



New Jersey Strategic Highway Safety Plan

2015





State of New Jersey

DEPARTMENT OF TRANSPORTATION
P.O. Box 600
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Governor

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Lt. Governor

August 18, 2015

Robert Clark
Division Administrator
Federal Highway Administration
New Jersey Division
840 Bear Tavern Road, Suite 202
West Trenton, NJ 08628

RE: New Jersey Strategic Highway Safety Plan

Dear Mr. Clark:

I am pleased to provide New Jersey's 2015 Strategic Highway Safety Plan. This plan outlines safety priorities and strategies to reduce fatalities and serious injuries on New Jersey's roads.

The 2015 Strategic Highway Safety Plan is driven by crash data and significant stakeholder involvement and will focus safety spending toward both state and local roadways.

We believe this plan was prepared utilizing a process that meets the requirements of the Federal Highway Administration and will enable continued authorization of funds under the Highway Safety Improvement Program for the next several years.

If you have any questions, please contact my office.

Sincerely,

A handwritten signature in black ink, appearing to read "Jamie Fox".

Jamie Fox
Commissioner

Enclosure

Executive Summary

Each state is mandated by the U.S. Department of Transportation to develop a Strategic Highway Safety Plan (SHSP) to guide the allocation of safety funding and resources to reduce highway fatalities and serious injuries on public roadways. A SHSP is required by the Federal Highway Administration (FHWA) Highway Safety Improvement Program (HSIP) as a condition to utilize federal HSIP funds. In New Jersey, HSIP funds total approximately \$57 million per year, and have been used to make significant safety improvements on state, county, and local roadways, improving safety for motorists, pedestrians, bicyclists, heavy vehicles, and at rail grade crossings.

The SHSP is data driven, sets long-term goals, and is a coordinated statewide plan that identifies the most significant infrastructure and behavioral safety issues on New Jersey's public roads. The SHSP's comprehensive approach also considers strategies to improve behaviors and infrastructure. Emphasis areas outlined in New Jersey's SHSP were identified through an analysis of crash data, while the safety strategies were selected based on their propensity to efficiently and effectively address the emphasis areas and on their acceptance and applicability in New Jersey.

New Jersey has adopted the national vision for highway safety – *Toward Zero Deaths: A National Strategy on Highway Safety (Toward Zero Deaths)*. This calls for a national goal of reducing the number of traffic fatalities by half by the year 2030. New Jersey's crash reduction goal is to reduce serious injuries and fatalities by 2.5 percent annually with the support of all safety partners. Toward that end, the SHSP is linked to the *New Jersey Highway Safety Plan*, prepared by the New Jersey Division of Highway Traffic Safety (NJDOTS), and the *New Jersey Comprehensive Statewide Freight Plan*, prepared by the New Jersey Department of Transportation (NJDOT). Both agencies, in collaboration with their safety partners, are committed to implementing the SHSP. Emphasis areas (listed in the box to the right) and strategies (discussed in the Safety Emphasis Area Factsheets in Appendix B) reflect this collaboration.

Safety Emphasis Areas

1st Priority:

- ▶ Lane Departure
- ▶ Drowsy and Distracted Driving
- ▶ Aggressive Driving
- ▶ Intersections
- ▶ Pedestrian and Bicycle
- ▶ Mature Drivers (Over the age of 64)

2nd Priority:

- ▶ Impaired Driving
- ▶ Unbelted Vehicle Occupants
- ▶ Teen Drivers (Under the Age of 21)
- ▶ Motorcycle

3rd Priority:

- ▶ Heavy Vehicles
- ▶ Unlicensed Drivers
- ▶ Work Zone
- ▶ Train-Vehicle Collisions
- ▶ Improved Data Analysis

This plan provides the following direction:

- ▶ Infrastructure related (NJDOT)
 - Better alignment of investments with crash data, to continually adjust the program so that funds are targeting the most pressing safety issues.
 - Focus approximately 40 percent of the annual HSIP funding on state highways and evaluation and 60 percent on county and municipal network in line with the current distribution of serious injuries and fatalities.
 - Focus on lane departure, intersections, and pedestrians as a top priority.
 - Consider mature drivers in infrastructure improvements.
 - Improve alignment of Local Safety/High Risk Rural Roads funding with crash data on the local system.
 - Advance systemic infrastructure improvements that prove more effective in reducing fatalities and serious injuries. Examples are centerline and edge-line rumble strips and high-friction surfaces on curves.
- ▶ Behavior related (NJDHTS)
 - NJDHTS's short-term goal is to reduce crashes and fatalities by improving roadway users' compliance with motor vehicle laws and their understanding and adoption of key safety practices that result in knowledge, attitude, and behavior change.

This is accomplished by providing funding to municipalities to conduct a range of safety programs, including educational programs, high visibility enforcement campaigns, and pedestrian safety training with children and mature adults.

NJDHTS also acts as a clearinghouse for a broad range of educational safety materials and programs.

While a complete update to the SHSP is required every 4 years, NJDOT, along with the New Jersey Department of Law and Public Safety, will review progress against the plan on an annual basis. A summary of the review will be prepared by NJDOT that outlines performance and identifies plan changes that may be needed prior to a full update.

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Safety Stakeholders

The 2015 Strategic Highway Safety Plan (SHSP) was developed in collaboration with safety stakeholders from public and private agencies throughout New Jersey. Stakeholders include:

NJSHSP Workshop Participating Organizations

AAA Mid-Atlantic

AAA New Jersey

AARP

Bergen County Planning & Economic Development

Bicycle Coalition of Philadelphia

Brain Injury Alliance of New Jersey

Burlington County Engineering

Burlington County Sheriff's Office

CH2M HILL, Inc.

City of Newark Traffic

City of Vineland

Community Options, Inc.

Cross County Connection TMA

DCH Teen Safe Driving Foundation

Delaware River Port Authority

Delaware Valley Regional Planning Commission

Drive Safer

Essex County College Police Academy

Federal Highway Administration

Greater Mercer TMA

HART TMA

Hudson County Engineering

Hudson County Planning

Hudson TMA

Meadowlink TMA

Mercer County Engineering

Mercer County Planning

Monmouth County Engineering

MONOC Hospital Service Corp.

Morristown Medical Center

Motor Vehicle Commission

New Jersey Bike Walk Coalition

New Jersey Department of Health
Office of EMS

New Jersey Department of
Transportation

New Jersey Division of Highway
Traffic Safety

New Jersey Division of Criminal
Justice

New Jersey Foundation for Aging

New Jersey Police Traffic Officers
Assn.

New Jersey Prevention Network

New Jersey State Police

New Jersey Transit

North Jersey Transportation
Planning Authority

Ocean County Engineering

Parsons Brinckerhoff

Passaic County Planning

RBA Group

Ridewise TMA

Rutgers University

Safe Routes to School National
Partnership

Somerset County Engineering

South Jersey Transportation
Planning Organization

Sussex County Division of
Planning

TransOptions TMA

Tri-State Transportation

Campaign

Union County Engineering

Urban Engineers

VHB, Inc.

Voorhees Transportation Center



Purpose, Mission, Vision and Goal

It is the duty of New Jersey safety practitioners and residents to work together to make travel in New Jersey as safe as it can be for all roadway users.

Purpose

The preparation of this SHSP is mandated by the Moving Ahead for Progress in the 21st Century Act (MAP-21), which requires each state to develop a SHSP that identifies priority emphasis areas and strategies through a consensus-based process to make their safety investments eligible for funding through the Highway Safety Improvement Program (HSIP). The goal of the HSIP is to achieve significant reductions in traffic fatalities and serious injuries on public roads. The New Jersey SHSP supports that goal because it provides a data driven, consensus-based blueprint to drive state HSIP investment decisions by ensuring projects correspond to the safety emphasis areas and strategies identified in the plan. The NJDHTS receives federal funding through the National Highway Traffic Safety Administration (NHTSA) to support education and enforcement safety activities and programs to complement the HSIP.

Developed through a collaborative approach that included input from a broad cross section of stakeholders – engineers, planners, advocates, public health officials, law enforcement officers, educators, and emergency response providers – the SHSP outlines a new safety vision and mission for New Jersey. The SHSP identifies 16 key safety emphasis areas and the supporting strategies that are likely to have the greatest impact on improving safety on our roadways. Also, the SHSP renews the state’s commitment to direct resources to these safety strategies with a goal of ensuring the continuation of New Jersey’s downward trend in traffic fatalities and serious injuries.

Safety Mission

The mission of New Jersey's safety programs and its SHSP is to drive down serious injuries and fatalities on New Jersey's roadways by addressing infrastructure and behavioral factors contributing to crashes and utilizing and combining multiple strategies to achieve the greatest safety benefits. While New Jersey has made great progress in making roadways safer for all users through investments such as guiderails, non-slip surfaces, geometric improvements, and pedestrian signals and crosswalks, data confirm that the majority of crashes that occur on New Jersey and the nation's roadways are largely the result of unsafe behavior such as distraction, impairment, fatigue, and speeding. The synergy between infrastructure investments and behavioral change programs is critical to realizing the greatest safety improvements for the traveling public.

Safety Vision

New Jersey's vision is to achieve zero deaths on all public roads. This long-term vision will require time to change attitudes and behaviors, as well as physical improvements to the roadway system to reduce the frequency and severity of crashes.

It is no longer acceptable to say that traffic crashes and the resulting injuries and fatalities are the price we pay for mobility. Instead, the state's safety stakeholders are committed to achieving zero deaths and are asking all roadway users to join in this effort. While zero traffic deaths may seem improbable, if we as agencies and individuals are not willing to strive for it, it begs the question: *Who among us are willing to allow the next traffic fatality on our roadways?*

Safety Goal

To achieve this long-term vision, New Jersey has established a 2.5% per year reduction in the 5-year rolling average of fatalities and serious injuries. Achievement of this goal would bring serious injuries and fatalities to fall below the 2012 level of 2,059 to 1,599 by the year 2022. See Figure 1.1.

Is this goal realistic? It is if all safety stakeholders focus their efforts to implement safety strategies that hold the greatest promise for reducing crashes and saving lives.

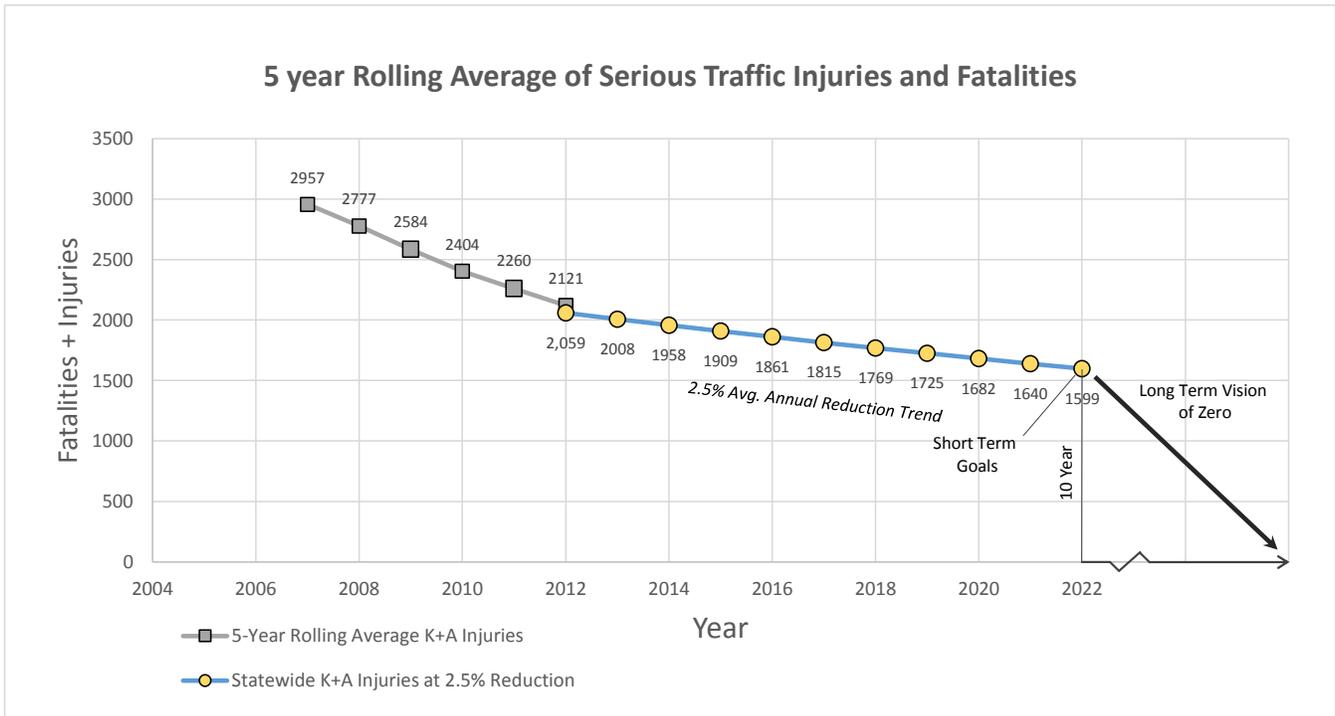
Crash Reduction Goal

Severe crashes are those motor vehicle crashes that result in one or more fatalities or serious injuries, or both.

New Jersey's crash reduction goal is to reduce serious injuries and traffic fatalities from the 2012 level of 2,059 to 1,599 by the year 2022.

To achieve this goal, the number of traffic-related serious injuries and deaths will have to decrease by approximately 2.5% each year.

FIGURE 1-1
New Jersey's Short-Term Crash Reduction Goal and Long-Term Safety



Vision

*Years 2013 to 2022 are projections

2000 to 2012 Rolling Average Fatality Source:
<http://www-fars.nhtsa.dot.gov/Main/index.aspx>

5-Year Rolling Average calculation example: Year 2007 represents average serious injury and fatality data from 2003 to 2007.

Toward Zero Deaths: A National Strategy on Highway Safety

New Jersey is not the only state focused on zero traffic deaths. To date, more than 40 states have incorporated zero-based traffic safety efforts. *Toward Zero Deaths: A National Strategy on Highway Safety (Toward Zero Deaths)* was developed by a group of national stakeholders convened to create a singular highway safety vision and strategy for the nation. This strategy also has been adopted by seven national organizations representing state transportation agencies, state highway safety agencies, law enforcement, commercial motor vehicles, driver licensing, and emergency responders.

Toward Zero Deaths was developed in cooperation with the U.S. Department of Transportation (USDOT) and its various modal agencies, the Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), and the National Highway Traffic Safety Administration (NHTSA).

Toward Zero Deaths is based on the principle that even one traffic death is unacceptable. The national strategy is data-driven and focuses on identifying and creating opportunities for changing our highway safety culture. *Toward Zero Deaths* provides tools that national, state, and local safety partners and stakeholders can use to develop their safety plans.

Of the states that have adopted zero as their long-term vision for reducing highway deaths, research shows that *Toward Zero Deaths* implementation is accelerating the reduction in fatal and serious injury crashes. Studies also indicate that successful *Toward Zero Deaths* programs promote:

More aggressive goal setting for reducing traffic-related fatalities and serious injuries.

Interagency cooperation among state transportation, public safety and health agencies, and state and local roadway authorities.

Development of safety strategies that leverage the 4Es of traffic safety.

Implementation of data-driven, performance-based safety strategies to provide the greatest opportunity to reduce the number of fatal and serious injury crashes.

Policy leadership that supports a state's short-term goals and long-term vision.

By adopting *Toward Zero Deaths*, New Jersey is likely to reach its short-term goal sooner, reducing the time it will take to achieve the long-term vision of zero traffic fatalities.

Toward Zero Deaths: A National Strategy on Highway Safety

With over 30,000 fatalities occurring on the nation's highways each year, roadway safety remains one of the most challenging issues facing America.

"The philosophy behind TZD is until our roads are absolutely free of fatalities, our work is not finished."

--American Association of State Highway and Transportation Officials (AASHTO)

"Setting the bar for safety to the highest possible standard requires commitment from everyone – from drivers to industry, safety organizations and government at all levels."

--U.S. DOT

"To reach our goal of zero, solutions must come from multiple angles, which is why the TZD plan addresses the vehicles, the road and the driver."

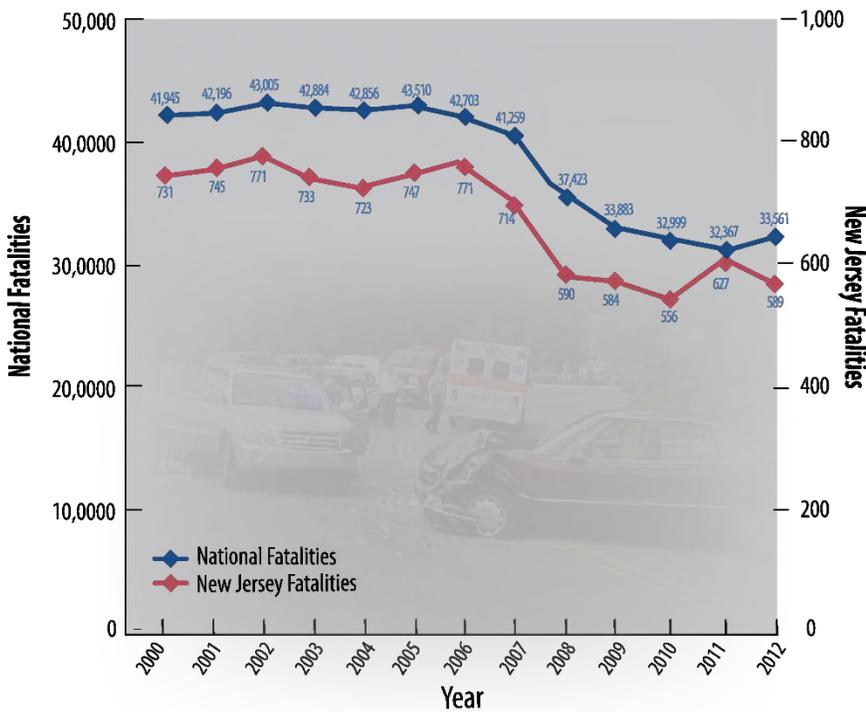


National and New Jersey Crash Data Overview – Traffic Fatalities

Traffic fatalities in the United States (U.S.) peaked in 1972 at 54,589 deaths and have since fallen at a rate of about 1 percent annually to 33,561 fatalities in 2012. The reduction is the result of a combination of efforts that have made roadways and vehicles safer, and law enforcement and emergency response more effective. However, traffic crashes are still one of the leading causes of death in the U.S., with over 90 people losing their lives on the nation’s roadways every day.

Since 2000, New Jersey’s traffic fatalities have followed a similar trend, declining about 2 percent per year. Figure 1-2 compares the U.S. and New Jersey traffic fatality trend lines.

FIGURE 1-2
New Jersey and National Traffic Fatalities, 2000 to 2012



Source: <http://www.fars.nhtsa.dot.gov/Main/index.aspx>



Safety Emphasis Areas and Strategies

Developing a SHSP is a collaborative, thoughtful process to identify a short list of safety emphasis areas and strategies and to identify the types of roadways where the most fatalities and serious injury crashes occur. FHWA guidelines require a data-driven process with a focus on fatalities and crashes resulting in the most serious injuries to allow for easier comparison across all states. The FHWA also encourages states to consider cost effectiveness when assembling the short list of safety strategies since these become the focus of investments within the highway safety program.

Five years (2008 through 2012) of New Jersey crash data were analyzed. The number of fatalities and fatalities plus serious injuries was disaggregated (divided) among the specific categories of crashes to determine and prioritize the safety emphasis areas by the number of fatalities and serious injuries. This data-driven approach helps direct the state’s limited safety dollars to those infrastructure and behavioral initiatives that offer the greatest opportunity to save lives. The analysis of New Jersey’s data assigned severe crashes to five broad categories and 16 safety emphasis areas, as shown in Table 2-1.

TABLE 2-1: NEW JERSEY SAFETY EMPHASIS AREAS BY AASHTO CATEGORY

Categories	Safety Emphasis Areas
Drivers	Drowsy and Distracted Driving Aggressive Driving (Including Speeding) Impaired Driving Mature Drivers Teen Drivers Unbelted Vehicle Occupants Unlicensed Drivers
Other Users	Pedestrians and Bicyclists
Vehicles	Motorcyclists Heavy Vehicles
Highways	Lane Departure Intersections Work Zones Train-Vehicle Collisions
Other	Improved Data Analysis Driver Safety Awareness

The results of this first step (dividing fatalities and fatalities plus serious injuries into safety emphasis areas) are shown in Table 2-2. The most predominant types of fatality and serious injury crashes in New Jersey involve lane departure and drowsy and distracted driving, while the least predominant involve work zones and train-vehicle collisions.

TABLE 2-2
New Jersey's Safety Emphasis Areas by Fatalities and Serious Injuries – 2008 to 2012

Safety Emphasis Area	National Fatalities Percentage	New Jersey			
		Fatalities		Fatalities + Serious Injuries	
		Percentage	Number ^c	Percentage	Number ^c
Statewide Totals		2,946		10,605	
Lane Departure	52% ^a	47%	1,386	45%	4,776
Drowsy and Distracted Driving	12% ^b	34%	1,002	42%	4,478
Aggressive Driving	36% ^b	32%	937	34%	3,600
Intersections	21% ^a	24%	700	30%	3,233
Pedestrians and Bicyclists	15% ^a	27%	798	23%	2,472
Impaired Driving	31% ^a	14%	420	18%	1,898
Mature Drivers (Over the Age of 64)	16% ^b	20%	591	17%	1,840
Unbelted Vehicle Occupants	34% ^a	18%	531	16%	1,740
Teen Drivers (Under the Age of 21)	8% ^b	11%	337	13%	1,395
Motorcycles	14% ^a	13%	375	12%	1,245
Heavy Vehicles	12% ^a	5%	162	3%	337
Unlicensed Drivers	16% ^b	1%	36	3%	337
Work Zones	2% ^b	3%	76	2%	183
Train-Vehicle Collisions	1% ^b	0%	9	0%	13
Improved Data Analysis	N/A				
Driver Safety Awareness	N/A				

Notes:

^a From *Towards Zero Deaths: A National Strategy on Highway Safety*, Draft, 2014

^b From *AASHTO Strategic Highway Safety Plan*, 2004

^c The numbers in the columns add to more than 100 percent because many crashes are assigned to more than one emphasis area. For example, a crash that occurred at an intersection, involving a teen driver that was unbelted would be assigned to three safety emphasis areas.

Source: Rutgers University, Transportation Safety Resource Center (TSRC), Plan4Safety

For comparison, the most current national crash data (based on fatalities that occurred in 2012) also is shown in Table 2-2. These data indicate that in some safety emphasis areas the relative frequency of fatalities in New Jersey is similar to the national numbers (aggressive driving/speeding, intersection crashes, and crashes involving motorcyclists); while in other emphasis areas New Jersey's numbers are lower than national numbers (roadway/lane departure, impaired driving, unbelted vehicle occupants, and crashes involving large/heavy vehicles); or higher (drowsy and distracted drivers and crashes involving pedestrians and bicyclists). Additional information related to New Jersey's Emphasis Areas is presented in the factsheets found in Appendix B.

A review of the number of fatalities plus serious injuries associated with each safety emphasis area suggested three levels of priority (Figure 2-1) for the implementation of safety strategies to reduce fatality and serious injury crashes. New Jersey has chosen to include Mature Drivers among its highest priority as this population is growing in the state.

The image of a target (Figure 2-2) was chosen to illustrate New Jersey's approach to prioritizing the safety emphasis areas. The closer to the center of the target, the higher the safety investment priority for reducing fatality and serious injury crashes on New Jersey roads.

FIGURE 2-1
Fatalities and Serious Injuries in Each Safety Emphasis Area – New Jersey 2008 to 2012

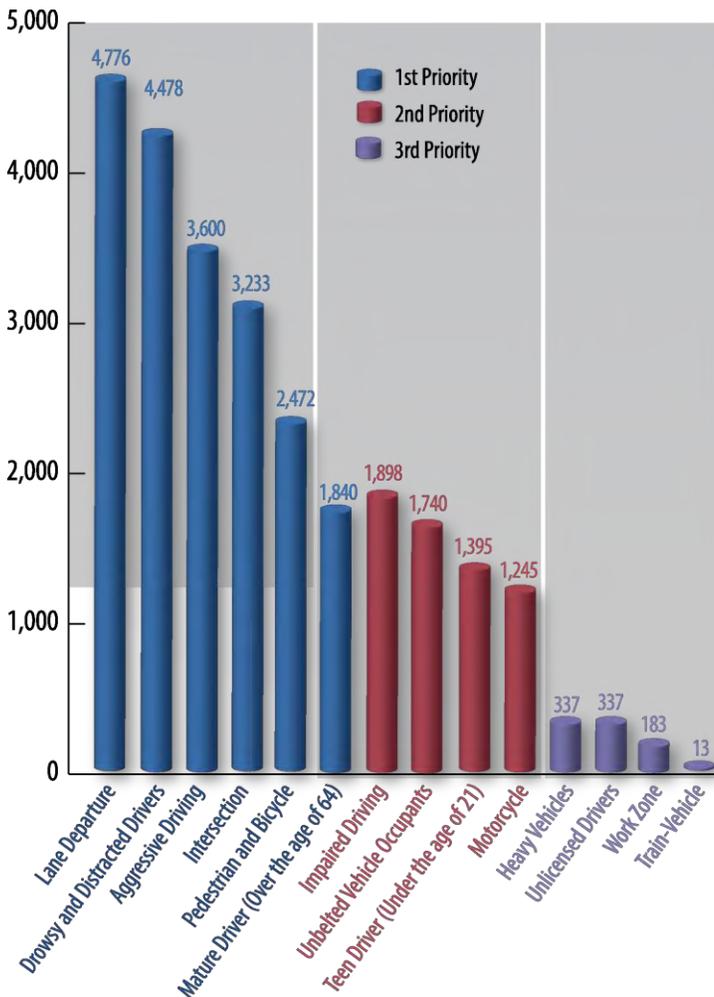
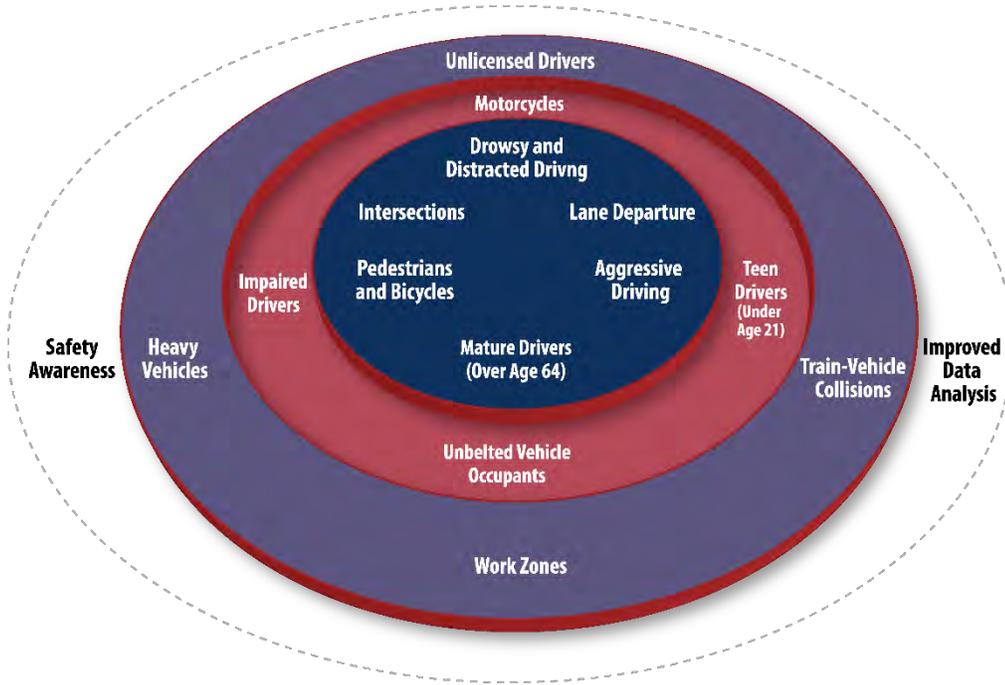


FIGURE 2-2
New Jersey Prioritization of Safety Emphasis Areas



Legend

1st Priority (>2,000 fatality and serious injury crashes)
2nd Priority (1,000 to 2,000 fatality and serious injury crashes)
3rd Priority (<1,000 fatality and serious injury crashes)

Note: Fatality and serious injury crashes are those crashes that result in one or more fatalities or serious injuries, or both. The exception to this categorization is for Mature Drivers, which are considered a first priority emphasis area due to the increasingly older population in New Jersey.

Safety Strategies

Potential safety strategies were identified for each safety emphasis area. The initial list of strategies was compiled using a number of national resources including the National Cooperative Highway Research Program (NCHRP) *Report 500* series, the *Highway Safety Manual*, and *Countermeasures That Work*. These resources were developed to assist state and local agencies to effectively identify, implement, and manage infrastructure and behavioral safety projects and programs proven to reduce crashes, fatalities, and serious injuries.

The SHSP advisory team reviewed a number of safety strategies resulting in a comprehensive list that reflects best practices and the culture in New Jersey and encompasses infrastructure and behavioral countermeasures. These 250 strategies were shared with more than 130 safety stakeholders representing the 4Es at a statewide workshop. The strategies were discussed with the stakeholders and comments were received during facilitated breakout sessions. The stakeholders participated in a voting exercise that resulted in the identification of 179 strategies that present the greatest opportunity for New Jersey to achieve its crash reduction goals. Not all the strategies will be implemented. Strategies will be considered for implementation based on their potential and feasibility to reduce fatalities and serious injuries.

The SHSP advisory team considered effectiveness and implementation costs when selecting safety strategies. National agencies such as FHWA, NHTSA, and NCHRP have expended considerable effort to document expected crash reductions associated with the implementation of various safety strategies as not all strategies are equally likely to reduce crashes. For example, high-visibility enforcement reduces aggressive driving-related crashes by approximately 3 percent, while centerline rumble strips reduce crossover crashes (where a vehicle crosses the centerline and enters the opposing travel lane) by approximately 40 percent.

Analysis of New Jersey's crash data indicates that fatal and serious injury crashes are widely scattered across the state. Consequently, the number of sites with multiple severe crashes, or hot spots, is limited. As a result, New Jersey is moving toward a comprehensive traffic safety approach that includes identifying candidates for investment consisting of both a reactive component based on hot spots and a proactive component based on the outcome of a system-wide risk assessment, and application of strategies across broader areas as opposed to only focusing resources on high-crash locations.

Discussions of each of the safety emphasis areas are provided on the following pages. These discussions identify the issue, list some of the priority safety strategies identified to help reduce severe crashes, and indicates how strategies will be implemented. A complete list of all safety strategies, beyond those highlighted in this report, for New Jersey is provided at the end of this chapter.

Lane Departures

Safety Emphasis Area



Lane-departure crashes occur when a vehicle leaves its travel lane and either runs off the road and collides with a fixed object or collides with another vehicle(s) traveling in the opposite direction.

Example Safety Strategies

Strategies for reducing lane-departure crashes include:

- ▶ **Implement road diets on urban roadways**, which are proven to reduce rear-end, sideswipe, and head-on crashes by approximately 40 percent. This is a low-cost strategy because a road diet typically consists of restriping, rather than reconstructing, an existing roadway.
- ▶ **Install shoulder and centerline rumble strips**, which provide drivers with a tactile warning that they are about to leave their lane. Consideration should be given to ensuring that edge rumble strips are bicycle friendly. The treatment reduces run-off-the-road crashes by as much as 20 percent and head-on crashes by up to 40 percent

Issue

2008 to 2012

Fatalities and Serious Injuries = 4776

Average = 955/year

Represents 45 percent of all fatal and serious injuries for the 5-year period

Type of Crashes

Single vehicle

Run off road and hitting fixed object = 65 percent

Multiple vehicles

Head on = 20 percent

Type of Roadway

Urban (arterials) = 57 percent

State roadways = 41 percent

County roadways = 36 percent

Road Diet



Rumble Strips



- ▶ **Improve the design of highway hardware** so that vehicles are intercepted and restrained before they collide with other vehicles in other travel lanes or objects along the roadside. New Jersey has installed center median barriers along highways. Highway hardware includes support for traffic signs, streetlights, median barriers and guiderails, and utility poles.

Traffic Signs



Center Median Barrier



Drowsy and Distracted Driving

Safety Emphasis Area



Fatalities and serious injuries caused by drowsy and distracted driving are a growing concern in New Jersey. National and statewide surveys reflect that the majority of people surveyed viewed drowsy and distracted driving as a significant safety problem and strongly object to motorists driving distracted and fatigued. Generally, motorists are aware of the dangers of drinking and driving, but fail to realize the full risk of their own drowsy and distracted driving behaviors. Similar to the effects of driving while impaired, driving while drowsy or distracted not only slows reaction time, decreases awareness, and impairs judgment, but also results in the driver taking his/her eyes and mind off the road. Detection of drowsy and distracted drivers presents challenges for law enforcement. Increasingly, distraction (particularly cell phone use) is a factor in pedestrian and bicycle crashes, with walkers and bikers not paying full attention to their surroundings. In addition, this type of crash is typically underreported.

Example Safety Strategies

Strategies for reducing drowsy and distracted driving include:

- ▶ **Install shoulder and centerline rumble strips**, which provide drivers with a tactile warning that they are about to leave their lane. Consideration should be given to ensuring that shoulder/edge rumble strips are bicycle friendly. The treatment reduces run-off-the-road crashes by as much as 20 percent and head-on crashes by up to 40 percent.

Issue

2008 to 2012

Fatalities and Serious Injuries = 4478

Average = 896/year

Represents 42 percent of all fatal and serious injuries for the 5-year period

Daytime crashes = 56 percent

Male drivers = 61 percent

Dry roadways = 83 percent

Type of Crashes

Single vehicle

Hitting fixed object,

Pedestrian, or

Bicyclist = 50 percent

Multiple vehicles

Right angle or

Rear end = 26 percent

Type of Roadway

Arterials = 50 percent

Urban state and county = 55 percent

Rumble Strips



- ▶ **Mount high-visibility enforcement and public outreach campaigns** using paid and earned media such as the national *U Drive, U Text, U Pay* mobilization, and other ongoing local efforts funded through highway safety grants. Pilot programs using high-visibility enforcement coupled with public outreach to address distracted driving are resulting in a reduction of observed cell phone use and texting.
- ▶ **Partner with employers** to adopt and implement sanction-based cell phone policies that address the use of electronic devices while driving for work purposes. The crash reduction factor is unknown, but a survey of more than 1,100 organizations with cell phone policies found that companies that prohibit the use of all wireless communications devices while driving (handheld and hands free) saw a 20 percent reduction in employee crash rates and property damage.
- ▶ **Promote peer-to-peer outreach programs** that address social norms and shared driving behaviors for all roadway users. Drivers are more likely to engage in behaviors—risky or safe—that they perceive to be typical among their social group or peers. Correcting misperceptions about how often people engage in risky driving behaviors offers opportunities to challenge and positively influence the desirable social norm. The crash reduction factor and implementation costs are unknown but, in some counties where this strategy has been implemented, fatal crashes have declined by as much as 40 percent.

Talking on a Hand-held Device



TALKING ON A HAND-HELD DEVICE WHILE DRIVING IS PROHIBITED

Texting while Driving



TEXTING WHILE DRIVING IS PROHIBITED

Hands-free Device



USE HANDS-FREE DEVICES SPARINGLY.

Effective July 1, 2014, the fines for talking or texting on a hand-held wireless communications device increased. Although it is discouraged, drivers may use a hands-free device if it does not interfere with standard safety equipment. "Use" of a wireless phone and any other hand-held communication device includes, but is not limited to, talking or listening to another person, texting, or sending and receiving electronic messages.

A hand-held phone may be used for an emergency only and the driver must keep one hand on the wheel at all times.

Source: State of New Jersey

Aggressive Driving Safety Emphasis Area



Aggressive driving generally involves unsafe driving behaviors such as speeding, following too closely, tailgating, and swerving in and out of traffic. Other risk factors such as alcohol use and lack of seat belt use are associated with a higher percentage of fatality and serious injury aggressive driving crashes.

Example Safety Strategies

Strategies for reducing aggressive driving include:

- ▶ **Improve geometry/layout and use of traffic calming**, which contribute to increased safety. Techniques include redesigning opposing left-turn lanes so they align across the intersection (improving sight lines for left-turning drivers); realigning skewed approaches so that roadways intersect at right angles (improving sight lines for left-turning drivers); and installing traffic calming devices such as roadway narrowing and vertical elements (speed humps, bumps, and tables) to lower traffic speeds on the most appropriate roadways.
- ▶ **Install dynamic warning signs** to remind drivers of their travel speed. These signs are shown to reduce vehicle speeds by up to 5 miles per hour (mph) and are effective when used at speed transitions that occur as a driver enters an urban area.

Issue

2008 to 2012

Fatalities and Serious Injuries = 3600

Average = 720/year

Represents 34 percent of all fatal and serious injuries for the 5-year period

Alcohol was a factor in 19 percent of the crashes

Type of Crashes

Single vehicle

Hitting fixed object = 29 percent

Multiple vehicles

Right angle = 26 percent

Type of Roadway

Urban state and county = 60 percent

Traffic Calming



Dynamic Warning Sign



- ▶ **Promote peer-to-peer outreach programs** to address social norms and shared driving behaviors for all roadway users. Drivers are more likely to engage in behaviors — risky or safe — that they perceive to be typical among their social group or peers. Correcting misperceptions regarding the frequency in which drivers engage in risky driving behaviors presents opportunities to challenge and positively influence the social norm. The crash reduction factor is unknown but, in some counties where this strategy has been implemented, fatal crashes have declined by as much as 40 percent.
- ▶ **Mount high-visibility enforcement and public outreach campaigns** using paid and earned media to deter unsafe and unlawful driving by increasing the perceived risk of being ticketed. High-visibility enforcement and public outreach campaigns are generally expensive to develop, implement, and publicize. Evidence suggests that high-visibility aggressive driving enforcement campaigns have promise. It is estimated that these efforts reduce crashes by as much as 5 percent.
- ▶ **Establish a statewide definition** for aggressive driving by analyzing crash reports to determine specific contributing factors. This will enable New Jersey to implement the most appropriate and cost-effective safety countermeasures.

Speedometer



(Image: New Jersey Driver Education website)

Intersections

Safety Emphasis Area



Intersection-related crashes are generally multiple vehicle crashes that occur in or at the approaches to intersections controlled by either traffic signals or STOP signs.

Example Safety Strategies

Strategies for reducing intersection-related crashes include:

- ▶ **Improve the visibility of traffic signals** by placing signal heads over the travel lanes on mast arms (as opposed to pedestal-mounted on the side of the road), and installing 12-inch lenses (rather than 8-inch lenses) and background shields and retro-reflective tape around the perimeter. These enhancements have the potential to reduce crashes by 15 percent to 30 percent.
- ▶ **Improve pedestrian and bicyclist visibility and operations at signal-controlled intersections** by adding countdown timers and installing a Leading Pedestrian Interval (LPI) to give pedestrians and bicyclists a 2- to 3-second head start. These can be low cost enhancements that have the potential to reduce crashes by 30 percent to 60 percent.
- ▶ **Improve geometry/layout** to increase safety. Techniques include redesigning opposing left-turn lanes so they align across the intersection (improving sight lines for left-turning drivers), realigning skewed approaches so that roadways intersect at right angles (improving sight lines for left-turning drivers).

Issue

2008 to 2012

Fatalities and Serious Injuries = 3233

Average = 647/year

Represents 30 percent of all fatal and serious injuries for the 5-year period

Type of Crashes

Right angle = 35 percent

Pedestrian

Bicyclist = 24 percent

Type of Roadway

Urban two-lane

(Principal arterials) = 66 percent

County two-lane

(Minor arterials) = 40 percent

Visibility at Intersections



- ▶ **Improve signs, pavement markings, overall lighting, and pedestrian-scale lighting** to make the roadway, intersections, and pedestrians/bicyclists more visible to drivers in low light and poor weather conditions. The crash reduction varies by technique, but the addition of streetlights can reduce crashes by as much as 25 percent to 40 percent.
- ▶ **Install roundabouts** to control traffic and reduce conflicts between vehicles at intersections. Roundabouts reduce severe angle crashes at intersections by 60 percent to 90 percent.

Roundabout



Pedestrians and Bicyclists

Safety Emphasis Area



Pedestrian and bicyclist crashes involve a collision with a motor vehicle within the roadway right-of-way. New Jersey is a DOT identified pedestrian focus state and the City of Newark is a pedestrian focus city in New Jersey. This means that pedestrian fatalities and serious injuries exceed national rates.

Example Safety Strategies

Strategies for reducing pedestrian and bicyclist crashes include:

- ▶ **Improve pedestrian and bicyclist visibility and operations at signal-controlled intersections** by adding countdown timers and installing a LPI to signals to give pedestrians and bicyclists a 2- to 3-second head start. These enhancements have the potential to reduce crashes by 30 percent to 60 percent.
- ▶ **Implement road diets**, which are proven to reduce rear-end, sideswipe, and head-on crashes by approximately 40 percent. The cost of a road diet is kept low because the roadway is reallocated and restriped rather than reconstructed.
- ▶ **Improve traffic signs, pavement markings, overall lighting, and pedestrian-scale lighting** to make the roadway, intersections, and pedestrians/bicyclists more visible to drivers in low light and poor weather conditions. The crash reduction varies by technique, but the addition of streetlights has the potential to reduce incidences by 25 percent to 40 percent.

Issue

2008 to 2012

Fatalities and Serious Injuries = 2472

Average = 494/year

Represents 23 percent of all fatal and serious injuries for the 5-year period

FHWA has identified New Jersey as a pedestrian focus state and Newark as a focus city

Type of Roadway

Most occurred on high-speed principal urban arterials and low-speed minor urban arterials.

Evenly distributed among the state, county and city roadway systems.

Visibility at Intersections



Road Diet



- ▶ **Use traffic calming** to change driver behavior along the most appropriate roadways by altering the physical roadway environment to slow traffic and make it safer for all users, primarily pedestrians and bicyclists. The most common techniques involve reducing the width of the roadway and adding vertical elements, such as speed humps, bumps, and tables.
- ▶ **Install sidewalks, curb extensions, ADA-compliant curb ramps, and medians** to reduce pedestrian and bicyclist exposure to motor vehicles. These techniques have been shown to reduce crashes by as much as 50 percent.
- ▶ **Install HAWK signals and RRFBs** that are pedestrian activated and help ensure a safe crossing. Crash reduction factors have not yet been determined, but initial research shows promise.

ADA-compliant Curb Ramps



Rectangular Rapid Flash Beacon



- ▶ **Educate pedestrians and bicyclists** about safe walking and riding practices and their responsibilities for walking and crossing in accordance with the law through high visibility enforcement and public outreach and education campaigns.
- ▶ **Adopt and implement Complete Streets policies** that require planners and designers to consider all modes of travel for all ages and abilities when building new or improving existing roadways.
- ▶ **Include pedestrian and bicyclist safety in driver education** to ensure that new drivers understand the importance of sharing the road as prescribed by law.

*Bicycle and Pedestrian
Safety Handouts*



(Images: New Jersey Department of Law & Public Safety website)

Mature Drivers Safety Emphasis Area



Currently, there are more than 1 million drivers who are 64 years of age or older in New Jersey. That number is expected to increase as another 1.5 million drivers will become senior citizens over the next 15 years. Mature drivers have a lifetime of experience that includes safe driving practices, but they're particularly vulnerable because of their propensity to be seriously injured or killed in the event of a crash as well as their declining physical acuity. Helping mature drivers stay mobile as long as safely possible must include initiatives that help them address declines in vision, hearing, reaction time, and flexibility, which all contribute to an increased crash risk.

Example Safety Strategies

Strategies for reducing crashes involving mature drivers include:

- ▶ **Improve the visibility of traffic signals** by replacing signal heads over the travel lanes on mast arms (as opposed to pedestal-mounted on the side of the road), installing 12-inch lenses (rather than 8-inch lenses), and background shields and retro-reflective tape around the signal heads. These enhancements have the potential to reduce crashes by 15 percent to 30 percent.
- ▶ **Improve traffic signs, pavement markings, overall lighting, and pedestrian-scale lighting** to make the roadway, intersections, and pedestrians/bicyclists more visible to drivers in low light and poor weather conditions. These techniques are associated with a 25 percent to 40 percent reduction in crashes.
- ▶ **Establish accessible and safe mobility options for at-risk mature drivers** who are seeking to reduce or cease driving. In response to its growing mature driver population, New Jersey seeks to maintain the independence and wellbeing of its mature drivers by establishing and promoting driving alternatives such as ride sharing, public transit, and local community-based transportation services.

Issue

2008 to 2012

Fatalities and Serious Injuries = 1840

Average = 368/year

Represents 17 percent of all fatal and serious injuries for the 5-year period

Type of Crashes

Multiple vehicles

Right angle = 21 percent

Single vehicle = 20 percent

Pedestrians and bicyclists = 17 percent

Type of Roadway

Urban arterials and collectors = 70 percent

State roadways = 39 percent

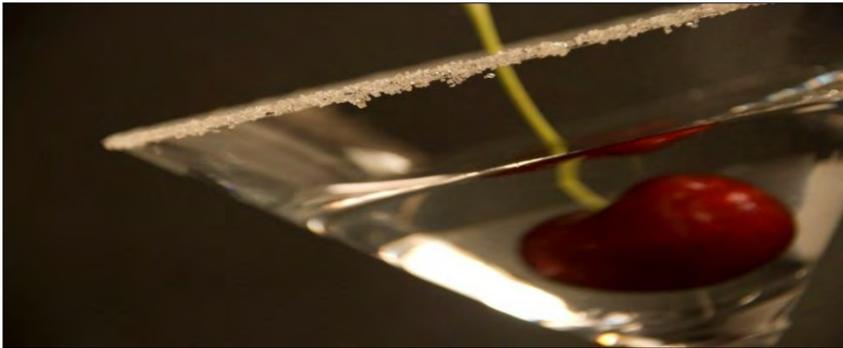
County roadways = 37 percent

Traffic Signs, Pavement Markings, and Lighting



- ▶ **Update screening protocol and training for licensing authorities** to identify at-risk mature drivers demonstrating compromised physical or cognitive functioning. Equip MVC examiners with the tools to assess mature drivers' fitness to drive and the necessary training and guidance take the appropriate licensing actions can positively impact safety for all roadway users.
- ▶ **Strengthen the role of medical advisory boards and update training for licensing authorities** to identify and assess high risk and at-risk mature drivers demonstrating compromised physical or cognitive functioning. Provide Motor Vehicle MVC examiners with tools, training, and guidance to assess mature and at-risk drivers' fitness to a drive. Enhance the role of MVC's Medical Review Unit to implement appropriate safety recommendations and develop policy recommendations on licensing actions.
- ▶ **Establish an interagency stakeholder team** to assess existing programs, services, education, and public outreach that address the needs of at-risk mature drivers. An interagency team would include representatives from licensing, health care, roadway engineering, transit, law enforcement, and health care, and aging and transportation stakeholder groups.

Impaired Driving Safety Emphasis Area



Driving under the influence (DUI) of alcohol or drugs is a major factor in fatal and serious injury crashes nationally and in New Jersey. While the number of people killed and injured in drunk-driving crashes has declined in New Jersey, drivers impaired by illegal and prescription drugs and over-the-counter-medications is on the rise. New Jersey, like all states, has a legal blood alcohol content (BAC) limit of .08, but a motorist can be convicted of drunk driving even when his or her BAC is under that threshold.

Example Safety Strategies

Strategies for reducing impaired driving include:

- ▶ **Mount high-visibility enforcement and public outreach campaigns** to deter unsafe and unlawful driving by increasing the perceived risk of being ticketed. New Jersey will continue to actively participate in the national impaired-driving crackdown mobilization, *Drive Sober or Get Pulled Over*. Planned high-visibility enforcement is publicized extensively through community kickoff events and public education campaigns that announce the enhanced enforcement and the risks and consequences of driving impaired. It's estimated that these efforts reduce crashes by as much as 5 percent.
- ▶ **Ignition Interlock Devices (IIDs) for all DUI offenders.** Currently, New Jersey statute requires all first offenders with a BAC of 0.15 or higher to have an IID installed in their vehicle to regain driving privileges. DUI offenders who have IIDs installed in their vehicles are at a substantially lower risk for recidivism. Consider the use of IIDs by all DUI offenders to eliminate driving during the license sanction period. Initial studies of states implementing IIDs for use by all offenders have demonstrated declines in impaired-driving injury crashes ranging from 20 percent to 32 percent.

Issue

2008 to 2012

Fatalities and Serious Injuries = 1898

Average = 380/year

Represents 18 percent of all fatal and serious injuries for the 5-year period

Nighttime crashes = 69 percent

Dry roadways = 82 percent

Type of Crashes

Single vehicle

Hitting fixed object

Pedestrian = 57 percent

Bicyclist

Type of Roadway

Most at-risk roadways are two-lane arterials.

Urban state roadways accounted for one-third of fatalities and serious injuries.



Ignition Interlock Device



(Photo: Interlock Device of New Jersey website)

- ▶ **Expand the Drug Recognition Expert callout program** to more counties and increase the number of officers trained to detect and identify persons under the influence of drugs, alcohol, and other controlled and illegal substances. The crash reduction factor is unknown.
- ▶ **Promote peer-to-peer outreach programs** to address social norms and shared driving behaviors for all road users. Drivers are more likely to engage in behaviors — risky or safe — that they perceive to be typical among their social group or peers. Correcting misperceptions about how often drivers engage in risky driving behaviors presents opportunities to challenge and positively influence the social norm. The crash reduction factor is unknown but, in some counties where this strategy has been implemented, there has been a 40 percent reduction in fatal crashes.

Unbelted Vehicle Occupants

Safety Emphasis Area



Increasing seat belt use is the most effective way to reduce serious injury and death in the event of a crash. However, failure to buckle up remains a major contributing factor in fatal crashes in New Jersey despite a primary seat belt law for all front seat occupants, occupants under 18 years of age, and all occupants when the vehicle is operated by a graduated driver license (GDL) holder (adults and 18 and older riding in the back seat are required to buckle up, but it is a secondary rather than primary offense if they fail to do so). Unbelted occupants can become projectiles during a collision and seriously injure themselves, other passengers, or the driver.

New Jersey experienced a steady increase in seat belt usage between 1996 and 2013 for front seat passengers, peaking at 94.5 percent in 2011. The 2012 survey, conducted by the New Jersey Institute of Technology, showed a reduced usage rate of 88.3 percent. The seat belt usage rate rose in 2013 by more than 2 percentage points, to 91 percent. Unfortunately, in 2014, usage rates declined from the previous year to 87.6 percent.

Example Safety Strategies

Strategies for reducing unrestrained motor vehicle occupants include:

- ▶ **Mount high-visibility enforcement and public outreach campaigns** to deter unsafe and unlawful driving by increasing the perceived risk of being ticketed. New Jersey will continue to actively participate in the national *Click It Or Ticket* campaign. These campaigns are generally expensive to develop, implement, and publicize. It's estimated that these efforts reduce crashes by as much as 5 percent.

Issue

2008 to 2012

Fatalities and Serious Injuries = 1740

Average = 348/year

Represents 16 percent of all fatal and serious injuries for the 5-year period

Type of Crashes

Single vehicle = 48 percent

Multiple vehicle

Right angle = 12 percent

Type of Roadway

Urban areas = 70 percent

Freeways, arterials and Collectors = 50 percent

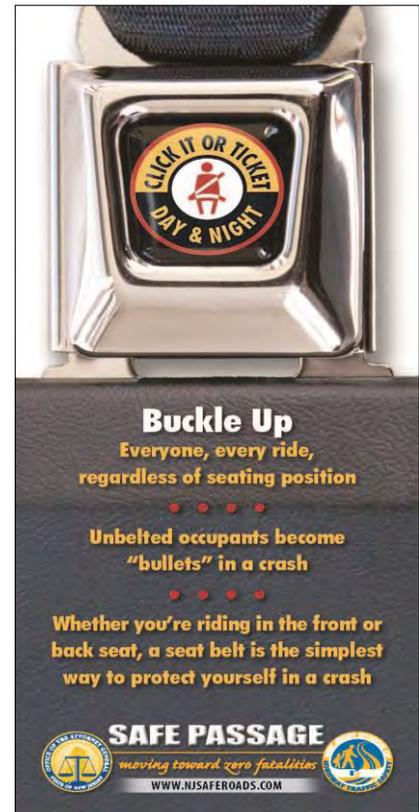
State roadways = 40 percent

County roadways = 29 percent



- ▶ **Partner with employers** to adopt and implement employment-based seat belt policies. As with other high-risk driving behaviors, education alone may have a short-term effect, but research confirms that drivers are more likely to respond when faced with meaningful consequences. Employers can protect themselves by implementing clear safety policies, monitoring compliance, and reinforcing consequences and rewards.

Seat Belt Use Handout



(Image: New Jersey Department of Law & Public Safety website)

Teen Drivers Safety Emphasis Area



(Photo: New Jersey Driver Education website)

Car crashes are the number one killer of teens and no other age group on the road has a higher crash risk. Teens are overrepresented in crashes because they lack both the judgment that comes with maturity and the skills that come with experience. New Jersey's comprehensive GDL program allows novice drivers to gradually gain experience over a period of time, while reducing the things that cause them the greatest risk – driving with passengers, late at night, unbelted, and distracted. New Jersey's GDL program applies to all novice drivers under 21 years of age, however, the program also applies to new drivers 21 and older complete a shortened version of the GDL program. A teen may obtain a permit at 16 years of age, a probationary (restricted license) at age 17 after a minimum of 6 months of practice driving, and a basic (full, unrestricted license) at age 18 after 12 months of probationary licensure. The age group represented here is under 21 years of age (not including age 21).

Example Safety Strategies

Strategies for reducing crashes involving teen drivers include:

- ▶ **Improve the design of highway hardware** to reduce the severity of fixed object crashes, which typically involve teen drivers. Highway hardware includes support for traffic signs, streetlights, median barriers and guardrails, and utility poles.

Issue

2008 to 2012

Fatalities and Serious Injuries = 1395

Average = 279/year

Represents 13 percent of all fatal and serious injuries for the 5-year period

From 2003 to 2012 teen drivers accounted for 14 percent of all fatalities as 6 percent of the driving population.

Type of Crashes

Single vehicle = 31 percent

Multiple vehicles

Right angle = 19 percent

Type of Roadway

Urban (≥ 45 mph) arterials

Collectors = 70 percent

State roadways = 33 percent

County roadways = 41 percent



Center Median Barrier



- ▶ **Promote peer-to-peer outreach programs** to address social norms and shared driving behaviors for all road users. Drivers are more likely to engage in behaviors—risky or safe—that they perceive to be typical among their social group or peers. Correcting misperceptions about how often drivers engage in risky driving behaviors presents opportunities to challenge and positively influence the social norm. The crash reduction factor is unknown but, in some counties where this strategy has been implemented, fatal crashes have declined by as much as 40 percent.
- ▶ **Require teens to attend an orientation with a parent, guardian, or supervising adult as a prerequisite for obtaining a learner's permit.** Novice teen drivers are four times more likely than any other age group to be involved in a fatal crash. The orientation program should help parents make the connection between GDL restrictions and teen driving risks, as well as promote the critical role they play in coaching and monitoring their teen drivers. Research confirms that teen drivers with parents who provide guidance and support and monitor the rules are half as likely to crash and 30 percent to 50 percent less likely to engage in risky behaviors such as failing to buckle up, drinking and driving, talking on a cell phone while driving, and speeding.
- ▶ **Expand the learner's permit supervised driving phase from a minimum of 6 months to 12 months** to maximize the safety benefits of instruction and coaching before allowing independent driving. Increasing the supervised driving phase to 12 months enables teens to log more supervised driving miles and to gain experience driving under a variety of conditions (i.e., rain, fog, snow, and ice) throughout the year. Research confirms that comprehensive GDL programs are associated with a 20 percent to 40 percent reduction in crashes. New Jersey's GDL is credited with cutting teen driver and teen passenger fatalities by more than 50 percent over the past decade.
- ▶ **Require teens to log a minimum of 50 hours of supervised practice driving (10 a night) during the permit phase of GDL.** Supervised driving practice provides time for novice drivers to receive real-time feedback, instruction, and practice under a variety of driving conditions, fostering skill development. Requiring supervised practice driving is an important enhancement to New Jersey's GDL program. Research demonstrates that comprehensive GDL programs are associated with crash reductions ranging from 20 percent to 40 percent.

Traffic Signs



New Jersey Law Requires Red Sticker for Drivers under Age 21



(Image: Cars.com website)

Motorcycles

Safety Emphasis Area



Motorcycle crashes can involve either single or multiple vehicles. Based on vehicle miles traveled, motorcyclists are 26 times more likely than passenger vehicle occupants to die in a motor vehicle crash and 5 times more likely to be injured.

Example Safety Strategies

Strategies for reducing motorcycle crashes include:

- ▶ **Provide training for highway engineers and maintenance personnel focusing on to motorcycle issues.** The training would identify ways to routinely incorporate motorcycle safety considerations into roadway inspection, design, and construction projects.
- ▶ **Promote the importance of beginner and advanced motorcycle rider training.** Improve training for both beginner and advanced riders by encouraging them to complete a Motorcycle Safety Foundation (MSF) training course. MSF courses are designed to help new and experienced riders reduce or avoid injury by understanding the dangers of aggressive and impaired riding. The training also addresses the importance of wearing full safety gear including helmets, improving riding skills, and the use of proper vehicle equipment. Other potential benefits of participating in an approved training program include road test waivers, insurance discounts, and license point deductions.
- ▶ **Improve first-responder training in the handling of motorcycle crashes and nontraditional vehicles** to provide rapid and appropriate emergency medical response. Specialized training – such as safe helmet removal and how to safely lift a motorcycle off a victim without causing further injury – is needed to equip law enforcement, fire, and emergency medical personnel with the necessary skills to meet the medical needs of motorcyclists.

Issue

2008 to 2012

Fatalities and Serious Injuries = 1245

Average = 249/year

Represents 12 percent of all fatal and serious injuries for the 5-year period

Type of Crashes

Single vehicle

Run off road of rollover = 40 percent

Multiple vehicle

Right angle = 19 percent

Type of Roadway

Collectors = 60 percent

State roadways = 37 percent

County roadways = 36 percent

Heavy Vehicles Safety Emphasis Area



New Jersey's strategic location along the east coast provides access to both port facilities and major north/south and east/west interstate corridors. Consequently, the heavy vehicles on New Jersey roadways are predominantly commercial tractor-trailers (also referred to as 18-wheelers, semi-trucks, or trucks towing trailers) transporting goods. Sharing the road with these vehicles can be safe if vehicle drivers understand and respect the limitations trucks face when it comes to visibility, required stopping distances, and maneuverability.

Example Safety Strategies

Strategies for reducing heavy vehicle crashes include:

- ▶ **Provide new/expanded truck parking facilities** to reduce truck-passenger vehicle interactions and promote rest when drivers are fatigued.
- ▶ **Install new pavement technologies** in key corridors to provide better traction for heavy vehicles.
- ▶ **Install new and/or upgrade interchanges in select corridors** (with longer acceleration and deceleration lanes and larger corner radii at the ramp terminal intersections) to provide easier access for heavy vehicles, reduce over-running of curbs and other facilities, and reduce collisions with highway hardware (i.e., overhanging signs, light poles).
- ▶ **Improve access between the state highway network** and truck generators (distribution centers, major retailers, and inter-modal terminals) to reduce interactions between heavy trucks and passenger vehicles and provide more direct access to highways.

Issue

2008 to 2012

Fatalities and Serious Injuries = 337

Most crashes occur at interchanges along designated freight corridors such as Interstate-78, Interstate-80, Interstate-287, and the New Jersey Turnpike.

Access for Trucks



Unlicensed Drivers Safety Emphasis Area

Driving is a privilege, not a right. Drivers who disregard traffic laws face the possibility of having their driving privileges suspended or revoked. Research shows that 75 percent of persons who have their driver's license suspended continue to drive, potentially endangering others. Nearly one in five fatal car crashes in the United States involves a driver who is operating a vehicle without a legal license.

Example Safety Strategies

Strategies for reducing severe crashes involving unlicensed and suspended licensed drivers include:

- ▶ **Enhance traffic enforcement to increase law officers' contact** with illegal drivers. Law enforcement officers cannot determine if a driver is properly licensed unless they stop the vehicle and request the operator's credentials. More frequent law enforcement contact through expanded use of checkpoints to include random driver's license checks, stepped-up enforcement of a primary seat belt law, and high-visibility traffic enforcement campaigns increase officer contacts with suspended and unlicensed drivers resulting in their identification and prosecution, and can deter drivers with suspended licenses from driving.
- ▶ **Expand the implementation of license plate and vehicle sanctions** to prevent unlicensed and suspended drivers from operating a vehicle. Sanctions may include:
 - **Special license plates** that allow others to drive the offender's vehicle but permit law enforcement to stop and verify that the driver is properly licensed.
 - **License plate impoundment** that enables law enforcement to seize and impound or destroy the license plate.
 - **Vehicle immobilization** and storage on the offender's property.
 - **Vehicle impoundment** or removal to a public impound lot.
 - **Vehicle forfeiture** where the vehicle is confiscated and auctioned.
- ▶ **These sanctions are most effective** under an administrative structure that allows police officers to impose sanctions at the time of the arrest. Studies indicate that when license plate and vehicle sanctions are administered, there are reduced rates of repeat DUI offenses, moving violations and repeat driving-while-suspended/revoked offenses.

Issue

2008 to 2012

Fatalities and Serious Injuries = 337

Represents 3 percent of all fatal and serious injuries for the 5-year period

An average of 8,400 people die each year in the United States as a result of unlicensed drivers.

Work Zone Safety Emphasis Area



Work zone safety continues to be a high-priority issue for traffic engineering professionals and highway agencies. With as many as 200 highway and bridge projects underway at any given time in New Jersey, motorists are likely to travel through work zones on a regular basis.

Example Safety Strategies

Strategies for reducing work zone crashes include:

- ▶ **Provide work zone training to law enforcement**, as well as municipal and public works/engineering personnel. Training in the proper set-up of a work zone by public works employees, utility workers and police officers will allow drivers to clearly identify the proper travel lane and reduce the chances for a vehicle-vehicle or vehicle-worker conflict.
- ▶ **Continue to conduct work zone training and participate in public awareness initiatives.** New Jersey participates in the national observance of Work Zone Safety Awareness Week and hosts a conference for a multidisciplinary audience of construction, maintenance and operations, engineering, and public safety personnel. Partnering agencies also use this venue to distribute pertinent safety materials and offer assistance and resources to attendees. Work zone safety training (including train-the-trainer programs and refresher courses) are provided for law enforcement personnel.

Issue

2008 to 2012

Fatalities = 38

12,315 total crashes in work and maintenance zones

Train-Vehicle Collisions Safety Emphasis Area



New Jersey is a major hub for freight movement and an extensive system of railroad tracks is a key part of this multimodal freight network. New Jersey is home to 19 Class I, II, and III freight railroad companies and two passenger rail companies, Amtrak and NJ TRANSIT. There are currently 1,535 public, at-grade rail crossings and more than 90 percent have active warning systems in place.

Example Safety Strategies

New Jersey addresses train-vehicle collisions through safety education initiatives that are part of Operation Lifesaver's Railroad Safety Awareness Program, through the use of Diagnostic Team Reviews and via implementation of the following four primary strategies:

- ▶ **Upgrade/install active grade crossing warning equipment** by installing flashing warning lights and gates or by providing upgrades to existing equipment.
- ▶ **Provide improvements on the approaches to at-grade crossings** by installing/upgrading advance warning signs and pavement markings, relocating intersections that are too close to the at-grade crossing and installing median channelization to prevent vehicles from crossing the centerline and illegally driving around gates.
- ▶ **Improve visibility at grade crossings** by removing obstacles (i.e., trees, fences, and buildings) at at-grade crossings that prevent drivers from having a clear view of approaching trains.
- ▶ **Eliminate crossings** by physically removing the at-grade crossing and diverting highway traffic to other locations.

Issue

2008 to 2012

Fatalities and Serious
Injuries = 13

Average = less than three
per year

Improved Data Analysis Safety Emphasis Area



Promoting and supporting the collection and use of data is critical for reducing fatalities and serious injuries on New Jersey's roadways. Ensuring that New Jersey collects all available data and continuously analyzes it to identify at-risk roadways and roadway users will ensure that safety stakeholders fully understand why and where crashes are occurring and who is involved. This will lead to identifying and implementing the most effective and appropriate strategies.

Example Safety Strategies

Strategies for improving state traffic records and data analysis include:

- ▶ **Implement electronic data transfer (EDT) of crash reports statewide.** New Jersey's crash reports are currently processed by paper copy through the NJDOT. Developing a process to send those reports electronically from all police agencies would improve the timeliness and accessibility of the crash data to multiple users statewide. This would allow agencies to better identify at-risk locations, behavioral issues, and other safety concerns. This strategy also will help stakeholders determine and react to changing trends and future highway-safety issues as they arise.
- ▶ **Update the Statewide Traffic Records Coordinating Committee (STRCC) Strategic Plan** and incorporate recommendations from the January 2012 Traffic Records Assessment.

Issue

2008 to 2012

Plan4Safety (P4S) = crash data, roadway elements, and GIS mapping

Statewide Traffic Records Coordinating Committee (STRCC) Strategic Plan outlines efforts to enhance data quality across all traffic records.

- ▶ **Geocode current and past records** as they are introduced into the Plan4Safety system. Providing this information will ensure the accuracy (i.e., crash locations) and completeness of (i.e., filling in missing information such as roadway cross section and intersection traffic control) crash records. Approximately 25 percent of crash records in the crash database do not include geocoding information, resulting in an unacceptable number of records being excluded when users search for crash clusters.
- ▶ **Implement electronic patient care reporting (ePCR).** Continue to use funds to implement electronic patient care reporting in the state's Advanced Life Support programs. The ePCR Program uses real-time data management tools to provide stakeholders (Office of Emergency Medical Services [EMS], hospitals, and Advanced Life Support programs) the data needed to make decisions in the most efficient manner possible. With the electronic patient care program, first responders collect patient and circumstantial data at scenes using tablet devices. As the data fields are completed, this patient information is transferred in real-time to the closest hospital to help medical personnel improve patient care. Simultaneously, data is transmitted to the New Jersey Office of Information Technology data warehouse for access by EMS providers, the Division of State Police, the MVC, and other agencies and stakeholders.
- ▶ **Update the NJTR-1 Crash Form** to incorporate new items and eliminate outdated elements to increase the type and accuracy of the information collected at a crash scene. This information will be used to understand the nature of crash problems and develop appropriate safety programs to address those problems.

Additional Safety Strategies Identified for New Jersey

An initial list developed through extensive stakeholder collaboration identified over 250 potential safety strategies associated with the selected safety emphasis areas—far too many to discuss in detail. Not every safety strategy could be included in the New Jersey program due to limited implementation resources. Based on interviews with key staff at NJDOT, FHWA, and other key stakeholders, the strategies most relevant to New Jersey's traffic safety goals and stakeholders were selected to be highlighted under each emphasis area. However, the full range of strategies discussed is shown in Table 2-3, as these strategies could be particularly effective and appropriate safety countermeasures under certain conditions and should be included in New Jersey's safety programs.

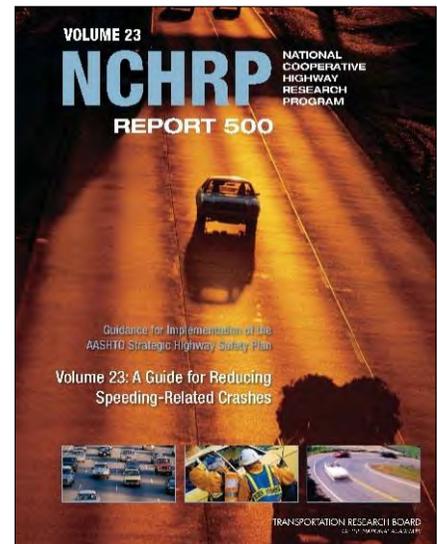
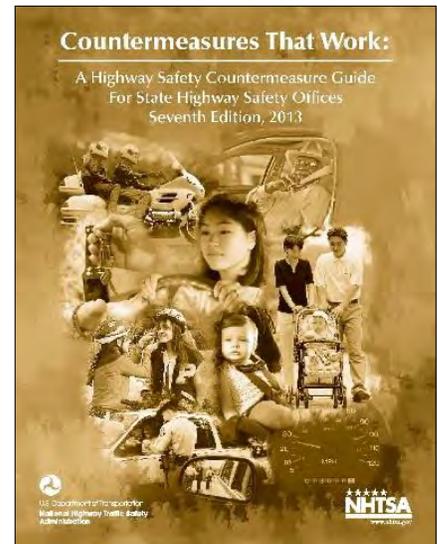


TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
Lane Departure	
A. Keep Vehicles from Encroaching on the Roadside	A1 Install shoulder rumble strips. A2 Install edge line profile markings, edge line rumble strips, or modified shoulder rumble strips on the sections with narrow or no paved shoulders. A3 Provide enhanced shoulder, lighting, or delineation and pavement markings for sharp curves. A4 Provide improved highway geometry for horizontal curves. A5 Provide enhanced pavement markings. A6 Provide skid-resistant pavement surfaces. A7 Apply shoulder treatments: <ul style="list-style-type: none"> – Eliminate shoulder drop-offs. – Widen and/or pave shoulders.
B. Minimize the Likelihood of Overturning or Crashing into an Object if the Vehicle Travels Off the Shoulder	B1 Design safer slopes and ditches to prevent rollovers. B2 Remove/relocate fixed objects in problematic locations. B3 Remove or improve awareness of conflicts with overhead fixed objects such as railroad passes.
C. Reduce the Severity of the Crash	C1 Improve design and application of barrier and attenuation systems.
D. Reduce the Likelihood of a Head-On Vehicle Collision	D1 Install centerline rumble strips on two-lane roads. D2 Use alternating passing lanes or four-lane sections at key locations. D3 Install cable median barrier for narrow-width medians and multilane roads.
Drowsy and Distracted Driving	
A. Increase Driver Awareness of Distracted Driving and Associated Risks	A1 Conduct education and public awareness campaigns on the risks and consequences of distracted driving.
B. Promote Driver Focus and Perceived Consequences through Stronger Policies, Penalties, and Enforcement	B1 Incorporate information on distracted driving into education programs and materials for young drivers. B2 Implement policy prohibiting young drivers issued a restricted or intermediate license from driving with unrelated underage passengers. B4 Strengthen text-messaging-while-driving law to prohibit all drivers from using any electronic communication device while driving (similar to drivers with a restricted license). B5 Conduct high-visibility enforcement of distracted driving laws to maximize compliance through public perceived risk of being stopped.
C. Enforce Requirements through Alternative Sources	C1 Implement employer sanction programs prohibiting the use of any electronic communication device while driving on company business.
Aggressive Driving / Speed-Related – Driver Behavior	
A. Heighten Driver Awareness of Aggressive Driving/Speed-Related Consequences	A1 Increase public perception of being stopped by law enforcement through highly visible enforcement, including public communication campaigns.
B. Improve Efficiency and Effectiveness of Aggressive Driving/Speed Enforcement Efforts	B1 Conduct highly visible, publicized, and saturated enforcement campaigns at locations with higher incidence of aggressive driving/speed-related crashes.

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
	B2 Implement automated speed enforcement. B3 Support legislation to strengthen penalties for right-of-way and speed violations. B4 Strengthen the adjudication of speeding citations to enhance the deterrent effect of fines. B5 Increase speed-related fines. B6 Use automated enforcement to detect and cite drivers who speed and/or run red lights. Automated enforcement is intended to augment – not replace – traditional traffic enforcement.
C. Review Crash Data	C1 Analyze data to clearly define aggressive driving and identify factors contributing to aggressive driving.
Aggressive Driving / Speed-Related – Infrastructure	
A. Set Appropriate Speed Limits	A1 Implement variable speed limits. A2 Increased fines for speeding in work zones.
B. Communicate Appropriate Speeds through Use of Traffic Control Devices	B1 Implement active speed warning signs, including dynamic message signs at rural-to-urban transitions. B2 Use in-pavement measures to communicate the need to reduce speeds.
C. Ensure that Roadway Design and Traffic Control Elements Support Appropriate and Safe Speeds	C1 Effect safe speed transitions through design elements and on approaches to lower-speed areas. C2 Provide adequate change and clearance intervals at signalized intersections. C3 Install lighting at high-speed intersections (high speed only).
Intersections – Signalized	
A. Reduce Frequency and Severity of Intersection Conflicts through Traffic Control and Operational Improvements	A1 Employ multiphase signal operation. A2 Optimize clearance intervals. A3 Restrict or eliminate turning maneuvers (including right turns on red). A4 Employ signal coordination along a corridor or route. A5 Employ emergency vehicle preemption. A6 Improve operation of pedestrian and bicycle facilities at signalized intersections. A7 Remove unwarranted signal.

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
B. Reduce Frequency and Severity of Intersection through Geometric Improvements	B1 Provide/improve left-turn channelization. B2 Provide/improve right-turn channelization. B3 Improve geometry of pedestrian and bicycle facilities.
C. Improve Sight Distance at Signalized Intersections	C1 Clear sight triangles. C2 Redesign intersection approaches.
D. Improve Driver Awareness of Intersections and Signal Control	D1 Improve visibility of signals (overhead indications, 12-inch lenses, background shields, light-emitting diodes) and signs (mast-arm-mounted street names) at intersections.
E. Improve Driver Compliance with Traffic Control	E1 Install red-light confirmation lights.
F. Improve Access Management Near Signalized Intersections	F1 Restrict access to properties using driveway closures or turn restrictions F2 Restrict cross-median access near intersections.
G. Improve Safety through other Infrastructure Treatments	G1 Restrict or eliminate parking on intersection approaches.
Intersections – Unsignalized	
A. Improve Management of Access near Unsignalized Intersections	A1 Implement driveway closures/relocations. A2 Implement driveway turn restrictions.
B. Reduce the Frequency and Severity of Intersection Conflicts through Geometric Design Improvements	B1 Provide left-turn lanes at intersections. B2 Provide longer left-turn lanes at intersections. B3 Provide offset left-turn lanes at intersections. B4 Provide bypass lanes on shoulders at T-intersections. B5 Provide left-turn acceleration lanes at divided highway intersections. B6 Provide right-turn lanes at intersections. B7 Provide offset right-turn lanes at intersections. B8 Provide right-turn acceleration lanes at intersections. B9 Restrict or eliminate turning maneuvers by providing channelization or closing median openings. B10 Close or relocate high-risk intersections. B11 Convert four-legged intersections to two T-intersections. B12 Realign intersection approaches to reduce or eliminate intersection skew. B13 Use indirect left-turn treatments to minimize conflicts at divided highway intersections. B14 Improve pedestrian and bicycle facilities to reduce conflicts between motorists and nonmotorists.
C. Improve Sight Distance at Unsignalized Intersections	C1 Clear sight triangle on stop- or yield-controlled approaches to intersections, including snow removal. C2 Clear sight triangles in the medians of divided highways near intersections, including snow removal. C3 Change horizontal and/or vertical alignment of approaches to provide more sight distance. C4 Eliminate parking that restricts sight distance. C5 Consider the use of red-light confirmation lights to reduce red-light running. These lights, when coordinated with the signal timing and added

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
	to the back of a traffic signal, allow law enforcement to see red light violators.
D. Improve Availability of Gaps in Traffic and Assist Drivers in Judging Gap Sizes at Unsignalized Intersections	D1 Provide an automated real-time system to inform drivers of suitability of available gaps for making turning and crossing maneuvers.
E. Improve Driver Awareness of Intersections as Viewed from the Intersection Approach	E1 Improve visibility of intersections by providing enhanced signing and delineation. E2 Improve visibility of intersections by providing lighting. E3 Provide a stop bar (or provide a wider stop bar) on minor-road approaches. E4 Install larger regulatory and warning signs at intersections, including the use of dynamic warning signs at appropriate intersections. E5 Call attention to the intersection by installing rumble strips on the intersection approaches. E6 Provide dashed markings (extended left edge lines) for major-road continuity across the median opening at divided highway intersections. E7 Provide pavement markings with supplemental messages, such as STOP AHEAD. E8 Install flashing beacons at stop-controlled intersections.
F. Choose Appropriate Intersection Traffic Control to Minimize Crash Frequency and Severity	F1 Avoid signaling through roads. F2 Provide all-way stop control at appropriate intersections. F3 Provide roundabouts at appropriate locations.
G. Guide Motorists More Effectively through Complex Intersections	G1 Provide turn-path pavement markings.
Pedestrians	
A. Reduce Pedestrian Exposure to Vehicular Traffic	A1 Provide sidewalks/walkways and curb ramps. A2 Install or upgrade traffic and pedestrian signals. A3 Construct pedestrian refuge islands and raised medians. A6 Install countdown timers. A7 Install advance walk interval.
B. Improve Sight Distance and/or Visibility Between Motor Vehicles and Pedestrians	B1 Provide crosswalk enhancements, including curb extensions/bump-outs. B2 Implement lighting/crosswalk illumination measures. B3 Eliminate physical objects that interfere with lines of sight between drivers and pedestrians. B4 Signals to alert drivers that pedestrians are crossing (HAWK signal).
C. Improve Pedestrian and Driver Safety Awareness and Behavior	C1 Provide education, outreach, and training. C2 Implement enforcement campaigns.
Bicycles	
A. Reduce Bicycle Crashes at Intersections	A1 Improve visibility at intersections. A2 Improve signal timing and detection. A3 Improve signing. A4 Improve pavement markings at intersections. A5 Improve geometry of intersections.

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
	<p>A6 Restrict right turn on red movements.</p> <p>A8 Addition of bike boxes.</p>
B. Reduce Bicycle Crashes Along Roadways	<p>B1 Provide safe bicycle facilities for parallel travel – on/off-road facilities, shoulders, dedicated.</p>
C. Reduce Motor Vehicle Speeds	<p>C1 Implement traffic calming techniques.</p> <p>C2 Implement speed enforcement.</p> <p>C3 Implement road diets where appropriate.</p>
D. Improve Safety Awareness and Behavior	<p>D1 Provide bicyclist skill education.</p> <p>D2 Improve enforcement of bicycle-related laws.</p>
E. Increase Use of Bicycle Safety Equipment	<p>E1 Increase use of bicycle helmets.</p> <p>E2 Increase rider and bicycle conspicuousness.</p>
Impaired Driving	
A. Reduce Excessive Drinking and Underage Drinking	<p>A1 Conduct well-publicized compliance checks of alcohol retailers to reduce sales to underage persons.</p> <p>A2 Provide and conduct media outreach on accessible safe-ride alternative transportation services.</p> <p>A3 Employ screening and brief interventions in health care settings.</p> <p>A4 Promote Operation PROM and “ghost out” activities in schools and other organizations, such as Mothers Against Drunk Driving and Students Against Drunk Driving.</p>
B. Strengthen Enforcement to Improve Safety	<p>B1 Strengthen detection and public perceived risk of arrest through regular, well-publicized, highly visible impaired-driving enforcement, including sobriety checkpoints.</p> <p>B2 Expand use of DUI sobriety checkpoints and multi-jurisdictional enforcement task forces.</p> <p>B3 Publicize and enforce zero tolerance laws for drivers under age 21.</p> <p>B4 Conduct assessment of impaired-driving laws to strengthen criminal penalties and administrative license sanctions.</p> <p>B5 Create and electronic DUI system that tracks an impaired driver from arrest through sentence completion.</p> <p>B6 Use preliminary breath test devices.</p>
C. Prosecute, Impose Sanctions On, and Treat DUI Offenders	<p>C1 Extend administrative license suspension for offenders.</p> <p>C2 Establish stronger penalties for BAC test refusal than for test failure.</p> <p>C3 Implement mandatory IID program.</p> <p>C4 Impose increased penalties for BACs of 0.16 or higher.</p> <p>C5 Strengthen the use of in-squad-car cameras to more successfully prosecute DUI arrests.</p>
D. Control High-BAC and Repeat Offenders	<p>D1 Require IIDs as a condition for license reinstatement.</p> <p>D2 Establish a Whiskey Plate (special license plate for restricted driving privileges) for repeat DUI offenders.</p> <p>D3 Strengthen repeat DUI offender monitoring programs.</p>

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
Mature Drivers	
A. Improve the Roadway and Driving Environment to Better Accommodate Older Drivers' Special Needs	<p>A1 Provide advanced signage and lane markings.</p> <p>A2 Enhance use of retroreflective materials to signs and safety devices such as traffic cones and pavement markings to notify drivers of hard-to-see obstacles.</p> <p>A3 Increase size and letter height of roadway signs and maximize their placement for enhanced visibility (such as overhead, centered).</p> <p>A4 Increase signal head size to 12 inches when replacing/ upgrading signal.</p> <p>A5 Provide more protected left-turn signal phases at high-volume intersections.</p> <p>A6 Improve lighting at intersections, horizontal curves, and at-grade railroad crossings.</p> <p>A7 Improve roadway delineation.</p> <p>A8 Improve traffic control at work zones.</p> <p>A9 Establish accessible and safe mobility options for older drivers.</p> <p>A10 Pilot the designation of senior zones to alert passing drivers and assist older drivers.</p>
B. Strengthen Reporting/Referral, Assessment, and Licensing of At-Risk Older Drivers	<p>B1 Strengthen the role of medical advisory boards in assessing the potential impairment of older drivers and recommending appropriate licensing actions.</p> <p>B2 Strengthen physician medical assessment training (via online course).</p> <p>B3 Encourage referral of at-risk older drivers to licensing authorities through clarifying the referral process, enabling anonymous referral, and developing accessible driver assessment and referral resources.</p> <p>B4 Update screening protocol and training for licensing authorities to identify older drivers demonstrating a decline in physical or cognitive functioning.</p> <p>B5 Update and implement vision acuity requirements and screening protocols.</p> <p>B6 Conduct comprehensive review and adoption of improved license renewal policies and practices for at-risk older drivers to reflect best practice and proven safety measures, including age of mandatory in-person license renewal, periodic assessment of driving skills, shortened license renewal cycle, issuing restricted licenses, etc.</p> <p>B7 Implement variable driver license restrictions (for example, high speed, night, geographic limits).</p> <p>B8 Require refresher safe-driving course for older drivers.</p> <p>B9 Mandate insurance providers to provide discount/reduced premium upon completion of older driver course.</p>
D. Improve Mature Driver Education and Public Outreach	<p>D1 Establish interagency and stakeholder team to assess existing mature driver education and information outreach programs/resources, and develop plan for meeting older drivers' information, education, and transportation needs.</p> <p>D2 Establish a one-step, robust mature driver web resource to guide the older driver, their family, and caregivers on the resources, processes, and alternatives available to plan for the cessation of driving.</p> <p>D3 Provide education and training for older drivers to assess their driving capabilities and limitations, improve skills, voluntarily limit driving to safe driving conditions, and identify transportation alternatives.</p>

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
Unbelted Vehicle Occupants / Seat Belt Usage	
A. Maximize Use of Occupant Restraints by all Vehicle Occupants	<p>A1 Conduct high-visibility and highly publicized enforcement campaigns to maximize safety belt and child restraint use, including nighttime enforcement.</p> <p>A2 Provide enhanced enforcement and focused communication outreach to population groups with low safety belt use.</p> <p>A3 Support primary seat belt legislation covering all passengers in all seating positions.</p> <p>A4 Increase safety-belt-use law penalties.</p> <p>A5 Encourage the enactment of local laws that will permit primary enforcement of restraint laws.</p> <p>A6 Conduct targeted and highly publicized enforcement for drivers under age 18 at school locations.</p> <p>A7 Partner with employers to adopt and implement employment-based seat belt policies. Employers can protect themselves by implementing clear safety policies, monitoring compliance, and reinforcing consequences and rewards.</p>
B. Ensure that Restraints, Especially Child and Infant Restraints, are used Properly	<p>B1 Strengthen child restraint/booster-set laws for children up to 8 years of age or 4 feet, 9 inches in height.</p> <p>B2 Conduct high-profile child passenger safety inspection clinic events at multiple community locations to educate on the proper use of restraint devices.</p> <p>B3 Train law enforcement personnel to check for proper child restraint use in all motorist encounters.</p>
C. Provide Access to Appropriate Information, Materials, and Guidelines for Those Implementing Programs to Increase Occupant Restraint Use	<p>C1 Create state-level clearinghouses for materials that offer guidance in implementing programs to increase safety restraint use.</p> <p>C2 Provide tools/information on the benefits and ways to achieve the highest safety restraint usage percentage possible.</p>
D. Provide Use Requirements through Alternative Sources	<p>D1 Use employer sanction programs for noncompliance of seat-belt-use policies.</p>
Teen Drivers	
A. Strengthen GDL Safety Provisions	<p>A1 Require the learner's permit supervised-driving phase to be 12 months long.</p> <p>A2 For probationary GDL drivers, implement nighttime driving restriction beginning at 10:01 pm.</p> <p>A3 For probationary GDL drivers, require 50 hours of supervised driving.</p> <p>A4 Ensure GDL violations and resulting license suspensions and GDL postponements are systematically captured and administratively enforced.</p>
B. Publicize, Enforce, and Adjudicate Young Driver Safety Laws	<p>B1 Strengthen enforcement of and supporting media outreach for GDL, zero-tolerance underage drinking and driving and seat-belt-use laws.</p>
C. Strengthen Parental Engagement and Monitoring of Teen Drivers	<p>C1 Require parent/teen driver orientation as a condition for learner's permit.</p> <p>C2 Partner with school and community driver education providers to increase parent participation and engagement in teen safe driving programs.</p> <p>C3 Promote peer-to-peer outreach programs that address social norms/shared behaviors and infrastructure safety.</p>

TABLE 2-3
Safety Emphasis Area Objectives and Potential Strategies

Safety Emphasis Area/Objective	Potential Strategies
D. Improve Young Driver Training and Education	D1 Dedicated and sustain funding for driver education through the GDL-mandated Drivers Education Fund. D2 Designate lead agency to ensure quality driver education and skills training. D3 Provide continuing education and on-going professional development driver educators.
E. Infrastructure: Reduce Severity of Run-Off-The-Road Events by Creating More-Forgiving Driving Environments	E1 Apply shoulder treatments: <ul style="list-style-type: none"> – Eliminate shoulder drop-offs – Shoulder edge – Widen and/or pave shoulders E2 Remove/relocate objects in hazardous locations. E3 Improve safety design of roadside hardware (such as breakaway poles for traffic signs).
Motorcycles	
A. Incorporate Motorcycle-Friendly Roadway Design, Traffic Control, Construction, and Maintenance Policies and Practice.	A2 Provide full paved shoulders to accommodate roadside motorcycle recovery and breakdowns. A3 Training for highway engineers and maintenance personnel relating to motorcycle issues and incorporate motorcycle safety considerations into routine roadway inspections, design, and construction projects.
B. Education and Outreach	B1 Review locations that experience higher than the statewide average motorcycle crashes on rural major or minor collectors or a rural local roads and address identified safety improvements. B2 Motorcycle Awareness and Education Effort – Work to enhance education effort related to motorcycle specific roadway concerns such as reduced traction, irregular roadway surfaces, and changes in roadway surface elevation. B3 Provide rider information (such as road closures, chip seals, lane closures, etc.) that impact rideability to media outlets. Use a public information campaign to promote the use of this information by motorcycles rides and related events. B4 Provide a media education campaign to increase the awareness of other drivers' toward motorcycle riders. B5 Promote the importance of beginner and advanced motorcycle rider training. B6 Improve first responder training in the handling of motorcycle crashes.



Safety Issues specific to State and Local Roadway Systems

One of the primary objectives of this SHSP is to provide agencies with guidance for future traffic safety investments. A state must continuously review its crash data to determine who is crashing, why they are crashing, and where the crash occurred. This, coupled with ongoing assessment of past safety investments, ensures that funds are directed toward strategies that offer the greatest potential for preventing crashes and saving lives.

Overview of Crash Data

New Jersey's roadway system consists of approximately 40,000 miles of public roads, of which approximately 2,800 miles (7 percent) are state highway facilities under the jurisdiction of the NJDOT. Another 36,000 miles (89 percent) of roadway are managed by counties (6,800 miles) and municipalities (29,000 miles).

Statewide crash data were analyzed to identify the most prevalent crash types and where they occur on both state and local (county/municipal) roads.

Crashes resulting in either a fatality, serious injury, or both were analyzed. Approximately 33 percent of fatal and serious injury crashes occurred on state highways and 57 percent on local roads (Figure 3-1). This analysis also identified three high-priority crash types – lane departure, intersections, and pedestrians/bicyclists – and two high-priority, behavior-related crash types – drowsy/distracted driving and aggressive driving.

The distribution of each crash type by state and local roadways (Table 3-1) is similar to the overall total, with approximately one-third of each type occurring on state highways and two-thirds on local roads. In each case, there are more crashes on county roads (34 percent) than city streets (23 percent).

FIGURE 3-1
Fatal and Serious Injuries by Roadway System by Roadway System, 2008 to 2012

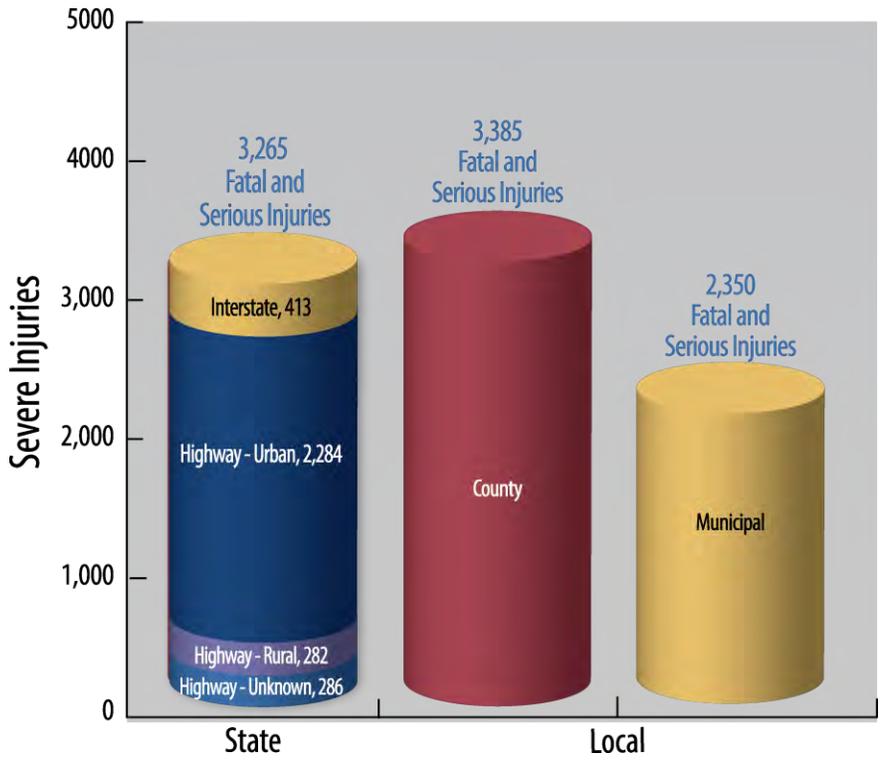


TABLE 3-1

Distribution of Roadway Miles and Fatalities and Serious Injuries By Jurisdiction, Facility Type, and Crash Type

	State Road System					Local Road System		Other	Statewide
	Interstate	State Highway				County	Municipal		
		Total	Urban	Rural	Unknown				
Roadway Length	State: 2,757 miles (7%)					Local: 35,820 miles (89%)			
Miles	—	—	—	—	—	6,826	28,994	1,719	40,296
% Total Miles	—	—	—	—	—	17%	72%	4%	100%
Total Fatalities and Serious Injuries	State: 3,265 (33%)					Local: 5,735 (57%)			
Number	413	2,852	2,284	282	286	3,385	2,350	1,037	10,037
% Total Fatalities and Serious Injuries	4%	28%	23%	3%	3%	34%	23%	10%	100%
Lane Departure	State: 1,515 (33%)					Local: 2,569 (56%)			
Number	272	1,243	936	184	123	1,658	911	512	4,596
% Total Fatalities and Serious Injuries	6%	27%	20%	4%	3%	36%	20%	11%	100%
Intersections	State: 1,002 (33%)					Local: 2,028 (66%)			
Number	10	992	831	78	83	1,215	813	50	3,080
% Total Fatalities and Serious Injuries	0%	32%	27%	3%	3%	39%	26%	2%	100%
Pedestrians/Bicycles	State: 709 (28%)					Local: 1,565 (62%)			
Number	44	665	590	15	60	815	750	266	2,540
% Total Fatalities and Serious Injuries	2%	26%	23%	1%	2%	32%	30%	10%	100%
Distracted Driving	State: 1,294 (32%)					Local: 2,346 (58%)			
Number	175	1,119	878	129	112	1,420	926	422	4,062
% Total Fatalities and Serious Injuries	4%	28%	22%	3%	3%	35%	23%	10%	100%
Aggressive Driving	State: 591 (28%)					Local: 1,301 (62%)			
Number	94	497	385	44	68	706	595	205	2,097
% Total Fatalities and Serious Injuries	4%	24%	18%	2%	3%	34%	28%	10%	100%
Mature Drivers	State: 611 (34%)					Local: 1,006 (57%)			
Number	49	562	448	75	39	648	358	162	1,779
% of Total Fatalities and Serious Injuries	3%	32%	25%	4%	2%	36%	20%	9%	100%

New Jersey's crash database was reviewed to provide additional insight about the characteristics of high-priority, fatal, and serious injury crashes in New Jersey. Data from 2008 to 2012 was analyzed.

Lane-departure Crashes

- ▶ A total of 84 percent of the 4,956 fatal and serious injuries resulted from a single vehicle running off the road and 16 percent from a multiple-vehicle, head-on collision or sideswipe where one of the vehicles crossed into the opposing travel lane.
- ▶ Over 80 percent of the crashes occurred on dry pavement.
- ▶ The greatest number of injuries occurred on county roads (1,658), followed by state highways (1,515) and city streets (911).

Intersection Crashes

- ▶ Almost 75 percent of the 3,080 fatal and serious injuries occurred at signalized intersections.
- ▶ The most common type (43 percent) was right angle or left turn.
- ▶ Approximately 85 percent occurred on dry pavement.
- ▶ Most injuries took place on county roadways (1,215), followed by state highways (1,002) and city streets (813).

Pedestrian/Bicyclist Crashes

- ▶ Approximately one third of fatal and serious pedestrian/bicyclist injuries (2,540) occurred at an intersection, 80 percent of which were controlled by traffic signals.
- ▶ Of the remaining injuries occurred along roadway segments, 70 percent involved a pedestrian attempting to cross the road while 2 percent involved bicyclists.
- ▶ Pedestrians and bicyclists between 46 and 55 years of age are involved in the greatest number of fatal and serious injury crashes. The age group most at risk is bicyclists 65 and older.
- ▶ The greatest number of injuries occurred on county roads (815), followed by city streets (750) and state highways (709).

Drowsy and Distracted Driving

- ▶ Of the 4,062 fatal and serious injuries caused by drowsy or distracted drivers, 83 percent occurred on dry roads, 70 percent in urban areas, and 56 percent during daylight hours.
- ▶ Other factors include higher speed roads (with speed limits greater than 45 mph) and at intersections (30 percent).
- ▶ Male drivers accounted for 61 of the injuries.
- ▶ The greatest number occurred on county roadways (1,397), followed by state highways (1,281), and city streets (920).

Aggressive Driving

- ▶ The majority of fatal and serious injuries (2,097) caused by aggressive driving occurred on dry roads (81 percent), in urban areas (74 percent), during daylight hours (57 percent), and on roads with speeds greater than 45 mph (44 percent).
- ▶ Alcohol also was a factor in nearly 1 of 5 crashes (19 percent).
- ▶ The greatest number occurred on county roadways (706), followed by city streets (595), and state highways (591).



Mature Drivers

- ▶ The majority of fatal and serious injuries (1,779) incurred by mature drivers occurred on dry roads (84 percent), during daylight hours (76 percent), and in urban areas (73 percent).
- ▶ The most common type of crash involved a right angle collision at an intersection (21 percent).
- ▶ The greatest number occurred on county roadways (648), followed by state highways (611), and city streets (358).





Implementation

Background

New Jersey has adopted the long-term vision of moving toward zero deaths and a short-term goal of reducing the number of fatalities and serious injuries by 2.5 percent annually. Development of this data-driven SHSP and adoption of crash reduction goals are, however, only a first step. Developing a safety plan does not prevent serious crashes and save lives but implementing mitigation measures does prevent serious crashes and save lives. To achieve these crash reduction goals, New Jersey is committed to the development of a coordinated safety program across state agencies that includes implementation of high-priority safety strategies along state and local roadways and at high-risk locations.

The components of this comprehensive program include implementing strategies that reduce serious injuries and fatal crashes using:

- ▶ **Engineering:** implementing infrastructure safety improvements that are proven to reduce lane-departure, intersection, and pedestrian/bicycle crashes.
- ▶ **Education:** increasing outreach to all roadway users to promote safe driving, walking, riding, and bicycling.
- ▶ **Enforcement:** increasing enforcement of motor vehicle laws that address key risk factors including impaired and distracted driving and unrestrained motor vehicle occupants.
- ▶ **Emergency Response:** increasing training and outreach for safe and timely response to motor vehicle crashes.
- ▶ **Data:** improving the accuracy and availability of crash data.
- ▶ **This SHSP is intended to be the umbrella:** document providing strategic direction for the HSIP, the Highway Safety Plan, and the Commercial Vehicle Safety Plan. The implementation of infrastructure-related strategies funded through HSIP or other FHWA funded sources will be led by the NJDOT. NJDOT also will monitor infrastructure improvements funded outside of the HSIP so that all safety-focused investments, regardless of funding source, are captured and measured to determine their impact in moving New Jersey toward zero deaths.

Vision

Achieve zero traffic deaths on New Jersey's roadways.

Basic Components

- ▶ Engineering
- ▶ Education
- ▶ Enforcement
- ▶ Emergency Response
- ▶ Data

The implementation of behavior-related strategies identified in this plan that are funded through federal and state grants will be led by the NJDHTS. This is not intended to prohibit other agencies from using their own and other funding sources, but ensures state agencies are engaged in centralized efforts to document statewide safety investments and the resulting outcomes. Consistent with this approach, implementation of commercial vehicle-safety-related strategies funded by the FMCSA will be led by the New Jersey Department of Law and Public Safety and the State Police in coordination with the NJDOT.

Actions to Strengthen Safety Programs

Taking into account New Jersey's past safety investments coupled with the location and cause of severe injury crashes, and its focus on *Toward Zero Deaths*, the state will:

- ▶ **Increase emphasis on balancing investment** by facility type, jurisdiction, and safety emphasis area to more closely approximate the actual distribution of fatalities and serious injuries.
- ▶ **Place a greater emphasis on implementing new and proven strategies** (i.e., centerline rumble strips, road diets, enhanced pedestrian facilities, high visibility enforcement) that reduce fatalities and serious injuries associated with the priority crash types identified in the SHSP.
- ▶ **Work to implement systemic improvements.** A systemic approach that identifies locations for safety investment based on a system-wide risk assessment and dedicates safety funds for the implementation of low-cost strategies across at-risk facilities will complement previous efforts to develop HSIP projects using the site analysis process that focuses on high-crash locations.
- ▶ **Encourage the development of safety plans** for each county, since more severe injuries occur on this roadway system. The plans would identify priority crash types, safety strategies, at-risk locations, and candidate projects for safety investments that are consistent with statewide priorities.
- ▶ **Promote a higher level of coordination between** infrastructure- and behavior-related safety projects. Analysis of not only where the crash occurred, but why and who was involved, will allow engineers, educators, and law enforcement to address key crash types (i.e., intersection crashes caused by red light running, speeding and/or aggressive driving; alcohol-related crashes involving pedestrians on local roadways at night) through a system-wide assessment that ensures the best investment of resources.

- ▶ **Implementing an electronic crash reporting system.** New Jersey is preparing to move from a paper-based to an electronic crash reporting system with the expectation of testing and implementing the new system in the next few years. Implementation of an electronic crash reporting system will improve the accuracy, timeliness, and completeness of crash data. Using data to direct safety investments of all kinds increases the likelihood that these investments will make meaningful improvements in safety.
- ▶ **Improved crash report form.** The crash reporting form will be revised to capture additional information that will better inform safety investment decision making.
- ▶ **Improved integration and accessibility.** An effort will be made to better integrate the crash database with other databases both inside and outside the NJDOT. For example, better integration of crash records with roadway and traffic control characteristic databases (especially for county roads and city streets) will allow analysts to better understand how these factors contribute to severe crashes. In addition, expanding the crash records into a statewide data warehouse will allow analysts to link citation and emergency response data. This provides a full and complete picture of why the crash occurred (i.e., the driver was speeding, the pedestrian was jaywalking) and the resulting injuries, which are often not known at the time of the crash. New Jersey also will expand its efforts to make these data accessible to all STRCC members and other agencies in the state.

Investment Strategies

State System

New Jersey Department of Transportation (NJDOT)

Under current federal highway legislation (MAP-21), New Jersey receives approximately \$57 million annually in HSIP funds. New Jersey has set annual targets for HSIP funding allocation based on the emphasis areas identified in this plan and on the distribution of fatal and serious injury crashes among state and local jurisdictions. The investment goals and the identification of key safety strategies outlined in Table 4-1 are intended to guide this allocation process. Focus on these and other emphasis areas and strategies may fluctuate based on program delivery/project readiness and the identification of other, non HSIP, funding sources.

TABLE 4-1

Engineering – Priority Safety Strategies for Reducing Crashes Involving Fatalities and Serious Injuries on the State Road System

Responsible Agency	NJDOT
Lane Departure	
Key Safety Strategies	Center and edge line rumble strips. High friction surface course treatment and utility pole relocation or replacement.
Intersections	
Key Safety Strategies	Improved traffic signal hardware (12-inch lenses and back plates) and improved signing and markings. Roundabouts, pedestrian accommodations, and geometric improvements.
Pedestrian/Bicycle	
Key Safety Strategies	Road diets, sidewalks, crosswalk enhancements/warnings, median refuge islands, and pedestrian signal improvements (HAWK, rapid flash beacons, and countdown timers).

NJDOT does not have a dedicated infrastructure program focused on reducing crashes involving mature drivers. However, the agency commits to investing in improvements to sign/markings retro-reflectivity and geometric considerations in areas with high mature driver populations as part of the Crash Reduction Program and the Intersection Improvement Program.

New Jersey Division of Highway Traffic Safety (NJ DHTS)

The NJDHTS's short-term goal is to reduce crashes and fatalities by improving roadway users' compliance with motor vehicle laws, and their understanding and adoption of key safety practices that result in knowledge, attitude, and behavior change.

Investments in the key strategies outlined in Table 4-3 are the foundation of the safety program that is expected to drive down the number of severe crashes in the short-term and help move New Jersey toward zero deaths.

TABLE 4-2

Education and Enforcement – Priority Safety Strategies for Reducing Fatalities and Serious Injuries

Impaired Drivers	
Key Safety Strategies	High visibility enforcement, public information programs, and support of enforcement/adjudication activities.
Aggressive Driving	
Key Safety Strategies	High Visibility Enforcement, public information programs, and support of enforcement/adjudication activities.
Unbelted Vehicle Occupants	
Key Safety Strategies	High Visibility Enforcement, public information programs, support of enforcement/adjudication activities, and education/training to increase correct use of occupant protection devices.
Motorcycles	
Key Safety Strategies	Supports rider training courses and communications/outreach campaigns to increase other driver’s awareness.
Pedestrians/Bicycles	
Key Safety Strategies	Driver and pedestrian education programs and rider education (using the compulsory helmet law to promote safe rider behavior).
Young Drivers	
Key Safety Strategies	Coordinated public information programs.

Local Systems

NJDOT, with the cooperation of New Jersey Transportation Planning Authority (NJTPA), Delaware Valley Regional Planning Commission (DVRPC), and SJTPO, will annually update a program of safety projects on state and local road systems that align with investment goals identified in this SHSP. The Metropolitan Planning Organizations, working with local governments and NJDOT’s Divisions of Local Aid, Environmental Resources and Safety Programs, and FHWA, will deliver a local safety program that includes improvement projects that address priority crash types and high-risk/high-crash locations using data driven processes to develop systemic improvement programs and hot spot improvements.

Safety on the Local System

NJDOT supports safety on local systems through the dedication of HSIP funds and by providing technical assistance. New Jersey’s Metropolitan Planning Organizations support the implementation of safety projects on local and county roads through the Local Road Safety, the High Risk Rural Roads and Preliminary Engineering and Design Assistance Program.

North Jersey Transportation Planning Authority

The NJTPA supports the implementation of infrastructure-based safety projects on local and county roadways through the Local Safety, High Risk Rural Roads, and Preliminary Engineering and Design Assistance Programs. Over the last decade, the NJTPA has invested nearly \$40 million to make 90 sites safer through 80 projects. In total, \$30.5 million has been invested through the Local Safety Program and \$9.3 million through the High Risk Rural Roads Program. The Local Safety Program advances quick-fix safety initiatives on county and local roadways. The High Risk Rural Roads Program provides funds to advance quick-fix safety improvements located only along rural roadways that have been identified as high risk rural roads. To receive federal authorization for construction of Local Safety and High Risk Rural Roads projects, recipients must identify and secure the National Environmental Policy Act document by coordinating with NJDOT, produce final plans, specifications, and estimates documents. The NJTPA will continue the Local Safety Preliminary Engineering and Design Assistance program, which provides consultant services to the NJTPA members for the development of these documents. The NJTPA also will work with member subregions to identify suitable locations for systemic safety improvements.

The NJTPA's safety program also includes a focus on pedestrian safety through *Street Smart NJ*, an education and enforcement campaign that is implemented in local communities to address unsafe driver and pedestrian behaviors that put the latter at risk. Implemented in partnership with FHWA, NJDOT, NJDHTS, and the Transportation Management Associations, the campaign's overarching goal is to change pedestrian and motorist behavior resulting in a reduction in the incidence of pedestrian injuries and fatalities.

The NJTPA's key safety strategies and safety investments are identified in Table 4-2. These investments are focused on addressing lane departure, intersection, and pedestrian/bicyclist crashes. These improvements also contribute toward increasing safety for mature drivers. The NJTPA also will support local safety implementation by developing a regional safety plan that analyzes local roads by the safety emphasis areas and strategies outlined in the SHSP.

Delaware Valley Regional Planning Commission

DVRPC supports the implementation of infrastructure-based safety projects on local and county roadways through the Local Safety Program, the High Risk Rural Roads Program, and the Design Assistance Program. Safety funds are directed to at-risk locations identified through a data-driven screening process that focuses on four safety emphasis areas: pedestrian hot spot locations, pedestrian corridor locations, intersections, high-risk rural road segments, and any location where a road safety audit has been completed. Safety funds also are directed to implementing high-priority safety strategies



identified in this SHSP. DVRPC is committed to aligning the safety projects in the region with the priority emphasis areas in its Regional Transportation Safety Action Plan (TSAP) and long-range plan for the Delaware Valley (Connections 2040) and the SHSP.

The eight emphasis areas in DVRPC's 2014 TSAP address factors that contribute to 97

TABLE 4-2

NJTPA Priority Safety Strategies for Reducing Crashes Involving Fatalities and Serious Injuries on the Local Road System

Responsible Agencies	Technical and Funding Assistance – NJDOT. Project Development – County and City Agencies plus NJTPA.
Lane Departure	
Key Safety Strategies	Edge line rumble Strips, Safety Edge, Improved Pavement Markings and Improved Design of Highway Hardware.
Intersections	
Key Safety Strategies	Improve Visibility of traffic Signals, Roundabouts, Improve Left turn Channelization, Enhanced Red Light Enforcement, Dynamic Warning Signs, Pedestrian Accommodations, and Geometric Improvements.
Pedestrian/Bicycle	
Key Safety Strategies	Road Diets, Sidewalks and Curb Ramps, High Visibility Enforcement, Safe Community Programs, Livable Communities, Complete Streets and Education and Outreach Programs.

percent of crash fatalities in the Delaware Valley, based on analysis of 2010 to 2102 data (it should be noted that the DVRPC region includes four counties in New Jersey and five counties in Pennsylvania). In descending order of contribution to crash fatalities, the emphasis areas are:



1. Curb Aggressive Driving
2. Keep Vehicles on the Roadway and Minimize the Consequences of Leaving the Roadway
3. Improve the Design and Operation of Intersections
4. Reduce Impaired and Distracted Driving
5. Increase Seat Belt Usage
6. Ensure Pedestrian Safety
7. Sustain Safe Senior Mobility
8. Ensure Young Driver Safety

South Jersey Transportation Planning Organization



South Jersey
Transportation
Planning Organization

South Jersey Transportation Planning Organization (SJTPO) has engaged in a number of activities to strengthen its Local Safety Program in recent years, focused on both infrastructure and behavior. For the infrastructure component, SJTPO has developed a robust yet intuitive project application process. SJTPO's Local Safety Program will generate safety infrastructure projects by guiding applicants through a five-step process: selecting a location, identifying the problem, determining an appropriate safety improvement, measuring its effectiveness, and checking for barriers to implementation.

SJTPO will capitalize on its long-running Road Safety Audit program to identify problems and potential safety improvements. In 2011, SJTPO was the first agency in New Jersey to utilize the Highway Safety Manual in support of a local safety project, a process that will continue to guide SJTPO in selecting quality projects in the future. SJTPO will work to invest HSIP funding at a mix of hot spot locations identified through the network screening process, as well as through a systemic approach.

SJTPO's Local Safety Program is unique in its dual focus on infrastructure improvements and behavior. For many years, SJTPO has had a robust behavioral focus, with a strong emphasis on safety education. SJTPO collaborates with a number of organizations on programs that address different facets of safety. SJTPO has been heavily involved with *Share the Keys*, a high school program that works to educate parents and encourages active involvement with their new teen drivers. *Belts on Bones* is a program designed for early elementary school students that teaches the importance of proper seat belt usage and empowers students to talk to parents about these issues. *Belts, Bones, and Buses* is the *Belts on Bones* program that incorporates school bus safety. In addition, SJTPO has developed its own safety programs, one such program is *Most Dangerous Places*, a high school initiative, which presents the real risks of unsafe driving practices and occupant protections and safety features of their vehicles and touches on defensive driving tactics. Another SJTPO-developed program, *Car Crashes – It's Just Physics*, teaches students about the crash dynamics and the physical impact of crashes on the body.



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Acronyms and Abbreviations

4Es	engineering, education, enforcement, and emergency
AASHTO	American Association of State Highway and Transportation Officials
ADA	American with Disabilities Act
BAC	blood alcohol content
CRF	crash reduction factor
DOT	Department of Transportation
DUI	driving under the influence
DVRPC	Delaware Valley Regional Planning Commission
EMS	emergency medical services
ePCR	electronic patient care reporting
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GDL	Graduated Driver Licensing
HAWK	High Intensity Activated Crosswalk
HSIP	Highway Safety Improvement Program
IID	ignition interlock device
LPI	Leading Pedestrian Interval
MAP-21	Moving Ahead for Progress in the 21st Century Act
mph	miles per hour
MSF	Motorcycle Safety Foundation
MVC	Motor Vehicle Commission
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NJDHTS	New Jersey Division of Highway Traffic Safety
NJDOT	New Jersey Department of Transportation
NJTPA	North Jersey Transportation Planning Authority
RRFB	rectangular rapid flash beacon
SHSP	Strategic Highway Safety Plan
SJTPO	South Jersey Transportation Planning Organization
STRCC	Statewide Traffic Records Coordinating Committee
<i>Toward Zero Deaths</i>	<i>Toward Zero Deaths: A National Strategy on Highway Safety</i>
TSAP	Transportation Safety Action Plan



Glossary

4Es. engineering, education, enforcement, and emergency medical services. Generally, the 4Es of traffic safety define the broad stakeholder communities who care about safety and are responsible for making the roads safe for all users:

- ▶ Engineering (for example, highway design, traffic, maintenance, operations, planning)
- ▶ Enforcement (state and local law enforcement agencies)
- ▶ Education (for example, driver education, citizen advocacy groups, educators, prevention specialists)
- ▶ Emergency response (for example, first responders, paramedics, fire, and rescue)

5-year rolling average. The average of five individual, consecutive annual points of data (for example, annual fatality rate).

Complete Streets. Complete Streets are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.

contributing factor. Conditions of the environment (such as lighting, weather) or driver behavior (such as inattentiveness, driving under the influence of alcohol or drugs) that contribute to the occurrence of a crash or its severity.

crash. A set of events not under human control that results in injury or property damage due to the collision of at least one motorized vehicle and may involve collision with another motorized vehicle, a bicyclist, a pedestrian, or a fixed object.

crash modification factor (CMF). An index of how much crash experience is expected to change following a modification in design or traffic control. CMF is the ratio between the number of crashes per unit of time expected after a modification or safety countermeasure is implemented and the number of crashes per unit of time estimated if the change does not take place.

crash reduction factor (CRF). The percentage crash reduction that might be expected after implementing a modification in design or traffic control. The CRF is equivalent to $(1 - \text{CMF})$.

crosswalk. Any portion of a highway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other marking on the road surface.

driver. Operator of a motor vehicle.

emphasis area. A highway safety priority in the SHSP, identified through a data-driven, collaborative process. Also see *safety emphasis area*.

facility. A length of highway that may consist of connected road sections, segments, and intersections.

HAWK beacon. A High Intensity Activated Crosswalk (HAWK) beacon is a pedestrian hybrid beacon that creates a controlled pedestrian crossing.

highway hardware. Highway hardware includes supports for traffic signs, street lights, and median barriers and guardrails, as well utility poles.

High Risk Rural Road. Any roadway functionally classified as a rural major or minor collector or rural local road where the rate of fatalities and incapacitating injuries exceeds the statewide average for roads of the same functional classification.

Highway Safety Improvement Program (HSIP). The HSIP is a core Federal-aid program. The goal of the program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance.

highway safety improvement project. Strategies, activities, and projects on a public road that are consistent with the Strategic Highway Safety Plan and corrects or improves a road location or feature where a number of severe crashes have occurred, or that addresses a highway safety issue.

ignition interlock device (IID). An after-market device installed in a motor vehicle to prevent a driver from operating the vehicle if the driver has been drinking. Before starting the vehicle, a driver must breathe into the device and if the driver's blood alcohol concentration (BAC) is above a pre-set limit or set point, the ignition interlock will not allow the vehicle to start.

intersection. The general area where two or more roadways or highways meet, including the roadway, and roadside facilities for pedestrian and bicycle movements within the area.

mature driver. In New Jersey, a driver who is 64 years of age or older.

Metropolitan Planning Organization (MPO). A MPO is a federally mandated and federally funded transportation policy-making organization that is made up of representatives from local government and governmental transportation authorities. MPOs conduct planning and programming for federal transportation funds within a "3C" process (continuing, comprehensive, and cooperative).

mid-block crosswalk. A crosswalk located away from an intersection, distinctly indicated by lines or markings on the road surface.

non-infrastructure project. A transportation safety project that does not result in construction. Examples of non-infrastructure projects are road safety audits; transportation safety planning activities; improvements in the collection and analysis of data; driver education and outreach; and enforcement activities.

passenger vehicle. An automobile used and designed for the transportation of passengers, other than omnibuses and school buses.

pavement/road markings. Symbols or messages painted on the roadway. These markings have the same force of law as signs or traffic signals.

pedestrian. A person traveling on foot or in a wheelchair.

performance measure. Indicators that enable decision-makers and other stakeholders to monitor changes in road system condition and performance against established visions, goals, and objectives.

programmed funds. Those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

rectangular rapid flash beacon (RRFB). A user-actuated amber LED that supplements warning signs at unsignalized intersections or mid-block crosswalks. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system. RRFBs use an irregular flash pattern that is similar to emergency flashers on police vehicles. RRFBs may be installed on either two-lane or multilane roadways. RRFBs typically receive power by standalone solar panel units, but may also be wired to a traditional power source.

road diet. The concept of a road diet involves the conversion of two or four-lane undivided roads into a three-lane roadway with a center two-way-left-turn-lane (photo to the right). Road diets are considered to be a proven effective safety strategy for reducing rear end, side swipe, and head-on crashes.

road system. All of the roads (local and/or highway) that are under the jurisdiction of a single agency (such as state, county, or municipality).

roadway. The portion of a highway, including shoulders, for vehicular use.

roundabout. A one-way, circular intersection in which traffic flows around a center island. Roundabouts are designed to meet the needs of all road users – drivers, pedestrians, pedestrians with disabilities, and bicyclists. A roundabout eliminates some of the conflicting traffic, such as left turns, which cause crashes at traditional intersections. Because roundabout traffic enters or exits only through right turns, the occurrence of severe crashes is substantially reduced.

rumble strips. A road safety feature that provide drivers with a tactile warning that they are about to leave their lane or that there is a decision point ahead (such as a four-way intersection after miles of uninterrupted travel). Rumble strips are an effective countermeasure for preventing roadway departure crashes. The noise and vibration produced by rumble strips alert drivers when they leave the travel way or about the danger ahead. New Jersey uses milled rumble strips, which are made by a machine with a rotary cutting head that creates a smooth, uniform, and consistent groove into the pavement. They are almost always used with a cautionary sign.

rumble stripes. The term used for rumble strips painted with a retroreflective coating to increase the visibility of the pavement edge at night and during inclement weather conditions. See also *rumble strips*.

safety countermeasure. See *safety strategy*.

safety culture. “The implicit shared values and beliefs that determine the way in which the society organizes and acts” in matters that affect safety (AAA Foundation for Traffic Safety, 2007).

safety emphasis area. An area that has been identified as a safety concern for which resources within the jurisdiction are allocated to develop and implement action plans forming a Strategic Highway Safety Plan. A safety emphasis area offers the greatest potential for reducing fatalities and injuries. Over time, safety priorities change as opportunities arise and/or barriers prevent progress; therefore, safety emphasis areas for a jurisdiction will change as well.

safety strategy. A roadway-based strategy intended to reduce the crash frequency or severity, or both at a specific site or for several similar locations.

serious injury. An incapacitating injury or any injury, other than a fatal injury, which prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred.

severe crash. A motor vehicle crash that results in one or more fatalities or serious injuries, or both.

severe injuries. The combination of fatalities and serious injuries that are the result of motor vehicle crashes.

shoulder. That portion of the highway, exclusive of and bordering the roadway, designed for emergency use but not ordinarily to be used for vehicular travel.

sidewalk. That portion of a highway intended for the use by pedestrians, between the curb line or the lateral line of a shoulder, or if none, the lateral line of the roadway and adjacent right-of-way line.

sign. An official traffic control device placed or erected by authority of a public body or official having jurisdiction for the purpose of regulating, warning, or guiding traffic. Also referred to “traffic sign.”

speed humps/speed bumps. Speed control devices installed across a street. A speed bump is a low ridge that runs across a street and that is designed to slow down cars and other motor vehicles. A speed hump is a longer, flatter version of a speed bump.

Strategic Highway Safety Plan (SHSP). An SHSP is a data-driven, comprehensive, multidisciplinary plan integrating the 4Es of safety – engineering, education, enforcement, and emergency medical services. It establishes statewide performance measures, goals, objectives, and emphasis areas and describes a program of strategies to reduce or eliminate safety hazards. It is developed by the state Department of Transportation (DOT) in consultation with federal, state, local, and tribal safety stakeholders, in accordance with 23 U.S.C. § 148.

systemic safety improvement. An improvement that is widely implemented based on high-risk roadway features that are correlated with specific severe crash types.

teen driver. In New Jersey, a driver who is between 16 and 20 years of age. A teen may obtain a permit at 16 years of age, a probationary (restricted license) at age 17 and a basic (full, unrestricted license) at age 18.

traffic calming. Roadway geometry devices such as roadway narrowing and vertical elements (speed humps, bumps, and tables) that are installed to help lower traffic speeds on local roadways.

traffic signs. Signs designed to control traffic are divided into three basic categories:

- ▶ **Warning:** Yellow, diamond-shaped signs with a black symbol or word message that warn motorists of hazards ahead that are difficult to see. Warning signs are for road conditions that need caution and for specific hazards that may be encountered during certain road operations such as road conditions, school crossings, or curved roadways.
- ▶ **Guidance:** Green or brown signs with white lettering that guide motorists to a destination by clearly identifying the route. Motorist service signs have white lettering or symbols on a blue background.
- ▶ **Regulatory:** Generally, white, rectangular signs that regulate traffic speed and movement. This category includes STOP, YIELD, and DO NOT ENTER signs. Two national signs that indicate where certain interstate trucks can or cannot travel are now being used in New Jersey: Green signs mark the routes and ramps where trucks are permitted, and also mark the travel route to truck services and terminals. Red signs mark the routes and ramps where trucks are prohibited, and also mark the end of designated routes.

vehicle. A device in, upon, or by which a person or property is or may be transported upon a highway, excepting devices moved by human power or used exclusively on stationary rails or tracks.

Appendix A Summary of Stakeholder Outreach

Stakeholder Outreach

One of the major components of Strategic Highway Safety Plans is the input from both traditional and non-traditional safety partners. Having representation from all of the E's, engineering, enforcement, education, and emergency response, is key to not only the development of the Plan, but more importantly for implementation of the priority strategies.

New Jersey held two webinars to introduce the stakeholders to the process for updating the Plan. Over 275 stakeholders were invited to attend either of the webinars on March 5th or 10th, 2014, where an overview of the current plan, data analysis, workshop, and strategy selection were presented. Each participant was encouraged to participate in the Safety Forum on April 22nd, 2014.

The Safety Forum was a one-day workshop with 117 attendees, where the first half of the day were presentations regarding the potential emphasis areas as noted from the analysis of NJ's crash data. The second half of the day was devoted to break-out sessions for input from the stakeholders on priority strategies. Each participant was assigned a break-out session, with an emphasis on achieving a diverse group of participants in each break-out session. The groups were as follows:

- ▶ Infrastructure
- ▶ Pedestrians and Bicyclists
- ▶ Older and Younger Drivers
- ▶ Aggressive and Distracted Driving
- ▶ Impaired and Unbelted
- ▶ Motorcycles

Each group was facilitated by two subject matter experts with a list of the potential strategies and the participants were asked to provide input on those strategies with the result being a list of priority strategies that would be part of the final plan.

At the end of the day, each participant was asked to cast a vote for their top five strategies among all of the Emphasis Areas, not just the ones from their break-out session. This exercise was to provide the Advisory Team with a list of priority strategies from the various stakeholder groups. In effect, it allowed the team to understand what the partners felt was most important to New Jersey.

While the forum provided significant input on the plan strategies, the Advisory Team wanted additional input from the under-represented groups below:

- ▶ Motorcyclists
- ▶ Emergency Response
- ▶ Chiefs of Police

Meetings were scheduled with all three groups; with motorcycles being a conference call and emergency response and chiefs of police being in-person events. Each group was asked to review and comment on the existing strategies from the forum related to their expertise and then provide any additional strategies that they felt would be of value to the plan.

Overall, the stakeholder outreach effort provided the guidance and input that the Advisory Team needed to select the priority strategies that would be highlighted in the plan. In addition, bringing these diverse groups together provided an opportunity to highlight and strengthen the need for all safety partners to participate in decreasing deaths and injuries on New Jersey's roadways.

**New Jersey Strategic Highway Safety Plan Update
Workshop
Tuesday April 22, 2014
8:30 AM to 3:30 PM
The Conference Center at Mercer
1200 Old Trenton Road
West Windsor, NJ 08550**

8:00 – 8:30 am	Registration	
8:30 – 8:45 am	Welcome & Introductions	Opening Remarks: David Kuhn, NJDOT Joseph Bertoni, Deputy Commissioner, NJDOT
8:45 – 9:00 am		DHTS – Edward O’Connor FHWA – Caroline Trueman DVRPC – John Ward SJTPO – Jennifer Marandino NJTPA – Lois Goldman
9:00 – 9:45 am	SHSP Overview Goal Discussion TZD Video	Howard Preston, CH2M Hill Pam Fischer, NJTPA, Patricia Ott, MBO Engineering, LLC
9:45 – 10:45 am	Panel Discussion: Barriers & Successes in the 4Es+	Facilitator: Caroline Trueman, FHWA <u>Data</u> – Andy Kaplan, Rutgers Transportation Safety Resource Center <u>Emergency Medical Services</u> – Don Roberts, Department of Health <u>Enforcement</u> – Andy Anderson, Essex County Police Academy <u>Engineering</u> – Countermeasures, Lynn Rich, NJDOT <u>Education</u> – Pedestrian Decoy & Share the Keys, Raymond Reeve, Violet Marrero, DHTS
10:45 – 11:00 am	Break	
11:00 – 11:30 am	New Jersey’s Safety Emphasis Areas & Strategies	Howard Preston, CH2M Hill Cheri Marti, CH2M Hill
11:30 am – 12:30 pm	Working Lunch Short Term Goal Discussion	Facilitators: Lois Goldman, NJTPA, David Kuhn, NJDOT Pam Fischer, NJTPA, Patricia Ott, MBO Engineering, LLC
12:30 – 2:30 pm	Breakout Discussions of Safety Strategies	
	Infrastructure	Facilitators: Howard Preston, CH2M Hill & Kevin Conover, NJDOT
	Pedestrians & Bicycles	Facilitators: Charlie Zegeer, North Carolina Highway Safety Research Center & Elise Bremer-Nei, NJDOT
	Older & Younger Drivers Aggressive & Distracted Driving	Facilitators: Cheri Marti, CH2M Hill & Pam Fischer, NJTPA Facilitators: Glenn Hansen, Traffic Safety Solutions & SFC John Sandner, NJSP
	Impaired & Unbelted Driving	Facilitators: Ed O’Connor, DHTS & Andy Anderson, Essex County Police Academy
	Motorcycles	Facilitators: Tina Arcaro, SJTPO & Suzanne O’Hearn, DHTS
2:30 – 2:45 pm	Break	
2:45 – 3:15 pm	Breakout Discussion Report Out & Cast Your Vote	Howard Preston, CH2M Hill
3:15 – 3:30 pm	Wrap Up	Steve Dilts, CH2M Hill

NJSHSP Workshop

Participating Organizations by Breakout Session

Infrastructure

Burlington County Engineering
CH2M HILL
City of Newark Traffic
Federal Highway Administration
Hudson County Engineering
Mercer County Engineering
Monmouth County Engineering
New Jersey Department of Health Office of EMS
New Jersey Department of Transportation
New Jersey Transit
Ocean County Engineering
Somerset County Engineering
Union County Engineering

Mature & Teen Drivers

AARP
CH2M HILL, Inc.
Community Options, Inc.
DCH Teen Safe Driving Foundation
Federal Highway Administration
Greater Mercer TMA
Meadowlink
MONOC Hospital Service Corp.
Morristown Medical Center
Motor Vehicle Commission
New Jersey Department of Transportation
New Jersey Foundation for Aging
New Jersey Prevention Network
North Jersey Transportation Planning Authority
Ridewise TMA

Impaired & Unbelted Driving

AAA Mid-Atlantic
City of Vineland
Delaware Valley Regional Planning Commission
Essex County College Police Academy
Federal Highway Administration
Hudson TMA
Meadowlink TMA
New Jersey Department of Transportation
New Jersey Division of Highway Traffic Safety
North Jersey Transportation Planning Authority
South Jersey Transportation Planning Organization
TransOptions

Pedestrians & Bicyclists

Bergen County Planning & Economic Development
Bicycle Coalition of Philadelphia
Burlington County Sheriff's Office
Cross County Connection TMA
HART TMA
Hudson County Planning
New Jersey Bike Walk Coalition
New Jersey Department of Transportation
New Jersey Division of Highway Traffic Safety
Parsons Brinckerhoff
Passaic County Planning
RBA Group
Safe Routes to School National Partnership
Sussex County Division of Planning
Tri-State Transportation Campaign
Urban Engineers
VHB, Inc.
Voorhees Transportation Center

Motorcycles

AAA New Jersey
Brain Injury Alliance of New Jersey
CH2M HILL, Inc.
Delaware Valley Regional Planning Commission
Mercer County Planning
New Jersey Department of Transportation
New Jersey Division of Highway Traffic Safety
North Jersey Transportation Planning Authority
South Jersey Transportation Planning Organization
Transportation Safety Resource Center

Aggressive & Distracted Driving

City of Vineland
Delaware River Port Authority
Drive Safer
Federal Highway Administration
Greater Mercer TMA
New Jersey Department of Health Office of EMS
New Jersey Department of Transportation
New Jersey Division of Criminal Justice
New Jersey Police Traffic Officers Assn.
New Jersey State Police

Appendix B Safety Emphasis Area Factsheets

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Aggressive Driving Crashes

APRIL 2014

How Significant is the Issue?

There were 3,600 severe injuries (fatal or incapacitating) due to aggressive driving crashes between 2008 and 2012 in New Jersey. This is an average of 720 severe injuries per year and accounted for 34 percent of all severe injuries during the 5-year period. Aggressive driving includes crashes involving unsafe speeds or reckless driving behavior. Nationally, aggressive driving behavior accounted for 36 percent of traffic fatalities.

What are the Contributing Factors?

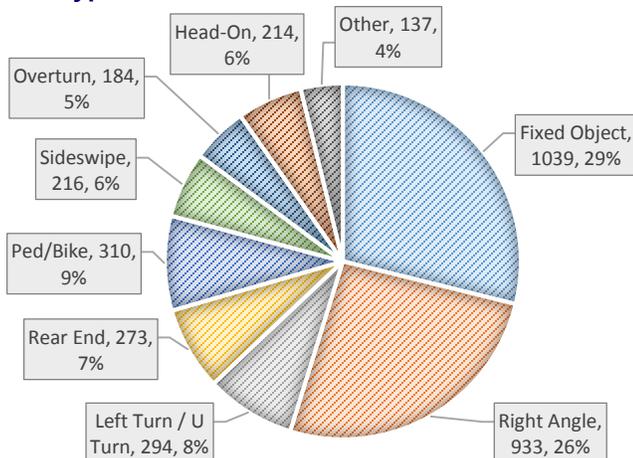
Pavement and Light Conditions

- Severe aggressive driving injuries were predominantly reported on dry roads (2,900 of 3,600; 81 percent).

Light Condition	Severe Injuries	Percentage
Daylight	2,038	57%
Dawn/Dusk	132	4%
Dark	1,414	39%
Street Lights On	1,064	30%
Street Lights Off	80	2%
No Street Lights	270	8%
Unknown	16	<1%

- A majority of severe aggressive driving injuries occurred during day light conditions.
- A total of 19 percent (700 of 3,600) of severe aggressive driving injuries involved alcohol use.

Crash Type



Infrastructure

Functional Class	≤30 mph	35 - 40 mph	≥45 mph			
Interstate	1	0%	2	0%	150	4%
Freeway	4	0%	11	0%	155	4%
Principal Arterial	105	3%	242	7%	551	15%
2-Lane	60	2%	117	3%	340	9%
4- and 6-Lane	44	1%	92	3%	80	2%
3- and 5-Lane	1	0%	31	1%	120	3%
Minor Arterial	229	6%	287	8%	345	10%
2-Lane	194	5%	227	6%	290	8%
4- and 6-Lane	26	1%	52	1%	43	1%
3- and 5-Lane	6	0%	4	0%	5	0%
Collector	112	3%	142	4%	194	5%
Local Road	225	6%	66	2%	68	2%
Unknown	214	6%	154	4%	129	4%
All Roadways	890	25%	904	25%	1,592	44%

- Severe aggressive driving injuries were more prominent on high-speed (≥45 mph) roadways.
- Nearly half of severe aggressive driving injuries occurred on arterial roadways.

Location

Jurisdiction	Rural	Urban	Unknown			
State	130	4%	1,064	30%	129	4%
County	165	5%	1,021	28%	165	5%
City	42	1%	573	16%	222	6%
Other	0	0%	0	0%	89	2%

- Urban state and county roads together accounted for nearly 60 percent of severe aggressive driving injuries.

MPO	Severe Aggressive Injuries	Percentage
DVRPC	947	26%
NJTPA	2,179	61%
SJTPO	474	13%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Bicyclist Crashes

APRIL 2014

How Significant is the Issue?

There were 368 severe bicyclist injuries (fatal or incapacitating) between 2008 and 2012 in New Jersey. This is an average of 74 severe injuries per year and accounted for 3 percent of all severe injuries during the 5-year period. Nationally, bicyclists accounted for 2 percent of traffic fatalities.

What are the Contributing Factors?

Pavement and Light Conditions

- Severe bicyclist injuries were predominantly reported on dry roads (331 of 368; 90 percent).

Light Condition	Severe Injuries	Percentage
Daylight	236	64%
Dawn/Dusk	17	5%
Dark	114	31%
Street Lights On	95	26%
Street Lights Off	4	1%
No Street Lights	15	4%
Unknown	1	<1%

- More than half of severe bicyclist injuries occurred during daytime lighting conditions.

Infrastructure

- A total of 51 percent (186 of 368) of severe bicyclist injuries occurred at an intersection.
- At least 71 percent (261 of 368) of severe bicyclist injuries occurred at areas without a median.

Traffic Control	Bicyclist	
Null/No Control	155	39%
Lane Markings	124	31%
Traffic Signal	69	17%
Stop/Yield Sign	38	10%
Channelization	4	1%
Officer/Crossing Guard	1	<1%
Other	4	1%
All Traffic Control	395	14%

- Traffic signals demonstrated the greatest intersection-related risk to bicyclists.
- Severe bicyclist injuries were prominent on arterials and low-speed roadways (≤ 30 mph).

Functional Class	≤ 30 mph		35 - 40 mph		≥ 45 mph	
Interstate/Freeway	0	0%	0	0%	1	<1%
Principal Arterial	17	5%	33	9%	42	11%
Minor Arterial	47	13%	45	12%	19	5%
Collector	31	8%	14	4%	5	1%
Local Road	39	11%	6	2%	4	1%
Unknown	28	8%	16	4%	6	2%
All Roadways	162	44%	114	31%	77	21%

Demographics

Age	Male		Female		Unknown	
<9	8	2%	1	0%	0	0%
9 to 14	37	9%	4	1%	1	<1%
15 to 20	46	12%	10	3%	0	0%
21 to 25	27	7%	4	1%	0	0%
26 to 35	40	10%	4	1%	0	0%
36 to 45	45	11%	9	2%	0	0%
46 to 55	55	14%	8	2%	0	0%
56 to 65	28	7%	3	1%	0	0%
>65	21	6%	2	1%	0	0%
Unknown	36	9%	5	1%	1	<1%

- Adult males were the demographic most represented in severe bicyclist injuries.
- The most common pre-crash bicyclist action was going straight ahead (56 percent) and the most common contributing circumstance was driver inattention (13 percent).

Location

Jurisdiction	Rural		Urban		Unknown	
State	1	<1%	85	23%	6	2%
County	7	2%	128	35%	12	3%
City	3	1%	86	23%	33	9%
Other	0	0%	0	0%	7	2%

- Urban county roads accounted for more than one third of severe bicyclist injuries.

MPO	Severe Bicyclist Injuries	Percentage
DVRPC	89	24%
NJTPA	229	62%
SJTPO	50	14%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Drowsy & Distracted Driving Crashes

APRIL 2014

How Significant is the Issue?

There were 4,478 severe injuries (fatal or incapacitating) due to drowsy and distracted driving crashes between 2008 and 2012 in New Jersey. This is an average of 896 severe injuries per year and accounted for 42 percent of severe injuries during the 5-year period. Nationally, drowsy and distracted driving behavior accounted for 12 percent of traffic fatalities.

What are the Contributing Factors?

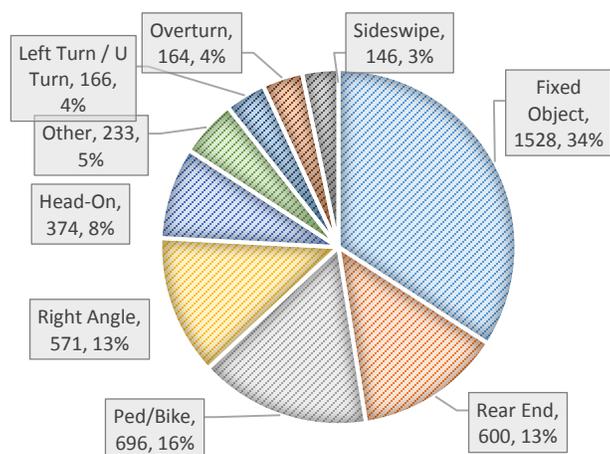
Pavement and Light Conditions

- Severe drowsy and distracted driving injuries were predominantly reported on dry roads (3,739 of 4,478; 83 percent).

Light Condition	Severe Injuries	Percentage
Daylight	2,528	56%
Dawn/Dusk	191	4%
Dark	1,738	39%
Street Lights On	1,234	28%
Street Lights Off	84	2%
No Street Lights	420	9%
Unknown	21	<1%

- More than half of severe drowsy and distracted driving injuries occurred during daytime lighting conditions.

Crash Type



- Fixed object, pedestrian/bike, rear end, and right angle crash types combined represented 76 percent

(3,395 of 4,478) of severe injuries involving drowsy or distracted driving.

Infrastructure

- A total of 30 percent (1,354 of 4,478) of severe drowsy and distracted driving injuries occurred at an intersection.

Functional Class	≤30 mph	35 - 40 mph	≥45 mph			
Interstate/Freeway	9	0%	6	0%	472	11%
Principal Arterial	122	3%	265	6%	672	15%
Minor Arterial	309	7%	337	8%	351	8%
Collector	123	3%	154	3%	229	5%
Local Road	262	6%	78	2%	73	2%
Unknown	339	8%	172	4%	170	4%
All Roadways	1164	26%	1012	23%	1967	44%

- Nearly half of severe drowsy and distracted driving injuries occurred on arterials.

Demographics

Age	Male	Female	Unknown			
<21	363	5%	186	3%	0	<1%
21 to 25	540	8%	248	4%	3	<1%
26 to 35	789	12%	367	6%	4	<1%
36 to 45	730	11%	366	6%	6	<1%
46 to 55	692	10%	315	5%	3	<1%
56 to 65	425	6%	216	3%	1	<1%
>65	409	6%	283	4%	1	<1%
Unknown	113	2%	42	1%	538	8%

- At least 61 percent of drivers involved in drowsy and distracted driving injuries were male.

Location

Jurisdiction	Rural	Urban	Unknown			
State	191	4%	1,351	30%	165	4%
County	229	5%	1,120	25%	217	5%
City	54	1%	651	15%	317	7%
Other	0	0%	0	0%	183	4%

- Urban state and county roads together accounted for more than 55 percent of severe drowsy and distracted driving injuries.

MPO	Severe Inattentive Injuries	Percentage
DVRPC	1,123	25%
NJTPA	2,769	62%
SJTPO	586	13%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Impaired Driving Crashes

APRIL 2014

How Significant is the Issue?

There were 1,898 severe injuries (fatal or incapacitating) in impaired driving crashes between 2008 and 2012 in New Jersey. This is an average of 380 severe injuries per year and accounted for 18 percent of all severe injuries during the 5-year period. Nationally, impaired driving accounted for 31 percent of traffic fatalities.

What are the Contributing Factors?

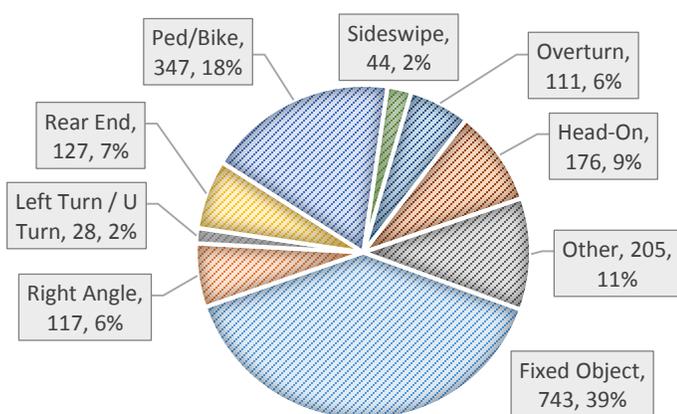
Pavement and Light Conditions

- Severe impaired driving injuries were predominantly reported on dry roads (1,551 of 1,898; 82 percent).

Light Condition	Severe Injuries	Percentage
Daylight	506	27%
Dawn/Dusk	68	4%
Dark	1,310	69%
Street Lights On	939	49%
Street Lights Off	57	3%
No Street Lights	314	17%
Unknown	14	1%

- The majority of severe impaired driving injuries occurred at night in dark conditions, yet primarily with street lights on.
- 37 percent of severe impaired driving injuries occurred between 9 pm and 2 am.

Crash Type



- Fixed object, pedestrian and bicyclist crash types combined represented 57 percent (1,090 of 1,898) of severe impaired driving injuries.

Infrastructure

Functional Class	≤30 mph	35 - 40 mph	≥45 mph
Interstate	1 0%	0 0%	84 4%
Freeway	2 0%	9 0%	102 5%
Principal Arterial	38 2%	122 6%	287 15%
2-Lane	20 1%	65 3%	193 10%
4- and 6-Lane	71 1%	40 2%	29 2%
3- and 5-Lane	1 0%	14 1%	60 3%
Minor Arterial	141 7%	150 8%	164 9%
2-Lane	120 6%	135 7%	149 8%
4- and 6-Lane	19 1%	13 1%	11 1%
3- and 5-Lane	2 0%	1 0%	3 0%
Collector	50 3%	76 3%	6 0%
Local Road	130 7%	41 2%	33 2%
Unknown	127 7%	37 4%	73 4%
All Roadways	489 26%	465 24%	831 44%

- Approximately 35 percent of severe impaired driving injuries occurred on 2-lane arterials.
- Severe impaired driving injuries occurred along roadways of all speed limits.

Location

Jurisdiction	Rural	Urban	Unknown
State	65 3%	596 31%	58 3%
County	101 5%	484 26%	92 5%
City	23 1%	294 15%	124 7%
Other	0 0%	0 0%	61 3%

- Urban state roads accounted for nearly one third of severe impaired driving injuries.

MPO	Severe Impaired Injuries	Percentage
DVRPC	482	25%
NJTPA	1,119	59%
SJTPO	297	16%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Intersection Crashes

APRIL 2014

How Significant is the Issue?

There were 3,233 severe injuries (fatal or incapacitating) in intersection-related crashes between 2008 and 2012 in New Jersey. This is an average of 647 severe injuries per year and accounted for 30 percent of all severe injuries during the 5-year period. Nationally, intersection-related crashes accounted for 21 percent of traffic fatalities.

What are the Contributing Factors?

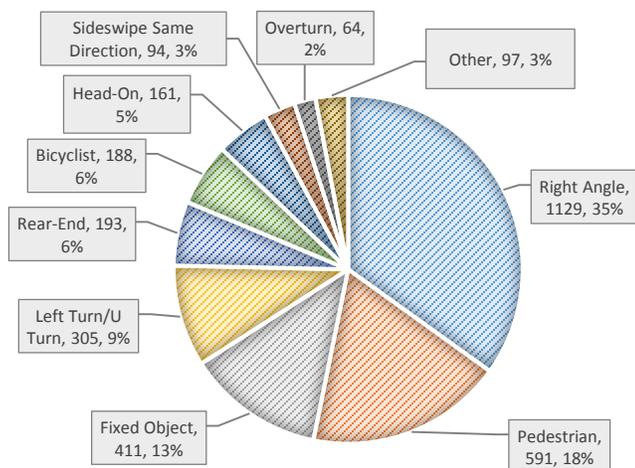
Pavement and Light Conditions

- Severe intersection injuries were predominantly reported on dry roads (2,694 of 3,233; 83 percent).

Light Condition	Severe Injuries	Percentage
Daylight	1,930	60%
Dawn/Dusk	124	4%
Dark	1,161	36%
Street Lights On	1,012	31%
Street Lights Off	48	1%
No Street Lights	101	3%
Unknown	18	1%

- The majority of severe intersection injuries occurred during daytime light conditions.

Crash Type



- Right angle, pedestrian and bicyclist crash types combined represented 59% (1,908 of 3,233) of severe injuries at intersections.

Infrastructure

Functional Class	≤30 mph		35 - 40 mph		≥45 mph	
Interstate	0	0%	0	0%	10	0%
Freeway	4	0%	1	0%	24	1%
Principal Arterial	172	5%	294	9%	532	16%
2-Lane	99	3%	137	4%	302	9%
4- and 6-Lane	69	2%	113	3%	73	2%
3- and 5-Lane	4	0%	37	1%	149	5%
Minor Arterial	339	10%	307	9%	245	8%
2-Lane	284	9%	236	7%	203	6%
4- and 6-Lane	49	2%	63	2%	31	1%
3- and 5-Lane	3	0%	5	0%	5	0%
Collector	137	4%	112	3%	119	4%
Local Road	219	7%	33	1%	30	1%
Unknown	201	6%	130	4%	97	3%
All Roadways	1,072	33%	877	27%	1,057	33%

- Approximately 40 percent of severe intersection injuries occurred on 2-lane arterials.
- Severe intersection injuries occurred along roadways of all speed limits.

Location

Jurisdiction	Rural		Urban		Unknown	
State	82	3%	887	27%	111	3%
County	85	3%	1,055	33%	148	5%
City	15	<1%	190	6%	644	20%
Other	0	0%	16	<1%	0	0%

- Urban county roads accounted for one third of severe intersection injuries.

MPO	Severe Intersection Injuries	Percentage
DVRPC	691	21%
NJTPA	2,189	68%
SJTPO	353	11%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Lane Departure Crashes

APRIL 2014

How Significant is the Issue?

There were 4,776 severe injuries (fatal or incapacitating) due to lane departure crashes between 2008 and 2012 in New Jersey. This is an average of 955 severe injuries per year and accounted for 45 percent of all severe injuries during the 5-year period. Lane departure includes head-on, sideswipe, and run-off-road crashes. Nationally, lane departure crashes accounted for 52 percent of traffic fatalities.

What are the Contributing Factors?

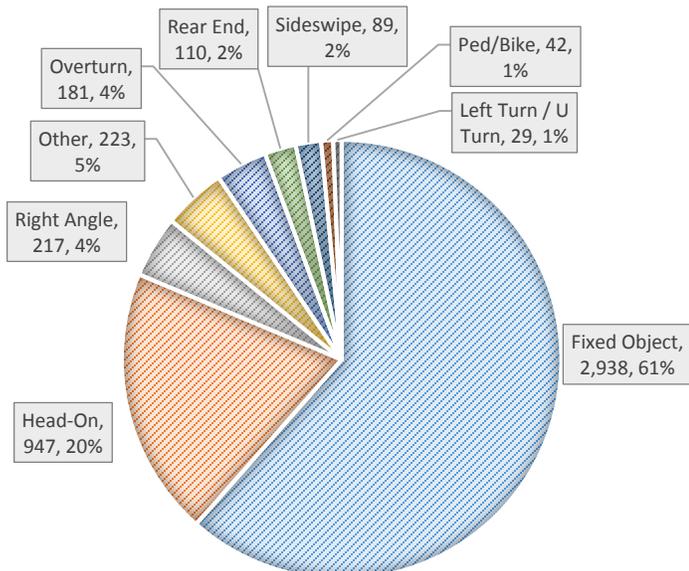
Pavement and Light Conditions

- Severe lane departure injuries were predominantly reported on dry roads (3,801 of 4,776; 80 percent).

Light Condition	Severe Injuries	Percentage
Daylight	2,527	53%
Dawn/Dusk	202	4%
Dark	2,026	42%
Street Lights On	1,278	27%
Street Lights Off	89	2%
No Street Lights	659	14%
Unknown	21	<1%

- More than half of severe lane departure injuries occurred during daytime lighting conditions.

Crash Type



Infrastructure

- A total of 18 percent (847 of 4,776) of severe lane departure injuries occurred at an intersection.

Functional Class	≤30 mph	35 - 40 mph	≥45 mph
Interstate	5 <1%	3 <1%	315 7%
Freeway	5 <1%	12 <1%	370 8%
Principal Arterial	58 1%	218 5%	713 15%
Minor Arterial	170 4%	368 8%	501 10%
Collector	94 2%	204 4%	343 7%
Local Road	215 5%	122 3%	122 3%
Unknown	262 5%	185 4%	218 5%
All Roadways	809 17%	1,112 23%	2,582 54%

- Severe lane departure injuries became more predominant at higher speeds and larger roadway classes.
- Collision with a fixed object accounted for 61 percent of severe lane departure injuries, while head-on collision with another vehicle accounted for 20 percent of these injuries.

Location

Jurisdiction	Rural	Urban	Unknown
State	261 5%	1,517 32%	157 3%
County	361 8%	1,129 24%	234 5%
City	96 2%	578 12%	287 6%
Other	0 0%	0 0%	156 3%

- Urban state and county roads together accounted for over 55 percent of severe lane departure injuries.

MPO	Severe Lane Departure Injuries	Percentage
DVRPC	1,198	25%
NJTPA	2,849	60%
SJTPO	729	15%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Motorcycle Crashes

APRIL 2014

How Significant is the Issue?

There were 1,245 severe injuries (fatal or incapacitating) in motorcycle crashes between 2008 and 2012 in New Jersey. This is an average of 249 severe injuries per year and accounted for 12 percent of all severe injuries during the 5-year period. Nationally, motorcycle crashes accounted for 14 percent of traffic fatalities.

What are the Contributing Factors?

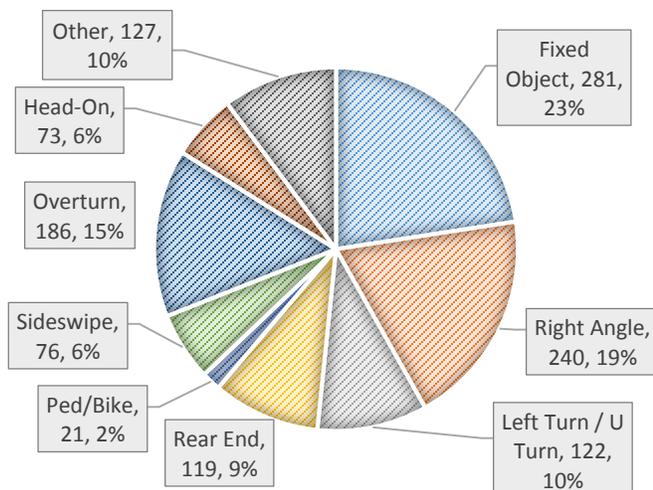
Pavement and Light Conditions

- Severe motorcycle injuries were predominantly reported on dry roads (1,172 of 1,245; 94 percent).

Light Condition	Severe Injuries	Percentage
Daylight	820	66%
Dawn/Dusk	54	4%
Dark	364	29%
Street Lights On	266	21%
Street Lights Off	19	2%
No Street Lights	79	6%
Unknown	7	1%

- The majority of severe motorcycle injuries occurred during daytime light conditions.

Crash Type



- Right angle, fixed object, and overturned crash types combined represented 57 percent (707 of 1,245) of severe motorcycle injuries.
- 14 percent of severe motorcycle injuries involved impaired driving.

Infrastructure

Functional Class	≤30 mph	35 - 40 mph	≥45 mph
Interstate	3 0%	2 0%	71 6%
Freeway	0 0%	1 0%	38 3%
Principal Arterial	25 2%	95 8%	151 12%
2-Lane	12 1%	48 4%	100 8%
4- and 6-Lane	13 1%	36 3%	18 1%
3- and 5-Lane	0 0%	9 1%	29 2%
Minor Arterial	54 4%	94 8%	121 10%
2-Lane	50 4%	83 7%	111 9%
4- and 6-Lane	4 0%	7 1%	7 1%
3- and 5-Lane	0 0%	2 0%	2 0%
Collector	37 3%	57 5%	85 8%
Local Road	75 6%	20 2%	18 1%
Unknown	99 8%	62 5%	47 4%
All Roadways	293 24%	331 27%	531 43%

- Approximately one third of severe motorcycle injuries occurred on 2-lane arterials.
- Severe motorcycle injuries occurred along roadways of all speed limits, but were more prevalent on high-speed roadways (≥45 mph).

Location

Jurisdiction	Rural	Urban	Unknown
State	79 2%	338 27%	47 8%
County	87 7%	279 22%	77 6%
City	20 2%	171 14%	98 8%
Other	0 0%	0 0%	49 4%

- Urban state roads accounted for more than a quarter of severe motorcycle injuries.

MPO	Severe Motorcycle Injuries	Percentage
DVRPC	268	22%
NJTPA	801	64%
SJTPO	176	14%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Older (≥ 65 Years) Driver Crashes

APRIL 2014

How Significant is the Issue?

There were 1,840 severe injuries (fatal or incapacitating) in crashes involving older drivers between 2008 and 2012 in New Jersey. This is an average of 368 severe injuries per year and accounted for 17 percent of all severe injuries during the five-year period. Nationally, crashes involving older drivers accounted for 16 percent of traffic fatalities.

What are the Contributing Factors?

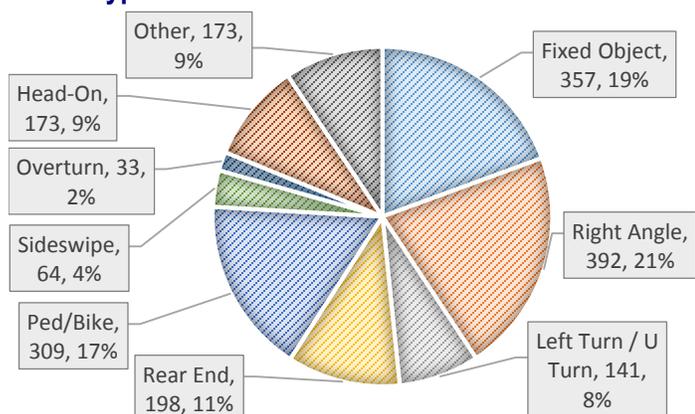
Pavement and Light Conditions

- These severe injuries were predominantly reported on dry roads (1,544 of 1,840; 84 percent).

Light Condition	Severe Injuries	Percentage
Daylight	1,403	76%
Dawn/Dusk	52	3%
Dark	377	20%
Street Lights On	274	15%
Street Lights Off	18	1%
No Street Lights	85	5%
Unknown	8	0%

- The majority of severe injuries in crashes involving older drivers occurred during daytime light conditions.

Crash Type



- Right angle and fixed object crash types combined represented 41 percent (749 of 1,840) of severe injuries.
- A total of 8 percent of severe injuries in crashes involving older drivers involved impaired driving.

Infrastructure

Functional Class	≤30 mph	35 - 40 mph	≥45 mph
Interstate	1 0%	0 0%	68 4%
Freeway	1 0%	1 0%	67 4%
Principal Arterial	32 2%	162 9%	347 19%
2-Lane	18 1%	91 5%	209 11%
4- and 6-Lane	13 1%	55 3%	51 3%
3- and 5-Lane	1 0%	14 1%	81 4%
Minor Arterial	113 6%	172 9%	165 9%
2-Lane	100 5%	134 7%	142 8%
4- and 6-Lane	10 1%	36 2%	15 1%
3- and 5-Lane	1 0%	2 0%	3 0%
Collector	56 3%	63 3%	92 5%
Local Road	86 5%	25 1%	17 1%
Unknown	104 6%	80 4%	65 4%
All Roadways	393 21%	503 27%	821 45%

- Approximately 37 percent of severe injuries in crashes involving older drivers occurred on 2-lane arterials.
- These severe injuries occurred along roadways of all speed limits.

Location

Jurisdiction	Rural	Urban	Unknown
State	82 4%	591 32%	52 3%
County	74 4%	505 27%	93 5%
City	12 1%	252 14%	101 5%
Other	0 0%	0 0%	78 4%

- Urban state roads accounted for one third of severe injuries in crashes involving older drivers.

MPO	Severe Injuries	Percentage
DVRPC	434	24%
NJTPA	1,180	64%
SJTPO	226	12%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Pedestrian Crashes

APRIL 2014

How Significant is the Issue?

There were 2,104 severe pedestrian injuries (fatal or incapacitating) between 2008 and 2012 in New Jersey. This is an average of 421 severe injuries per year and accounted for 20 percent of all severe injuries during the 5-year period. Nationally, pedestrians accounted for 13 percent of traffic fatalities.

What are the Contributing Factors?

Pavement and Light Conditions

- Severe pedestrian injuries were predominantly reported on dry roads (1,691 of 2,104; 80 percent).

Light Condition	Severe Injuries	Percentage
Daylight	856	41%
Dawn/Dusk	73	3%
Dark	1,151	55%
Street Lights On	892	42%
Street Lights Off	62	3%
No Street Lights	197	9%
Unknown	24	1%

- Over half of severe pedestrian injuries occurred under dark lighting conditions.

Infrastructure

- 30 percent (625 of 2,104) of severe pedestrian injuries occurred at an intersection.
- At least 56 percent (1,175 of 2,104) of severe pedestrian injuries occurred at areas without a median.

Traffic Control	Pedestrian	
Null/No Control	1,756	74%
Lane Markings	281	12%
Traffic Signal	282	12%
Stop/Yield Sign	13	<1%
Channelization	22	1%
Officer/Crossing Guard	11	<1%
Other	14	1%

- Traffic signals demonstrated the greatest intersection-related risk to pedestrians.
- Severe pedestrian injuries were prominent on arterials and low-speed (≤ 30 mph) roadways.

Functional Class	≤ 30 mph		35 - 40 mph		≥ 45 mph	
Interstate/Freeway	1	0%	2	0%	106	5%
Principal Arterial	128	6%	190	9%	272	13%
Minor Arterial	263	13%	168	8%	62	3%
Collector	86	4%	31	1%	18	1%
Local Road	170	8%	21	1%	11	1%
Unknown	230	11%	54	3%	43	2%
All Roadways	878	42%	466	22%	512	24%

Demographics

Age	Male		Female		Unknown	
<9	41	2%	26	1%	0	0%
9 to 14	62	3%	34	1%	0	0%
15 to 20	138	6%	84	4%	0	0%
21 to 25	123	5%	65	3%	1	<1%
26 to 35	194	8%	87	4%	1	<1%
36 to 45	179	8%	117	5%	1	<1%
46 to 55	203	9%	126	5%	3	<1%
56 to 65	165	7%	72	3%	0	0%
>65	187	8%	181	8%	2	<1%
Unknown	172	7%	95	4%	20	1%

- The adult male demographic was represented most in severe pedestrian injuries.
- The most common pre-crash pedestrian action was crossing/jaywalking (21 percent) and the most common contributing circumstance was crossing where prohibited (13 percent).

Location

Jurisdiction	Rural		Urban		Unknown	
State	21	1%	578	27%	57	3%
County	12	1%	549	26%	94	4%
City	2	<1%	446	21%	164	8%
Other	0	0%	0	0%	181	9%

- Urban state and county roads each accounted for over a quarter of severe pedestrian injuries.

MPO	Severe Pedestrian Injuries	Percentage
DVRPC	416	20%
NJTPA	1,498	71%
SJTPO	190	10%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Teen (≤ 20 Years) Driver Crashes

APRIL 2014

How Significant is the Issue?

There were 1,395 severe injuries (fatal or incapacitating) in crashes involving teen drivers between 2008 and 2012 in New Jersey. This is an average of 279 severe injuries per year and accounted for 13 percent of all severe injuries during the five-year period. Nationally, crashes involving teen drivers accounted for 8 percent of traffic fatalities.

What are the Contributing Factors?

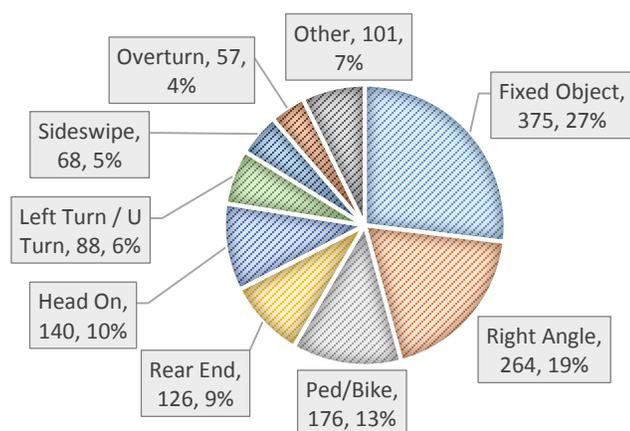
Pavement and Light Conditions

- These severe injuries were predominantly reported on dry roads (1,121 of 1,395; 80 percent).

Light Condition	Severe Injuries	Percentage
Daylight	717	51%
Dawn/Dusk	47	3%
Dark	618	44%
Street Lights On	438	31%
Street Lights Off	26	2%
No Street Lights	154	11%
Unknown	13	1%

- The majority of severe injuries in crashes involving teen drivers occurred during daytime light conditions.

Crash Type



- Right angle, pedestrian/bike, and fixed object crash types combined represented 58 percent (815 of 1,395) of severe injuries involving teen drivers.
- 14 percent (190 of 1,395) of these severe injuries occurred in an alcohol-related crash.

Infrastructure

Functional Class	≤ 30 mph	35 - 40 mph	≥ 45 mph
Interstate	0 0%	0 0%	35 3%
Freeway	0 0%	4 <1%	48 3%
Principal Arterial	30 2%	77 6%	226 16%
2-Lane	19 1%	39 3%	126 9%
4- and 6-Lane	10 1%	29 2%	34 2%
3- and 5-Lane	1 <1%	9 1%	61 4%
Minor Arterial	63 5%	127 9%	144 10%
2-Lane	55 4%	103 7%	128 9%
4- and 6-Lane	7 1%	21 2%	9 1%
3- and 5-Lane	0 0%	1 <1%	5 <1%
Collector	33 2%	64 5%	102 7%
Local Road	99 7%	34 2%	23 2%
Unknown	84 6%	63 5%	58 4%
All Roadways	309 22%	369 26%	636 46%

- Over a quarter of severe injuries in crashes involving teen drivers occurred on high speed (≥ 45 mph) arterials.
- These severe injuries occurred along roadways of all speed limits, but are more prevalent on high speed roadways.
- 35 percent (483 of 1,395) of these severe injuries occurred at an intersection.

Location

Jurisdiction	Rural	Urban	Unknown
State	39 3%	374 27%	53 4%
County	92 7%	403 29%	73 5%
City	23 2%	207 15%	93 7%
Other	0 0%	0 0%	38 3%

- Urban county roads accounted for nearly one third of severe injuries in crashes involving teen drivers.

MPO	Severe Injuries	Percentage
DVRPC	362	26%
NJTPA	858	62%
SJTPO	175	13%

New Jersey Strategic Highway Safety Plan Update

Severe (Fatal + Incapacitating Injury) Unbelted Occupant Crashes

APRIL 2014

How Significant is the Issue?

There were 1,740 severe injuries (fatal or incapacitating) in crashes involving unbelted occupants between 2008 and 2012 in New Jersey. This is an average of 348 severe injuries per year and accounted for 16 percent of all severe injuries during the five-year period. Nationally, crashes involving unbelted occupants accounted for 34 percent of traffic fatalities.

What are the Contributing Factors?

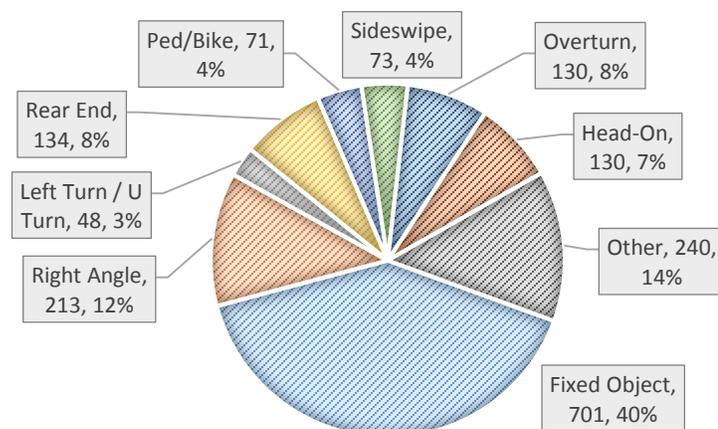
Light and Pavement Condition

- These severe injuries were predominantly reported on dry roads (1,404 of 1,740; 81 percent).

Light Condition	Severe Injuries	Percentage
Daylight	838	48%
Dawn/Dusk	88	5%
Dark	804	46%
Street Lights On	519	30%
Street Lights Off	49	3%
No Street Lights	236	14%
Unknown	10	1%

- The majority of severe injuries in unbelted occupant crashes occurred during daytime light conditions.
- 26 percent of these severe injuries occurred between 9 pm and 2 am.

Crash Type



- Right angle and fixed object crash types combined represented 53 percent (914 of 1,740) of severe injuries in crashes involving unbelted occupants.

Infrastructure

Functional Class	≤30 mph	35 - 40 mph	≥45 mph
Interstate	0 0%	1 0%	132 8%
Freeway	2 0%	8 0%	145 8%
Principal Arterial	39 2%	65 4%	231 13%
2-Lane	30 2%	38 2%	156 9%
4- and 6-Lane	9 1%	18 1%	28 2%
3- and 5-Lane	0 0%	9 1%	45 3%
Minor Arterial	86 5%	85 5%	143 8%
2-Lane	73 4%	75 4%	133 8%
4- and 6-Lane	8 0%	6 0%	8 0%
3- and 5-Lane	3 0%	2 0%	0 0%
Collector	42 2%	67 3%	85 5%
Local Road	127 7%	41 2%	40 2%
Unknown	125 7%	52 3%	7 4%
All Roadways	421 24%	317 18%	853 49%

- Approximately 30 percent of severe injuries in crashes involving unbelted occupants occurred on 2-lane arterials.
- Nearly half of severe injuries occurred along roadways with speed limits of 45 mph or above.

Location

Jurisdiction	Rural	Urban	Unknown
State	84 5%	551 32%	56 3%
County	95 5%	346 20%	64 4%
City	25 1%	275 16%	135 8%
Other	0 0%	0 0%	109 6%

- Urban state roads accounted for one third of severe injuries in crashes involving unbelted occupants.

MPO	Severe Unbelted Injuries	Percentage
DVRPC	454	26%
NJTPA	1,005	58%
SJTPO	281	16%