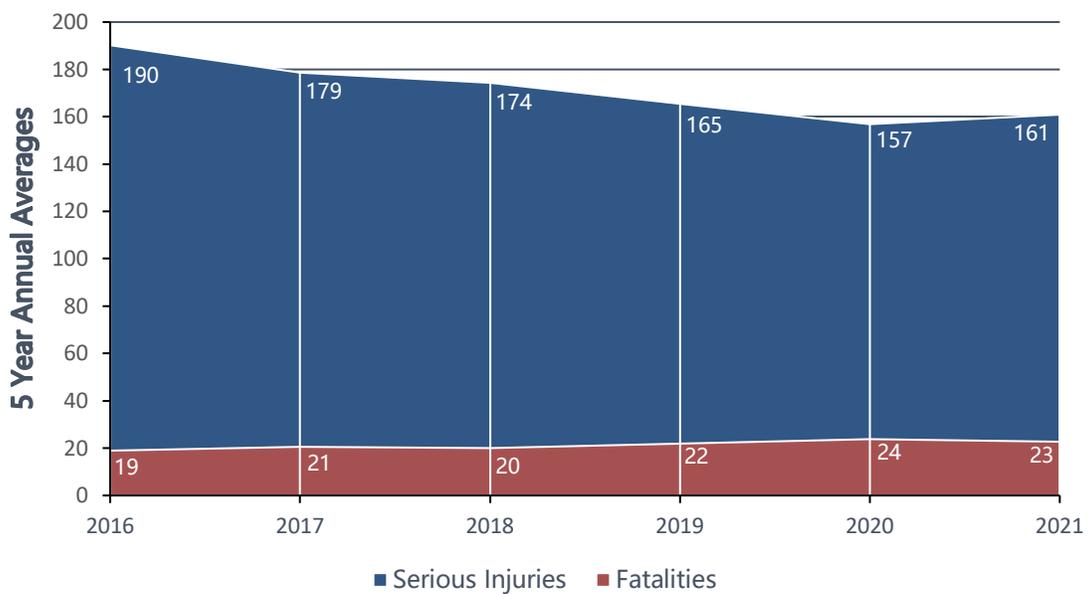
ID	Strategy/Activity	Lead	Safe Systems
WC-1	Enhance detection capabilities of roadway weather conditions	MaineDOT, MTA	roads
WC-2	Provide dynamic sign messaging at key interstate locations advising motorists of wintry, heavy rain or other significant weather conditions and reduced speed limits	MaineDOT, MTA	roads, speeds
WC-3	Wind, blowing snow onto roadways, can be hazardous (living snow fences, etc.)	MaineDOT, MTA	roads
WC-4	Increase public awareness of the hazards of winter driving, and educate drivers on appropriate driving techniques to use in these conditions	MaineDOT, MTA	users
WC-5	Promote Green Lights on winter maintenance vehicles	MaineDOT, MTA	vehicles
WC-6	Eliminate unnecessary Interstate crossovers with a history of plow truck crashes	MaineDOT, MTA	roads
WC-7	Reduce winter shadowing of road surfaces through selective clearing	MaineDOT, MTA	roads



Intersection Crashes (Three-, Four- and Five-Leg Intersections)



Intersection Serious Injuries and Fatalities (Three-, Four-, and Five-Leg Intersections)



Intersection Crashes

Intersections are a common crash location. Drivers need to be observant, make proper decisions and follow the rules of the road. Common crash types that occur annually at intersections include rear-end crashes (4,187) and intersection movements (3,454). About 90 of these crashes at intersections involve bicyclists and 110 involve pedestrians. An additional 220 crashes occur annually at Maine’s 32 roundabouts, with 4 more roundabouts currently in design. Drivers had the following contributing factors reported in the most recent five-year period:

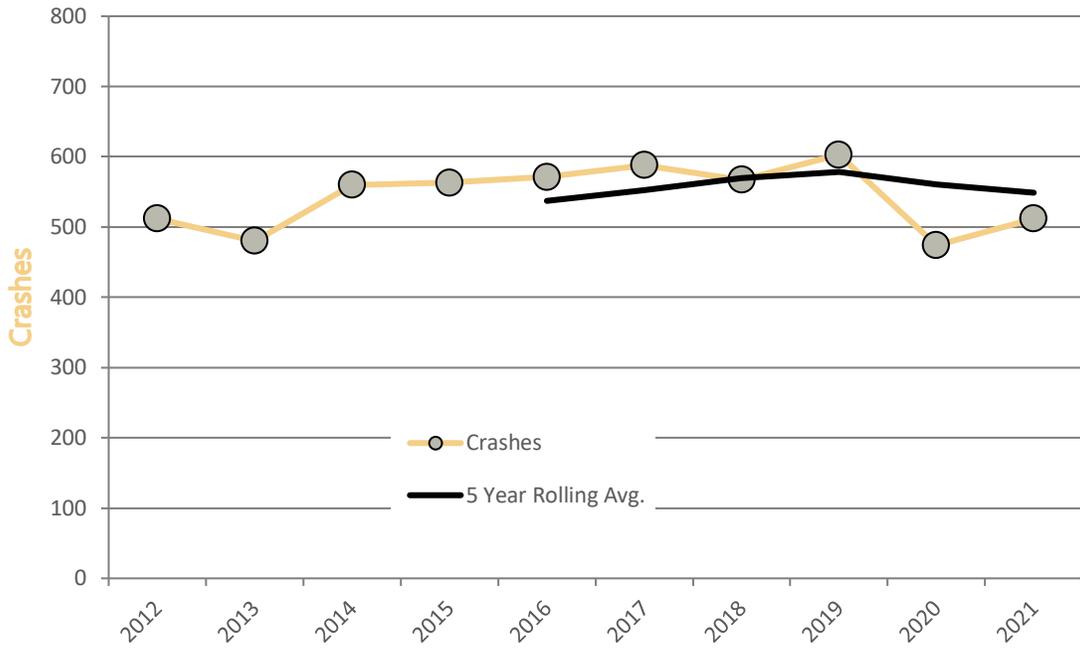
- Failure to yield right of way – 13,200
- Follow too close – 11,600
- Distraction – 6,500
- Ran red light or stop sign – 3,900
- Illegal/unsafe speed – 3,400
- Improper turn – 2,500
-

In 2010, the American Association of State Highway and Transportation Officials (AASHTO) released the Highway Safety Manual (HSM). The HSM is a science-based technical approach that takes the guesswork out of safety analysis. The HSM is a quantitative safety analysis tool that is utilized throughout the Highway Safety Improvement Program (HSIP) process, including network screening, safety project evaluations, design alternatives, benefit to cost analysis and priority ranking of safety projects.

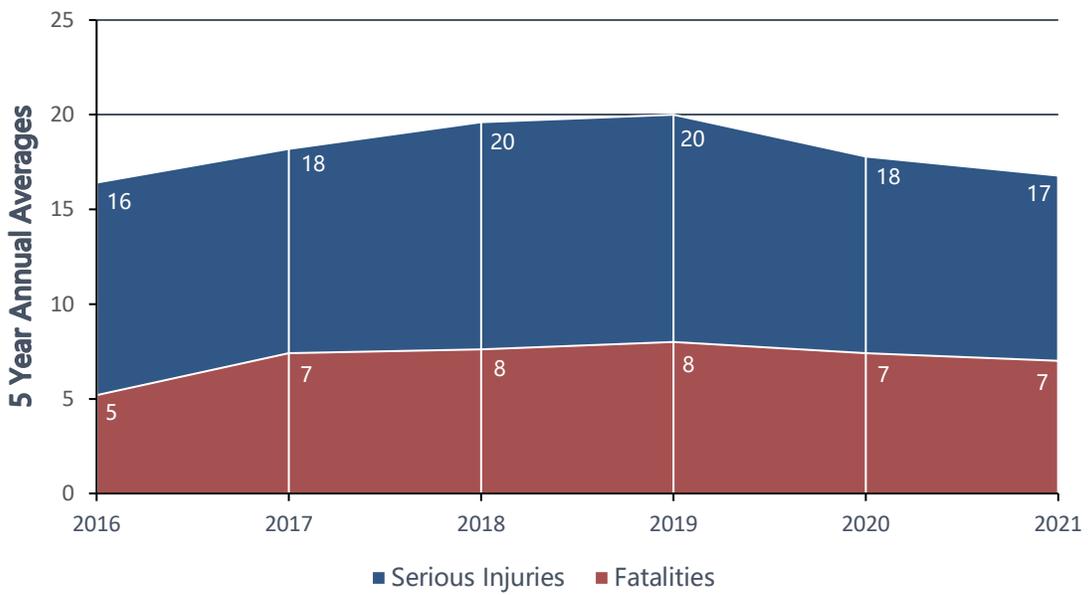
Intersection Strategies

ID	Strategy/Activity	Lead	Safe Systems
IC-1	Evaluate/identify the locations of most concern through network screening	MaineDOT	roads
IC-2	Develop safety spot improvements for reviewed locations	MaineDOT	roads
IC-3	Evaluate alternative solutions for reviewed locations with the potential to reduce crash kinetic energy such as roundabouts and all-way stops	MaineDOT	roads
IC-4	Work with law enforcement professionals to pursue enforcement presence at intersections with known safety performance issues	MaineDOT / Municipal, State, and County Law Enforcement Agencies	users
IC-5	Provide improved pavement markings	MaineDOT	roads
IC-6	Provide reflective back plates on traffic signals and improve the tethering of signal heads systemically	MaineDOT	roads
IC-7	Increase the conspicuity of intersection warning and stop signs at select locations. (Increase size, flashing and back-lit)	MaineDOT	roads, users
IC-8	Install flashing yellow arrows for permissive turn movements	MaineDOT	roads, users
IC-9	Install roadside units for connected vehicles	MaineDOT	roads, users
IC-10	Provide access to Travel Safely App to provide information to the motorist	MaineDOT	roads, users

Truck Crashes (Units With Five Axles or More)



Truck Serious Injuries and Fatalities (Units with Five Axles or More)



Commercial Trucks and Buses

Large trucks are a concern due to the size and load differential between larger trucks and passenger vehicles. There is also focus on fatigue related to long haul operations. Overall truck crash and fatality rates have improved over the years, but the fatality rate has decreased at a slower rate.

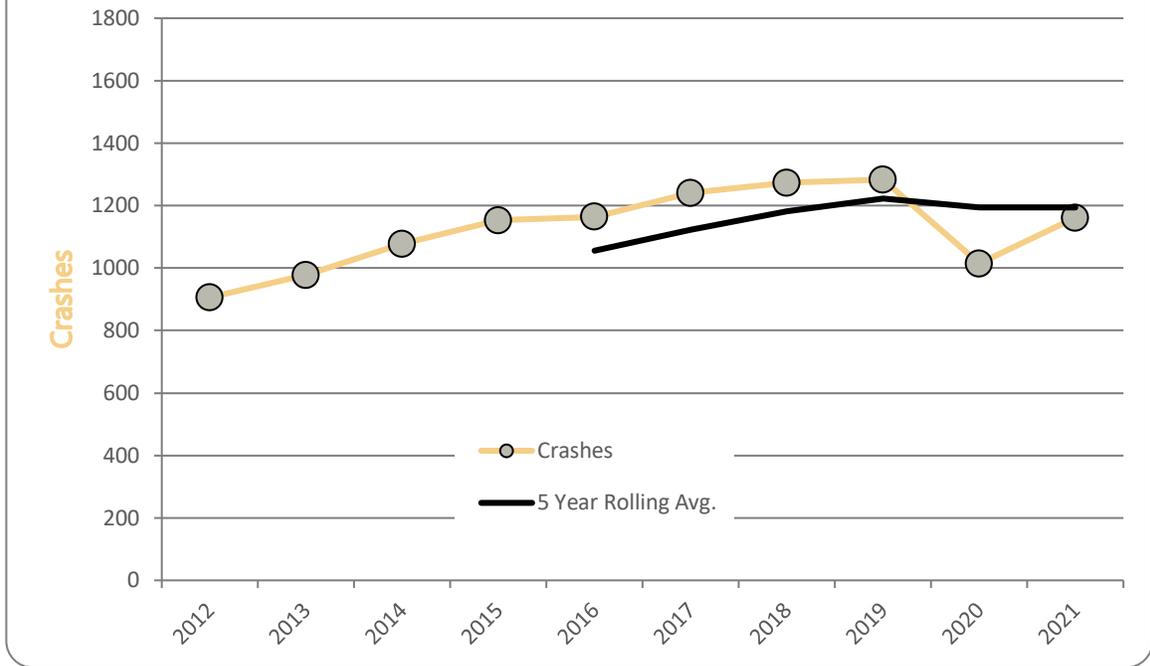
Commercial buses are an important segment due to the number of passengers being carried both on in-state routes and out-of-state charters.

Commercial Truck and Bus Strategies

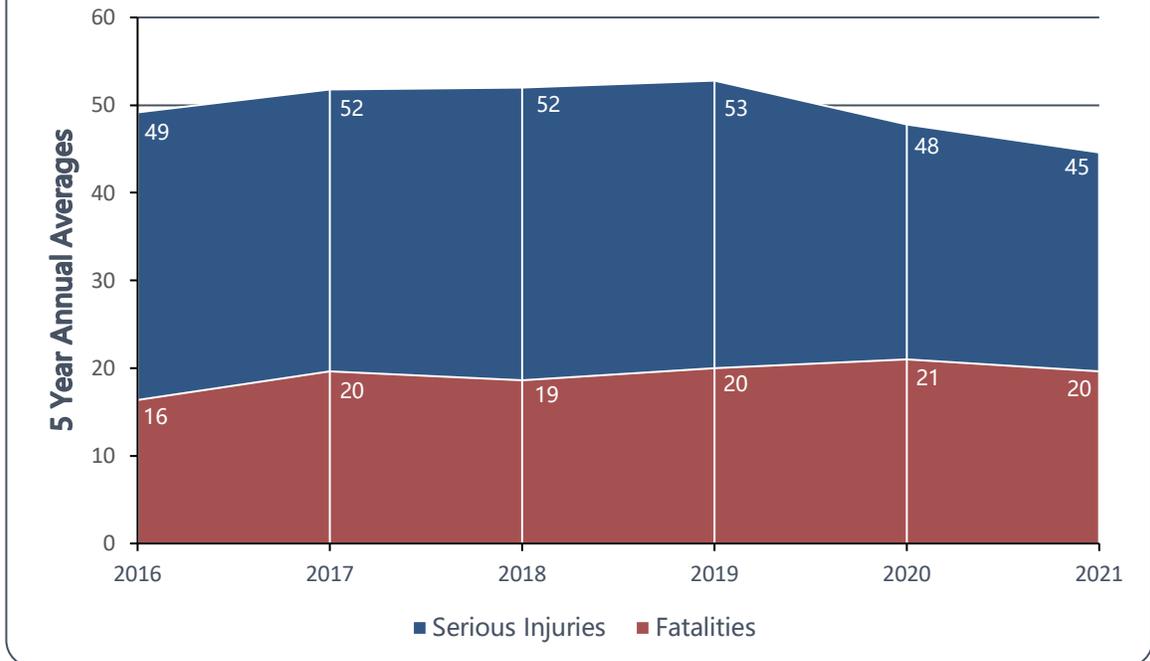
ID	Strategy/Activity	Lead	Safe Systems
	Commercial Trucks		
CT-1	Pursue targeted enforcement efforts that will lead to educational opportunities	MSP	users
CT-2	Expedite new entrant safety audits	FMCSA MSP	users
CT-3	Effectively communicate the importance of safety regulatory compliance as a means to increase safety awareness	BMV	users
CT-4	Engage agencies to address aggressive driving around commercial vehicles	FMCSA / NHTSA / MSP / MMTA / BMV	users
CT-5	Evaluate opportunities to refine enforcement interactions to focus on statistically relevant motor carriers	MSP	users
CT-6	Evaluate heights and widths of existing bridges and overpasses and identify those that are prone to being hit by over-height commercial vehicles	MaineDOT	roads
	Commercial Buses		
CB-1	Continue to conduct educational outreach and focused enforcement efforts on the passenger-carrying industry	MSP	users



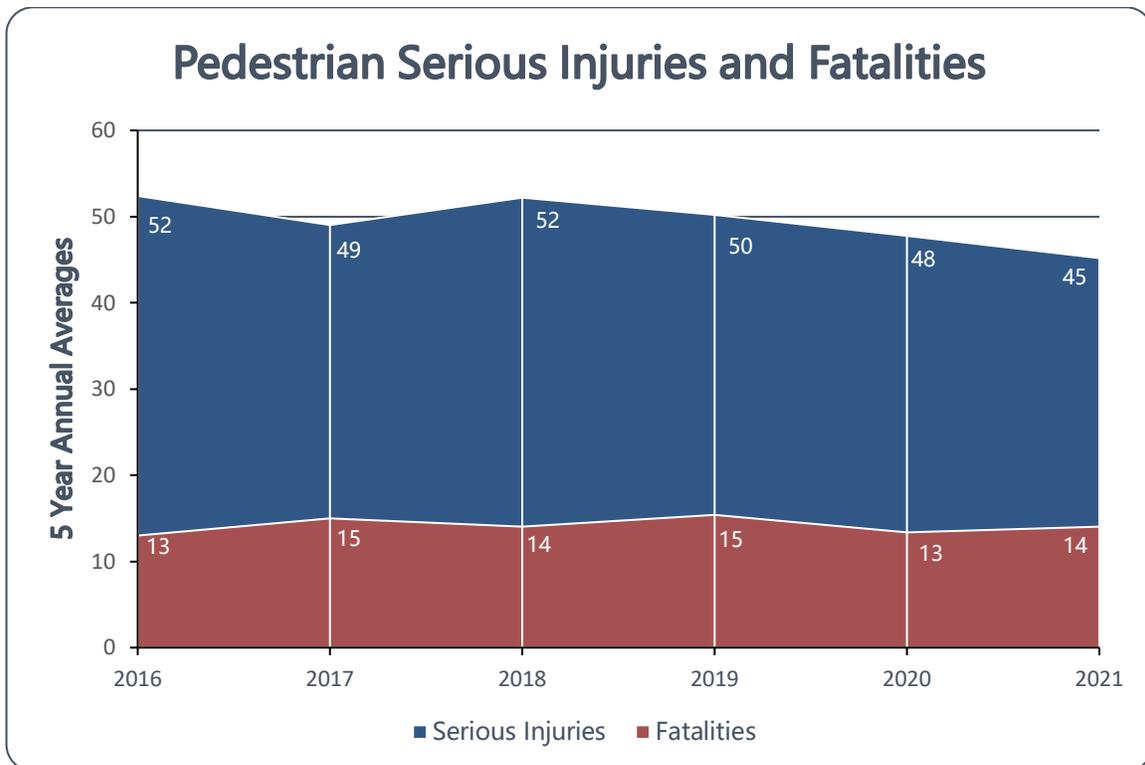
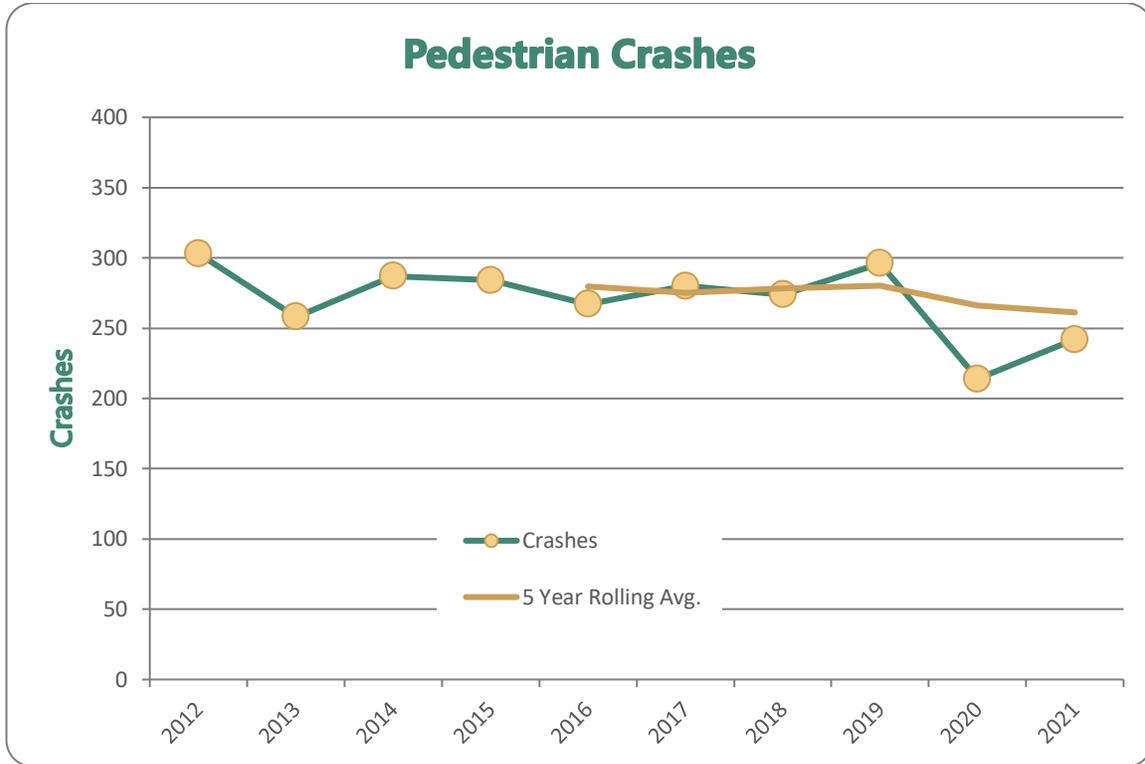
Commercial Vehicle Crashes



Commercial Vehicle Serious Injuries and Fatalities





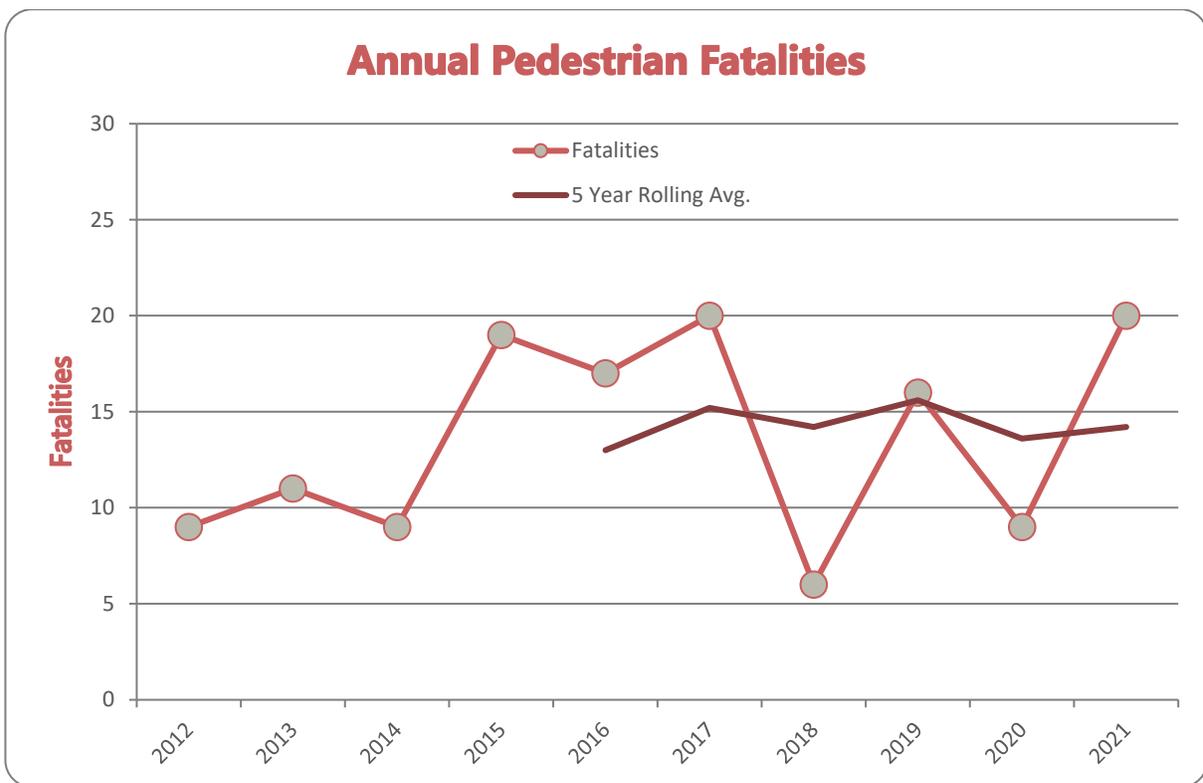


Pedestrians and Bicyclists

Crashes involving vulnerable road users are a growing concern.

Youth, the elderly, people with disabilities, individuals without a license, and those with financial limitations often have no means of travel other than walking, using a mobility device, or biking. Other people choose to walk or bike for health/fitness or environmental reasons. Providing a safe place to walk and bike is essential for these and other users of Maine's transportation system. From 2016 to 2021, Maine averaged just over 290 pedestrian crashes per year which equates to a pedestrian being struck by a motor vehicle every 30 hours, 11 minutes. Unfortunately, more than 91% of these reported pedestrian crashes involve injury or death to the pedestrian.

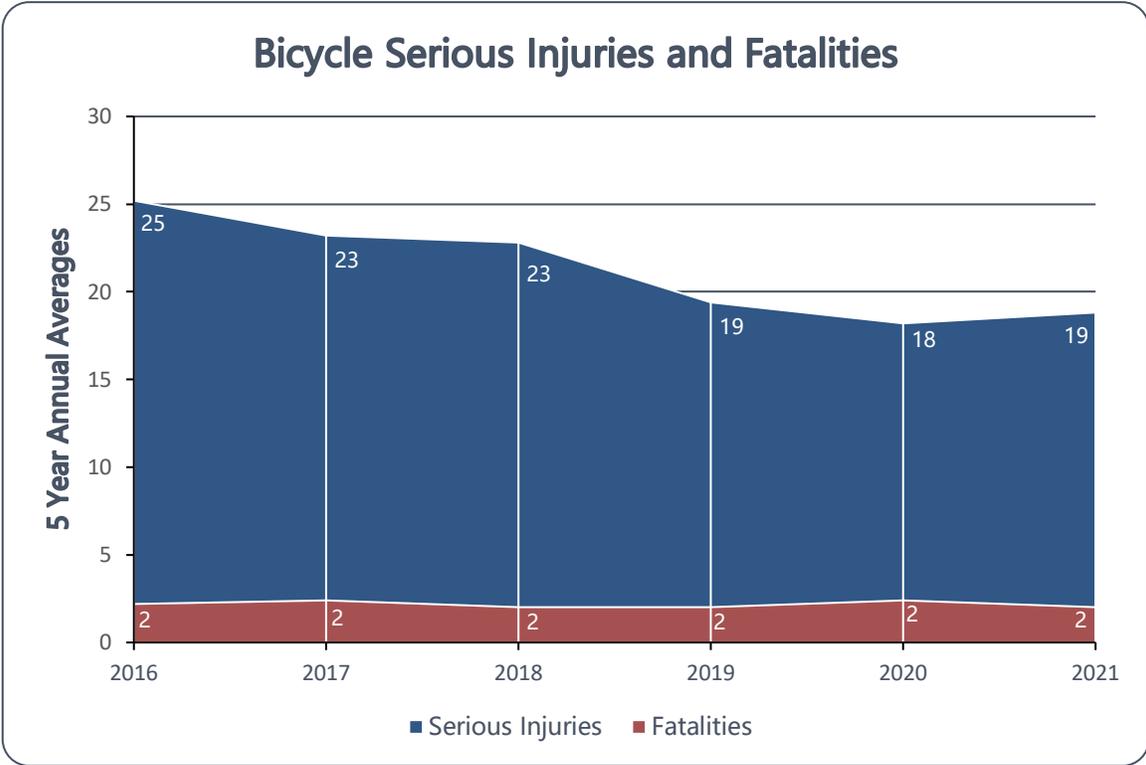
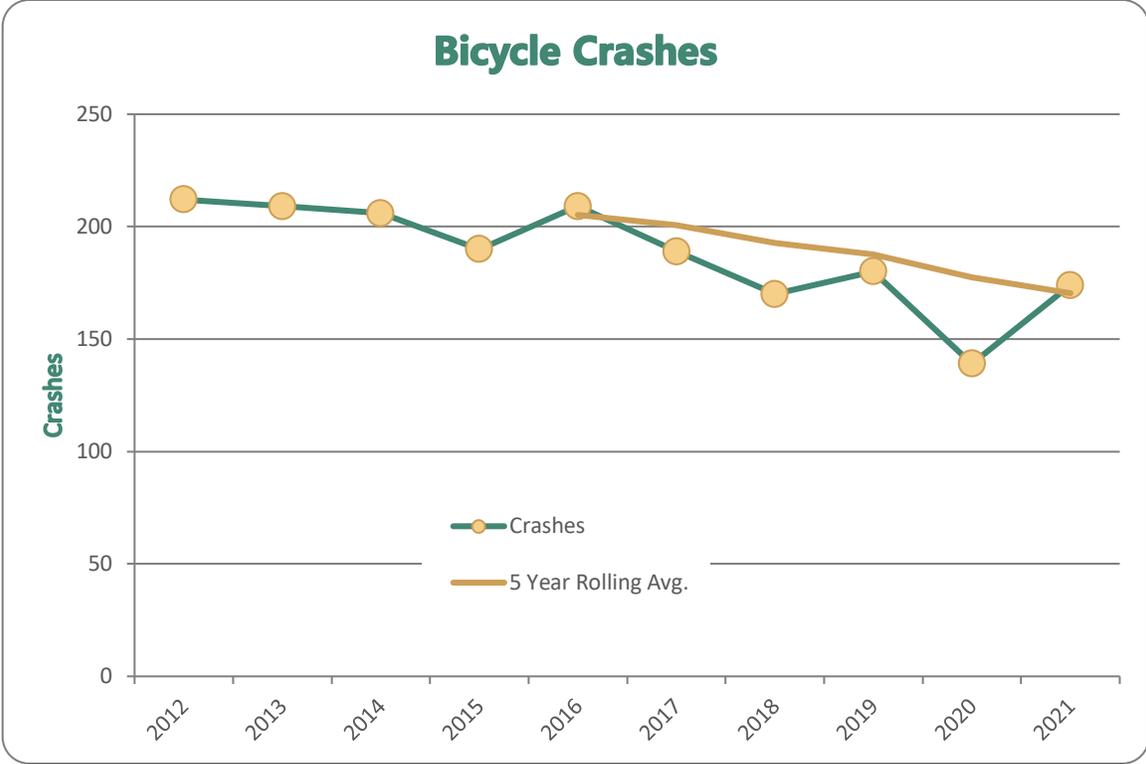
Maine has experienced 136 pedestrian and 21 bicycle fatalities over the last 10 years. Pedestrian fatalities have risen sharply since 2015 resulting in increased media and public attention to this safety area.



Bicyclist and pedestrian safety must be considered and incorporated into all projects covered under MaineDOT's Complete Streets policy, particularly those providing sidewalks, shoulders, lighting, and safe crossings where they are needed and appropriate. It is also essential that bicyclists and pedestrians are educated regarding safe behaviors including the need to comply with all traffic laws, dress brightly, be fully aware of their surroundings, and never assume drivers can see them and know they are there. It is critical that drivers are educated on the importance of reducing speed, avoiding distractions while driving, and giving pedestrians and bicyclists plenty of space. All road users need to be paying full attention to their travel and taking the right precautions to assure the safety of others.

MAINE'S PEDESTRIAN SAFETY FINDINGS (2017 - 2021):

Not surprisingly, Maine's pedestrian crashes continue to be concentrated primarily in the larger population centers. During this 5-year period, Maine experienced years with both very low and very high numbers of pedestrian



fatalities. In 2017 and 2021 there were 20 pedestrian fatalities each year – the highest number since 1994 (1990, 1993, and 1994 hold the record high for pedestrian fatalities at 22). However, in 2018 there were only 6 pedestrian fatalities which is the lowest number since 1990, which is the earliest documentation we have for pedestrian fatalities.



Based upon the 5-year history back in 2017 (2013-2017), 21 communities were identified as having a disproportionate number of pedestrian crashes. These “Focus Communities” represented about 67% of the state’s pedestrian crashes, including 44% of pedestrian fatalities. In addition to dedicating funding to support targeted infrastructure improvements within these communities, our Heads Up Pedestrian Safety Project emphasized municipal and community engagement efforts to raise awareness of pedestrian safety.

Maine has experienced a reduction in both the number of pedestrian crashes and pedestrian fatalities over the last five-year period. Maine experienced 8% fewer pedestrian crashes in 2017-2021 (1200) than the previous period of 2013-1017 (1304). Maine also experienced a 4.3% reduction in pedestrian fatalities when comparing the two periods (67 versus 70.)

The Heads Up Focus Communities also saw substantial reductions in the numbers of pedestrian crashes and fatalities compared to the previous 5-year period. The cumulative number of pedestrian crashes over the previous 5-years in 2017 was 877 while in 2021 that number dropped to 780. This represents 97 fewer crashes or an 11.1% reduction. They also had 31 fatalities which dropped to 29 for a 6.5% reduction in fatal ped crashes for those Focus Communities.



Nearly 80% of the fatalities occurred to pedestrians aged 26 and older. About 28% were 71 years old or older. In addition to the 21 Focus Communities, non-urban settings have pedestrian issues as well. About 57% of pedestrian fatalities occur on rural roads and about 48% of the crash fatalities occur on roads that have posted speed limits of 40 mph or higher. Impaired conditions are noted in 27.8% of fatal crashes and reported more often for pedestrians than drivers. 66.2% of the fatal crashes occur between dusk and dawn. Visibility and wearing dark clothing are often cited within police reports as contributing factors.

PEDESTRIAN STRATEGIES

ID	Strategy/Activity	Lead	Safe Systems
P-1	Continue to expand the Pedestrian Safety Outreach and Education Program in Maine	MaineDOT / BCM / BHS / Local Municipalities and Law Enforcement	users
P-2	Continue to develop and refine pilot projects within target communities	MaineDOT / VHB	roads



	for specifically identified “at-risk vulnerable populations”		
P-3	Statewide efforts to help meet and address the pedestrian safety needs in other areas of the state will be implemented	MaineDOT / BCM	users
P-4	Identify opportunities for pedestrian infrastructure improvements, including sidewalks, off-road trails, shoulders, and crossing improvements	MaineDOT / MPOs / RPOs / Local municipalities	roads
P-5	Incorporate proposed pedestrian infrastructure improvements within MaineDOT’s and local community’s planning process to insure that identified pedestrian needs are addressed and included within nearby infrastructure projects	MaineDOT / MPOs / RPOs / Local municipalities	roads
P-6	Educate municipalities, planners and advocates on the policies, processes, and funding opportunities available to improve pedestrian safety	MaineDOT / MPOs / RPOs / Local municipalities	users
P-7	Create and maintain an active transportation web page	MaineDOT / VHB	users
P-8	Continue and expand state agency coordination	MaineDOT / BHS	users
P-9	Improve state and local policies and ordinances	MaineDOT / MPOs / RPOs / Local municipalities	roads
P-10	Collaborate with law enforcement	MaineDOT / Law Enforcement Agencies / BHS / BCM	users
P-11	Continue a pedestrian safety signage and visible crossing program	MaineDOT	roads
P-12	Continue safety awareness campaigns	MaineDOT / NHTSA / BHS / FHWA / BCM	users
P-13	Expand the number, type, content, and frequency of safety awareness programming that targets adults	MaineDOT / NHTSA / BHS / FHWA / BCM	users
P-14	Analyze and consider transportation needs of all users by implementing MaineDOT’s Complete Streets Policy,	MaineDOT	roads

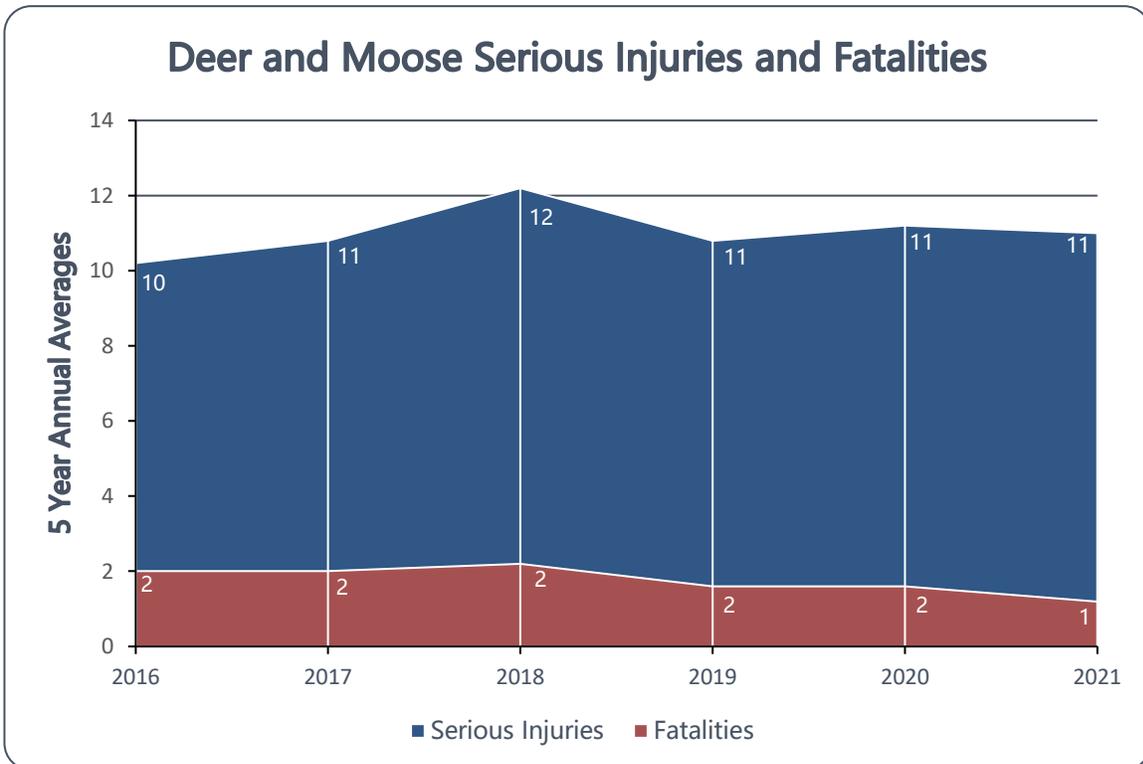
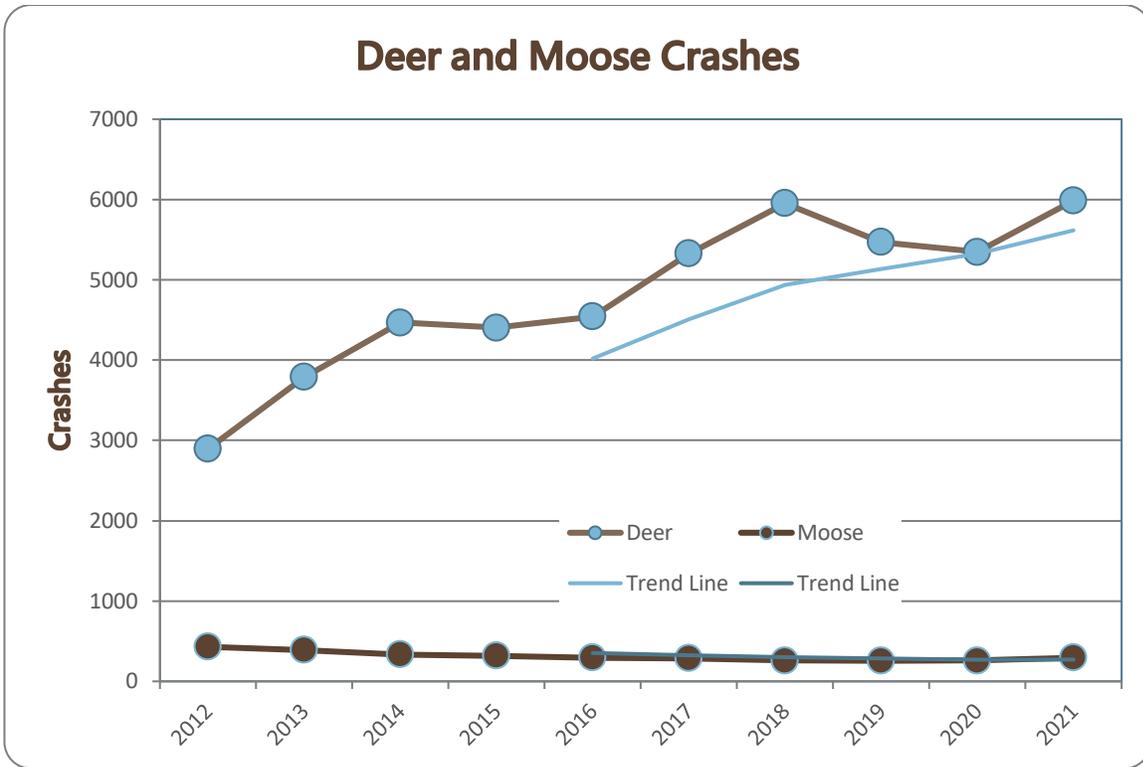
	implementing strategies in the 2022 Statewide Active Transportation Plan		
P-15	Promote MaineDOT’s Village Partnership Initiative (VPI) and measures such as Village Gateway Treatments and demonstration projects to alert drivers to the likelihood of encountering pedestrians and bicyclists and to encourage them to reduce speed where vulnerable users are present	MaineDOT	roads, speeds
P-16	Continue to install leading pedestrian intervals (LPI’s) at signalized intersections	MaineDOT	roads, users
P-17	Develop strategies to incorporate blank-out signs at signalized intersections (“No Right Turn On red” and “Vehicles Yield to Pedestrians”)	MaineDOT	roads, users
P-18	Promote the use of the Travel Safely App to provide information between drivers and pedestrians	MaineDOT	users

BICYCLE STRATEGIES

ID	Strategy/Activity	Lead	Safe Systems
B-1	Coordinate bicycle improvements including paved shoulders, signage, bike lanes, and off-road trails	MaineDOT / Local municipalities	roads
B-2	Educate municipalities, planners and advocates on the policies, processes, and funding opportunities available to improve conditions for bicyclist safety	MaineDOT / MPOs / RPOs / BCM / Local municipalities	users
B-3	Continue bicycle safety awareness campaigns	MaineDOT / NHTSA / BHS / FHWA / BCM	users
B-4	Continue and expand state agency coordination	MaineDOT / Local municipalities	users
B-5	Improve state and local policies and ordinances to ensure that bicycle connections are made	MaineDOT / Local municipalities	users
B-6	Identify key locations where engineering improvements and bicycle visibility enhancements can be deployed	MaineDOT / MPOs / RPOs	roads

B-7	Encourage increased bicycle utilization for commuting and shorter trips and raise driver awareness of bicycle activity by developing and implementing MaineDOT's new E-Bike Library and Test-Drive Projects	MaineDOT / BCM / Local municipalities and libraries	users
B-8	Implement a strategy for the use of green bike lanes through busy intersections, the use of bike boxes, and two-stage queue boxes	MaineDOT / BCM / Municipalities	roads, users





Large Animals (Moose/Deer)

Maine is known for its terrific scenery and the accompanying wildlife – moose, deer, turkeys, and other creatures that may find their way onto any road, anywhere, any time. Moose and deer have much higher crash activity from dusk to dawn, and overall crash activity has been decreasing. Maine does have a multi-agency task force to address related safety issues.

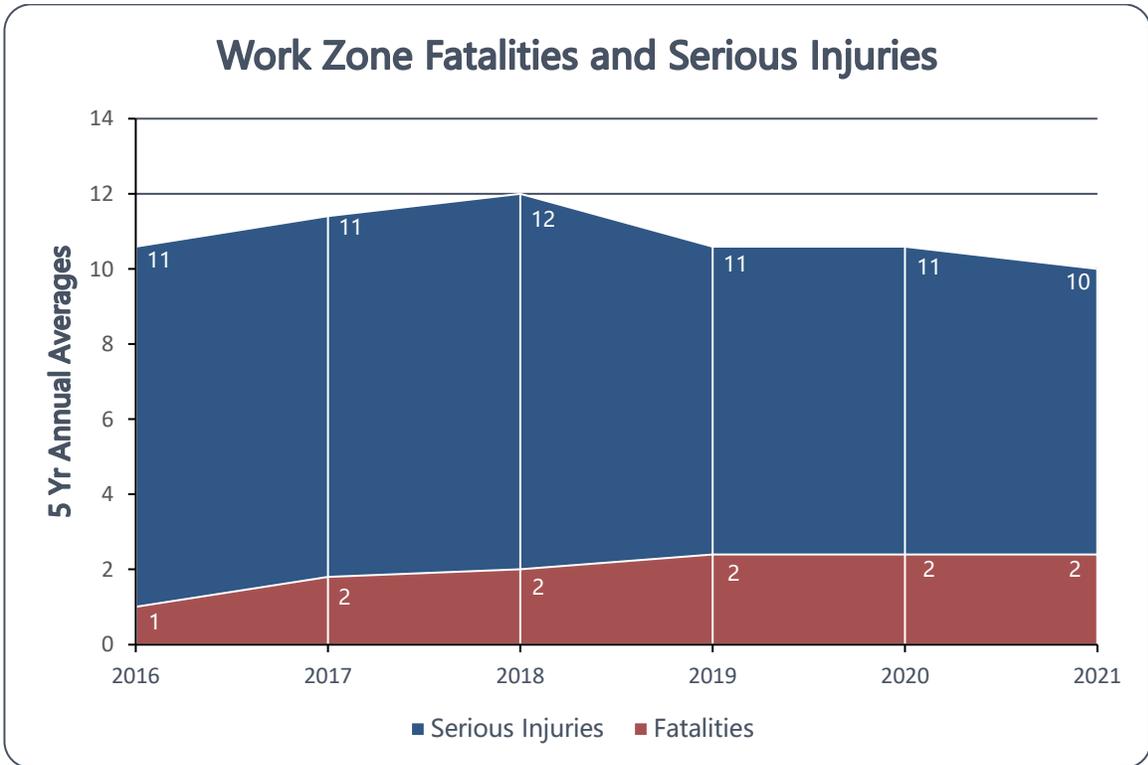
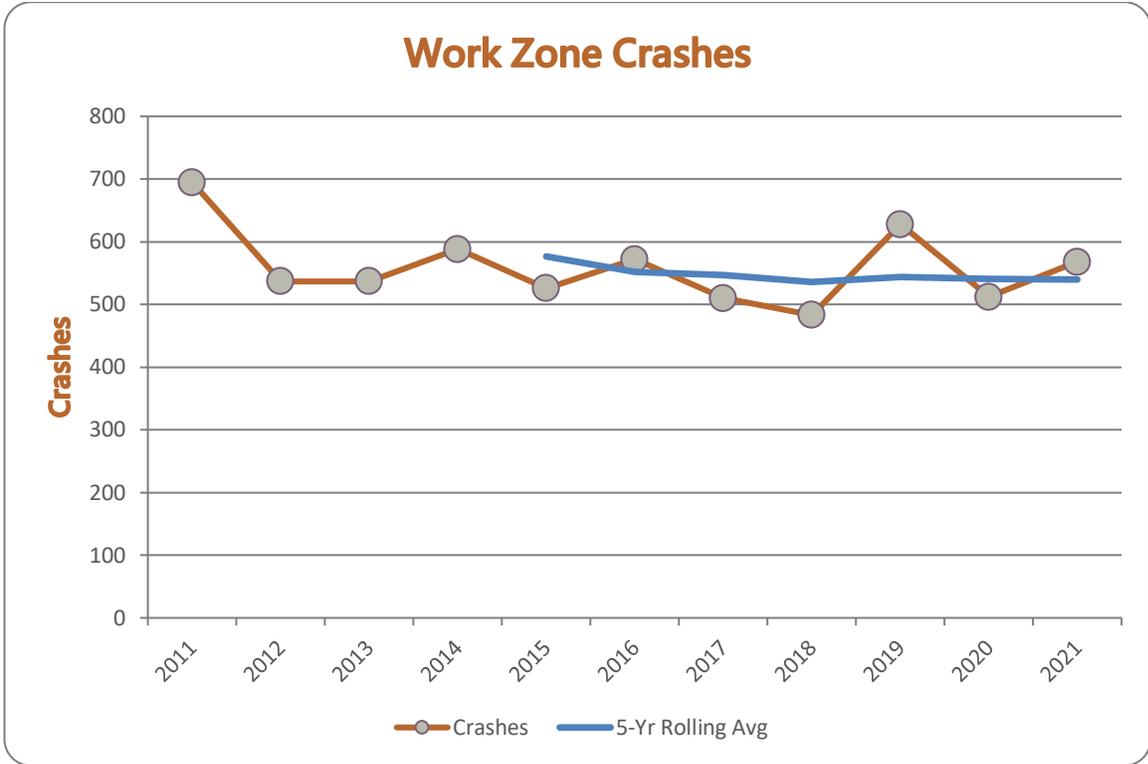
Moose do not represent the most frequent Maine animal crash type, but they are highlighted due to their sheer size. Impact with these animals can be devastating, with countless stories about these tall, heavy animals entering the passenger compartment upon impact, causing serious injury and death.

Deer crashes are more frequent and, although the animal is smaller, injuries and even fatalities do sometimes result.

Large Animal Strategies

ID	Strategy/Activity	Lead	Safe Systems
LA-1	Identify high crash locations using crash reports, local knowledge, and crash hot spot analysis tools	MaineDOT / IF&W	roads
LA-2	Identify possible animal/vehicle crash reduction solutions	MaineDOT / IF&W	roads
LA-3	Continue public outreach activities	MaineDOT, BHS, IF&W	users
LA-4	Address special mitigation needs in seasonal crash areas	MaineDOT / IF&W	roads
LA-5	Use engineering solutions to mitigate animal-vehicle collisions at locations identified in LA-1 and incorporate these solutions into MaineDOT projects	MaineDOT	roads
LA-6	Work with local interests on special large animal safety concerns	MaineDOT / IF&W	users
LA-8	Continue to invest in technological strategies (message boards, thermal cameras for large animal detection, etc.) to convey large animal messaging	MaineDOT / IF&W	users





Work Zones / Traffic Incident Management



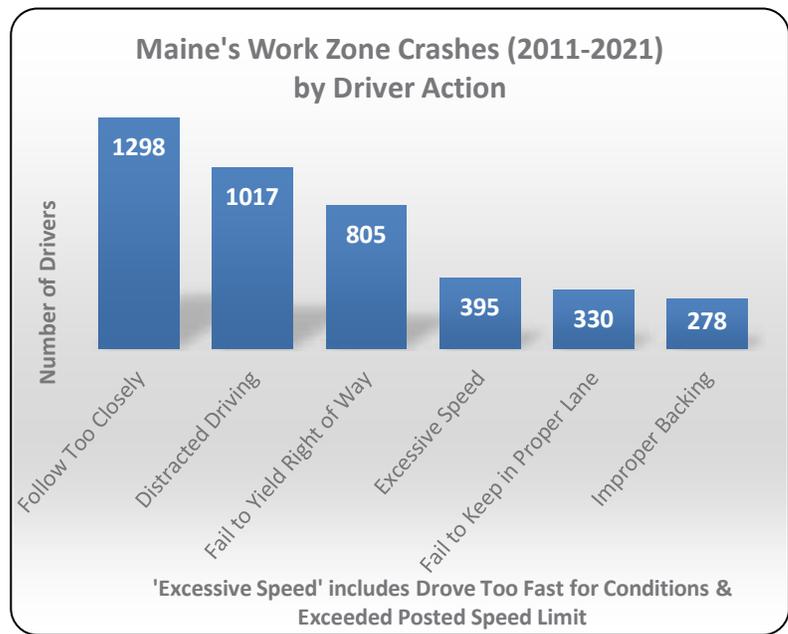
There are hundreds of Work Zones in Maine each year, ranging from short-term activities such as work on utility lines, tree trimming, mowing and ditch clearing, to longer term road reconstruction projects. Although most large projects are done when the weather is warm, work might be under way along the road any time of the year. Work zones can be found anywhere - on the Interstate, at bridges, hundreds of highways and secondary roads, and even local streets.

Those who work on or along our highways are particularly at risk in high-speed rural environments where their work may not always afford them the opportunity to focus completely on oncoming vehicles. For the most part they are vulnerable pedestrians within an activity area. In mobile operations, construction vehicles are often operating at speeds much lower than normal traffic speeds increasing the risk of the severity of crashes due to speed differential.

- In the past decade, Maine has experienced approximately 560 reportable work zone crashes per year
- 28% of these work zone crashes resulted in injury or death of workers and/or motorists

Construction and maintenance activities are only one example of vulnerable people working on Maine’s highways. Law enforcement and first responders arriving at a crash scene are extremely vulnerable, and with more than 30,000 reportable crashes per year these “work

zones” are far more numerous than what we think of as traditional work zones. On a crash or incident site responders are engaged in tending to the injured, investigating the cause(s) and reporting the crash, while others are ensuring that the site is being managed to prevent secondary crashes. Notification to approaching traffic needs to be made, the crash site needs to be cleared of debris, and normal traffic flow needs to be restored as soon as reasonable. Many stakeholder organizations are working together to make sure incident management protocols are in place to ensure those who respond to help when people are most in need are doing so safely.





Work Zone / Traffic Incident Management Strategies

ID	Strategy/Activity	Lead	Safe Systems
WZ-1	Support work zone awareness campaigns through social media and outreach	MaineDOT	users
WZ-2	Explore "smart" technology to improve work zone safety performance	MaineDOT	roads, users, speeds
WZ-3	Protect workers by piloting work zone intrusion alarms and equipping trail vehicles with crash attenuators for mobile operations	MaineDOT	roads, vehicles
WZ-4	Coordinate work zone speed enforcement with law enforcement	MaineDOT, MSP, County, and Local Law Enforcement	users
WZ-5	Continue Traffic Incident Management Task Force Meetings and Training	MaineDOT, RPOs, and other emergency response crews	speeds, users, post-crash care
WZ-6	Conduct public outreach campaign promoting awareness of Maine's Move-Over Law to protect law enforcement, first responders, highway workers, and tow company employees responding to highway emergencies	BHS, MSP, MaineDOT	users
WZ-7	Explore "Smart" technology to help minimize exposure of first responders at incident scenes	MaineDOT / first responders / municipalities	post-crash care



To help protect first responders, Maine law requires drivers to move over or slow down when approaching stopped emergency and public service vehicles on the side of the road. Public service vehicles include highway maintenance, utility vehicles, tow trucks, and other public service-related vehicles equipped with authorized amber or green lights.

MOVE OVER & SLOW DOWN



MaineDOT

Emergency Medical Services

Maine has nearly 6,000 individuals who are associated with the 285 EMS services that respond to emergency medical calls and inter-facility medical transfers. In 2016, Maine EMS providers responded to 281,022 calls. 178,940 of these were emergency (9-1-1) calls, including over 11,000 car crashes. Timely notification to EMS activates a system of care that includes emergency medical dispatchers, pre-hospital providers, and hospital resources. Maine has both a statewide trauma system that involves every hospital, and statewide EMS treatment protocols which help to provide quality care and determine the most appropriate destination for trauma patients. Based upon historical data, Maine emergency vehicles experience an average of 60 crashes a year. Further study needs to be done in order to evaluate these data and develop an appropriate plan. Workers experience about 12.7 fatalities per 100,000 workers. This is about the same as police departments (PD) and fire departments (FD) – and 250% higher than average workers. Transportation risks are 500% higher than average. In terms of work-related injuries, EMS is at 34.6/100, which is higher than FD & PD, and seven times higher than the average worker. For air medical crew, there have been 113 deaths per 100,000 employees, which is higher than death rates of Alaska fishermen (111 in 100,000) and PD (21 in 100,000).

Forty-one percent of the ground ambulance crashes happen while responding to an emergency; 17% during routine driving, and about 12% each for transporting a patient in an emergency setting or non-emergency setting. Fifty-eight percent happen during clear and dry weather conditions. Fatigue is a big concern because many EMS and fire departments still work 24-hour shifts. A study published in *Pre-Hospital Emergency Care* (Sleep Quality and Fatigue Among Prehospital Providers Patterson, PD et al, [Prehospital Emergency Care](#), Vol. 14, Iss. 2, 2010, April 2010) concluded that after 21 hours awake, individual performance is equivalent to a blood alcohol content of .08 in terms of concentration and response.

Emergency Medical Services Strategies

ID	Strategy/Activity	Lead	Safe Systems
ES-1	Continue efforts to integrate EMS data with other systems through the Traffic Records Coordinating Committee	Maine EMS	post-crash care
ES-2	Continue to improve the quality and analysis of EMS data	Maine EMS	post-crash care
ES-3	Update continuing education requirements for all license levels as needed	Maine EMS	post-crash care, users
ES-4	Continue the development and review of Emergency Medical Dispatch Determinant Codes	Maine EMS	post-crash care
ES-6	Promote a culture of safety	Maine EMS	post-crash care, users
ES-7	Review Emergency Medical Dispatch (EMD) policies and procedures	Maine EMS	post-crash care
ES-8	Train EMS providers on the proper way to transport children safely in ambulances	Maine EMS	post-crash care
ES-9	Continue EMS: Public Information, Education, and Relations (PIER) outreach programs	Maine EMS	post-crash care, users

Traffic Records

Maine's Strategic Highway Safety Plan is data driven.

Maine enjoys having very good traffic records data systems. This quality data has enabled us to identify and analyze our safety needs. Maine has published crash results in key performance areas during recent years.

It is important that Maine continuously evaluates how to gather, evaluate, and report crash results more effectively and efficiently.

A good understanding of the safety issues that data analysis provides will help lead to the best strategies to improve safety and save lives. The goal of Maine's Traffic Records Coordinating Committee (TRCC) is to continue to develop a comprehensive traffic records system so Maine can address the highest priority highway safety issues. Maine's TRCC partners have made significant progress in improving the state's traffic records systems.

Maine's TRCC has identified, selected, and prioritized projects to resolve the deficiencies identified in the Traffic Records Strategic Plan through a recent Traffic Records Assessment. The TRCC agreed on the prioritization based on the ability to: improve data quality in the core traffic records data systems; bring existing efforts currently underway to completion; and make measurable progress. The end goals of the TRCC are to improve the performance areas (timeliness, consistency, completeness, accuracy, accessibility, and integration), and increase MMUCC and NEMSIS compliance.

Traffic Records Strategies

Maine does have a Traffic Records Coordinating Committee that has multiagency representation, meets on a quarterly basis, and identifies areas of future data system enhancements. The types of records that are evaluated in this process are:

- Crash Data System
- Citation and Adjudication
- Injury Surveillance System
- Vehicle Data System
- Driver Data System
- Roadway Data System

Special Rules

High Risk Rural Roads

High risk rural roads are of safety interest and present opportunities for safety improvements. These are roads defined as having the Federal Functional Classification of Rural Major and Minor Collectors, and Rural Local roads that have significant safety risks.

A “significant safety risk” may be identified as a section of road or intersection with one or more of the following qualities:

- A crash, fatality and/or serious injury rate that is at least 10% higher than roadways of similar functional classifications in Maine
- Meets the definition of Maine’s High Crash Location criteria
- Has significant crash clusters of head-on or went-off-road crashes
- Are identified as high-risk locations through engineering/safety field reviews, safety assessments, road safety audits, and local town/law enforcement knowledge. Using information from observations in the field can identify high risk locations that may not be identified through data analysis
- Increases in traffic volumes that are likely to create a crash rate for fatalities and incapacitating injuries that exceed the statewide average at those locations



Safety Planning Beyond Statewide Efforts: Metropolitan Planning Organizations, Regional Planning Organizations, and Tribal Communities

MPO's/RPO's: The concern for safety extends to roads and modes of all types and settings in Maine. While the four Maine Metropolitan Planning Organizations (MPOs) have a more local focus in the denser parts of the state, Maine Regional Planning Organizations (RPOs) provide transportation planning services for the rest of the mostly rural state. While the urban areas benefit from lower speed limits, they also see increased safety vulnerabilities with increased bicycle and pedestrian activity. Overall, two thirds of Maine's roads are locally maintained.

The MPOs and RPOs are an important part of the safety and State Highway Safety Plan conversation. Maine's MPOs and RPOs have a variety of efforts under way to integrate safety into their planning. For further details about their plans, go to the individual MPO/RPO website. The items below provide a sampling of activities being conducted by some of Maine's MPOs/ RPOs and coordinated activities with tribal groups.

Maine's MPOs

- Androscoggin Transportation Resource Center (ATRC).
- Portland Area Comprehensive Transportation System (PACTS)
- Bangor Area Comprehensive Transportation System (BACTS)
- Kittery Area Comprehensive Transportation System (KACTS)

Each MPO is required to establish their own set of safety performance targets starting in 2018 that are in line with state-wide efforts. While MPOs share many of the same safety challenges as have been identified statewide, these more densely populated areas of the state will have higher concentrations of pedestrians and bicyclists and as a result, more focus on these two safety areas.

RPOs

The state of Maine also has Regional Planning Organizations which provide transportation planning assistance to Maine's rural communities. The nature and breadth of safety planning efforts can differ by region, depending upon local/regional issues and opportunities for improvement.

Tribal

Tribal communities are also responsible for transportation safety planning. MaineDOT is actively keeping these communities informed about the SHSP and is seeking ways to coordinate transportation safety planning by discussing tribal transportation safety plans, identifying specific safety project opportunities, and participating in road safety audits.

APPENDIX A – Maine’s Vulnerable Road User (VRU) Safety Assessment

On October 21, 2022, the Federal Highway Administration released a Vulnerable Road User Safety Assessment Guidance memorandum the intent of which was to:

“...provide background and guidance to clarify the requirements for the Vulnerable Road User Safety Assessment as described in 23 U.S.C. 148(l), as amended by the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58, also known as the “Bipartisan Infrastructure Law” (BIL)). All States are required to develop a Vulnerable Road User Safety Assessment as part of their Highway Safety Improvement Program (HSIP) in accordance with 23 U.S.C. 148(l).”

Additionally, this memorandum states:

“All States are required to complete an initial Vulnerable Road User Safety Assessment by **November 15, 2023** (23 U.S.C. 148(l)(1)) and include it as part of their State Strategic Highway Safety Plan (SHSP) (23 U.S.C. 148(a)(13)(G)).”

The work required to complete the initial VRU Safety Assessment cannot be completed by the deadline for Maine’s 2022 SHSP Update. This appendix is intended as a placeholder for Maine’s Vulnerable Road User Safety Assessment which, once completed, will be published as a separate addendum to this document.

All subsequent SHSP Updates are required to include updated VRU Safety Assessments as an Appendix.



Drive Responsibly



MaineDOT



Driving Toward Zero Deaths

Maine's 2022 Strategic Highway Safety Plan