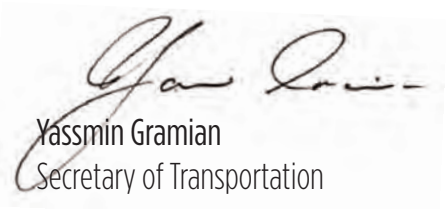
PENNSYLVANIA Strategic Highway Safety Plan

2022

Introduction

Pennsylvania's Strategic Highway Safety Plan (SHSP) has been developed as a multi-agency effort to substantially reduce traffic related fatalities and serious injuries. The SHSP is a comprehensive, data-driven strategic plan. The goals and strategies included in this plan were established in collaboration with our Steering Committee (key safety stakeholders and partners). By signing this document, the signatories agree to support Pennsylvania's Highway Safety Goal and implement the strategies and action items for which they are responsible (see Appendix).



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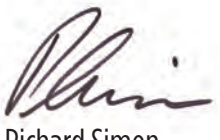

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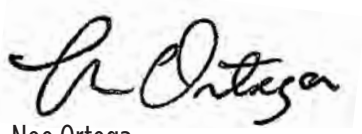

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The Pennsylvania Department of Transportation (PennDOT) would like to thank the following public and private sector organizations for contributing to the development of Pennsylvania's 2022 Strategic Highway Safety Plan. Our stakeholders and partners represented below are working together to implement the highway safety programs and strategies contained in this plan.

AARP
Administrative Office of Pennsylvania Courts (AOPC)
Allegheny County Economic Development
Alliance of Bikers Aimed Toward Education (ABATE)
American Academy of Pediatrics (AAP)
American Automobile Association (AAA)
American Traffic Safety Services Association (ATSSA)
American Trauma Society (ATS)
Amtrak
Arora and Associates, P.C.
Community Traffic Safety Projects (CTSP)
Delaware County Transportation Management Association (DCTMA)
Department of Drug & Alcohol Programs (DDAP)
Department of Health (DOH)
Federal Highway Administration (FHWA)
Federal Motor Carrier Safety Administration (FMCSA)
Governors Highway Safety Association (GHSA)
Highway Safety Network (HSN)
Kittelson & Associates, Inc.
Local Technical Assistance Program (LTAP)
Mothers Against Drunk Driving (MADD)
National Highway Traffic Safety Administration (NHTSA)
National Safety Council (NSC)
Norfolk Southern Corporation (NS)
PA Chiefs of Police Association (PCPA)
PA Commission on Crime and Delinquency (PCCD)
PA Courts of Common Pleas
PA Department of Education (PDE)
PA District Attorneys Association (PDAA)
PA DUI Association (Team DUI)
PA Emergency Management Agency (PEMA)
PA House Transportation Committee
PA Liquor Control Board (PLCB)
PA Metropolitan and Rural Planning Organizations (MPO/RPOs)
PA Motor Truck Association (PMTA)
PA Office of Attorney General
PA Pedalcycle and Pedestrian Advisory Committee (PPAC)
PA Public Utility Commission (PUC)
PA Senate Transportation Committee
PA State Association of Boroughs (PSAB)
PA State Association of Township Supervisors (PSATS)
PA Turnpike Commission (PTC)
PA State Police (PSP)
Safe Kids Pennsylvania
SEDA-COG Joint Rail Authority
Students Against Destructive Decisions (SADD)

Executive Summary

Pennsylvania's 2022 Strategic Highway Safety Plan (SHSP) has been developed to maintain and build on momentum achieved by previous editions of the SHSP. This plan serves as a blueprint to reduce fatalities and serious injuries on Pennsylvania roadways and targets Priority Emphasis Areas and Safety Focus Areas that have the most influence on improving highway safety throughout the state. For each focus area, strategies and action items have been identified applying to all public roads throughout the commonwealth.

Themes addressed in this plan include enhancing Highway Safety, Active Transportation, the Safe System Approach and providing Transportation Equity. Highway Safety is a diverse and complex field. Motor vehicle crashes generally involve multiple contributing factors (human, roadway, environmental, and/or vehicle), which means the approach to preventing crashes must be multidisciplinary in nature. Using data driven methods and implementing strategies pertaining to the emphasis and safety focus areas discussed throughout this document will have a high impact on reducing fatalities and serious injuries.

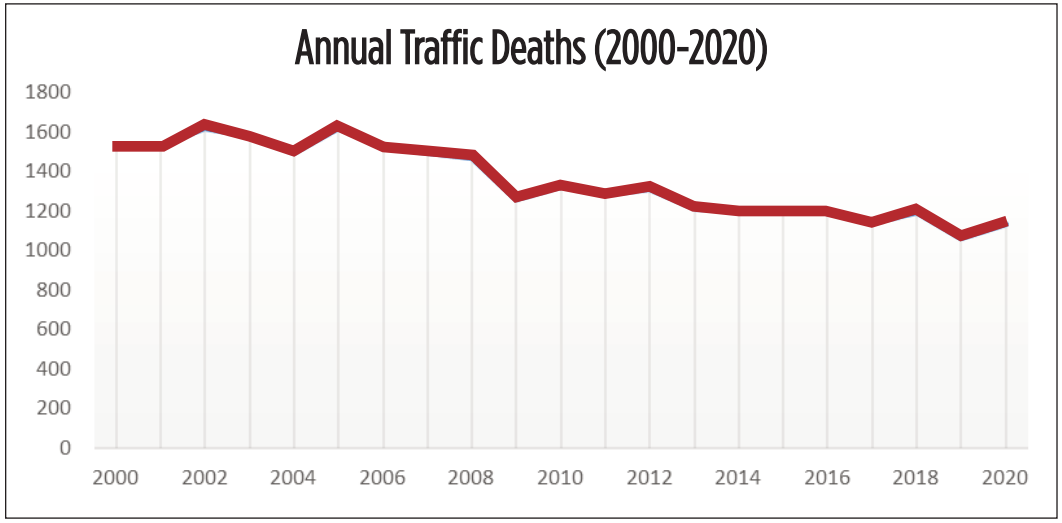
Pennsylvania's comprehensive approach to improve highway safety started with engaging state and national experts at a Highway Safety Summit to collect input. The plan was then developed in collaboration with federal, state, and regional partners across the seven categories listed above. We will continue to embrace the practices and tools that make our transportation network safer and help all roadway users become more responsible. A combined effort among all our safety stakeholders and partners is necessary to continue reducing fatalities and move toward zero deaths.

Table of Contents

Working Toward Zero Deaths

Toward Zero Deaths (TZD) is a national highway safety movement supporting the elimination of fatalities and serious injuries on our nation's roadways, conceptualized by safety practitioners, researchers, and advocates from a variety of disciplines. TZD calls for all stakeholders to champion the idea that one death is too many, and we must all work together to bring the annual number of roadway deaths down to zero. Pennsylvania's SHSP sets the groundwork for progressing TZD in the commonwealth by incorporating the following themes:

- Highway Safety: strategies for key focus areas to reduce crash frequency and severity and achieve measurable success.
- Active Transportation: mobility options powered primarily by human energy, including bicycling and walking.
- Safe System Approach: roadway design that emphasizes minimizing the risk of injury to all road users, considers the possibility of human error, and accommodates human injury tolerance by considering likely accident types and resulting impact forces.
- Transportation Equity: reducing inequities in our transportation network, building resilience against future disruptions, improving safety, and supporting both environmental and financial sustainability.
- Data & Technology: using cost-effective, data-driven methods, and incorporating safety technologies into infrastructure, vehicles & other modes of travel.



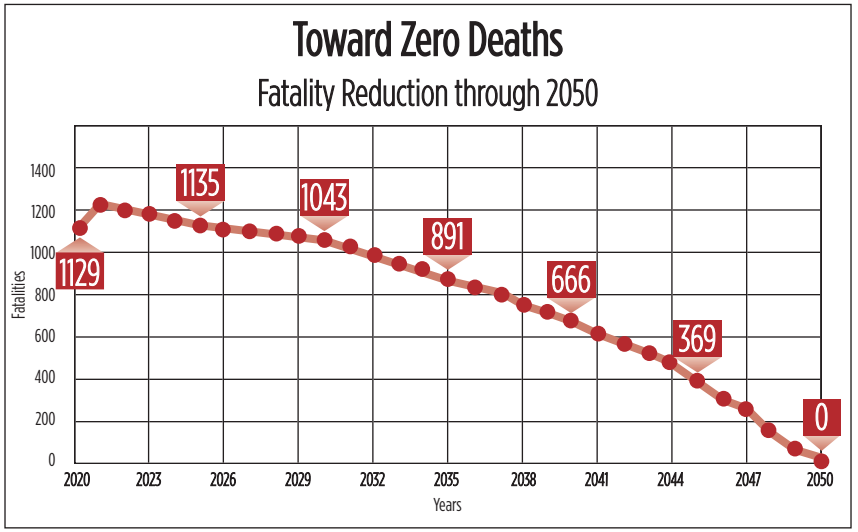
This graph shows highway fatalities in Pennsylvania since the turn of the century. The trend indicates a steady decline from 2000 to 2020. These two decades include the 12 lowest fatality years on record (stats have been kept since 1928). Despite these substantial improvements, there were still 1,129 highway fatalities in Pennsylvania in 2020. It is the responsibility of traffic safety professionals and stakeholders to continue engaging and innovating to work TZD. Collaboration and commitment will be essential to make TZD progress. More information on the national TZD initiative can be found at: https://www.towardzerodeaths.org/

Pennsylvania's Highway Safety Goal

Pennsylvania's safety goals over the next five years are to achieve a 2% annual reduction for fatalities and maintain level for suspected serious injuries. This will drive a reversal of current trends and allow for the implementation of other components to support long-term success toward our overall reduction goals. These components consist of:

- Increased safety culture outreach to reverse current trends that began during the COVID-19 pandemic and reduce unsafe driving behaviors like impaired driving, speeding, and other aggressive and distracted driving habits.
- Vehicle-assist features are becoming more mainstream in the vehicle fleet across the nation, but it is suggested that it may take up to 10 years to turn over the existing fleet to allow for greater saturation of these emerging technologies.
- Improved integration of Highway Safety Manual methodologies into the planning and project development processes will lead to project selection that has a greater safety return for the financial investment, which will drive a steeper decline in fatalities as we approach 2050.

Implementing these three factors along with many other strategies addressed in the SHSP will help Pennsylvania progress toward zero deaths and support the long-term federal goal for achieving zero deaths by 2050.



Context and Crash Data Implications

Several key influences must be considered as we work toward achieving our fatality and serious injury goals over the next 5 years and the ultimate goal of zero deaths by 2050.

Population Shift – The total population of Pennsylvania marginally increased during the lifetime of the last SHSP from 2016 to 2020, increasing by 1.7% according to the US Census Bureau. Pennsylvania is slowly urbanizing, with growing numbers of Pennsylvanians living in urban areas. The increased number of urban and suburban counties across the state have had higher growth rates compared to the rural areas.

Aging Population – The number of Pennsylvania licensed drivers age 65 and over have increased consistently since 2010 peaking in 2020. This increase has a significant impact on the number of older driver and pedestrian fatalities/serious injuries. People ages 65 and older account for approximately 18.7% of Pennsylvania's population based on US census data.

Freight Growth – The U.S. Department of Transportation projects long-term growth (2018-2045) for truck freight activity in Pennsylvania of 51 percent in tonnage, 58 percent in ton-miles and 80 percent in value. These figures confirm a steady growth in truck traffic on the state highway system.

Updated Serious Injury Classifications – In 2016, Pennsylvania shifted from using "Major Injury" to the standard national language of "Suspected Serious Injury." This terminology change directly resulted in an increase of the number of crashes being classified as serious injury starting in 2016. Several of the 5-year average graphics may show an upward trend for the historical data and/or future goals even though the annual serious injuries may have decreased since 2016.

The COVID-19 Pandemic – There was a recent uptick in traffic-related fatalities in Pennsylvania. This is not an isolated trend, as national estimates for 2020 fatalities show that 38,680 people died in traffic related crashes, the largest projected number of fatalities nationwide since 2007. This represents a 7.2% increase in fatalities from the previous year (NHTSA, 2021). The COVID-19 pandemic greatly impacted the way that typical road users traveled in 2020-2021 and may continue influencing trends in the coming years. 2020 vehicle miles traveled decreased by 17% from the previous year. This major decrease was a significant factor in calculating the fatality rate and serious injury rate metrics found in the Performance Measures section.

There were also fewer people taking public transportation as more road users preferred biking and walking. These changes in volumes influenced speeds and other road user behaviors. The pandemic also caused economic strain, contributed to widespread anxiety, and highlighted inequities, influencing the quantity and type of fatal and serious injuries occurring on the roadway network.

Performance Measures

The SHSP identifies Pennsylvania's priority emphasis areas and other safety focus areas as well as their associated strategies for implementation. In addition, this plan coordinates the efforts of all agencies and stakeholders that have a role in highway safety. For the plan to be successful, it must translate to outcome-based metrics and be periodically evaluated for effectiveness. This will allow for modifications to occur which will lead to continual improvement in performance over the next five years.

Infrastructure Investment and Jobs Act (IIJA) requires the implementation of five specific safety performance measures to assess fatalities and serious injuries on all public roads. In accordance with federal legislation, Pennsylvania uses five-year rolling averages to calculate historical crash trends and set new targets.

Federal Performance Measures:

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

Pennsylvania 2022 Safety Performance Targets

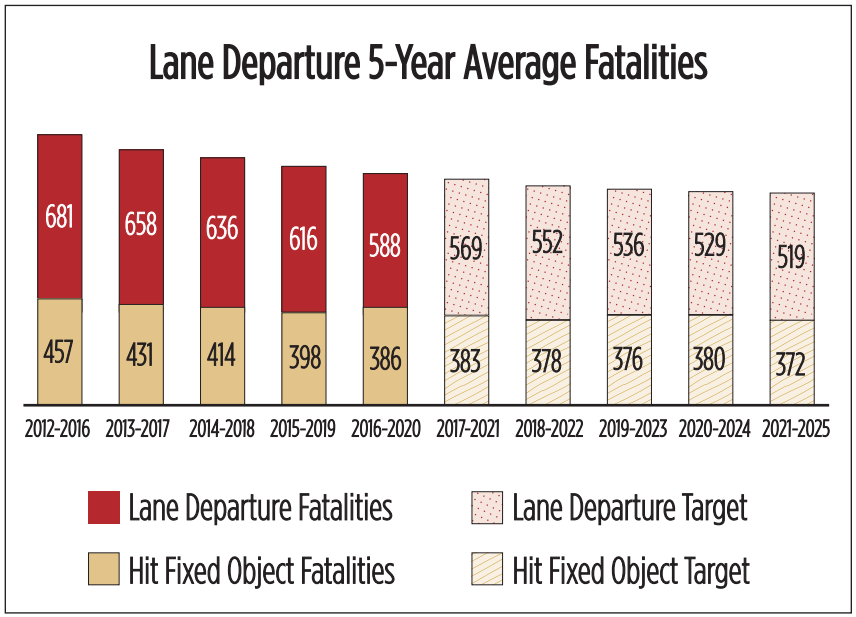
Performance Measure	2018-2022 Target
Number of Fatalities	1113.7
Fatality Rate	1.205
Number of Serious Injuries	4490.8
Serious Injury Rate	4.860
Number of Non-motorized Fatalities & Serious Injuries	730.1

The Pennsylvania State Highway Safety Report provides a summary for the above performance measures as well as past performance. A State Department of Transportation (DOT) has met or made significant progress towards meeting its safety performance targets when at least four of the five safety performance targets established under 23 CFR 490.209(a) have been met or the actual outcome is better than the baseline performance. The baseline performance is the 5-year average ending with the year prior to the establishment of the target.

Pennsylvania's Priority Emphasis Areas

Three priority emphasis areas have been selected which provide the greatest potential for significantly reducing traffic fatalities and serious injuries. Prioritizing these emphasis areas and supporting strategies will guide allocation of funding and resources over the next five years and help meet our safety performance targets.

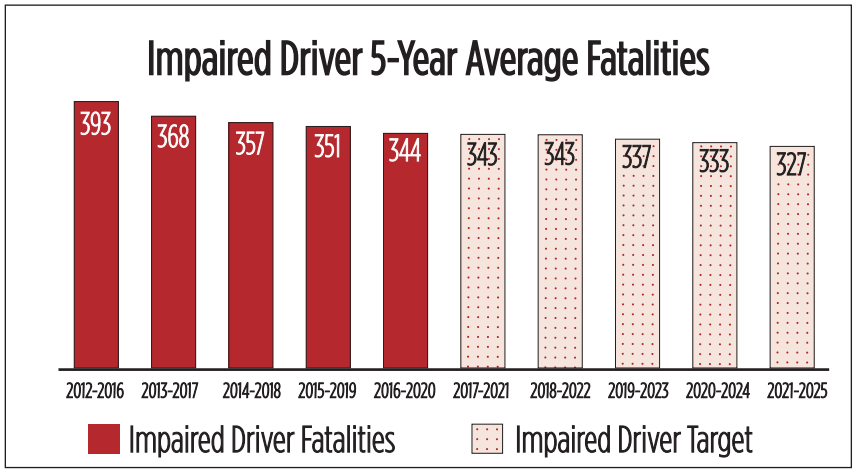
Lane Departure Crashes: Pennsylvania sustains more fatalities (52%) and serious injuries (42%) each year due to vehicles departing their travel lane compared to any other crash type. A lane departure occurs when a vehicle crosses the edge line or center line of a roadway. Two-thirds of all fatal and serious injury lane departures include a collision with a fixed object, most commonly trees, utility poles, embankments and guiderail. Over half of all fatal and serious injury lane departures occur on rural roads. Given PA's large rural network, this crash issue must be addressed through systemic and spot specific infrastructure improvements. Behavioral safety efforts that deal with seat belt use, distracted driving and impairment are equally important to improving this emphasis area.

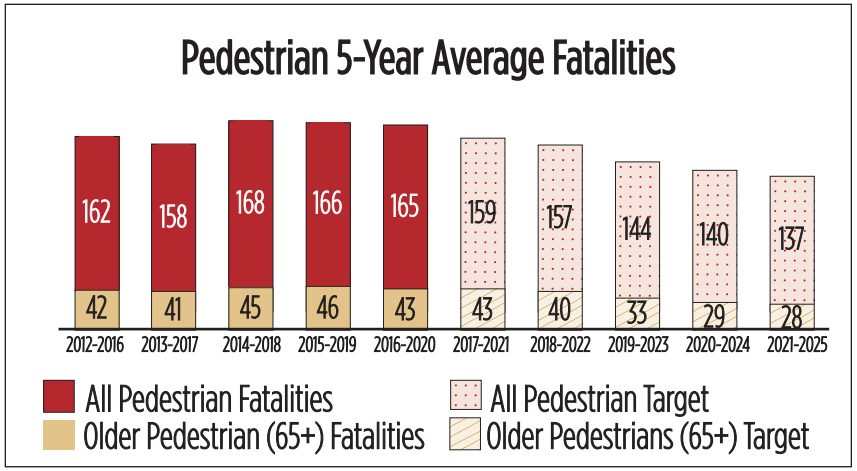


Pennsylvania's Priority Emphasis Areas

Impaired Driving: Alcohol related crashes have been a top concern in PA since the first edition of our SHSP in 2006. While fatalities in this area have steadily decreased over the last 15 years, they remain high. Drug-related fatalities have been increasing and may even grow more with the potential legalization of recreational marijuana. Alcohol, marijuana, opioids, and other drugs impair the ability to drive because they slow coordination, judgment, and reaction times. Prescription and over-the-counter medicines can cause drowsiness, dizziness, and other side effects which impair the ability to drive safely. Driving while impaired by any substance (legal or illegal) puts all roadway users in harm's way and continues to account for approximately 1 of every 3 highway fatalities.

Pedestrian Safety: Walking is the most fundamental form of transportation used by people of all ages and physical abilities. While the total number of fatalities have been trending down in Pennsylvania, pedestrian fatalities have been marginally increasing and account for 14% of the statewide fatalities each year. Active transportation is on the rise and being promoted across all areas of the state from urban centers to small rural towns. This has resulted in increasing pedestrian activity making it more likely to have collisions with motor vehicles. PennDOT is making accommodations for active transportation a routine and integral element of planning, project development, design, construction, operations and maintenance.



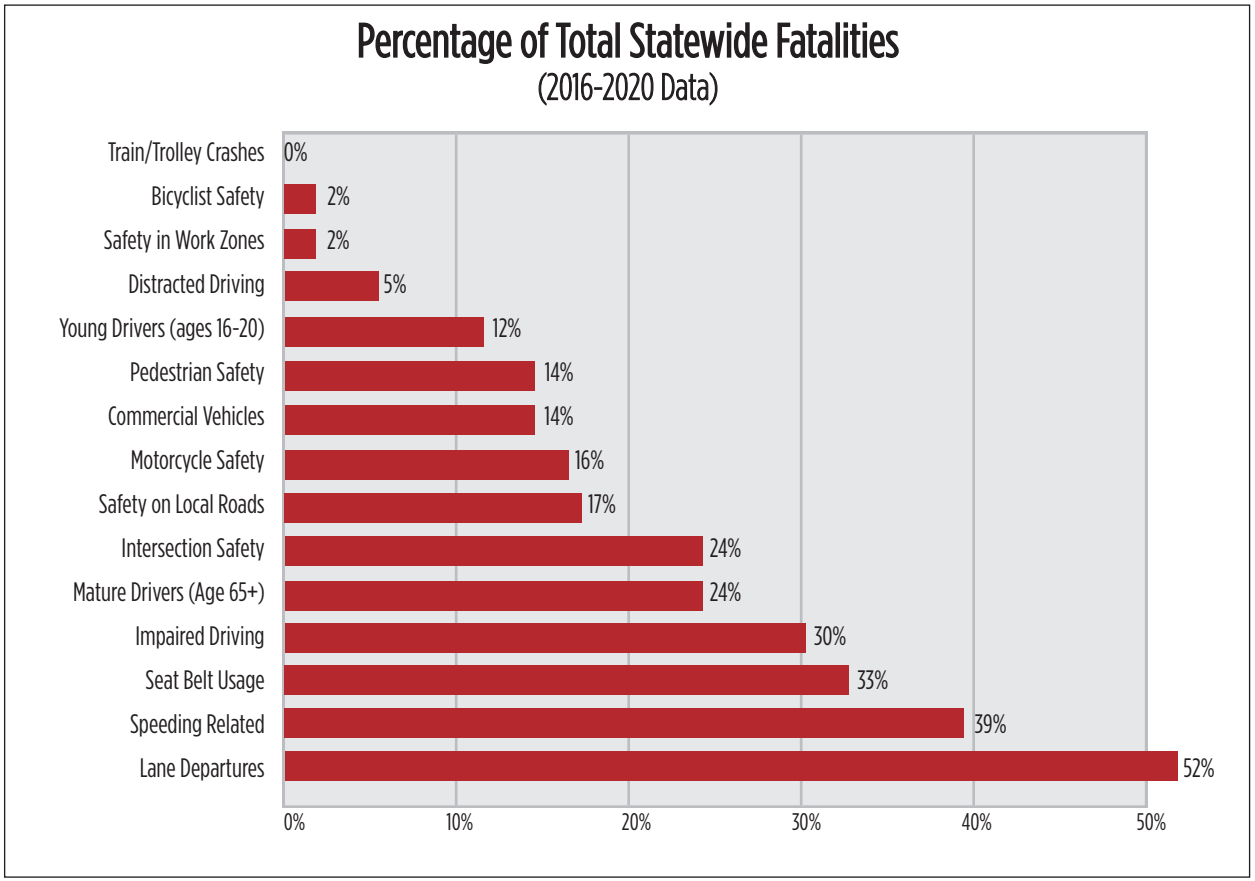


Safety Focus Areas

In addition to our three priority emphasis areas, Pennsylvania has identified 15 other Safety Focus Areas (SFA) to drive down fatalities and serious injuries. This is essential considering the complexity of our roadway system and diverse nature of motor vehicle crashes. These SFAs were established based on the most current 5-year average fatality data, proven countermeasures, and benefit-cost analysis. A complete list of strategies and action items for all 18 focus areas can be found in the appendix.

- Lane Departure Crashes
- Speeding & Aggressive Driving
- Seat Belt Usage
- Impaired Driving
- Intersection Safety
- Mature Driver Safety
- Local Road Safety
- Vulnerable User Safety (Motorcycle Safety)
- Vulnerable User Safety (Pedestrian Safety)
- Vulnerable User Safety (Bicyclist Safety)
- Commercial Vehicle Safety
- Young & Inexperienced Drivers
- Distracted Driving
- Traffic Records Data
- Work Zone Safety
- Transportation Systems Management & Operations (TSMO)
- Emergency Medical Services (EMS)
- Vehicle-Train Safety

Safety Focus Areas

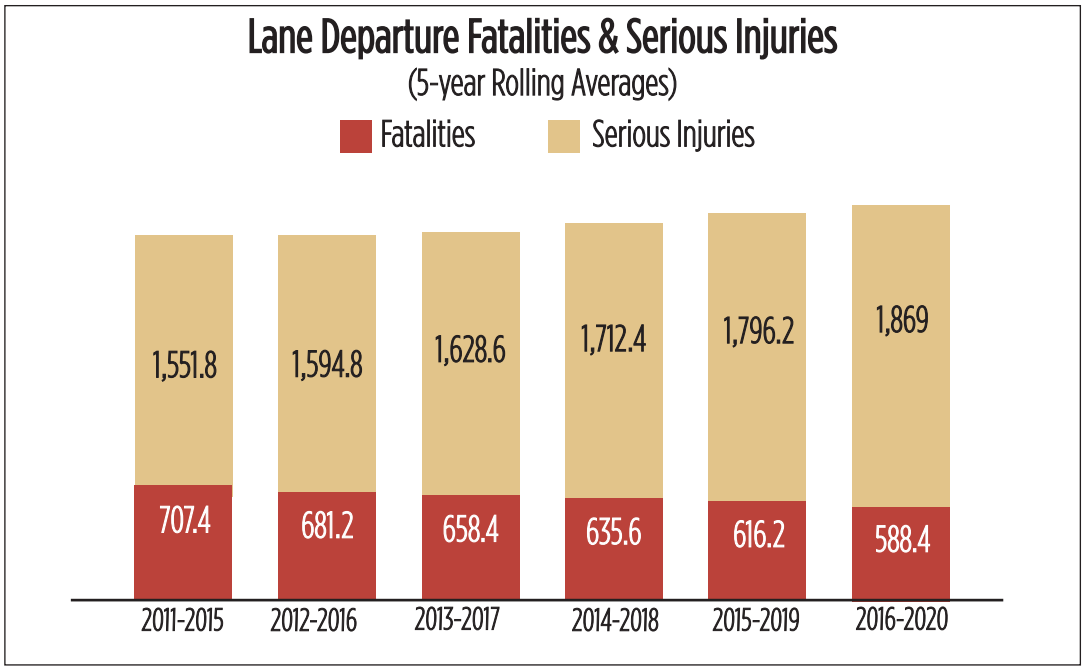


This chart represents the percentage of statewide fatalities associated with each SFA (not including Traffic Records Data, TSMO, or EMS). Note that the percentages in this chart do not add up to 100% because there is often more than just one contributing factor for any given fatal crash.

Lane Departure Crashes

Over half of the highway fatalities across the commonwealth involve a lane departure crash making this one of Pennsylvania's priority emphasis areas. Lane departures include:

- Single vehicle run-off-road crashes when a vehicle leaves the roadway.
- Hit fixed object crashes when a vehicle leaves the roadway and collides with a fixed object such as a tree, utility pole, guiderail, etc.
- Head-on collisions when a vehicle enters an opposing lane and crashes with an oncoming vehicle.



77%

of lane departure fatalities and serious injuries involved hitting fixed objects.

Supporting Information:

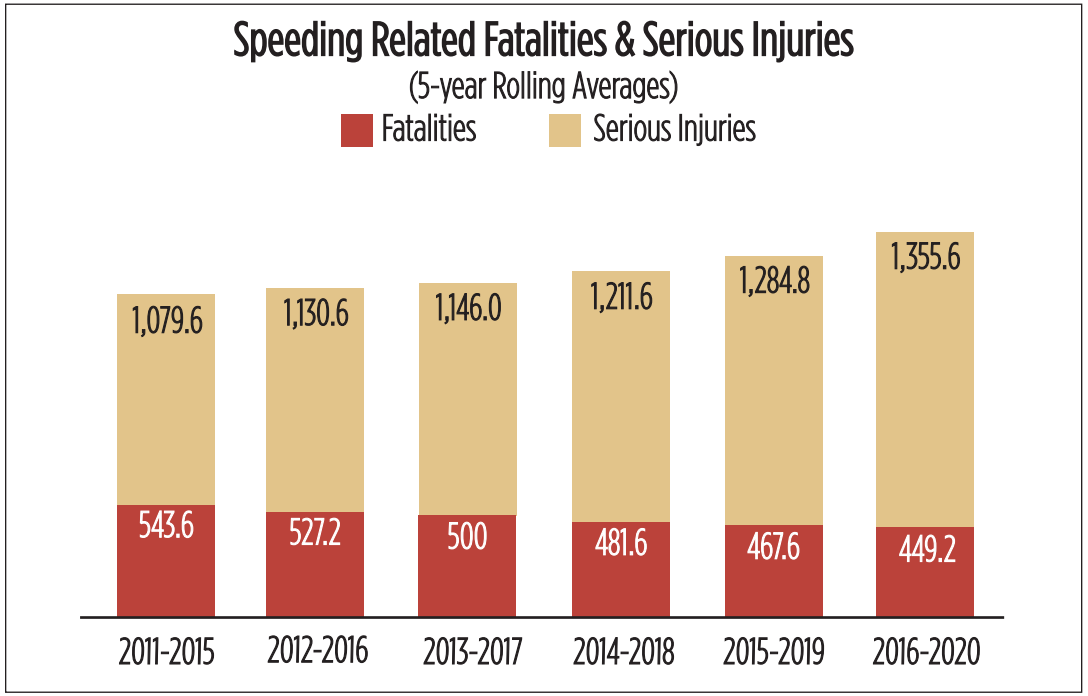
The strategies to combat lane departure crashes are aimed at keeping vehicles on the roadway and within the proper lanes of travel. Many of the below strategies involve low-cost safety improvements. Installing systemic improvements such as centerline/shoulder rumble strips, high friction surface treatments, and cable median barrier are some of the most cost-effective countermeasures PennDOT deploys throughout the state. However, even after engineering improvements are completed, lane departure crashes due to unsafe driving behavior can still occur. Therefore, strategies aimed at reducing the severity and frequency of hit fixed object crashes are also recommended. Implementing FHWA's FoRRRwD approach is a key initiative to reduce rural roadway departures.

Strategies:

- Modify roadside clear zone in the vicinity of hazardous fixed objects
- Reevaluate passing zones
- Implement lane departure related infrastructure improvements
- Utilize the highway safety manual to identify and evaluate proposed improvements
- Incorporate new technologies and countermeasures

Speeding & Aggressive Driving

The National Highway Traffic Safety Administration defines aggressive driving as occurring when "an individual commits a combination of moving traffic offenses so as to endanger other persons or property." Motorists have cited aggressive driving as the number one traffic safety threat. In Pennsylvania, for a crash to be deemed aggressive, one vehicle involved must have committed two or more aggressive crash actions. Aggressive driving actions include speeding, red light running, tailgating, passing in a no passing zone, careless passing, etc. Speeding and driving too fast for conditions have been a contributing factor for 39% of total fatalities in Pennsylvania.



10%

of aggressive driving crashes involve drivers who are tailgating as one of the contributing factors.

Supporting Information:

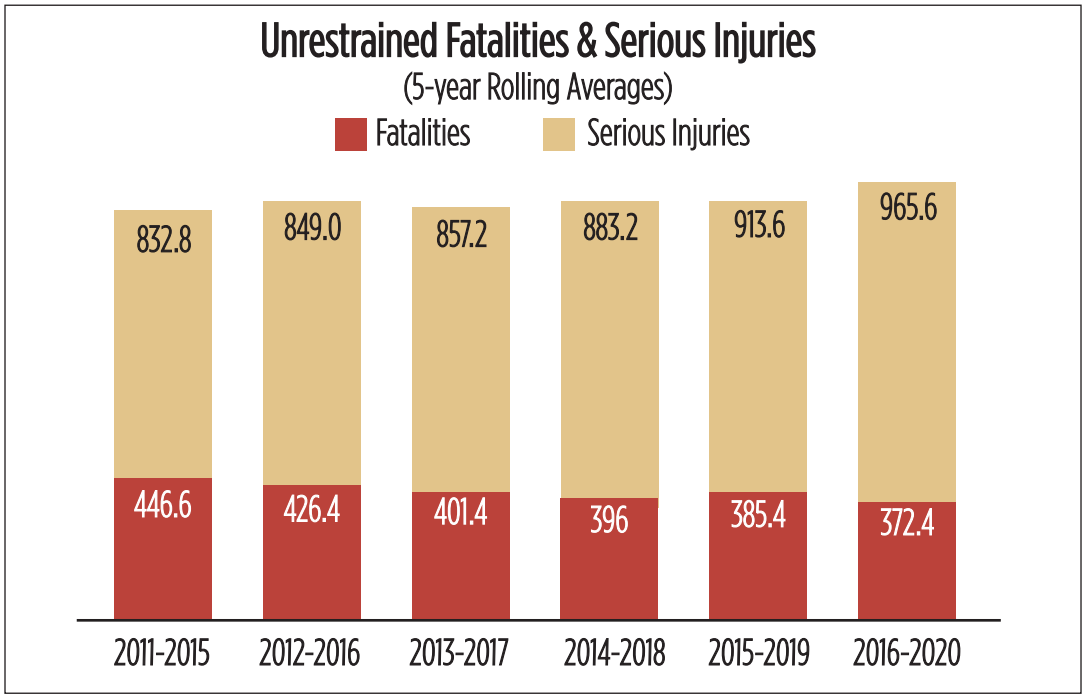
Pennsylvania's strategies to battle speeding and other aggressive driving behaviors incorporate technology such as speed display signs and real time feedback warning systems. Educational programs at schools and during driver's license testing procedures are specific approaches aimed at changing driver behavior. Targeted traffic enforcement is also very effective in changing driver behavior and improving safety.

Strategies:

- Increase education and outreach programs
- Increase enforcement efforts
- Enact legislation to support enforcement
- Implement infrastructure improvements to mitigate speeding
- Increase the use of new technologies

Seat Belt Usage

Occupant protection is one of the most effective ways to prevent injury or death in a vehicle crash. From 2016 to 2020, there were an average of 372 unrestrained fatalities per year in Pennsylvania. Many of these fatalities could have been prevented simply by buckling up. Data in Pennsylvania has shown the combination of lap/shoulder seat belts, when used, reduces the risk of fatalities to front seat passenger car occupants by 45% and the risk of injuries by 50%. Seat belt usage continues to be higher in primary law states, where drivers can be pulled over solely for not wearing a seat belt. However, Pennsylvania is currently a secondary law state.

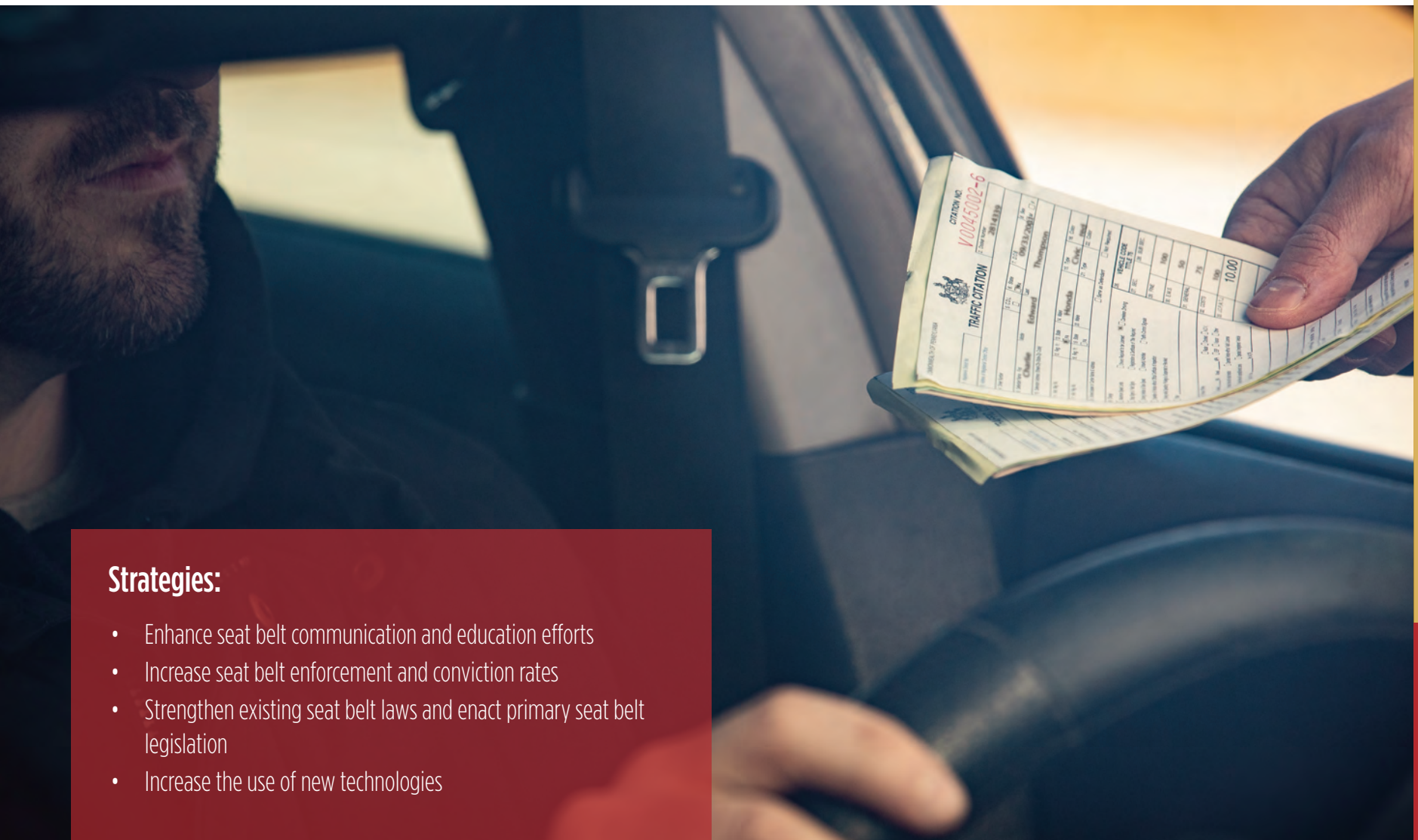


94%

of people who died in cars, small trucks, vans, and SUVs would have likely survived had they been wearing a seatbelt.

Supporting Information:

After Pennsylvania's first seat belt law was passed in 1987 usage rates increased steadily reaching the low 80's in 2004. More recently, seat belt usage rates have increased each year since 2016 peaking at 89.5% in 2021. A primary seat belt law for all drivers and education/enforcement programs will help increase future seat belt rates. Our top strategies to increase seat belt usage include educating drivers and passengers as well as high-visibility enforcement.

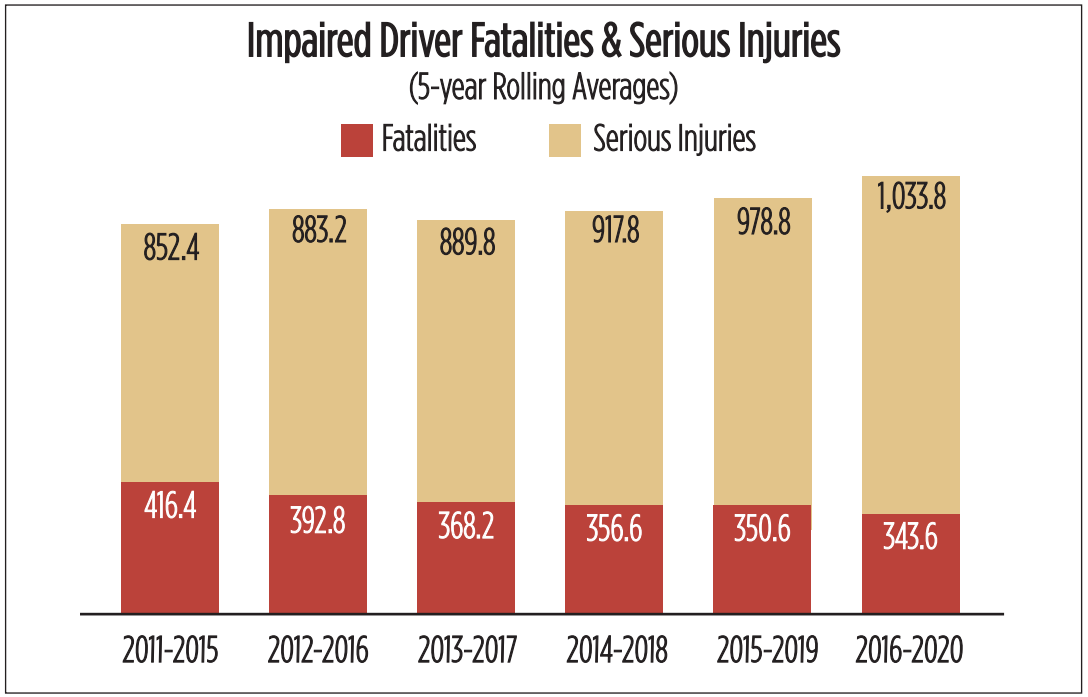


Strategies:

- Enhance seat belt communication and education efforts
- Increase seat belt enforcement and conviction rates
- Strengthen existing seat belt laws and enact primary seat belt legislation
- Increase the use of new technologies

Impaired Driving

Impaired driving consists of a driver under the effect of alcohol, drugs, medication, or any combination of those. Impaired driving has been a contributing factor for 30% of the statewide fatalities over the past 5 years, making this one of Pennsylvania's priority emphasis areas. On average in 2020, 27 impaired driving related reportable crashes took place each day. In Pennsylvania, a driver is considered to be impaired by alcohol with a blood alcohol concentration (BAC) of 0.08 or higher. There has been a consistent focus on alcohol impairment along with many measures to increase high visibility enforcement and driver accountability. However, an issue on the rise is driver impairment due to illegal or prescription drugs. This trend is a key area of focus in the upcoming years as we move toward zero deaths.



78%

of impaired driving crashes involved a driver under the influence of alcohol and 32% were under the influence of drugs.

Supporting Information:

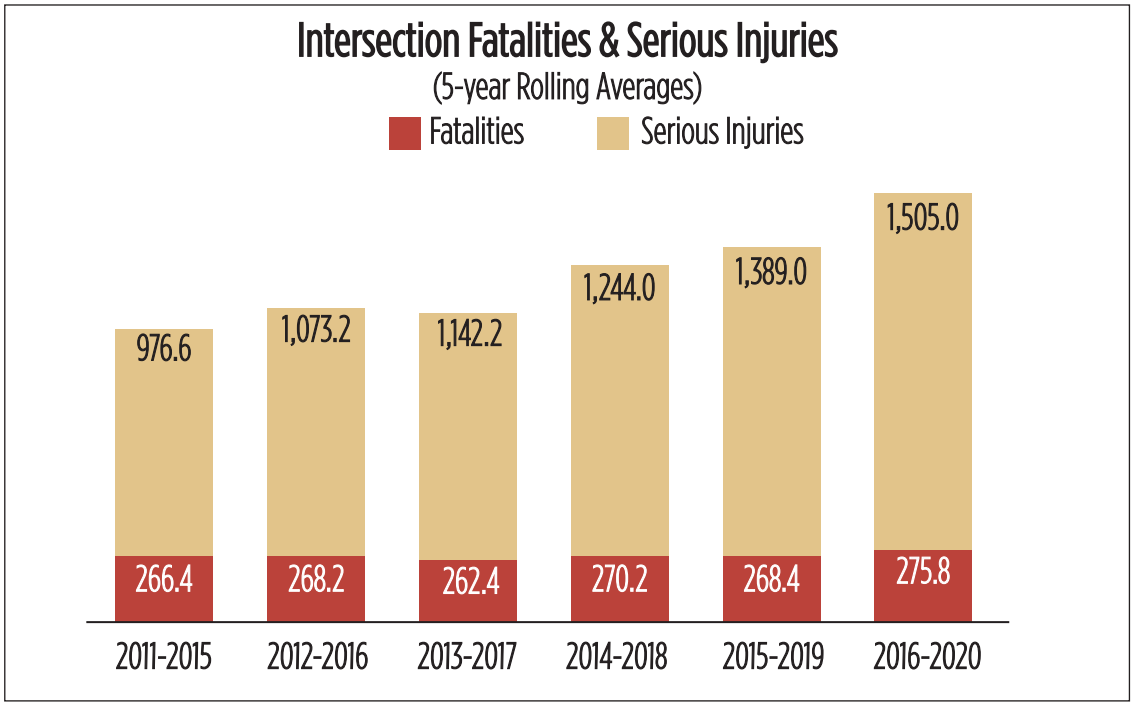
Pennsylvania takes a proactive approach to combat impaired driving. This approach focuses on enforcement and educational programs as a means of prevention. However, it also includes legislative efforts and emerging technologies to aid in detection. The below strategies reflect a comprehensive approach to this focus area.

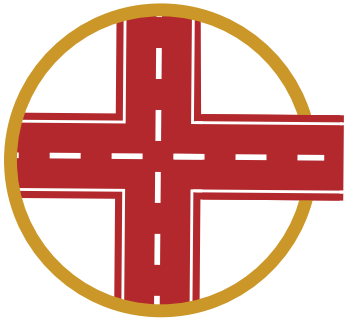
Strategies:

- Shift focus to include drugged driving
- Utilize data to drive safety decisions
- Increase impaired driving education and training for law enforcement
- Increase effectiveness of media, communications, and educational efforts
- Support impaired driving cases through the judicial process

Intersection Safety

Intersections are known points of conflict and are a significant contributor to crashes. The crossing and turning movements that occur at intersections are the main contributors to the increased crash risk. Additionally, intersections are heavily utilized by pedestrians and bicyclists, making this focus area important for both motorists and active transportation users. Within Pennsylvania, intersection related crashes account for 24% of the annual fatalities, 34% of serious injuries, and 36% of all crashes.





37% of all intersection fatalities occurred at signalized intersections and **31%** occurred at stop controlled intersections.

Supporting Information:

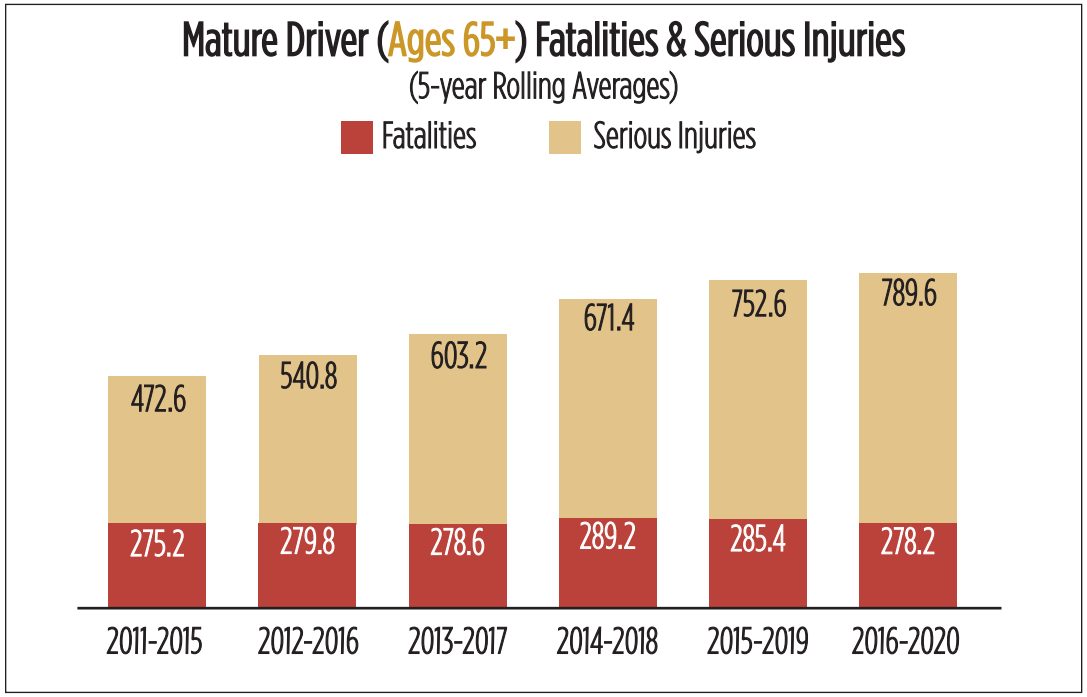
Intersections and interchanges encompass many different designs/locations and provide transportation for all types of road users. Due to such diversity, a wide variety of countermeasures are available to improve intersection safety. Transportation practitioners can use a Safe System approach to supplement an Intersection Control Evaluation (ICE) for selecting the right intersection design for a specific location. A Safe System approach can include minimizing and modifying conflict points, reducing speed of vehicles, improving visibility at intersections, and providing space and protection for pedestrians and bicyclists.

Strategies:

- Implement innovative intersection and interchange designs
- Increase education, outreach, and applications of intersection safety countermeasures
- Implement intersection related infrastructure improvements

Mature Driver Safety

Mature drivers have been a contributing factor for 24% of total fatalities in Pennsylvania. The number of licensed drivers age 65 and over have increased consistently since 2010 peaking in 2020. This increase has a significant impact on the number of older driver/pedestrian fatalities and serious injuries. People age 65 and older account for approximately 19% of Pennsylvania's population based on US census data making this age group the fastest growing segment of the population.



20%

of all mature driver crashes occurred at nighttime between dusk and dawn.

Supporting Information:

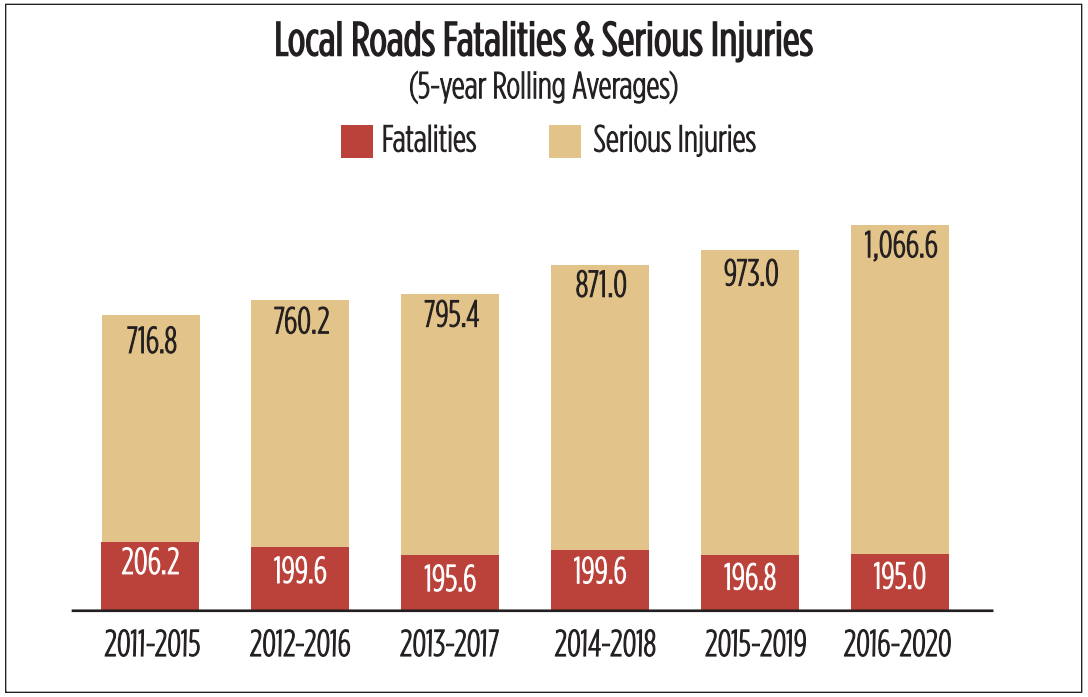
The strategies to improve mature driver safety focus on education, encouraging alternative modes of transportation, and improved driver's license screening. Infrastructure improvements to accommodate older drivers include intersection and ramp countermeasures to prevent wrong way crashes and the utilization of leading pedestrian intervals to increase walk time for mature pedestrians.

Strategies:

- Establish partnerships with stakeholder organizations to promote mature driver safety
- Educate families, medical professionals, and stakeholders about making decisions regarding mature drivers
- Enhance the screening of driver's licenses for mature drivers
- Utilize infrastructure improvements to accommodate mature drivers
- Expand the use of mobility alternatives and provide education for mature drivers

Local Road Safety

Local roads make up approximately two-thirds of the 120,000 miles of highways in Pennsylvania and accommodate nearly 43 million miles of traffic each day. These roads are owned by townships, boroughs, cities, and counties. One quarter of all reportable crashes and approximately 200 fatalities occur every year on the local road network.



67% of all local road fatalities occurred in urban areas and 33% occurred in rural areas.

Supporting Information:

Our top strategies to enhance safety on local roads include engineering improvements as well as providing training, technical assistance and safety audits. These all aid in identifying countermeasures to prioritize high crash corridors and intersections. Additionally, the strategies focus on assisting municipalities with improved safety data and utilization of safety plans as well as funding improvements.

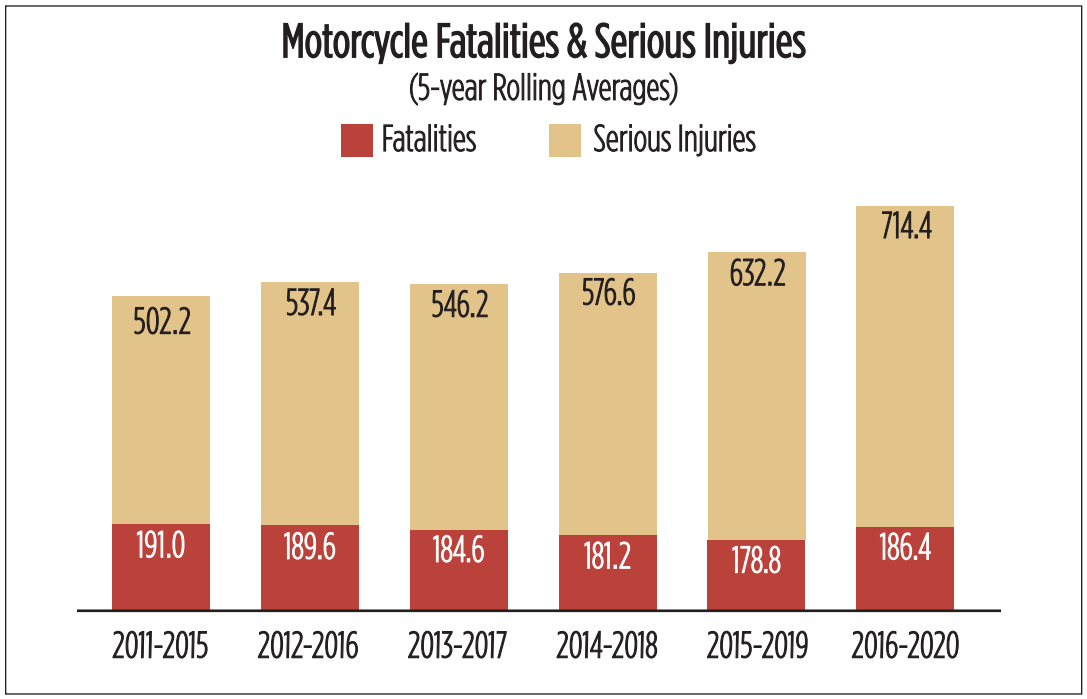
Strategies:

- Increase collection, analysis, and dissemination of local safety data
- Streamline the planning and programming process for local road HSIP projects
- Increase development and implementation of Local Road Safety Plans (LRSP) by municipalities
- Expand & promote technical assistance to local agencies to advance safety activities through legislation, guidance, tools, & training

Vulnerable User Safety: Motorcycle Safety

Motorcycles have been involved in 16% of the total fatalities in Pennsylvania. Motorcycle safety remains an area of great concern in Pennsylvania. Key factors that have contributed to motorcycle fatalities include impaired riding, lack of helmet use, lack of training, and aggressive riding.

- Motorcycle-related suspected serious injuries account for approximately 11-16% of total statewide suspected serious injuries (since 2010).
- Five year rolling averages for suspected serious injuries have been increasing between 2-13% since 2012.



27%

of all motorcycle crashes involved a fatality or serious injury.

Supporting Information:

Strategies to combat motorcycle fatalities and serious injuries include education programs, rider training, and law enforcement. Safer motorcyclist operating habits and awareness campaigns for other motorists who encounter motorcycles are important elements to reducing motorcycle related crashes.

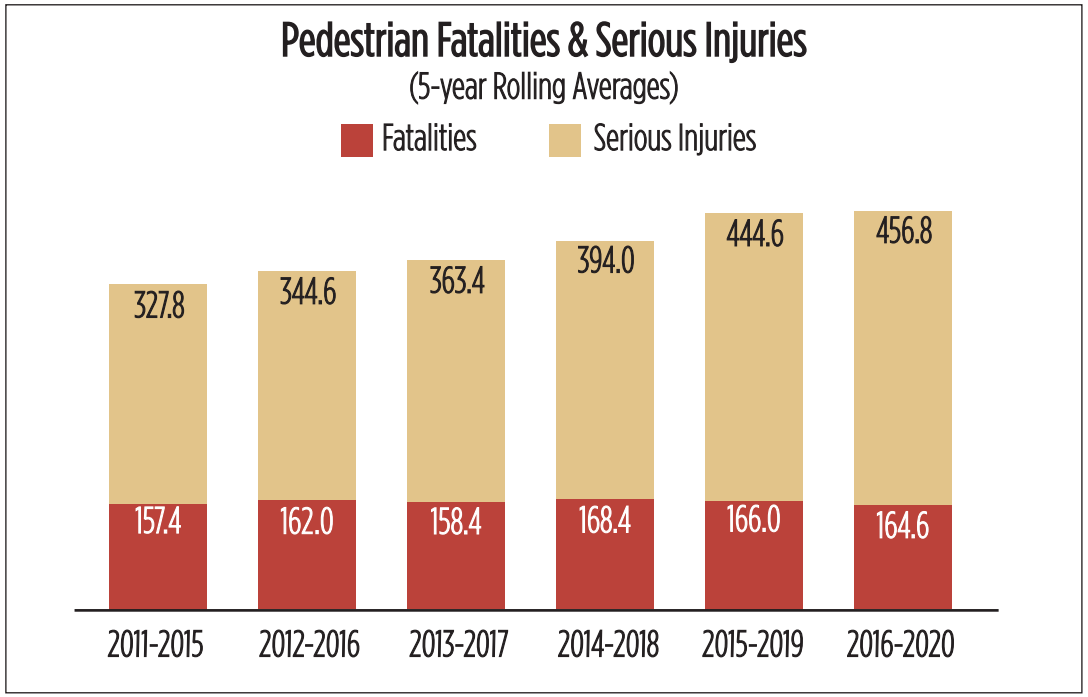
Strategies:

- Enhance public outreach efforts and partnerships with motorcycle stakeholders
- Improve motorcycle rider education and training for Emergency Medical Service personnel
- Enhance motorcycle safety enforcement efforts
- Enact motorcycle safety legislation
- Incorporate motorcycle friendly infrastructure improvements

Vulnerable User Safety: Pedestrian Safety

Active transportation is any self-propelled, human-powered mode of transportation such as walking or bicycling, and engages roadway users in healthy physical activity while they travel from place to place. People walking, using wheelchairs, skateboarding, scootering, and inline skating are all ways pedestrians can engage in transportation so these need to be considerations of this emphasis area.

Pedestrians are one of the most vulnerable groups of roadway users. One out of eight highway fatalities is a pedestrian, making this one of Pennsylvania's priority emphasis areas. To address this situation PennDOT aims to provide safe, reliable, cost-effective, and convenient facilities.
This will allow pedestrians of all ages and abilities access to their community's destinations of interest.



55%

of all pedestrian crashes occur at intersections.

Supporting Information:

Pedestrian fatalities and serious injuries are a multi-faceted problem. While most pedestrian related crashes occur at intersections in urban areas, many pedestrian fatalities can still occur at non-intersection locations in suburban or rural areas. This is important to recognize because rural vehicle speeds tend to be higher while pedestrian awareness by motorists tends to be lower and specific pedestrian infrastructure is not present. Our strategies to improve pedestrian safety include outreach materials, emerging technologies, roadway infrastructure improvements and the safe system approach.

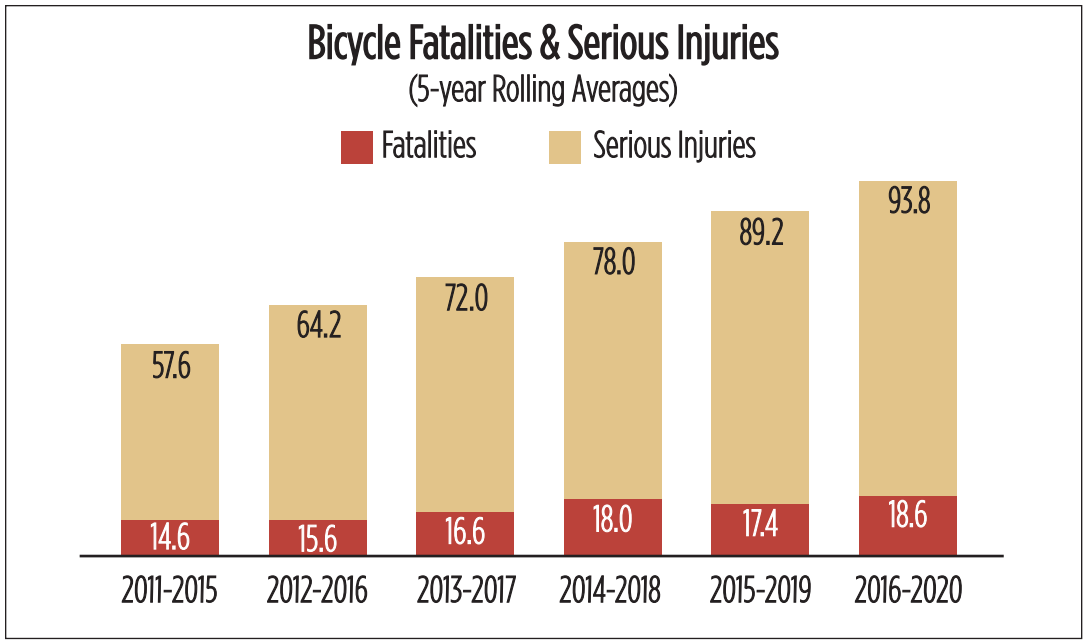
Strategies:

- Implement pedestrian related infrastructure improvements
- Utilize data-driven approaches to pedestrian safety
- Use a safe system approach to integrate safety in the planning, design, construction, operation, and maintenance of our transportation networks
- Increase the use of new technologies to support pedestrian safety
- Implement legislative changes to promote increased pedestrian safety
- Increase pedestrian safety education and outreach materials for all modes of travel
- Consider other motorized micro-mobility modes and identify safety risks

Vuneralble User Safety: Bicyclist Safety

Active transportation is always evolving because there are more mobility options than ever before including ride-hailing services, bikeshare, scooter share, and e-bikes. It is critical to think about these options not only as new applications of technology but also new ways to connect people. New mobility continues to change how we think about transportation with a focus on shared mobility.

PennDOT's emphasis on bicyclist safety is to ensure that it is predictable, consistent, and blends safely with other highway users. Another component is to ensure that motorists and bicyclists understand the rules of the road. The attention begins with elementary school children, by teaching the basics of bicycling and the importance of wearing helmets. It continues with instructional publications and website information for teens and adults.



60%

of all bicycle fatalities resulted from turning movements (angle collisions).

Supporting Information:

Enhancing the bicycle safety public education program that targets all age groups of bicyclists and drivers will greatly improve this focus area throughout the state. Other top strategies to reduce the frequency and severity of motor vehicle-bike crashes consist of roadway infrastructure improvements, supporting legislation that applies to cyclists, and innovative technologies to identify high usage routes and bicycle treatments.

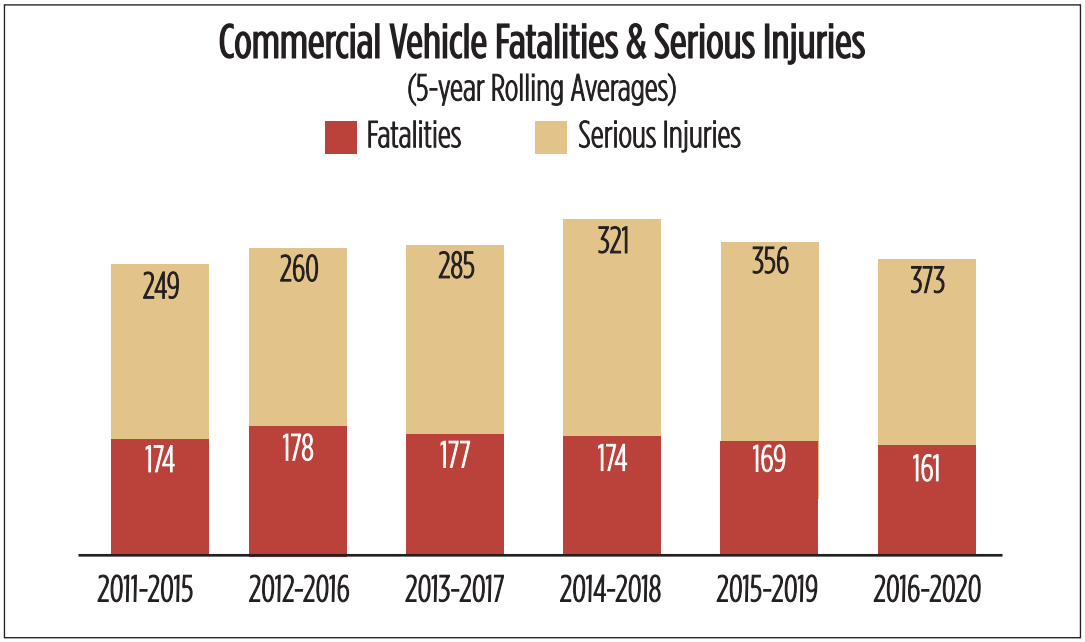
Strategies:

- Implement bicycle related infrastructure improvements
- Increase the use of new technologies to support bicyclist safety
- Implement improvements to the planning and design process
- Implement legislative changes to promote increased bicyclist safety
- Increase bicycllist safety education and outreach materials for all modes of travel

Commercial Vehicle Safety

Commercial motor vehicles have been a contributing factor for 14% of total fatalities in Pennsylvania. The fatality rate is twice the serious injury rate due to the size of commercial vehicles and significantly higher number of highway miles traveled at relatively higher speeds. Promoting commercial vehicle safety through education, regulatory oversight, and enforcement is key component of this safety focus area. These will all lead to reduced truck and bus fatalities as well as serious injuries on our highways.

- Fatalities involving a commercial vehicle account for approximately 14-15% of total statewide fatalities (since 2011).
- Suspected serious injuries involving commercial vehicles account for approximately 8-9% of total statewide suspected serious injuries (since 2011)



52%

of commercial vehicle crashes involve an angle or rear end collision.

Supporting Information:

Pennsylvania continues to strive to reduce the number of large truck and bus crashes. This can be achieved through sustained roadside inspections, enforcement activity, public outreach, and educational presentations. Coordination with law enforcement agencies to strengthen ties with the trucking industry partners will provide a better understanding of commerce and highway safety needs.

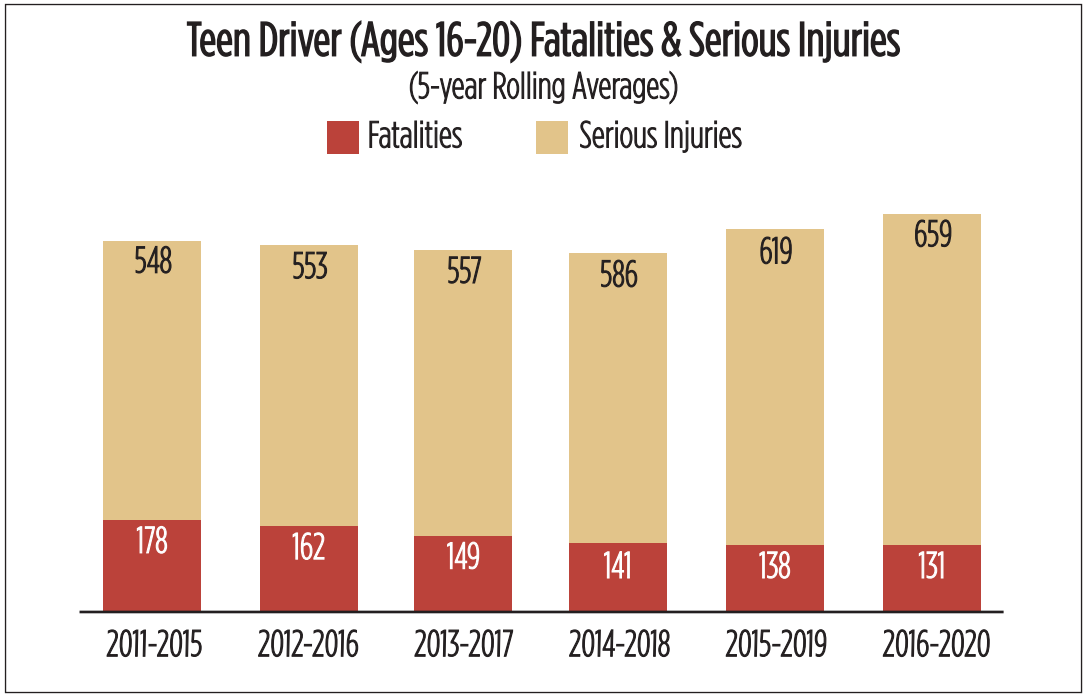
Strategies:

- Increase commercial vehicle safety education and outreach
- Implement commercial vehicle related infrastructure improvements
- Improve commercial vehicle safety enforcement efforts
- Increase the use of new technologies

Young & Inexperienced Drivers

Motor vehicle crashes are the main cause of death among the 16-20 year-old age group. Young drivers have been a contributing factor for 12% of total fatalities in Pennsylvania. Some key contributors to crashes involving teen drivers in Pennsylvania include driver inexperience, driver distractions, driving too fast for conditions, and improper or careless turning.

- Fatalities involving teen drivers (ages 16-20) account for approximately 12-14% of total statewide fatalities (since 2011).
- Suspected serious injuries involving teen drivers (ages 16-20) account for approximately 15-17% of total statewide suspected serious injuries (since 2011).



53%

of all fatalities in a teen driven vehicle were unbelted.

Supporting Information:

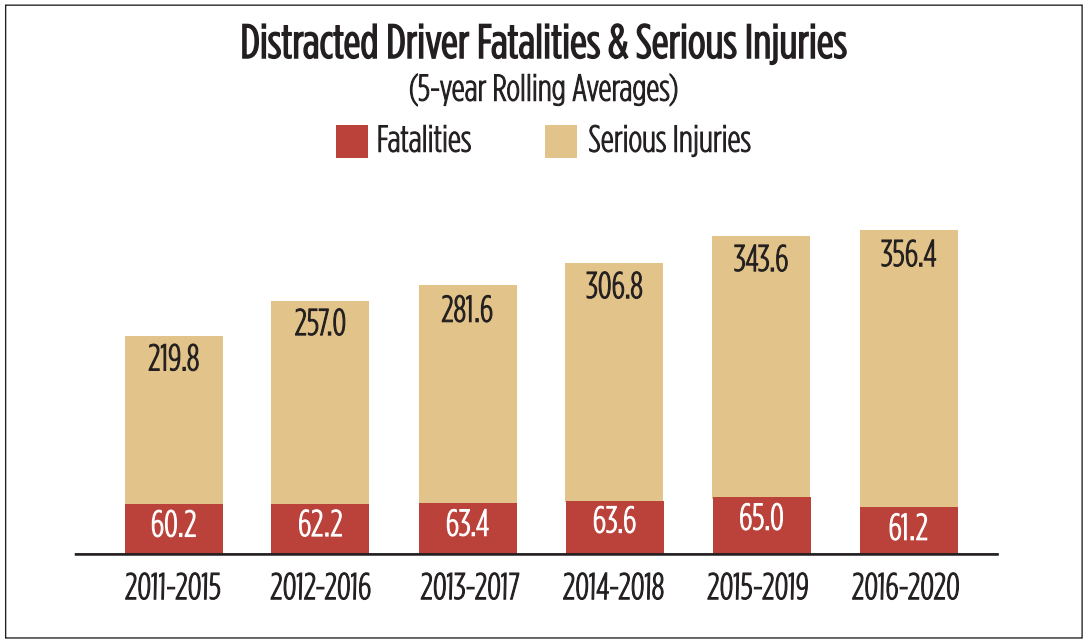
The strategies to decrease crashes involving inexperienced drivers consist primarily of education and law enforcement efforts. Utilization of vehicle technology and data to implement safety countermeasures will be critical to improving this safety focus area.

Strategies:

- Increase education efforts for young and inexperienced drivers and parents of young drivers
- Pursue partnerships with non-traditional organizations
- Increase enforcement efforts for younger driver safety
- Utilize data to drive the implementation of safety countermeasures
- Promote the use of vehicle technologies for younger drivers

Distracted Driving

Distracted driving is any non-driving activity a person engages in while operating a motor vehicle which has the potential to distract the person from the primary task of driving and increases the risk of crashing. Awareness of these dangerous activities has increased dramatically over the last decade and reducing distracted driving is now a top traffic safety priority. Distracted driving has been a contributing factor for 5% of total fatalities in Pennsylvania. However, various state and national studies suggest the true total could be twice that number as drivers involved in a crash may not readily admit to being inattentive or drowsy.



Over **13%** of distracted driving fatal crashes involved a cell phone.

Supporting Information:

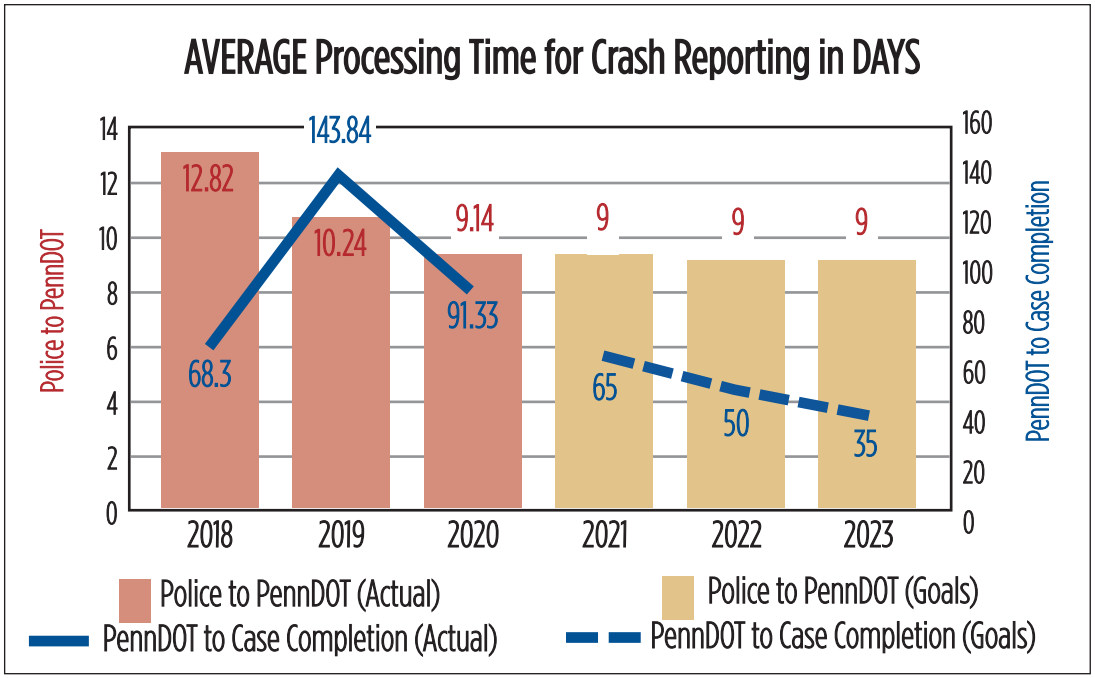
Pennsylvania has a statewide anti-texting law that went into effect in 2012. However, there are still many strategies that need to be implemented to aid in further reduction of fatalities and injuries. Implementing effective engineering countermeasures, providing public information/outreach programs, and increased enforcement campaigns will help decrease the frequency and severity of distracted driving crashes.

Strategies:

- Increase outreach programs and driver awareness of drowsy/distracted driving dangers
- Use roadway infrastructure to increase driver awareness
- Increase enforcement and enact legislation to address distracted driving
- Implement technologies to prohibit or limit cell phone and electronic equipment while vehicle is in motion

Traffic Records Data

Accurate traffic records data is the backbone of an effective safety program. Pennsylvania's crash records system provides the basic information that is necessary for successfully implementing highway safety countermeasures at the local, state, and federal levels of government. The statewide crash records system is used to perform problem identification, establish performance measures, allocate resources, determine the progress of specific programs, and support the evaluation of highway safety countermeasures. The actual time between the crash date and police submission is tracked to improve the timeliness of police agencies submitting their report. PennDOT works with police agencies on a monthly basis to ensure that all required crash reports are submitted.



A **reportable crash** is one in which an injury or a fatality occurs or at least one of the vehicles involved requires towing from the scene.

Supporting Information:

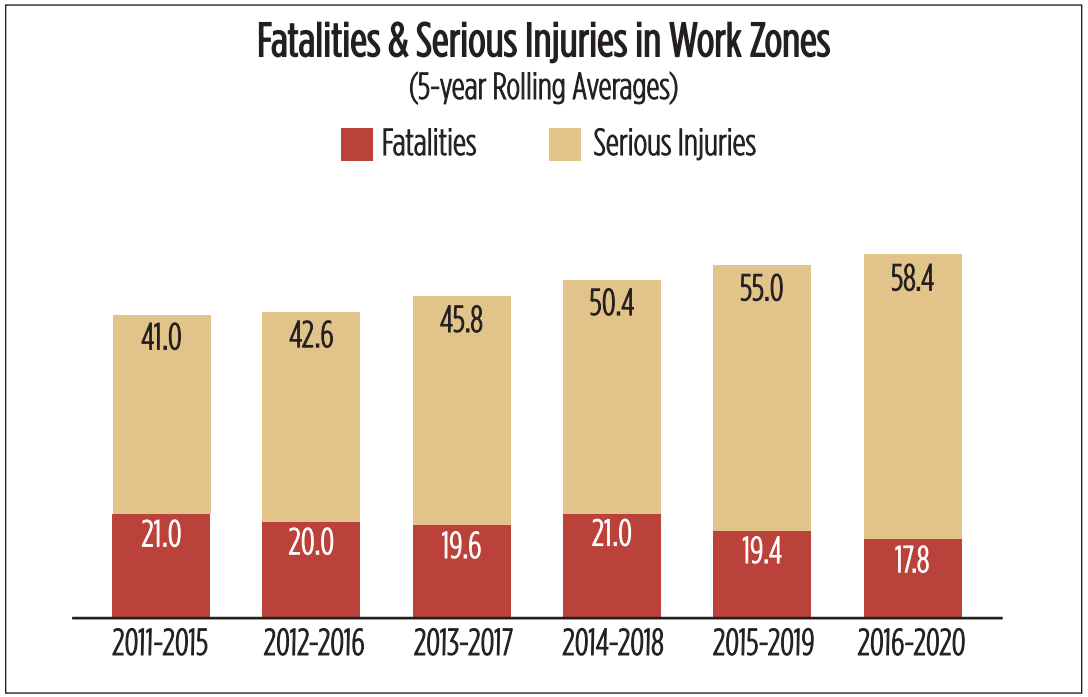
Without accurate traffic records data, sound decisions about the direction of Pennsylvania's highway safety programs cannot be made or measured. The goal is to provide traffic records data in a timely manner that is consistent, complete, accurate, accessible, and portable (able to be integrated with other data sources).

Strategies:

- Improve the accessibility of data to partners and the capabilities in data analysis
- Improve the timeliness and quality of data collection and police prepared data
- Establish common standards and plan for integration of all traffic records components
- Improve the quality of road data collected

Work Zone Safety

Traffic patterns are constantly changing during road work that requires additional focus on the part of motorists. Additionally, workers are often present, which magnifies the potential of a fatal or serious injury crash. To effectively improve safety in work zones the safety needs of our road users, highway workers, and communities must be considered.



47%

of fatalities in work zones resulted from drivers speeding or driving too fast for conditions.

Supporting Information:

Implementing new safety products, expanding public awareness/education, engineering, and increasing the presence of law enforcement will help to increase work zone safety.

Strategies:

- Increase work zone awareness and education efforts
- Effectively coordinate and manage enforcement in work zones
- Establish an effective and actionable work zone performance management program
- Improve work zone design and operations to improve safety
- Use data and technology to improve work zone safety and monitor performance
- Target CMV Safety in work zones

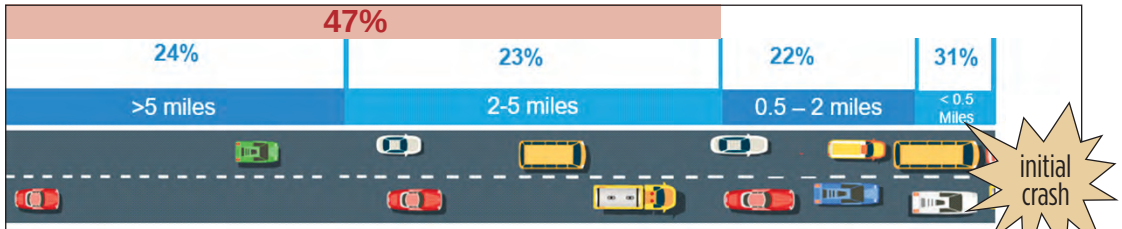
Transportation Systems Management and Operations

Transportation Systems Management & Operations (TSMO) is a set of integrated strategies used to optimize the operational performance of existing infrastructure. In simplest terms, TSMO is a way to increase reliability and mobility of our roadways by using a wide range of strategies to manage congestion, rather than adding more roadway capacity.

As described in the PennDOT TSMO Strategic Framework for Pennsylvania, TSMO not only impacts mobility, but also safety, with recurring and non-recurring congestion serving as causal factors for both primary and secondary crashes across Pennsylvania.

For example, a limited access highway operating in free-flow conditions is unlikely to see many rear-end crashes, whereas a congested roadway is much more likely to see rear-end crashes. Furthermore, when an incident occurs, the amount of time it takes for an incident to be cleared from the roadway (average incident clearance time) and the amount of time that the incident influences the roadway operations even after the incident has been cleared (average incident influence time) both impact the likelihood of resulting congestion and delays, which can lead to secondary crashes.

Average Timing of Primary Crash to Secondary Crash (2018-2020)			
Time (Minutes)	**Crashes**	**Fatality Count**	**Injury Count**
0-15	219	4	147
16-30	134	0	83
31-60	228	1	145
61+	492	2	290



Distance & Percentage of Secondary Crashes from Primary Crash (2018-2020)

30%

of congestion in PA is due to roadwork, 23% is caused by motor vehicle crashes, and 19% is due to weather related conditions.

Supporting Information:

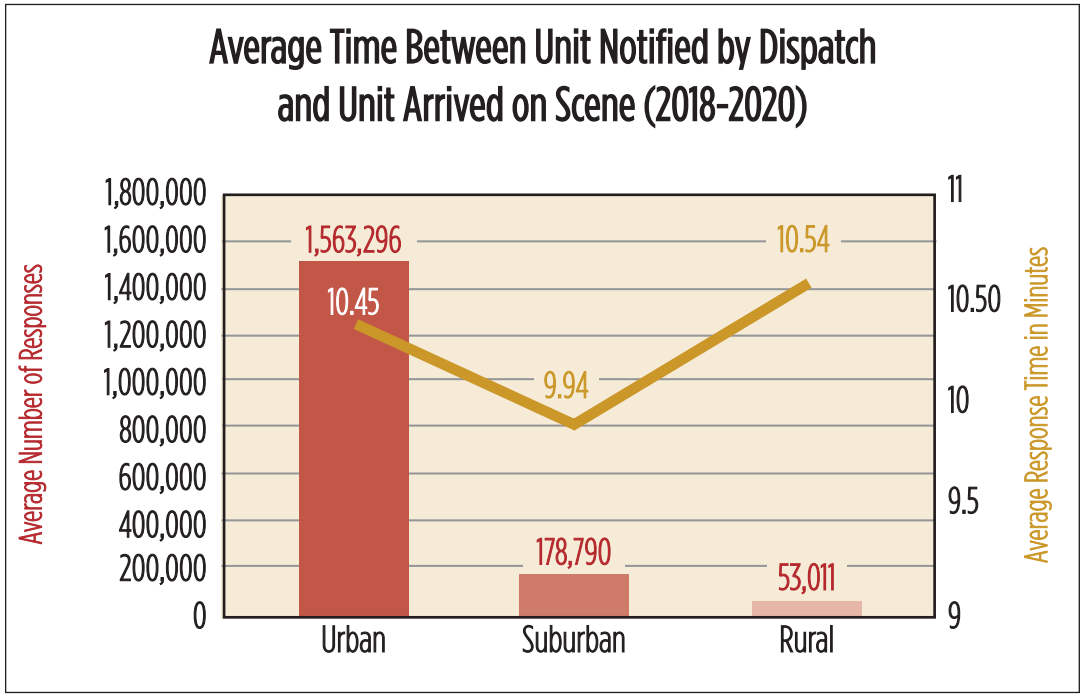
The overarching TSMO safety-related goals are to reduce the occurrence and impacts of recurring and non-recurring congestion, reduce the average incident clearance time, and reduce the average incident influence time. Pennsylvania deploys various different strategies to achieve these three objectives.

Strategies:

- Improve data & performance metrics capabilities
- Implement tools for effective traffic operations
- Enhance Traffic Management Center (TMC) Operations
- Improve Traffic Incident Management (TIM) through legislation, education, and outreach

Emergency Medical Services

Pennsylvania has one of the nation's largest rural populations with nearly 3 million residents or 21% of its population considered rural. Due to the remoteness and inaccessibility of rural areas, EMS agencies have more obstacles to respond to a patient in need than those in urban areas. Opportunities for improvement include inadequate financial resources, recruitment and retention difficulties, high reliance on increasingly hard-to-find volunteer personnel, aging infrastructure, communication technology problems, lack of access to qualified medical direction, lack of training opportunities close to home and continuing education.



The minimum recommended hours for EMS certification programs are 48 hours for emergency medical responders, 150 hours for emergency medical technicians, and 1,000 hours for paramedics.

Supporting Information:

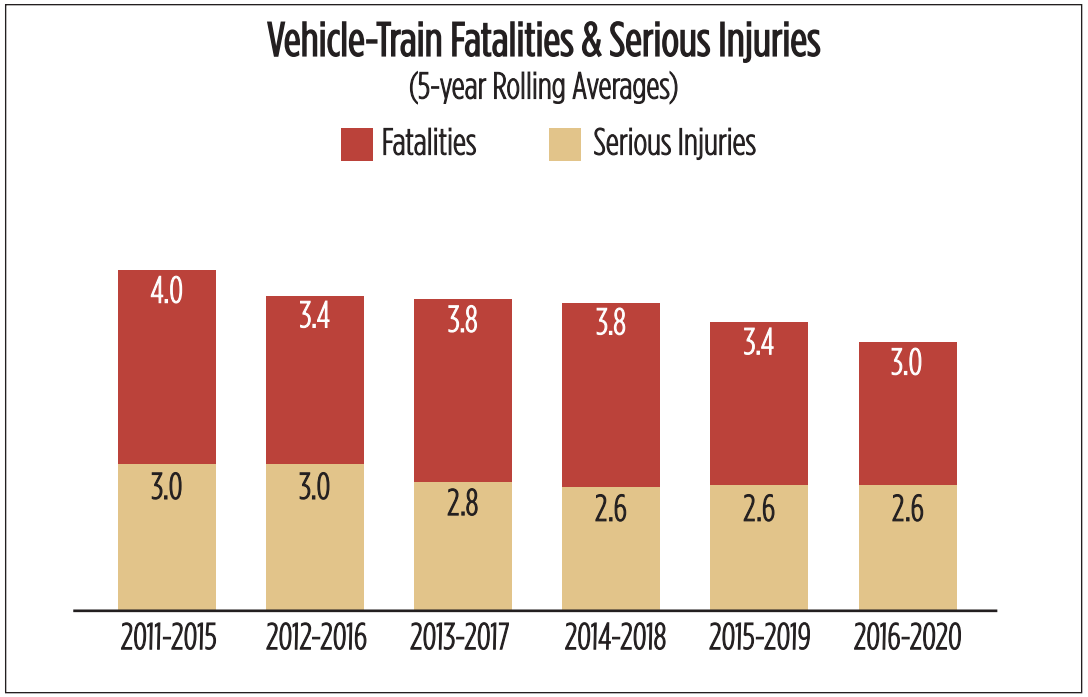
Enhanced technology is the most efficient method to improve emergency response time both in urban and rural areas. Our top strategies to address this focus area include EMS and law enforcement programs.

Strategies:

- Expand the promotion of the Yellow Dot Program
- Implement the Highway Incident & Transportation System and include EMS personnel when planning or implementing response plans
- Utilize technologies to improve emergency medical service and reduce response times
- Optimize EMS provider safety workforce and EMS staffing patterns with recruitment and retention strategies

Vehicle-Train Safety

A vehicle-train crash indicates that a motor vehicle was involved in a collision with a train or trolley. Each year, less than 1% of all traffic crashes in Pennsylvania occur at our state's highway-rail grade crossings. However, this safety focus area is still a high concern due to the fact that a majority of crashes that do occur are very severe and result in serious injuries or fatalities.



33%

of all vehicle-train fatalities and serious injuries involved a driver failing to respond to a traffic control device.

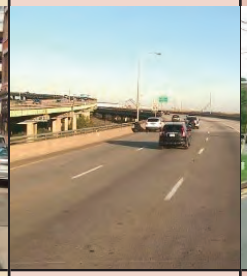
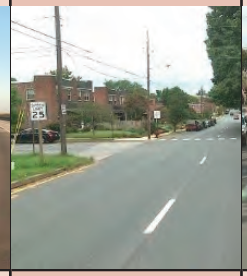
Supporting Information:

Many of the vehicle-train crashes that occur are the result of drivers deliberately circumventing or purposely violating active control devices such as flashing lights, bells, and crossing arms. The below strategies apply to both state and local roadways that have crossings.

Strategies:

- Support at-grade crossing closure program and sustain systemic safety improvements
- Increase rail crossing safety education and outreach and maintain partnerships with stakeholder organizations
- Increase enforcement of grade crossing violations
- Utilize technology and data for safety related decisions

Photograph by Austin MacDougall

Statewide Fatalities (2016–2020)						
Safety Focus Area	Rural vs Urban		Functional Classification			
	Rural	Urban	Freeways	Arterial Roads	Collector Roads	Local Roads
						
Lane Departures	54%	46%	16%	44%	21%	19%
Speeding Related	49%	51%	15%	43%	22%	20%
Seat Belt Usage	51%	49%	13%	47%	20%	19%
Impaired Driving	48%	52%	11%	48%	19%	22%
Intersection Safety	27%	73%	3%	64%	12%	20%
Mature Drivers (Ages 65+)	43%	57%	10%	60%	17%	13%
Safety on Local Roads	37%	63%	0%	0%	0%	100%
Motorcycle Safety	41%	59%	9%	51%	21%	18%
Pedestrian Safety	14%	86%	9%	61%	8%	23%
Bicyclist Safety	27%	73%	2%	60%	13%	24%
Commercial Vehicles	47%	53%	32%	52%	9%	7%
Young Drivers (Ages 16-20)	51%	49%	12%	51%	18%	20%
Distracted Driving	38%	62%	18%	51%	16%	15%
Safety in Work Zones	39%	61%	59%	34%	2%	5%
Train/Trolley Crashes	46%	54%	0%	9%	9%	82%

Autonomous Vehicle Technology

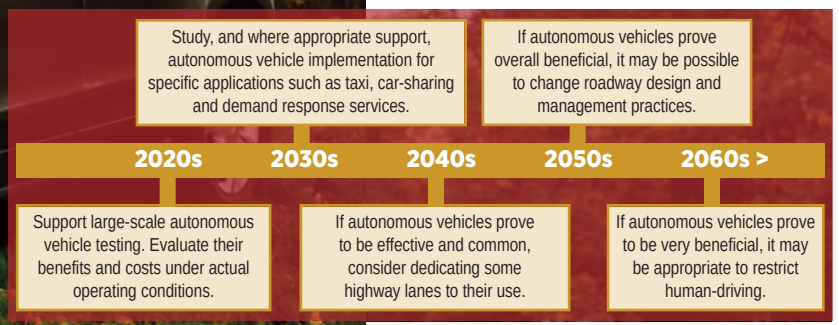
Pennsylvania recognizes the safety benefits of connected and automated vehicles. As a result, PennDOT is committed to ensuring Pennsylvania is prepared to facilitate the deployment of connected and automated vehicle technology. To accomplish these goals, PennDOT participates on numerous national committees. In 2016, PennDOT formed both the Pennsylvania AV Policy Task Force and the Smart Belt Coalition, to ensure Pennsylvania aligns with industry and national best practices. The Task Force is made up of a diverse and comprehensive set of stakeholders, including representatives from federal, state and local government, law enforcement, technology companies, higher education, manufacturers, motorists and trucking groups, and academic research institutions. The Smart Belt Coalition is a first-of-its-kind collaboration between PennDOT, PTC, Ohio DOT, the Ohio Turnpike, Michigan DOT and universities in those states with a focus on automated and connected vehicle initiatives across jurisdictional borders.

Additionally, PennDOT is working with academia and planning partners to equip traffic signals throughout the state with connected vehicle roadside units to aid in the deployment of automated vehicles. Currently, Pennsylvania has deployments in the Pittsburgh & Harrisburg regions, with planned deployments in State College & Philadelphia. Pennsylvania currently has legislation allowing AV testing, vehicle platooning, automated construction vehicles, and personal delivery devices (PDDs). Policies have been developed outlining the guidelines for the testers and deployers of AVs, platoons and PDDs that operate within commonwealth right-of-way. PennDOT will be working with the House and Senate Transportation Committees to develop legislation regarding emerging technologies for the commonwealth. In Fall 2019, PennDOT was awarded a $8.4 million Automated Driving System (ADS) Demonstration Grant to explore the safe integration of automated vehicles in work zones. Through the ADS grant, PennDOT plans to develop a consistent approach to allow for AVs to operate in work zones.

Carnegie Mellon University's
2012 Autonomous Cadillac SRX

Timeline for autonomous vehicle planning impact projections:

Source: Autonomous Vehicle Implementation Predictions (Implications for Transport Planning) Todd Litman, Victoria Transport Policy Institute, 2014



Essential Eight Elements

The Essential Eight Elements for successful SHSP implementation refer to the four fundamental requirements and four effective steps identified by the Implementation Process Model accessible on the FHWA website (https://safety.fhwa.dot.gov/shsp/implementing.cfm). The four fundamental requirements are leadership, collaboration, communication, and data collection-analysis. Effective use of these elements is essential for moving forward on the following steps: focus area action plans, linkage to other plans (see Appendix), marketing, and monitoring, evaluation, and feedback. Objectives for each of the "essential eight" are outlined below.

1 Leadership

Providing Leadership and Accountability for SHSP Implementation

- SHSP Operations Manager
- Lead organization for implementation of the strategies/action items identified in the focus area action plans
- Established Action Team/Task Group for collaborating with the necessary safety stakeholders to accomplish the action items and expected outcomes within the action plans

2 Collaboration

Sharing Ownership of the Safety Goal

- Collaborative problem solving between safety partners
- SHSP Steering Committee: nearly 50 organizations comprised of stakeholders & partners to develop and implement the SHSP
- Establish multidisciplinary collaborative efforts involving the 7 E's of highway safety

3 Communication

Creating Effective Communication Mechanisms

- Steering Committee Meetings
- PennDOT Safety website http://www.penndot.gov/safety to provide resources, tools, and highway safety guidance
- National peer exchanges to learn best practices from federal partners and other states
- Quarterly Planning Partners Meetings
- Annual Traffic Safety Conference

4 Data Collection and Analysis

Collecting, Analyzing, and Sharing Data

- Pennsylvania Crash Information Tool (PCIT)
- Local Safety Planning through MPO-RPO Outreach
- CDART Year End Cluster Reports for each safety focus area
- HSIP Data-Driven Process
- Low-Cost Safety Improvement Projects (quarterly reports)

5 Focus Area Action Plans

Identifying Performance Measures for all Safety Focus Areas

- Safety Focus Area Action Plans (see Appendix)
- Performance Metrics for Priority Emphasis Areas
- Road Safety Audits

6 Integration with Existing Transportation/Safety Plans

Linkage to other Programs and Agency Strategic Plans

- Highway Safety Improvement Program (HSIP)
- Prioritizing Safety in the Transportation Improvement Program (TIP/STIP)
- Active Transportation Plan
- Traffic Records Integration Plan
- PA Motorcycle Data Study
- Commercial Motor Vehicle Safety in Work Zones Action Plan
- Local Road Safety Plans

7 Monitoring, Evaluation and Feedback

Sustaining and Measuring Safety Efforts

- SHSP Evaluation Process Model https://safety.fhwa.dot.gov/shsp/epm/ovrvw.cfm
- SHSP Action Plans
- HSIP Implementation Plan
- FHWA Performance Dashboard Pennsylvania State Highway Safety Report
- MPO-RPO Target Setting Enclosure
- Tracking Local Project Implementation

8 Marketing

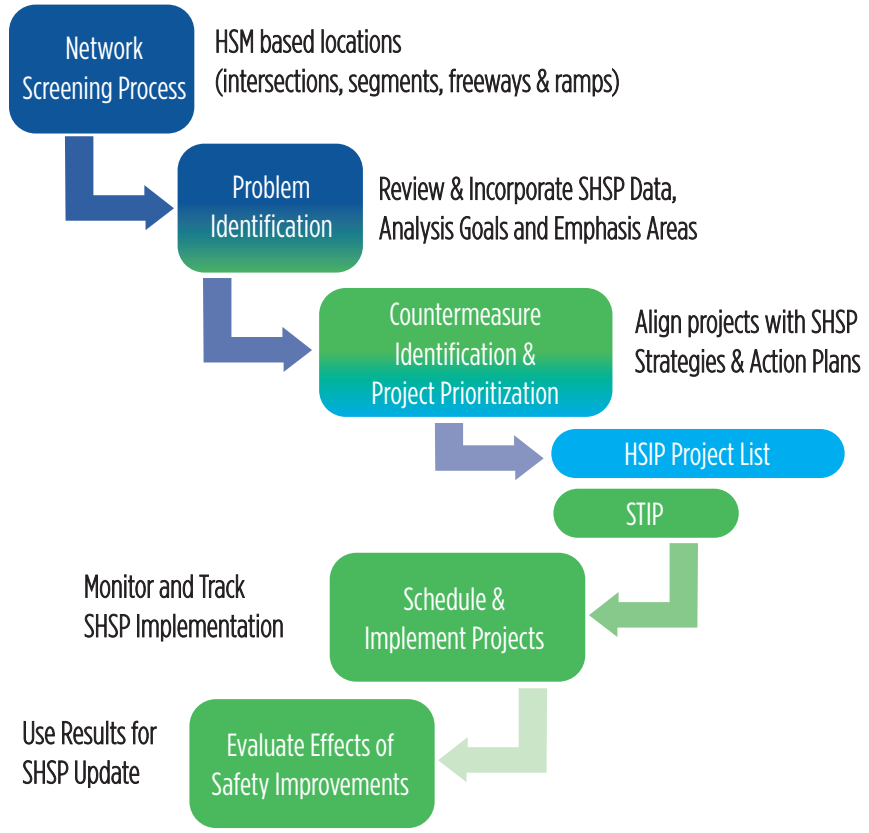
Engagement and Marketing the SHSP

- Strategic Highway Safety Plan https://www.penndot.gov/TravelInPA/Safety/Pages/Strategic-Highway-Safety-Plan.aspx
- Pennsylvania Highway Safety Summit
- Provide information to general public about highway safety goals and programs
- Unify outreach efforts, media events, and education programs to inform of government organizations, public entities, & businesses
- Outreach to schools, senior organizations, Chambers of Commerce, and others to reach people one on one to promote highway safety
- Identify safety marketing strategies such as paid media, earned media, internal marketing, and others

Pennsylvania's Highway Safety Improvement Program (HSIP)

The HSIP is a core Federal-aid program under Section 148 of Title 23, United States Code (23 U.S.C. 148) with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The HSIP requires a data-driven, strategic approach to improving highway safety with a focus on performance. Pennsylvania receives over $100 million HSIP funding per year. This funding is obligated towards infrastructure-related safety improvements. Project selection is based on a Highway Safety Manual network screening or systematically as proven low-cost countermeasures (rumble strips, intersection projects & curve improvements).

Illustration of data-driven process that is the foundation of the HSIP as well as the relationship between the SHSP and the HSIP



PennDOT has a process in place ensuring that HSIP projects identified in the Statewide Transportation Improvement Program (STIP) are consistent with and address SHSP priorities by:

- Developing, implementing and updating Pennsylvania's SHSP
- Producing a program of projects and strategies to reduce identified safety problems
- Regularly evaluating the SHSP to ensure the accuracy of data and proposed strategies

The Infrastructure Investment and Jobs Act provides flexibility to states in defining their High Risk Rural Roads (HRRR) per 23 USC 148(a)(1). The HRRR Special Rule applies if the fatality rate on rural roads in a state increases over the most recent two-year period for which data is available. For the purposes of meeting Federal requirements, an HRRR in Pennsylvania is defined as:

A roadway functionally classified as either a rural major/minor collector or a rural road, with roadway segments having at least two crashes per mile or one crash per intersection within the most recent five-year time period of available crash data.

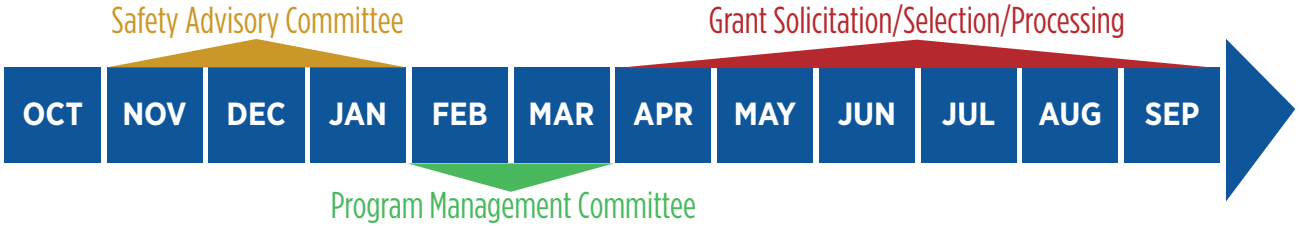
Pennsylvania's Highway Safety Grant Programs

The National Highway Traffic Safety Administration (NHTSA) Office of Regional Operations and Program Delivery administers approximately $19 million in grant programs annually to Pennsylvania. Under Section 405, NHTSA awards grants for occupant protection, state traffic safety information systems, impaired driving countermeasures, distracted driving, motorcyclist safety, and non-motorized safety. Pennsylvania provides traffic safety grants to state agencies and local governments, universities, and nonprofit organizations to improve highway safety and reduce fatalities/serious injuries on our roadways. Grant opportunities reflect evidence-based countermeasures proven to address the following critical traffic safety needs identified through data analysis:

- High-Visibility Enforcement (State & Local Aggressive Driving, Occupant Protection, Impaired Driving, and Non-Motorized campaigns)
- Enforcement Support (Institute for Law Enforcement Education Training, DUI Program Administrators, and Law Enforcement Liaisons)
- Prosecutorial Support/Training (Traffic Safety Resource Prosecutor)
- Adjudication Support/Training (Judicial Outreach Liaison and DUI Courts)
- Education (Community Traffic Safety Projects, Child Passenger/Motorcycle Safety Programs, Public Information & Educational Materials)
- Traffic Records System Enhancements (Traffic Records Program Administrators, Pennsylvania Crash Information Tool)

Other programs include: Paid Media (Impaired Driving, Distracted Driving, Seat Belt Safety and Speeding), Ignition Interlock Quality Assurance, Alcohol Highway Safety Schools, Bike/Ped Safety Trainings, and Car Seat Restraint Funds

Pennsylvania submits a Highway Safety Plan (HSP) that addresses behavioral highway safety focus areas, establishes performance measures/targets, and identifies programs to be funded based on strategies recommended in the SHSP. The Highway Safety Office conducts transportation safety planning year-round. Emerging trends and safety needs are identified through data monitoring and outreach to key safety stakeholders. Below, the timeline of HSP Planning Process depicts the annual planning cycle. To identify the state's overall highway safety problems, PennDOT analyzes a variety of data using sources including but not limited to Pennsylvania's Crash Reporting System, arrest and citation data reported through the state's e-grants system, the PA Department of Health's database, and others.



Glossary of Acronyms and Abbreviations

AOPC: Administrative Office of Pennsylvania Courts
ARLE: Automated Red Light Enforcement
ARNOLD: All Roads Network Of Linear Referenced Data
ATMS: Advanced Transportation Management System
BAC: Blood Alcohol Content
CDART: Crash Data Analysis Retrieval Tool
CDL: Commercial Driver's License
CMV: Commercial Motor Vehicle
CRS: Crash Reporting System
DLT: Displaced Left Turn
DUI: Driving Under the Influence
EMS: Emergency Medical Services
FCC: Federal Communications Commission
FoRRRwD: Focus on Reducing Rural Roadway Departures
FRA: Federal Railroad Administration
FHWA: Federal Highway Administration
GPS: Global Positioning System
HOP: Highway Occupancy Permit
HSM: Highway Safety Manual
HSIP: Highway Safety Improvement Program
ICE: Intersection Control Evaluation
ISIP: Intersection Safety Implementation Plan
ITS: Intelligent Transportation Systems
LCSIP: Low-Cost Safety Improvement Plan
LiDAR: Light Detection and Ranging
LRSP: Local Road Safety Plan
LTAP: Local Technical Assistance Program
MASH: Manual for Assessing Safety Hardware
MDJ: Magisterial District Judges
MIRE: Model Inventory of Roadway Elements
MOU: Memorandum of Understanding
MPMS: Multi-modal Project Management System
MPO: Metropolitan Planning Organization
PA: Pennsylvania
PCIT: Pennsylvania Crash Information Tool
PennDOT: Pennsylvania Department of Transportation
PSA: Public Service Announcement
PSP: PA State Police
RDIP: Roadway Departure Implementation Plan
RMS: Roadway Management System
RPO: Rural Planning Organizations
RTMC: Regional Transportation Management Center
RWIS: Road Weather Information Stations
SBI: Screening and Brief Intervention
SFA: Safety Focus Area
SHSP: Strategic Highway Safety Plan
SPF: Safety Performance Function
STIP: Statewide Transportation Improvement Program
TraCS: Traffic and Criminal Software
TIP: Transportation Improvement Program
TMC: Traffic Management Center
TRPA: Traffic Records Program Administrator
TSAMS: Traffic Signal Asset Management System
TSMO: Transportation Systems Management & Operations
TZD: Toward Zero Deaths
VR: Virtual Reality

Appendix (Action Plans)

Action Plans for all 18 focus areas have been developed to detail the specific action items needed to execute each strategy. Performance measures and the leading organization have also been identified to track progress and implement the strategies/action items under each focus area.

Throughout the appendix there are themes pertaining to the following seven categories (the 7 E's) which impact the various safety programs. Each of the 7 E's has a unique icon to assist readers in locating the specific action items that they may have involvement or interest in to improve safety.

Engineering (highway planning, design, construction, operations, and maintenance)

Education (driver training, citizen advocacy groups, educators, prevention specialists)

Enforcement (high-visibility enforcement, state and local police agencies, targeted enforcement programs)

Emergency Medical Services (first responders, paramedics, fire, and rescue)

Engagement (marketing campaigns, partnerships, communication, public outreach, media events)

Emerging Technology (data analysis, vehicle & infrastructure technology, specialized equipment, tech-based solutions, ITS)

Enact Legislation (special interest committees, legislative representatives and staff, new/proposed safety laws)

Lane Departure Crashes Action Plan

Priority Emphasis Area Leading Organization: PennDOT

Strategy:	Modify roadside clear zone in the vicinity of hazardous fixed objects		
Performance Measure:	• Number of hit fixed object crashes (hit tree, hit pole, hit barrier, etc.) • Tree Removal and Utility Pole Relocation Before & After Report		
Action Item		**Leading Organization**	**Category**
Remove frequently hit trees and other objects and coordinate with municipalities on zoning ordinance for tree removal.		PennDOT	
Remove/relocate frequently hit utility poles and bury utilities when possible. Coordinate with PUC and utility companies on the planning and implementation of the Utility Relocation Management System (URMS).		PennDOT	
Enhance delineation of fixed objects (utility poles, trees, barriers, etc.).		PennDOT	

Strategy:	Reevaluate passing zones		
Performance Measure:	• Number of projects with the presence of a passing zone • Number of passing zone locations evaluated using passing sight distance criteria		
Action Item		**Leading Organization**	**Category**
Perform evaluation of passing zones using current passing sight distance criteria.		PennDOT	
Use new Pennsylvania regional SPFs for passing zone analysis.		PennDOT	
Map passing zones using PennDOT's GIS and RMS Systems.		PennDOT	

Strategy:	Implement lane departure related infrastructure improvements
Performance Measure:	• Number of lane departure crashes • Miles of shoulder/edgeline and centerline rumble strips • Annual Cross Median Crash Report & Cable Median Barrier Sites Tracking/Safety Performance Evaluations • High Friction Surface Treatments Tracking Sheet/Safety Performance Evaluations • Updated RDIP with new and proven methods to incorporate low-cost safety countermeasures

Action Item	Leading Organization	Category
Install shoulder/edgeline/centerline rumble strips and stripes.	PennDOT	
Investigate the effectiveness of sinusoidal rumble strips for urban applications.	PennDOT	
Install median barrier systems, crash cushions, and guiderail end treatments.	PennDOT	
Install retroreflective signing, roadway delineation, and pavement markings.	PennDOT	
Install high friction surface treatments, especially at curves.	PennDOT	
Create physical separation of oncoming traffic on high crash potential two-lane roads (2+1 designs).	PennDOT	
Update the Roadway Departure Implementation Plan (RDIP) and use systemic analysis tools to identify and target high-risk roadway features.	PennDOT	
Improve geometric design of rural roadways and implement FHWA's FoRRRwD initiative to reduce rural roadway departures.	PennDOT	
Increase the use of road diets by coordinating with MPO/RPO's and municipalities.	MPO/RPO's	

Strategy:	Utilize the highway safety manual to identify and evaluate proposed improvements
Performance Measure:	• Perform Statewide Network Screening v3 based on more current crash data • Number of locations with excess values above zero implemented with safety projects • Number of locations with site specific HSM analyses

Action Item	Leading Organization	Category
Perform network screenings to identify problem areas and prioritize locations for programming.	PennDOT	
Determine which locations require low-cost safety improvements and which projects require more in-depth planning and design.	PennDOT	
Perform safety analysis of all projects when possible, including resurfacing projects, to identify potential safety deficiencies and improvements.	PennDOT	

Strategy:	Incorporate new technologies and countermeasures
Performance Measure:	• Number of lane departure crashes • Number of design projects with completed safety reviews • Number of intersection warning treatments and advanced curve warning markings

Action Item	Leading Organization	Category
Implement innovative pavement markings such as intersection warning treatments, advanced curve warning markings, etc.	PennDOT	
Utilize safety data during the planning process to ensure scopes of work are adequately defined for the design of all projects.	PennDOT	
Enhance our LRS curve inventory to improve user accessibility. Use the PennDOT VideoLog contract to collect roadway geometry (grade, cross slope, horizontal & vertical curvature).	PennDOT	
Refer to Safe System approach by proactively designing roadway features in a way that anticipates human errors and reduces risk of severe injury or death due to a crash.	PennDOT	
Implement lane departure warning systems in vehicles and other innovative ITS solutions.	PennDOT	

Speeding & Aggressive Driving Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase education and outreach programs		
Performance Measure:	• Number of aggressive driving crashes where PSAs are deployed • Number of aggressive driving crashes among young drivers • Percentage of aggressive driving questions on driver exam answered correctly		
Action Item		**Leading Organization**	**Category**
Increase the frequency of Aggressive Driving PSAs and explore new distribution channels.		PennDOT	
Develop a targeted education plan for aggressive driving (e.g. speeding, red light running, left lane cruising) by incorporating aggressive driving demographic data.		PennDOT	
Reestablish Drivers Education programs at schools.		Department of Education	

Strategy:	Increase enforcement efforts		
Performance Measure:	• Number of aggressive driving and speed-related citations • Number of aggressive driving and speeding-related crashes		
Action Item		**Leading Organization**	**Category**
Continue targeted enforcement for aggressive driving and speeding-related offenses.		PSP	
Enforce the Left Lane Cruising Law.		PSP	

Strategy:	Enact legislation to support enforcement
Performance Measure:	• Average traveling speeds • Number of crashes involving aggressive driving and speeding

Action Item	Leading Organization	Category
Investigate the expansion of automated enforcement programs to enact new legislation.	PennDOT	
Support legislation for local police departments to use moving radar.	PSP	
Examine fine structure for aggressive driving and speeding related infractions and update as necessary.	PennDOT	

Strategy:	Implement infrastructure improvements to mitigate speeding
Performance Measure:	• Average traveling speeds • Number of aggressive driving and speed related crashes

Action Item	Leading Organization	Category
Implement more road diets and traffic calming projects to control vehicle speeds	PennDOT	

Strategy:	Increase the use of new technologies
Performance Measure:	• Average traveling speeds • Number of speed display signs

Action Item	Leading Organization	Category
Increase the use of speed display signs and roadside speed feedback warning systems in combination with police at locations that have a history of speed related crashes.	PennDOT	
Investigate the expansion of automated enforcement programs.	PennDOT	
Support real time speed feedback warning systems through automated and connected vehicle technology.	PSP	

Seat Belt Usage Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Enhance seat belt communication and education efforts		
Performance Measure:	• Number of unrestrained crashes • Number of crashes involving unrestrained or improperly restrained children		
Action Item		**Leading Organization**	**Category**
Create a dedicated seat belt education and outreach plan to address low compliance groups.		PennDOT	
Partner with the healthcare industry on seat belt usage education and outreach with a focus on pediatricians to educate caregivers.		PA Department of Health	
Establish occupant protection advisory group to identify new strategies.		PennDOT	
Implement parent and caregiver education programs on topics related to child restraints and child occupant safety practices.		PennDOT	
Continue programs to promote safety seat check stations and provide approved child safety seats to parents and caregivers.		PennDOT	

Strategy:	Increase seat belt enforcement and conviction rates		
Performance Measure:	• Number of citations for improperly restrained children • Number of unrestrained crashes in targeted enforcement areas • Number of unrestrained citations overturned		
Action Item		**Leading Organization**	**Category**
Educate the Magisterial District Judges (MDJs) on the importance of enforcing seat belt citations.		PennDOT	
Provide proper child restraint training to law enforcement.		PSP	
Continue high-visibility occupant protection enforcement, including nighttime and child restraint use.		PSP	

Strategy:	Strengthen existing seat belt laws and enact primary seat belt legislation		
Performance Measure:	• Number of unrestrained crashes related to passed legislation • Number of unrestrained crashes involving children		
Action Item		**Leading Organization**	**Category**
Collaborate with partners and stakeholders to create a focused lobby.		PennDOT	
Present seat belt safety data to legislators to enact a primary seat belt law.		PennDOT	
Revise the state child safety seat legislation to specify requirements based on a child's size in lieu of age.		PennDOT	
Evaluate and improve fine structure for violating seat belt and child restraint legislation.		PennDOT	

Strategy:	Increase the use of new technologies		
Performance Measure:	• Number of unrestrained crashes before and after technology implementation		
Action Item		**Leading Organization**	**Category**
Collaborate with NHTSA to implement require advanced seat belt reminder systems, including those for rear-seat occupants.		PennDOT	

Impaired Driving Action Plan

Priority Emphasis Area Leading Organization: PA State Police

Strategy:	Shift focus to include drugged driving
Performance Measure:	• Number of drug impaired citations overturned • Number of drugged driving crashes

Action Item	Leading Organization	Category
Establish relationships with medical community to expand educational efforts.	PA Department of Health	
Improve driver alcohol and drug detection technology.	PSP	
Train and deploy drug recognition experts.	PennDOT	

Strategy:	Utilize data to drive safety decisions
Performance Measure:	• Number of DUIs and impaired driver crashes • Number of DUIs and impaired crashes involving repeat offenders

Action Item	Leading Organization	Category
Make "place of last drink" a standard reporting item and use this data to identify potential locations for server training.	PSP	
Link crash data and driver history to identify frequency of recidivism amongst DUI drivers and crashes.	PennDOT	
Continue training and providing information to stakeholders about Pennsylvania Crash Information Tool (PCIT).	PennDOT	

Strategy:	Increase impaired driving education and training for law enforcement
Performance Measure:	• Number of high-visibility enforcement efforts including sobriety checkpoints and roving patrols • Number of impaired driving crashes

Action Item	Leading Organization	Category
Increase the frequency of trainings for standardized field sobriety testing, advanced roadside impaired driving enforcement, and drug recognition expert certifications.	PSP	
Continue Ignition Interlock awareness training for law enforcement.	PennDOT	
Continue high-visibility impaired driving enforcement.	PSP	
Continue programs (compliance checks, responsible beverage server education/training, etc.) that prevent access to alcohol by persons under the age of 21 and over service of patrons.	PA Liquor Control Board	

Strategy:	Increase effectiveness of media, communications, and educational efforts
Performance Measure:	• Number of impaired driver crashes by regions • Number of DUIs within targeted enforcement area

Action Item	Leading Organization	Category
Continue educational efforts at grade school level about riding with impaired drivers.	Department of Education	
Expand designated driver campaigns and promote the Shared Ride Program to prevent impaired persons from driving.	PennDOT	
Coordinate with establishments serving alcohol by utilizing outreach campaigns for drug and alcohol awareness.	PA Liquor Control Board	
Continue Alcohol Screening and Brief Intervention (SBI) efforts.	PA Department of Health	

Strategy:	Support impaired driving cases through the judicial process
Performance Measure:	• Number of crashes involving drug impairment before and after enforcement changes • Average length of time between arrests and hearings • Number of DUIs and impaired crashes involving repeat offenders

Action Item	Leading Organization	Category
Identify strategies to allow participants to utilize ignition interlock while in the DUI court program.	PennDOT	
Identify strategies to reduce the time between impaired driving arrest to arraignment and promote best practices for reducing recidivism during that period.	AOPC	
Enhance Magisterial District Judges (MDJ) education by presenting impaired driving safety data at yearly trainings.	AOPC	
Continue to implement DUI courts.	AOPC	
Assess current fines and penalty structure for repeat impaired driving offenders.	AOPC	
Enact legislation to allow new enforcement methods and testing technologies such as oral fluid testing to measure impairment, including prescription drugs.	AOPC	

Intersection Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Implement innovative intersection and interchange designs
Performance Measure:	• Number of intersection injury crashes • Number of projects using the ICE policy to determine intersection operation • Number of diverging diamonds and roundabouts

Action Item	Leading Organization	Category
Take a Safe System approach by proactively designing intersection features in a way that anticipates human errors and mitigates the severity of crashes.	PennDOT	
Apply PennDOT's Intersection Control Evaluation (ICE) Tool during the design phase of a new intersection and when a modification to an existing intersection is considered.	PennDOT	
Increase level of consideration for diverging diamonds and roundabouts during the scoping and design.	PennDOT	
Incorporate positive offset left and right turn lanes or displaced left turn (DLT) when applicable.	PennDOT	
Install technologies that warn drivers of potential conflicts and/or assist them in choosing appropriate gaps in traffic at intersections.	PennDOT	

Strategy:	Increase education, outreach, and applications of intersection safety countermeasures		
Performance Measure:	• ARLE and Green Light-Go Program sources selected using HSM methods • LTAP courses with feedback of actual use by municipalities • Number of interchange projects using safety prediction methods		
Action Item		**Leading Organization**	**Category**
Utilize traffic calming measures.		PennDOT	
Educate and promote the use of funding sources such as Automated Red Light Enforcement (ARLE), the Green Light-Go Program and others.		PennDOT	
Promote the use of Local Technical Assistance Program (LTAP) educational offerings to local municipalities.		LTAP	
Educate local municipalities on the repainting of stop bars and inform them of their responsibility for this maintenance work.		LTAP	
Institute and promote HSM analysis (including the Interactive Highway Safety Design Model) to review the safety and operations of intersections and interchanges for all road users.		PennDOT	

Strategy:	Implement intersection related infrastructure improvements
Performance Measure:	• Number of intersection fatal & injury crashes • Number of low-cost intersection safety projects (LCSIP Quarterly Report tracking) • Annual Wrong Way location priority list and number of wrong way driving crashes on freeways/ramps • Updated ISIP with new and proven methods to incorporate low-cost safety countermeasures

Action Item	Leading Organization	Category
Improve signing, markings, and lighting to increase driver awareness of intersections.	PennDOT	
Enhance signalized intersection safety by considering protective left-turn phases, peak period turning restrictions, enhancing clearance intervals, implementing RED signal ahead signs, and coordinating signals.	PennDOT	
Redesign intersections, including constructing offset left and right turn lanes, restricted crossing U-turn intersections, or removing skews.	PennDOT	
Consider implementation of roundabouts through the HOP process.	PennDOT	
Ensure appropriate wrong way countermeasures are being utilized.	PennDOT	
Update the Intersection Safety Implementation Plan.	PennDOT	
Improve visibility of existing traffic signals by implementing low-cost countermeasures such as reflective backplates, LED lenses, and supplemental signal heads.	PennDOT	
Increase the use of road diets by coordinating with MPO/RPO's and municipalities.	MPO/RPO's Municipalities	

Mature Driver Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Establish partnerships with stakeholder organizations to promote mature driver safety
Performance Measure:	• Number of mature driver crashes involving supplemental driver test trainees • Number of CarFIT technicians • Number of mature road user crashes

Action Item	Leading Organization	Category
Encourage insurance discounts for safe driving and completing an approved driver improvement course.	PennDOT	
Partner with senior living communities, civic organizations, and churches to encourage mature driver education.	PennDOT	
Sponsor multidisciplinary conferences throughout the commonwealth to provide education and assistance to mature drivers and caregivers.	AARP	
Encourage the use of continuing mature driver education through insurance incentives.	PennDOT	
Promote newsletters and programs in newspapers targeting mature road users.	AARP	
Partner with vehicle manufacturers to educate mature drivers about vehicle technologies and abilities. Increase the number of CarFIT technicians across the state to ensure mature drivers are situated properly in their cars.	PennDOT	

Strategy:	Educate families, medical professionals, and stakeholders about making decisions regarding mature drivers
Performance Measure:	• Number of mature driver crashes in winter conditions • Number of mature driver crashes where prescription drugs were a contributing factor

Action Item	Leading Organization	Category
Provide winter driving education to mature drivers.	PennDOT	
Educate local officials and regional planners on infrastructure improvements, policies, and programming that benefit mature road users.	PennDOT	
Establish partnerships with medical community to provide education about topics such as medical reporting requirements and side effects of common prescription drugs.	PA Department of Health	
Provide educational resources to families and caregivers to discuss driving concerns.	PA Department of Health	
Expand training for law enforcement officers to include improving interactions with mature drivers.	PSP	

Strategy:	Enhance the screening of driver's licenses for mature drivers
Performance Measure:	• Number of mature driver crashes • Number of mature drivers who completed the retesting program

Action Item	Leading Organization	Category
Increase the sampling of drivers at advanced ages for the random retesting program.	PennDOT	
Enhance a vision-based screening program.	PennDOT	

Strategy:	Utilize infrastructure improvements to accommodate mature drivers		
Performance Measure:	• Number of mature road user crashes • Number of low-cost improvements installed		
Action Item		**Leading Organization**	**Category**
Target infrastructure improvements at high mature driver/pedestrian crash locations or areas with dense populations of mature road users.		PennDOT	
Implement roadway enhancements for older drivers and increase visibility of traffic control devices.		PennDOT	
Update design policies and practices for roadways and vehicles to reflect the needs of older drivers.		PennDOT	

Strategy:	Expand the use of mobility alternatives and provide education for mature drivers		
Performance Measure:	• Number of mature road users using transit and paratransit • Percentage of mature driver ridership in transit and shared ride programs		
Action Item		**Leading Organization**	**Category**
Promote accessibility and educate mature drivers regarding autonomous vehicle technologies.		PennDOT	
Expand Mobility-as-a-Service (MaaS) as emerging private sector options provide safety benefits for seniors and other drivers.		Local Transit Agency	
Provide a robust transit system and promote the use of mass transit and the Shared Ride Program.		PennDOT	
Advertise free and reduced fare transportation offered to mature drivers through state funded agencies and social media campaigns.		AAA	
Promote alternative transportation options and pre-planning travel habits that do not require driving such as door-through-door escort service and volunteer driver programs. Utilize the Eldercare Locator for a full list of options.		AARP	

Local Road Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase collection, analysis, and dissemination of local safety data
Performance Measure:	• Incorporate local roads into the next round of Statewide Network Screening locations v3 • Complete 100% MIRE Fundamental Data Elements before the September 2026 deadline • Number of local road projects with site specific HSM analyses

Action Item	Leading Organization	Category
Complete and implement a Linear Referencing System for all municipal owned roads through the ARNOLD project to improve local safety analysis activities.	PennDOT	
Collect MIRE Fundamental Data Elements (e.g., traffic volume) and supplemental data (e.g., curves, speed, land use, socioeconomics, etc.) for local roads.	PennDOT	
Perform network level data analysis to assist Planning Organizations and local agencies in identifying local roads for potential safety improvements with an emphasis on systemic countermeasure options and HSIP funding eligibility.	PennDOT	
Distribute safety data and analysis results to Planning Organizations and municipalities. Promote PCIT usage and HSM training.	PennDOT	

Strategy:	Streamline the planning and programming process for local road HSIP projects
Performance Measure:	• Number of local road projects funded under HSIP • Number of local road fatalities and serious injuries

Action Item	Leading Organization	Category
Improve communication and collaboration between Districts and Planning Organizations for HSIP projects. Streamline the agreement process to advance project implementation.	PennDOT	
Solicit input from impacted local jurisdictions early in the HSIP planning process.	MPO/RPO's	

Strategy:	Increase development and implementation of Local Road Safety Plans (LRSP) by municipalities		
Performance Measure:	• Number of municipalities with completed LRSPs • Planning Organization federal performance targets • Number of Road Safety Audits performed on local roads		
Action Item		**Leading Organization**	**Category**
Leverage PennDOT Connects to collaborate and communicate with municipalities and other community stakeholders on the benefits of an LRSP.		PennDOT	
Promote development of LRSP for municipalities (FHWA website and LTAP Course). Incentivize municipalities to complete LRSP's though funding, grants, etc.		LTAP	
Utilize HSIP funding to support LRSP development and implementation.		PennDOT	
Engage the Planning Organizations to support development and implementation of the LRSP to meet regional safety targets.		PennDOT	
Promote low-cost safety countermeasures and systemic improvements for inclusion in the LRSP.		LTAP	
Perform Road Safety Audits and evaluate past safety studies to identify implementation opportunities and inclusion into a LRSP.		PennDOT	
Improve coordination between the transportation and public health communities (such as the WalkWorks Program) and injury surveillance practices to better develop, implement, and evaluate state, regional, and local safety plans.		PennDOT	
Perform analysis to identify those local agencies where lane departure, intersection, and/or pedestrian crashes are over-represented and target for LRSP development and implementation.		PennDOT	
Provide peer to peer workshops on successful LRSP development and implementation.		LTAP	

Strategy:	Expand and promote technical assistance to local agencies to advance safety activities through legislation, guidance, tools, and training
Performance Measure:	• Number of municipalities completing LTAP tech assistance trainings • Number of municipalities collecting speed data for targeted enforcement and operations analysis

Action Item	Leading Organization	Category
Enhance and increase awareness of LTAP services: technical assistance, technology transfer, and training to support safety.	LTAP	
Provide and promote training to local agencies based on identified needs related to safety including topics such as curve management, speed management, low-cost safety improvements, LRSP development and implementation, etc.	LTAP PennDOT	
Develop speed limit guidance to assist local agencies with collecting speed data, analyzing operating speeds, evaluating design speeds, establishing appropriate speed limits, and curve management.	PennDOT Muncipalities	
Develop and pass legislation to advance local road safety such as allowing radar/LIDAR for local police departments.	Chiefs of Police Association	
Encourage municipalities to develop landscaping policies that prevent planting of new trees in the clear zone or in the median of divided highways where cable barriers have been installed (or will be installed).	PSATS, PSAB	
Provide training on the administration of federal funding.	FHWA, PennDOT	
Coordinate with industry partners (e.g. ATSSA) to pilot and demonstrate safety products and applications (e.g. high friction surface treatment, pavement markings, etc).	ATSSA	
Promote and provide training on traffic calming, consideration of parking and pedestrian safety.	PennDOT, LTAP	

Motorcycle Safety Action Plan

Priority Emphasis Area Leading Organization: PennDOT

Strategy:	Enhance public outreach efforts and partnerships with motorcycle stakeholders	
Performance Measure:	• Number of "Share the Road with Motorcycle" programs • Number of motorcycle crashes within targeted area	
Action Item	**Leading Organization**	**Category**
Conduct additional "Share the Road with Motorcycle" programs.	PennDOT	
Continue general motorcycle awareness campaigns.	PennDOT	
Continue the promotion of the Live Free Ride Alive program.	PennDOT	
Research industry models to identify additional best practices.	PennDOT	
Continue to partner with insurance companies to promote awareness and offer training incentives.	PennDOT	
Continue to partner with manufacturers to promote safe riding.	PennDOT	
Continue to provide training information distributed through Motorcycle Dealers Association.	Motorcycle Dealers Association	
Encourage riders to use motorcycle airbag vests, jackets, and other proven safety devices to reduce the severity of injuries during a crash.	PennDOT	

Strategy:	Improve motorcycle rider education and training for Emergency Medical Service personnel		
Performance Measure:	• Number of impaired driver motorcycle crashes • Number of motorcycle crashes of trained vs untrained individuals • Number of crashes involving inexperienced riders		
Action Item		**Leading Organization**	**Category**
Increase the number of motorcycle trainings, availability, and locations.		PennDOT	
Implement motorcycle rider education on impaired driving, distracted driving, protective equipment, training and licensing.		PennDOT	
Introduce a "Kickstarter Course" for inexperienced riders.		PennDOT	
Work with stakeholders to provide incentives for riders to complete training courses.		PennDOT	
Increase awareness of new technologies available to riders.		PennDOT	
Increase and enhance training for EMS on handling motorcycle crashes.		Department of Health (EMS)	
Increase informational partnerships with EMS providers.		Department of Health (EMS)	

Strategy:	Enhance motorcycle safety enforcement efforts		
Performance Measure:	• Number of motorcycle citations for aggressive and distracted driving • Number of motorcycle crashes where targeted enforcement was performed • Number of impaired driver motorcycle crashes		
Action Item		**Leading Organization**	**Category**
Examine demographics and causations for high-risk motorcycle driving behaviors and target efforts at high-probability regions.		PennDOT	
Target law enforcement at areas with a history of motorcycle crashes.		PSP	
Increase training for law enforcement in motorcycle DUI detection and crash investigation.		PSP	

Strategy:	Enact motorcycle safety legislation
Performance Measure:	• Severity of motorcycle crashes after legislation • Number of motorcycle crashes involving children

Action Item	Leading Organization	Category
Require training as part of motorcycle licensing.	PennDOT	
Enact motorcycle helmet legislation for all ages and riders.	PennDOT	
Remove helmet exception for those with previous driving offenses.	PennDOT	
Establish a minimum age and weight requirement for passengers on motorcycles.	PennDOT	

Strategy:	Incorporate motorcycle friendly infrastructure improvements
Performance Measure:	• Number of motorcycle crashes after countermeasure implementation • Benefit/cost ratio of motorcycle improvements • Number of motorcycle crashes attributed to maintenance issues

Action Item	Leading Organization	Category
Deploy safety countermeasures at high motorcycle crash locations.	PennDOT	
Mitigate roadway deficiencies that hinder motorcyclists.	PennDOT	
Implement new design and maintenance guidelines to reduce risk of motorcycle crashes.	PennDOT	
Perform a study to identify traffic control devices that reduce risk of motorcycle fatalities and implement improvements.	PennDOT	

Pedestrian Safety Action Plan

Priority Emphasis Area Leading Organization: PennDOT

Strategy:	Implement pedestrian related infrastructure improvements
Performance Measure:	• Number of pedestrian crashes at locations where systemic improvements were completed • Number of speed-related pedestrian fatalities

Action Item	Leading Organization	Category
Improve traffic control devices and upgrade existing intersection signals to include pedestrian signal heads.	PennDOT	
Implement infrastructure/roadway improvements such as medians, crossing islands and increased lighting for improved visibility.	MPO/RPO's	
Support speed management by implementing road diets to reduce risk of pedestrian fatalities.	MPO/RPO's	
Incorporate safety considerations for pedestrians with disabilities into the design of pedestrian facilities.	PennDOT	
Address rutted pavement, inlet grates, and utility access covers located at bus stops and within crosswalks.	PennDOT	

Strategy:	Utilize data-driven approaches to pedestrian safety
Performance Measure:	• Number of school-age pedestrian crashes • Number of pedestrian crashes

Action Item	Leading Organization	Category
Continue to utilize crash data and mapping tools to implement School Travel Plans to eliminate safety concerns with school routes.	Department of Education	
Implement active transportation data collection standards.	PennDOT	
Utilize crash data involving pedestrians to identify appropriate safety countermeasures.	PennDOT	
Utilize the commonwealth's torts and claims data to identify pedestrian hazards.	PennDOT	

Strategy:	Use a Safe System approach to integrate safety in the planning, design, construction, operation, and maintenance of our transportation networks
Performance Measure:	• Number of pedestrian crashes after completion of transit infrastructure projects • Number of pedestrian crashes at locations where systemic improvements were completed

Action Item	Leading Organization	Category
Leverage opportunities to expand modal separation by improving sidewalks and intersections with FHWA proven safety countermeasures.	PennDOT	
Modify the PennDOT Design Manuals to incorporate traffic calming measures and utilization guidance.	PennDOT	
Identify transit stops where pedestrian safety needs improved through utilization of concepts like "Build a Better Bus Stop."	PennDOT	
Ensure PennDOT Connects processes are being used systematically statewide.	PennDOT	
Provide safe pedestrian connections between origins and destinations.	MPO/RPO's	

Strategy:	Increase the use of new technologies to support pedestrian safety
Performance Measure:	• Before and after pedestrian crash studies at locations where innovative improvements were tested

Action Item	Leading Organization	Category
Support vehicle design technologies that lower risk for pedestrian injuries and fatalities in motor vehicle crashes.	NHTSA	
Utilize innovative technologies to identify high pedestrian usage routes.	Pedalcycle and Pedestrian Advisory Committee	
Develop processes for testing innovative pedestrian treatments prior to incorporating them as permanent solutions.	PennDOT	

Strategy:	Implement legislative changes to promote increased pedestrian safety		
Performance Measure:	• Number of pedestrian crashes after law changes		
Action Item		**Leading Organization**	**Category**
Enact and enforce traffic laws applicable to motor vehicle operators and vulnerable highway users (automated speed enforcement, red-light enforcement, pedestrian plazas and sideguards on trucks).		Pedalcycle and Pedestrian Advisory Committee	

Strategy:	Increase pedestrian safety education and outreach materials for all modes of travel		
Performance Measure:	• Percentage of driver's license exam questions answered correctly • Number of school-age pedestrian crashes • Number of impressions from outreach		
Action Item		**Leading Organization**	**Category**
Implement education programs for school-age pedestrians to support topics like Safe Routes to School (SRTS), walkable communities, etc.		Department of Education	
Provide education on right-of-way related to crosswalks.		PennDOT	
Develop outreach materials for avoiding approaching/turning motor vehicles when entering the roadway.		PennDOT	
Utilize innovative partnerships to disseminate safety materials and promote pedestrian safety.		PennDOT	
Provide FHWA and PennDOT active transportation training.		PennDOT	
Establish a clearinghouse for active transportation safety education materials.		FHWA	
Modify the Driver's Licensing Exam to reflect design standard and legislative changes.		PennDOT	
Provide an increased emphasis on education and outreach on safety topics where pedestrian exposure is greater.		PennDOT	

Strategy:	Consider other motorized micro-mobility modes and identify safety risks		
Performance Measure:	• Number of micro-mobility crashes		
Action Item		**Leading Organization**	**Category**
Study other motorized micro-mobility modes to identify risks and potential mitigation strategies.		PennDOT	

Bicyclist Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Implement bicycle related infrastructure improvements		
Performance Measure:	• Number of crashes at locations where improvements were completed • Percentage of locations selected from network screening with excess value		
Action Item		**Leading Organization**	**Category**
Implement infrastructure/roadway improvements to reduce conflicts with bicyclists.		PennDOT	
Implement infrastructure/roadway improvements like speed management countermeasures to reduce factors contributing to bicyclist fatalities and serious injuries.		PennDOT	
Promote bicycle network connectivity through targeted provisions of quality bike facilities where they have the greatest network benefit.		MPO/RPO's	
Improve traffic control devices to reduce risk of bicyclist conflicts.		PennDOT	

Strategy:	Increase the use of new technologies to support bicyclist safety		
Performance Measure:	• Number of crashes at locations where improvements were piloted • Severity of crashes at locations where improvements were completed before and after installation		
Action Item		**Leading Organization**	**Category**
Utilize innovative technologies to identify high bicycle usage routes.		MPO/RPO's	
Develop processes for testing innovative bicycle treatments prior to incorporating them as permanent solutions.		PennDOT	

Strategy:	Implement improvements to the planning and design process		
Performance Measure:	• Number of bicycle crashes after completion of transit infrastructure projects • Number of crashes at locations where systemic improvements were completed		
Action Item		**Leading Organization**	**Category**
Utilization of the Safe System approach to improve roadway and intersection design to reduce risk of bicyclist fatalities and serious injuries.		PennDOT	
Update design standards and policies to improve bicyclist safety during construction and maintenance.		PennDOT	
Identify transit stops where bicyclist safety needs to be improved through utilization of concepts like "Build a Better Bus Stop."		PennDOT	
Systematically coordinate the PennDOT Connects Process, Connects Technical Assistance Outreach, and LTAP Technical Assistance for the possibility to include bicyclist safety improvements as part of maintenance activities and the MPO/RPO programmed TIP projects.		PennDOT	
Utilize crash data involving bicyclists to identify appropriate safety countermeasures.		PennDOT	
Coordinate between municipalities, safety stakeholders, PennDOT, and planning partners to implement strategies from the PennDOT Active Transportation Plan.		MPO/RPO's	

Strategy:	Implement legislative changes to promote increased bicyclist safety		
Performance Measure:	• Percentage of bicycle crashes not wearing a helmet • Number of bicycle crashes after law changes		
Action Item		**Leading Organization**	**Category**
Enact and enforce traffic laws applicable to motor vehicle operators and vulnerable highway users (automated speed enforcement, red-light enforcement, parking protected bike lanes, and sideguards on trucks).		Pedalcycle and Pedestrian Advisory Committee	
Support bicycle helmet laws that apply to cyclists of all ages.		Pedalcycle and Pedestrian Advisory Committee	

Strategy:	Increase bicycle safety education and outreach materials for all modes of travel		
Performance Measure:	• Percentage of driver's exam questions answered correctly • Number of bicycle crashes involving new drivers • Number of impressions from outreach		
Action Item		**Leading Organization**	**Category**
Implement driver education and update the driver's manual/test to raise awareness of behaviors around bicyclist traffic.		PennDOT	
Produce educational materials relative to traffic laws applicable to bicyclists.		PennDOT	
Implement targeted awareness programs for drivers failing to obey traffic control devices and careless turning movements to reduce risk of bicyclist injuries and fatalities.		PennDOT	
Deploy educational efforts to curtail impaired and distracted bicycle riders.		PennDOT	
Provide FHWA and PennDOT active transportation training.		PennDOT	
Establish a clearinghouse for active transportation safety education materials.		PennDOT	
Modify the Drivers Licensing Exam and Manual to reflect design standard and legislative changes.		PennDOT	
Provide an increased emphasis on education and outreach on safety topics where bicyclist exposure is greater.		PennDOT	

Commercial Vehicle Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase commercial vehicle safety education and outreach		
Performance Measure:	• Number of CMV crashes after outreach or education • Motorist awareness of CMV and appropriate safety interaction		
Action Item		**Leading Organization**	**Category**
Provide educational information and resources to Commercial Motor Vehicle (CMV) owners during the commercial vehicle registration process.		PennDOT	
Use social media and non-traditional outreach to educate drivers about CMVs.		PennDOT	
Increase the number of "Share The Road" presentations for all drivers.		Pennsylvania Motor Truck Association	
Implement Community College Commercial Driver's License (CDL) training programs and facilities.		PennDOT	

Strategy:	Implement commercial vehicle related infrastructure improvements		
Performance Measure:	• Number of driver violations per hours of service • Number of CMV crashes involving drowsy driving • Number of CMV crashes involving infrastructure factors		
Action Item		**Leading Organization**	**Category**
Encourage the integration of truck parking needs into local planning and zoning. Update the data and maps in the 2007 TAC Truck Parking study. Pursue opportunities with public and private stakeholders to provide information on truck parking availability and expand truck parking capacity where required.		Pennsylvania Motor Truck Association	
Identify best practices for incorporating commercial vehicle safety and size/weight enforcement through maintenance of enforcement sites and systems, installation of technologies such as weigh-in motion systems, data analytics to improve targeted enforcement, and planning for needed infrastructure improvements to improve enforcement operations.		PSP	
Improve multimodal freight transportation operations and safety.		PennDOT	

Strategy:	Improve commercial vehicle safety enforcement efforts
Performance Measure:	• Number of crashes involving safety violations • Number of crashes in targeted enforcement areas • Number of commercial vehicle safety inspection details

Action Item	Leading Organization	Category
Maintain the number of Level III inspections and increase the number of officers trained.	PSP	
Focus enforcement on the Move Over Law for all motorists.	PSP	
Use traffic and crash data to identify critical corridors and focus enforcement within high crash counties. PennDOT will continue to provide data analytics as a resource to optimize enforcement by PSP.	PSP	
Continue "One Driver, One Record" and implement system to proactively notify commercial vehicle companies when there is a status change to a truck or bus driver's record.	PennDOT	
Maintain a comprehensive bus inspection program to reduce the risk of fatalities involving motor coaches and other passenger-carrying vehicles.	PSP	
Continue enforcement of trucks using restricted routes.	PSP	

Strategy:	Increase the use of new technologies
Performance Measure:	• CMV crashes involving commercial vehicles with vehicle assist or connected technology • Number of restricted route violations for trucks • Number of driver violations per hours of service • Number of CMV crashes involving drowsy driving

Action Item	Leading Organization	Category
Support driver monitoring systems, in-cab cameras and other vehicle technologies.	PennDOT	
Pilot the testing of connected/autonomous vehicle technologies in CMVs with an emphasis on platooning.	PennDOT	
Partner with commercial GPS mapping companies to communicate truck restricted routes in known problem areas.	PennDOT	
Support implementation of innovative safety equipment for trucks with an emphasis on fleets serving urban areas.	PennDOT	

Young & Inexperienced Drivers Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase education efforts for young and inexperienced drivers and parents of young drivers		
Performance Measure:	• Number of crashes or incidents involving young and inexperienced drivers • Number of unrestrained young driver crashes		
Action Item		**Leading Organization**	**Category**
Create additional opportunities at schools for increased awareness by school students to the importance of safe driving habits.		Department of Education	
Partner with high school administrations to promote seat belt use on campus by its student drivers through existing parking permit policies.		Department of Education	
Adopt a Share the Keys program, including education for inexperienced drivers, young drivers, and parents of young drivers.		PennDOT	
Implement programs focused on educating parents of young drivers on learner's permit and driver's education requirements.		PennDOT	
Enhance documentation system for drivers going from junior to senior license.		PennDOT	
Continue comprehensive testing of younger drivers after initial testing.		PennDOT	
Standardize materials and laws requiring driver education.		Department of Education	

Strategy:	Pursue partnerships with non-traditional organizations
Performance Measure:	• Number of young driver crashes involving distracted driving • Number of young driver court cases overturned by Magisterial District Judges

Action Item	Leading Organization	Category
Partner with vehicle manufacturers to incorporate and promote safety features.	PennDOT	
Partner with popular travel and vehicle mobile applications to incorporate safe driving features.	PennDOT	
Utilize Administrative Office of Pennsylvania Courts (AOPC) contact network to educate Magisterial District Judges of the need to uniformly apply laws regarding younger drivers.	AOPC	
Work with insurance companies to help make driver's education and training available and affordable via incentives and discounts.	PennDOT	

Strategy:	Increase enforcement efforts for younger driver safety
Performance Measure:	• Number of crashes involving drivers under the age of 18 with a senior license

Action Item	Leading Organization	Category
Evaluate stricter graduated driver licensing law requirements.	PSP	

Strategy:	Utilize data to drive the implementation of safety countermeasures		
Performance Measure:	• Number of young driver crashes		
Action Item		**Leading Organization**	**Category**
Collect HOP and planning level data on driver safety courses relative to drivers in reportable crashes.		PennDOT	
Explore non-traditional data sets, including data on infrastructure, to further define the issues for inexperienced drivers.		PennDOT	

Strategy:	Promote the use of vehicle technologies for younger drivers		
Performance Measure:	• Number of young driver crashes • Number of young driver crashes involving distracted driving		
Action Item		**Leading Organization**	**Category**
Research the viability of driving simulators and other emerging VR technology.		PennDOT	
Implement driver monitoring systems for teen drivers.		NHTSA	
Implement young driver-oriented technologies in vehicles that adjust stereo volume, increase seat belt warning signals, and react to signs of distraction.		NHTSA	

Distracted Driving Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase outreach programs and driver awareness of distracted/drowsy driving dangers	
Performance Measure:	• Number of distracted/drowsy driver crashes involving new drivers	
Action Item	**Leading Organization**	**Category**
Revise driver's license testing procedures to better prepare inexperienced drivers for driving distracted.	PennDOT	
Educate all drivers on new vehicle technologies at dealerships.	AAA	
Establish partnerships with large employers to institute safe driving policies and practices to reduce distracted and drowsy driving.	PennDOT	
Promote safe stopping and rest areas to prevent distracted and drowsy driving behaviors.	PennDOT	

Strategy:	Use roadway infrastructure to increase driver awareness	
Performance Measure:	• Number of distracted and drowsy crashes after implementation • Number of lane departure crashes	
Action Item	**Leading Organization**	**Category**
Implement improved way-finding signage, remove sign clutter, and minimize advertisement signs at decision points.	PennDOT	
Install edgeline and centerline rumble strips as systemic improvements as well as transverse rumble strips, where inattentive driving concerns are documented.	PennDOT	
Increase the use of beacons, in-pavement lights, and flashing warning devices.	PennDOT	

Strategy:	Increase enforcement and enact legislation to address distracted driving		
Performance Measure:	• Number of distracted/drowsy driver crashes near enforcement locations • Number of citations after legislation passed • Number of distracted driver crashes after legislation passed		
Action Item		**Leading Organization**	**Category**
Continue high-visibility enforcements.		PSP	
Sustain enforcement of commercial vehicle hours of service regulations.		PSP	
Expand enforcement beyond cell phone use.		PSP	
Support legislation for total cell phone/distraction ban.		AAA	
Reassess current fine and penalty structure for distracted driving offenses.		AOPC	
Continue educational efforts to curtail distracted traveling for all road users.		AAA	

Strategy:	Implement technologies to prohibit or limit cell phone and electronic equipment use while vehicle is in motion		
Performance Measure:	• Number of distracted and drowsy crashes after implementation		
Action Item		**Leading Organization**	**Category**
Support the development of autonomous vehicles and connected infrastructure. Implement other vehicle technologies which mitigate distracted and drowsy driving.		PennDOT	

Traffic Records Data Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Improve the accessibility of data to partners and the capabilities in data analysis
Performance Measure:	• Number of CDART users • Number of PCIT authenticated partners registered • Number of PCIT public site visitors

Action Item	Leading Organization	Category
Expand the use of Crash Data Analysis Retrieval Tool (CDART) and Pennsylvania Crash Information Tool (PCIT).	PennDOT	
Add action item for the crash slicer tool and include current year data.	PennDOT	
Pursue other crash applications that can provide data visualization, graphs, side-by-side comparisons of one or more datasets, and integration of the Highway Safety Manual.	PennDOT	
Improve data accessibility by partners and data users.	PennDOT	
Increase the capabilities and capacity in data analysis and statistical evaluation for improving quality and timeliness of crash reports.	PennDOT	
Update historical local road crash data through an automated process using technology and techniques not available previously.	PennDOT	

Strategy:	Improve the timeliness and quality of data collection and police prepared data
Performance Measure:	• Rate of complete crash data received by police • Rate of accurate crash data received by police • Timeliness of Crash Data: Crash date to police report submission • Timeliness of Crash Data: Crash date to usable data • Rate of crashes having valid latitude/longitude • Number of crash report submissions within the 15-day legal requirement

Action Item	Leading Organization	Category
Present information to police agencies within the upcoming online training tutorials that explain why the crash data are so important.	PennDOT	
Develop a reporting tool to track under-reporting agencies.	PennDOT	
Develop metric to measure the error rate of police agencies submitting crash reports and report it back to the police agencies.	PennDOT	
Continue to conduct face-to-face meetings between PennDOT and local police using the Traffic Records Program Administrators (TRPA).	PennDOT	
Develop a program to determine the size and scope of problems with incorrect crash locations.	PennDOT	
Expand the use of Traffic and Criminal Software (TraCS)/Crash to users outside of the PSP.	PennDOT	
Establish a sample-based audit system for police data quality.	PennDOT	
Develop a comprehensive strategy to increase compliance with the 15-day legal requirement to crash report submission.	PennDOT	

Strategy:	Establish common standards and plan for integration of all traffic records components		
Performance Measure:	• Number of Traffic Records Integration Plan recommendations • Number of vehicle inspection records submitted by safety inspection stations		
Action Item		**Leading Organization**	**Category**
Implement recommendations from the Traffic Records Integration Plan.		PennDOT	
Establish common standards (data dictionary) to ensure compatibility of data systems and data compatibility.		PennDOT	
Integration of crash records data and all other traffic records data components.		PennDOT	
Improve access to crash and citation information, including medical services, pre-hospital and court disposition data and link with crash data systems.		PennDOT	
Research what it would take from a physical, security, risk, legal, and legislative standpoint to integrate all components of traffic records.		PennDOT	
Develop a uniform table of offenses to contain all traffic and criminal offenses so all agencies will validate offenses against the same table.		PennDOT	
Improve vehicle safety inspection data accessibility by increasing the electronic submission of inspection records by safety inspection stations.		PennDOT	

Strategy:	Improve the quality of road data collected
Performance Measure:	• Error rate of roadway change requests completed for RMS Modernization • MIRE Percent of ADT recorded for local roads • MIRE Percent of Segment Identifiers recorded for local roads • Number of traffic data collection sites

Action Item	Leading Organization	Category
Identify gaps in the Roadway Management System (RMS). Integrate RMS with other systems (CRS, MPMS, TSAMS, SAP sign inventory, etc).	PennDOT	
Increase the number of collection sites to collect traffic data.	PennDOT	
Complete Linear Referencing of all roadways and combine all public roadways into a single database.	PennDOT	
Adopt ARNOLD and local federal aid networks to locate crashes for linear analysis.	PennDOT	
Collect all MIRE Fundamental Data Elements.	PennDOT	
Expand data quality metrics.	PennDOT	
Broaden data collection sources to capture active transportation users.	PennDOT	
Use newer technologies like LiDAR to collect and enhance roadway data records.	PennDOT	

Work Zone Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Increase work zone awareness and education efforts
Performance Measure:	• Percentage of work zone questions answered correctly on driver's license exam • Number of injuries involving workers after completion of training • Before/After comparison of QA review scores after training is completed

Action Item	Leading Organization	Category
Integrate work zone safety information into the driver's manual, social media, and information provided to existing drivers.	PennDOT	
Plan, coordinate and promote National Work Zone Awareness Week with key stakeholders.	PennDOT, PTC	
Implement Temporary Traffic Control Safety Training Program statewide in all work zones.	PennDOT	
Continue annual Worker Safety Standdown day with industry promoting the continued education of worker safety.	PennDOT	
Transition to a coordinated marketing approach for work zone safety and awareness between all transportation agencies (e.g. #GoOrangePA).	PennDOT, PTC	
Enhance trainings for work zone managers, flaggers, utility companies, police, municipalities and contractors.	PennDOT	

Strategy:	Effectively coordinate and manage enforcement in work zones
Performance Measure:	• Speeds in work zones with and without AWZSE • Number of work zone crashes after legislation is enacted • Number of work zone crashes after enforcement training is completed

Action Item	Leading Organization	Category
Enact legislation updating and continuing the Automated Work Zone Speed Enforcement (AWZSE) program.	PennDOT, PTC	
Enact work zone safety legislation modernizing Act 229 requirements and providing field documentation of work zone safety concerns to law enforcement for investigation.	PennDOT	
Develop a work zone enforcement training course.	PSP	
Update the Pennsylvania State Police (PSP) Assistance MOU to include enforcement targets.	PSP	
Enact legislation to permit audio and visual work zone devices to be utilized within Pennsylvania.	PennDOT	
Establish a clear enforcement policy to ensure all work zones meet minimum requirements.	PennDOT	

Strategy:	Establish of an effective and actionable work zone performance management program
Performance Measure:	• Number of work zone predictive evaluations • TSMO work zone safety performance metrics

Action Item	Leading Organization	Category
Enhance work zone predictive evaluations (e.g. FREEVAL-PA).	PennDOT	
Enhance the TSMO performance metrics program to identify and implement actual work zone safety and mobility mitigation improvements by identifying through performance, crash, and other data sources any changes that need to occur to the program.	PennDOT	

Strategy:	Improve work zone design and operations to improve safety		
Performance Measure:	• Number of non-motorized work zone crashes • Number of hit fixed object work zone fatal crashes • Percentage of work zone speed limit compliance • Number of work zones crashes		
Action Item		**Leading Organization**	**Category**
Investigate integration of Highway Safety Manual methodologies and strategies into work zone designs.		PennDOT	
Incorporate non-motorized users into design of temporary traffic control plans.		PennDOT	
Pilot proven work zone safety and mobility devices to determine effectiveness and statewide implementation.		PennDOT	
Implement MASH 2016 Temporary Traffic Control Device requirements.		PennDOT	
Modernize work zone safety and mobility policy (e.g. effects on MAP-21).		PennDOT	
Identify factors that would permit work zone speed limit reductions.		PennDOT	
Incorporate Maintenance and Protection of Traffic (MPT) guidance within the Department's design manual.		PennDOT	
Improve temporary traffic control considerations in the project development process.		PennDOT	
Complete annual work zone safety reviews and implement recommendations. Improve methods to review work zones for non-DOT personnel including utility companies, police, municipalities and contractors.		PennDOT	

Strategy:	Use data and technology to improve work zone safety and monitor performance		
Performance Measure:	• Utilization rate of lane reservation management system • Number of work zone crashes within smart work zones		
Action Item		**Leading Organization**	**Category**
Implement Lane Reservation Management System.		PennDOT	
Adopt a work zone data exchange (WZDx).		PennDOT	
Identify non-traditional data sources to evaluate work zone safety, provide improved traveler information, and increase road user awareness of work zone activities.		PennDOT	
Establish smart work zone applications for all Limited Access Roadway projects.		PennDOT	

Strategy:	Target CMV Safety in work zones		
Performance Measure:	• Number of work zone predictive evaluations • TSMO work zone safety performance metrics		
Action Item		**Leading Organization**	**Category**
Develop decision-making guidance for CMV use of the left lane.		PennDOT	
Strengthen the use of automated speed enforcement.		PSP	
Deploy speed enforcement upstream of active work zone access points to reduce speed differentials at those points and to control speeds and provide notification of work zones ahead.		PSP	
Conduct an outreach campaign to CMV drivers and fleet operators to explain mapping tool limitations/consideration of CMVs when suggesting alternate routes.		PennDOT	

Transportation Systems Management & Operations (TSMO) Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Improve data & performance metrics capabilities
Performance Measure:	• Number of secondary crashes reported on local roads

Action Item	Leading Organization	Category
Develop a robust performance metrics program for incident management by incorporating new data sets such as RWIS and private company travel applications.	PennDOT	
Assist local agencies in capturing information for secondary crashes.	PennDOT	

Strategy:	Implement tools for effective traffic operations
Performance Measure:	• Number of secondary crashes during incidents • Average ITS device downtime

Action Item	Leading Organization	Category
Update regional ITS architecture to ensure interoperability between agency ATMS platforms.	PennDOT	
Improve and implement a strategy for updating antiquated ITS devices.	PennDOT	
Integrate statewide HSM network screening with Regional Operation Plans.	PennDOT	
Improve the communications with motorists stuck in a trapped queue using mobile applications.	PennDOT	

Strategy:	Enhance Traffic Management Center (TMC) Operations	
Performance Measure:	• Average clearance times after establishment of operation plans	
Action Item	**Leading Organization**	**Category**
Establish Traffic Operations Plans in each Regional TMC.	PennDOT	
Improve communications and clarify roles between the PennDOT Statewide TMC, Regional TMCs, and PA Turnpike TOC.	PennDOT, PTC	
Increase District collaboration within each RTMC region to improve resource allocation.	PennDOT	

Strategy:	Improve Traffic Incident Management (TIM) through legislation, education, and outreach	
Performance Measure:	• Number of first responder injuries and fatalities • Average incident response times where TIM taskforces have been implemented • Average clearance times after legislation	
Action Item	**Leading Organization**	**Category**
Develop a Statewide Traffic Incident Management (TIM) Program.	PennDOT	
Improve driver education, outreach, and awareness of PA TIM laws. Continue to work with PennTIME and legislature to strengthen existing laws and enact new laws as necessary.	PennDOT	
Identify resource needs to expand TIM taskforces and designate a coordinator in each PennDOT District.	PennDOT	
Increase the number of TIM trained first responders.	Department of Health	
Enact legislation for Quick Clearance Programs.	PennDOT	

Emergency Medical Services Action Plan

Safety Focus Area Leading Organization: Department of Health (EMS)

Strategy:	Expand the promotion of the Yellow Dot Program		
Performance Measure:	• Number of injury crashes that occur during incidents • Number of fatality and serious injury rate for Yellow Dot participants		
Action Item		**Leading Organization**	**Category**
Partner with new stakeholder organizations to distribute materials regarding the Yellow Dot Program		PennDOT	
Increase social media coverage and the exposure to mature drivers and drivers with special needs.		PennDOT	
Utilize communication technology to enhance emergency care by providing medical information of drivers/passengers to first responders following a crash.		Department of Health (EMS)	

Strategy:	Implement the Highway Incident & Transportation System and include EMS personnel when planning or implementing response plans		
Performance Measure:	• Number of communities and EMS personnel participating in response plans		
Action Item		**Leading Organization**	**Category**
Engage National Association of State EMS Officials (NASEMSO) on highway safety issues relevant to emergency services.		Department of Health (EMS)	
Collaborate with safety stakeholders to promote understanding of EMS and identify opportunities for cooperative efforts.		Department of Health (EMS)	
Increase the participation of communities and EMS personnel when planning response plans.		Department of Health (EMS)	

Strategy:	Utilize technologies to improve emergency medical service and reduce response times	
Performance Measure:	• Fatality rate of crash victims once medical care begins • Incident response time from dispatch to treatment (EMS or Hospital) after new equipment is installed	
Action Item	**Leading Organization**	**Category**
Increase 911 center compliance with Federal Communications Commission (FCC) Wireless Phase 2.	PA Emergency Management Agency	
Increase number of EMS vehicles equipped with GPS and vehicle tracking devices.	Department of Health (EMS)	
Implement a coordinate addressing system for rural locations.	PEMA	
Integrate PennDOT crash data with EMS records using the National EMS Information System (NEMSIS) Version 3 dataset	PennDOT	

Strategy:	Optimize EMS provider safety workforce and EMS staffing patterns with recruitment and retention strategies	
Performance Measure:	• Percentage of 911 calls meeting national standards • Number of incidents involving EMS and drowsy driving • Number of crashes with occupants unrestrained in EMS vehicles • Incident response time from dispatch to treatment (EMS or Hospital)	
Action Item	**Leading Organization**	**Category**
Support and review research related to EMS personnel fatigue and operation on roadways.	Department of Health (EMS)	
Increase the utilization of restraint devices by EMS personnel in the patient compartment during patient transport.	Department of Health (EMS)	
Increase the recruitment of new EMS personnel and retain existing certified EMS personnel.	Department of Health (EMS)	
Increase the percentage of calls that meet national response time standards.	Department of Health (EMS)	

Vehicle-Train Safety Action Plan

Safety Focus Area Leading Organization: PennDOT

Strategy:	Support at-grade crossing closure program and sustain systemic safety improvements
Performance Measure:	• Number of Pedestrian-rail crashes compared to near misses after completion of improvements • Number of at grade rail crossing crashes • Number of crossings with active devices

Action Item	Leading Organization	Category
Partner with railroad agencies to identify candidate at-grade crossings.	PennDOT	
Identify and map high crash potential crossings and make infrastructure improvement recommendations.	PennDOT	
Provide matching funds as incentives for crossing closures.	PennDOT	
Promote crossing closure as part of safety, highway, and bridge projects.	PennDOT	
Upgrade crossings with passive devices to active devices and enhance crossings that already have active devices. Federal funding is available if there is an antiquated equipment concern.	PennDOT	
Implement Z-crossing channelization and other national best-practices at crossings with high pedestrian traffic.	PennDOT	
Evaluate highway-rail crossing safety projects using FRA's GradeDec tool. Enhance performance monitoring of crashes where improvements have been installed.	PennDOT	
Use the FRA Web Accident Prediction System (WBAPS) and Grade Crossing Safety Project Selection Tool to identify high potential crossings and vehicle-train crashes.	PennDOT	

Strategy:	Increase rail crossing safety education and outreach and maintain partnerships with stakeholder organizations
Performance Measure:	• Percentage of rail related questions answered correctly on the driver's license exam • Number of Operation Lifesaver presentations • Number of CMV crashes at rail crossings • Updated Statewide Freight Rail Strategic plan and State Rail Plan

Action Item	Leading Organization	Category
Increase the number of Operation Lifesaver presentations and transition to virtual platforms to increase exposure.	PA Operation Lifesaver	
Increase the usage of Operation Lifesaver materials in Driver's Education classes.	PennDOT	
Improve the grade crossing information in commercial driver's license trainings.	PennDOT	
Update Pennsylvania's Statewide Freight Rail Strategic plan and the State Rail Plan with rail engagement.	PennDOT	
Partner with freight railroads and Amtrak to improve outreach and promote public awareness.	PennDOT	
Maintain the Freight Work Group to engage the different modes and have a comprehensive view on freight issues/needs.	PennDOT	
Evolve our partnership with the Keystone State Railroad Association.	PennDOT	

Strategy:	Increase enforcement of grade crossing violations		
Performance Measure:	• Number of road user-rail crashes compared to traffic violations at prioritized enforcement locations • Number of enforcement campaigns		
Action Item		**Leading Organization**	**Category**
Use crash and violation data to identify locations where increased enforcement would most contribute to improved rail crossing safety.		PennDOT	
Increase the number of enforcement campaigns and increase their visibility by developing partnerships with local police departments and determine train crossing times.		Chiefs of Police Association	

Strategy:	Utilize technology and data for safety related decisions		
Performance Measure:	• Number of at grade rail crossing crashes • Number of non-motorized crashes at crossings		
Action Item		**Leading Organization**	**Category**
Maintain the accuracy and currency of the U.S. DOT Highway-Rail Crossing Inventory for the commonwealth.		PennDOT	
Analyze non-motorized user crash and active transportation system data to implement multimodal improvements and identify pedestrian-bicycle trails at-grade crossings.		PennDOT	
Integrate historical crash data with Federal Railroad Administration (FRA) reporting.		PennDOT	
Investigate new technology to monitor/study motorist actions. Install cameras and utilize photo enforcement at problematic locations.		PennDOT	

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Be Safe PA.
Distractions are everywhere.
Don't Drive Distracted


Be Safe PA.
There's more than one way
to be under the influence.
Don't Drive Impaired
Best Mom Ever.


Be Safe PA.
Buckle up every trip, every time.
Don't Drive Unbuckled

Be Safe PA.