



New Jersey 2020 Strategic Highway Safety Plan

Emphasis Area

OTHER VULNERABLE ROAD USERS

**Team Leader: Arnold “Andy” Anderson
Room 224 ●**



Safety Summit #2
Emphasis Area Breakout Session (90 minutes)

Agenda

- 1. Review Goals of the Session (5 minutes)**
- 2. Review Data and Identify Key Data Questions (20 minutes)**
- 3. Review Existing Strategies (20 minutes)**
- 4. Identify Additional Potential Strategies (15 minutes)**
- 5. Discuss Prioritization of Strategies (30 minutes)**

Emphasis Area

OTHER VULNERABLE ROAD USERS

Contents

- **Mature Drivers**
- **Younger Drivers**
- **Motorcyclists**
- **Work Zone Safety**
- **Other Road Workers***
- **Emergency Medical Services & Other First Responders***

* Crash data specific to these categories not available



Mature Drivers Crash Data Sheet

Summit #2

January 21, 2020

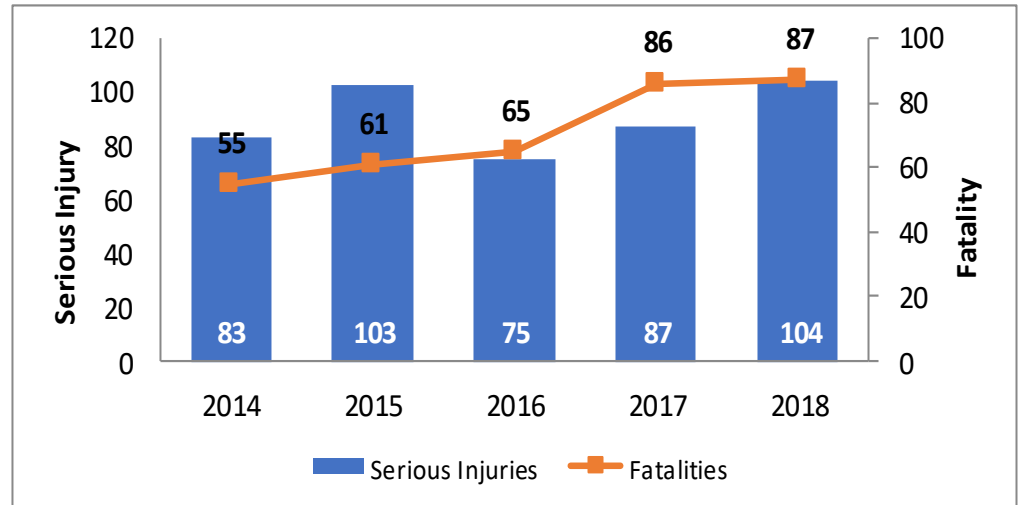
Summary

This fact sheet provides many details of mature driver crash fatalities and serious injuries (FSI). It also provides suggested strategies to reduce fatalities and serious injuries in NJ.



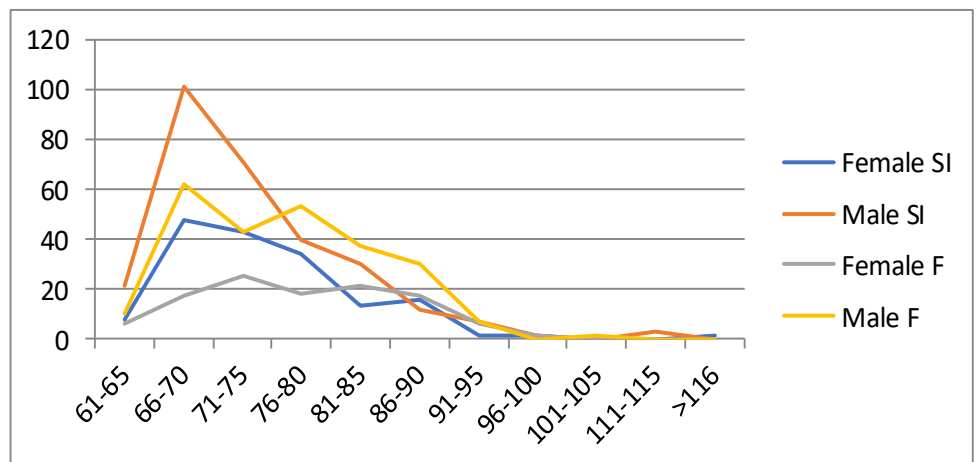
Mature Drivers Crash Quick Facts

- Accounts for 10% of all NJ fatalities and serious injuries.
- Data from 2014-2018
- Drivers age 65 and older
- 354 fatalities
- Decrease of 2% from 2015 SHSP
- 452 serious injuries
- Decrease of 34% from 2015 SHSP



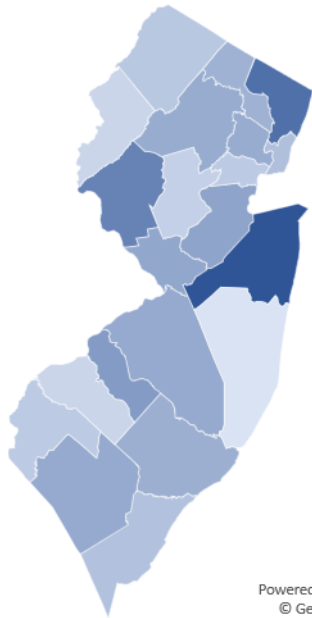
Who Was Involved?

Male drivers aged 66-70 years old are involved in the most mature driving fatalities and serious injuries. The most serious injuries for female drivers is also in this age range.

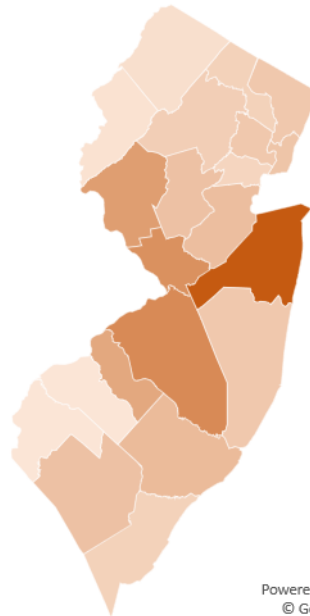


Who was Involved	1
Where did Crashes Occur	2
When did Crashes Occur	2
Contributing Factors	3
Crash Types / Conditions	3
Strategies	4
Strategies	5

Where Did Crashes Occur?



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FSI by County (top) and MPO (bottom)

MPO	Fatality	Serious Injury
DVRPC	93	26%
NJTPA	211	60%
SJTPO	50	14%

Sixty-three percent (63%) of mature driver fatalities and serious injuries occurred in the NJTPA region.

FSI by Roadway Type

Roadway	Rural	Urban
Interstate	4	21
State	34	251
County	39	236
City	3	39
Other	0	0
Total	80	547

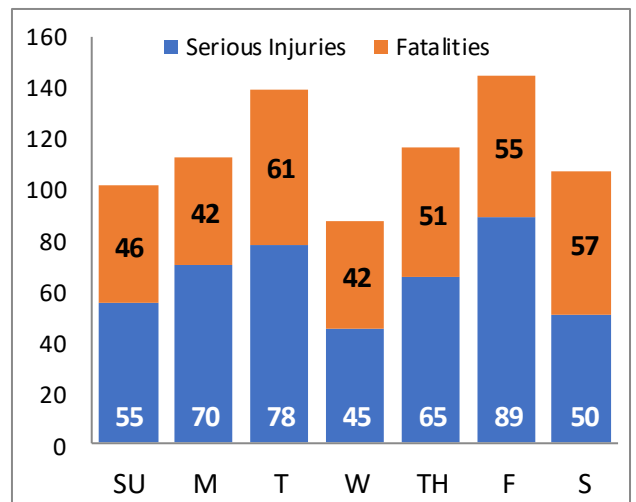
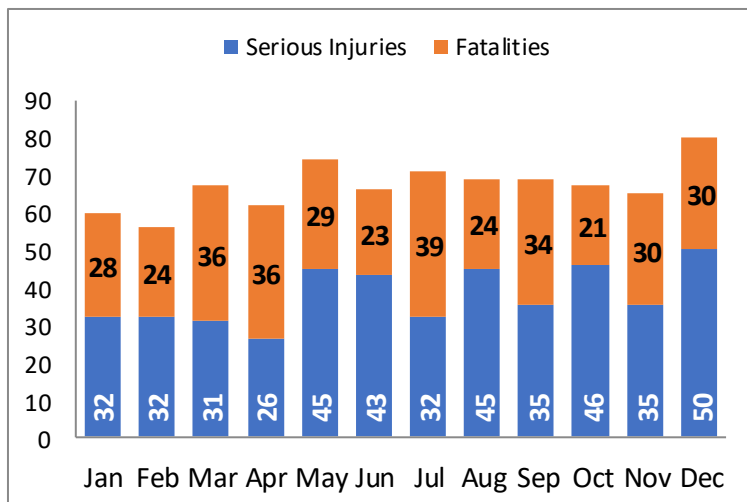
22% FSI - Unknown Roadway Type

FSI by Functional Class

Functional Class	<=25 mph	30-45mph	45+ mph
Interstate	1	0	35
Freeways	0	5	45
Principal Arterial	13	114	114
Minor Arterial	19	129	44
Major Collector	14	40	25
Minor Collector	2	3	2
Local	1	6	4
Other	84	68	20

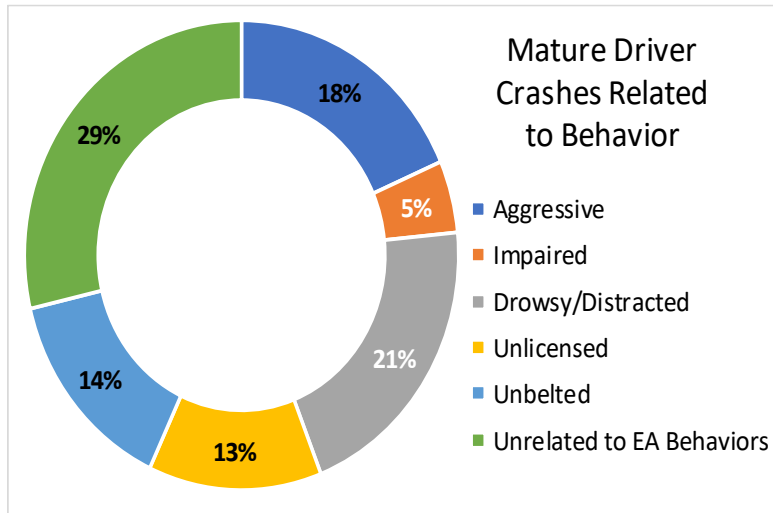
When Did Crashes Occur?

Both fatalities and serious injuries occurred mostly on Tuesdays and Fridays. The most fatalities happened in July while most serious injuries occurred in December.



Contributing Factors

Relationship to Other SHSP Emphasis Areas

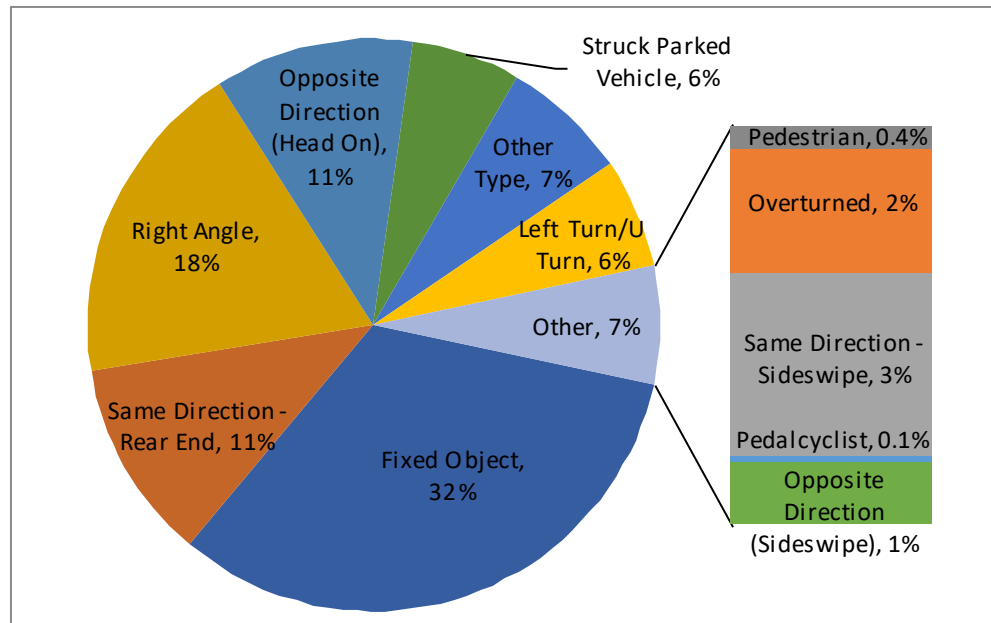


Approximately 15% of mature driver crashes occurred at signalized intersections and 64% at unsignalized intersections.

65% of mature driver fatalities and serious injuries were related to lane departure.

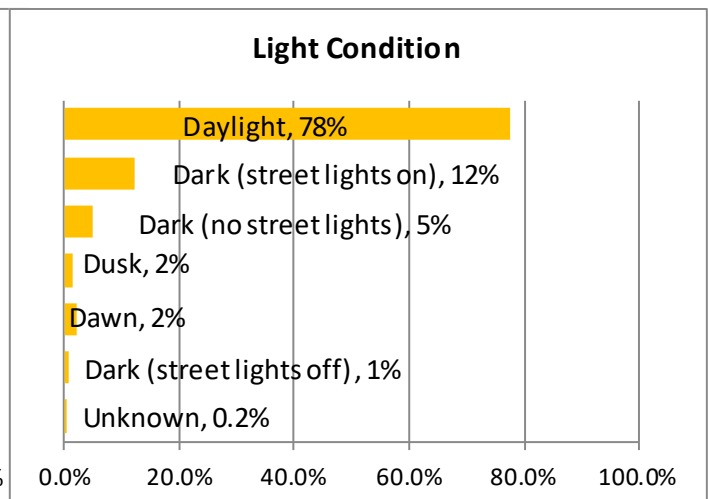
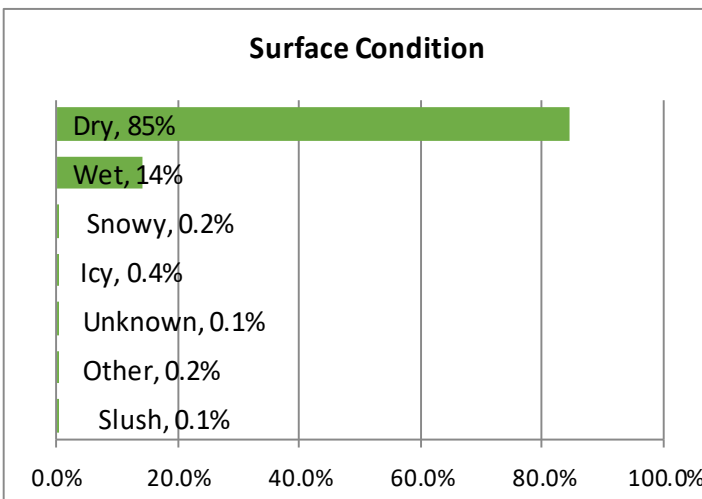
Crash Type

Mature driver fatalities and serious injuries resulted in fixed object crashes as the top crash types. Right angle crashes accounted for 18% of the total.



Surface and Light Conditions

Mature driver fatalities and serious injuries mainly occurred during the day and on dry pavement con-



Strategies

The NJ 2015 SHSP identified several strategies that have the greatest potential to reduce mature driving fatalities and serious injuries. Other strategies are noted.

Improve the Roadway and Driving Environment to Better Accommodate Older Drivers' Special Needs

- Provide advanced signage and lane markings. ★
- 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. ★
- Increase size and letter height of roadway signs and maximize their placement for enhanced visibility (such as overhead, centered).
- Increase signal head size to 12 inches when replacing/ upgrading signal.
- Provide more protected left-turn signal phases at high-volume intersections.
- Improve lighting at intersections, horizontal curves, and at-grade railroad crossings.
- Improve roadway delineation. ★
- Improve traffic control at work zones.
- Establish accessible and safe mobility options for older drivers.
- Pilot the designation of senior zones to alert passing drivers and assist older drivers.

Strengthen Reporting/Referral, Assessment, and Licensing of At-Risk Older Drivers

- Strengthen the role of medical advisory boards in assessing the potential impairment of older drivers and recommending appropriate licensing actions.
- Strengthen physician medical assessment training (via online course).
- 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.

- Update screening protocol and training for licensing authorities to identify older drivers demonstrating a decline in physical or cognitive functioning.
- Update and implement vision acuity requirements and screening protocols.
- 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.
- Implement variable driver license restrictions (for example, high speed, night, geographic limits).
- Require refresher safe-driving course for older drivers.
- Mandate insurance providers to provide discount/reduced premium upon completion of older driver course.

Improve Mature Driver Education and Public Outreach

- 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.
- 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.
- 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.

Additional Considerations

- Increase seatbelt use by older drivers and passengers to reduce the risk of injury and death to older drivers and passengers involved in crashes
- Install backplates with retroreflective borders to the traffic signals to improve visibility of the illuminated face of the signal by introducing a controlled-contrast background. ★

★ *FHWA Proven Safety Countermeasure*

Overview of the Mature Drivers Crash Query

- NJDOT Crash Records Database (100% of records)
- Position In/On Vehicle noted in NJTR-1 as Driver
- Driver Age noted in the NJTR-1 as 65 years or older

Disclaimer: The 2020 SHSP data is based upon a programmatic analysis of statewide data supplied by third party sources. Because of limitations in the data supplied and the method used to develop the charts contained in this fact sheet, users should be aware that data may be incorrect and/or incomplete. NJDOT makes no guarantees as to the accuracy, completeness, or content of the information. Data is subject to update as more information becomes available. NJDOT, its officers, employees or agents shall not be liable for damages or losses of any kind arising out of or in connection with the use or performance of information, including but not limited to, damages or losses caused by reliance upon the accuracy or timeliness of any such information, or damages incurred from the viewing, distributing, or copying of these materials. The materials and information provided herein are provided "as is." No warranty of any kind, implied, expressed, or statutory, including but not limited to the warranties of non-infringement of third-party rights, title, merchantability, and fitness for a particular purpose, is given with respect to the contents of this fact sheet.



Enhanced Delineation and Friction for Horizontal Curves

SAFETY BENEFITS:

CHEVRON SIGNS

25%

Reduction in nighttime crashes

16%

Reduction in non-intersection
fatal and injury crashes

Source: CMF Clearinghouse, CMF IDs 2438 and 2439

HIGH FRICTION SURFACE TREATMENTS

52%

Reduction in wet road crashes

24%

Reduction in curve crashes

Source: CMF Clearinghouse, CMF IDs 7900 and 7901

This proven safety countermeasure for reducing crashes at curves includes a variety of potential strategies that can be implemented in combination or individually. These strategies fall into two categories: enhanced delineation and increased pavement friction.



Chevron signs installed along a curve.

Source: Thinkstock

Enhanced Delineation

Enhanced delineation treatments can alert drivers in advance of the curve and vary by the severity of the curvature and operating speed. Price ranges for these strategies are low to moderate. Treatments include the following:

- Pavement markings.
- Post-mounted delineation.
- Larger signs and signs with enhanced retroreflectivity.
- Dynamic advance curve warning signs and sequential curve signs.

Increased Pavement Friction

High friction surface treatment (HFST) is another highly cost-effective countermeasure. HFST compensates for the high friction demand at curves where the available pavement friction is not adequate to support operating speeds due to one or more of the following situations:

- Sharp curves.
- Inadequate cross-slope design.
- Wet conditions.
- Polished roadway surfaces.
- Driving speeds in excess of the curve advisory speed.

To implement these proven safety countermeasures, agencies can take the following steps:

1. Develop a process for identifying and treating problem curves.
2. Use the appropriate application for the identified problem(s), consider the full range of enhanced delineation and friction treatments.
3. Improve consistency in application of horizontal curve guidance provided in the *Manual on Uniform Traffic Control Devices* for new and existing devices.
4. Review signing practices and policies to ensure they comply with the intent of the new guidance.

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>.





Backplates with Retroreflective Borders



SAFETY BENEFIT:

15%
Reductions in total
crashes

Source: CMF Clearinghouse, CMF ID 1410.

Backplates added to a traffic signal indication improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background. The improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a retroreflective border. Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions.

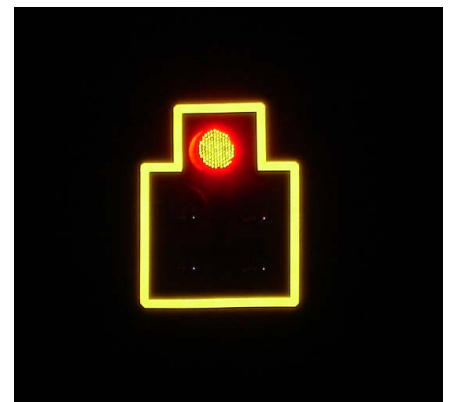
This treatment is recognized as a human factors enhancement of traffic signal visibility, conspicuity, and orientation for both older and color vision deficient drivers. This countermeasure is also advantageous during periods of power outages when the signals would otherwise be dark, providing a visible cue for motorists.

Transportation agencies should consider backplates with retroreflective borders as part of their efforts to systemically improve safety performance at signalized intersections. Adding a retroreflective border to an existing signal backplate is a very low-cost safety treatment. The most effective means of implementing this proven safety countermeasure is to adopt it as a standard treatment for signalized intersections across a jurisdiction.



Example of a signal backplate framed with a retroreflective border.

Source: FHWA



Retroreflective borders are highly visible during the night.

Source: South Carolina DOT

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>.





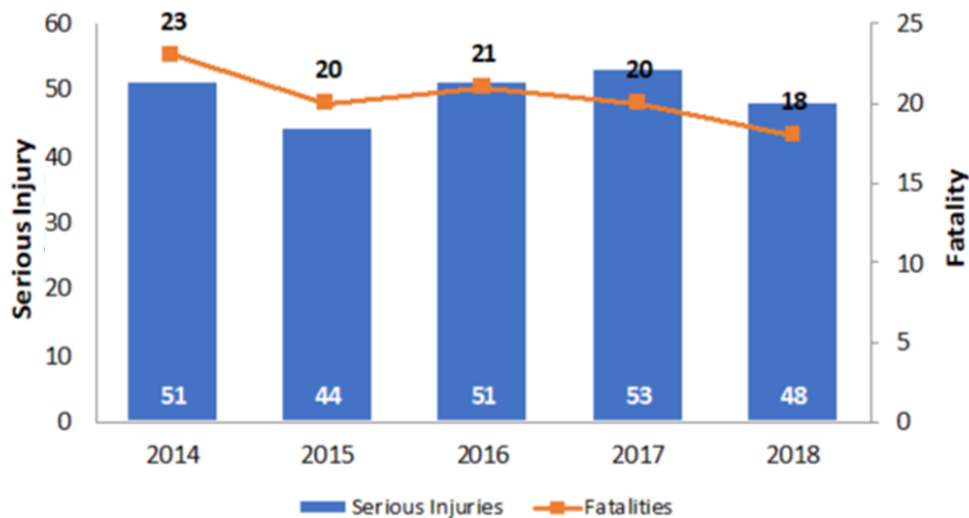
Younger Drivers Crash Data Sheet

Summit #2

January 21, 2020

Summary

This fact sheet provides many details of younger driver crash fatalities and serious injuries (FSI). It also provides suggested strategies to reduce fatalities and serious injuries in NJ.

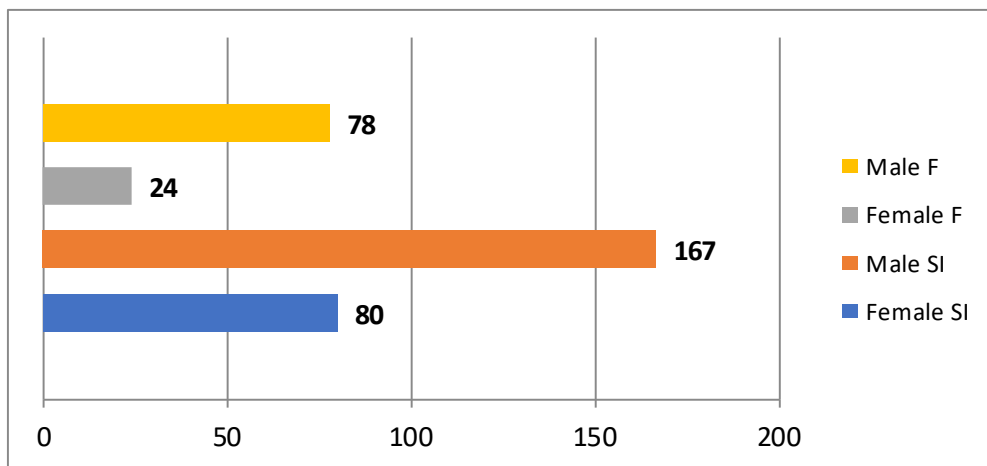


Younger Drivers Crash Quick Facts

- Accounts for 4% of all NJ fatalities and serious injuries.
- Data from 2014-2018
- Drivers age 16-20
- 102 fatalities
- Increase of 66% from 2015 SHSP
- 247 serious injuries
- Decrease of 54% from 2015 SHSP

Who Was Involved?

Male drivers account for 70% of the younger driver fatalities and serious injuries.



Who was Involved 1

Where did Crashes Occur 2

When did Crashes Occur 2

Contributing Factors 3

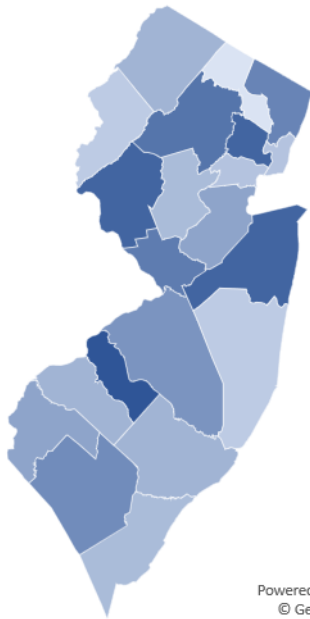
Crash Types / Conditions 3

Strategies 4

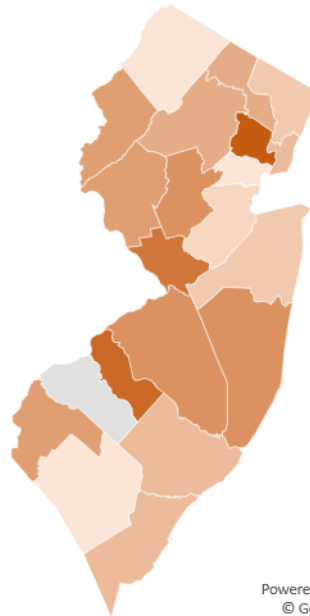
Where Did Crashes Occur?

Serious Injury 3 21

Fatality 1 11



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FSI by County (top) and MPO (bottom)

MPO	Fatality	Serious Injury
DVRPC	26 25%	59 24%
NJTPA	61 60%	146 59%
SJTPO	15 15%	42 17%

Fifty-nine percent (59%) of younger driver fatalities and serious injuries occurred in the NJTPA

FSI by Roadway Type

Roadway	Rural	Urban
Interstate	2 1%	17 5%
State	16 5%	82 23%
County	23 7%	85 24%
City	0 0%	25 7%
Other	0 0%	0 0%
Total	41	209

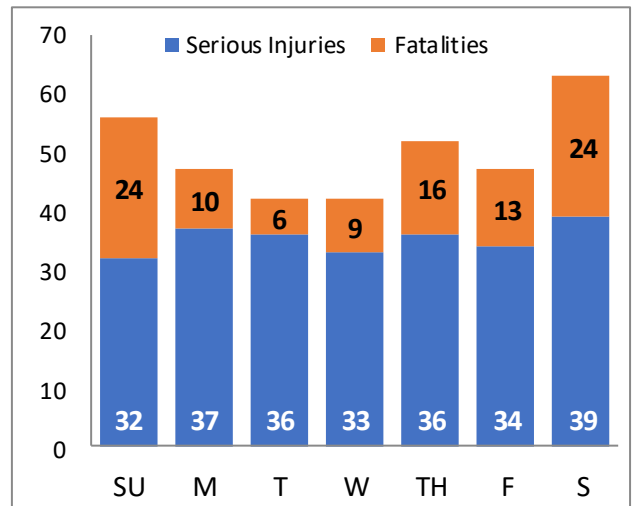
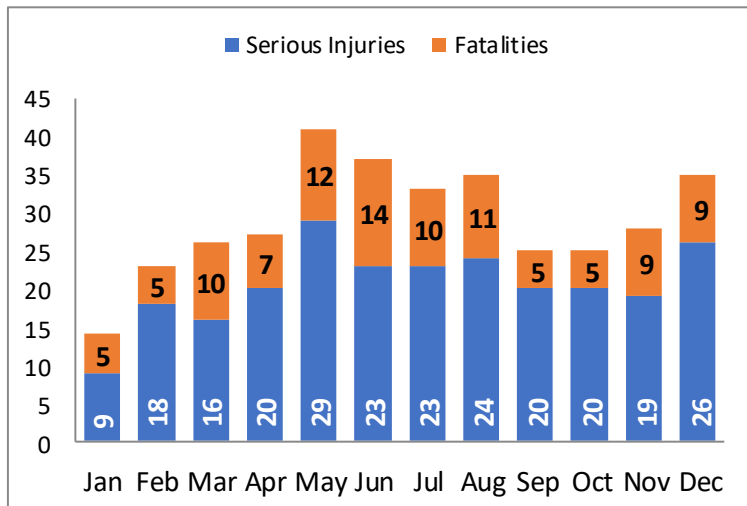
28% FSI - Unknown Roadway Type

FSI by Functional Class

Functional Class	<=25 mph	30-45mph	45+ mph
Interstate	0	1	18
Freeways	1	0	24
Principal Arterial	3	39	34
Minor Arterial	8	33	17
Major Collector	10	26	13
Minor Collector	0	3	1
Local	3	6	6
Other	41	38	13

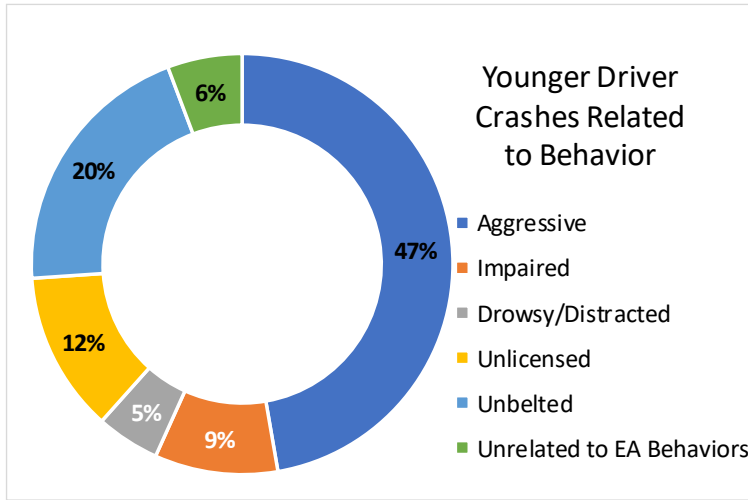
When Did Crashes Occur?

Both fatalities and serious injuries occurred mostly during the weekend. Most Fatalities and Serious Injuries happened primarily in the months of May through August and in December.



Contributing Factors

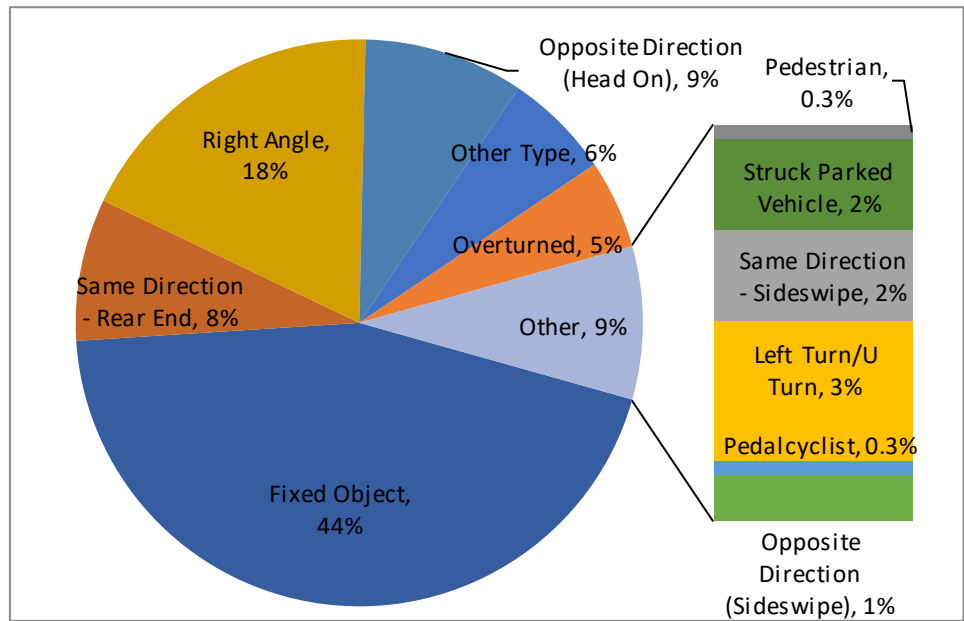
Relationship to Other SHSP Emphasis Areas



Approximately 28% of younger driver crashes occurred at intersections. In addition, about 8% of younger drivers were involved in lane departure crashes.

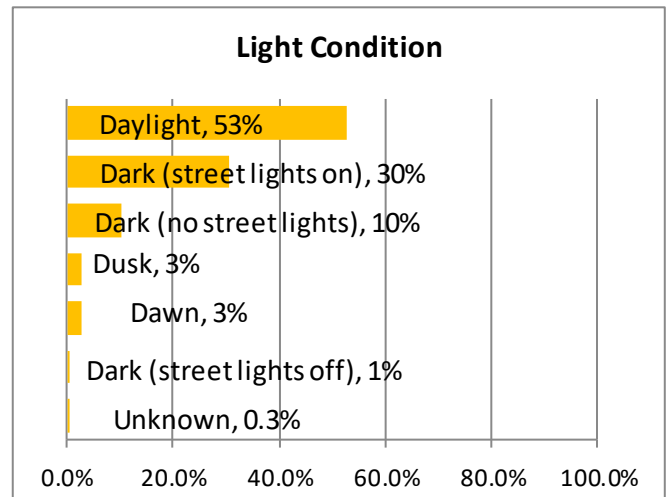
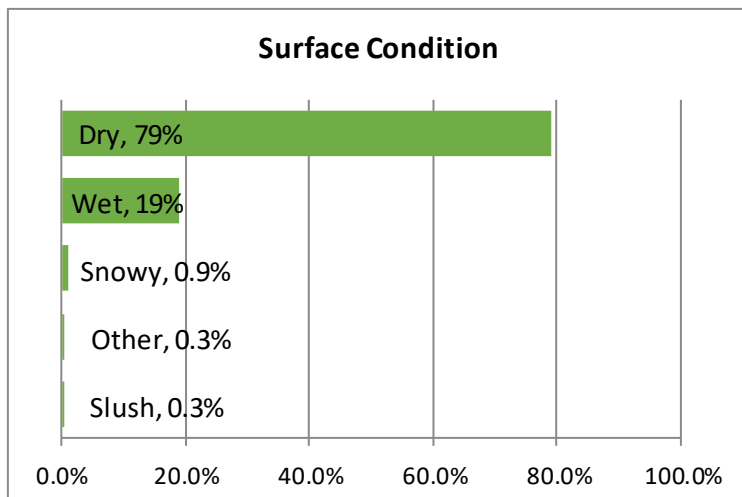
Crash Type

Younger driver fatalities and serious injuries resulted in fixed object crashes as the top crash type. Right angle crashes accounted for 18% of the total. Less than 1% involved pedestrians or pedalcyclists.



Surface and Light Conditions

Younger driver fatalities and serious injuries mainly occurred during the day and on dry pavement conditions.



Strategies

The NJ 2015 SHSP identified several strategies that have the greatest potential to reduce younger driver fatalities and serious injuries.

Strengthen GDL Safety Provisions

- Require the learner's permit supervised-driving phase to be 12 months long.
- For probationary GDL drivers, implement nighttime driving restriction beginning at 10:01 pm.
- For probationary GDL drivers, require 50 hours of supervised driving.
- Ensure GDL violations and resulting license suspensions and GDL postponements are systematically captured and administratively enforced.
- Conduct education and public awareness campaigns on the risks and consequences of distracted driving.

Publicize, Enforce, and Adjudicate Young Driver Safety Laws

- Strengthen enforcement of and supporting media outreach for GDL, zero-tolerance underage drinking and driving and seat-belt-use laws.

Strengthen Parental Engagement and Monitoring of Teen Drivers

- Require parent/teen driver orientation as a condition for learner's permit.
- Partner with school and community driver education providers to increase parent participation and engagement in teen safe driving programs.

Overview of the Younger Drivers Crash Query

- NJDOT Crash Records Database (100% of records)
- Position In/On Vehicle noted in NJTR-1 as Driver
- Driver Age noted in the NJTR-1 as 16—20 years

- Promote peer-to-peer outreach programs that address social norms/shared behaviors and infrastructure safety.

Improve Young Driver Training and Education

- Dedicated and sustain funding for driver education through the GDL-mandated Drivers Education Fund.
- Designate lead agency to ensure quality driver education and skills training.
- Provide continuing education and on-going professional development driver educators.
- Dedicated and sustain funding for driver education through the GDL mandated Drivers Education Fund.

Infrastructure: Reduce Severity of Run-Off-The-Road Events by Creating More-Forgiving Driving Environments

- Apply shoulder treatments:
 - ◊ Eliminate shoulder drop-offs ★
 - ◊ Safety edge ★
 - ◊ Widen and/or pave shoulders
- Remove/relocate objects in hazardous locations.
- Install centerline / edge line rumble strips. ★
- Improve safety design of roadside hardware (such as breakaway poles for traffic signs).

Additional Considerations

Employ School-Based Strategies

- Eliminate early high school start times.
- Review transportation plans for new/expanded high school sites.

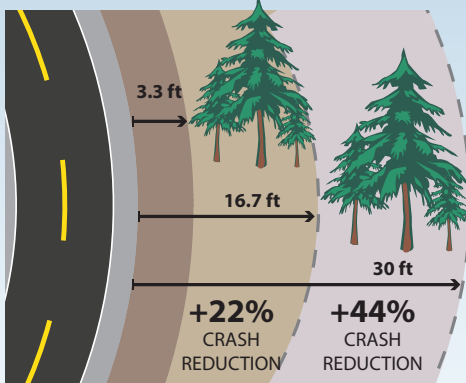
★ *FHWA Proven Safety Countermeasure*

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Roadside Design Improvements at Curves

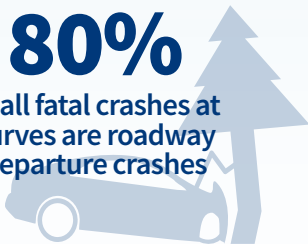
Increasing the Clear Zone prevents crashes



Source: Leidos. Data Source: CMF Clearinghouse (CMF IDs 35 and 36)

27%
of all fatal crashes occur at curves

80%
of all fatal crashes at curves are roadway departure crashes



Source: Fatality Analysis Reporting System (FARS)

Roadside design improvement at curves is a strategy encompassing several treatments that target the high-risk roadside environment along the outside of horizontal curves. These treatments prevent roadway departure fatalities by giving vehicles the opportunity to recover safely and by reducing crash severity.

Roadside design improvements can be implemented alone or in combination and are particularly recommended at horizontal curves—where data indicates a higher-risk for roadway departure fatalities—and where cost effectiveness can be maximized.

Roadside Design Improvements to Provide for a Safe Recovery

In cases where a vehicle leaves the roadway, strategic roadside design elements, including clear zone addition or widening, slope flattening, and shoulder addition or widening, can provide drivers with an opportunity to regain control and re-enter the roadway.

- A **clear zone** is an unobstructed, traversable area beyond the edge of the through traveled way for the recovery of errant vehicles. Clear zones are free of rigid fixed objects such as trees and utility cabinets or poles. AASHTO's *Roadside Design Guide* details the clear zone width adjustment factors to be applied at horizontal curves.
- **Slope flattening** reduces the steepness of the sideslope to increase drivers' ability to keep the vehicle stable, regain control of the vehicle, and avoid obstacles.
- **Adding or widening shoulders** gives drivers more recovery area to regain control in the event of a roadway departure.

Roadside Design Improvements to Reduce Crash Severity

Since not all roadside hazards can be removed at curves, installing roadside barriers to shield unmovable objects or embankments may be an appropriate treatment. Roadside barriers come in three forms:

- **Cable barrier** is a flexible barrier made from wire rope supported between frangible posts.
- **Guardrail** is a semi-rigid barrier, usually either a steel box beam or W-beam. These deflect less than flexible barriers, so they can be located closer to objects where space is limited.
- **Concrete barrier** is a rigid barrier that does not deflect. These are typically reserved for use on divided roadways.



Shoulder is provided along roadway curve.

Source: Alaska DOT

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>.





Longitudinal Rumble Strips and Stripes

SAFETY BENEFITS:



CENTER LINE RUMBLE STRIPS

44-64%

Head-on, opposite-direction,
and sideswipe fatal and
injury crashes

SHOULDER RUMBLE STRIPS

13-51%

Single vehicle, run-off-road
fatal and injury crashes



Source: NCHRP Report 641, *Guidance for the Design and Application of Shoulder and Centerline Rumble Strips.*



Shoulder rumble strips and center line rumble strips are installed on this roadway.

Source: FHWA

Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway.

Rumble stripes are edge line or center line rumble strips where the pavement marking is placed over the rumble strip, which can result in an increased visibility of the pavement marking during wet, nighttime conditions.

With roadway departure crashes accounting for more than half of the fatal roadway crashes annually in the United States, rumble strips and stripes are designed to address these crashes caused by distracted, drowsy, or otherwise inattentive drivers who drift from their lane. They are most effective when deployed in a systemic application since driver error may occur on all roads.



Example of an edge line rumble stripe.

Source: Missouri DOT

Transportation agencies should consider milled center line rumble strips (including in passing zone areas) and milled edge line or shoulder rumble strips with bicycle gaps for systemic safety projects, location-specific corridor safety improvements, as well as reconstruction or resurfacing projects.

→ For more information on this and other FHWA Proven Safety Countermeasures, please visit <https://safety.fhwa.dot.gov/provencountermeasures>.



Safe Roads for a Safer Future
Investment in roadway safety saves lives



SafetyEdge_{SM}



Example of SafetyEdge_{SM} after backfill material settles or erodes.

Source: FHWA

SAFETY BENEFIT:

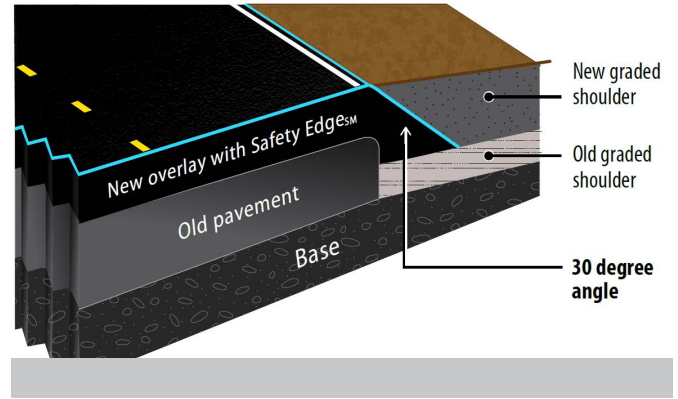
11%

Reduction in fatal and injury crashes



Source: Safety Effects of the SafetyEdge_{SM}, FHWA-SA-17-044.

SafetyEdge_{SM} technology shapes the edge of the pavement at approximately 30 degrees from the pavement cross slope during the paving process. This systemic safety treatment eliminates the vertical drop-off at the pavement edge, allowing drifting vehicles to return to the pavement safely. It has minimal effect on asphalt pavement project cost with the potential to improve pavement life.



Source: FHWA-SA-17-044

Vehicles may leave the roadway for various reasons, ranging from distracted driver errors to low visibility, or to the presence of an animal on the road. Exposed vertical pavement edges can cause vehicles to be unstable and prevent their safe return to the roadway. SafetyEdge_{SM} gives drivers the opportunity to return to the roadway while maintaining control of their vehicles.

For both SafetyEdge_{SM} and traditional edge, agencies should bring the adjacent shoulder or slope flush with the top of the pavement. Since over time the edge may become exposed due to settling, erosion, and tire wear, the gentle slope provided by SafetyEdge_{SM} is preferred versus the traditional vertical pavement edge.

Transportation agencies should develop standards for implementing SafetyEdge_{SM} on all new asphalt paving and resurfacing projects where curbs are not present, while encouraging standard application for concrete pavements.

SafetyEdge_{SM} adds nominal cost to repaving a road.

Rural road crashes involving edge drop-offs are

Calculated benefit-cost ratios typically range between

500 to 1400

2 to 4 times

more likely to include a fatality than other crashes on similar roads.

Source: Safety Effects of the SafetyEdge_{SM}, FHWA-SA-17-044.

Source: S.L. Hallmark, et al., Safety Impacts of Pavement Edge Drop-offs, (Washington, DC: AAA Foundation for Traffic Safety: 2006), p 93.

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Motorcycle Crash Data Sheet

Summit #2

January 21, 2020

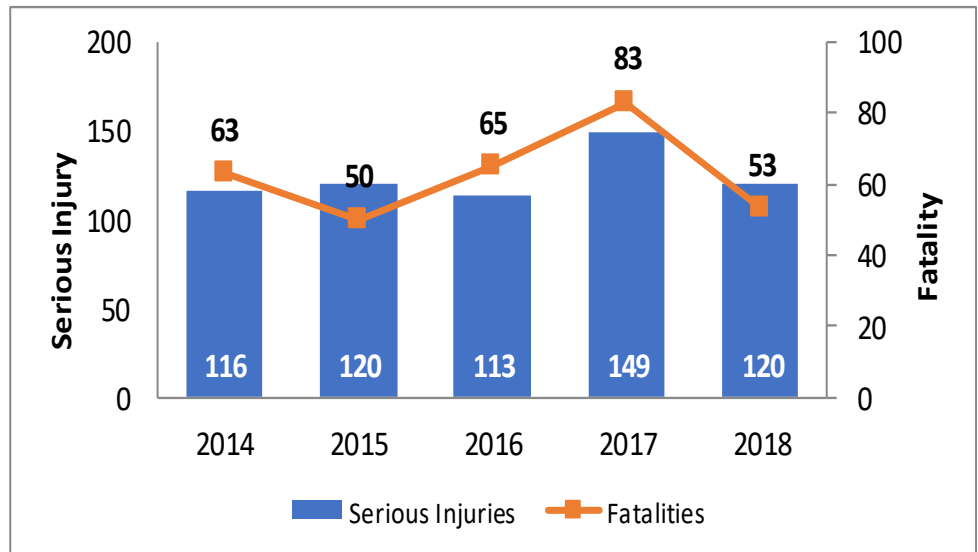


Motorcycle Crash Quick Facts

- Accounts for 12% of all NJ fatalities and serious injuries.
- Data from 2014-2018
- 314 fatalities
- Decrease of 18% from 2015 SHSP
- 618 serious injuries
- Decrease of 36% from 2015 SHSP

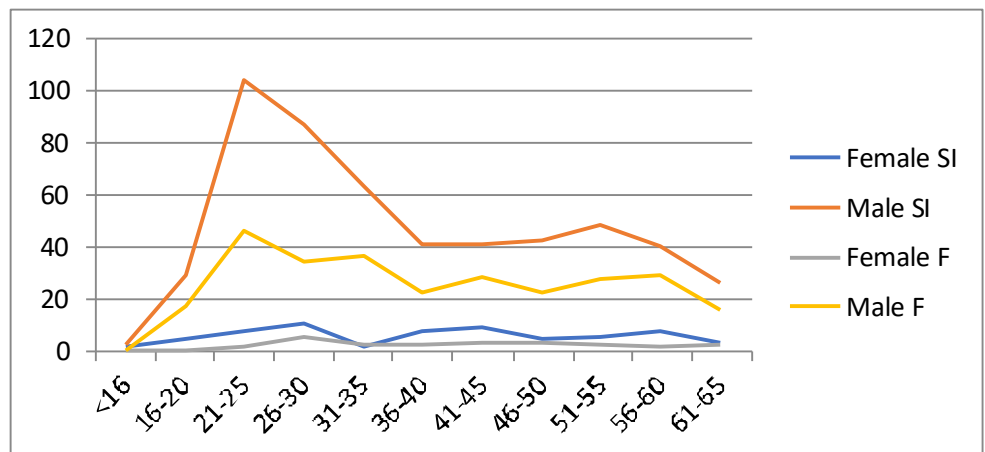
Summary

This fact sheet provides many details of motorcyclist fatalities and serious injuries (FSI). It also provides suggested strategies to reduce fatalities and serious injuries in NJ.



Who Was Involved?

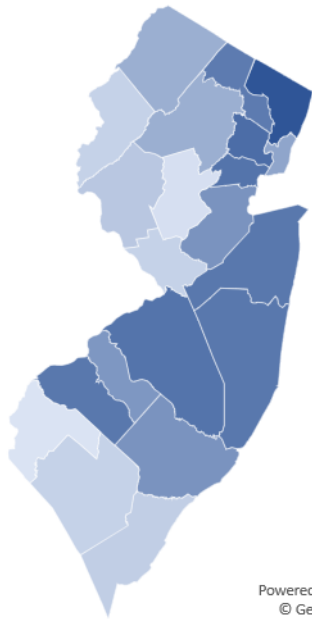
Male motorcyclists aged 21-25 years old are involved in the most motorcycle fatalities and serious injuries. The most serious injuries for female drivers is in the 26-30 age range.



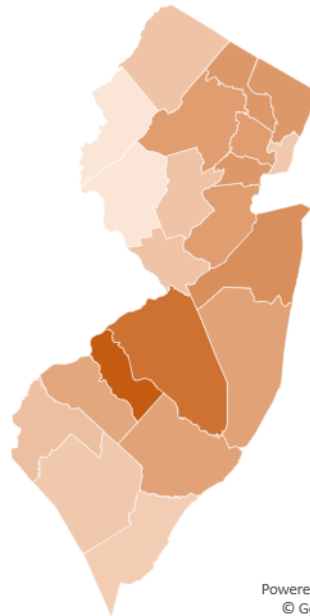
Who was Involved	1
Where did Crashes Occur	2
When did Crashes Occur	2
Contributing Factors	3
Crash Types / Conditions	3
Strategies	4
Strategies	5

Motorcycle

Where Did Crashes Occur?



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Sixty-four percent (64%) of motorcycle fatalities and serious injuries occurred in the NJTPA region.

FSI by Roadway Type

Roadway	Rural		Urban	
Interstate	3	0%	45	5%
State	27	3%	266	29%
County	53	6%	264	28%
City	4	0%	63	7%
Other	0	0%	0	0%
Total	87		638	

22% FSI - Unknown Roadway Type

FSI by Functional Class

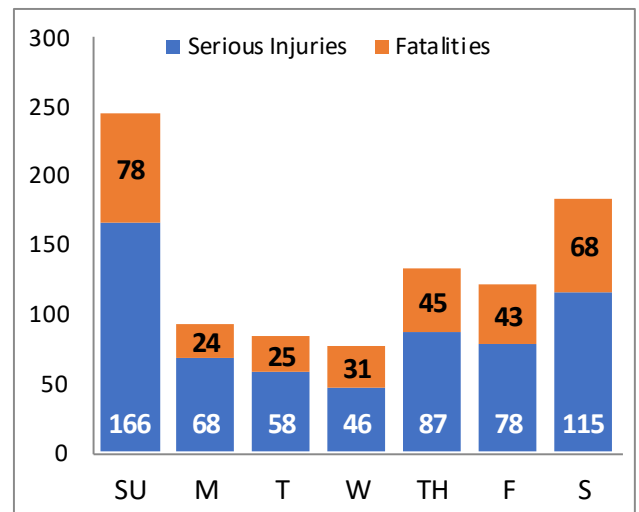
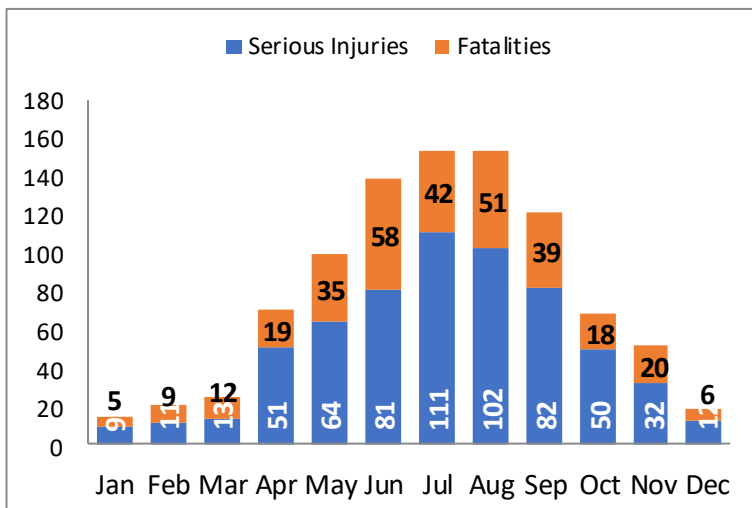
Functional Class	<=25 mph	30-45mph	45+ mph
Interstate	0	3	52
Freeways	1	7	31
Principal Arterial	30	119	95
Minor Arterial	45	125	42
Major Collector	25	57	28
Minor Collector	1	8	1
Local	12	6	9
Other	96	71	27

FSI by County (top) and MPO (bottom)

MPO	Fatality		Serious Injury	
DVRPC	85	27%	130	21%
NJTPA	184	59%	414	67%
SJTPO	45	14%	74	12%

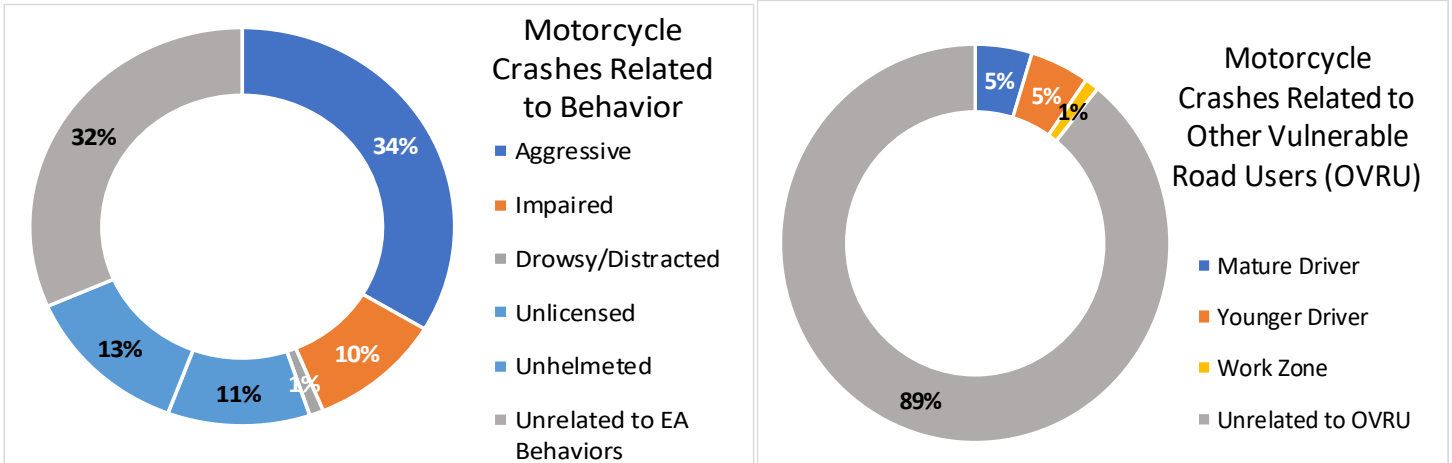
When Did Crashes Occur?

Both fatalities and serious injuries occurred mostly on weekends and during non-winter months (April-October).



Contributing Factors

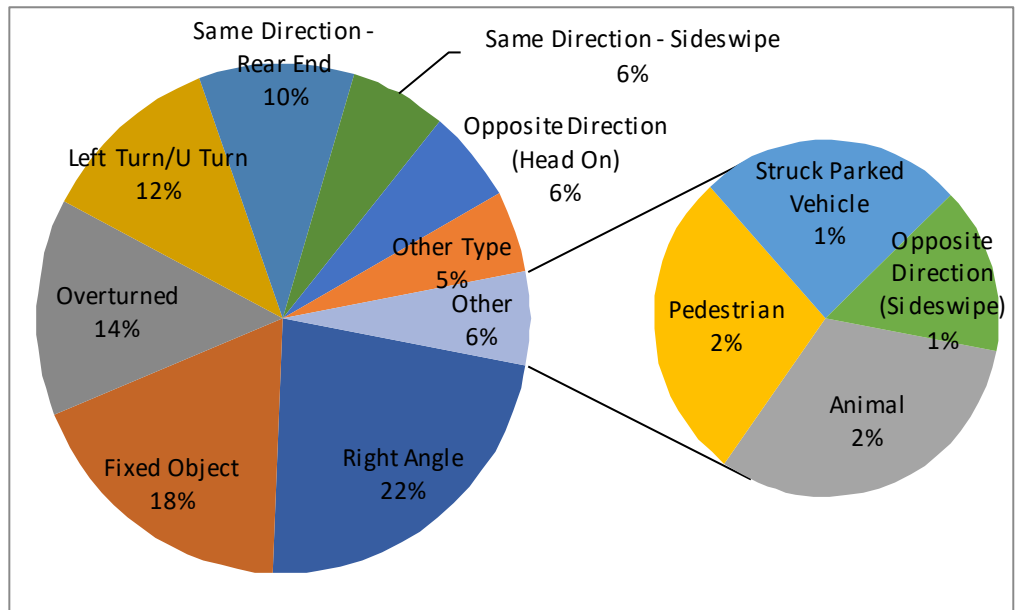
Relationship to Other SHSP Emphasis Areas



Approximately 37% of motorcycle crashes occurred at intersections and 8% were lane departure.

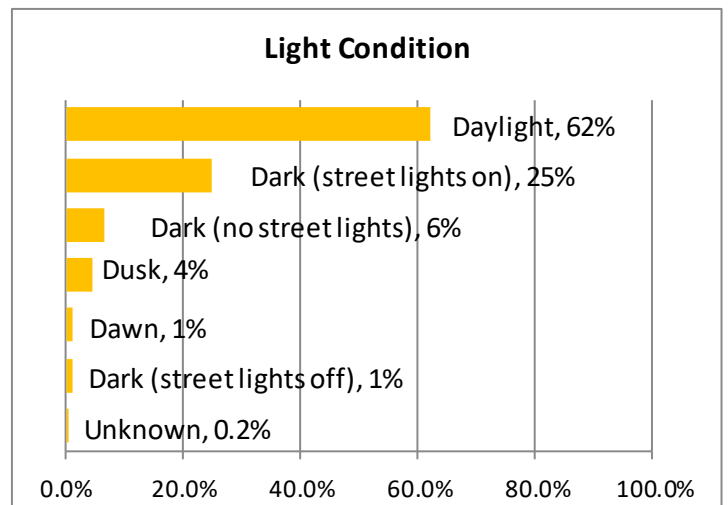
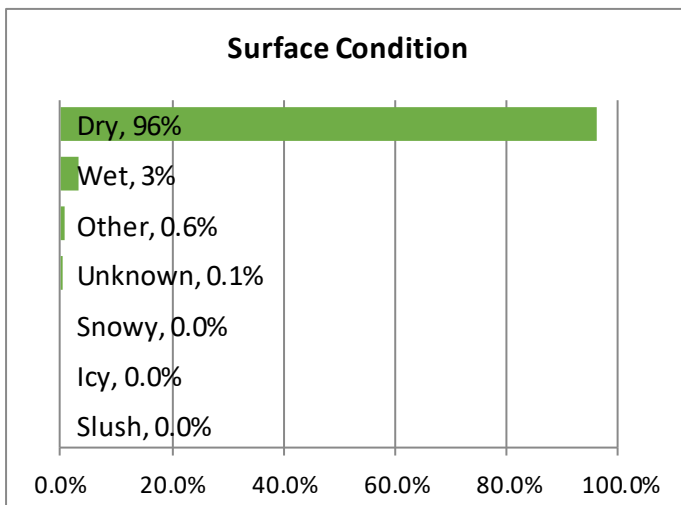
Crash Type

Motorcyclist fatalities and serious injuries resulted in right angle and fixed object crashes as the top crash types. Pedestrian crashes accounted for 2% of the total.



Surface and Light Conditions

Motorcyclist fatalities and serious injuries mainly occurred during the day and on dry pavement conditions.



Strategies

The NJ 2015 SHSP identified several strategies that have the greatest potential to reduce mature driving fatalities and serious injuries. Other strategies are noted.

Incorporate Motorcycle-Friendly Roadway Design, Traffic Control, Construction, and Maintenance Policies and Practice

- Provide full paved shoulders to accommodate roadside motorcycle recovery and breakdowns.
- Training for highway engineers and maintenance personnel relating to motorcycle issues and incorporate motorcycle safety considerations into routine roadway inspections, design, and construction projects.

Education and Outreach

- 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.
- 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.
- 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 motorcycle rides and related events.
- Provide a media education campaign to increase the awareness of other drivers' toward

Overview of the Motorcycle Crash Query

- NJDOT Crash Records Database (100% of records)
- Vehicle type noted in NJTR-1 as Motorcycle

motorcycle riders.

- Promote the importance of beginner and advanced motorcycle rider training.
- Improve first responder training in the handling of motorcycle crashes.

Additional Considerations

Reduce the number of motorcycle crashes due to impaired, unlicensed or untrained motorcyclists

- Increase motorcyclist awareness of the risks of impaired motorcycle operation.
- Expand existing impairment prevention programs to include motorcycle riders and specific motorcycle events.
- Increase awareness of the causes of crashes due to unlicensed or untrained motorcycle riders.
- Ensure that licensing and rider training programs adequately teach and measure skills and behaviors required for crash avoidance.

Increase the visibility of motorcyclists

- Increase the awareness of the benefit of high-visibility motorcyclists clothing
- Identify and promote rider visibility-enhancement methods and technology

Reduce the severity of motorcycle crashes

- Increase the use of FMVSS 218 compliant helmets
- Increase the use of protective clothing

Disclaimer: The 2020 SHSP data is based upon a programmatic analysis of statewide data supplied by third party sources. Because of limitations in the data supplied and the method used to develop the charts contained in this fact sheet, users should be aware that data may be incorrect and/or incomplete. NJDOT makes no guarantees as to the accuracy, completeness, or content of the information. Data is subject to update as more information becomes available. NJDOT, its officers, employees or agents shall not be liable for damages or losses of any kind arising out of or in connection with the use or performance of information, including but not limited to, damages or losses caused by reliance upon the accuracy or timeliness of any such information, or damages incurred from the viewing, distributing, or copying of these materials. The materials and information provided herein are provided "as is." No warranty of any kind, implied, expressed, or statutory, including but not limited to the warranties of non-infringement of third-party rights, title, merchantability, and fitness for a particular purpose, is given with respect to the contents of this fact sheet.

Work Zone Crash Data Sheet

Summit #2

January 21, 2020

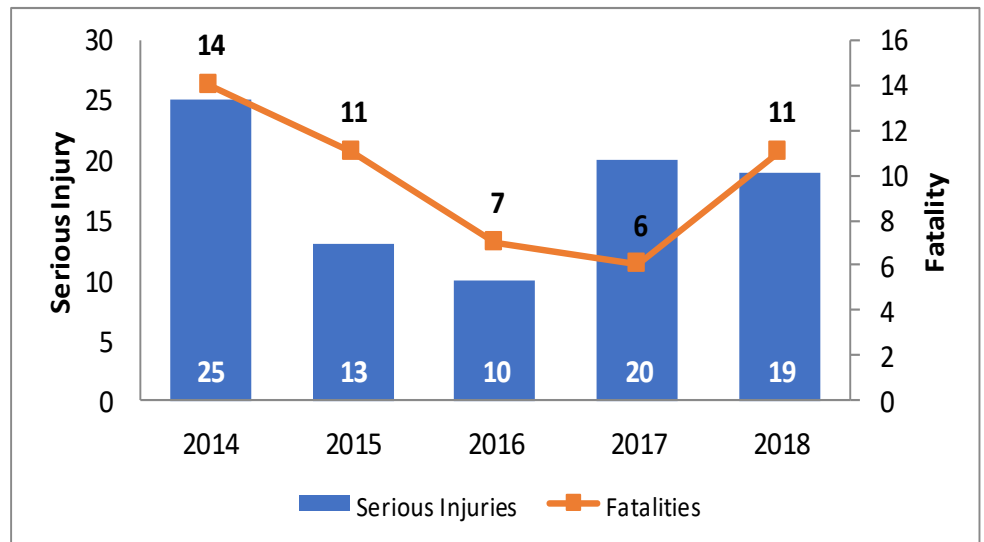


Work Zone Crash Quick Facts

- Accounts for 2% of all NJ fatalities and serious injuries.
- Data from 2014-2018
- 49 fatalities
- Decrease of 15% from 2015 SHSP
- 87 serious injuries
- Decrease of 11% from 2015 SHSP

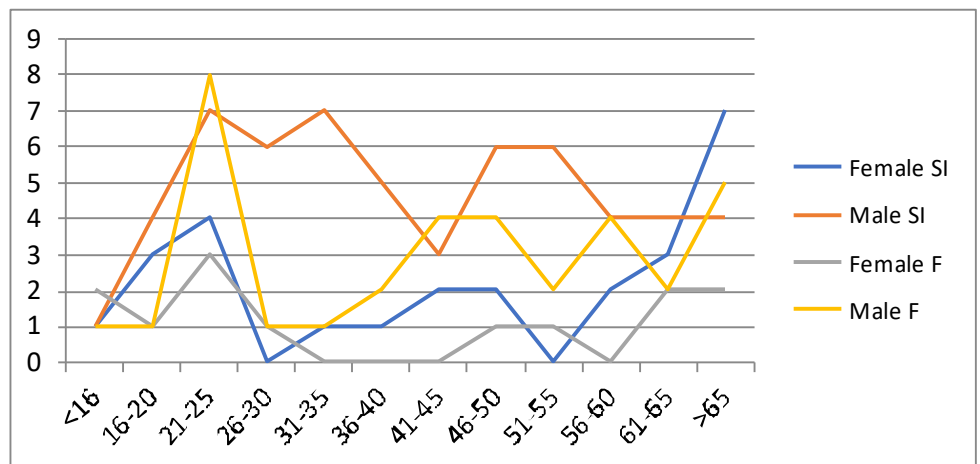
Summary

This fact sheet provides many details of work zone crash fatalities and serious injuries (FSI). It also provides suggested strategies to reduce fatalities and serious injuries in NJ.



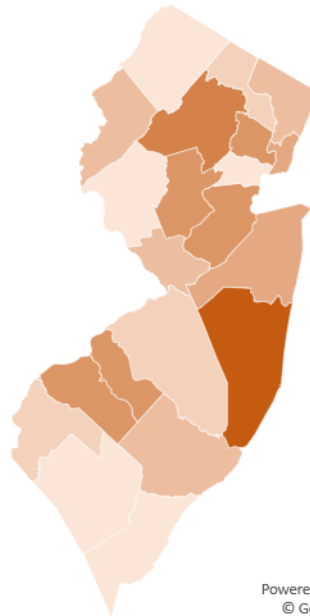
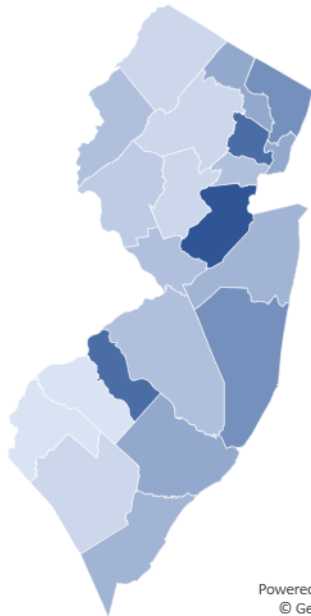
Who Was Involved?

Males aged 21-25 years old are involved in the most work zone fatalities and serious injuries. Females aged 65 years or older have most serious injuries in the work zones.



- Who was Involved **1**
- Where did Crashes Occur **2**
- When did Crashes Occur **2**
- Contributing Factors **3**
- Crash Types / Conditions **3**
- Strategies **4**

Where Did Crashes Occur?



FSI by County (top) and MPO (bottom)

MPO	Fatality	Serious Injury
DVRPC	11 22%	16 18%
NJTPA	35 71%	61 70%
SJTPO	3 6%	10 11%

Seventy-one percent (71%) of work zone fatalities and serious injuries occurred in the NJTPA region.

FSI by Roadway Type

Roadway	Rural	Urban
Interstate	1 1%	15 11%
State	3 2%	61 45%
County	1 1%	21 15%
City	0 0%	7 5%
Other	0 0%	0 0%
Total	5	104

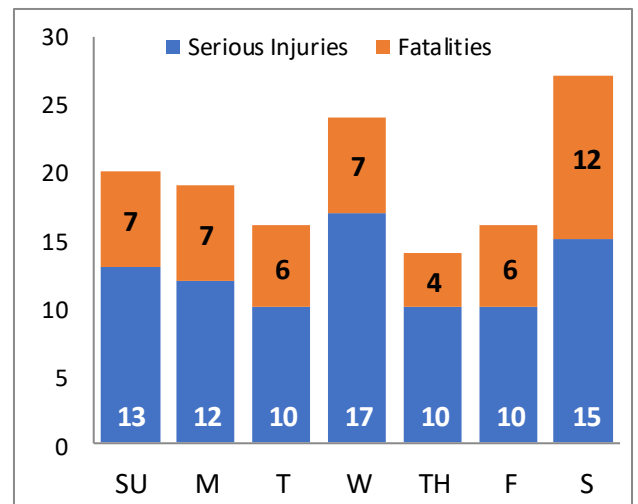
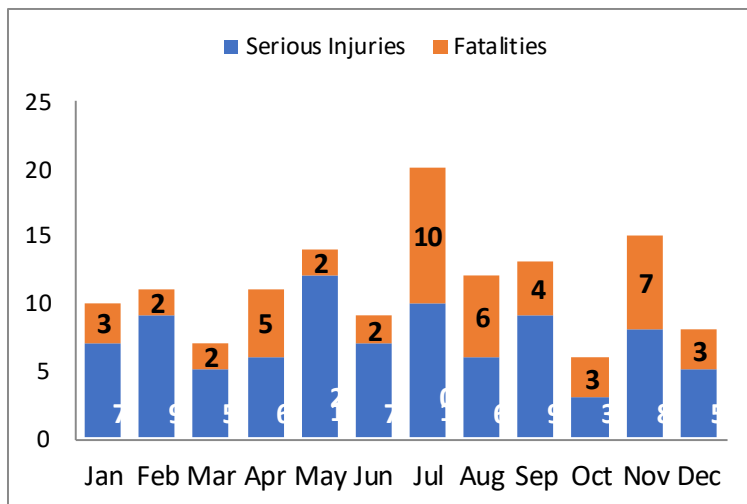
20% FSI - Unknown Roadway Type

FSI by Functional Class

Functional Class	<=25 mph	30-45mph	45+ mph
Interstate	0	5	20
Freeways	0	21	9
Principal Arterial	1	14	11
Minor Arterial	7	9	1
Major Collector	4	2	1
Minor Collector	0	0	0
Local	0	0	0
Other	10	4	4

When Did Crashes Occur?

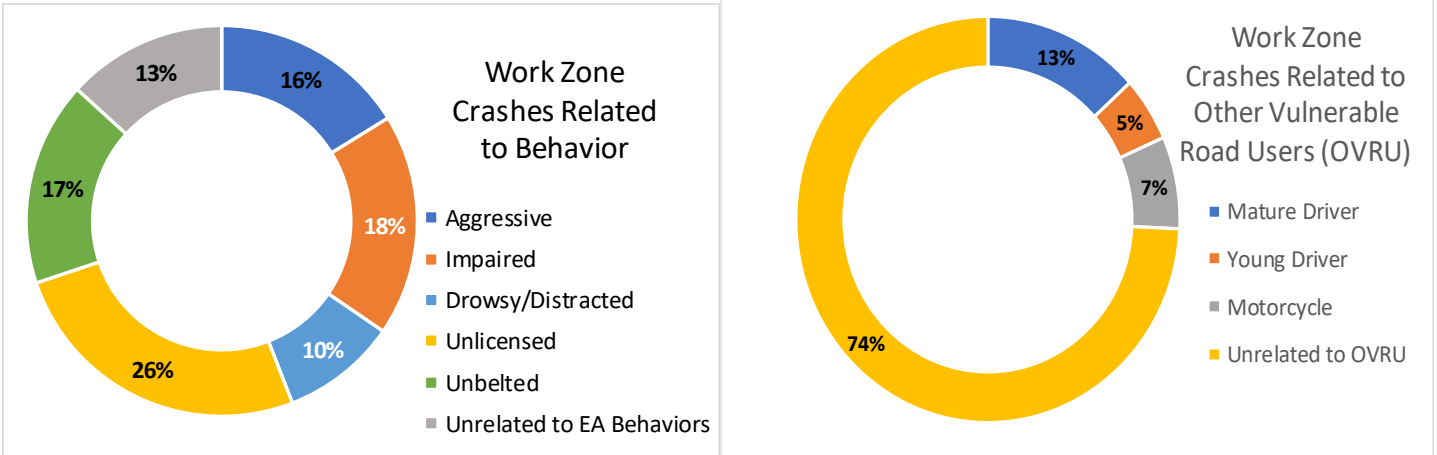
Both work zone fatalities and serious injuries occurred mostly on Wednesdays and Saturdays. Fatalities happened primarily in the summer months of May and July and serious injuries had an increase in November.



Contributing Factors

Work Zone

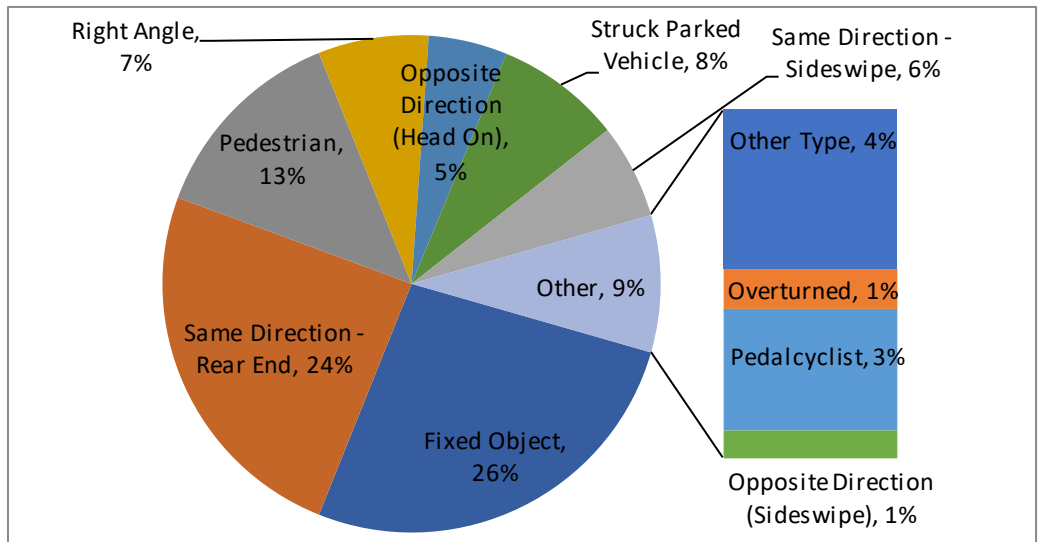
Relationship to Other SHSP Emphasis Areas



Approximately 14% of work zone crashes occurred at intersections.

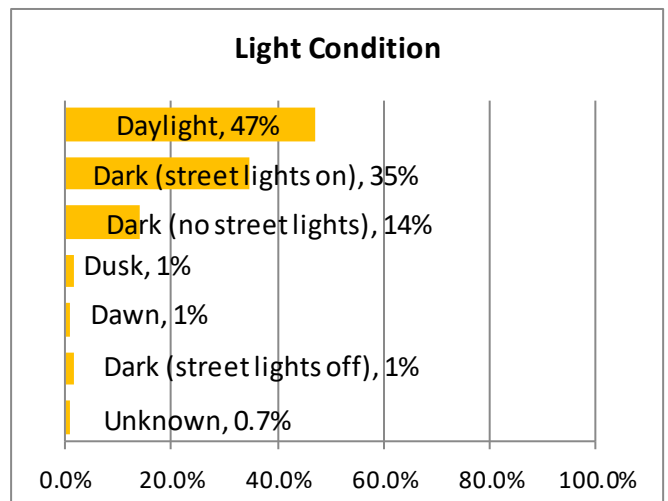
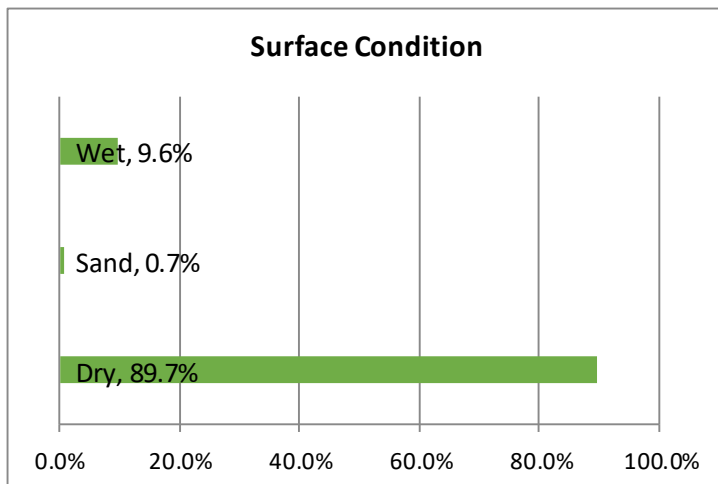
Crash Type

Work zone fatalities and serious injuries resulted in fixed object crashes as the top crash types. Pedestrian/bicyclist crashes accounted for 16% of the total.



Surface and Light Conditions

Work zone fatalities and serious injuries mainly occurred during the day and on dry pavement conditions.



Strategies

The NJ 2015 SHSP did not identify strategies to implement for work zone safety, but did provide examples. Additional strategies from NCHRP* Report 500, Volume 17, are summarized below.

Provide work zone training

- Provide work zone training to law enforcement, municipal and public works/engineering personnel.
- Ensure proper set-up of a work zone by public work employees, utility workers and police officers to clearly identify proper travel lane.

Continue to conduct work zone training and participate in public awareness initiatives.

- Continued participation in the national observance of Work Zone Safety Awareness Week.
- Host conferences for a multidisciplinary audience of construction, maintenance and operations, engineering, and public safety personnel. Distribute pertinent safety materials and offer assistance and resources to attendees.

Additional Considerations

Reduce the number, duration and impact of work zones

- Improve maintenance and construction practices.
- Utilize time-related contract provisions.
- Use nighttime road work.
- Use demand management programs to reduce volumes through work zones.
- Design future work zone capacity into new or reconstructed highways.

Overview of the Work Zone Crash Query

- NJDOT Crash Records Database (100% of records)
- Temporary Traffic Control Zone noted in NJTR-1 as Construction, Maintenance, or Utility Zone

Improve work zone traffic control devices

- Implement ITS strategies to improve safety.
- Improve visibility of work zone traffic control devices, work zone personnel and vehicles.
- Reduce flaggers' exposure to traffic.

Improve work zone design practices

- Establish work zone design guidance.
- Implement measures to reduce work space intrusions (and limit consequences of intrusions).
- Improve work zone safety for pedestrians, bicyclists, motorcyclists, and heavy-truck drivers.

Improve driver compliance with work zone traffic controls

- Enhance enforcement of traffic laws and increase driver penalties in work zones.
- Improve credibility of signs.

Increase knowledge and awareness of work zones

- Disseminate work zone safety information to road users.
- Provide work zone training programs and manuals for designers and field staff.

Develop procedures to effectively manage work zones

- Develop or enhance agency-level work zone crash data systems.
- Improve coordination, planning, and scheduling of work activities.
- Use incentives to create and operate safer work zones.
- Implement work zone quality assurance procedures (i.e., safety inspections or audits).

* National Cooperative Highway Research Program

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