ARIZONA STRATEGIC TRAFFIC SAFETY PLAN

2019

OCTOBER 1, 2019

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STATE OF ARIZONA
OFFICE OF THE GOVERNOR

DOUGLAS A. DUCEY
GOVERNOR

EXECUTIVE OFFICE

Nearly every Arizonan relies upon our state's transportation system each day to go to work and school, visit friends and family, and travel to the many natural wonders that Arizona has to offer. Travelers have one expectation on each of these trips: to return safely home.

Transportation safety is a top priority. This year Arizona passed distracted driving legislation that prohibits hand-held mobile device use while driving, increased the number of state troopers patrolling our highways at the hours when impaired driving is most common, and continued to test a first of its kind thermal detection pilot project to intercept wrong way drivers.

This 2019 Arizona Strategic Traffic Safety Plan (STSP) builds on this work and identifies strategies and countermeasures to reduce serious injuries and deaths from motor vehicle crashes on all public roads. The plan highlights five emphasis areas that will direct state and local efforts to improve transportation safety. The emphasis areas include behavior-related causes including impaired driving, which is involved in 33% of traffic fatalities, improving safety at intersections, which account for 28% of all traffic fatalities, as well as strategies to curb pedestrian accidents, which account for 22% of traffic fatalities in Arizona.

A comprehensive strategy is only possible with collaboration and execution from a diverse set of experts. This plan is the result of work between hundreds of people across Arizona's coordinating agencies, as well as federal, regional, state, local, academic, and tribal partners. I sincerely thank the Arizona Department of Transportation, the Governor's Office of Highway Safety, the Arizona Department of Public Safety, the Arizona Department of Health Services, and all partners for their work on this report and their commitment to ensuring that all travelers return safely home.

Sincerely,

Douglas A. Ducey
Governor
State of Arizona

STSP ENDORSEMENT

As part of the Arizona 2019 Strategic Traffic Safety Plan (STSP) update process, the Executive Committee serves in a leadership capacity for developing, promoting and implementing cost-effective traffic safety strategies within the state to reduce the number and severity of crashes on all of Arizona's public roadways. This STSP was developed through a data-driven, collaborative approach involving Arizona's safety stakeholders. The STSP represents the state safety goal statement and identifies the Emphasis Areas that will be the focus in order to achieve the state's goal. The STSP is an overarching and strategic statewide safety document that will guide the existing safety planning and programming processes; it will facilitate implementation of recommended safety strategies and action steps (countermeasures) through existing plans and programs; and it will modify current planning processes over time to adopt and institutionalize a change in Arizona's traffic safety culture.

2019 STSP EXECUTIVE COMMITTEE MEMBERS:

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WE, ON BEHALF OF THE STATE AGENCY MEMBERS OF THE ARIZONA STRATEGIC TRAFFIC SAFETY PLAN EXECUTIVE COMMITTEE, APPROVE THIS STSP.

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IN COORDINATION WITH THE FOLLOWING STATE AND FEDERAL TRANSPORTATION SAFETY AGENCIES:

- Arizona Department of Liquor Licenses and Control
- Federal Highway Administration
- Federal Motor Carrier Safety Administration
- National Highway Traffic Safety Administration

ACKNOWLEDGMENTS

THIS REPORT IS THE RESULT OF THE COMBINED EFFORTS OF EIGHT EXECUTIVE COMMITTEE AGENCIES:

The update and implementation of the Arizona Strategic Traffic Safety Plan would not be possible without the hard work and commitment of the Executive Committee, their support team, and Emphasis Area Team Leaders who have dedicated significant amounts of time and effort toward the development of the STSP and reducing fatalities on Arizona's roadways. Their dedication and desire to improve traffic safety in Arizona is sincerely appreciated.

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WE ALSO EXPRESS OUR APPRECIATION TO THE MANY OTHER STRATEGIC TRAFFIC SAFETY PLAN EMPHASIS AREA TEAM MEMBERS, EXTERNAL SAFETY STAKEHOLDERS AND PARTNERS WHO PARTICIPATED IN AND CONTRIBUTED TO THE STSP:

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- American Traffic Safety Services Association
- Apache County
- Arizona Chapter National Safety Council
- Arizona Department of Health Services
- Arizona Department of Public Safety
- Arizona Department of Liquor License and Control
- Arizona Department of Transportation
- Arizona Governor's Office of Highway Safety
- Arizona Motor Vehicle Division
- Arizona Motorcycle Safety and Awareness Foundation
- Arizona Professional Towing & Recovery Association
- Arizona State University
- Banner Desert/Cardon Children's Medical Center
- Banner Thunderbird Trauma Center
- Burgess & Niple
- Central Yavapai Metropolitan Planning Organization
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- City of El Mirage
- City of Eloy
- City of Glendale
- City of Goodyear
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- City of Surprise
- City of Tempe
- City of Tucson
- Colorado River Indian Tribes
- Driving MBA
- Federal Highway Administration
- Gila County
- Hopi Nation
- Indian Health Service
- Inter Tribal Council of Arizona
- J2 Design
- Lake Havasu Metropolitan Planning Organization
- Law Tigers
- Lee Engineering
- M.G. Tech-Writing, LLC
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- Maricopa County
- Mayo Clinic
- Mohave County
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- Navajo Nation, Tonalea Chapter
- Northern Arizona University
- Pima Association of Governments
- Pinal County
- Salt River Pima Maricopa Indian Community
- Sun Corridor Metropolitan Planning Organization
- T.Y. Lin International
- Tatum Group
- Tempe Bicycle Action Team
- Tohono O'odham Nation
- Town of Florence
- Town of Gilbert
- Town of Marana
- Town of Prescott Valley
- White Mountain Apache Tribe
- Y2K Engineering, LLC
- Yuma Metropolitan Planning Organization

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ACRONYMS, TERMS, AND DEFINITIONS

4 E's ..... *Engineering, Enforcement, Education, and Emergency Medical Services or Emergency Response; defines the broad categories of safety stakeholder communities with key roles and responsibility to reduce serious injuries and fatalities on public roads*

ADOT..... *Arizona Department of Transportation*

ALISS ..... *Accident Location Identification Surveillance System; database, maintained by ADOT, contains crash information entered on the standard Arizona Crash Report as reported by law enforcement agencies*

AMSAF ..... *American Motorcycle Safety Awareness Foundation*

ARIDE ..... *Advanced Roadside Impaired Driving Enforcement*

AzSTEP ..... *Arizona Safe Transportation for Every Pedestrian*

CAPP ..... *Children are Priceless Passengers*

COG..... *Council of Governments*

CVSP ..... *Commercial Vehicle Safety Plan*

DDSA..... *Data-driven safety analysis*

DITEP..... *Drug Impairment Training for Educational Professionals*

DOT ..... *Department of Transportation*

DRE ..... *Drug Recognition Expert*

DUI..... *Driving Under the Influence*

EDC ..... *Every Day Counts; a federal initiative to improve efficiency and safety*

EMS ..... *Emergency Medical Services; includes emergency responders and emergency medical facilities*

EMT ..... *Emergency Medical Technician*

FARS..... *Fatality Analysis Reporting System; a fatality is counted in FARS when it takes place within 30 days of injuries sustained in a collision*

FAST Act ..... *Fixing America's Surface Transportation Act; the current funding and authorization bill signed December 4, 2015, to govern United States federal surface transportation spending*

Fatality (K)..... *Any injury that results in death within a 30-day time period after the crash occurred.*

FFY..... *Federal Fiscal Year*

FHWA ..... *Federal Highway Administration*

GOHS..... *Governor's Office of Highway Safety*

HGN..... *Horizontal Gaze Nystagmus*

HRRR..... *High risk rural road; Roadways that are functionally classified as a Rural Major Collector, Rural Minor Collector or Rural Local Road with a rate for fatalities and/or serious injuries that exceeds the statewide average for those functional classifications of roadways, or are likely to experience an increase in traffic volume that leads to rates for fatalities and/or serious injuries that exceed the statewide average for those functional classifications of roadways*

HSIP..... *Highway Safety Improvement Program; federal-aid program to achieve a significant reduction in traffic fatalities and serious injuries; requires the development of a Strategic Highway Safety Plan (SHSP) by states*

HSP..... *Highway Safety Plan; produced annually by the GOHS to document top priority highway safety challenges and strategies to address them; submitted to and approved by the NHTSA for funding under the Federal 402 Program*

ICE ..... *Intersection Control Evaluation*

IHSDM..... *Interactive Highway Safety Design Model*

ITCA..... *Inter Tribal Council of Arizona*

KABCO injury severity scale ... *A measure of the functional injury level of the victim at the crash scene; K=fatal injury, A=suspected serious injury, B=suspected minor injury, C=possible injury, and O=no injury*

LPI..... *Leading Pedestrian Intervals*

LRTP..... *Long-Range Transportation Plan*

MAP-21..... *Moving Ahead for Progress in the 21st Century Act; the funding and authorization bill, passed in 2012, to govern United States federal surface transportation spending. This act established the performance-based planning standards carried forward into the FAST Act*

MIRE FDE..... *Model Inventory of Roadway Elements Fundamental Data Elements*

MPO..... *Metropolitan Planning Organization; required in all metropolitan areas with a population of 50,000 or more; MPOs conduct regional transportation and other planning activities and are required to develop the region's Metropolitan Transportation Safety Plan*

MVMT..... *Million Vehicle Miles Traveled*

MVT..... *Motor Vehicle Traffic*

NHTSA..... *National Highway Traffic Safety Administration*

PBT..... *Preliminary Breath Testing*

ACRONYMS, TERMS, AND DEFINITIONS (CONTINUED)

PHTLS . . . . . *Prehospital Trauma Life Support*

RDSIP. . . . . *Roadway Departure Safety Implementation Plan*

RSA. . . . . *Road Safety Assessments*

SAFETEA-LU . . . *Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users; federal transportation bill passed in 2005 mandating a state-developed SHSP*

SFST. . . . . *Standardized Field Sobriety Testing*

Suspected Serious Injury (A) . . . . . *Any injury other than a fatal which results in one or more of the following:*

- *Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood*
- *Broken or distorted extremity (arm or leg)*
- *Crush injuries*
- *Suspected skull, chest or abdominal injury other than bruises or minor lacerations*
- *Significant burns (second and third degree burns over 10% or more of the body)*
- *Unconsciousness when taken from the crash scene*
- *Paralysis*

SHS. . . . . *State Highway System*

SHSP . . . . . *Strategic Highway Safety Plan; see 'STSP'*

STSP. . . . . *Arizona Strategic Traffic Safety Plan; Strategic Highway Safety Plan (SHSP) required by federal legislation and developed by the State Department of Transportation in a cooperative process with local, state, federal, tribal, and private-sector safety stakeholders; a data-driven, multi-year comprehensive plan that establishes statewide goals, objectives and key Emphasis Areas and integrates the 4 E's of traffic safety*

TIM. . . . . *Traffic incident management*

TraCS . . . . . *Traffic and Criminal Software*

TRCC . . . . . *Traffic Records Coordinating Committee*

TSMO . . . . . *Transportation Systems Management and Operations*

TSP. . . . . *Transportation Safety Plan*

VMT. . . . . *Vehicle Miles Traveled*

TRANSPORTATION SAFETY RESOURCES

A. ARIZONA DEPARTMENT OF TRANSPORTATION

- Crash Facts website
- Transportation Safety website
- Traffic Incident Management website

B. GOVERNOR'S OFFICE OF HIGHWAY SAFETY

- Highway Safety Programs
- Impaired Driving Programs

C. ARIZONA DEPARTMENT OF PUBLIC SAFETY

- Safety website

D. ARIZONA DEPARTMENT OF HEALTH SERVICES

- EMS & trauma annual reports
- Arizona trauma programs website

E. INTER TRIBAL COUNCIL OF ARIZONA

- ITCA Injury Prevention website

F. NATIONAL HIGHWAY SAFETY RELATED ANNUAL OBSERVANCES

- See Appendix E

1. EXECUTIVE SUMMARY

WHAT IS A STRATEGIC TRAFFIC SAFETY PLAN?

A Strategic Traffic Safety Plan (STSP) is a statewide coordinated plan that provides a comprehensive framework for reducing fatalities and serious injuries on all public roads. The Arizona STSP is developed by the Arizona Department of Transportation (ADOT) in cooperation with local, regional, state, federal, tribal, non-profit, and private-sector safety stakeholders. The STSP is a data-driven, multi-year plan that establishes statewide goals and objectives and identifies Emphasis Areas that must be addressed to reduce traffic fatalities and serious injuries.

The plan outlines feasible strategies and actions or countermeasures to address Emphasis Areas through ***the integration of the "4 E's" of traffic safety:***
Engineering. . Enforcement. . Education. . Emergency Medical Services.

ARIZONA'S 2014 STRATEGIC HIGHWAY SAFETY PLAN

The previous statewide safety plan was the 2014 Arizona Strategic Highway Safety Plan (SHSP). The Plan identified 12 safety-related Emphasis and two Support Areas, and safety strategies for each Emphasis Area.

The 2014 SHSP established a long-term vision of "*Toward zero deaths by reducing crashes for a safer Arizona*" and a goal to "*Reduce fatalities and the occurrence and severity of serious injuries on all public roads in Arizona.*" The plan included an objective of reducing the total number of fatalities and serious injuries in Arizona by 3-7% over the five-year period, with a 2013 base year.

Since 2014, Arizona has experienced an increase in fatalities (K) and a decrease in serious injuries (A) resulting from crashes involving motor vehicles. As illustrated in **Table 1-1**, compared to the 2013 base year, total fatalities have increased by 19%[1]. Single-year fatalities and serious injuries are depicted in **Figure 1-1**. **Figure 1-2**, on the following page, shows fatal and serious injury crashes per 1 million vehicle miles traveled (VMT). This graph shows that fatal crashes have increased even when accounting for the growth in VMT in Arizona.

TABLE 1-1: FATALITIES AND SERIOUS INJURIES, 2009-2018[1]

YEAR	FATALITIES (K)	SUSPECTED SERIOUS INJURIES (A)
2009	806	4,827
2010	759	4,648
2011	827	4,598
2012	821	4,508
2013	849	4,329
2014	774	3,966
2015	897	4,213
2016	952	4,604
2017	998	4,194
2018	1,021	3,743

1 Number of fatalities as in ADOT ALISS database, July 18, 2019.

FIGURE 1-1: FATALITIES AND SERIOUS INJURIES, 2009-2018[1]

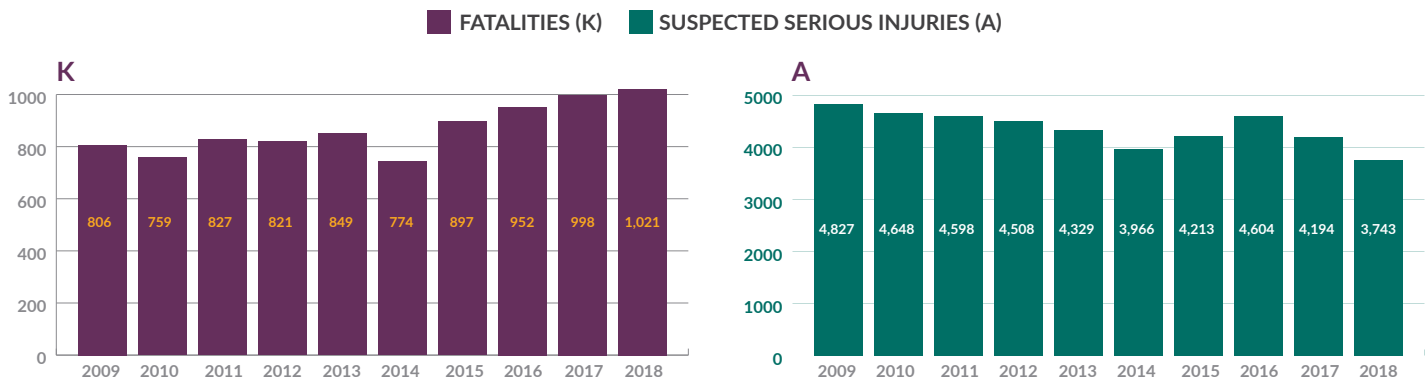
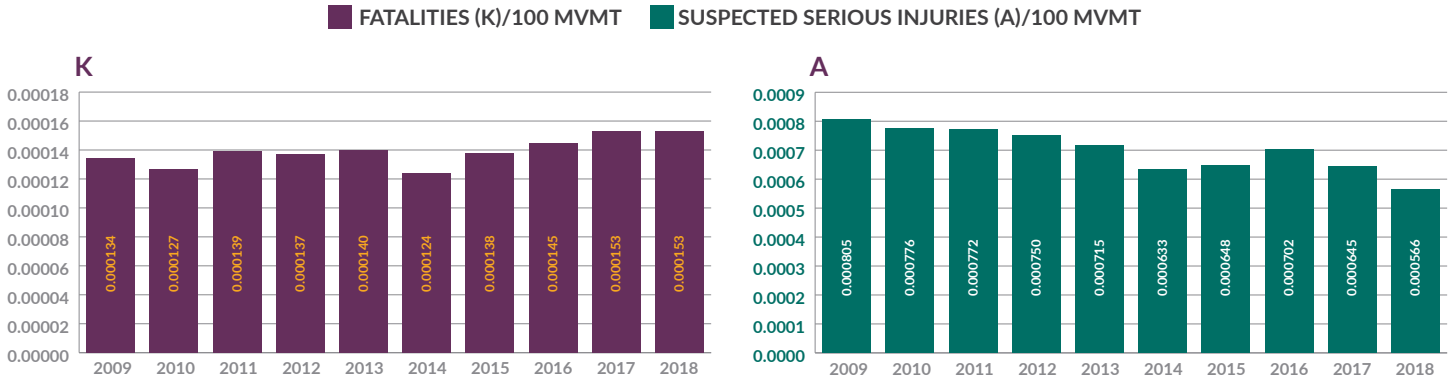


FIGURE 1-2: FATAL AND SERIOUS INJURY CRASH RATES, 2009-2018



ARIZONA'S 2019 STRATEGIC TRAFFIC SAFETY PLAN

In 2018, Arizona's safety leaders began the process to update the 2014 SHSP in accordance with federal regulations outlined in Fixing America's Surface Transportation Act (FAST Act). The 2019 STSP represents this update. The Executive Committee changed the name of the plan to Arizona Strategic Traffic Safety Plan[1] to emphasize its applicability to all public roads in Arizona.

The purpose of the STSP is to direct transportation project investment decisions and ensure best safety practices are adopted to achieve a meaningful reduction in transportation-related fatalities and serious injuries on all public roadways.

The STSP update process was a collaborative effort involving safety stakeholders, traffic safety research, and analysis and documentation of the statewide database of crash records and other data.

Over the past several years, Arizona conducted dozens of Road Safety Assessments (RSAs); began implementation of SafetyAnalyst; participated as a Federal Highway Administration (FHWA) Focus State for Pedestrians, Roadway Departure, and Intersections; and completed several other safety-focused analyses, plans, and studies. These activities led ADOT, with support from the Executive Committee, to establish five 2019 STSP Emphasis Areas:

- Highway Safety (Behavior-Related)
- Intersections
- Lane Departure
- Pedestrians
- Safety-Related Data

To provide greater focus on the most critical issues facing Arizona, the Emphasis Areas have been reduced and consolidated since the 2014 SHSP. However, the vision remains the same as it encompasses and focuses on all traffic safety efforts in the state.

FIGURE 1-3: 2019 STSP EMPHASIS AREAS

HIGHWAY SAFETY (BEHAVIOR-RELATED)

This emphasis area relates to crashes involving speeding/reckless driving, impaired driving, distracted driving, pedestrians, lack of restraint use, and/or motorcycles. In Arizona, for the 2016-2018 period, nearly **33% of all traffic fatalities** involved an impaired driver. Safety devices (helmets, seatbelts) were not used in nearly **32% of all traffic fatalities.**

INTERSECTIONS

In the United States, one-quarter of traffic fatalities and roughly half of all traffic injuries involved intersections. In Arizona, nearly **28% of all traffic fatalities,** and 44% of serious injuries occurred at intersections.

LANE DEPARTURE

A lane-departure crash is defined as a crash that occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way. In Arizona, **65% of all traffic fatalities** involved lane departure.

PEDESTRIANS

Nationally, each year, pedestrian fatalities are 16% of all traffic fatalities with approximately 5,000 pedestrian deaths. In Arizona, pedestrian fatalities are **22% of all traffic fatalities.** For 2016-2018, an average of **221** pedestrians per year were killed when struck by a motor vehicle.

SAFETY-RELATED DATA

This emphasis area relates to improved safety data availability, timeliness, accuracy, and analytical processes. A primary focus is on improving processes for local agencies to submit crash data to ADOT.

1. Strategic Highway Safety Plan (SHSP) is a requirement of the Highway Safety Improvement Program (HSIP) (23 U.S.C. § 148). The Arizona STSP is developed to comply with this requirement.

STSP VISION AND GOAL

The Executive Committee established an over-arching goal to save lives—reduce traffic fatalities on Arizona's roadways.

Engineers, law enforcement, public health and education professionals, and the public, all play a critical role in reducing traffic fatalities and severe crashes.

Ultimately, to eliminate all traffic fatalities and serious injuries, engineers must design safe roads and the public must make good choices and drive defensively and safely.

The STSP is continuously evolving and will need to be re-addressed and updated through regular evaluation of results.

VISION

Toward Zero Deaths by Reducing Crashes for a Safer Arizona

GOAL

Reduce Traffic Fatalities on Arizona's Roadways

CURRENT STATUS

In 2018, there were 1,021 traffic-related deaths on Arizona's roadways.*

**Number of fatalities as in ADOT ALISS database, July 18, 2019.*

2. BACKGROUND

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) passed in 2005 and created a new core safety program in Section 148: The Highway Safety Improvement Program (HSIP). This new program was carried forward in the two most recent transportation authorizations under Moving Ahead for Progress in the 21st Century Act (MAP-21), passed in 2012, and the FAST Act, passed in 2015.

The HSIP provides funds to state departments of transportation (DOTs) for safety improvement projects and requires states to develop an SHSP. The federally-required SHSP involves preparation of a comprehensive, collaborative, and data-driven approach to safety that incorporates the 4-E's of highway safety—Engineering, Enforcement, Education, and Emergency Medical Services. The process defined by the FHWA involves developing a SHSP that establishes the overall framework for analysis of priority needs and opportunities relating to safety on all public roadways. The SHSP can also identify complementary and jointly funded activities to be implemented among state, regional, local, and tribal partners. All partners are encouraged to utilize the SHSP as a guide to investing safety-related funds. The SHSP will be the overarching traffic safety plan to guide Arizona's highway safety planning and programming processes and to facilitate implementation of recommended safety strategies and countermeasures.

FEDERAL REQUIREMENTS

- Federal regulations require the development of a Strategic Highway Safety Plan.
- The 2019 Arizona Strategic Traffic Safety Plan is designed to meet this federal requirement. The Arizona plan is titled *Strategic Traffic Safety Plan* to emphasize its applicability to all public roads, more than just state highways.

2.1 ARIZONA SHSP HISTORY

2.1.1 ARIZONA 2007 STRATEGIC HIGHWAY SAFETY PLAN

In 2005, state safety leaders developed and released the Arizona Transportation Safety Plan (TSP) that examined and planned for safety from a broad perspective that included the 4 E's. SAFETEA-LU was passed that same year and included important new and continued funding sources for safety-related projects, programs, and initiatives. In response to passage of SAFETEA-LU and the requirements of the legislation, leadership in Arizona championed development of Arizona's first SHSP in 2007.

That plan established a long-term state vision of "Zero fatalities on Arizona roads, your life depends on it" and the "No fatalities by 2050" goal. An intermediate goal was set for a 12 percent reduction in serious crashes by the end of 2012, with a 15 percent "stretch sub-goal" for each of six Emphasis Areas. At this point in time, Arizona had experienced unique challenges with a rapidly growing population and an accompanying increase in VMT. The Arizona 2007 SHSP still aimed for this substantial reduction in total number of crashes, in line with the long-term vision.

Following consideration and evaluation of available data and information during development of the 2007 SHSP, participants agreed to focus attention on six areas considered to be the most significant indicators for addressing the safety of highways and public roadways in Arizona.

2007 SHSP EMPHASIS AREAS

- Restraint Usage
- Young Drivers
- Speeding
- Impaired Driving
- Roadway/Roadside
- Data Improvement

2.1.2 ARIZONA 2014 STRATEGIC HIGHWAY SAFETY PLAN

In 2012, Arizona's safety leaders began the process to update the SHSP in accordance with the federal regulations outlined in legislation that funded MAP-21, the federal surface transportation program. The purpose of the SHSP update was to direct transportation project investment decisions and ensure best practices were adopted to achieve a significant reduction in transportation-related fatalities and serious injuries on all public roadways.

The SHSP update process involved safety stakeholders, traffic safety research, and analysis of the statewide database of crash records. The data analysis included geospatial investigation of crash characteristics associated with all fatal and serious-injury crashes and the relationship or interaction of these crashes between the various summarized crash characteristics. These efforts helped identify 12 safety Emphasis Areas, two Support Areas, and corresponding safety strategies. The Executive Committee recommended a special focus on five Emphasis Areas that are associated with the highest number of fatalities and serious injuries.

2014 SHSP EMPHASIS AREAS

- Speeding and Aggressive Driving
- Impaired Driving
- Occupant Protection
- Motorcycles
- Distracted Driving
- Roadway Infrastructure and Operations
- Age Related
- Heavy Vehicles/Buses/ Transit
- Nonmotorized Users
- Natural Risks
- Traffic Incident Management
- Interjurisdictional

SUPPORT AREAS

- Data Improvements: coordinate improvements to, and sharing of, safety data
- Policy Initiatives: provide direction on proposed changes to policies, procedures, or laws

2.2 ARIZONA SAFETY ACCOMPLISHMENTS

Since the 2014 SHSP, Arizona has enhanced existing traffic safety programs and laws and implemented new safety programs.

The Governor's Office of Highway Safety (GOHS) has championed several efforts to improve safety on public roadways in Arizona. ***Examples are listed below as described by the Arizona GOHS State of Arizona Highway Safety Annual Report Federal Fiscal Year (FFY 2018):***

GOHS partnered with the Arizona Supreme Court and the Phoenix Police Department to implement the "Electronic Search Warrant" for blood draws in DUI and drug impairment cases. Officers can now obtain electronic search warrants from a Superior Court judge based in Maricopa County in less than eight minutes. The GOHS Director has implemented this statewide with help from Arizona Supreme Court staff. The Arizona Department of Public Safety (DPS) is providing training statewide to all agencies with the system. Officers take 100 hours of phlebotomy training, which includes approximately 100 blood draws. Refresher training occurs every two years.

GOHS provided funding and personnel to train over 1,000 Arizona law enforcement officers in the pursuit of impaired driving certification in Advanced Roadside Impaired Driving Enforcement (ARIDE), Standardized Field Sobriety Testing (SFST), Drug Recognition Expert (DRE) training, and phlebotomy.

DUI arrests totaled just over 27,104 in 2018. GOHS continues to implement the "Know Your Limit" Program.

As a result of grants awarded to address speed and reckless driving, agencies used funds for the acquisition of speed detection devices—at a cost of $374,358. As a result of the additional equipment and increased overtime enforcement patrols, civil speed citations increased by 7%, criminal speed citations increased by 3%, and aggressive driving citations increased over 45% as compared to 2017.

GOHS provided grant funds of $226,863 to purchase 3,630 child safety/booster seats in FFY 2018. Through numerous organizations, 6,541 child safety/booster seats were installed.

GOHS reviewed more than 325 grant proposals submitted and awarded 306 grants to 121 agencies and organizations for FFY 2018.

GOHS hosted the National Highway Traffic Safety Administration (NHTSA) Region 9 Partners and Leadership meeting in April 2018.

ADOT has completed several significant safety projects and others that are underway.

- **WRONG-WAY DETECTION** – ADOT has taken steps to address the threat of wrong-way drivers, including installation of a first-of-its-kind thermal camera detection system pilot project on I-17. Additionally, larger and lowered "Wrong Way" and "Do Not Enter" signs have been installed on hundreds of freeway ramps and overpasses in the Phoenix Metropolitan Area and rural state highways.

DRIVE AWARE GET THERE

- **I-10 DUST DETECTION** – ADOT and the FHWA have developed a dust-detection and warning system along I-10, from Sunshine Boulevard to Picacho Peak Road. The system includes technology that will recognize an approaching dust storm, warn ADOT and drivers of that threat, and slow drivers down to a safer speed using variable speed limits. The project is funded by a federal FASTLANE grant and is currently under construction.
- **ARIZONA HSIP ANNUAL REPORTS (2014-2018)** – From 2014-2018, 329 projects were obligated using HSIP funds.

Photo by Arizona Department of Transportation

- **ARIZONA SAFE TRANSPORTATION FOR EVERY PEDESTRIAN (STEP) GUIDE** – Arizona is participating in the FHWA Every Day Counts (EDC) Innovations Program. EDC-5 promotes the systemic application of cost-effective countermeasures to help reduce pedestrian fatalities at both uncontrolled and signalized crossing locations. These include pedestrian hybrid beacons, leading pedestrian intervals, crosswalk visibility enhancements, pedestrian refuge islands, road diets, raised crosswalks, and rectangular rapid flashing beacons. FHWA published an updated "Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations" to help agencies choose countermeasures based on roadway characteristics and pedestrian safety issues. ADOT has created an Arizona-specific guide so that local engineers and planners can find examples, drawings, and specifications for these countermeasures. The Guide is available at: www.azdot.gov/azstep.
- **PEDESTRIAN SAFETY ACTION PLANS** – The ADOT Pedestrian Safety Action Plan was updated in 2017. The 2017 Pedestrian Safety Action Plan used a data-driven approach to assess pedestrian-motorist crashes and recommend strategies and projects for implementation on the State Highway System (SHS).
- **SAFETY CORRIDORS** – ADOT designated four Safety Corridors in December 2016 and January 2017. This safety-related education and enforcement program is intended to reduce crashes, injuries, and deaths on four freeway corridors using signs, targeted public information outreach, and increased enforcement. The Safety Corridor program is a joint effort by ADOT, DPS, and the GOHS. **Figure 2-1** (following page) shows an overview of the safety corridors and their locations.
- **SAFE PHONE ZONES** – Arizona's 14 highway rest area locations are designated as "Safe Phone Zones"—safe locations for motorists to pull off the highway and use phones for calling, texting, and accessing mobile apps. The Safe Phone Zone signs, which can be seen along the highways leading to rest areas and within the rest areas themselves, are part of a public-private partnership to reduce distracted driving.
- **RSA PROGRAM** – ADOT's RSA program has completed numerous RSAs since the adoption of the 2014 SHSP.
- **CRASH REPORT FORMS** – ADOT, Traffic Records Coordinating Committee (TRCC), and Arizona DPS updated the crash report form in 2014 and again in 2017, to better capture distracted driving and crash clearance time data, and to improve definitions of wrong-way crashes, secondary crashes, and speed-related crashes.

FIGURE 2-1: ADOT SAFETY CORRIDOR OVERVIEW

Safety Corridor

WHAT IS A SAFETY CORRIDOR?

A Safety Corridor is a highway segment selected for heightened driver education and law enforcement. A segment can become a safety corridor if there are higher-than-expected numbers of fatal and serious injury crashes involving driver behaviors such as speeding, aggressive driving, impaired driving and lack of seat belt use. Through increased enforcement and safety messaging, the Safety Corridor program will save lives by reducing dangerous driving behavior.

WHAT DOES IT MEAN FOR DRIVERS?

Motorists will see additional signage and more state trooper vehicles in Safety Corridors. There will be strict enforcement of laws with zero tolerance for violations. If drivers obey speed limits and other driving laws, you can expect to see fewer crashes and better driving behavior, making the road safer for everyone.

SAFETY CORRIDOR LOCATIONS

Phase 1

- **I-10** — 4-mile safety corridor from I-17 Stack to SR 51 Mini Stack (milepost 143-147)
- **I-10** — 23-mile safety corridor from Loop 202 Santan to SR 387 (milepost 162-185)

Phase 2

- **US 60** — 13-mile safety corridor from Loop 101 Price to Loop 202 (milepost 177-190)
- **I-40** — 23-mile safety corridor from US 93 to US 93 (milepost 49-72)

SAFETY CORRIDOR SIGNS

ADOT

Governor's Office of Highway Safety ARIZONA

16-304

OTHER INITIATIVES:

- **HOUSE BILL 2318, RELATING TO USE OF WIRELESS COMMUNICATION DEVICES WHILE DRIVING** – Governor Ducey signed this bill on April 22, 2019, which makes it illegal to hold a phone while driving. Officers can begin issuing warnings immediately and can write citations in 2021. Previously, drivers could be cited for a distracted driving violation if they were caught driving dangerously or erratically while using a cell phone. Earlier legislation (effective July 1, 2018) prohibited new drivers, up to the age of 18, from using a cell phone behind the wheel. Several local agencies in Arizona had previously banned texting or use of handheld devices, including Tucson, Oro Valley, Pima County, Salt River Pima-Maricopa Indian Community, Tempe, Glendale, Yavapai County, and Surprise.
- **REGIONAL, TRIBAL, AND LOCAL STRATEGIC TRANSPORTATION SAFETY PLANS** – These plans have been completed by the following local agencies:
  - *Maricopa Association of Governments (MAG)*
  - *Pima Association of Governments (PAG)*
  - *Yuma Metropolitan Planning Organization (MPO)*
  - *Southeastern Arizona Governments Organization*
  - *Sierra Vista MPO*
  - *Sun Corridor MPO*
  - *Western Arizona Council of Governments (COG)*
  - *Lake Havasu MPO*
  - *Northern Arizona COG*
  - *Central Yavapai MPO*
  - *Flagstaff MPO*
  - *City of Avondale*
  - *Pinal County*
  - *Navajo Nation*
  - *Tohono O'odham Nation*
  - *Colorado River Indian Tribes*
  - *Kaibab-Paiute Tribe*
  - *Hopi Tribe*
  - *Hualapai Tribe*
  - *Gila River Indian Community*
  - *Fort Mohave Indian Tribe*
  - *White Mountain Apache Tribe*
- **LOCAL AGENCY RSA PROGRAMS** – MAG and PAG have well-established RSA programs. PAG requires design-stage RSAs on all projects funded by the Regional Transportation Authority.
- **CITY OF TEMPE VISION ZERO** – Tempe became the first agency in Arizona to formally adopt and develop a Vision Zero program.

VISION ZERO TEMPE

2.3 2014 ARIZONA SHSP LESSONS LEARNED

An important part of the 2019 Arizona STSP update is to review the process and outcomes of the previous SHSP plans. ADOT identified several items from the 2014 SHSP that could be modified or improved to increase the effectiveness of the 2019 STSP update process and implementation activities. These are listed in **Table 2-1.**

TABLE 2-1: STSP LESSONS LEARNED AND PROCESS IMPROVEMENTS

Lesson Learned	*2019 STSP Improvement*
Emphasis Areas The 2014 SHSP required significant data analyses, many meetings, effort to organize the meetings, and continued member requests for additional data analysis. There was significant overlap between 12 Emphasis Areas and two Emphasis Area Support Areas.	• The 2019 STSP limits and focuses the number of Emphasis Areas. The 2019 STSP includes five Emphasis Areas: 1. *Highway Safety (Behavior-Related)* 2. *Intersections* 3. *Lane Departure* 4. *Pedestrians* 5. *Safety-Related Data* 
Emphasis Area Team Members The process must respect the team members' time and availability. All participants are passionate, and all are volunteers. All have other critical responsibilities in their positions.	• Limited the number of Emphasis Area meetings held during plan development. Meetings conducted during the 2019 STSP were limited to a Safety Launch, Safety Summit, and two meetings per Emphasis Area. • During the implementation phase, Emphasis Area teams will meet once per quarter, with requisite communication in between meetings. • Emphasis Area team members represented interests from across Arizona. Emphasis Area team meetings were held via webinar to facilitate participation from across the state.
Implementation Emphasis Area strategies were too broad; many were not able to be implemented. Communication between Emphasis Area Teams is critical.	• Focus Emphasis Area strategies on those for which reasonable funding can be identified. During STSP implementation, Emphasis Area team members will identify specific action items and implementation activities. • ADOT staff will participate in each Emphasis Area team meeting during implementation, providing connectivity and communication among teams. • Opportunities to partner with professional organizations include the Arizona Section of the Institute of Transportation Engineers (AZITE), who have formed a transportation safety committee and the Annual AZITE/IMSA Conference which held a Road Safety Forum at the 2019 Annual Conference.
Goals Goals should be aspirational and challenging.	• The STSP is continuously evolving and will need to be re-addressed and updated through regular evaluation of results, strategies, programs and projects.

3. STSP UPDATE PROCESS

The 2019 Arizona STSP is the state's comprehensive traffic safety plan. It is consistent with federal requirements and the ADOT Long-Range Transportation Plan (LRTP). As the overarching traffic safety plan, the STSP coordinates with other state safety plans and programs, such as the Highway Safety Plan (HSP), the Highway Safety Improvement Plan (HSIP), and the Commercial Vehicle Safety Plan (CVSP).

The Executive Committee titled the plan "Strategic Traffic Safety Plan" to emphasize its applicability to all public roads in Arizona, making clear it applies to more than just state highways.

The STSP's goal strategies are coordinated for alignment during the revisions of these state safety plans and development of other MPO, COG, and tribal community safety plans.

The STSP directs transportation project investment decisions and encourages the adoption of best practices to achieve a reduction in traffic fatalities and serious injuries on all public roadways.

Implementation of the state STSP will be carried out through a variety of state and local safety activities. The impacts of implemented strategies will be monitored and used to determine where adjustments and revisions to strategies are most warranted. Adjustments will be made through supporting plans and programs. The state STSP will be formally updated every five years as required by legislation under the FAST Act. This coordination with other plans supports and advances common goals, aligned strategies, and programs.

WHAT IS A STRATEGIC HIGHWAY SAFETY PLAN?

Is based on crash data and other safety analyses to identify safety issues on all public roads

Is developed from consultation with a broad range of stakeholders

Addresses the 4 E's of safety through a multidisciplinary approach

Describes a program of strategies to reduce fatal and serious-injury crashes

Sets a goal and measures performance

https://safety.fhwa.dot.gov/shsp/develop.cfm

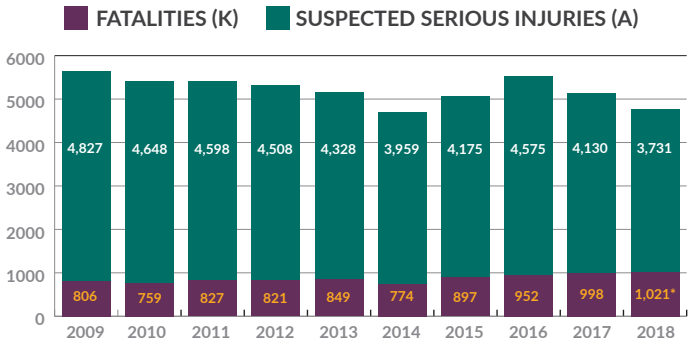
3.1 DATA DRIVEN

STSP Emphasis Areas are selected based on analysis of crash data and information. Crash information was obtained from the Accident Location Identification Surveillance System (ALISS) database, maintained by ADOT. This database is developed from information entered on the standard Arizona Crash Report form by law enforcement officers responding to each crash incident.

Because crash records are continuously collected from agencies throughout the state, data for past years is updated as information becomes available.

Figure 3-1 shows the annual number of fatalities and serious injuries for the 10-year period 2009-2018. After an initial period of gradual decline, fatalities have shown a sharp increase over the last four years. The number of fatalities in 2017 is 30% higher than in 2014. Suspected serious injuries generally decreased between 2009 and 2014, and then increased in 2015-2016. Data for each Emphasis Area is included in Appendix A.

FIGURE 3-1: STATEWIDE FATALITY AND SERIOUS INJURIES, 2009-2018



**Number of fatalities as in ADOT ALISS database, July 18, 2019.*

BUREAU OF EMERGENCY MEDICAL SERVICES AND TRAUMA SYSTEM

The Bureau of Emergency Medical Services and Trauma System, within the Arizona Department of Health Services, publishes descriptive statistics of Arizona injury and fatal motor vehicle crashes divided between "highway" and "non-highway" areas. Appropriate, complete EMS and trauma registry data play a significant role in the identification of safety measures. **Figure 3-2** shows that individuals ages 15-24 have the highest Motor Vehicle Traffic (MVT) trauma rate per 100,000 population. **Figure 3-3** shows total MVT-related trauma in 2017. **Figure 3-4** compares Urban and Rural MVT trauma fatality rates per 100,000 population. The Highway Urban and Rural rates were 1 and 13 per 100,000 population, respectively. The Non-Highway Urban and Rural rates were 5 and 10 per 100,000 population, respectively.

Note that the Arizona State Trauma Registry (ASTR) does not contain all fatal and non-fatal injury events within Arizona. Injured patients are NOT captured in the ASTR if they:

- Died at the scene and were not transferred to a trauma center,
- Were treated only at a non-reporting hospital, or
- Patient did not meet the ASTR trauma patient inclusion criteria.*

*The ASTR Trauma Patient Inclusion Criteria include:

- Triaged from scene to a healthcare institution by EMS per trauma protocol
- Injury transferred from one health care institution to another by an EMS provider or ambulance service
- Trauma Team Activation at the healthcare institution
- Admission or death and met ASTR inclusion diagnosis codes (ICD-10)

FIGURE 3-2: AGE-SPECIFIC MVT TRAUMA RATE PER 100,000 POPULATION, 2017

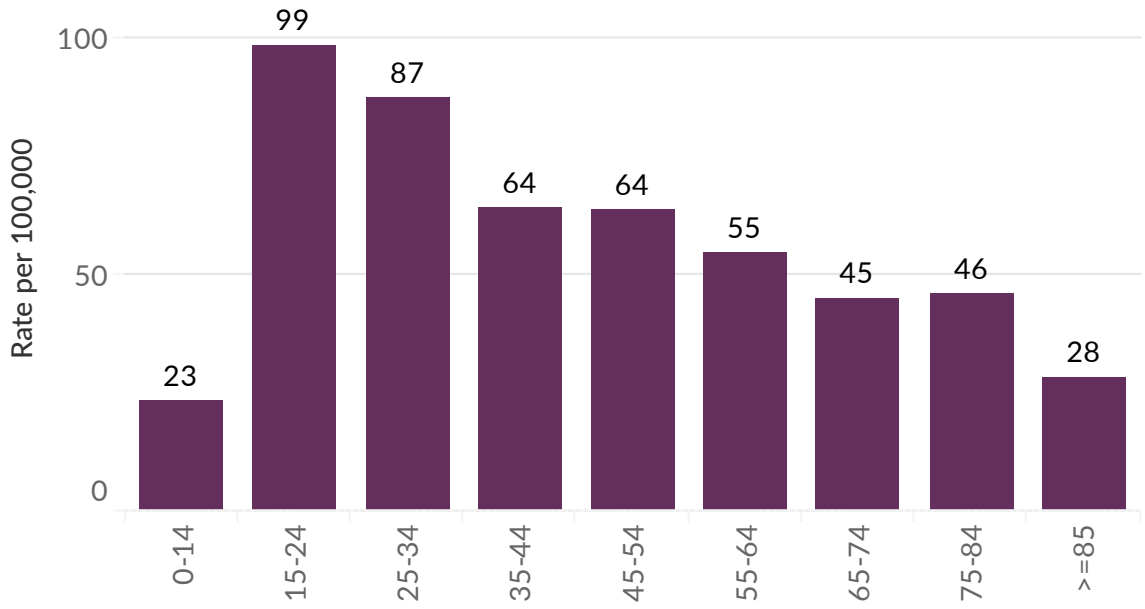


FIGURE 3-3: TOTAL MVT RELATED TRAUMA, 2017

Highway	4,133
Non-Highway	10,627

FIGURE 3-4: URBAN VS. RURAL MVT TRAUMA FATALITY RATE PER 100,000, 2017

	HIGHWAY		NON-HIGHWAY	
	FATALITIES	RATE	FATALITIES	RATE
Urban	80	1	306	5
Rural	38	13	28	10

3.2 PERFORMANCE MEASURES

Under the FAST Act, performance management will continue to transform federal highway programs and encourage more efficient investment of federal transportation funds. By focusing on national transportation goals, increasing the accountability and transparency of the federal highway programs, and improving transportation investment decision-making through performance-based planning and programming, safety on Arizona's public roadways will be improved.

The cornerstone of the FAST Act's highway program transition to a performance- and outcome-based program began under MAP-21. States were encouraged to invest resources to achieve individual goals that collectively made progress toward national goals. With respect to safety, the FAST Act continues the national performance goal to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. The federal legislation does not establish a specific goal nor define a significant reduction, leaving it up to the individual state to ascertain appropriate performance goals and objectives relative to local conditions.

Safety performance measures have been developed using Arizona's fatality and serious-injury data to establish a framework for monitoring progress toward reducing fatalities and serious injuries. The FAST Act annual safety performance measures are for all public roads and will be reported as a five-year rolling average for the following measures:

- **FATALITIES** – The number of persons killed in motor vehicle crashes on all public roads for a calendar year
- **SERIOUS INJURIES** – The number of persons seriously injured in motor vehicle crashes on all public roads for a calendar year
- **FATALITY RATE** – The number of persons killed in motor vehicle crashes per 100 MVMT for a calendar year
- **SERIOUS INJURY RATE** – The number of persons seriously injured in motor vehicle crashes per 100 MVMT for a calendar year
- **NON-MOTORIZED FATALITIES AND SERIOUS INJURIES** – The number of pedestrian and bicyclist fatalities and serious injuries for a calendar year

Safety performance measures and other data analyses are incorporated into Arizona's safety programs. As part of the annual evaluation and coordination of Arizona's traffic safety programs, such as in the HSP and HSIP, Arizona is required to establish annual targets for these performance measures based on a five-year average of the most recent data available.

Arizona's current HSIP targets are provided in **Table 3-1.**

TABLE 3-1: CURRENT ARIZONA HSIP TARGETS

	BASELINE *2013-2017 Annual Average*	TARGET *2015-2019 Annual Average*
Number of Fatalities	895.8	1,001.5
Fatality Rate (per 100 MVMT)	1.404	1.442
Number of Serious Injuries	4,232.4	4,166.9
Rate of Serious Injuries (per 100 MVMT)	6.638	6.102
Number of Non-Motorized Fatalities and Serious Injuries	744.6	814.0

3.3 STAKEHOLDER INPUT

The STSP update process included several opportunities for statewide safety stakeholder outreach to promote a coordinated STSP for implementation by all safety agencies and private-sector safety partners.

3.3.1 SAFETY LAUNCH

The first major event was the Safety Launch, designed to bring together federal, state, regional, local, and tribal traffic safety stakeholders from across Arizona. The Safety Launch was held on January 22, 2019, via webinar, and was attended by over 100 participants from throughout the state.

This event provided a unique opportunity to examine critical safety issues impacting the state's multimodal transportation system and to identify opportunities to improve traffic safety.

The Safety Launch included a discussion of:

- What is an STSP and its importance, including a high-level overview of crashes in Arizona
- An overview of the 2014 SHSP and lessons learned from previous efforts
- The plan for the 2019 STSP process, goals, and schedule

Snapshot of the Safety Launch webinar

3.3.2 SAFETY SUMMIT

The Safety Summit took place on February 11, 2019, giving Arizona's safety stakeholders the opportunity to provide input and ideas for strategies and action steps for the proposed Emphasis Areas. The Safety Summit included speakers from a variety of agencies, including ADOT, GOHS, and FHWA, focusing on the importance of the STSP, the Emphasis Areas being evaluated in the 2019 STSP, and how participants can get involved.

Participants were able to visit stations set up for each Emphasis Area for in-depth conversations with project team staff about the data analysis behind each Emphasis Area and potential countermeasures to be considered. Participants were provided the opportunity to volunteer for task forces that focus on each Emphasis Area so that they could continue to contribute to the STSP effort. Nearly 170 individuals attended the Safety Summit. A summary of input is provided in the Safety Summit Summary Report.

3.3.3 EMPHASIS AREA TEAM MEETINGS

Emphasis Area team meetings were held for each of the five Emphasis Areas in March and May 2019 to begin the discussion about improving safety through efforts of each Emphasis Area.

At each Emphasis Area team meeting, team members discussed relevant data and potential strategies for improving crash outcomes related to the Emphasis Areas.

Photo by Arizona Department of Transportation

3.4 2019 STSP VISION STATEMENT

The vision of the 2019 Arizona STSP is consistent with the national movement of Toward Zero Deaths. One death on Arizona's roadways is too many; as such, a safety culture change is necessary to improve safety for the traveling public in Arizona on all public roads, no matter the mode of transportation used.

VISION

Toward Zero Deaths by Reducing Crashes for a Safer Arizona

GOAL

Reduce Traffic Fatalities on Arizona's Roadways

CURRENT STATUS

In 2018, there were 1,021 traffic-related deaths on Arizona's roadways.*

**Number of fatalities as in ADOT ALISS database, July 18, 2019.*

3.5 2019 STSP GOAL

Over the past 10 years, Arizona's population **increased** by 8.7% from 6.6 million residents (2009) to 7.2 million residents (2018). Over the same period, the number of serious injuries **decreased** by 10%, but fatalities **increased** by 25%. In 2018, there were 1,021 traffic-related deaths on Arizona roadways. The STSP Executive Committee recognizes that while great progress has been made to reduce severe crashes, much more work needs to be done to save lives. The Executive Committee established an over-arching STSP goal to reduce traffic fatalities on Arizona's roadways.

Ultimately, to eliminate all traffic fatalities and serious injuries, engineers must design safe roads and the public must make good choices and drive defensively and safely. As we continuously strive to meet an ultimate vision of eliminating all traffic fatalities, goals will be reviewed annually and modified appropriately based on progress achieved.

4. STRATEGIC TRAFFIC SAFETY PLAN EMPHASIS AREAS AND STRATEGIES

4.1 EMPHASIS AREAS

FHWA guidance suggests that emphasis areas should reflect "the greatest potential for reducing fatalities and injuries." Based on the most recent analysis of statewide crash data, Arizona has identified five emphasis areas. These emphasis areas are a required component of any SHSP and help direct resources, focus implementation efforts, and organize emphasis area teams.

The 2019 STSP proposes five emphasis areas, as listed in **Figure 4-1**.

4.2 EMPHASIS AREA STRATEGIES

The STSP was prepared in collaboration with safety stakeholders organized into Emphasis Area teams. STSP Emphasis Area teams were tasked to identify Emphasis Area strategies that have the greatest potential to reduce fatalities and serious injuries on Arizona's public roads. Strategies are generally organized around the 4E's of safety, which define the stakeholder partners engaged in making our roads safer for all users. Stakeholders from the 4E's are typically from the following disciplines:

- Engineering: roadway and traffic design engineers, maintenance, operations, and planning professionals
- Enforcement: state and local law enforcement agencies
- Education: prevention specialists, communication professionals, educators, and citizen advocacy groups
- Emergency medical services: first responders, paramedics, fire, and rescue

HADDON MATRIX FOR EMPHASIS AREA STRATEGIES

Appendix C presents a Haddon Matrix for each emphasis area strategy. The matrix assists safety professionals to not only identify where and when to implement traffic safety countermeasures, but also to plan for crash-related data collection and identify stakeholder partners for collaboration efforts. Each cell of the Haddon matrix represents a different area in which strategies are identified and can be implemented. The matrix provides a range of issues that can be addressed through STSP strategies including education, enforcement, engineering, and emergency response solutions (the 4Es of Safety).

FIGURE 4-2: 4-E'S OF TRAFFIC SAFETY

FIGURE 4-1: 2019 STSP EMPHASIS AREAS

HIGHWAY SAFETY (BEHAVIOR-RELATED)

This emphasis area relates to crashes involving speeding/reckless driving, impaired driving, distracted driving, pedestrians, lack of restraint use, and/or motorcycles. In Arizona, for the 2016-2018 period, nearly **33% of all traffic fatalities** involved an impaired driver. Safety devices (helmets, seatbelts) were not used in nearly **32% of all traffic fatalities.**

INTERSECTIONS

In the United States, one-quarter of traffic fatalities and roughly half of all traffic injuries involved intersections. In Arizona, nearly **28% of all traffic fatalities,** and 44% of serious injuries occurred at intersections.

LANE DEPARTURE

A lane-departure crash is defined as a crash that occurs after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way. In Arizona, **65% of all traffic fatalities** involved lane departure.

PEDESTRIANS

Nationally, each year, pedestrian fatalities are 16% of all traffic fatalities with approximately 5,000 pedestrian deaths. In Arizona, pedestrian fatalities are **22% of all traffic fatalities.** For 2016-2018, an average of **221** pedestrians per year were killed when struck by a motor vehicle.

SAFETY-RELATED DATA

This emphasis area relates to improved safety data availability, timeliness, accuracy, and analytical processes. A primary focus is on improving processes for local agencies to submit crash data to ADOT.

4.3 HIGHWAY SAFETY (BEHAVIOR-RELATED) EMPHASIS AREA

This Highway Safety Emphasis Area is inclusive of several sub-areas that are related to driver behavior. This Emphasis Area was named "Highway Safety" because the implementation of these strategies is under the leadership of GOHS. It should be clear that these Emphasis Area strategies apply to all public roads. The Emphasis Area also addresses some pedestrian behaviors that lead to fatalities and serious injuries. The Highway Safety (Behavior-Related) Emphasis Area addresses the following sub-areas:

- Speeding/Reckless Driving
- Impaired Driving
- No Restraint Used
- Pedestrians (Behavior-Focused)
- Motorcycles
- Distracted Driving

ANNUAL DATA TREND

The focus of this Emphasis Area is to reduce fatalities and suspected serious injuries related to speeding, reckless driving, lack of seat belt or child safety seat use, distracted, and/or alcohol and/or drug impaired driving. **Table 4-1** shows the percentage of each type of crash in terms of total fatalities and serious injuries. These factors have a major impact on fatal and serious injuries; speeding, non-use of occupant restraints, and impaired driving are primary factors in nearly one-third of fatal crashes. Note that Emphasis Area sectors are not mutually exclusive and add to more than 100% because multiple behavioral factors may be involved in a single crash.

TABLE 4-1: HIGHWAY SAFETY (BEHAVIOR-RELATED CRASH) FACTORS IN SERIOUS CRASHES (2016-2018)

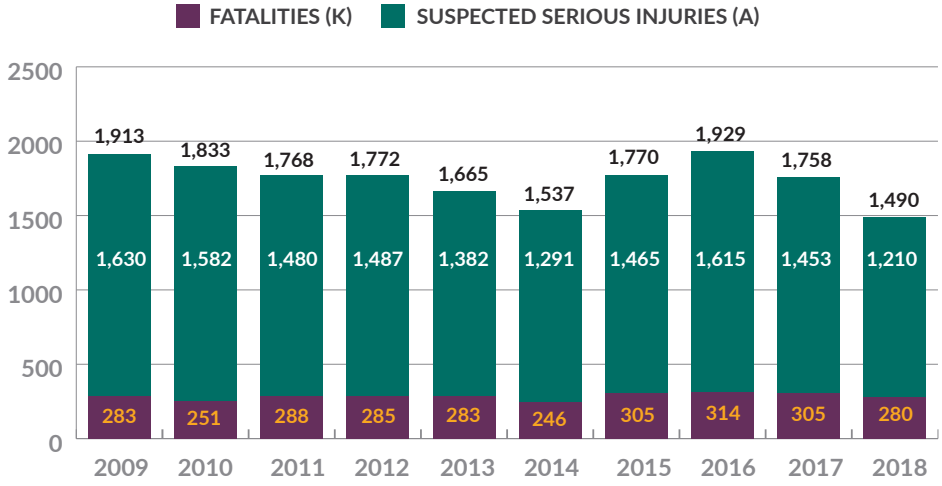
EMPHASIS AREA SECTOR	DEFINITION	% OF TOTAL FATALITIES	% OF TOTAL SUSPECTED SERIOUS INJURIES
Speeding	Count of fatalities and serious injuries from crashes involving Speeding, drivers who were cited on the violation/behavior portion of the crash record for speed too fast for conditions or exceeding lawful speed.	30%	34%
Impaired Driving	Select all drivers who were affected by alcohol, drugs, or by medication. Sum victim counts from selected Incidents.	33%	15%
No Restraint Used	Select all drivers that were not using the appropriate safety device.	32%	17%
Pedestrians	Count of pedestrian fatalities and serious injuries.	22%	10%
Motorcycles	Count of motorcyclist fatalities and serious injuries.	16%	15%
Distracted Driving	Count of fatalities and serious injuries from crashes involving a Distracted Driver, a driver who had a violation indicated on the crash report for inattention or distraction and all units where a distraction was indicated.	Data to be provided as it becomes available in future years	

Source: ALISS accessed May 12, 2019

SPEEDING DRIVING DATA TREND

Figure 4-3 shows the annual totals for speeding-involved driving fatality and serious injuries.

FIGURE 4-3: ANNUAL TREND IN SPEEDING-INVOLVED FATALITIES AND SERIOUS INJURIES

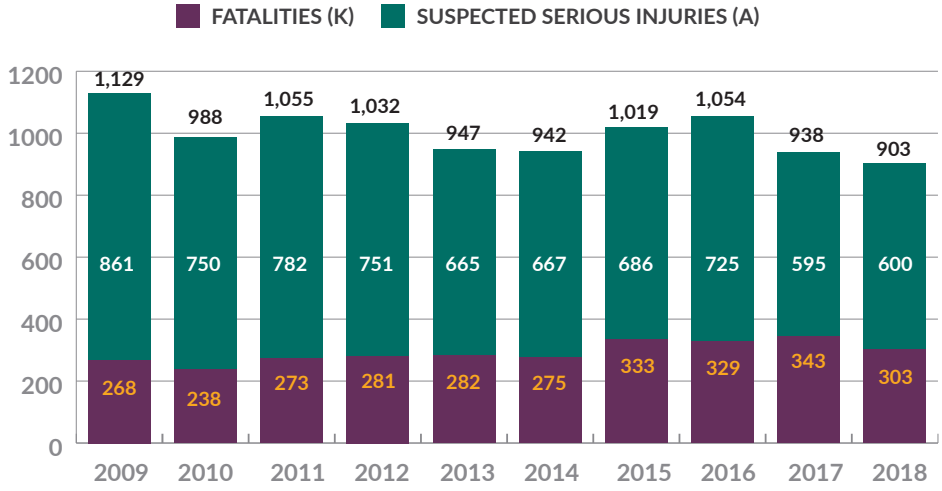


Source: ALISS accessed May 12, 2019

IMPAIRED DRIVING DATA TREND

Figure 4-4 shows the annual totals for impaired driver-involved fatalities and serious injuries. Impaired drivers are all drivers who were impaired by alcohol, marijuana and other drugs, or medication.

FIGURE 4-4: ANNUAL TREND IN IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES

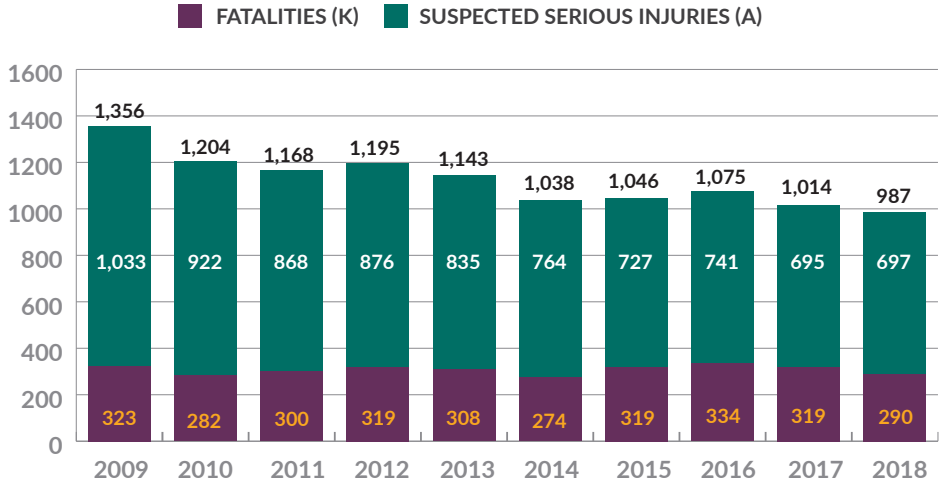


Source: ALISS accessed May 12, 2019

NO RESTRAINT USED DATA TREND

Figure 4-5 shows the annual no-restraint-used (unrestrained occupant) fatality and serious injuries.

FIGURE 4-5: ANNUAL TREND IN NO-RESTRAINT-USED FATALITIES AND SERIOUS INJURIES



Source: ALISS accessed May 12, 2019

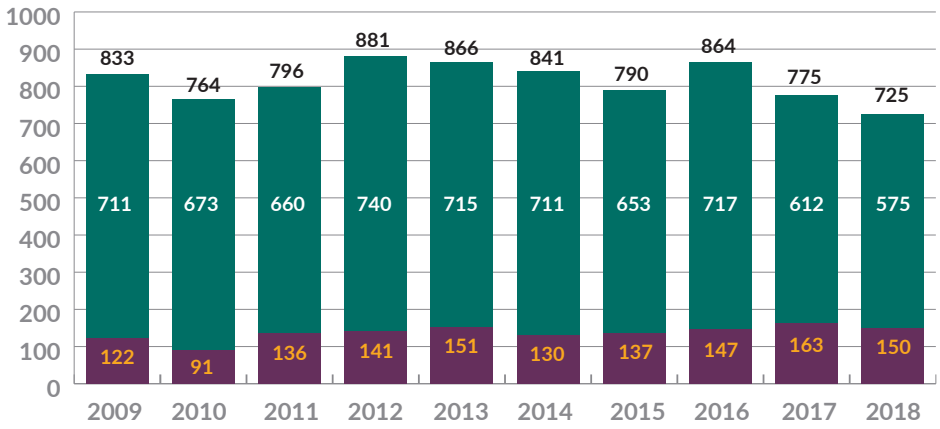
PEDESTRIANS DATA TREND

See **Figure 4-9** for the annual totals for pedestrian fatalities and serious injuries.

MOTORCYCLES DATA TREND

Figure 4-6 shows the annual totals for motorcycle-involved fatalities and serious injuries. Motorcycle-involved fatalities range from a low of 91 in 2010 to a high of 163 in 2017.

FIGURE 4-6: ANNUAL TREND IN MOTORCYCLE FATALITIES AND SERIOUS INJURIES



Source: ALISS accessed May 12, 2019

DISTRACTED DRIVING DATA TREND

The annual number of fatalities and serious injuries in which distracted driving is a factor is not available. The Arizona Crash Report form was modified in 2014 to better capture distracted driving. Distracted driving data will improve and be provided in the next STSP update as law enforcement officers utilize the new report form, and provide improved details related to distracted driving with legislation passed in April 2019 that prohibits use of a cell phone while driving (A.R.S 18-914).

HIGHWAY SAFETY (BEHAVIOR-RELATED) EMPHASIS AREA GOAL

Use enforcement, education, and awareness to create a safety culture in which Arizona road users are always focused and alert, and to minimize behaviors such as:

- Speeding/Reckless Driving
- Impaired Driving
- No restraint used including seat belts and child safety seats
- Distracted Driving

STRATEGIES TO ACHIEVE HIGHWAY SAFETY (BEHAVIOR-RELATED) EMPHASIS AREA GOAL

TABLE 4-2: STRATEGIES TO ACHIEVE HIGHWAY SAFETY (BEHAVIOR-RELATED) EMPHASIS AREA GOAL

Strategy Category
Speeding/Reckless Driving
Engineering
1. Consider speed reduction in heavy traffic zones. Consider variable speed limits in heavy traffic zones. An example is I-17 between Flagstaff and Phoenix, or I-10 between Phoenix and Tucson. The speed limit would be modified in congested conditions, incidents, or inclement weather.
Enforcement
2. Establish a Speed Enforcement Task Force statewide, with media exposure. Drag racing will be an important messaging element.
3. Increase high-visibility enforcement of reckless driving and speed laws; support use of speed trailers and messaging for awareness.
4. Consider possible legislation to allow double fines (A.R.S 28-710) for speeding/reckless driving in construction zones on local streets statewide, and especially in large cities. Current statute enables double fines on state highways only.
5. Review criminal speed citations/arrests and modify aggressive driving statutes.
6. Encourage practices for law enforcement presence through all major work zones on state highways and major arterials.
Education
7. Support aggressive driving and speed enforcement efforts with strong multiple channel messaging and outreach to encourage appropriate speeds.
8. Reestablish and support program to teach defensive driving to high school students.
Impaired Driving
Enforcement
1. Continue DUI Task Force Enforcement. Support the use of high-visibility enforcement techniques, saturation patrols, and integrated enforcement tactics.

Strategy Category
2. Enhance DUI Drug Enforcement. Support law enforcement training in DRE, Drug Impairment Training for Educational Professionals (DITEP), ARIDE, Phlebotomy, and SFST/Horizontal Gaze Nystagmus (HGN).
3. Establish tablet-based DRE database for Arizona.
4. Expand number of officers statewide who are trained on E-Warrant.
5. Provide traffic officers with needed equipment: • Preliminary Breath Testing (PBT) device for all traffic officers • Expand Intoxilyzer 9000 deployment • False/Fake ID card mobile app
Education
6. Expand "KNOW YOUR LIMIT" program to all agencies statewide.
7. Support alcohol-, marijuana-, and other drug-related enforcement efforts with strong multiple-media messaging and outreach to encourage sober driving.
8. Continue and expand the use of alternative transportation modes including the use of sober designated drivers and ride services.
Occupant Protection (Non-use of Restraints)
Enforcement
1. Increase high-visibility and integrated occupant protection enforcement for seatbelts and child restraints.
2. Train additional law enforcement officers as child restraint system installation technicians.
3. Consider legislation for primary enforcement of mandatory restraint use (primary seat belt law).
4. Consider legislation for primary enforcement of mandatory restraint use for all vehicle seating positions (rear seat belt law).
5. Consider legislation to increase fines and penalties for non-use of occupant restraints.
Education
6. Support occupant protection enforcement efforts with strong multiple-channel messaging and outreach to encourage greater seatbelt and child restraint use.
7. Implement targeted outreach campaigns to address groups with low restraint use.
8. Expand the Children are Priceless Passengers (CAPP) program.
Pedestrian (Behavior-Focused Strategies)
Enforcement
1. Promote jay-walking ordinances in jurisdictions state-wide.
2. Collaborate with state, local, and tribal law enforcement agencies to conduct targeted enforcement in high-pedestrian-activity and high-crash areas.

Strategy Category	CITY OF TUCSON CITY CODE:
Education	
3. Collaborate with state, local, and tribal law enforcement agencies and public health agencies to conduct pedestrian safety education. Programs will be focused on both pedestrians and motorists of all ages, backgrounds, and ethnicities. Events may include bicycle rodeos at which bicycle helmets are distributed.	Sec. 20-92. Prohibited crossings. Between adjacent intersections at which traffic-control signals are in operation, pedestrians shall not cross at any place except in a crosswalk. No pedestrian shall cross a roadway other than in a crosswalk in the central business district or in any business district. (1953 Code, ch. 17, § 53)
4. Conduct elementary age, school-based pedestrian safety education programs.	
5. Prepare public messages to educate pedestrians boarding and alighting buses to walk to the nearest intersections to cross the street.	
6. Prepare public messages to educate about how to safely operate an e-scooter.	
Motorcycles	
Enforcement	
1. Continue motorcycle enforcement details, including split lane and speeding.	
Education	
2. Require mandatory training for license (M) endorsements.	
3. Provide motorcycle safety training scholarships (American Motorcycle Safety Awareness Foundation [AMSAF]).	
4. Enforce “no split lane”; consider possible legislation to prohibit HOV use by motorcycles, to reduce misuse including speeding and reckless driving in an HOV lane.	
Distracted Driving	
Enforcement	
1. Enforce existing city, county, and tribal distracted driving/cell phone ordinances until January 1, 2021.	
2. Issue warnings for violation of A.R.S. 28-014 until January 1, 2021. Track the number of warnings issued by each agency.	
3. Enforce with fines A.R.S. 28-014 effective January 1, 2021.	
Distracted Driving	
Education	
4. Support distracted driving education and awareness efforts, particularly of A.R.S. 28-014, with strong multiple-channel messaging and outreach to discourage distracted driving; may include an education video about A.R.S. 28-014. Consider collaborating with media Editorial Boards to provide information about the dangers of distracted driving, and the new distracted driving statute.	
5. Promote mobility options for older drivers as an alternative to driving.	

4.4 INTERSECTIONS EMPHASIS AREA

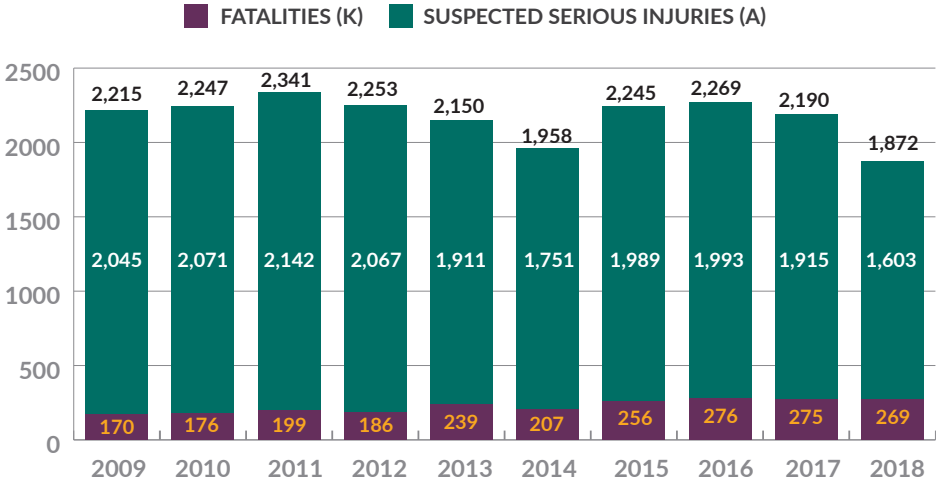
Every year in Arizona, approximately 2,000 fatal and serious-injury intersection crashes occur, with more than 14% of those crashes resulting in a fatality.

Over 25% of all crash fatalities in Arizona (2016-2018) were the result of an intersection-related crash. Intersections are high-conflict locations which often result in higher severity crashes. Intersection crashes are more prevalent in urban areas where the number of intersections and the population is greater. These crashes are predominantly categorized as Angle or Left-Turn crashes.

ANNUAL DATA TREND

Twenty-eight percent of all fatalities and 44% of all serious injuries in Arizona occurred at or were related to an intersection. **Figure 4-7** shows the annual totals for intersection-related fatalities and serious injuries. Serious injuries generally dropped over the prior 10-year analysis period, but overall, fatalities have increased since 2012.

FIGURE 4-7: ANNUAL TREND IN INTERSECTION-RELATED FATALITIES AND SERIOUS INJURIES



Source: ALISS accessed May 12, 2019

INTERSECTIONS EMPHASIS AREA GOAL

Use the 4 E's – Engineering, Enforcement, Education, and EMS/ Emergency Response to reduce the frequency and severity of intersection-related crashes across Arizona.

KEY FACTS:

- 14% of all fatalities and 29% of all serious injuries occurred at signalized intersections.
- 14% of all fatalities, and 15% of all serious injuries occurred at unsignalized intersections.

Intersection-related crash is defined as:

Location of the crash next to an intersection, on the approach to or the exit from an intersection, and results from an action related to the movement of traffic units through the intersection.

POTENTIAL INFRASTRUCTURE INTERSECTION COUNTERMEASURES

FHWA Proven Safety Countermeasures

- Reduced conflict left-turn intersections
- Systemic application of multiple low cost countermeasures at stop-controlled intersections
- Backplates with retroreflective borders
- Dedicated turn lanes
- Roundabouts
- Yellow change intervals
- Corridor access management

Other countermeasures:

- Protected-only left turns
- Signal coordination
- Emergency vehicle preemption
- Flashing yellow arrow
- Turn lane channelization
- Clear sight triangles
- Improve visibility of signals
- One signal head per lane
- Larger (12") signal heads

STRATEGIES TO ACHIEVE INTERSECTIONS EMPHASIS AREA GOAL

TABLE 4-3: STRATEGIES TO ACHIEVE INTERSECTIONS EMPHASIS AREA GOAL

Strategy Category Intersections	Strategy eligible for HSIP funding?
Engineering Strategies	
1. Consider adopting Intersection Control Evaluation (ICE) policies and procedures to evaluate and select the geometry and control for an intersection. Consider life-cycle cost and flexibility in the decision process. (Refer to: https://safety.fhwa.dot.gov/intersection/ice/)	—
2. Identify individual or groups of intersections with fatal and serious injury crash patterns that can be addressed through infrastructure upgrades or improvements. FHWA Proven Safety Countermeasures related to intersections include: • Reduced Conflict Left-Turn Intersections • Roundabouts • Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections • Leading Pedestrian Intervals (LPI) at signalized intersections with high numbers of pedestrians • Dedicated Left- and Right-Turn Lanes at intersections, including at two-way stop-controlled intersections where significant turning volumes exist Additional countermeasures to consider: • Intersection lighting at locations with over-representation of nighttime crashes • Improve left-turn lane offsets to provide additional visibility to help address left-turn crashes (MAG's Left-Turn Crash Mitigation Implementation Template and Guidance provides information on this countermeasure)	See Note 1
3. Consider FHWA Proven Safety Countermeasure: Corridor Access Management. Encourage ADOT and local jurisdictions to develop and adopt access management policies.	—
4. Consider FHWA Proven Safety Countermeasure: Yellow Change Intervals. Evaluate and adopt consistent signal timing clearance intervals policies across state and local jurisdictions to eliminate driver confusion.	—
5. Evaluate left-turn phasing practices and policies.	—

1. Locations where fatal and serious-injury crashes have occurred are eligible for HSIP funding.

TABLE 4-3: STRATEGIES TO ACHIEVE INTERSECTIONS EMPHASIS AREA GOAL

Strategy Category	Strategy eligible for HSIP funding?
Intersections	
6. Review and update corridor traffic signal timing and coordination on a regular schedule (every three to five years minimum).	—
7. Improve traffic signal timing and coordination between jurisdictional signal systems to improve operations and reduce driver frustration.	—
Enforcement Strategies	
8. Encourage and expand data-driven speed and red-light-running enforcement, including use of technology to assist enforcement. Focus should be on the top violations associated with intersection fatal and serious injury crashes (e.g., speeding, red-light running, failure to yield right of way, etc.)	—
9. Install red-signal enforcement lights to assist enforcement of red-light runners.[3] The red-signal enforcement light activates simultaneously with the red signal phase, providing an enforcement officer located downstream from an intersection with a visible indication of the upstream red phase so they can determine when a vehicle has violated the red phase. Relatively small, low-cost lights are mounted on the top, bottom, or rear of a traffic signal and are wired into the signal controller for accurate red-signal phase indication.	See Note 1
Education Strategies	
10. Educate the public and decision-makers on the safety benefits of traffic safety improvements, including but not limited to technology-assisted enforcement, roundabouts, access management, and flashing yellow arrows.	—
11. Educate the public on the dangers of red-light running, including how many fatalities involve red-light running. Emphasize that approximately 95% of all fatal crashes include driver behavior as a contributing factor.	—
Emergency Response	
12. Evaluate Emergency Vehicle Preemption system implementation practices statewide.	See Note 1
13. Expand deployment of Emergency Vehicle Preemption systems.	—

1. Locations where fatal and serious-injury crashes have occurred are eligible for HSIP funding.

3. https://safety.fhwa.dot.gov/intersection/conventional/signalized/tech_sum/fhwasa09005/

4.5 LANE-DEPARTURE EMPHASIS AREA

Every year in Arizona, more than 1,900 serious lane-departure crashes occur, with 24% of those crashes resulting in a fatality. Nearly half of all crash fatalities in Arizona between 2009 and 2018 were the result of a lane-departure crash. These crashes often take place on rural highways where speeds are typically higher, and as a result, crashes are frequently more severe. Lane-departure crashes are categorized as head-on, sideswipe, rollover, or collision with a fixed object.

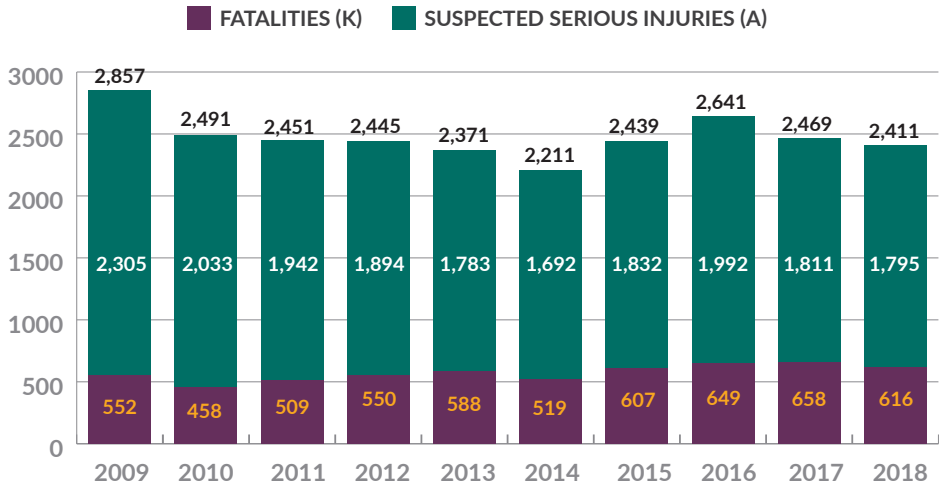
ANNUAL DATA TREND

Lane-departure crashes account for 47% of all fatalities and 34% of all serious injuries in Arizona. **Figure 4-8** shows the annual totals for lane-departure fatalities and serious injuries. Serious injuries have generally decreased over the previous 10-year analysis period, from a high in 2009. Lane-departure fatalities generally decreased since 2009, but have since increased from a low in 2014.

LANE-DEPARTURE EMPHASIS AREA GOAL

Create a safer roadway network by reducing the risk and severity of lane-departure crashes by employing traffic safety improvements and initiatives geared toward **keeping vehicles on the road,** influencing **driver focus on the road,** and enabling **advanced vehicle technologies.**

FIGURE 4-8: ANNUAL TREND IN LANE-DEPARTURE-RELATED FATALITIES AND SERIOUS INJURIES



Source: ALISS accessed May 12, 2019

KEY FACTS:

Overturn/Rollover is the most prevalent First Harmful event for Lane-Departure fatalities and serious injuries, 2016-2018 (20% of Lane-Departure fatalities and serious injuries).

For 2016-2018, **Head-on crashes** resulted in 295 fatalities and 814 serious injuries (15% of Lane-Departure serious injuries).

20% of Lane-Departure fatalities and 19% of Lane-Departure serious injuries occurred on **horizontal curves.**

POTENTIAL INFRASTRUCTURE LANE-DEPARTURE COUNTERMEASURES

FHWA Proven Safety Countermeasures:

- Roadside design improvement at curves
- Enhanced delineation/ friction for horizontal curves
- Longitudinal rumble strips
- Median barrier
- Safety Edge

Other countermeasures:

- Breakaway features for sign supports, utility poles, and other roadside features
- Bridge railings
- Cable barriers
- Concrete barriers
- Manual for Assessing Safety Hardware (MASH)
- W-beam guardrail
- Pavement friction
- Sign retroreflectivity requirements
- Rumble strips/stripes
- Clear zones and roadside terrain

STRATEGIES TO ACHIEVE LANE-DEPARTURE EMPHASIS AREA GOAL

TABLE 4-4: STRATEGIES TO ACHIEVE LANE-DEPARTURE EMPHASIS AREA GOAL

Strategy Category	Strategy eligible for HSIP funding?
Lane Departure	
Engineering Strategies	
1. Develop a statewide systemic lane-departure crash mitigation program to identify and address high-crash (fatalities and serious injuries) and high-risk segments for lane-departure crashes to be addressed through infrastructure improvements. Strategy focus areas are: **a.** Keep vehicles on the road **b.** Improve recovery area **c.** Minimize crash severity The following tools can be applied to identify countermeasures that upon implementation serve to reduce lane-departure crashes: • RSA • Arizona Roadway Departure Safety Implementation Plan (RDSIP) • FHWA EDC-5 – Reducing Rural Roadway Departures • Interactive Highway Safety Design Model (IHSDM)	—
a. Keep Vehicles on the Road Implement improvements to aid drivers in maintaining their focus and ability to stay on the road. Utilize FHWA Proven Safety Countermeasures, such as: • Longitudinal Rumble Strips and Stripes on Two-Lane Roads: Install centerline and edge-line rumble strips or enhanced edge line profiled pavement markings, such as six-inch edge lines, wet-reflective material, or epoxy, on rural roads, especially two-lane roads. • Enhanced Delineation and Friction for Horizontal Curves: Enhance curve delineation using chevrons, post-mounted delineators, oversized signs, brighter/wider (such as eight-inch)/ wet-reflective markings, enhanced guardrail delineation, post-mounted retroreflective sheeting, pavement markings through horizontal curves and tangent approaches ("Curve Ahead," "Slow") or dynamic speed-actuated feedback warning signs, and LED raised pavement markers. Consider utilizing high friction surface treatments. Where feasible, install combination of shoulder rumble strips with additional shoulder widening, or where feasible, pave existing shoulders, widen existing paved shoulders, or establish gravel/ stabilized "usable" shoulder extension at 1V:20H slope or flatter particularly where paved shoulder width is less than 8 feet.	See Note 1

1. Locations where fatal and serious-injury crashes have occurred are eligible for HSIP funding.

TABLE 4-4: STRATEGIES TO ACHIEVE LANE-DEPARTURE EMPHASIS AREA GOAL

Strategy Category	Strategy eligible for HSIP funding?
Lane Departure	
b. Improve Recovery Area (Prevent Lane-Departure Crash) Implement clear zone management to increase/improve the roadside recovery area to allow more time and space for corrective action by drivers to prevent collisions/rollovers. Where feasible, consideration for incorporating clear zone management activities should be incorporated into projects, such as: • Remove/relocate objects within the recovery area along the side of the road in high-risk locations. • Apply paving technologies to negate vertical drop-offs and facilitate driver ability to maintain vehicle control under instances of lane departure, such as Safety Edge. • Conduct slope flattening, repair, restoration, and maintenance to reduce likelihood of rollover on > 33% slopes, or recovery on > 25% slopes. • Improve shoulders by dispersing aggregate along the road edge to provide a more stable recovery area beyond the edge of pavement. Millings or aggregate are dispersed at 1V:6H or flatter. The photos at right (credit: ADOT Southcentral District) are from a shouldering project implemented in the ADOT Southcentral District on I-19.	See Note 1
c. Minimize Crash Severity Implement improvements in high-crash and high-risk locations to reduce the severity of the lane-departure crash. These include addressing roadside infrastructure to minimize the potential to collide with another vehicle or object or by installing infrastructure with breakaway technology to reduce the severity of a collision with that object. Utilize FHWA Proven Safety Countermeasures, where warranted, such as: • Longitudinal barriers • Barrier terminals	See Note 1

1. Locations where fatal and serious-injury crashes have occurred are eligible for HSIP funding.

4.6 PEDESTRIANS EMPHASIS AREA

Every year in Arizona, more than 1,700 pedestrians are struck by a motor vehicle and approximately 13 percent of those crashes result in a pedestrian fatality. Twenty-two percent of all fatalities in Arizona are pedestrians, and nearly 10 percent of all serious injuries involve pedestrians.

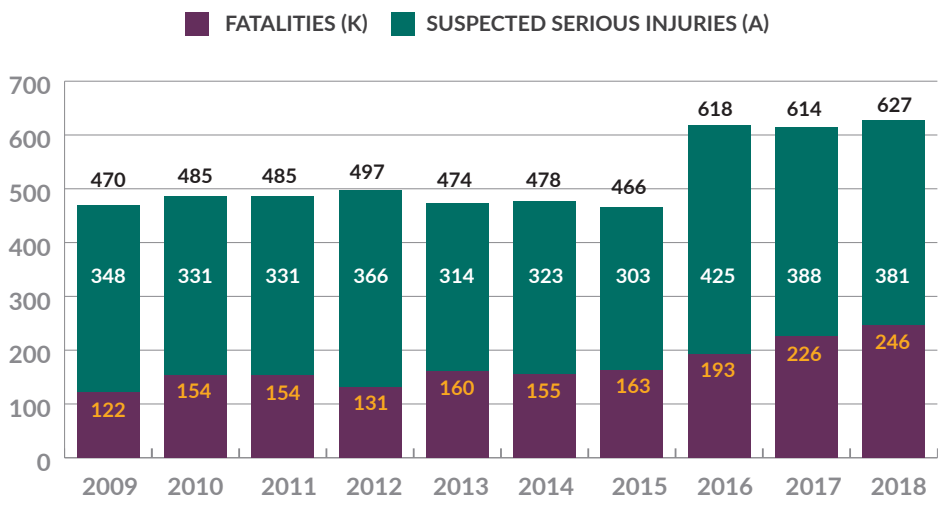
The outcome severity of pedestrian crashes has increased in the last 10 years. Pedestrian fatalities have doubled since 2009 while the total number of pedestrian crashes increased only slightly until the last three years.

As populations in Arizona communities continue to grow, pedestrian safety is a critical safety focus.

ANNUAL DATA TREND

Figure 4-9 shows the annual totals for pedestrian fatalities and serious injuries. Serious injuries have shown moderate fluctuations throughout the previous 10-year analysis period and showed a decrease from a high in 2012 to a low in 2015. Then, in 2016, fatalities and serious injuries increased significantly. Pedestrian fatalities have increased by 100 percent in 2018 as compared to 2009. Pedestrian-related fatalities and serious injuries have increased at a faster rate than total fatalities and serious injuries.

FIGURE 4-9: ANNUAL TREND IN PEDESTRIAN-RELATED FATALITIES AND SERIOUS INJURIES, 2009-2018



Source: ALISS accessed July 18, 2019

PEDESTRIANS EMPHASIS AREA GOAL

Create a safer Arizona for all pedestrians through targeted engineering, enforcement, education, and EMS/emergency response (4-E's). Emphasize accountability for all road users including motorists and pedestrians. Work in collaboration with the State of Arizona Highway Safety Plan, prepared by the GOHS.

KEY FACTS:

- 72% (477) of pedestrian fatalities, 2016-2018, and 58% of serious injuries (692) occurred at mid-block locations.
- In 48% of pedestrian fatalities and 14% of pedestrian serious injuries, the pedestrian was impaired by drugs or alcohol.

POTENTIAL INFRASTRUCTURE PEDESTRIANS COUNTERMEASURES

FHWA Proven Safety Countermeasures:

- Leading pedestrian interval
- Medians and pedestrian crossing islands in urban and suburban areas
- Pedestrian hybrid beacons
- Road diet
- Walkways

Other countermeasures:

- Raised pedestrian crossings
- Lighting and illumination
- Paved shoulder
- Curb extensions
- Advanced yield/stop lines
- Transit stop improvements
- Lane narrowing
- Driveway improvements
- Left-turn prohibitions
- Right turn on red prohibitions

RSA and the AzSTEP Guide, among other programs, can be applied to identify appropriate countermeasures.

STRATEGIES TO ACHIEVE THE PEDESTRIANS EMPHASIS AREA GOAL

TABLE 4-5: STRATEGIES TO ACHIEVE PEDESTRIANS EMPHASIS AREA GOAL

Strategy Category **Pedestrians**	Strategy eligible for HSIP funding?
Engineering Strategies	
1. Identify and prioritize intersections and segments of state and local roadways (including tribal) with the highest number of pedestrian crashes that can be addressed through infrastructure improvements. Conduct RSAs at the locations to identify appropriate countermeasures. Develop and implement projects at the locations.	See Note 1
2. Develop statewide systemic pedestrian safety improvements program to identify and prioritize intersections and segments of state and local roadways with geometric and traffic conditions that contribute to pedestrian crashes that can be addressed through infrastructure improvements. The Arizona Pedestrian Safety Action Plan (see call-out box) identifies a crash risk assessment methodology. The crash risk assessment methodology considers areas with higher proportions of vulnerable populations (examples include older adults, students, zero-car households, high pedestrian traffic, public transit, and school bus stops).	See Note 1
3. Promote and implement processes, practices, and procedures within state and local agencies to incorporate pedestrian safety into roadway improvements funding prioritization processes.	—
4. Promote requirements for pedestrian safety to be considered during development review processes. Examples include requiring evaluation of pedestrian safety in traffic impact analyses and during development plan reviews.	—
5. Promote and implement practices to set appropriate speed limits that consider the pedestrian environment and safety.	—
6. Collect data on pedestrian volumes to help assess safety risk. Create a statewide pedestrian data repository/online database. This may include before/after pedestrian data at project improvement locations.	—

PEDESTRIAN CRASH RISK ASSESSMENT

The Arizona Pedestrian Safety Action Plan introduced a risk assessment methodology to identify state highway segments and intersections where investment can help to lower the risk of pedestrian crashes.

The systemic or proactive approach identifies high-probability locations that can be addressed before pedestrian crashes occur.

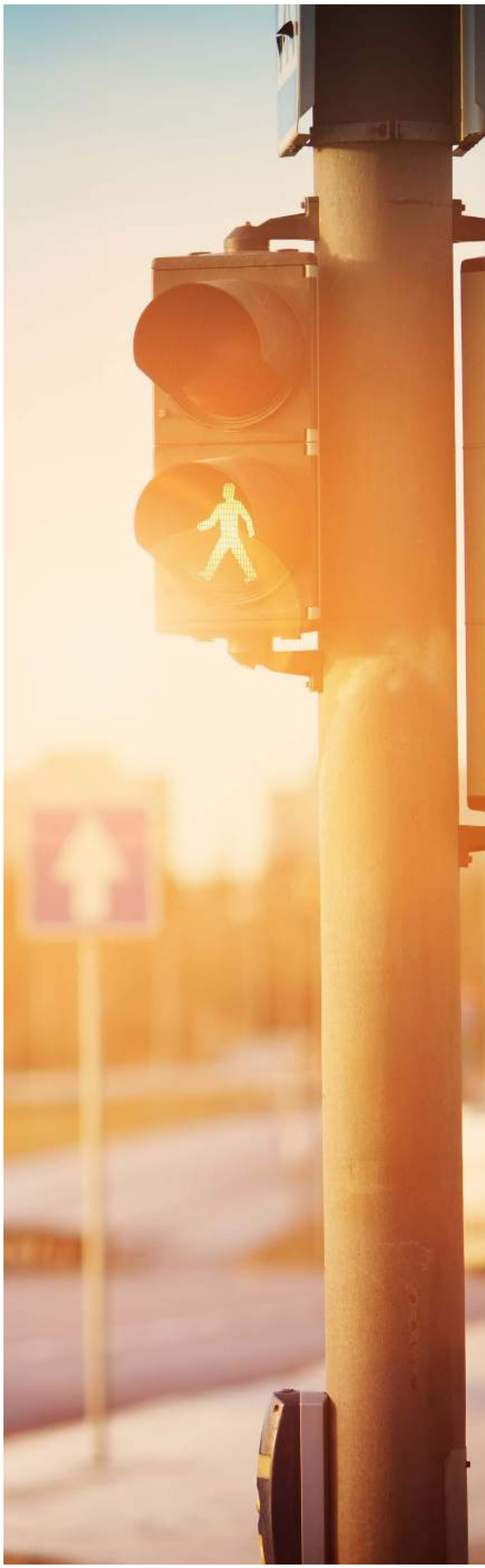
Factors and characteristics associated with pedestrian crashes include roadway geometry, number of lanes, traffic speed, traffic volume, population density, and land-use features that generate or attract pedestrian activity.

Local agencies can apply a similar approach to identify locations where pedestrian safety countermeasures can be considered.

1. *Locations where fatal and serious-injury crashes have occurred are eligible for HSIP funding.*

TABLE 4-5: STRATEGIES TO ACHIEVE PEDESTRIANS EMPHASIS AREA GOAL

Strategy Category Pedestrians	Strategy eligible for HSIP funding?
Enforcement Strategies	
7. Collaborate with state, local, and tribal law enforcement agencies to conduct targeted enforcement in high-pedestrian-activity and high-crash areas. Engineers and planners can support law enforcement to identify locations based on analysis of pedestrian crash data.	—
8. Collaborate with state, local, and tribal law enforcement to establish a Pedestrian Safety Task Force (similar to the DUI Task Force) to conduct high-visibility pedestrian safety enforcement.	—
9. Collaborate with state, local, and tribal law enforcement agencies to encourage consistent collection of detailed pedestrian crash reports. Work to ensure that crash report coding is accurate and the narrative descriptions by officers are comprehensive.	—
Education Strategies	
10. Establish and promote a local and statewide "Pedestrian Safety Month" in partnership with public safety and media.	—
11. Collaborate with state, local, and tribal law enforcement agencies and public health agencies to conduct pedestrian safety education. Programs will be focused on both pedestrians and motorists of all ages, backgrounds, and ethnicities. Target communications and outreach to communities that experience high numbers of pedestrian crashes. Messages can address behaviors including: limited conspicuity, drivers failing to yield, crossing behaviors at transit and other crossing locations, risks of walking while impaired or districted, and risks to pedestrians while driving distracted or impaired.	—
12. Collaborate with ADOT to restore Safe Routes to School programs, including elementary age, school-based pedestrian safety education programs.	—
13. Provide technical guidance, assistance, and training to small agencies, tribal, and local governments experiencing pedestrian challenges. An example training curriculum is "Designing for Pedestrian Safety," offered by the National Highway Institute.	—



4.7 SAFETY-RELATED DATA EMPHASIS AREA

A first step to improve traffic safety is to compile and analyze safety data. Quantitative data used for safety analysis includes traffic data, crash data, and roadway characteristics data.

ARIZONA SAFETY DATA

The ADOT Crash Records Section compiles and maintains a database (ALISS) of all crashes occurring within the state. It provides crash data to law enforcement agencies, government agencies at the local, state, and federal levels, and provides monthly reports to the GOHS. The ADOT Crash Records Section assists law enforcement agencies in transitioning to electronic transmittal of crash reports to ADOT through the Traffic and Criminal Software (TraCS) mobile crash reporting software system. These and other electronic platforms systems can also be used for electronic traffic citations and for developing traffic crash reports. In addition to electronic reports received through this system, approximately 25% of crash reports come into ADOT in paper form (33,224 reports in 2017). ADOT pays for the annual TraCS licensing fee through HSIP funding. Agencies statewide can work under this TraCS licensing fee.

DATA-DRIVEN SAFETY ANALYSIS (DDSA)

ADOT is in the process of implementing predictive safety analysis. Predictive safety analysis helps analysts and engineers to identify roadway sites with the greatest potential for improvement, and to quantify the expected safety performance of different project alternatives.

Predictive safety analysis combines crash data, roadway characteristics inventory, and traffic volume data to provide more reliable estimates of an existing or proposed roadway's expected safety performance. The results inform roadway safety management and project development decision-making. The data not only help agencies make better decisions, but also inform the public as to what safety benefits they can expect from their investment.

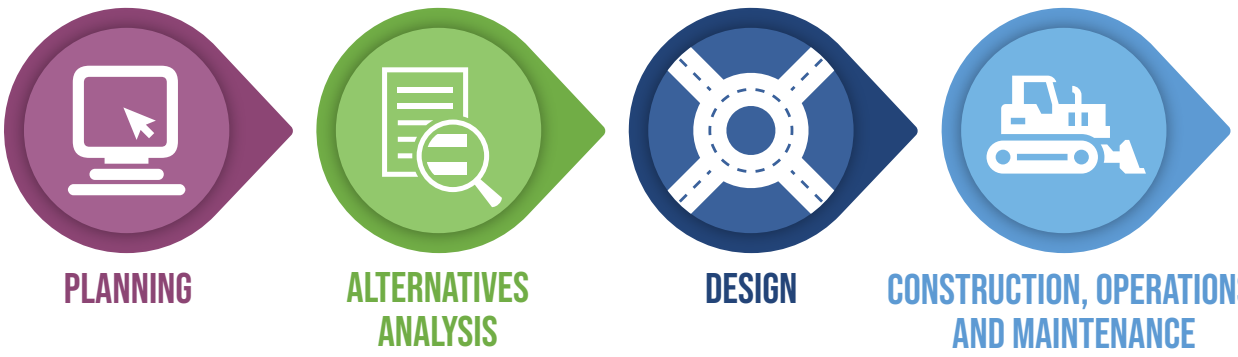
Arizona continues to prepare to implement DDSA into its traffic safety and project development programs.

SAFETY-RELATED DATA EMPHASIS AREA GOAL

Improve the quantity, quality, timeliness, and analysis of safety-related data, including expanding the use of standardized electronic crash data collection methods.

- By 2024, increase electronic reporting of crash data to 90% of all reports submitted to ADOT.
- By 2024, assist a majority of the 22 Tribal Communities with submitting crash data to ADOT in electronic format.
- Implement Highway Safety Manual predictive safety analysis statewide by 2024.

FIGURE 4-10: OPPORTUNITIES FOR DATA-DRIVEN SAFETY ANALYSIS



STRATEGIES TO ACHIEVE SAFETY-RELATED DATA EMPHASIS AREA GOAL

TABLE 4-6: STRATEGIES TO ACHIEVE SAFETY-RELATED DATA EMPHASIS AREA GOAL

Strategy Category
Safety-Related Data
Improving Crash Records
1. Identify problems or trends in crash data collection, analysis, or distribution. Make recommendations to enhance crash data. Rely on use of: • Fatality Analysis Reporting System (FARS) • Accident Location Identification Surveillance System (ALISS) • Arizona State Trauma Registry • Safety Analyst
2. Promote initiatives and identify funding resources for all Arizona agencies, including tribal communities, to migrate to the TraCS System, or a similar approved system to create a consistent and uniform crash data collection process.
3. Expand outreach to state, regional, and tribal law enforcement to improve crash reporting and improve reporting consistency.
4. Identify gaps between Arizona Crash Report Form, Model Minimum Uniform Crash Criteria 5th Edition. Modify as needed to be consistent as encouraged by the NHTSA.
5. Identify and apply crash-related data from other public health and safety registries to identify and evaluate preventative and injury management best practices.
Evaluation and Predictive Safety
6. Identify and address geographic gaps in Model Inventory of Roadway Elements Fundamental Data Elements (MIRE FDE) roadway and traffic volume data items.
7. Educate local, COGs, MPOs, and tribal staff on how data-driven approaches can be used to justify safety improvement funding.
8. Test Arizona application of predictive safety analyses to evaluate project prioritization criteria. Implement predictive safety analysis for the network screening process.
9. Perform, apply, and promote Highway Safety Manual Criteria for Safety Effectiveness Evaluation of safety improvement projects.
10. Provide technical assistance to COGs, MPOS, and local and tribal agencies to prepare for and submit HSIP Applications – including HSIP project identification and cost estimates. Provide technical support to prepare and update local, COG, MPO, and Tribal Transportation Safety Plans.

4.8 STRATEGIES COMMON TO ALL EMPHASIS AREAS

EMERGENCY MEDICAL SERVICES (EMS) STRATEGIES

EMS strategies are common to each emphasis area, and as such, are not repeated within each emphasis area.

EMERGENCY MEDICAL SERVICES

1. Expand traffic incident management (TIM) training for all agencies—transportation, public works, law enforcement, and EMS. Resources include the National Traffic Incident Management Responder Training Program (L12/L32A/L32B)[4]. On-line and in-person training is available. The training offers a set of practices and advanced standards to enable safer and faster clearance of traffic crashes. The training addresses all aspects of incident response, from the moment the first emergency call is made to the correct positioning of response vehicles and equipment, to a safe work area using traffic control devices, to final scene clearance. See https://tim.az.gov/ for additional information.

2. Support training rural-based EMS providers in the National Association of Emergency Medical Technician (EMT) Prehospital Trauma Life Support (PHTLS)[5] Course to enhance the coordinated delivery of field trauma care. PHTLS is appropriate for EMTs, paramedics, nurses, physician assistants, physicians, and other prehospital providers. Initial focus is on communities that are adjacent to high-risk roadway segments and segments with high number of crashes resulting in suspected serious and fatal injuries.

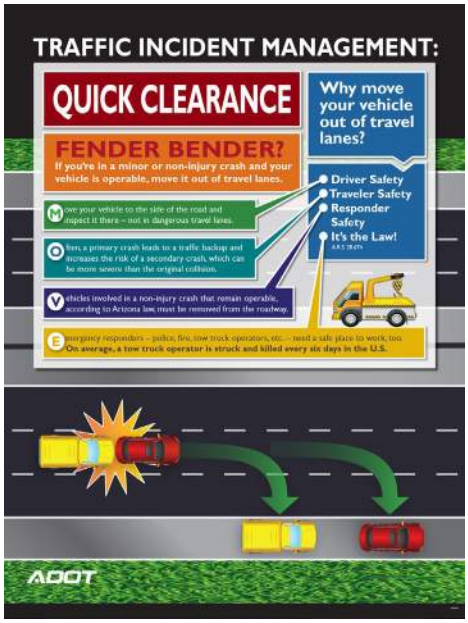
3. Train the public to apply evidence-based emergency care measures (while first responders are en route) to assist individuals sustaining traffic-related life-threatening injuries and prevent further injuries. Such measures can provide emergent care to the injured in rural areas with longer EMS response and transport times. Initially focus on rural communities that serve high-risk roadway segments and segments with a high number of crashes resulting in with serious and fatal injuries.

4. Identify mechanisms to educate drivers on appropriate procedures when approaching or involved in a highway incident (e.g., crash, debris, law enforcement activity, fire/EMS activity, and transportation and towing activities).
   - Work with Motor Vehicle Division to include Quick Clearance Laws in drivers licenses testing.
   - Consider an online Driver Incident Safety Course designed to prevent traffic-related injuries and secondary crashes by educating drivers on appropriate procedures when approaching or involved in a highway incident (e.g., crash, debris, law enforcement activity, fire/EMS activity, and transportation and towing activities).
   - Promote quick clearance of incidents to reduce secondary crashes, as shown in **Figure 4-11.** Identify mechanisms to expand awareness to motorists and the public about A.R.S. 28-674.
   - Provide emergency dispatchers specific crash details (e.g., landmarks, milepost markers, number/type of vehicles, injuries, and hazards) to facilitate appropriate levels of response and scene arrival times.

5. Establish a Fire/EMS Highway Safety Programs webpage that links to the 2019 STSP homepage to which EMS and safety agencies post their respective highway safety prevention and response programs addressing the emphasis areas with agency contact information. See Appendix C.

> "Improved incident management training leads to faster incident response and clearance. This results in fewer secondary crashes from the original incident and less exposure on the roadway for responders and drivers while the accident is cleared."[4]

FIGURE 4-11: INCIDENT QUICK CLEARANCE GUIDE



Source: ADOT
https://tim.az.gov/node/4700

4. https://www.fhwa.dot.gov/goshrp2/Solutions/Reliability/L12_L32A_L32B/National_Traffic_Incident_Management_Responder_Training_Program

5. https://www.naemt.org/education/phtls

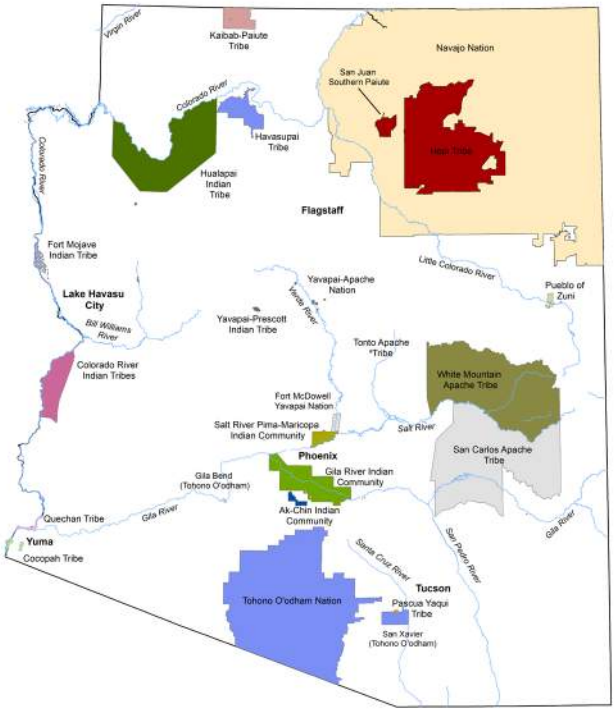
COORDINATION WITH TRIBAL COMMUNITIES

Arizona is home to 22 federally-recognized Tribes, Communities, and Native Nations in Arizona, with tribal land encompassing approximately 27,736,000 acres or 28% of the state land base. Nearly 18% (over 1,200 miles) of the state highway system centerline miles traverse tribal land. Available crash data that is reported to ADOT indicates that 11% of all fatal crashes in Arizona occur on tribal lands.

An analysis of crash data, *Arizona Preliminary Motor Vehicle Crash Data Analysis, 2007-2016*,[6] conducted by the Inter tribal Council of Arizona (ITCA), identified:

- **Lane departure** is 130% (46.2/20.1) more prevalent a factor in the percentage of fatal and incapacitating injuries on tribal land than off tribal land, when compared to the total number of fatal and incapacitating injuries for each.
- The percent of persons with known fatal or incapacitating injuries due to crashes involving impaired driving is 52% (39.0/25.6) higher on tribal land than off tribal land, when compared to the total fatalities and incapacitating injuries for each.
- **Speeding** is 21% (42.3/35.0) more prevalent a factor on tribal land than off tribal land when compared to total fatalities and incapacitating injuries for each.

Tribal Homelands In Arizona



Challenges to improving traffic safety on tribal communities include:

- Many fatal and severe-injury crashes that occur on tribal roads may not be reported to the Arizona Crash Information System.
- Crashes that occur on tribal lands often occur in very remote and rural areas, distant from EMS and medical care.
- Major traffic safety risk factors identified by the Centers for Disease Control and Prevention include low seat belt use, low child safety seat use, and alcohol-impaired driving.

The STSP implementation will be coordinated with tribal governments through the ADOT Multimodal Planning Division and the ITCA Transportation Working Group. Quarterly Working Group meetings will include a traffic safety-focused agenda item during which findings, action items, and coordination opportunities will be addressed. Examples include data improvement strategies (See Safety-related Data Emphasis Area), funding opportunities (e.g., HSIP), and training.

Strategy
Tribal Coordination
1. Coordinate with ADOT Multimodal Planning Division and the ITCA Transportation Working Group. Present findings from each emphasis area at the quarterly Transportation Working Group meetings. Coordinate schedules of Transportation Working Group Meetings with schedule for quarterly Emphasis Area Team Meetings.

6. http://itcaonline.com/wp-content/uploads/2018/02/FINAL-AZ-MVC-Analysis-Report.pdf

5. IMPLEMENTATION

Arizona recognizes development of this data-driven STSP and adopting its goals and objectives are only the initial steps in making this vision a reality. Developing safety plans does not prevent serious crashes or save lives; rather, this end is achieved by effective implementation of identified safety improvements and programs. Therefore, to achieve the STSP goal to save lives by reducing traffic-related deaths and serious injuries, Arizona is committed to the development of a comprehensive statewide highway safety program to effectively guide implementation of safety strategies on all of Arizona's public roadways.

For this reason, this plan is a "living document." Periodic reviews will be necessary to ensure the plan is current and on track, which will be achieved by reaching out to safety stakeholders for suggestions on implementation, conducting post-project evaluations to measure effectiveness, revising action steps to better support the strategies in this plan, and reporting on progress toward achieving Arizona's goal of reducing fatalities and serious injuries on all public roadways.

The basic components of this comprehensive program include implementing the Emphasis Area strategies to reduce fatalities and serious injuries:

- Engineering: implementing infrastructure safety improvements demonstrated as effective at reducing the number and severity of crashes
- Enforcement: supporting and promoting aggressive enforcement of current traffic laws
- Education: continually educating and training all road users and promoting safe transportation behaviors
- Emergency Medical Services: supporting and promoting the efficiency of first responders and trauma centers
- Policy: supporting best practice changes in safety-related laws or policies
- Data: improving the collection, quality, and use of crash and other safety-related data

The implementation of the STSP is continuously evolving and will need to be re-addressed and updated through regular evaluation of results.

5.1 STSP MANAGEMENT STRUCTURE

Effective implementation of the STSP vision, goals, and Emphasis Area strategies requires coordination and collaboration among all stakeholders. The STSP defines a system, organization, and a process to achieve an enhanced level of roadway safety by integrating the work of the disciplines and agencies involved. The process involves stakeholders at every level of government in Arizona (local, county, regional, state, tribal, and federal) as well as the private sector, advocacy groups, and the public, which includes representation from all 4 E's of safety: Engineering, Enforcement, Education, and EMS.

Figure 5-1 shows the STSP management structure as established to assure oversight of the plan's implementation during the next five years.

FIGURE 5-1: STSP MANAGEMENT STRUCTURE

5.2 LEADERSHIP ROLES AND RESPONSIBILITIES

EXECUTIVE COMMITTEE

ARIZONA EXECUTIVE COMMITTEE ON TRAFFIC SAFETY

The Executive Committee serves in a leadership capacity for developing, promoting and implementing cost-effective transportation-safety strategies within the state to reduce the number and severity of crashes on all of Arizona's public roadways.

ROLES AND RESPONSIBILITIES

- Meets quarterly or as deemed necessary
- Establishes STSP policies and procedures, reviews progress, provides advice and guidance, addresses challenges, and removes barriers
- Provides support and assistance to specific STSP strategies as appropriate
- Consults the STSP when updating agency or organization plans and programs and shares progress on safety initiatives
- Promotes collaboration among the agencies and stakeholders
- Shares progress on safety initiatives

STSP ADMINISTRATOR

The STSP Administrator position falls under the direction of the ADOT Transportation Systems Management and Operations Division (TSMO) Director and State Traffic Safety Engineer within the ADOT TSMO Division. The Administrator is responsible for managing implementation of the STSP.

ROLES AND RESPONSIBILITIES

- Manages the coordination, implementation, and evaluation of the STSP
- Serves as the direct line of communication between the Executive Committee, Emphasis Area team leaders, Emphasis Area support leaders, and the Safety Communication Group
- Plans, organizes, facilitates, and documents all Executive Committee and Emphasis Area team meetings
- Provides assistance, when appropriate, to overcome challenges or solve problems
- Provides recommendations to the Executive Committee from Emphasis Area team leaders relating to major plan initiatives, such as the HSIP, updating this SHSP, adding or revising goals, and changes in Emphasis Area team leadership
- Reviews implementation progress and performance for each of the Emphasis Areas and provides recommendations for enhancements
- Coordinates annual updates to SHSP strategies, action steps, and performance reporting, including coordination with other agencies on annual safety performance measure targets
- Assists ADOT staff in coordinating and facilitating safety events such as an annual safety summit
- Provides analytical support to summarize annual crash counts by characteristics and responds to specific analysis requests from the Executive Committee and Emphasis Area teams
- Evaluates the STSP annually relative to meeting established performance measures, progress on fatality and serious injury objectives, process evaluation, and accomplishments

SAFETY COMMUNICATION GROUP

MEMBERS OF THE SAFETY COMMUNICATION GROUP

- Arizona Department of Transportation (representative)
- Director, Arizona Governor's Office of Highway Safety
- Public Affairs Unit, Arizona Department of Public Safety (representative)
- Communication Director, Arizona Department of Health Services
- Federal Highway Administration (representative)
- Federal Motor Carrier Safety Administration (representative)
- National Highway Traffic Safety Administration (representative)

ROLES AND RESPONSIBILITIES

- Meets quarterly or as deemed necessary
- Develops an STSP Marketing and Communications calendar to outline the timing and messaging of annual public information and educational campaigns (events should coordinate with the NHTSA Highway Traffic Safety Calendar and NHTSA Communications Calendar, available at www.TrafficSafetyMarketing.gov)
- Oversees development of STSP marketing and communication materials
- Participates in news media events
- Develops campaign ideas for Emphasis Areas not already covered by existing campaigns
- Provides assistance, when necessary, to local agencies or groups hosting STSP-related media and outreach events
- Assists in supporting STSP safety events such as the annual safety summit

EMPHASIS AREA TEAMS

Emphasis Area teams are comprised of federal, state, regional, tribal, and local safety stakeholders, as well as other subject-matter experts and safety advocates. They are responsible for developing and implementing action plans for the strategies outlined in the STSP. Emphasis Area team leaders work with the STSP Administrator to provide guidance and direction for their teams and coordinate with other branches of the STSP management structure. These team leaders are considered "Champions" who provide the enthusiasm and momentum to promote communication and collaboration among team members and other safety partners.

ROLES AND RESPONSIBILITIES

- Meets quarterly or as deemed necessary
- Ensures a multidisciplinary approach by including representatives from the commonly recognized 4E's of safety and consulting the STSP Administrator where assistance is needed on team composition
- Reviews and implements Emphasis Area strategies; develops action plans for strategies including determining who is responsible for implementation; tracks progress; determines if revisions to STSP strategies are necessary; identifies new strategies; and notifies the STSP Administrator if assistance is needed during implementation

- Participates in ongoing tracking and evaluation of outputs and outcomes associated with strategy action plans, including development of performance measures for evaluating the effectiveness of implemented strategies
- Receives and reviews updates on STSP-related campaigns, trainings, or other programs
- Prepares quarterly progress reports for the STSP Administrator and the Executive Committee
- Provides assistance, when appropriate, to overcome challenges or solve problems
- Works in cooperation with the STSP Administrator to provide recommendations to the Executive Committee on all major plan initiatives, such as the HSIP, updating this STSP, adding or revising goals, and changes in Emphasis Area team leadership
- Emphasis Area team leaders support the STSP
- The STSP administrator facilitates team meetings and development and review of meeting materials and reports

5.3 EVALUATION

The purpose of a STSP evaluation is to keep the focus of safety efforts on effectively achieving the goal of reducing fatalities and serious injuries. Evaluation provides guidance in prioritization of traffic safety resources and helps identify where efforts are most effective or where potential course corrections are needed. Ongoing evaluation strengthens multidisciplinary cooperation as stakeholders work together to achieve a common goal.

Implementation of this STSP will include development of an evaluation plan to support implementation of safety efforts throughout the state. The evaluation plan will identify methods to track Emphasis Area performance measures and action plans to implement safety strategies. Emerging needs for safety-related data, additional stakeholders, and other necessary resources to support evaluation efforts will be identified.

Evaluation efforts will consider the overall STSP process and effectiveness toward achieving the stated objective of reducing the total number of fatalities and serious injuries in Arizona. With support from the STSP Administrator, Emphasis Area teams will meet and participate in evaluating agreed-upon Emphasis Area performance measures and actions. Performance measures specific to Emphasis Areas and the progress of the STSP will be reported in an STSP Annual Report.

Emphasis Area teams will use evaluation results to adjust their own action plans and specific goals. These teams will identify problems or barriers to further progress and request assistance from the STSP Executive Committee and/or agencies responsible for specific safety action steps, countermeasures, and programs.

An annual safety summit will be held to bring the state's safety stakeholders together to share progress toward achieving STSP and individual Emphasis Area goals, and to look ahead at efforts proposed for subsequent years.

CONTINUED RESEARCH

Strategies recommended in the STSP are based on Arizona crash trends and stakeholder input. However, strategies can be improved and focused with additional investigation, more understanding, and research, on which to base decisions. As the STSP is implemented, new questions will be asked. The ADOT Research Center is a partner to seek answers and additional learning, so that evidenced-based decisions can be made to potentially reduce fatal and serious injury crashes.

5.4 FUNDING

The success of Arizona's STSP is dependent on sufficient funding for implementation of strategies and action steps. This document will be used as a tool to direct resources or allocate additional funding to Emphasis Areas, strategies, and actions outlined. Funding and resources must be leveraged across agencies and jurisdictional boundaries.

APPENDIX A – DATA SUMMARY

APPENDIX FIGURES

NOTE: DATA SUMMARIES ARE BASED ON DATA EXTRACTED FROM ACCIDENT LOCATION IDENTIFICATION SURVEILLANCE SYSTEM, MAY 12, 2019.

HIGHWAY SAFETY (BEHAVIOR-RELATED)

SPEEDING AND RECKLESS DRIVING

FIGURE A-1: ANNUAL TREND IN SPEEDING-INVOLVED FATALITIES AND SERIOUS INJURIES

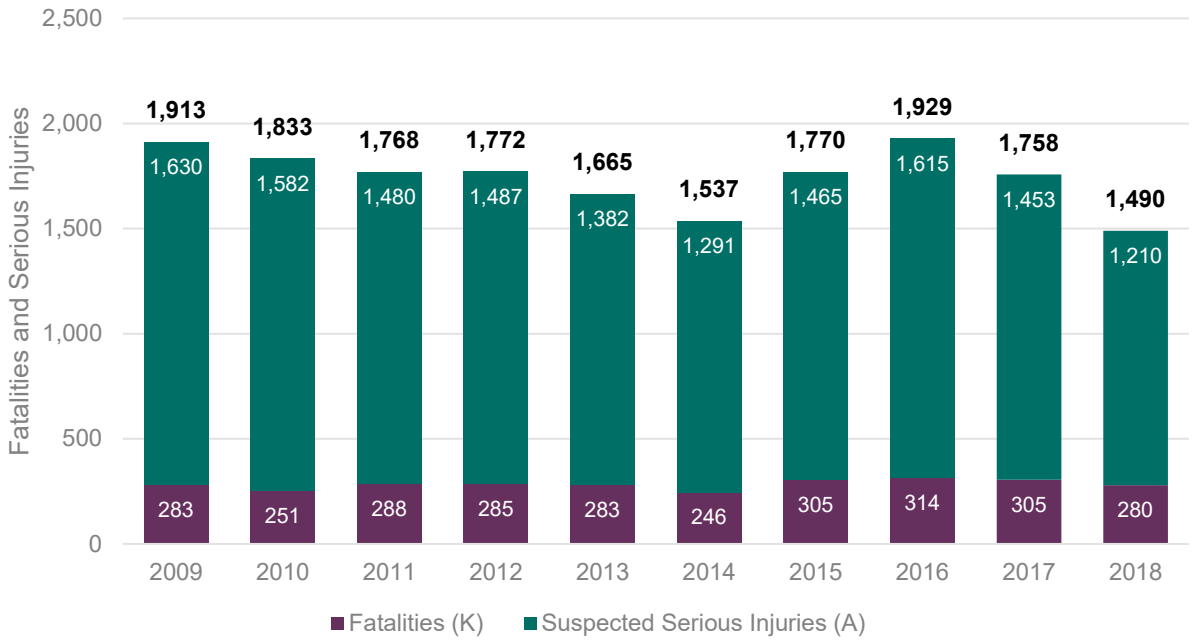


FIGURE A-2: SPEEDING-INVOLVED DRIVING FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

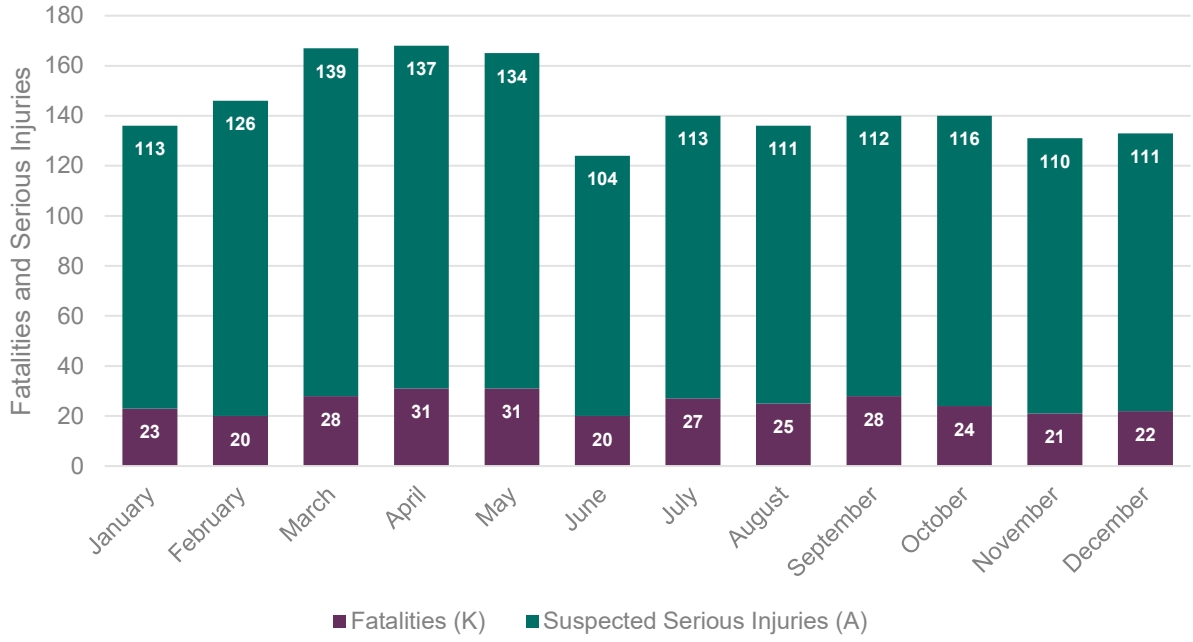


FIGURE A-3: SPEEDING-INVOLVED DRIVING FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

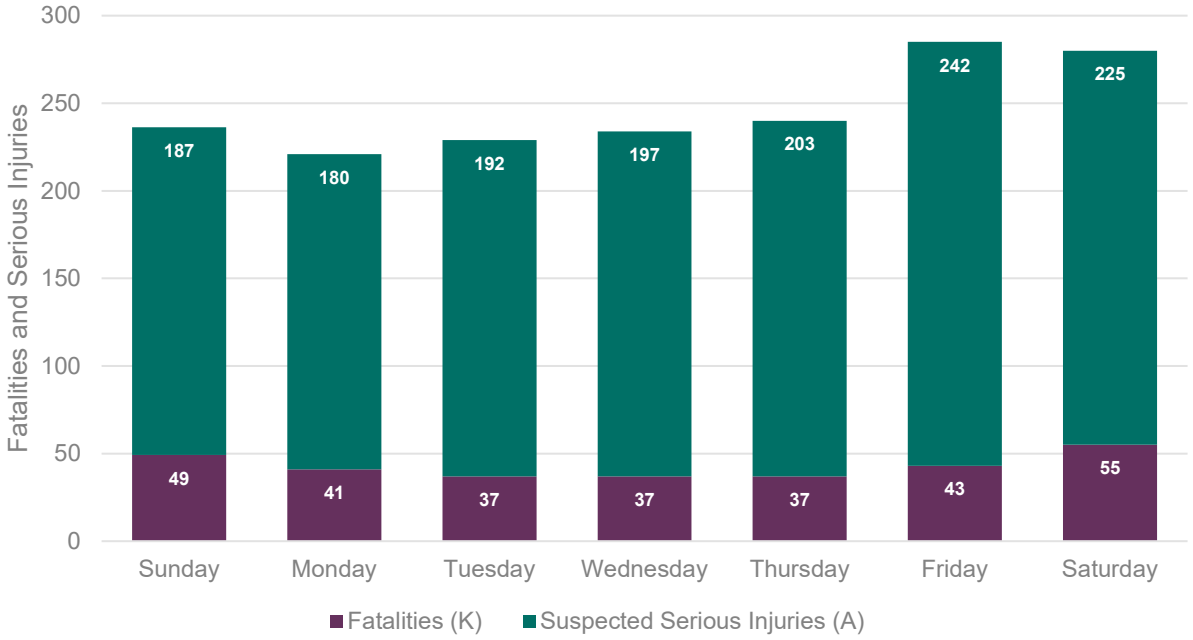


FIGURE A-4: SPEEDING-INVOLVED DRIVING FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

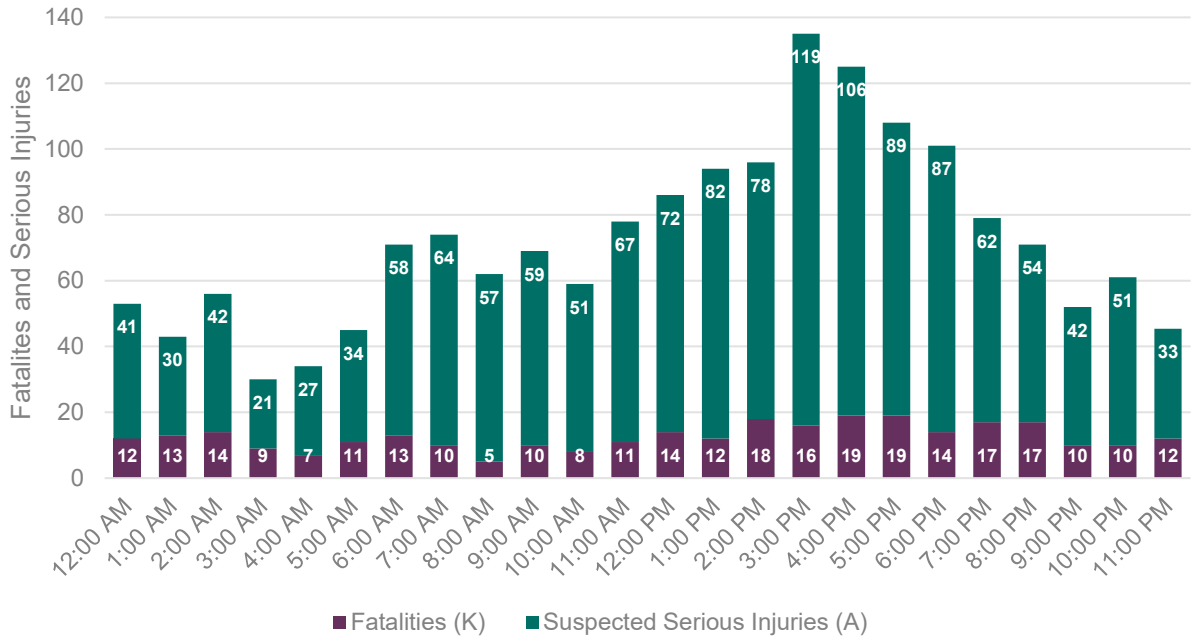


FIGURE A-5: SPEEDING-INVOLVED DRIVING FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER OF DRIVER (3-YEAR AVERAGE)

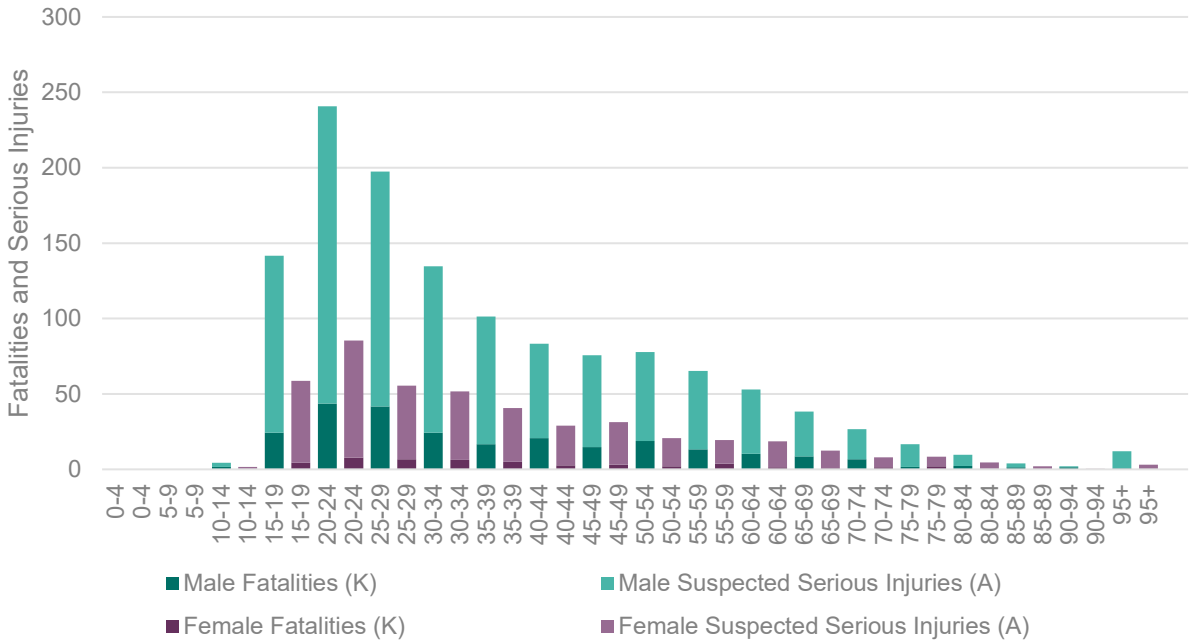
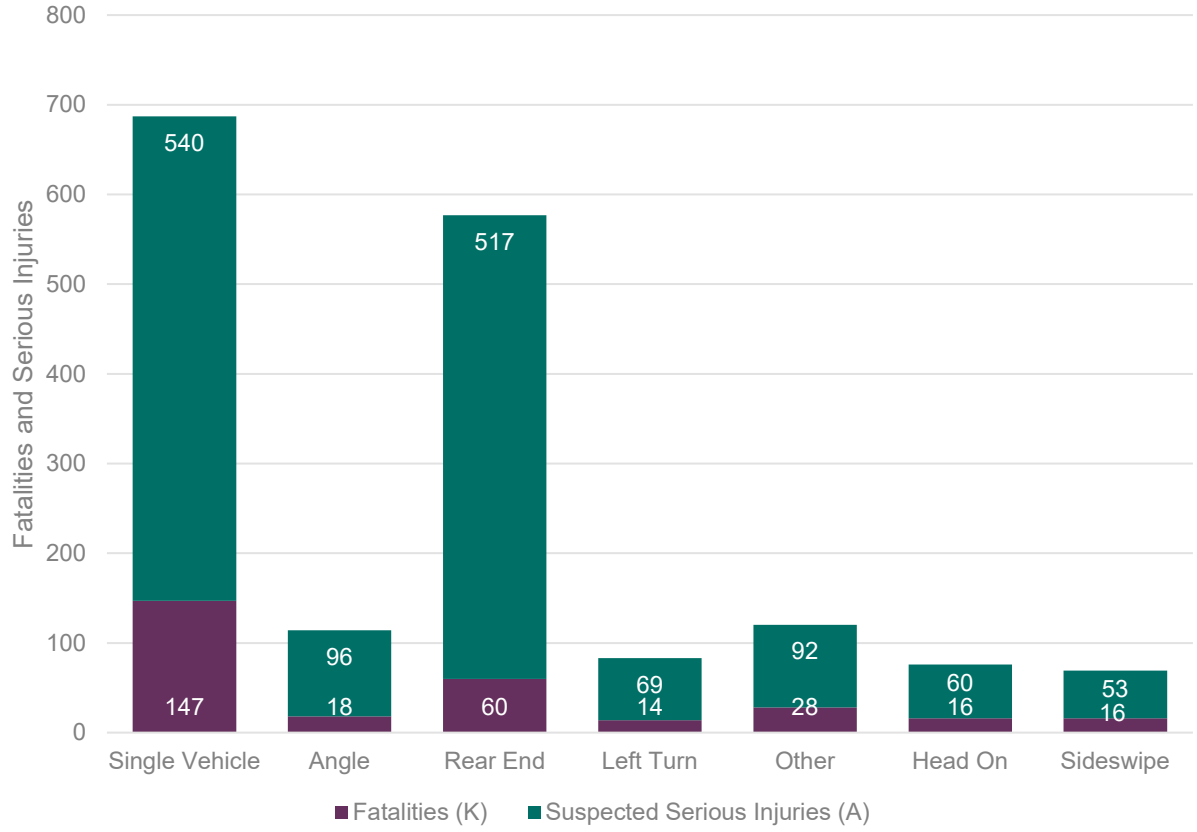


FIGURE A-6: SPEEDING-INVOLVED DRIVING FATALITIES AND SERIOUS INJURIES BY CRASH TYPE (3-YEAR AVERAGE)



IMPAIRED DRIVING

FIGURE A-7: ANNUAL TREND IN IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES

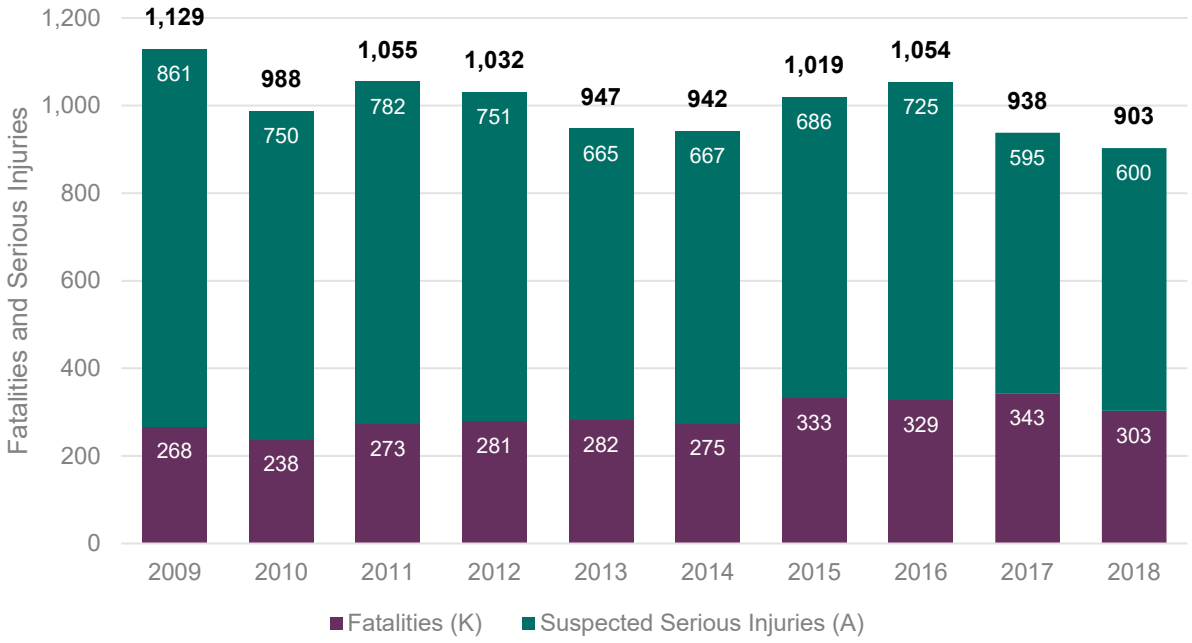


FIGURE A-8: IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

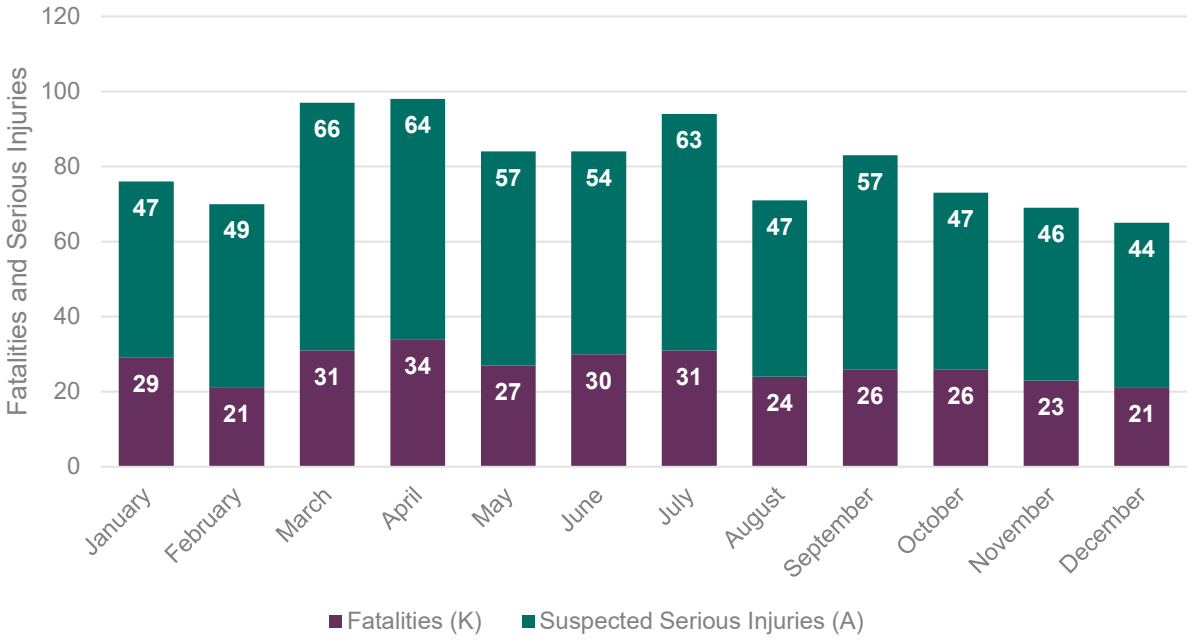


FIGURE A-9: IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

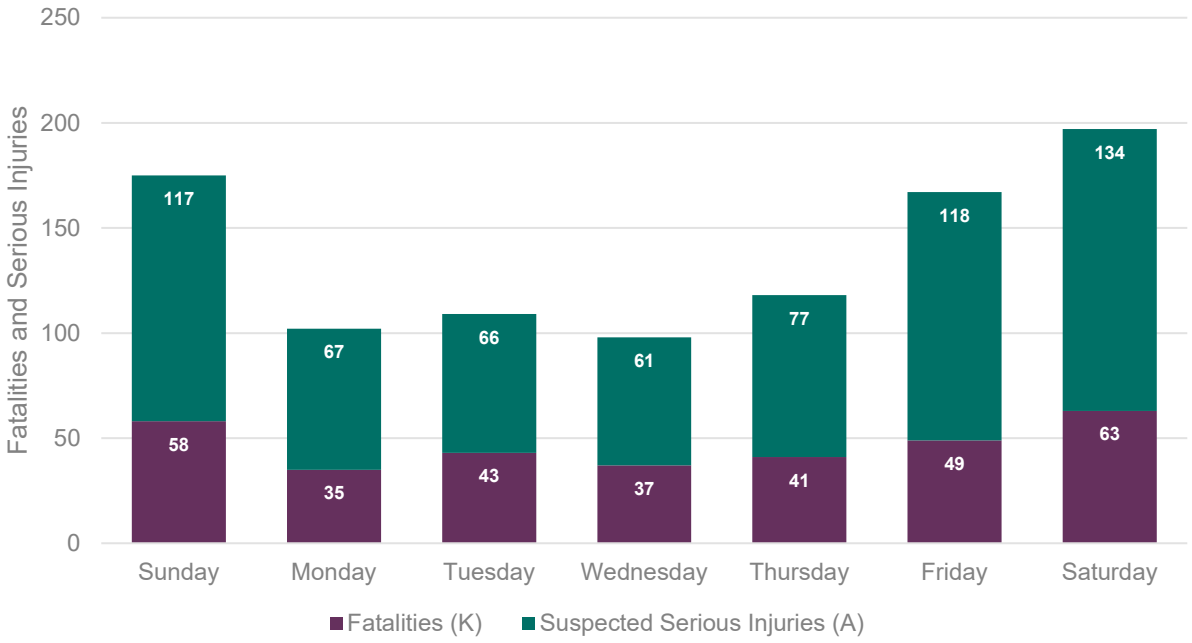


FIGURE A-10: IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

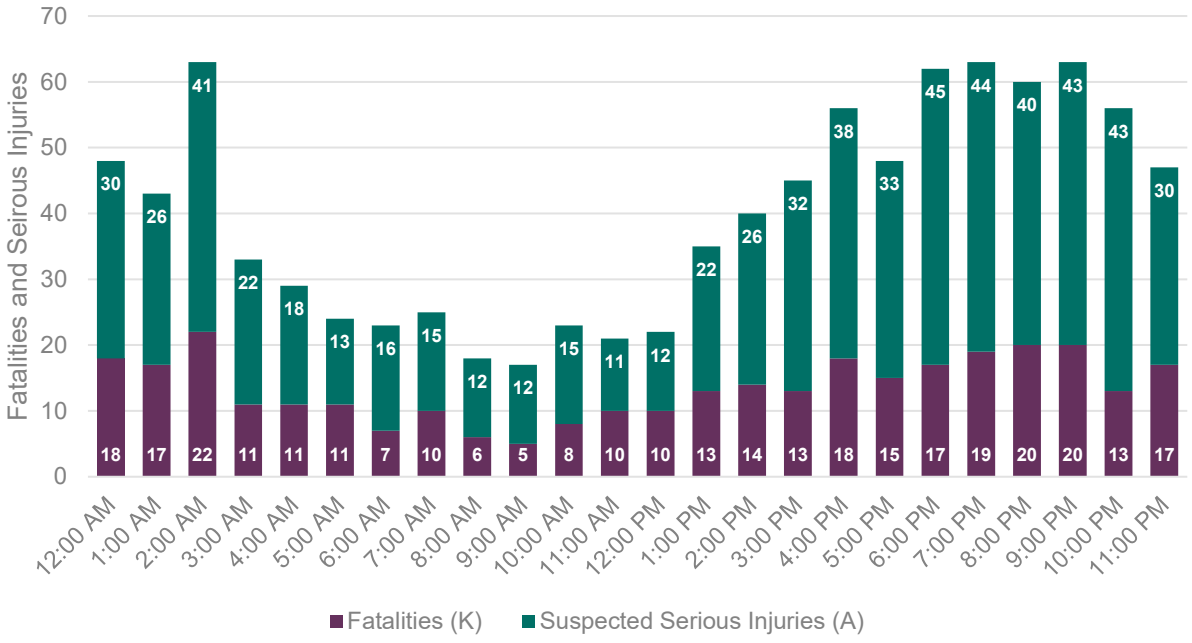


FIGURE A-11: IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER (3-YEAR AVERAGE)

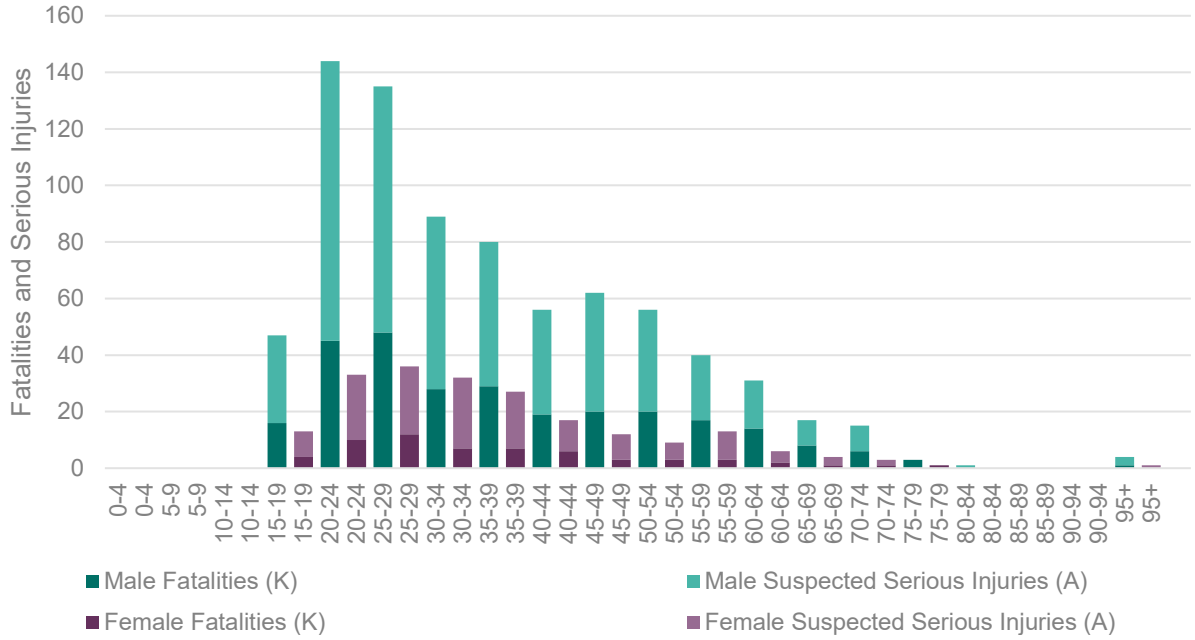
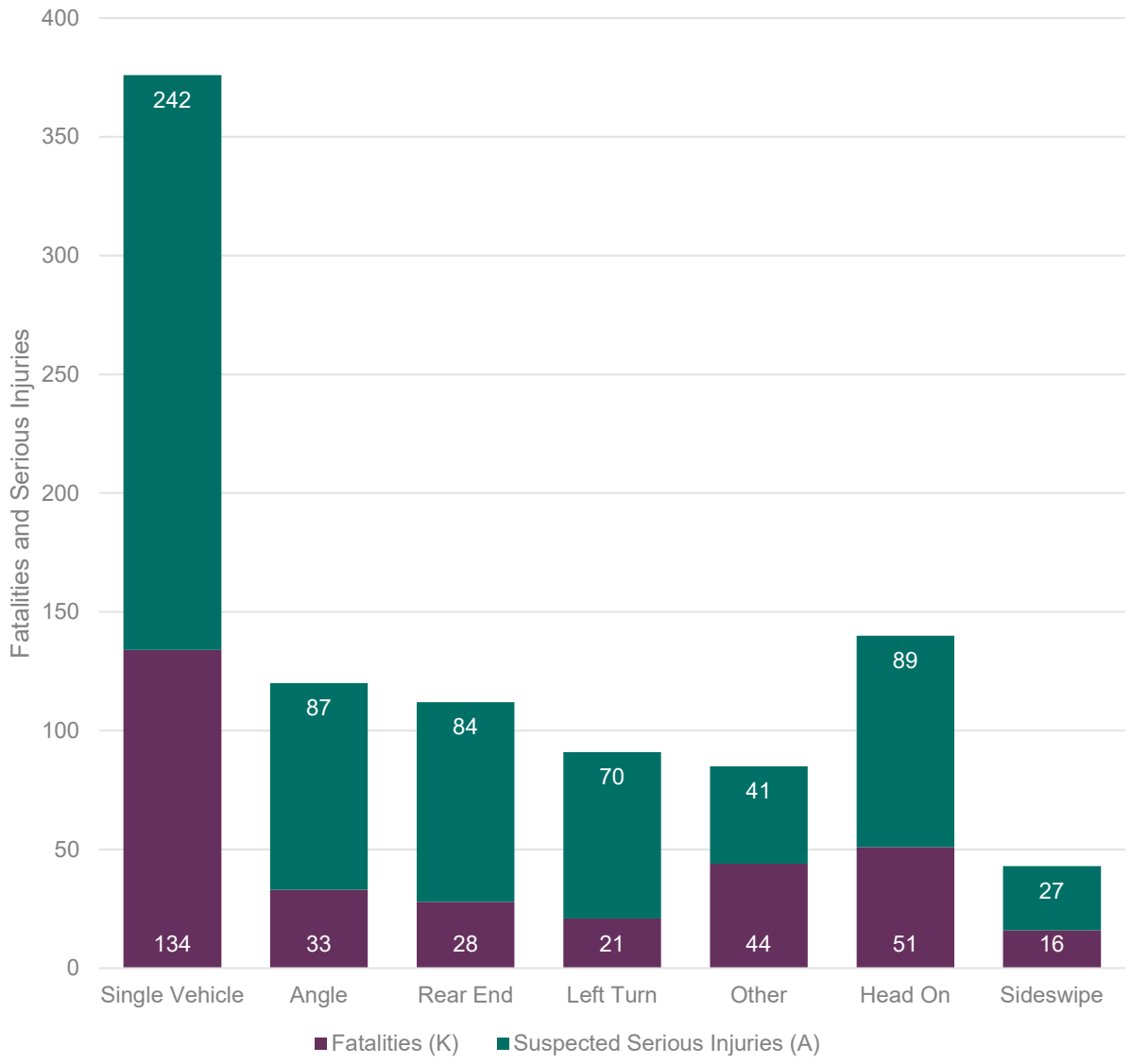


FIGURE A-12: IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY CRASH TYPE (3-YEAR AVERAGE)



DISTRACTED DRIVING

The annual number of fatalities and serious injuries in which distracted driving is a factor is not available. The Arizona Crash Report form was modified in 2014 to better capture distracted driving. Distracted driving data will improve and be provided in the next STSP update as law enforcement officers utilize the new report form, and provide improved details related to distracted driving with legislation passed in April 2019 that prohibits use of a cell phone while driving (A.R.S 18-914).

UNRESTRAINED OCCUPANT

FIGURE A-13: ANNUAL TREND IN UNRESTRAINED-OCCUPANT FATALITIES AND SERIOUS INJURIES

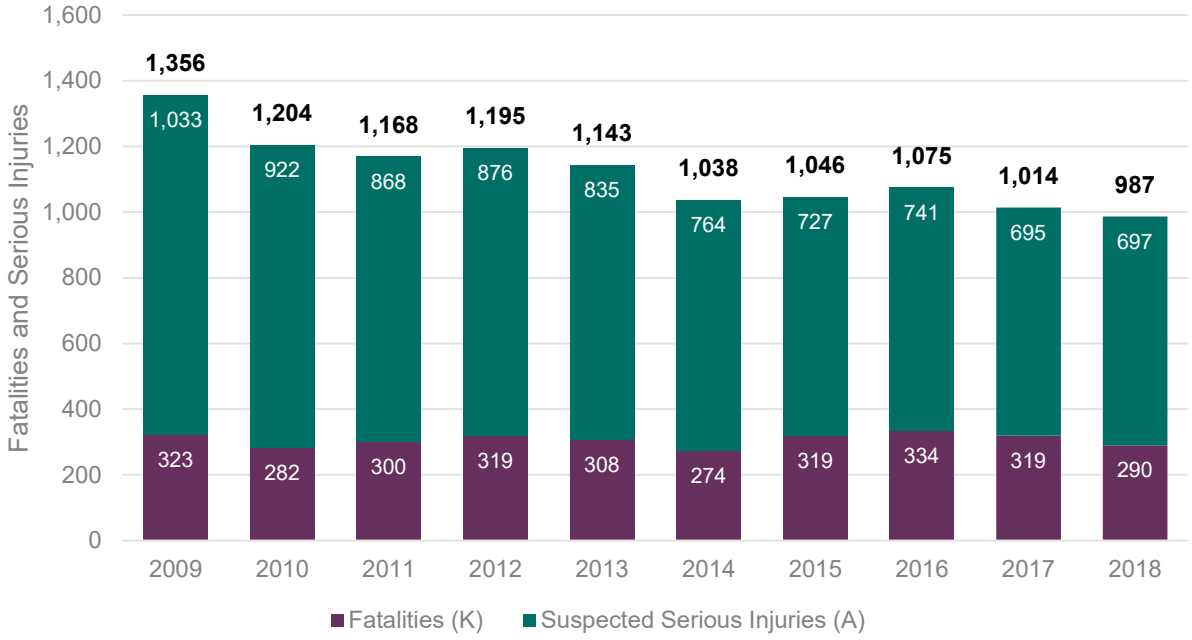


FIGURE A-14: UNRESTRAINED OCCUPANT DRIVING FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

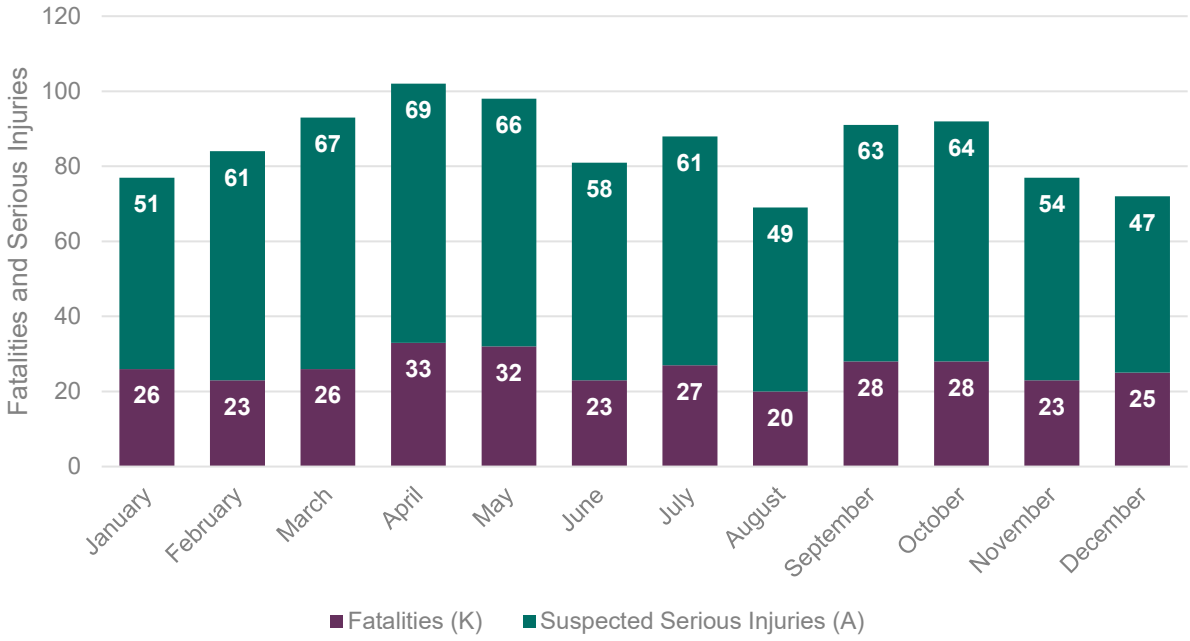


FIGURE A-15: UNRESTRAINED OCCUPANT FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

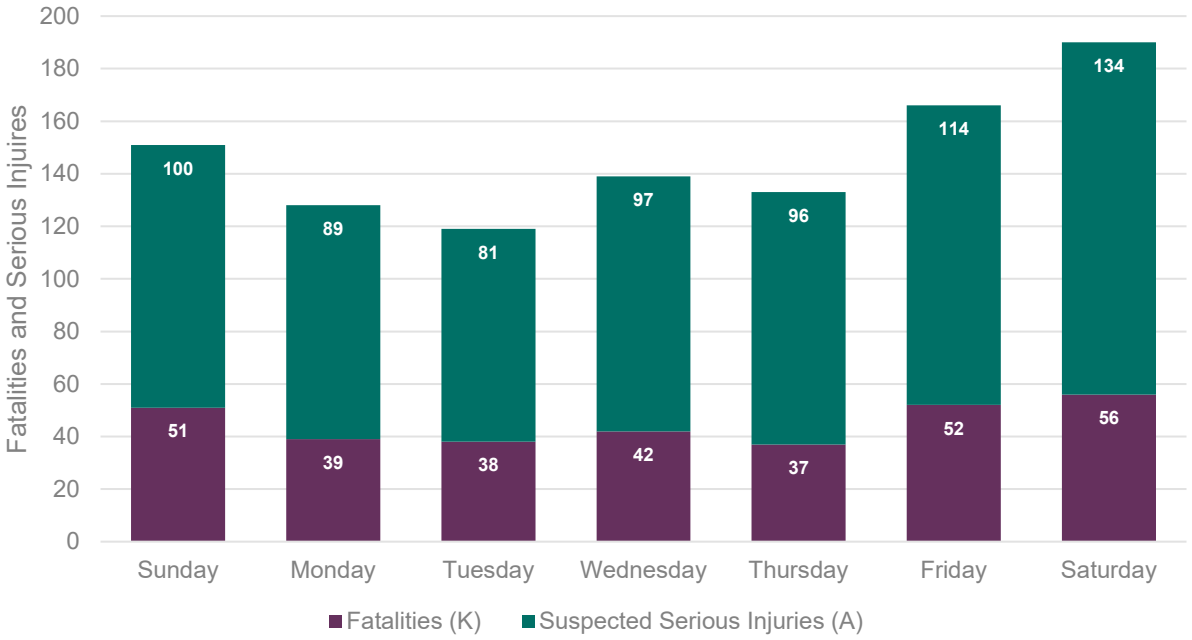


FIGURE A-16: UNRESTRAINED OCCUPANT FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

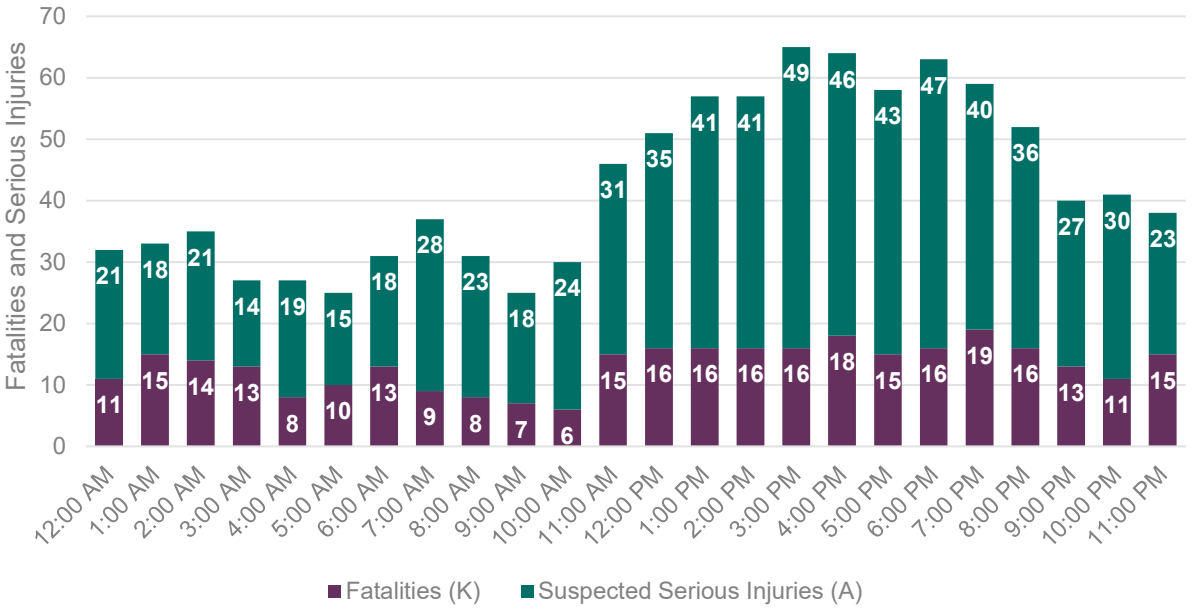
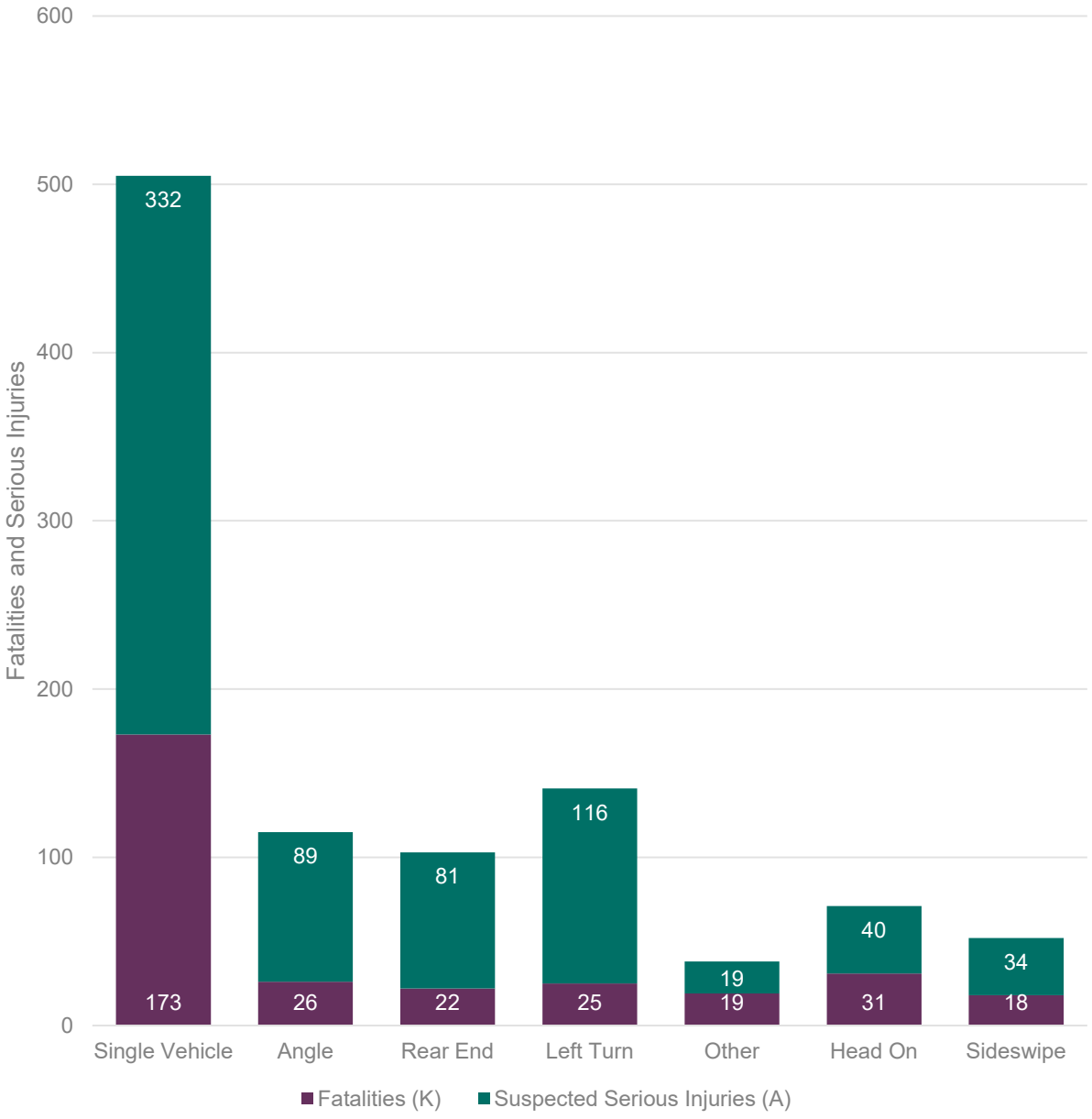


FIGURE A-17: UNRESTRAINED OCCUPANT FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER (3-YEAR AVERAGE)

FIGURE A-18: UNRESTRAINED OCCUPANT FATALITIES AND SERIOUS INJURIES BY CRASH TYPE (3-YEAR AVERAGE)



MOTORCYCLES

FIGURE A-19: ANNUAL TREND IN MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES

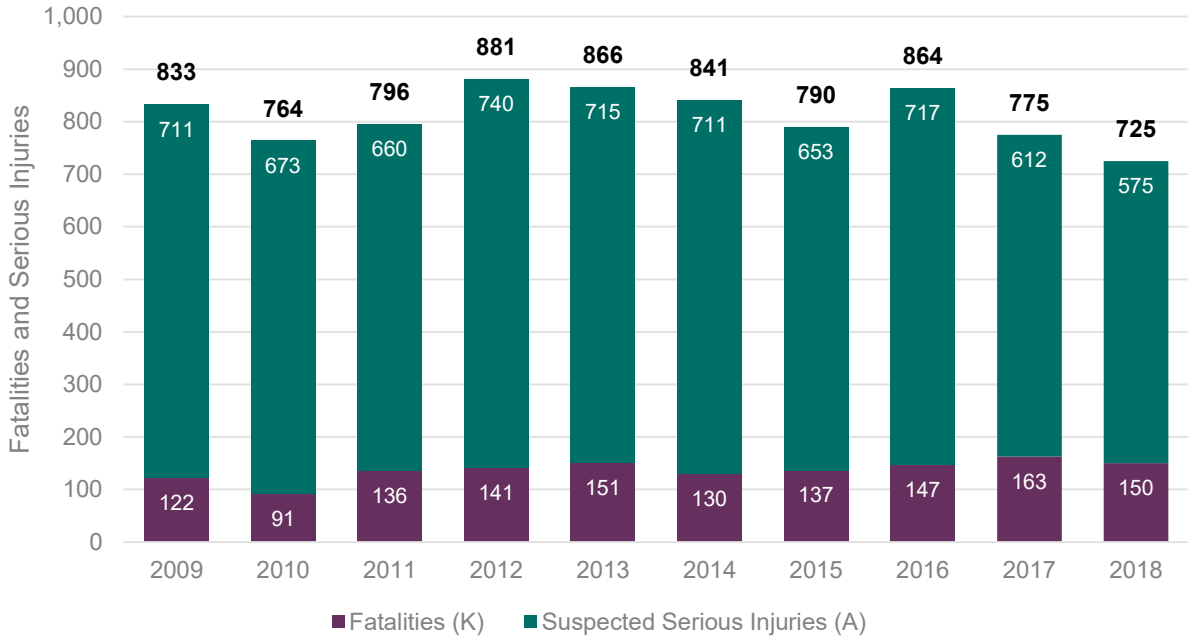


FIGURE A-20: MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

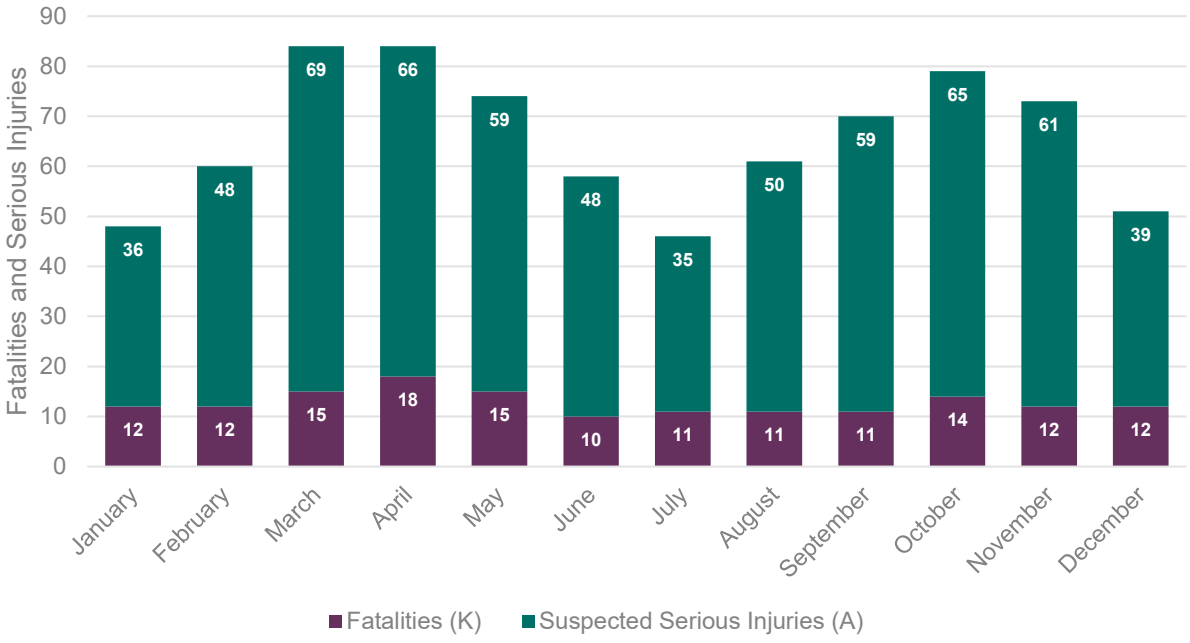


FIGURE A-21: MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

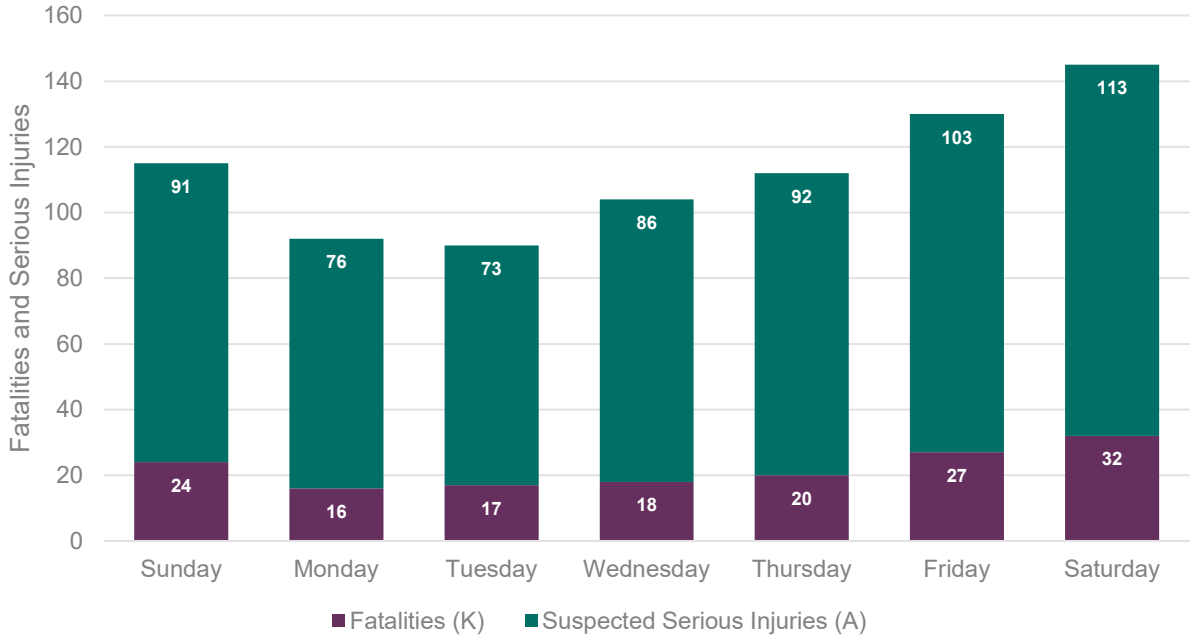


FIGURE A-22: MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

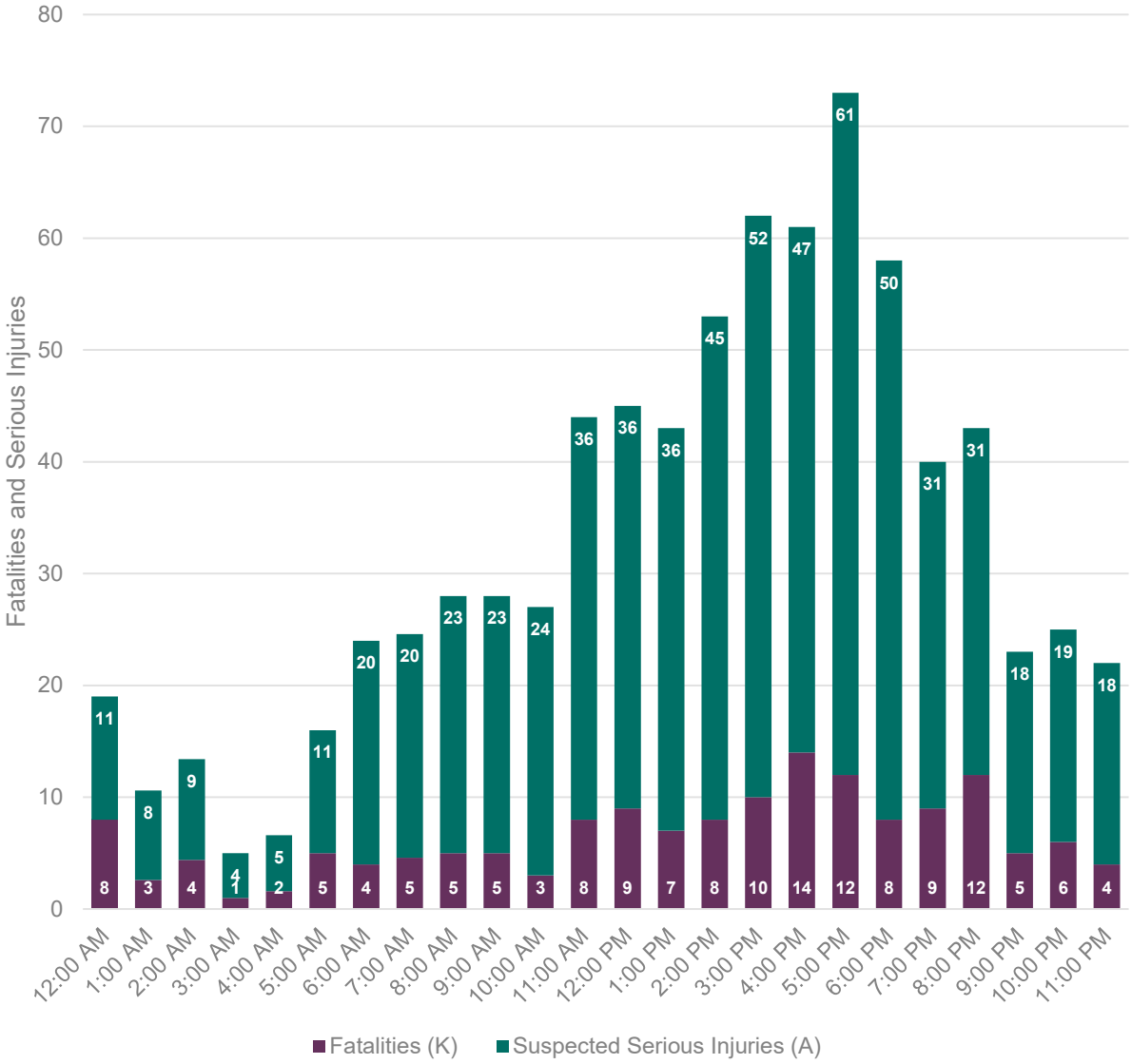
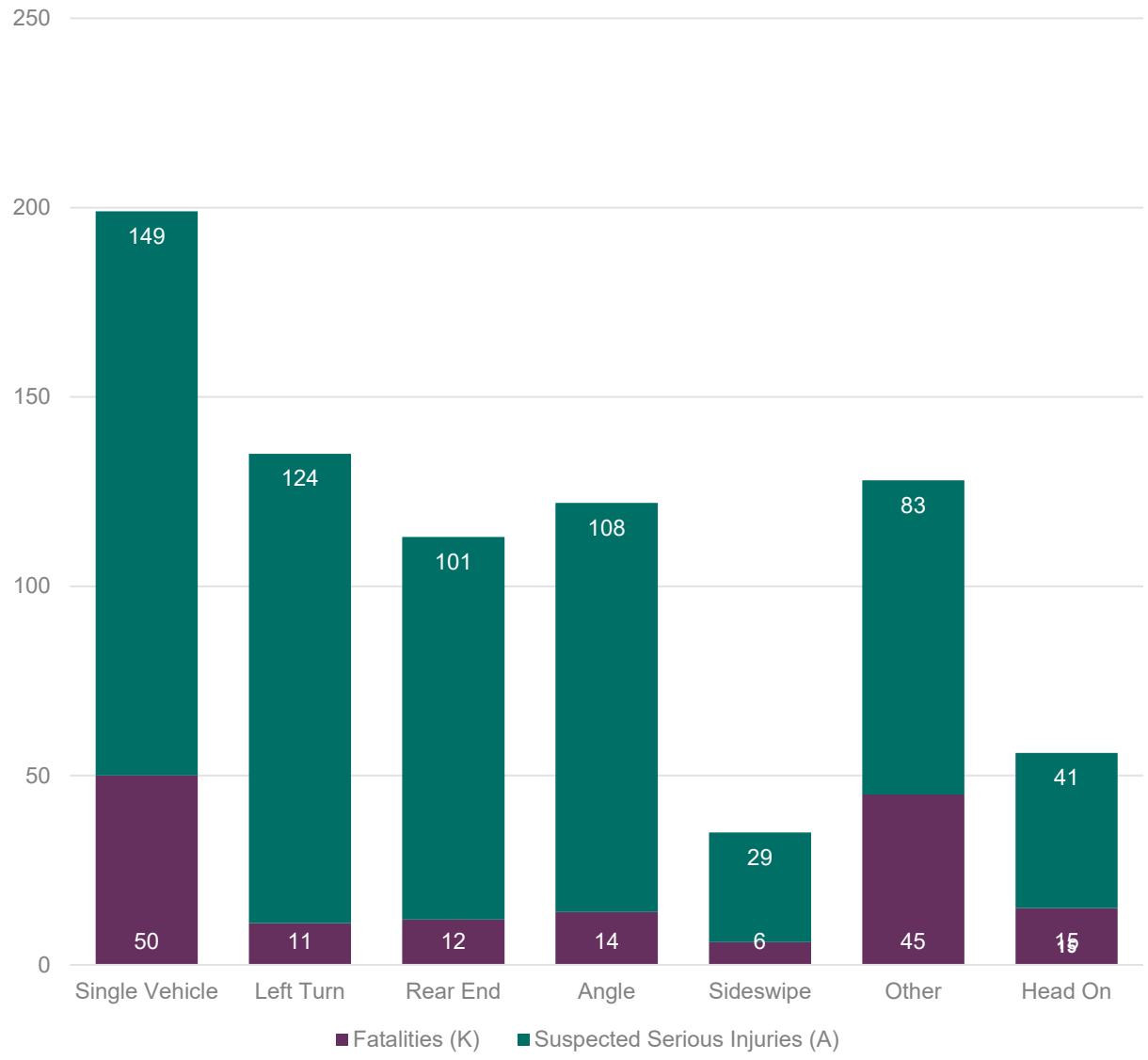


FIGURE A-23: MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER (3-YEAR AVERAGE)

FIGURE A-24: MOTORCYCLE-INVOLVED FATALITIES AND SERIOUS INJURIES BY CRASH TYPE (3-YEAR AVERAGE)



INTERSECTIONS

FIGURE A-25: ANNUAL TREND IN INTERSECTION-RELATED FATALITIES AND SERIOUS INJURIES

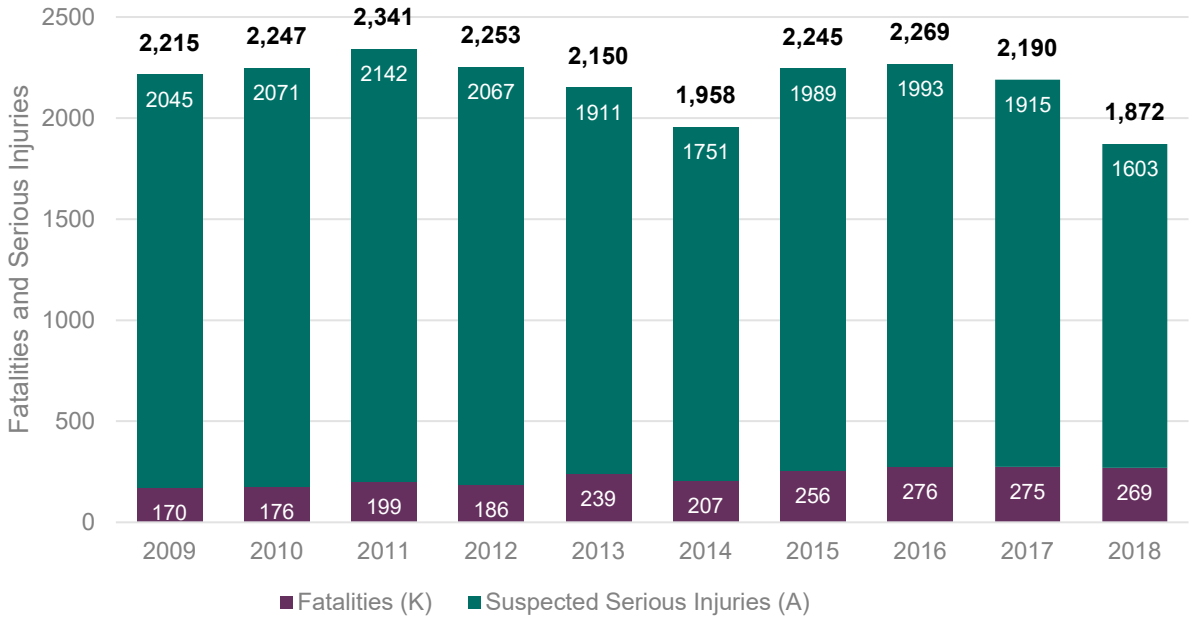


FIGURE A-26 INTERSECTION FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

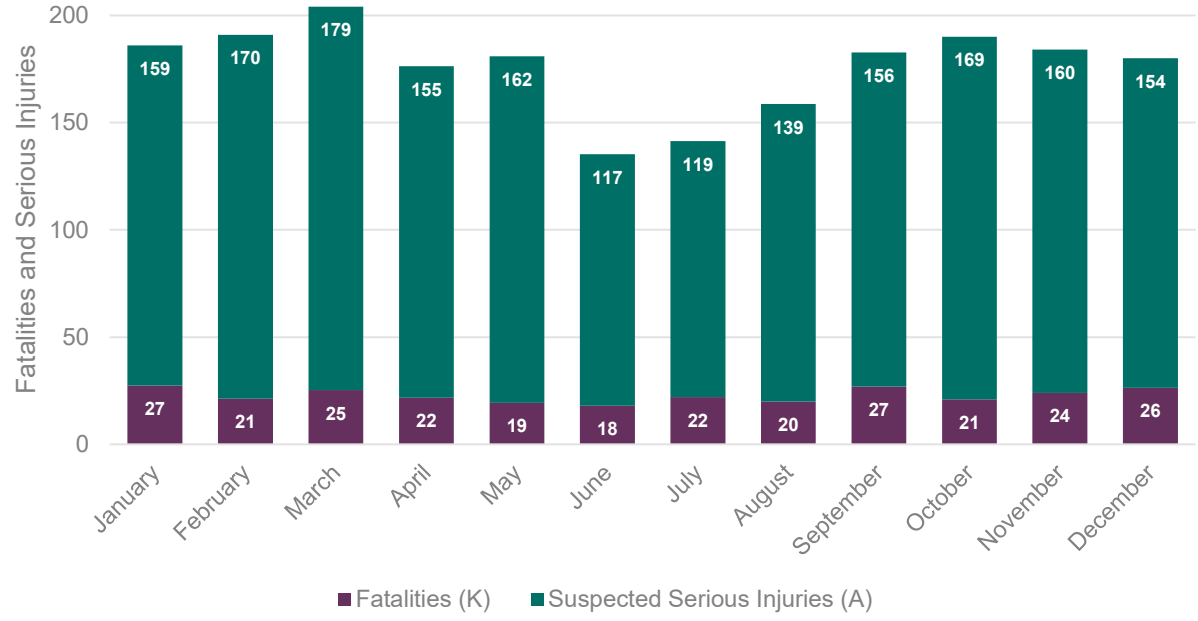


FIGURE A-27: INTERSECTION FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

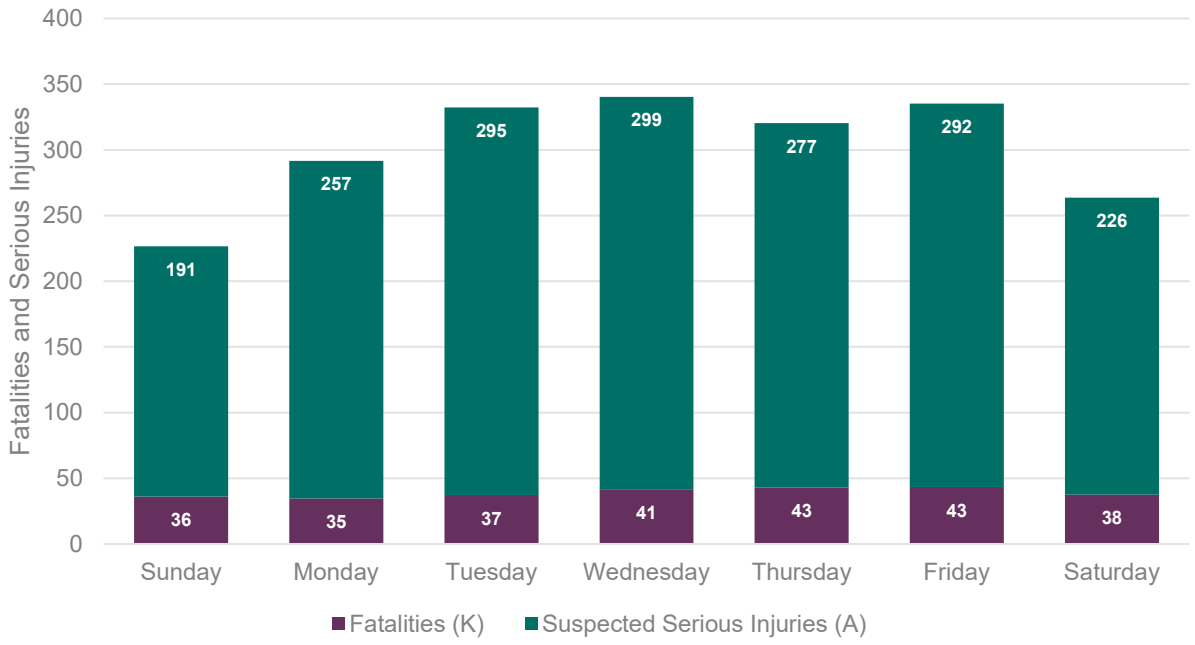


FIGURE A-28: INTERSECTION FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

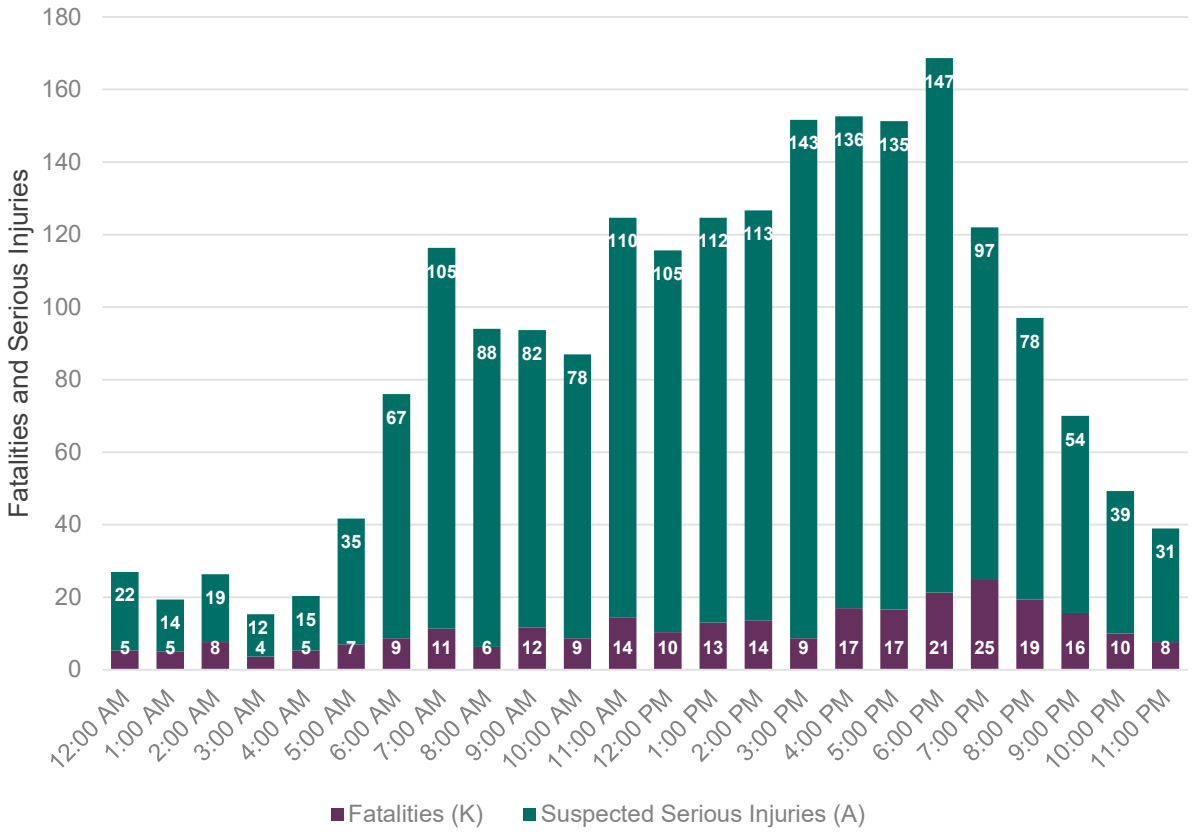
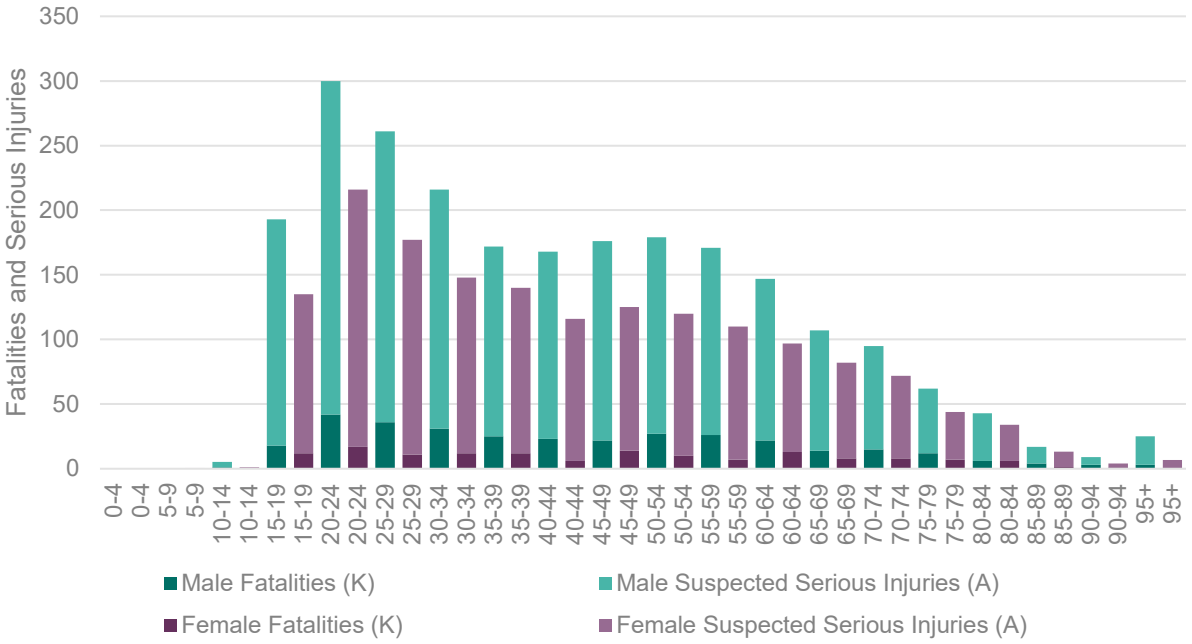


FIGURE A-29: INTERSECTION FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER OF PEDESTRIAN (3-YEAR AVERAGE)



LANE DEPARTURE

FIGURE A-30: ANNUAL TREND IN LANE-DEPARTURE-RELATED FATALITIES AND SERIOUS INJURIES

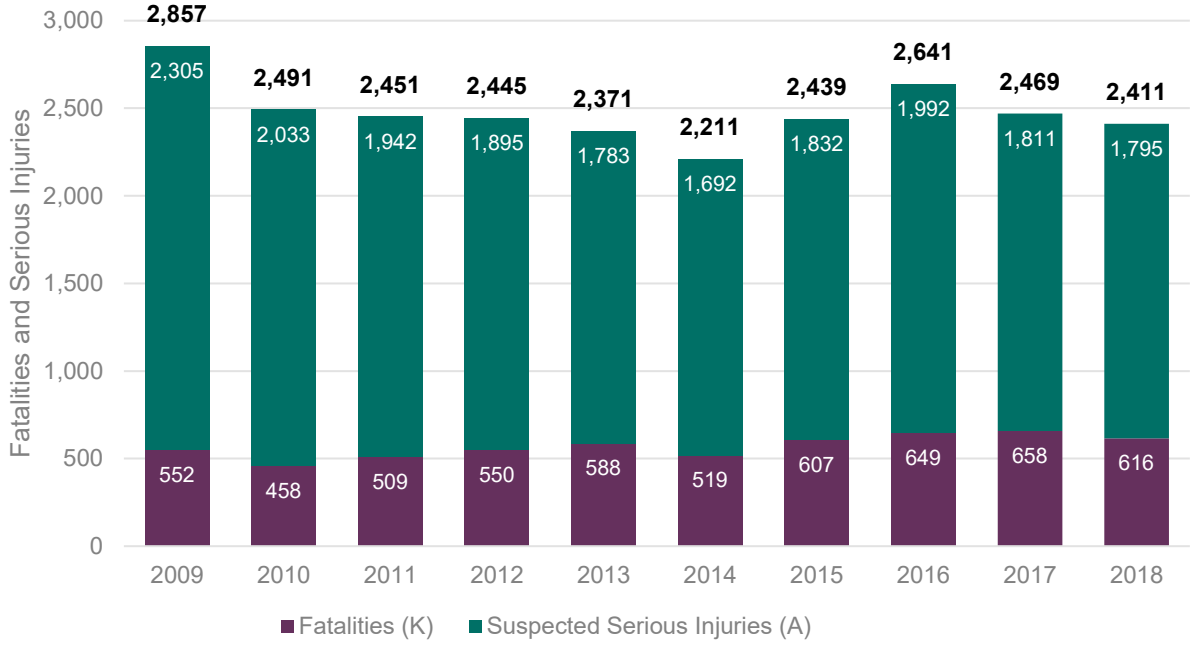


FIGURE A-31: LANE-DEPARTURE FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

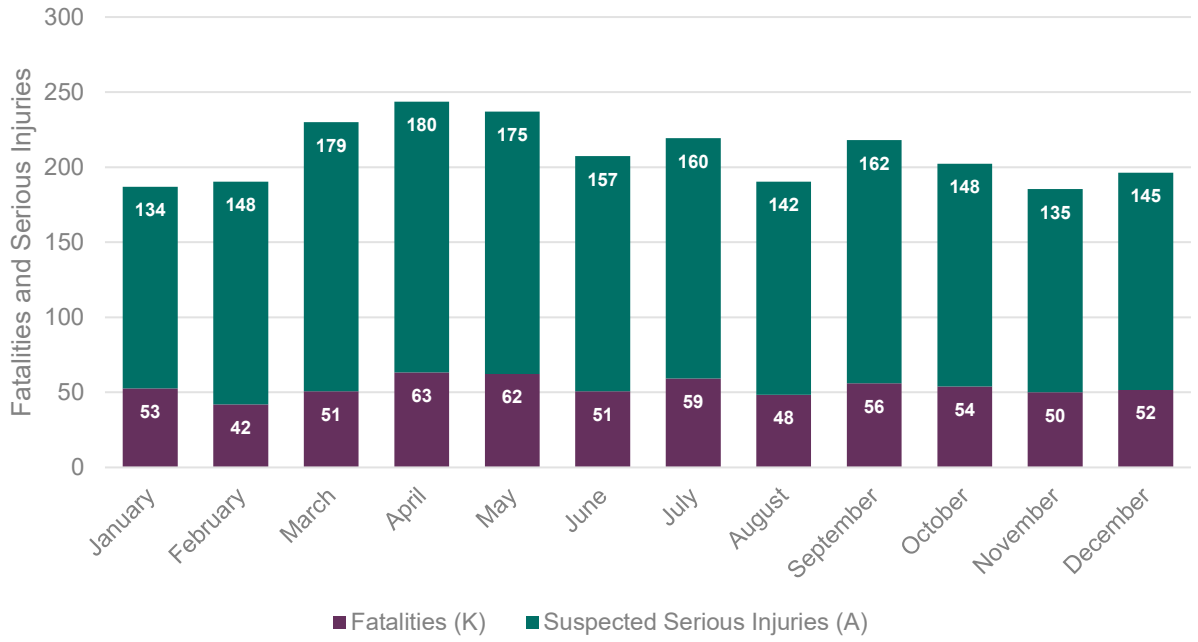


FIGURE A-32: LANE-DEPARTURE FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

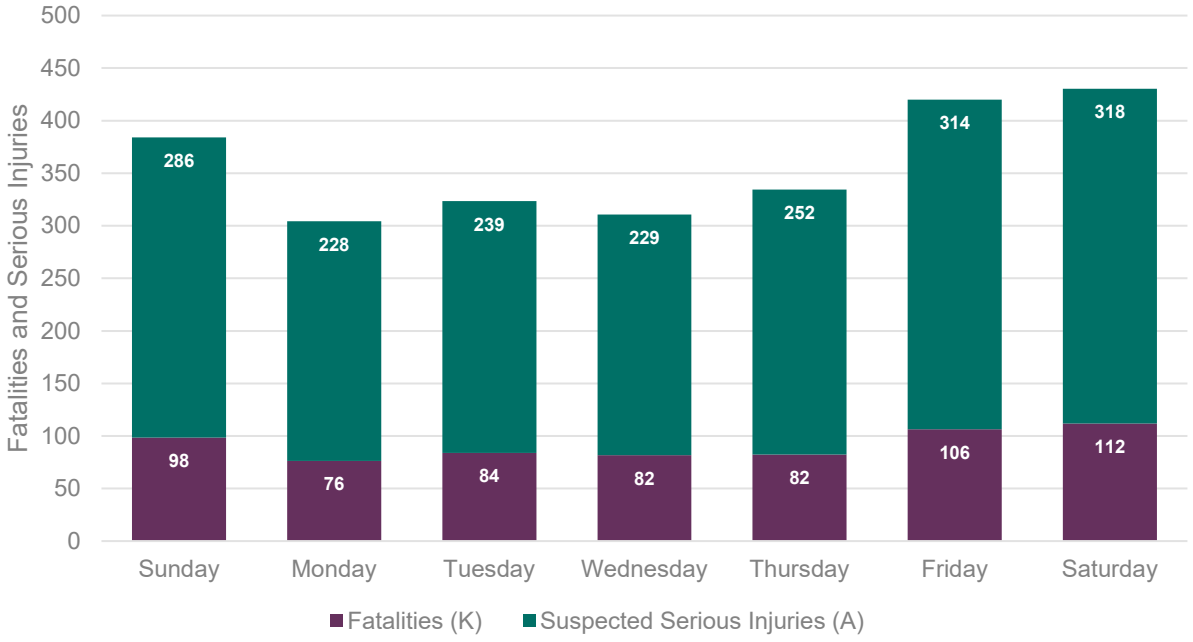


FIGURE A-33: LANE-DEPARTURE FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

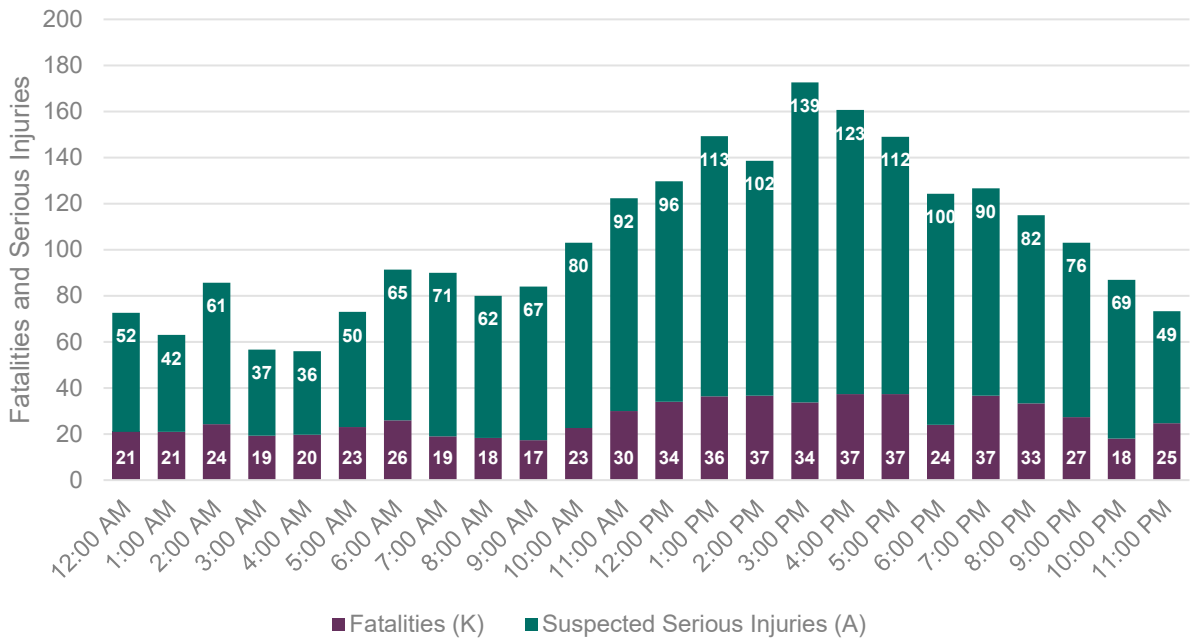
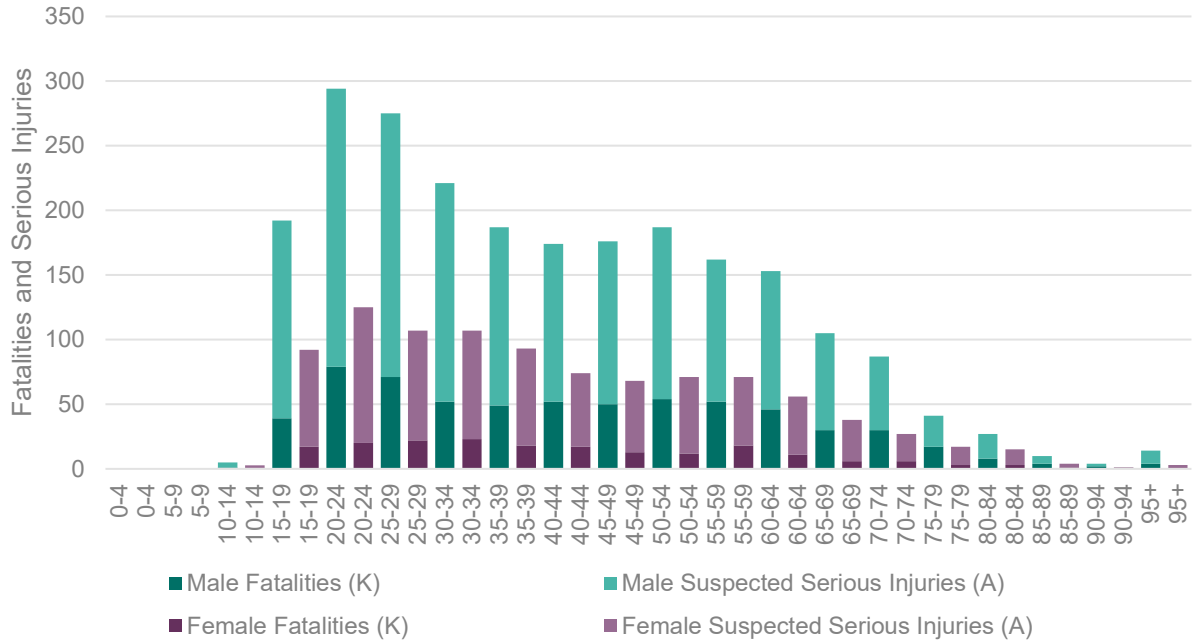


FIGURE A-34: LANE-DEPARTURE FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER (3-YEAR AVERAGE)



PEDESTRIANS

FIGURE A-35: ANNUAL TREND IN PEDESTRIAN-INVOLVED FATALITIES AND SERIOUS INJURIES

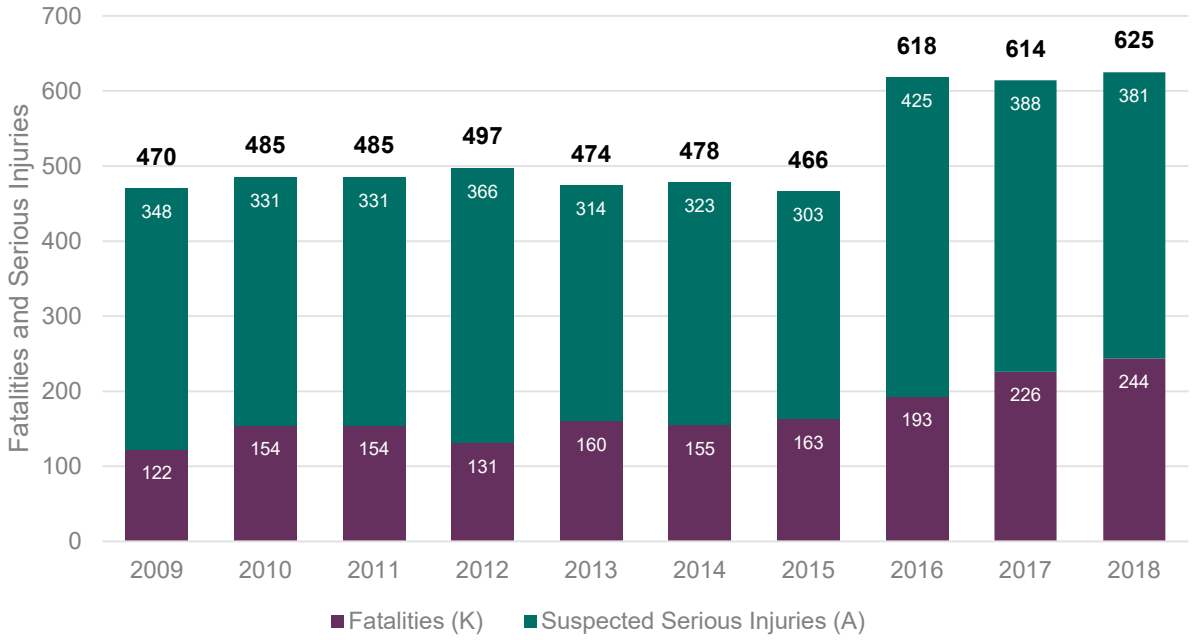


FIGURE A-36 PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY MONTH (3-YEAR AVERAGE)

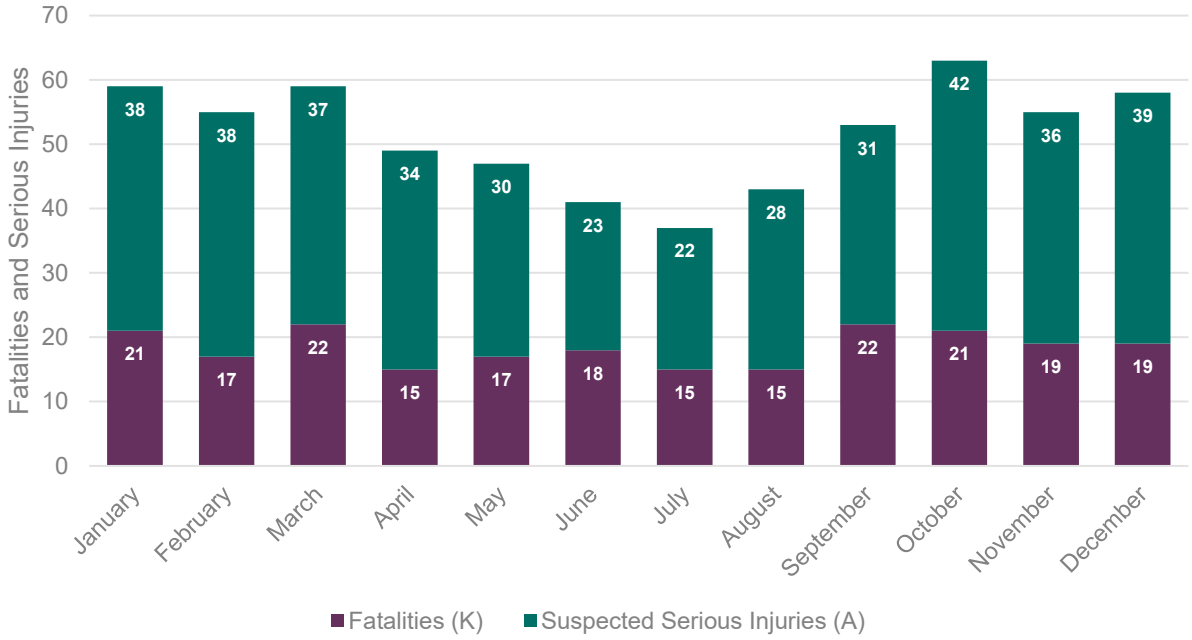


FIGURE A-37 PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY DAY-OF-WEEK (3-YEAR AVERAGE)

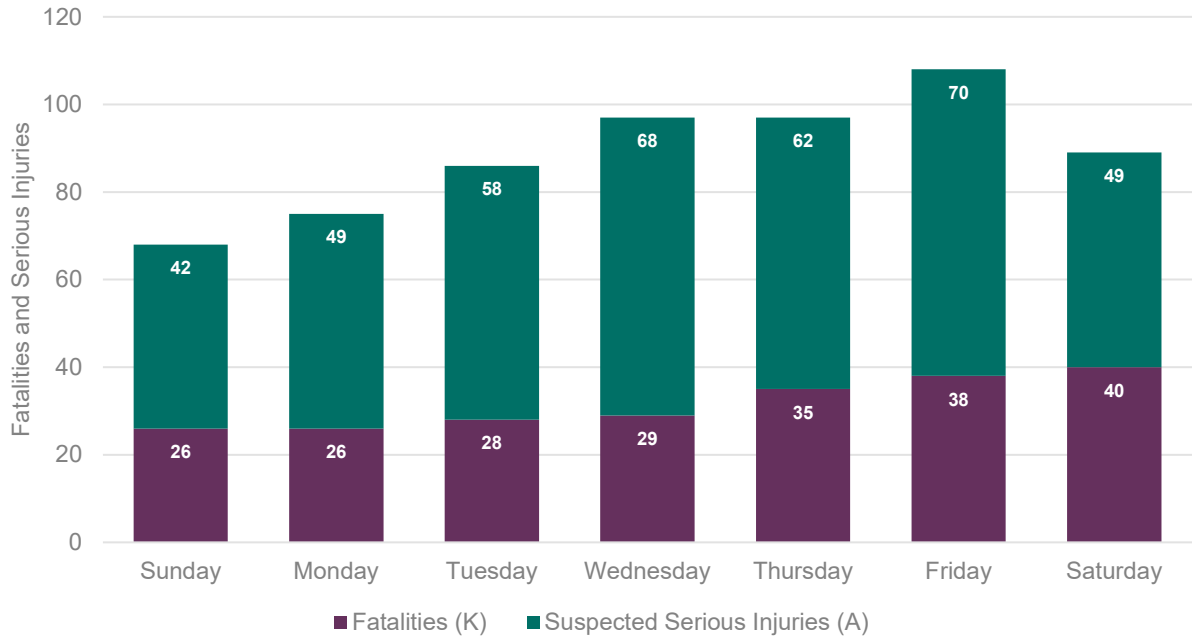


FIGURE A-38: PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY TIME-OF-DAY (3-YEAR AVERAGE)

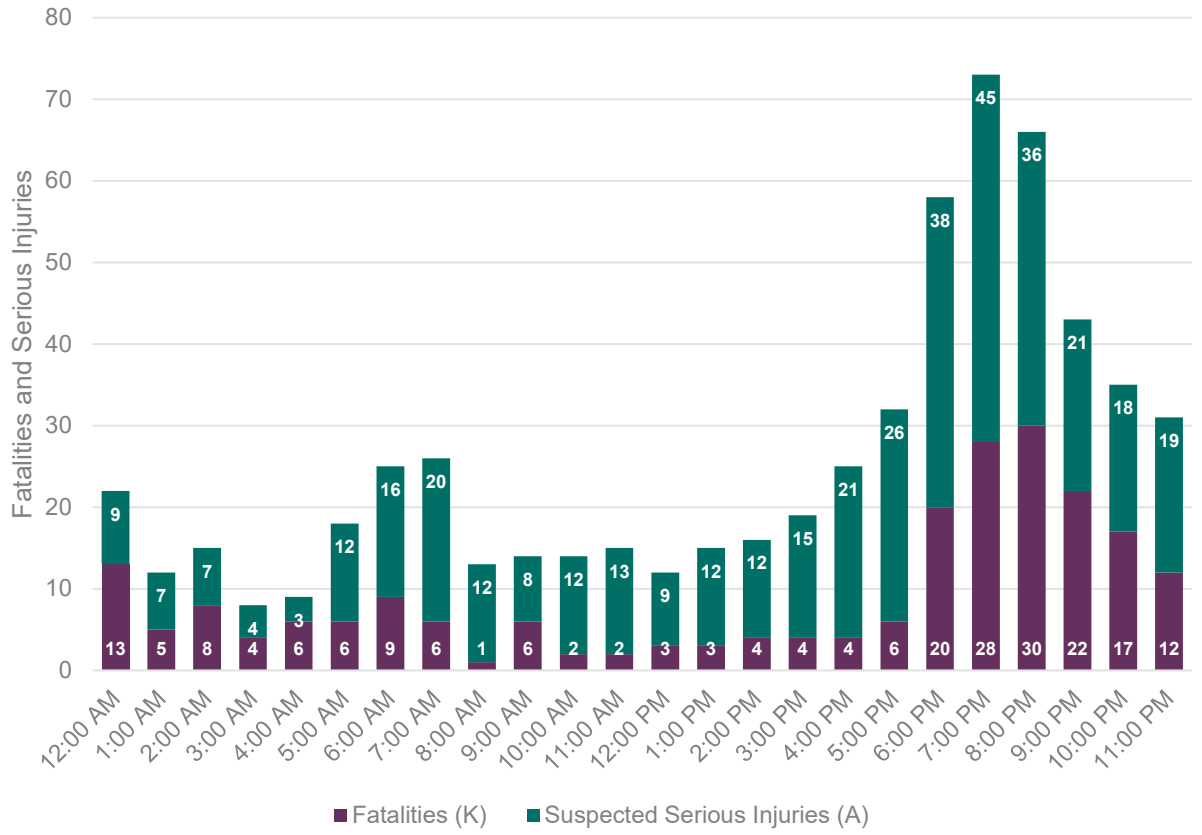
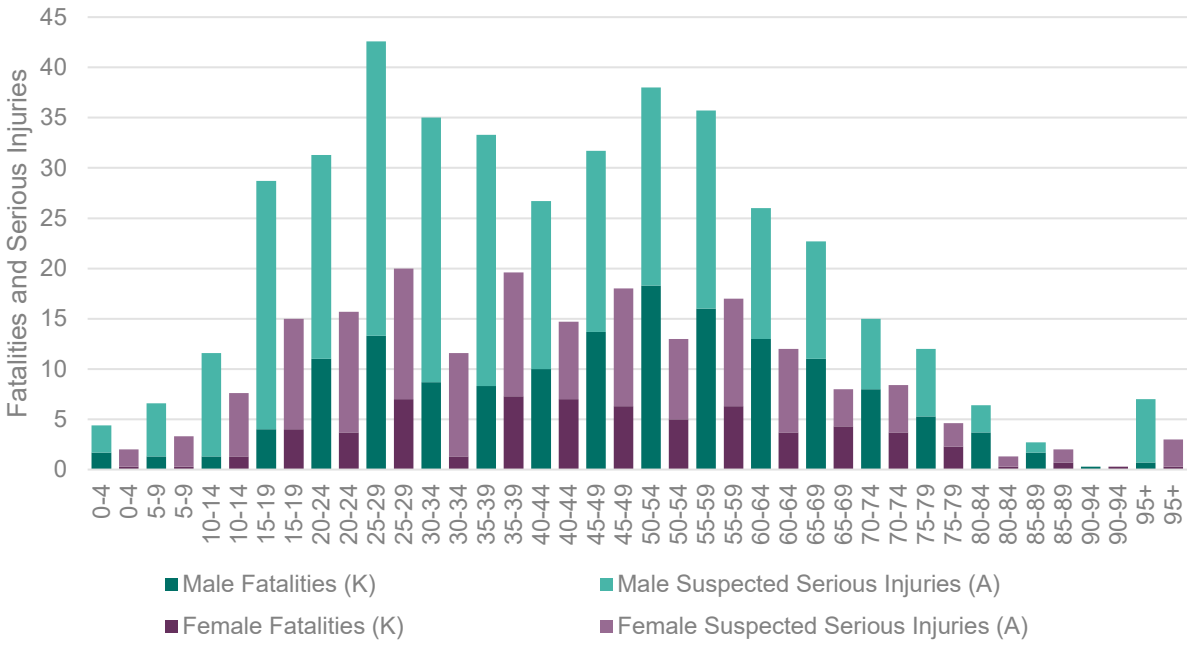


FIGURE A-39 PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY AGE AND GENDER OF PEDESTRIAN (3-YEAR AVERAGE)

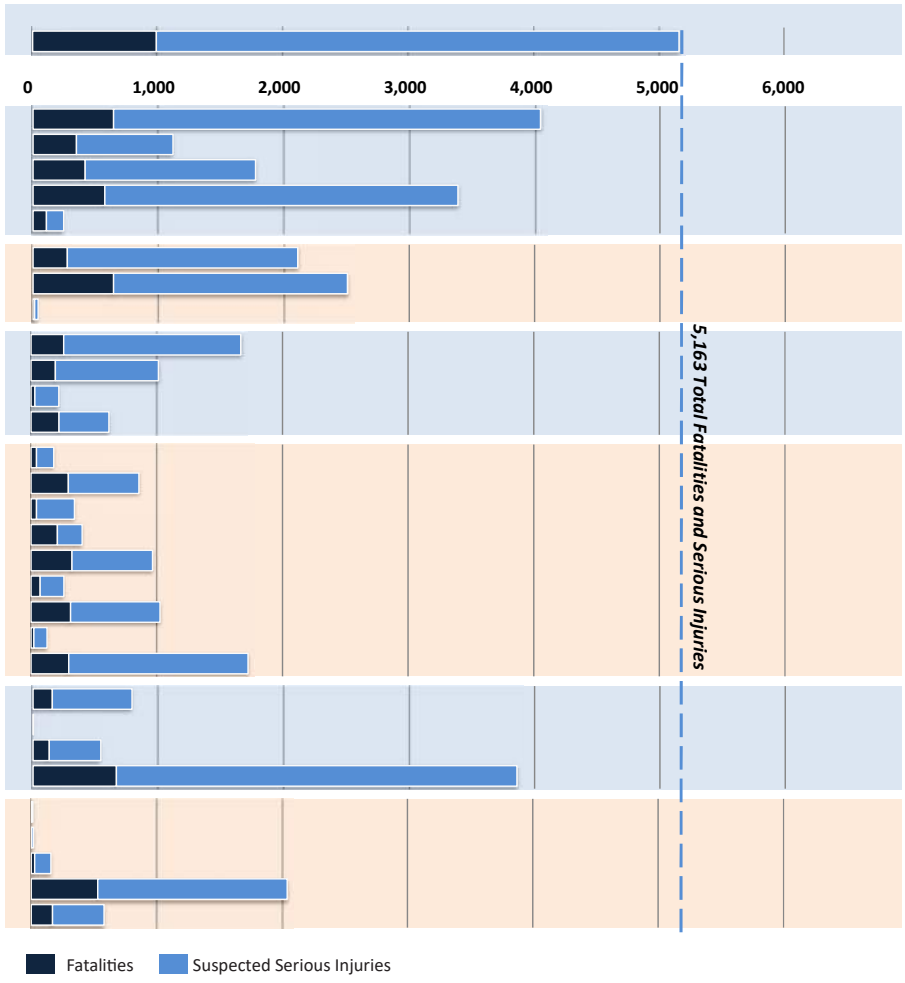


APPENDIX B – TOTAL CRASH-RELATED FATALITY AND SERIOUS INJURY STATISTICS

TABLE B-1: TOTAL FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Total Fatal and Serious Injury Statistics from 2016-2018

		Fatalities		Serious Injuries		Fatalities & Serious Injuries	
	Arizona Total	**987**	***100.0%***	**4,176**	***100.0%***	**5,163**	***100.0%***
	Characteristics	**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	641	*65.0%*	3,407	*81.6%*	4,048	*78.4%*
	Rural	346	*35.0%*	769	*18.4%*	1,115	*21.6%*
	State Road	415	*42.1%*	1,359	*32.5%*	1,774	*34.4%*
	Local Road	572	*57.9%*	2,817	*67.5%*	3,389	*65.6%*
	Tribal Land	106	*10.7%*	137	*3.3%*	243	*4.7%*
Geometry	Intersection Related	273	*27.7%*	1,837	*44.0%*	2,110	*40.9%*
	Lane Departure	641	*64.9%*	1,866	*44.7%*	2,507	*48.6%*
	Work Zone	12	*1.2%*	27	*0.6%*	39	*0.8%*
Person Type	Young Driver (13-24) Involved	259	*26.2%*	1,409	*33.8%*	1,668	*32.3%*
	Older Driver (65+) Involved	193	*19.5%*	820	*19.6%*	1,013	*19.6%*
	Bicyclist	30	*3.0%*	190	*4.6%*	220	*4.3%*
	Pedestrian	221	*22.4%*	398	*9.5%*	619	*12.0%*
Behavior	Aggressive Driver Involved	43	*4.3%*	136	*3.3%*	179	*3.5%*
	Alcohol Involved	296	*29.9%*	562	*13.5%*	857	*16.6%*
	Distracted Driver Involved	42	*4.2%*	303	*7.3%*	345	*6.7%*
	Drug Involved	209	*21.2%*	197	*4.7%*	406	*7.9%*
	Impaired Driver Involved	325	*32.9%*	640	*15.3%*	965	*18.7%*
	Unhelmeted Motorcyclist	72	*7.3%*	188	*4.5%*	260	*5.0%*
	No Restraint Used	314	*31.8%*	711	*17.0%*	1,025	*19.9%*
	Sleepy or Fatigued Involved	21	*2.1%*	105	*2.5%*	126	*2.4%*
	Speeding Involved	300	*30.4%*	1,426	*34.2%*	1,726	*33.4%*
Vehicle	Motorcyclist	153	*15.5%*	635	*15.2%*	788	*15.3%*
	Train Involved	0	*0.0%*	2	*0.1%*	2	*0.0%*
	Heavy Vehicle/ Truck Involved	129	*13.0%*	411	*9.9%*	540	*10.5%*
	Multiple Vehicle Involved	663	*67.2%*	3,197	*76.6%*	3,860	*74.8%*
Environmental	Dust Related (Windy)	2	*0.2%*	10	*0.2%*	12	*0.2%*
	Wildlife/Animal Involved	2	*0.2%*	14	*0.3%*	16	*0.3%*
	Wet Weather	26	*2.7%*	129	*3.1%*	155	*3.0%*
	Night	529	*53.6%*	1,511	*36.2%*	2,040	*39.5%*
	Dark - No Light	169	*17.2%*	411	*9.8%*	580	*11.2%*



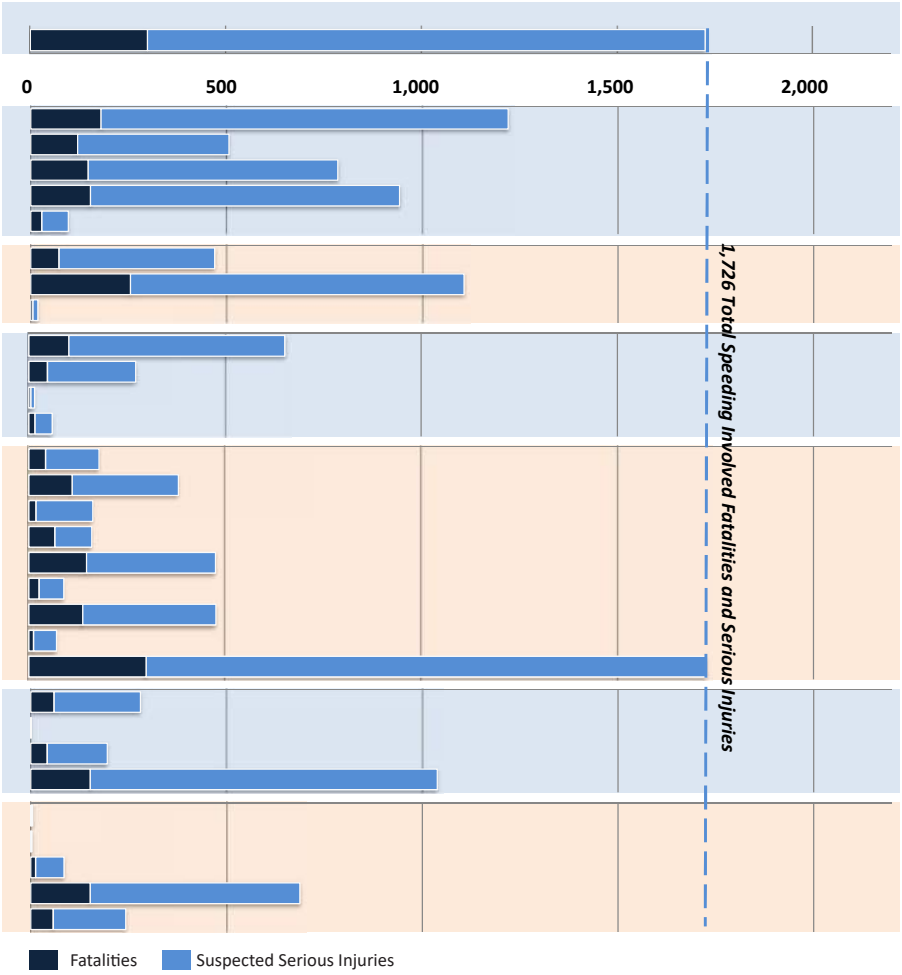
Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-2: SPEEDING INVOLVED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Speeding Involved Fatal and Serious Injury Statistics from 2016-2018

Speeding Involved	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
	300	*100%*	*1,426*	*100%*	*1,726*	*100%*

	Characteristics	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	180	*60.0%*	1,040	*72.9%*	1,219	*70.7%*
	Rural	120	*40.0%*	386	*27.1%*	506	*29.3%*
	State Road	147	*49.1%*	637	*44.7%*	784	*45.4%*
	Local Road	153	*50.9%*	789	*55.3%*	942	*54.6%*
	Tribal Land	28	*9.3%*	68	*4.8%*	96	*5.6%*
Geometry	Intersection Related	72	*24.1%*	397	*27.9%*	470	*27.2%*
	Lane Departure	255	*85.1%*	851	*59.7%*	1,106	*64.1%*
	Work Zone	6	*1.9%*	12	*0.9%*	18	*1.0%*
Person Type	Young Driver (13-24) Involved	102	*34.1%*	550	*38.6%*	652	*37.8%*
	Older Driver (65+) Involved	47	*15.8%*	225	*15.8%*	272	*15.8%*
	Bicyclist	5	*1.7%*	10	*0.7%*	15	*0.9%*
	Pedestrian	16	*5.2%*	44	*3.1%*	60	*3.5%*
Behavior	Aggressive Driver Involved	43	*14.2%*	136	*9.6%*	179	*10.4%*
	Alcohol Involved	111	*37.0%*	270	*19.0%*	381	*22.1%*
	Distracted Driver Involved	18	*6.1%*	145	*10.1%*	163	*9.4%*
	Drug Involved	67	*22.2%*	94	*6.6%*	161	*9.3%*
	Impaired Driver Involved	147	*49.2%*	328	*23.0%*	476	*27.6%*
	Unhelmeted Motorcyclist	26	*8.8%*	63	*4.4%*	89	*5.2%*
	No Restraint Used	138	*45.9%*	339	*23.8%*	477	*27.6%*
	Sleepy or Fatigued Involved	12	*4.1%*	59	*4.1%*	71	*4.1%*
	Speeding Involved	**300**	***100.0%***	**1,426**	***100.0%***	**1,726**	***100.0%***
Vehicle	Motorcyclist	60	*19.9%*	221	*15.5%*	280	*16.2%*
	Train Involved	0	*0.0%*	1	*0.0%*	1	*0.0%*
	Heavy Vehicle/ Truck Involved	42	*14.0%*	153	*10.8%*	195	*11.3%*
	Multiple Vehicle Involved	152	*50.8%*	886	*62.1%*	1,038	*60.2%*
Environmental	Dust Related (Windy)	1	*0.2%*	4	*0.3%*	5	*0.3%*
	Wildlife/Animal Involved	0	*0.1%*	2	*0.2%*	3	*0.2%*
	Wet Weather	12	*4.1%*	72	*5.1%*	85	*4.9%*
	Night	152	*50.7%*	535	*37.5%*	687	*39.8%*
	Dark - No Light	57	*19.1%*	185	*13.0%*	243	*14.1%*

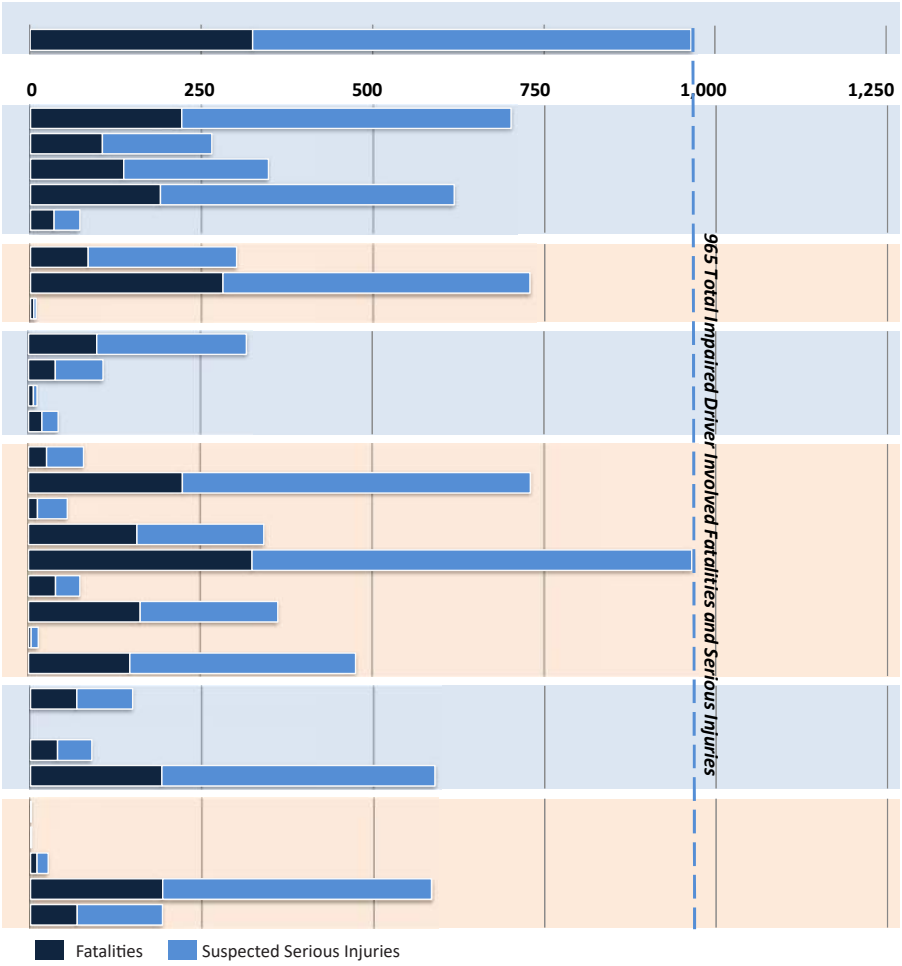


Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-3: IMPAIRED DRIVER INVOLVED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Impaired Driver Involved Fatal and Serious Injury Statistics from 2016-2018

	Impaired Driver Involved	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
		325	100%	640	100%	965	100%
	Characteristics	**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geographic	Urban	220	67.8%	480	75.1%	701	72.6%
	Rural	105	32.2%	160	24.9%	264	27.4%
	State Road	136	41.7%	211	33.0%	347	36.0%
	Local Road	189	58.3%	429	67.0%	618	64.0%
	Tribal Land	34	10.6%	37	5.8%	72	7.4%
Geometry	Intersection Related	84	25.8%	216	33.8%	300	31.1%
	Lane Departure	281	86.4%	448	69.9%	728	75.5%
	Work Zone	5	1.4%	3	0.5%	8	0.8%
Person Type	Young Driver (13-24) Involved	99	30.5%	218	34.0%	317	32.8%
	65 and Older Involved	39	11.9%	70	10.9%	108	11.2%
	Bicyclist	7	2.2%	5	0.8%	12	1.3%
	Pedestrian	19	5.9%	24	3.7%	43	4.5%
Behavior	Aggressive Driver Involved	26	8.0%	54	8.4%	80	8.3%
	Alcohol Involved	224	68.8%	506	79.1%	730	75.6%
	Distracted Driver Involved	13	3.9%	44	6.8%	56	5.8%
	Drug Involved	158	48.5%	185	28.9%	342	35.5%
	Impaired Driver Involved	**325**	**100.0%**	**640**	**100.0%**	**965**	**100.0%**
	Unhelmeted Motorcyclist	39	12.0%	36	5.6%	75	7.7%
	No Restraint Used	162	49.9%	200	31.3%	363	37.6%
	Sleepy or Fatigued Involved	4	1.1%	10	1.6%	14	1.5%
	Speeding Involved	147	45.3%	328	51.3%	476	49.3%
Vehicle	Motorcyclist	67	20.7%	81	12.7%	149	15.4%
	Train Involved	0	0.0%	0	0.0%	0	0.0%
	Heavy Vehicle/ Truck Involved	39	12.1%	50	7.8%	89	9.3%
	Multiple Vehicle Involved	191	58.9%	398	62.2%	590	61.1%
Environmental	Dust Related (Windy)	1	0.2%	0	0.1%	1	0.1%
	Wildlife/Animal Involved	1	0.2%	1	0.2%	2	0.2%
	Wet Weather	9	2.9%	16	2.6%	26	2.7%
	Night	193	59.3%	392	61.3%	585	60.6%
	Dark - No Light	68	20.9%	124	19.4%	192	19.9%

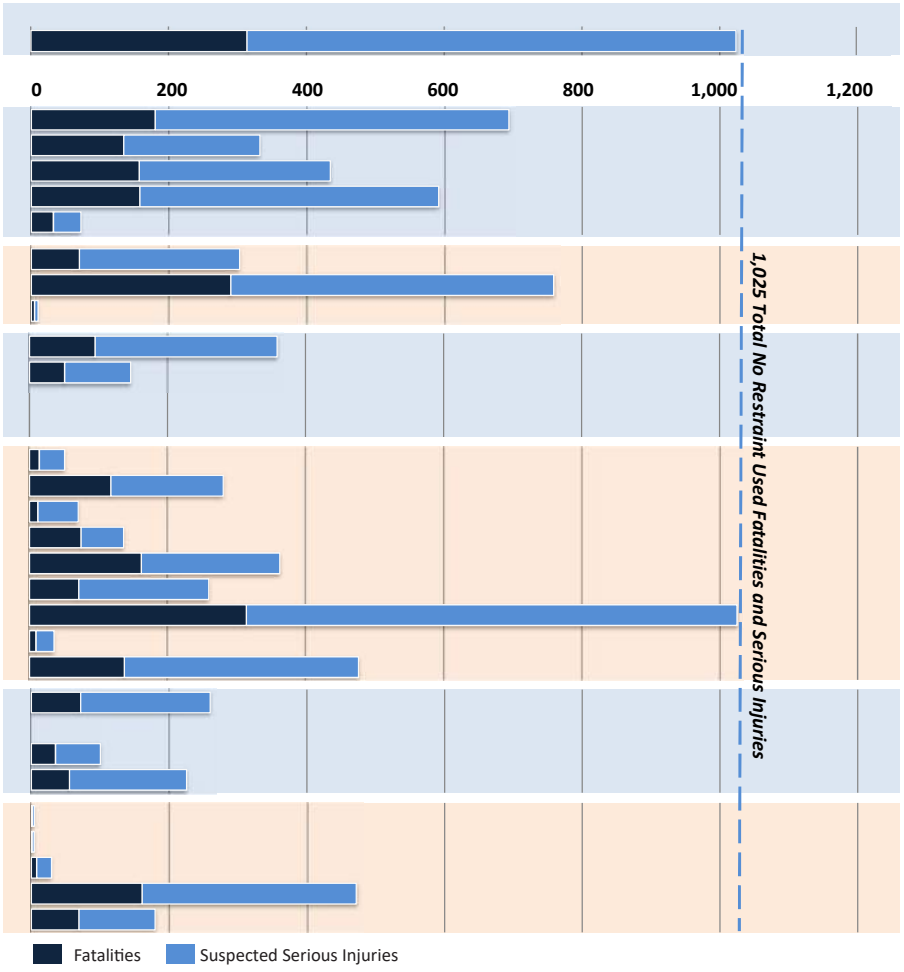


Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-4: NO RESTRAINT USED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

No Restraint Used Fatal and Serious Injury Statistics from 2016-2018

	No Restraint Used Involved	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
		314	*100%*	*711*	*100%*	*1,025*	*100%*
	Characteristics	**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	180	*57.3%*	513	*72.2%*	693	*67.6%*
	Rural	134	*42.7%*	198	*27.8%*	332	*32.4%*
	State Road	157	*49.8%*	277	*39.0%*	434	*42.3%*
	Local Road	158	*50.2%*	434	*61.0%*	591	*57.7%*
	Tribal Land	32	*10.2%*	40	*5.6%*	72	*7.0%*
Geometry	Intersection Related	70	*22.3%*	232	*32.7%*	302	*29.5%*
	Lane Departure	290	*92.2%*	469	*65.9%*	758	*74.0%*
	Work Zone	5	*1.5%*	5	*0.7%*	10	*0.9%*
Person Type	Young Driver (13-24) Involved	95	*30.3%*	264	*37.1%*	359	*35.0%*
	Older Driver (65+) Involved	51	*16.2%*	96	*13.5%*	147	*14.3%*
	Bicyclist	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Pedestrian	0	*0.0%*	0	*0.0%*	0	*0.0%*
Behavior	Aggressive Driver Involved	14	*4.6%*	37	*5.2%*	51	*5.0%*
	Alcohol Involved	118	*37.6%*	163	*22.9%*	281	*27.4%*
	Distracted Driver Involved	12	*3.9%*	58	*8.2%*	71	*6.9%*
	Drug Involved	75	*23.9%*	62	*8.7%*	137	*13.3%*
	Impaired Driver Involved	162	*51.6%*	200	*28.2%*	363	*35.4%*
	Unhelmeted Motorcyclist	72	*22.8%*	188	*26.5%*	260	*25.4%*
	No Restraint Used	**314**	***100.0%***	**711**	***100.0%***	**1,025**	***100.0%***
	Sleepy or Fatigued Involved	10	*3.1%*	26	*3.7%*	36	*3.5%*
	Speeding Involved	138	*43.8%*	339	*47.7%*	477	*46.5%*
Vehicle	Motorcyclist	72	*22.8%*	188	*26.4%*	260	*25.3%*
	Train Involved	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Heavy Vehicle/ Truck Involved	35	*11.1%*	65	*9.2%*	100	*9.8%*
	Multiple Vehicle Involved	55	*17.6%*	170	*23.9%*	225	*22.0%*
Environmental	Dust Related (Windy)	1	*0.4%*	3	*0.4%*	4	*0.4%*
	Wildlife/Animal Involved	1	*0.3%*	3	*0.4%*	4	*0.4%*
	Wet Weather	8	*2.4%*	22	*3.0%*	29	*2.9%*
	Night	161	*51.2%*	311	*43.7%*	472	*46.0%*
	Dark - No Light	69	*22.1%*	110	*15.5%*	180	*17.5%*

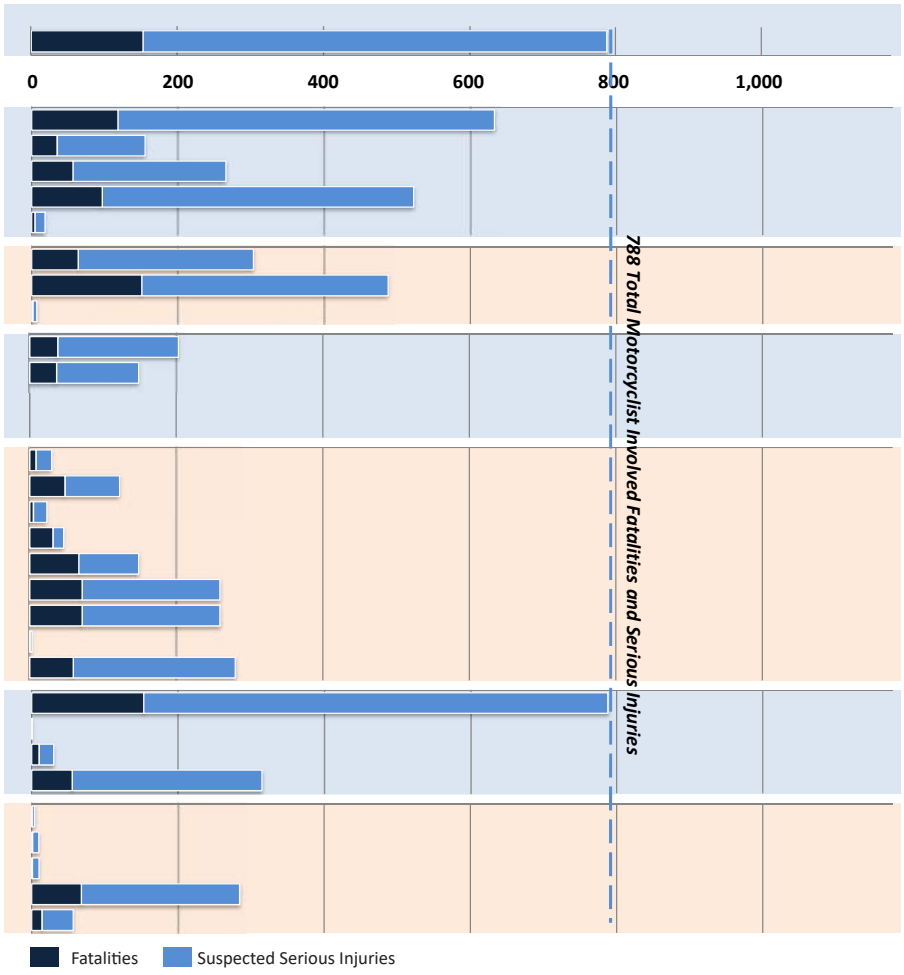


Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-5: MOTORCYCLIST INVOLVED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Motorcyclist Involved Fatal and Serious Injury Statistics from 2016-2018

		Fatalities		Serious Injuries		Fatalities & Serious Injuries	
Motorcyclist Involved Total		*153*	*100%*	*635*	*100%*	*788*	*100%*
Characteristics		**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	118	*77.2%*	515	*81.1%*	633	*80.3%*
	Rural	35	*22.8%*	120	*18.9%*	155	*19.7%*
	State Road	57	*37.0%*	209	*32.9%*	266	*33.7%*
	Local Road	97	*63.0%*	426	*67.1%*	522	*66.3%*
	Tribal Land	5	*3.0%*	14	*2.2%*	18	*2.3%*
Geometry	Intersection Related	64	*41.7%*	239	*37.7%*	303	*38.5%*
	Lane Departure	151	*98.5%*	337	*53.0%*	488	*61.9%*
	Work Zone	2	*1.1%*	5	*0.8%*	7	*0.9%*
Person Type	Young Driver (13-24) Involved	38	*25.0%*	165	*25.9%*	203	*25.8%*
	Older Driver (65+) Involved	37	*23.9%*	112	*17.6%*	149	*18.9%*
	Bicyclist	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Pedestrian	0	*0.0%*	0	*0.0%*	0	*0.0%*
Behavior	Aggressive Driver Involved	9	*5.7%*	21	*3.4%*	30	*3.8%*
	Alcohol Involved	48	*31.5%*	74	*11.7%*	123	*15.6%*
	Distracted Driver Involved	5	*3.3%*	18	*2.9%*	23	*3.0%*
	Drug Involved	32	*20.9%*	14	*2.3%*	46	*5.9%*
	Impaired Driver Involved	67	*43.9%*	81	*12.8%*	149	*18.9%*
	Unhelmeted Motorcyclist	72	*46.7%*	188	*29.6%*	260	*33.0%*
	No Restraint Used	72	*46.7%*	188	*29.6%*	260	*33.0%*
	Sleepy or Fatigued Involved	1	*0.4%*	2	*0.4%*	3	*0.4%*
	Speeding Involved	60	*38.9%*	221	*34.8%*	280	*35.6%*
Vehicle	**Motorcyclist**	**153**	***100.0%***	**635**	***100.0%***	**788**	***100.0%***
	Train Involved	0	*0.0%*	1	*0.1%*	1	*0.1%*
	Heavy Vehicle/ Truck Involved	10	*6.7%*	20	*3.1%*	30	*3.8%*
	Multiple Vehicle Involved	56	*36.3%*	259	*40.9%*	315	*40.0%*
Environmental	Dust Related (Windy)	1	*0.4%*	3	*0.5%*	4	*0.5%*
	Wildlife/Animal Involved	1	*0.9%*	8	*1.3%*	10	*1.2%*
	Wet Weather	1	*0.7%*	9	*1.4%*	10	*1.3%*
	Night	68	*44.3%*	216	*34.1%*	284	*36.1%*
	Dark - No Light	14	*9.3%*	42	*6.7%*	57	*7.2%*



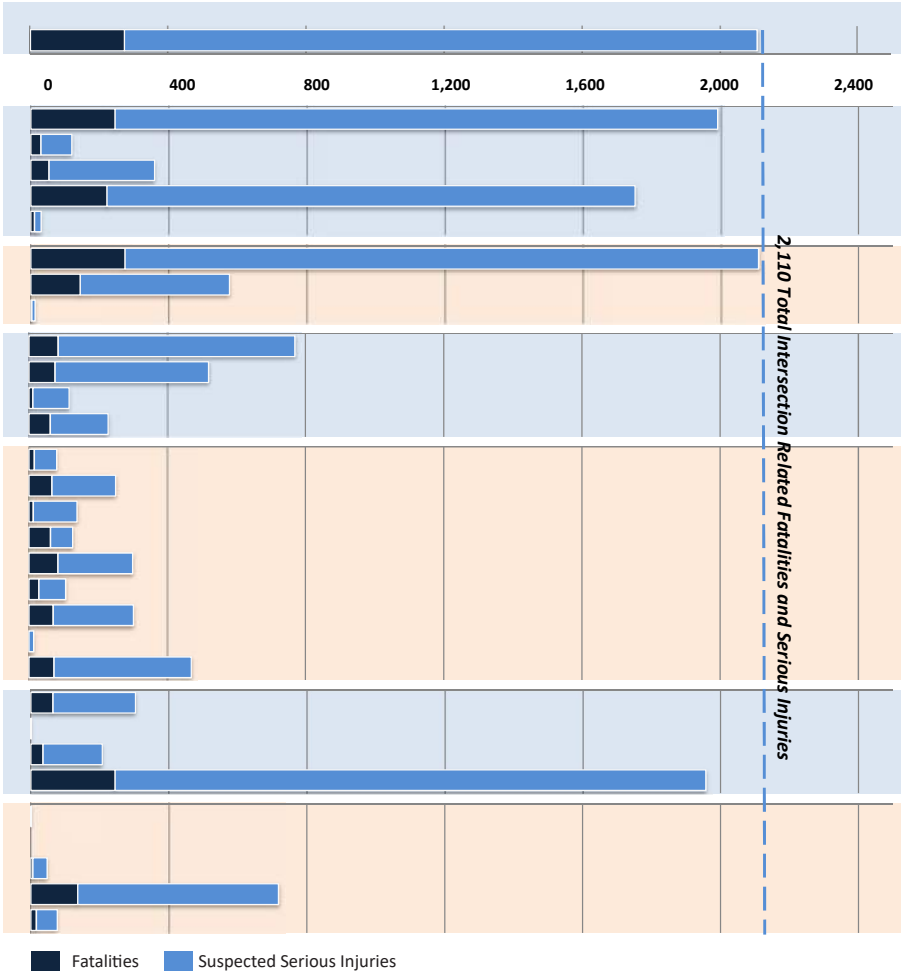
Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-6: INTERSECTION RELATED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Intersection Related Fatal and Serious Injury Statistics from 2016-2018

Intersection Related	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
	273	*100%*	*1,837*	*100%*	*2,110*	*100%*

	Characteristics	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	244	*89.4%*	1,747	*95.1%*	1,991	*94.4%*
	Rural	29	*10.6%*	90	*4.9%*	119	*5.6%*
	State Road	52	*19.1%*	306	*16.7%*	359	*17.0%*
	Local Road	221	*80.9%*	1,531	*83.3%*	1,752	*83.0%*
	Tribal Land	11	*3.9%*	19	*1.0%*	30	*1.4%*
Geometry	**Intersection Related**	**273**	***100.0%***	**1,837**	***100.0%***	**2,110**	***100.0%***
	Lane Departure	143	*52.4%*	432	*23.5%*	576	*27.3%*
	Work Zone	3	*1.0%*	10	*0.5%*	13	*0.6%*
Person Type	Young Driver (13-24) Involved	84	*30.9%*	685	*37.3%*	769	*36.5%*
	Older Driver (65+) Involved	76	*27.7%*	444	*24.2%*	520	*24.6%*
	Bicyclist	11	*4.1%*	105	*5.7%*	116	*5.5%*
	Pedestrian	62	*22.7%*	167	*9.1%*	229	*10.9%*
Behavior	Aggressive Driver Involved	15	*5.6%*	65	*3.6%*	81	*3.8%*
	Alcohol Involved	67	*24.4%*	184	*10.0%*	251	*11.9%*
	Distracted Driver Involved	12	*4.5%*	127	*6.9%*	139	*6.6%*
	Drug Involved	63	*22.9%*	64	*3.5%*	126	*6.0%*
	Impaired Driver Involved	84	*30.7%*	216	*11.8%*	300	*14.2%*
	Unhelmeted Motorcyclist	29	*10.5%*	77	*4.2%*	106	*5.0%*
	No Restraint Used	70	*25.6%*	232	*12.6%*	302	*14.3%*
	Sleepy or Fatigued Involved	0	*0.0%*	14	*0.8%*	14	*0.7%*
	Speeding Involved	72	*26.5%*	397	*21.6%*	470	*22.3%*
Vehicle	Motorcyclist	64	*23.4%*	239	*13.0%*	303	*14.4%*
	Train Involved	0	*0.0%*	1.0	*0.1%*	1	*0.0%*
	Heavy Vehicle/ Truck Involved	35	*12.8%*	172	*9.4%*	207	*9.8%*
	Multiple Vehicle Involved	245	*89.5%*	1,712	*93.2%*	1,957	*92.7%*
Environmental	Dust Related (Windy)	0	*0.0%*	1	*0.1%*	1	*0.1%*
	Wildlife/Animal Involved	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Wet Weather	6	*2.1%*	41	*2.3%*	47	*2.2%*
	Night	136	*49.9%*	581	*31.6%*	718	*34.0%*
	Dark - No Light	16	*5.9%*	60	*3.3%*	76	*3.6%*

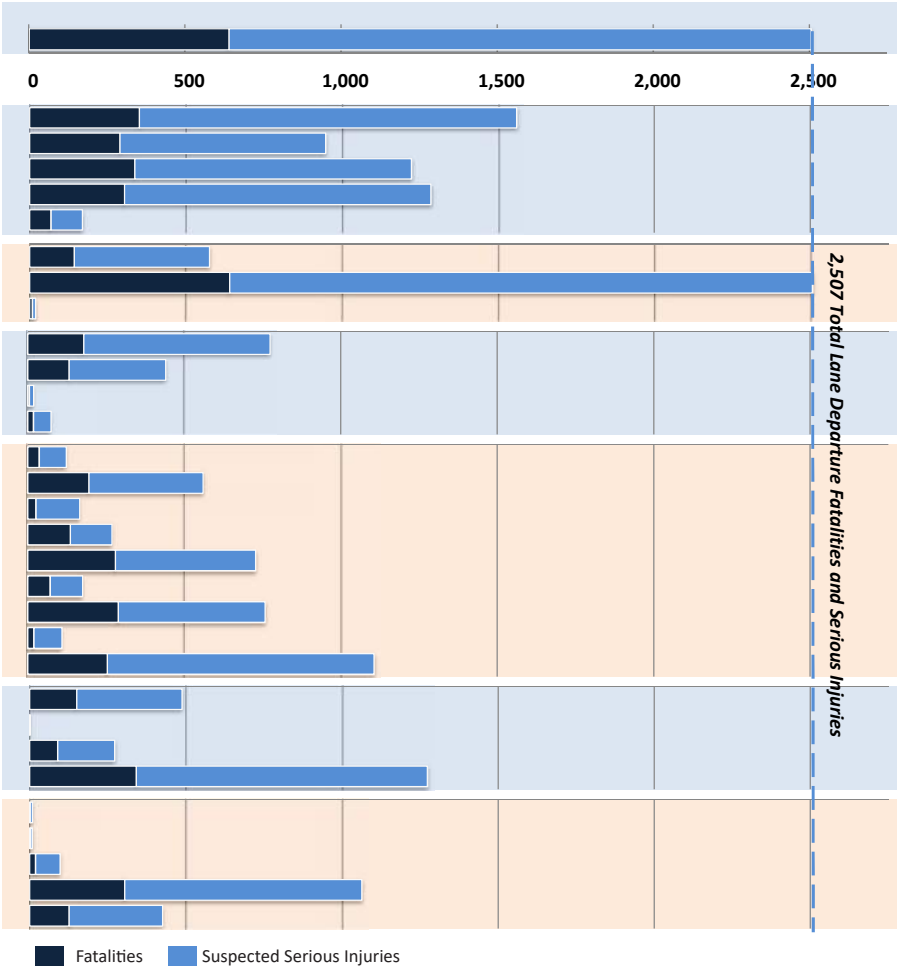


Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-7: LANE DEPARTURE FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Lane Departure Fatal and Serious Injury Statistics from 2016-2018

	Lane Departure	Fatalities		Serious Injuries		Fatalities & Serious Injuries	
		641	*100%*	*1,866*	*100%*	*2,507*	*100%*
	Characteristics	**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	352	*54.9%*	1,207	*64.7%*	1,559	*62.2%*
	Rural	289	*45.1%*	659	*35.3%*	948	*37.8%*
	State Road	337	*52.6%*	885	*47.4%*	1,222	*48.8%*
	Local Road	304	*47.4%*	981	*52.6%*	1,285	*51.2%*
	Tribal Land	69	*10.7%*	100	*5.4%*	169	*6.7%*
Geometry	Intersection Related	143	*22.4%*	432	*23.2%*	576	*23.0%*
	Lane Departure	**641**	***100.0%***	**1,866**	***100.0%***	**2,507**	***100.0%***
	Work Zone	9	*1.4%*	10	*0.5%*	19	*0.7%*
Person Type	Young Driver (13-24) Involved	180	*28.0%*	595	*31.9%*	774	*30.9%*
	Older Driver (65+) Involved	133	*20.7%*	308	*16.5%*	441	*17.6%*
	Bicyclist	5	*0.8%*	14	*0.8%*	19	*0.8%*
	Pedestrian	18	*2.9%*	56	*3.0%*	74	*3.0%*
Behavior	Aggressive Driver Involved	37	*5.8%*	86	*4.6%*	123	*4.9%*
	Alcohol Involved	196	*30.6%*	364	*19.5%*	561	*22.4%*
	Distracted Driver Involved	27	*4.2%*	140	*7.5%*	166	*6.6%*
	Drug Involved	136	*21.3%*	133	*7.1%*	269	*10.7%*
	Impaired Driver Involved	281	*43.8%*	448	*24.0%*	728	*29.1%*
	Unhelmeted Motorcyclist	72	*11.2%*	104	*5.6%*	176	*7.0%*
	No Restraint Used	290	*45.2%*	469	*25.1%*	758	*30.2%*
	Sleepy or Fatigued Involved	20	*3.1%*	90	*4.8%*	109	*4.4%*
	Speeding Involved	255	*39.8%*	851	*45.6%*	1,106	*44.1%*
Vehicle	Motorcyclist	151	*23.6%*	337	*18.0%*	488	*19.5%*
	Train Involved	0	*0.0%*	1	*0.0%*	1	*0.0%*
	Heavy Vehicle/ Truck Involved	89	*13.9%*	183	*9.8%*	272	*10.8%*
	Multiple Vehicle Involved	341	*53.3%*	932	*50.0%*	1,274	*50.8%*
Environmental	Dust Related (Windy)	1	*0.2%*	8	*0.4%*	9	*0.4%*
	Wildlife/Animal Involved	2	*0.3%*	6	*0.3%*	8	*0.3%*
	Wet Weather	19	*3.0%*	78	*4.2%*	97	*3.9%*
	Night	304	*47.5%*	759	*40.7%*	1,064	*42.4%*
	Dark - No Light	126	*19.7%*	299	*16.0%*	426	*17.0%*

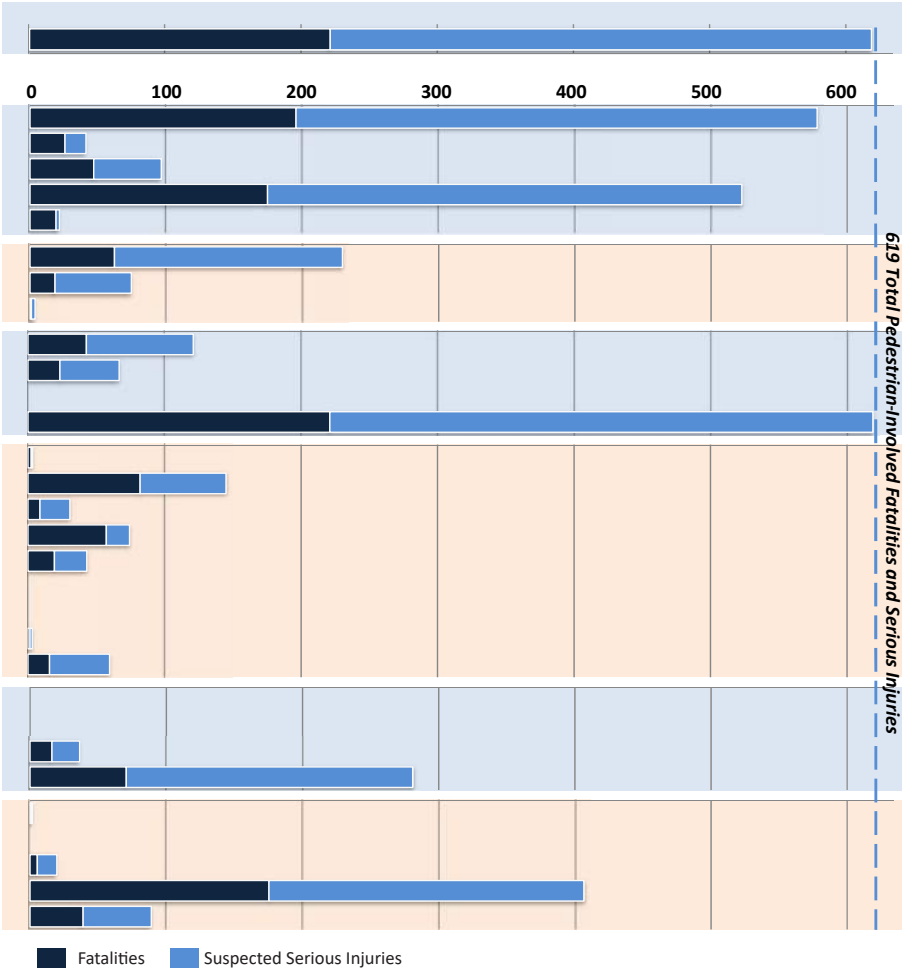


Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

TABLE B-8: PEDESTRIAN-INVOLVED FATAL AND SERIOUS INJURY STATISTICS FROM 2016-2018

Pedestrian-Involved Fatal and Serious Injury Statistics from 2016-2018

		Fatalities		Serious Injuries		Fatalities & Serious Injuries	
Pedestrian-Involved Total		***221***	***100%***	***398***	***100%***	***619***	***100%***
Characteristics		**Fatalities**		**Serious Injuries**		**Fatalities & Serious Injuries**	
		Annual Average	% of total	Annual Average	% of total	Annual Average	% of total
Geography	Urban	195	*88.4%*	383	*96.1%*	578	*93.4%*
	Rural	26	*11.6%*	15	*3.9%*	41	*6.6%*
	State Road	47	*21.1%*	50	*12.5%*	96	*15.6%*
	Local Road	174	*78.9%*	348	*87.5%*	523	*84.4%*
	Tribal Land	19	*8.6%*	3	*0.7%*	22	*3.5%*
Geometry	Intersection Related	62	*28.1%*	167	*42.0%*	229	*37.0%*
	Lane Departure	18	*8.3%*	56	*14.1%*	74	*12.0%*
	Work Zone	1	*0.5%*	3	*0.7%*	3.7	*0.6%*
Person Type	Young Driver (13-24) Involved	43	*19.3%*	78	*19.7%*	121	*19.5%*
	Older Driver (65+) Involved	23	*10.6%*	43	*10.9%*	67	*10.8%*
	Bicyclist	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Pedestrian	**221**	***100.0%***	**398**	***100.0%***	**619**	***100.0%***
Behavior	Aggressive Driver Involved	2	*1.1%*	1	*0.3%*	3	*0.5%*
	Alcohol Involved	82	*37.1%*	63	*15.8%*	145	*23.4%*
	Distracted Driver Involved	9	*3.9%*	22	*5.5%*	31	*5.0%*
	Drug Involved	57	*25.9%*	17	*4.3%*	74	*12.0%*
	Impaired Driver Involved	19	*8.7%*	24	*5.9%*	43	*6.9%*
	Unhelmeted Motorcyclist	0	*0.0%*	0	*0.0%*	0	*0.0%*
	No Restraint Used	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Sleepy or Fatigued Involved	1	*0.6%*	2	*0.4%*	3	*0.5%*
	Speeding Involved	16	*7.1%*	44	*11.1%*	60	*9.6%*
Vehicle	Motorcyclist	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Train Involved	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Heavy Vehicle/ Truck Involved	16	*7.2%*	20	*5.1%*	36	*5.9%*
	Multiple Vehicle Involved	71	*32.0%*	210	*52.8%*	281	*45.4%*
Environmental	Dust Related (Windy)	1	*0.3%*	1	*0.3%*	2	*0.3%*
	Wildlife/Animal Involved	0	*0.0%*	0	*0.0%*	0	*0.0%*
	Wet Weather	5	*2.4%*	14	*3.6%*	20	*3.2%*
	Night	175	*79.3%*	231	*58.1%*	407	*65.7%*
	Dark - No Light	39	*17.6%*	50	*12.6%*	89	*14.4%*



Note: Annual Average is calculated from 2016-2018 data, pulled from ALISS on May 12, 2019

APPENDIX C – HADDON MATRIX

HADDON MATRIX - EMPHASIS AREA STRATEGIES

The Haddon Matrix is a systematic approach to safety analysis. The matrix is a two-dimensional model which applies principles of public health to motor vehicle-related injuries. The first dimension is the phase of injury divided into pre-crash, crash, and post-crash. The second dimension is the four factors of injury: human (driver/passenger/pedestrian), vehicle, physical environment, and social environment (traffic safety culture).

The matrix assists safety professionals to not only identify where and when to implement traffic safety countermeasures, but also to plan for crash-related data collection and identify stakeholder partners for collaboration efforts. Each cell of the Haddon Matrix represents a different area in which strategies are identified and can be implemented. A sample Haddon Matrix is provided in **Table C-1**.

The Haddon Matrix is constructed for each emphasis area in **Tables C-2** through **C-5**. The top-left cell (pre-crash) identifies potential modifications to driver behavior that may reduce the likelihood or the severity of a crash. The matrix provides a range of issues that can be addressed through STSP strategies including education, enforcement, engineering, and emergency response solutions (the 4Es of Safety).

TABLE C-1: EXAMPLE OF HADDON MATRIX STRATEGIES

	Host/Person Affected	Vehicle	Physical Environment	Social/Economic
Pre-Crash	Impairment Prevention	Reducing vehicle speeds	Implementing safety elements into roadway design Improving pavement markings Installing roadway lighting in dark areas	Enforcing graduated licensing laws
Crash	Increasing use of restraints and child safety seats		Removing fixed objects from the clear zone Installing guard rail and median barriers	Enforcing impaired driving laws
Post-Crash	Emergency response training		Provide emergency response training	Provide emergency response training

Adapted from Iowa 2019-2023 SHSP

TABLE C-2: PEDESTRIANS EMPHASIS AREA HADDON MATRIX

Phases	Host/Person Affected Driver, Passenger, Pedestrian, Bicyclist				Vehicle Object that Transmits Kinetic Energy				Physical Environment				Social Environment Traffic Safety Culture			
	Emphasis Area Strategies															
	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS
Pre-Crash Primary Prevention	Ped 6	Ped 7; 8	Ped 12; 13	Ped 1; 3; 4 ;5	Ped 6				Ped 1;2; 4;5		Ped 12	EMS 1	Ped 2;3	Ped 7;8;9	Ped 10; 11; 12; 13	EMS 1 EMS 3 EMS 4
Crash Secondary Prevention																
Post-Crash Tertiary Prevention				EMS 1 EMS 2 EMS 3 EMS 4								EMS 2			Ped 9	EMS 2; 5

TABLE C-3: INTERSECTIONS EMPHASIS AREA HADDON MATRIX

Phases	Host/Person Affected Driver, Passenger, Pedestrian, Bicyclist				Vehicle Object that Transmits Kinetic Energy				Physical Environment				Social Environment Traffic Safety Culture			
	Emphasis Area Strategies															
	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS
Pre-Crash Primary Prevention	Int. 4; 5; 6; 7								Int. 1; 2; 3					Int. 8, 9	Int. 10, 11	Int. 11, 12
Crash Secondary Prevention																
Post-Crash Tertiary Prevention				EMS 1 EMS 2 EMS 3 EMS 4												EMS 5

TABLE C-4: LANE-DEPARTURE EMPHASIS AREA HADDON MATRIX

Phases	Host/Person Affected Driver, Passenger, Pedestrian, Bicyclist				Vehicle Object that Transmits Kinetic Energy				Physical Environment				Social Environment Traffic Safety Culture			
	Emphasis Area Strategies															
	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS
Pre-Crash Primary Prevention									Lane Dep 1a							
Crash Secondary Prevention									Lane Dep 1b, 1c							
Post-Crash Tertiary Prevention				EMS 1 EMS 2 EMS 3 EMS 4												EMS 5

TABLE C-5: HIGHWAY SAFETY (BEHAVIOR-RELATED) EMPHASIS AREA HADDON MATRIX

Phases	Highway Safety Sub-Area	Host/Person Affected: Driver, Passenger, Pedestrian, Bicyclist				Vehicle: Object that Transmits Kinetic Energy				Physical Environment				Social Environment: Traffic Safety Culture			
		Emphasis Area Strategies															
		Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS	Engineering	Enforcement	Education	EMS
Pre-Crash Primary Prevention	Distracted Driver (DD)			DD 5	EMS 1 EMS 2 EMS 3 EMS 4									DD 1	DD 2; 3	DD 4	EMS 5
	Speeding/ Reckless (S/R)									S/R 1					S/R 2; 3, 4; 5	S/R 6; 7	
	Occupant Protection / No Restraint (OP)			OP 6; 7; 8											OP 1; 3; 4; 5	OP 2; 6; 7; 8	
	Impaired Driver (ID)		ID 4; 5	ID 2; 3; 9d 8											ID 1; 4	ID 6; 7	
	Motorcycles (MC)																
Crash Secondary Prevention	Distracted Driver																
	Speeding/ Reckless																
	No Restraint																
	Impaired Driver																
	Motorcycles		MC 1	MC 2; 3; 4												MC 2; 3	
Post-Crash Tertiary Prevention	Distracted Driver																
	Speeding/ Reckless																
	No Restraint																
	Impaired Driver																
	Motorcycles																
	Distracted Driver																

APPENDIX D – EMPHASIS AREA TEAM LEADERS

EMPHASIS AREA TEAM LEADERS

STSP EMPHASIS AREA	LEADER(S)
Intersections	**Julian Dresang** City Traffic Engineer, City of Tempe **George Williams** Manager, ADOT TSMO Division
Lane Departure	**Steven Latoski** Public Works Director, Mohave County **Michael DenBleyker** Manager, ADOT Roadway Engineering Group
Highway Safety	**Alberto Gutier** Director, Arizona Governor's Office of Highway Safety **Nicole Costanza** Special Projects, Arizona Governor's Office of Highway Safety
Pedestrians	**Mailen Pankiewicz** Pedestrian Safety Coordinator, City of Phoenix, Street Transportation Department **Brian Fellows** Principal Planner, City of Phoenix, Street Transportation Department **Donna Lewandowski** Bicycle & Pedestrian Program Lead, ADOT Multimodal Planning Division
Safety-Related Data	**Tim Jordan** State Custodian of Crash Records, ADOT TSMO Division **Saroja Devarakonda** Traffic Engineer, ADOT TSMO Division

Revised: 5/17/2019

APPENDIX E – NATIONAL HIGHWAY SAFETY RELATED ANNUAL OBSERVANCES

EVENT NAME	LEAD AGENCY		PERIODICITY	MONTH	DESCRIPTION
National Work Zone Awareness Week	Federal Highway Administration	FHWA	Week	April	National attention to work zone motorist/ worker safety and mobility issues
Brain Injury Awareness Month	Brain Injury Association of America	BIAUSA	Month	March	Each March, people across the nation join brain injury advocates, friends, and colleagues on Capitol Hill for Brain Injury Awareness Day.
National Drug & Alcohol Facts Week	National Institutes of Health	NIH	Week	January	Health observance week for teens that aims to Shatter the Myths® about drug and alcohol use.
Distracted Driving Awareness Month	National Safety Council	NSC	Month	April	A united effort to recognize the dangers of and eliminate preventable deaths from distracted driving. Join us to help save lives.
National Public Health Week	American Public Health Association	APHA	Week	April	Communities across the United States observe National Public Health Week to recognize the contributions of public health and highlight issues important to improving our nation's health.
Motorcycle Safety Month	National Highway Traffic Safety Administration	NHTSA	Month	May	Promote motorists and motorcyclists to understand standard motorcycle driving behaviors and to drive safely around motorcycles on roadways.
National Bike Month	League of American Bicyclists	LAB	Month	May	Showcases the many benefits of bicycling and encourages more folks to giving biking a try.
Trauma Awareness Month	American Trauma Association	ATA	Month	May	Each year, a new focus is designated which relates to injury prevention and raising trauma awareness.
National Child Passenger Safety Technician Month	Safe Kids Worldwide	SKW	Month	May	Educating parents and caregivers properly to properly secure children in the correct car seats so the child is safe in the event of a crash.
Global Youth Traffic Safety Month	National Organizations for Youth Safety	NOYS	Month	May	A novel approach to teen distracted driving education.
Bike to School Day	National Center for Safe Routes to School	NCSRS	Day	May	Raises excitement and awareness about safe bicycling to school.
National Police Week	National Peace Officers Memorial Service	NPOMS	Week	May	Law enforcement officers around the world converge on DC to participate in planned events honoring those that have paid the ultimate sacrifice.
National Bike to Work Day	U.S. Department of Transportation	USDOT	Day	May	Raises excitement and awareness about safe bicycling to work.
EMS Week	American College of Emergency Physicians	ACEP	Week	May	Brings together communities and medical personnel to honor those who provide the day-to-day lifesaving services of medicine's "front line."
National Safety Month	National Safety Council	NSC	Month	June	Individuals and organizations participate in efforts to reduce the leading causes of unintentional injury and death.

EVENT NAME	LEAD AGENCY		PERIODICITY	MONTH	DESCRIPTION
National Trailer Safety Week	National Association of Trailer Manufacturers	NATM	Week	June	Events and educational resources to trailer dealers and customers raising awareness of proper towing techniques and maintenance.
Secure Your Load Day	Traffic Safety Marketing	TSM	Day	June	To raise awareness about the potentially catastrophic dangers of loose debris and unsecured loads
National Ride to Work Day	National Highway Traffic Safety Administration	NHTSA	Day	June	Raises excitement and awareness about safe motorcycle riding and promotes riding to work.
Back to School Month	National Safety Council	NSC	Month	August	Gears up parents, teachers, schools, and students gear for education
Stop on Red Week	National Coalition for Safer Roads	NCSR	Week	August	Brings awareness of the number and severity of intersection crashes; promotes safe driving, reminds drivers of the dangers of running red lights.
Drive Sober or Get Pulled Over	National Highway Traffic Safety Administration	NHTSA	Month	August	Focuses on law enforcement's goal to stop drunk drivers and constant police presence searching for drunk drivers to deter drinking and driving.
National Child Passenger Safety Week	National Highway Traffic Safety Administration	NHTSA	Week	September	Educate parents and caregivers about the best ways to keep kids safe while traveling in cars; car seat safety checks, and correct installation.
National Seat Check Saturday	National Highway Traffic Safety Administration	NHTSA	Day	September	To teach parents to correctly install and use car seats and ensure children are in the right seats for their age and sizes.
National Walk to School Day	National Center for Safe Routes to School	NCSRS	Day	October	Event where thousands of communities across the United States will walk their way to a healthy and safe day at school.
National School Bus Safety Week	National Association of Pupil Transportation	NAPT	Week	October	Educates parents, students, teachers, motorists, school bus operators, school administrators, and others on the importance of school bus safety.
National Teen Driver Safety Week	National Highway Traffic Safety Administration	NHTSA	Week	October	Educates teen drivers on alcohol, inconsistent or no seat belt use, distracted and drowsy driving, speeding, and number of passengers.
Drowsy Driving Prevention Week	National Sleep Foundation	NSF	Week	November	Raises awareness about drowsy driving, its effect on drivers and how to reduce the number of drivers who decide to drive sleep deprived.
National Traffic Incident Response Awareness Week	Federal Highway Administration	USDOT	Week	November	Brings awareness to responders and the importance of practices to ensure both responder safety and the safety of the traveling public.
Holiday Season Drunk Driving Campaign	National Highway Traffic Safety Administration	NHTSA	Month	December	Campaign during the December holiday season supporting the Drive Sober or Get Pulled Over campaign
Older Driver Safety Awareness Week	American Occupational Therapy Association	AOTA	Week	December	Brings attention to aspects of older driver safety and the importance of mobility and transportation to ensuring older adults remain active.