Washington State Strategic Highway Safety Plan 2019

Zero Deaths and Zero Serious Injuries by 2030

TARGET ZERO


ONE WAY
TARGET
ZERO

JAY INSLEE
Governor

STATE OF WASHINGTON
Office of the Governor

Washington State has a long tradition of excellence in traffic safety. In 2000, Washington adopted the goal of zero driving-related deaths and serious injuries by 2030. Since that time, we have adopted best practices in impairment, seat belt use, and distracted driving. For many years, we have proudly been at the forefront of traffic safety practices – because every life matters.

Despite ongoing progress in some areas, in recent years more people have been killed or seriously injured on our roadways. The trend is moving away from zero, and that is unacceptable. As a result, traffic safety partners across Washington have increased efforts and modified strategies to address the challenge of preventing fatal and serious injury crashes.

Formulating the 2019 Strategic Highway Safety Plan provided the opportunity for introspection, innovation, and growth. This plan assesses major social changes, strengthens our traffic safety culture, and makes a paradigm shift to the principles of a safe systems approach. It contains hundreds of strategies and key initiatives that communities statewide can implement to reach Target Zero.

Washington values safety and is committed to the Target Zero goal: zero driving-related deaths and serious injuries by 2030. As your governor, I share and honor this commitment. I want you, your family members, your friends, neighbors, and colleagues to travel our roads safely. Please join me in helping Washington meet the goal of "Target Zero."

Very truly yours,

Jay Inslee
Governor

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Washington Traffic Safety Commission

Governor Jay Inslee

Commission Chair

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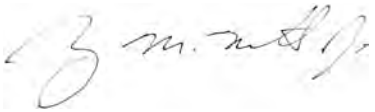
Superintendent of Public Instruction



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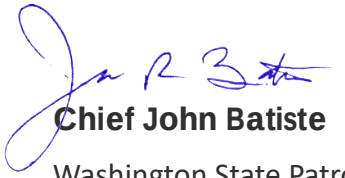

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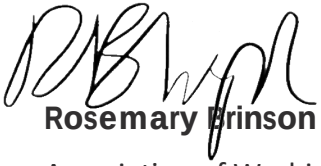

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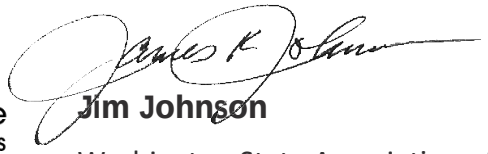

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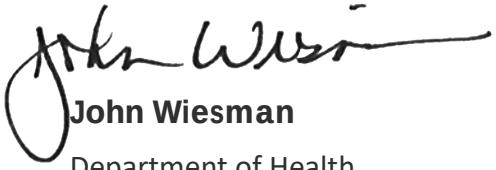

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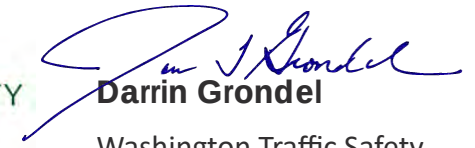

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Overview

Executive Summary

The Target Zero plan represents a bold vision: zero deaths and serious injuries on Washington's roadways by 2030.

The 2019 Target Zero Plan is the fifth version of this safety road map and it is more important now than ever. Data from the most recent three years (2015–2017) show that Washington's traffic fatality and serious injury trend is going in the wrong direction. Compared with prior three-year period (2012–2014), traffic fatalities have increased 23%, and serious injuries 7%. This mirrors a national increase of 11.3% in traffic fatalities.

In recognition of these increases, this edition of Target Zero is strongly action-focused. Each chapter in the High Risk, Crash Type, and Road Users categories contains descriptions of three to four key actions that a state or local jurisdiction can take to influence traffic safety.

Additional actions (also known as strategies or countermeasures) can be found at the end of these chapters, as well as several other chapters in this plan.

Focus on Innovation and New Initiatives

Target Zero is focused on new ways to accomplish the zero goal. Since Target Zero began in 2000, partners have accomplished much by enacting policies, completing projects, and developing new programs. Continued success will require new, more challenging initiatives. The next round of solutions may require more resources, changes in state laws, or design changes on roadways around the state.

Partners have identified our highest-priority strategies for the next three to four years for each emphasis area. Meanwhile, the Legislation and Policy chapter sets bold direction for sobriety checkpoints, automated speed enforcement, and graduated driver license policies.

Other new initiatives reflected in the 2019 plan:

- The Traffic Safety Culture chapter describes how we can change behavior by focusing on values and beliefs, as well as reinforcing healthy or positive behaviors. Several chapters contain callout boxes on traffic safety culture specific to that behavior or road user.
- Health Equity and Multicultural Communications both have new chapters in the plan, reflecting an increasing commitment to promoting equity in traffic safety outcomes. This influence can be seen in the Licensing and Regulation, Young Driver, and Pedestrian and Bicyclists chapters, among others.
- The Safe Systems Approach chapter explores the influence of roadway design on traffic safety, attempting to prevent crashes through design and roadway modifications for all users.
- The chapter on vehicle technology, now called Cooperative Automated Transportation—Includes Autonomous Vehicles, is updated and expanded. This is due to the increasing role technology plays in reducing crash potential and the significant potential of automated technology to reduce fatalities and serious injuries.
- The Licensing and Regulation chapter addresses best practices in licensing and potential improvements for Washington.

Data Drives our Decision-Making

The Target Zero approach is based on data, whenever possible. The data are used to point us to where we need to go next, and helps us evaluate where we've been. The data are critical, because in order to make change, we must understand the forces at work in our transportation and social structure that result in crashes. This is a complex environment, so our data systems must be able to help us answer difficult questions. See the Traffic Safety Data Systems chapter for more information (page 168).

Traffic safety data comes from Washington's Traffic Records Systems, which contains information about crashes, vehicles, drivers, citations, legal outcomes, and injuries. Partner agencies manage these systems to improve the timeliness, accuracy, completeness, uniformity, integration, and accessibility of the information. Through evaluation, analysis, and diagnosis, we use data to ensure we are investing in effective countermeasures and that those investments produce the expected outcomes.

Setting Priorities Based on Data

Target Zero focuses on the largest contributing factors to help set priorities. From 2015–2017, the top three factors across all fatalities were:

- Impairment (page 40): involved in 58% of all traffic fatalities, with polydrug impairment as the most common form of impairment.
- Lane Departure (page 92): involved in 48% of all traffic fatalities.
- Young Drivers (page 110): involved in 31% of all traffic fatalities.
- 75% of traffic fatalities involved at least one of these top three traffic safety priorities, and 11% involved all three.

Some other important facts:

- Fatalities and serious injuries involving heavy trucks increased 46% and 36%, respectively, compared to 2012–2014. See the Heavy Trucks chapter (page 158) to find out more.
- The second-highest increase was in pedestrian and bicyclist deaths, which increased 41%. Nationally, pedestrian and bicyclist deaths increased 20% during the same time period.

Target Zero Needs You

Washington can get to zero, but we must rely on the strength of our partnerships to do so. Target Zero needs YOUR leadership:

- Look at transportation equitably, across all modes.
- Carefully consider the strategies—choose and iterate on the ones that will result in the best outcomes for your need.
- Target investments using data and best practices.
- Support these fundamental, ongoing initiatives:
  - Traffic Safety Culture change
  - Cooperative Automated Transportation—Includes Automated Vehicles
  - A Safe Systems approach to design

The Target Zero vision is bold, but it's the only acceptable goal for our state's roadways.

About Target Zero

Target Zero is built on the belief that not one death is acceptable on our state's roadways. Everyone in Washington State should be able to travel our roadways without fear of being killed or seriously injured in a traffic crash.

A fundamental element of the Target Zero plan is that it is data-driven. Through evaluation, we identify the critical factors that contribute to fatal and serious injury crashes on Washington's roads. The plan then uses those factors to determine proven and recommended strategies, along with new ones, for reducing traffic deaths and serious injuries.

The Strategic Highway Safety Plan is our Guide

Target Zero is a data-driven strategic plan used to identify priorities and solutions, help create common goals, and develop a common language so we can work together across disciplines. Specifically, our partners use this strategic plan to:

- Set statewide priorities for all traffic safety partners over the next three to four years.
- Provide a resource of various strategies to address each emphasis area and factor.
- Help guide federal and state project funding toward the highest priorities and most effective strategies.
- Monitor outcomes at a statewide level for each priority area.

What is the Strategic Highway Safety Plan?

The federal government requires each state to have a Strategic Highway Safety Plan (SHSP); Target Zero is Washington's. Federal law requires that our SHSP be coordinated with the state's Highway Safety Plan, Commercial Vehicle Safety Plan, and the Highway Safety Improvement Program. This coordination includes harmonizing certain performance measures and targets. The role of our SHSP is to support the state's efforts to achieve these targets by establishing appropriate goals and objectives, outlining emphasis areas, and presenting effective strategies.

To learn more about federal requirements, please see Appendix H. To learn more about performance-based goals, please see Appendix I.

Partners Sustain Target Zero

Target Zero is a practitioner's plan, uniting the many contributing partners toward a common goal. Target Zero partners include key federal and state traffic safety agencies, along with tribes, cities, counties, non-profits, and private organizations. Collectively, this partnership is responsible for taking actions to reduce or prevent crashes through hundreds of projects, programs, initiatives, and campaigns all around our state. These include high visibility enforcement efforts, new roadway designs, campaigns to change traffic safety culture, and many other strategies. Traffic safety partners around the state are invited to incorporate the ideas in this plan into their own plans and programs to achieve zero fatal and serious crashes.

To get to zero deaths and serious injuries by 2030, Target Zero must rely on our many partners and their commitment to traffic safety. We must continue existing good strategies, as well as look at new and – at times – more demanding strategies to get to our goal. We strive for zero deaths and serious injuries on Washington's roadways, because every life counts.

Target Zero Partners

This plan is developed through a collaboration of traffic safety professionals and stakeholders from many different organizations and disciplines:

- Educational and subject-matter experts from the Washington Traffic Safety Commission (WTSC)
- Engineers from the Washington Department of Transportation (WSDOT) and local public works agencies. Training and licensing experts from the Department of Licensing (DOL)
- Tribal and city police, county sheriffs' deputies, and troopers and officers from the Washington State Patrol (WSP)
- Medical professionals and emergency medical services (EMS) personnel working with hospitals, public health agencies, and the Department of Health (DOH)
- Staff from the Federal Highway Administration (FHWA)
- Vision Zero practitioners and advocates
- Data specialists from state agencies and the Governor's Office
- And many other traffic safety specialists and interested parties from every corner of the state, all dedicated to making our roads safer

Traffic Safety Culture

Getting to zero will require more than just focusing on drivers. As leaders in traffic safety, transportation, and public health, we must take actions that demonstrate our commitment to building roads and addressing behaviors that reduce the potential for crashes. (See Traffic Safety Culture chapter on page 28 for more information.)

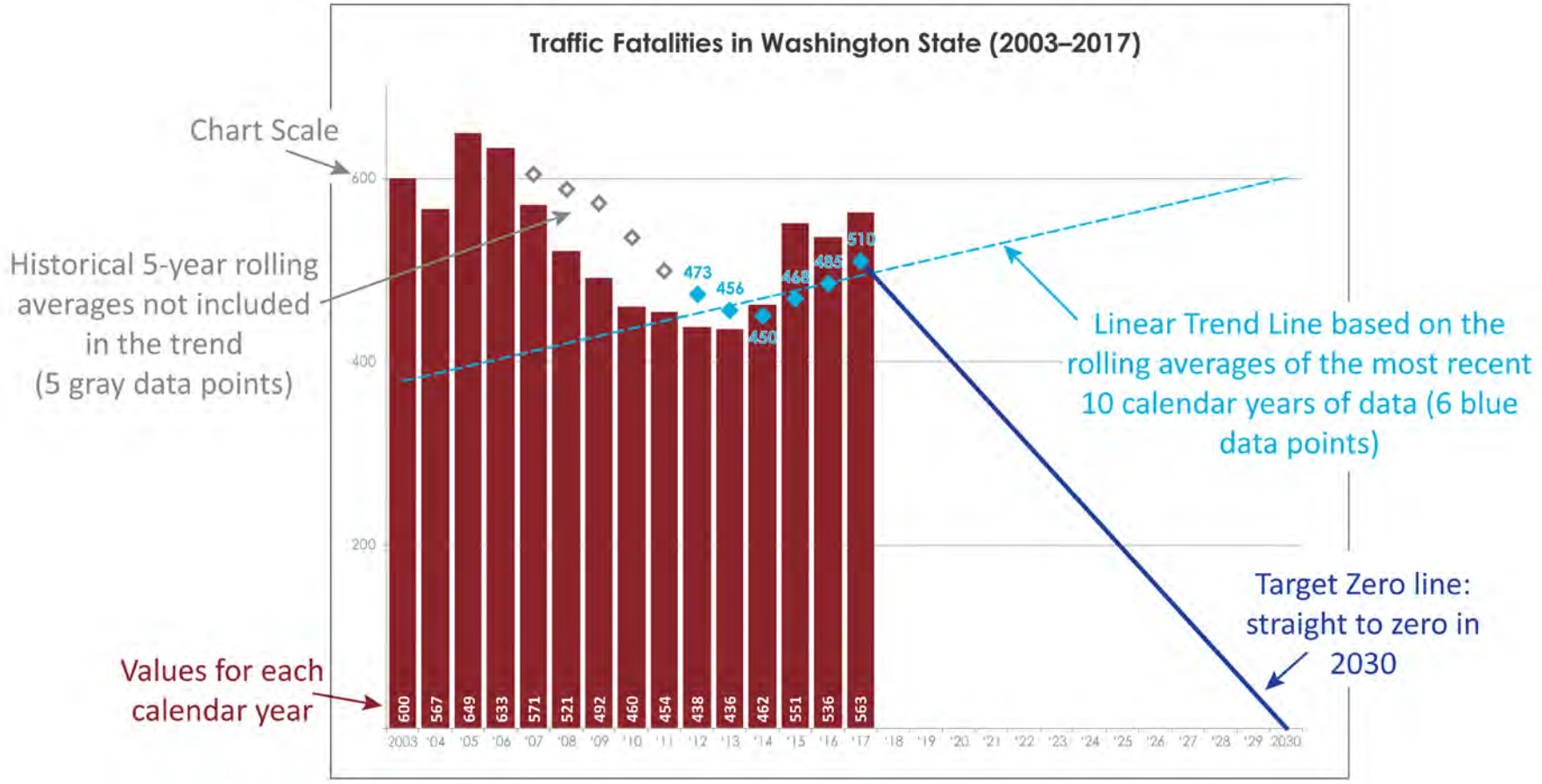
Reading Target Zero Graphs

Main Fatality and Serious Injury Graphs

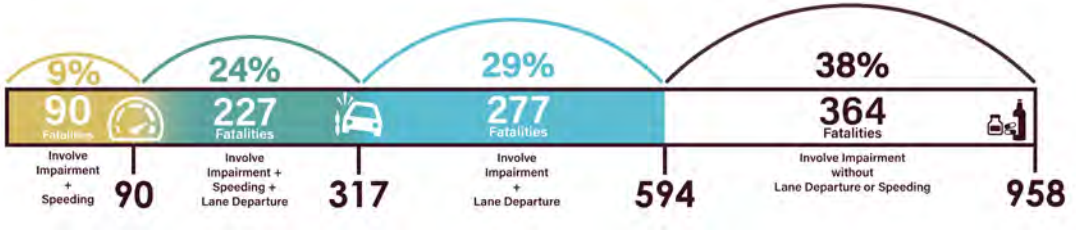
Throughout the Target Zero plan, traffic fatality and serious injury data are presented for each priority emphasis area. Fatality data is from the Fatality Analysis Reporting System (FARS), and serious injury data is from the Washington State Department of Transportation's (WSDOT's) Collision Location and Analysis System (CLAS). Fatalities are represented with the color red and serious injuries with orange.

The fatality and serious injury graphs throughout Target Zero display a performance trend line based on six five-year rolling averages derived from the most recent 10 years of data, along with the Target Zero line. The Target Zero line shows where we need to be to achieve our vision of zero deaths by 2030.

For more information on the methodologies and data sources used to calculate these numbers, please see Appendix C and Appendix D.



Overlapping Factors Graphic



In each emphasis area the overlapping factors graphic displays the other two most common emphasis areas for fatalities. For example, for fatalities that involved impairment, the two other most common factors were speeding and lane departure. The graphic shows that 90 fatalities involved impairment and speeding only, and 277 involved impairment and lane departure only, but you can also see that 227 fatalities involved all three. It also shows the number of fatalities that do not involve these other factors; in the case of impairment, this is 364.

The intention of the graphic is to highlight how each emphasis area is related to others and to find strategies that could reduce fatalities in multiple areas.

Strategies

Target Zero is focused on new ways to accomplish the zero goal. Since Target Zero began in 2000, partners have accomplished much by enacting policies, completing projects, challenging the status quo, and developing new programs. Continued success will require new, more difficult initiatives. The next round of solutions may require more resources, changes in state laws, or design changes on roadways around the state.

This version of Target Zero is heavily focused on issues and countermeasures to combat the current trend of increasing fatalities and serious injuries. Partners have identified our highest-priority strategies for the next three to four years and a table of all strategies is included at the end of each section.

Call-out Boxes

Throughout this plan you will see call-out boxes related to the following topics. These are highlighted due to their importance in moving forward towards zero deaths and zero serious injuries.

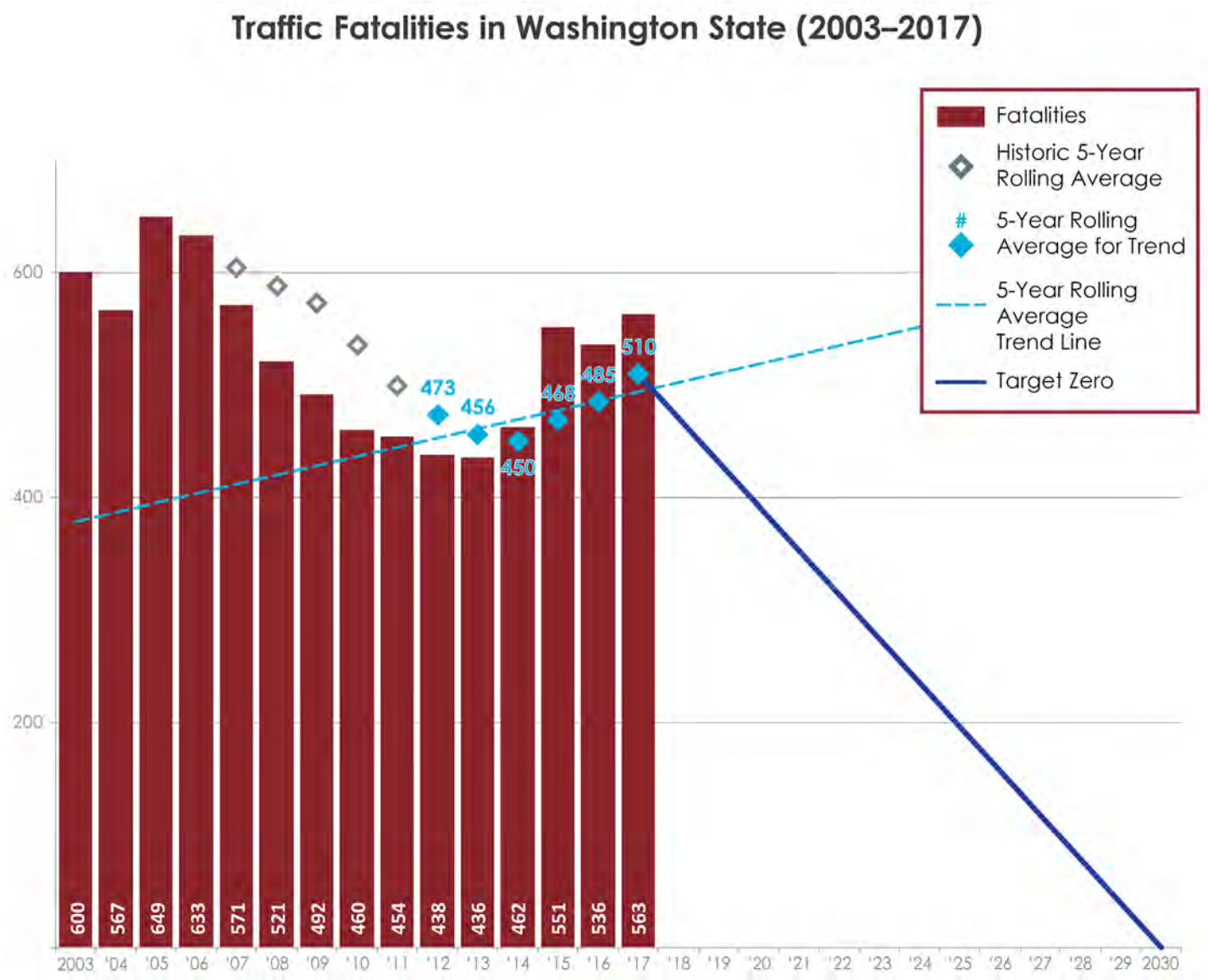
- **Health Equity:** This is the first time in the Target Zero plan that equity is included as a factor in how we plan to achieve zero deaths and serious injuries in Washington State. Data show the need to direct prevention efforts to communities with poverty rates higher than the state average as well as vulnerable and marginalized populations.
- **Traffic Safety Culture:** Connections and suggestions for making specific cultural changes for certain types of behaviors or roadway users, such as impairment, distraction, or motorcyclists. Included in this chapter is also a list of more general examples for encouraging traffic safety culture change. Readers are encouraged to consider culture change as a new and powerful approach to changing how we think about and address the factors that lead to crashes, and to employ cultural change strategies along with the more traditional educational strategies.
- **Related Areas:** There are some areas that did not fall into a level one or two priority, but are closely related to other emphasis areas. For example, drowsy drivers are discussed in the Impairment chapter since they experience cognitive impairment similar to that of alcohol-impaired drivers.

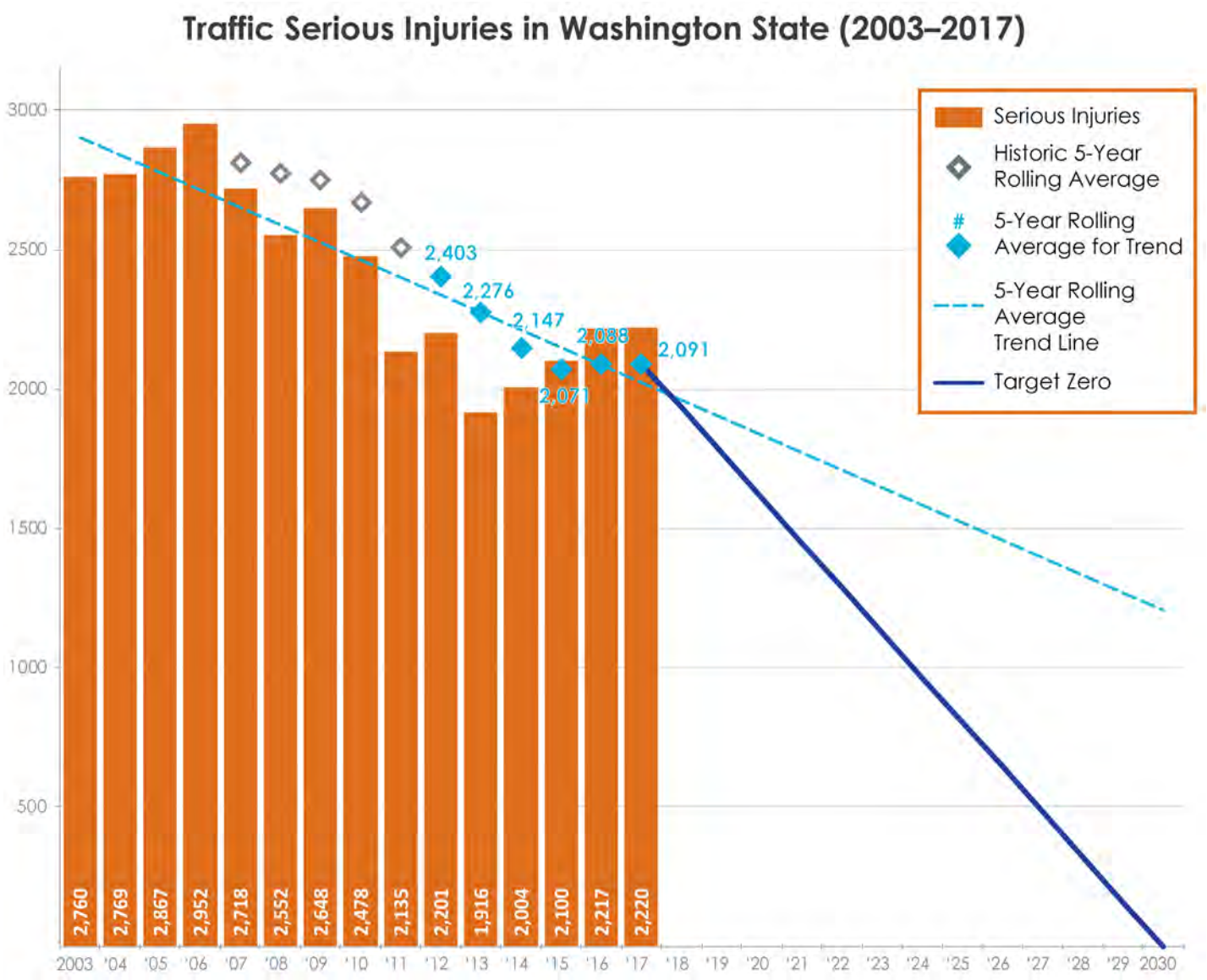
Target Zero Priorities

Washington State created the first Target Zero plan in 2000. Target Zero established an ambitious goal of zero traffic fatalities and serious injuries by the year 2030, and the state has made significant progress since then. In 2017, 563 people died in traffic crashes, a 10.8% reduction in fatalities compared to 631 lives lost in 2000.

Starting in 2005, traffic fatalities had been decreasing year after year. However, in 2015, a 19% increase in traffic fatalities marked the highest single-year increase in decades (from 462 to 551). For 2015–2017, the years covered by this edition of the plan, traffic fatalities remained at this higher level.

From 2014-2015, nationwide traffic fatalities increased 8.3%, the largest single-year increase since 1966. The National Highway Traffic Safety Administration (NHTSA) has attributed this increase to job growth, lower fuel prices, and an increase in Vehicle Miles Traveled (VMT).





Washington averaged 550 lives lost per year, representing a 23% increase in traffic fatalities in just three years. Traffic serious injuries have also increased 7% compared to 2012–2014. During this same time frame, Washington State's population only increased 4%, and VMT increased 6%. From 2015–2017, pedestrian and bicyclist deaths in Washington increased 41% compared to 2012–2014. Nationally, these deaths increased 20% during the same time period. This user group experienced the highest increases in fatalities of all road users in Washington from 2015–2017.

To achieve zero deaths and serious injuries on our roadways by 2030, Washington must average 39 fewer fatalities and 161 fewer serious injuries each year, starting right now. As time passes, it becomes harder to achieve our goal because partners have already accomplished the simpler efforts.

The improvements we have to make now are harder and more transformative than the ones that have come before. Complicating this difficult transformation is the recent increase in fatalities and serious injuries. With limited resources and personnel, every strategy — every effort — must count toward achieving our goal. This requires deliberate thought, meaningful analysis, careful planning, and strong commitment to a variety of effective traffic safety strategies.

Target Zero Priorities

To focus efforts on eliminating deaths and serious injuries on our state's roadways, a team of analysts from key Target Zero partners evaluated the data for 2015–2017. Their goal was to determine the highest priorities for immediate efforts. The team grouped the primary factors found in fatal and serious traffic crashes into priority levels one and two. The levels are based on the percentage of traffic fatalities and serious injuries associated with each factor.

Priority level one includes the factors associated with the largest number of fatalities and serious injuries in the state. Each of these factors was involved in at least 25% of the traffic fatalities or serious injuries between 2015 and 2017. It also includes Supporting Systems and Technologies.

Priority level two factors, while frequent, are not as common. Level two factors were seen in less than 25% of traffic fatalities or serious injuries.

Other crash factors occurring less frequently are monitored as a part of these higher-level priorities. These co-factors include crashes involving drowsy driving, work zones, wildlife, school buses, and trains. Because they are so infrequent, we do not delve deeply into these topics in the 2019 plan. However, they are discussed within several of the Target Zero plan chapters.

Data Changes in the 2019 Target Zero

In this edition of Target Zero, readers will find the following data changes from the 2016 edition:

- Priority levels were collapsed from three to two.
- Heavy truck-involved crashes became a priority level two, up from a priority three.
- Bicyclist crashes were combined with pedestrian crashes for a single Pedestrians and Bicyclists emphasis area, at priority level two.
- Unlicensed driver-involved crashes are no longer in the priority table. Licensure issues are now covered in a new chapter.
- Due to data reporting challenges and a lack of direct-impact strategies, drowsy driving became a monitored emphasis area.
- Replacing the Unlicensed Driver chapter, the Licensing and Regulation chapter addresses best practices in licensing and potential improvements for Washington.

Target Zero Priorities

	Washington State 2015–2017	Fatalities		Serious Injuries	
		Number	% Total	Number	% Total
		1,650	100%	6,537	100%
	High Risk Behavior				
1	Impairment	958	58.1%	1,215	18.6%
1	Distraction	502	30.4%	1,933	29.6%
1	Speeding	485	29.4%	1,579	24.2%
2	Unrestrained Occupants	312	18.9%	701	10.7%
	Crash Type				
1	Lane Departures	796	48.2%	2,458	37.6%
1	Intersections	377	22.8%	2,256	34.5%
	Road Users				
1	Young Drivers 16–25	512	31.0%	2,243	34.3%
2	Pedestrians and Bicyclists	329	19.9%	1,333	20.4%
2	Motorcyclists	236	14.3%	1,209	18.5%
2	Older Drivers 70+	223	13.5%	599	9.2%
2	Heavy Trucks	178	10.8%	442	6.8%
	Other Monitored Emphasis Areas				
	Drowsy Drivers	44	2.7%	236	3.6%
	Work Zones	18	1.1%	70	1.1%
	Vehicle-Train	12	0.7%	4	0.1%
	Wildlife	8	0.5%	53	0.8%
	School Buses	4	0.2%	17	0.3%

Priority Level One

Factors occurring in **at least 25% of total fatalities** and the following **Supporting Systems and Technologies**:

- Traffic Data Systems
- EMS and Trauma Care Systems
- Evaluation and Diagnostics
- Cooperative Automated Transportation—Includes Autonomous Vehicles
- Safe Systems

Priority Level Two

Factors occurring in **less than 25% of total fatalities**.

Other Monitored Emphasis Areas

These areas are important to Target Zero but are not Priority Level One or Two. They are discussed in the following related chapters:

- Drowsy Drivers: Impairment
- Work Zones: Distraction
- Vehicle-Train: Intersections
- Wildlife: Motorcyclists
- School Buses: Heavy Trucks

Fatality and Serious Injury Trends are Generally Increasing for 2015–2017

Since the last edition of Target Zero, fatalities and serious injuries have increased across almost all Target Zero emphasis areas (see the tables on the following page comparing 2012–2014 data with 2015–2017 data). The only exception to the upward trend is speeding-involved fatalities and serious injuries, which showed slight reductions.

Serious injuries involving impairment also decreased, but under-reporting in serious injury crashes involving impairment requires that this decrease be interpreted with caution. While 90% of people who die in fatal crashes receive a toxicology screening for drugs and alcohol, far fewer people involved in a serious injury crash receive the same testing. With the significant increase in impairment-involved fatalities (26%), it is unlikely that the serious injury data represents a true decrease.

Some emphasis areas experienced significant increases compared to the previous edition of the plan. Heavy-truck-involved crashes increased the most among all Target Zero emphasis areas. Pedestrians and bicyclists, older drivers, and intersection crashes all increased more than 30% from the previous three-year reporting period.

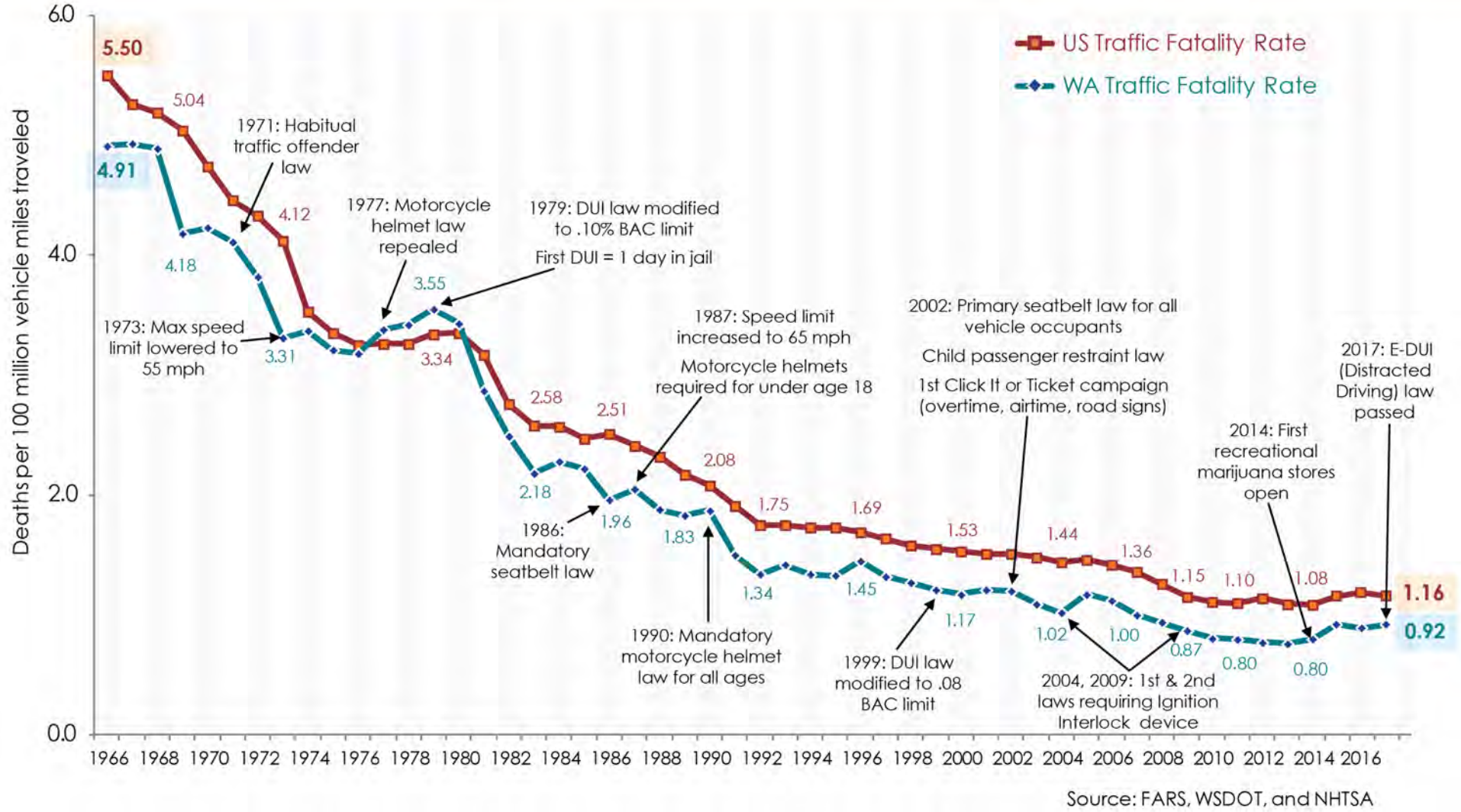
Many of the trends showed a decline for 2012–2014. However, most recent trends show the increases, and we must continue to push for implementing strategies from the plan that will have the largest effect on reducing crash potential. This will help us to achieve zero fatalities and serious injuries by 2030.

Washington State Traffic Fatalities			
	2012–2014	2015–2017	Three Year % Change
All Fatalities	**1,336**	**1,650**	**+23.5%**
Impairment	759	958	+26.2%
Distraction	395	502	+27.1%
Speeding	508	485	-4.5%
Unrestrained Occupants	296	312	+5.4%
Lane Departure	728	796	+9.3%
Intersections	276	377	+36.6%
Young Drivers 16–25	423	512	+21.0%
Pedestrians and Bicyclists	233	329	+41.2%
Motorcyclists	225	236	+4.9%
Older Drivers 70+	162	223	+37.7%
Heavy Truck	122	178	+45.9%

Washington State Traffic Serious Injuries			
	2012–2014	2015–2017	Three Year % Change
All Serious Injuries	**6,121**	**6,537**	**+6.8%**
Impairment	1,365	1,215	-11.0%
Distraction	1,403	1,933	N/A*
Speeding	1,622	1,579	-2.7%
Unrestrained Occupants	627	701	+11.8%
Lane Departure	2,234	2,458	+5.8%
Intersections	2,118	2,256	+6.5%
Young Drivers 16–25	2,057	2,243	+9.0%
Pedestrians and Bicyclists	1,165	1,333	+11.1%
Motorcyclists	1,165	1,209	+3.8%
Older Drivers 70+	524	599	+14.3%
Heavy Truck	326	442	+35.6%

*Due to a coding change in 2013, we cannot calculate percent change with 2012 data included for distraction.

Traffic Fatality Rates
US and Washington State 1966–2017
By Year and Major Traffic Safety Laws



Source: FARS, WSDOT, and NHTSA

Tribes and Target Zero

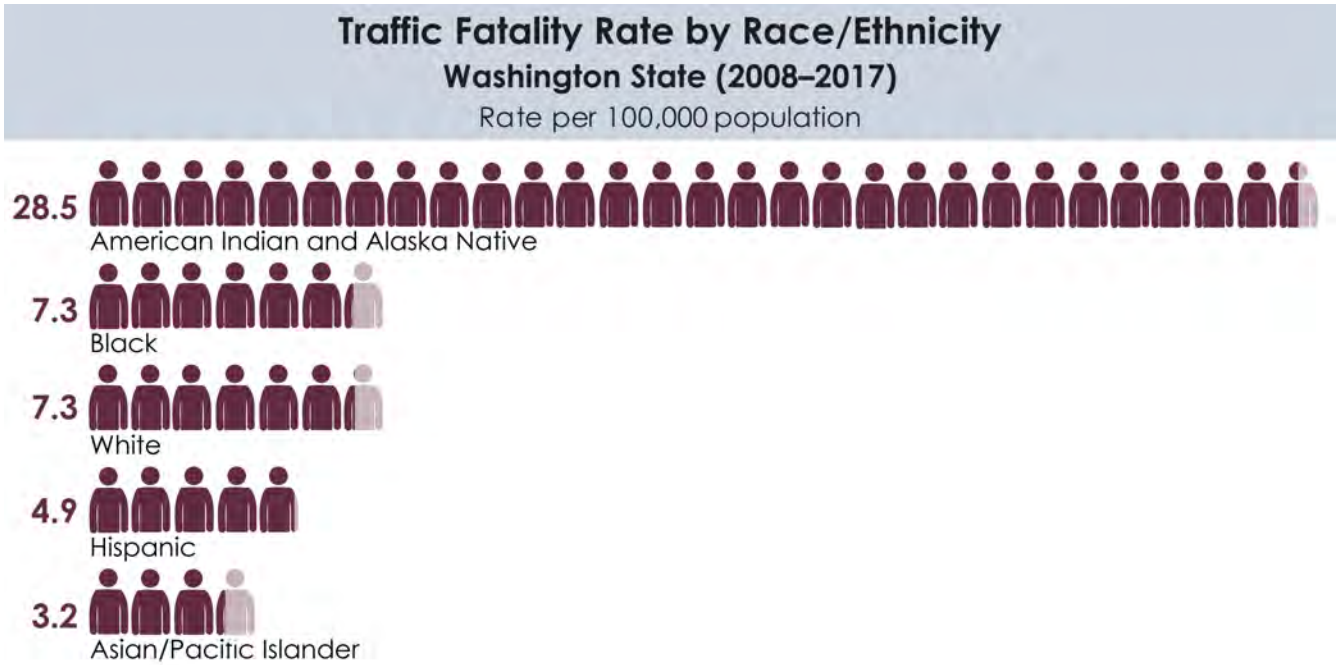
From 2015–2017, 89 American Indians and Alaskan Natives (AIANs) died in traffic crashes in Washington State, including both reservation and non-reservation roadways. Using data from 2008–2017, which represents 257 AIAN traffic deaths, the AIAN traffic fatality rate is 28.5 deaths per 100,000 people in the population. This rate is almost four times higher than the rate for the next highest race/ethnicity. The AIAN fatality and serious injury rates increased across most priority areas.

In addition to calculating death rates based on race/ethnicity, the tribal traffic safety community and partners also analyzed fatal and serious crash events occurring on reservations. From 2015–2017:

- There were 99 fatalities occurring on reservations, a 50% increase from 66 in 2014–2016. Of the 99 fatalities, 44 (44%) were AIAN deaths.
- There were 183 serious injuries on reservation roads, representing an increase of 6.4%. Since race/ethnicity information is gathered from death certificates, it is unknown how many of the serious injuries were AIANs.
- Most notably, the number of pedestrians and bicyclists killed on reservation lands increased by a staggering 360% from 2012–2014 to 2015–2017, from five to 23.
- Pedestrians or bicyclists seriously injured on reservation lands increased 86%.

Overview

There are 29 federally-recognized tribes in Washington State, and each one is a sovereign government. Through the Centennial Accord, the state of Washington and tribes have formally committed to working together on a government-to-government basis to address a number of common problems, including traffic safety issues. Tribes play a vital role in traffic safety outcomes and are active partners with other agencies in addressing the goals identified in the Target Zero plan. Tribal members served on the Project Team and Target Zero Steering Committee for the 2019 plan, and were involved in developing and reviewing the content of this chapter.



American Indian and Alaskan Natives have higher death rates involving high risk behaviors than other races. For example, the rate of AIAN unrestrained vehicle occupant deaths per 100,000 population is more than eight times higher than other races combined.

Transportation planning and engineering, as well as the human factors of traffic safety on tribal lands, are important areas of focus in our state. Reservations in Washington often include a mix of tribal, state, county, city, and Bureau of Indian Affairs (BIA) roads, which creates jurisdictional complexities with law enforcement, Emergency Medical Services (EMS), crash reporting, road maintenance, and capital safety projects. Additionally, many tribes in the state hold properties that are non-contiguous to their reservations, which provide vital services to their communities.

To address this complex mix of jurisdictions and experts, tribes have multiple forums that meet regularly for transportation and traffic safety issues. The Tribal Traffic Safety Advisory Board (TTSAB) is dedicated to tribal traffic safety issues. The board meets every other month to discuss tribal traffic safety concerns and partnership opportunities, and to implement projects identified through its strategic planning. Its members include tribal leaders, planners, law enforcement, and representatives from the Washington Traffic Safety Commission (WTSC) and the Washington State Department of Transportation (WSDOT).

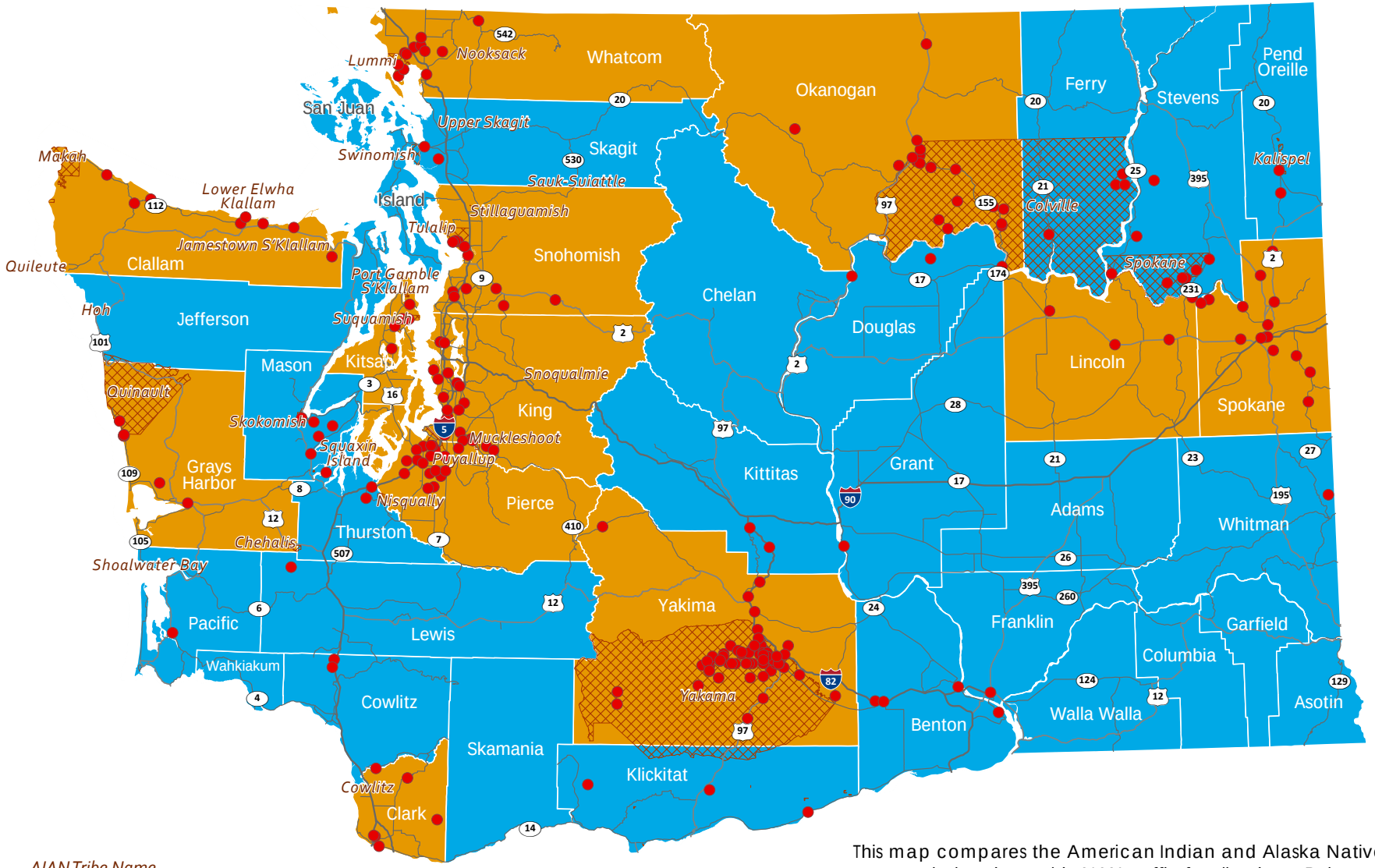
Other, more general forums that occasionally address tribal traffic safety issues include:

- Washington Indian Transportation Policy Advisory Committee (WITPAC)
- Tribal Transportation Planning Organization (TTPO)
- The Northwest Association of Tribal Law Enforcement Officers (NATEO)
- Small Urban and Rural Transit Center on Mobility (SURTCOM)

Fatalities and Serious Injuries on Reservations

WSDOT, in partnership with BIA, used U.S. Census data to include reservation boundaries in its data collection and reporting program. Of the 89 AIAN crash deaths from 2015–2017, 44 (49%) occurred on reservations. Target Zero partners suspect that this number is underreported due to gaps in data sharing between Washington State and tribes. Additionally, several tribal representatives have shared that the number of fatalities and serious injuries occurring on their reservations in the recent past exceeded what has been reported to the state.

Overrepresentation of American Indian and Alaskan Native Traffic Fatalities in Washington State Counties



AIAN Tribe Name

- AIAN Traffic Fatality (2008 - 2017)
- AIAN Overrepresented
- Approximately Equal
- Reservation Area

This map compares the American Indian and Alaska Native census population data with AIAN traffic fatality data. Points on the map are AIAN traffic fatalities from crashes 2008 - 2017 inclusive. Anecdotally, underreporting of traffic crashes is significant in some regions and time periods, creating an incomplete picture.

The table below shows the overrepresentation of AIAN fatalities by county. These counties reflect a higher AIAN proportion of traffic fatalities compared to the proportion of AIANs in the population.

County	% AIAN Population	% AIAN Fatalities
Clallam	4.7%	11.9%
Clark	0.7%	2.8%
Grays Harbor	4.2%	9.0%
King	0.6%	2.3%
Kitsap	1.4%	4.1%
Lincoln	1.5%	13.9%
Okanogan	10.6%	22.6%
Pierce	1.2%	3.4%
Snohomish	1.2%	3.3%
Spokane	1.4%	4.8%
Whatcom	2.5%	7.9%
Yakima	3.7%	25.2%

Health Equity and AIANs

The map on the previous page illustrates where AIAN fatalities are overrepresented based on the AIAN population for the county where the fatality occurred (based on 2008-2017 Office of Financial Management [OFM] population data and FARS fatalities for Native Americans 2008–2017). This map blends both data sources available to Washington State: race/ethnicity from death certificates and the locations where fatal AIAN crashes occur.

Data Challenges: How Different Data Sources Tell Different Stories

Target Zero partners used three data sets in order to tell the most complete story possible about AIAN traffic fatalities and serious injuries in Washington:

- **Statewide fatality rates for AIANs.** Data are based on ethnicity derived from state death certificates, which provide traffic fatality data for the entire state of Washington, regardless of jurisdiction. The data are captured using the Fatality Analysis Reporting System (FARS).
- **On-reservation fatalities.** Data are captured by focusing on crashes occurring on roadways located within reservation boundaries. The dataset includes all recorded fatalities and serious injuries occurring on these lands, regardless of the race/ethnicity of the people involved.
- **Fatality proportion compared to population proportion.** Population data estimates of race/ethnicity are produced by the U.S. Census Bureau.

Data gaps continue to exist, and in some cases data sources tell a conflicting story. Pedestrian fatalities are a prime example. Fatality information that considers ethnicity based on death certificates from crashes occurring both on and off reservations is in alignment with national data and anecdotal information from tribal representatives: pedestrian safety is a significant issue among AIAN people. That data source shows that the pedestrian fatality rates are six times higher for AIANs than non-AIANs.

However, crash information that considers the location of crashes on reservations, regardless of ethnicity, indicates that pedestrian safety is a lower priority. Pedestrian fatalities occurring on reservation lands comprised just 7.8% (22) of the statewide pedestrian fatalities (283). Target Zero partners believe that this demonstrates significant underreporting of fatalities and serious injuries occurring on non-state roadways within reservations. This interpretation (underreporting) is in

How Target Zero Determines Tribal Priorities

To focus efforts on eliminating fatalities and serious injuries on our state's roadways, Target Zero partners grouped the primary factors found in statewide fatal and serious traffic crashes into priority levels one and two. The levels are based on the percentage of traffic fatalities and serious injuries associated with each factor in 2015–2017. This chapter looks at just the subset of data that includes reservation roads in order to set tribal Target Zero priorities. It uses the same cut-off points for priority levels as the statewide figures do.

Priority level one includes the factors associated with the largest number of fatalities or serious injuries occurring on reservations. Each of these factors was involved in at least 25% of traffic fatalities or serious injuries occurring on reservations.

Priority level two factors, while frequent, are not as common as priority level one factors. Level two factors occur in less than 25% of the total fatalities or serious injuries.

alignment with information from WSDOT on the identity of reporting law enforcement agencies.

Based on this analysis and diagnosis, Target Zero partners believe that pedestrian safety is a significant issue for AIANs in Washington, both on- and off-reservation. The number of pedestrian and bicyclist fatalities occurring on reservations over the past three years increased by a staggering 360%. Despite the rural character of many reservations, a high percentage of the residents walk, bicycle, and use other non-motorized transportation.

Unfortunately, several factors on reservation roads can create unsafe conditions and contribute to the disproportionate fatality rates:

- Minimal availability of transit services
- Lack of sidewalks, crosswalks, and street lights
- High speeds
- Lack of enforcement due to staffing and geography

Many of the tribal categories end up in the same priority level as the overall population. However, major differences between tribal Target Zero priorities and overall Target Zero priorities include:

- Unrestrained occupants are a Priority One instead of Priority Two.
- Higher rate of impairment (72% vs 58%).
- Significant increase in pedestrian and bicyclist fatalities (23 in 2015–2017, compared to five in 2012–2014).

Tribal Target Zero Priorities

Given the disproportionately high rate of AIAN fatalities in Washington, it's important that the priorities in Target Zero are tailored to meet tribal needs. Several tribes throughout Washington State received funding under the federal Tribal Transportation Program in Moving Ahead for Progress in the 21st Century (MAP-21) and the FAST Act to develop their own traffic safety plans for their reservations. The unique priorities of individual tribes are reflected in those plans. Based on fatalities and serious injuries that have occurred on reservation roads statewide, the overall tribal priorities are as follows:

Fatalities and Serious Injuries Occurring on Reservation Roads 2015–2017	Fatalities			Serious Injuries		
	Number	% of Total	% of this emphasis area for fatalities on all roads	Number	% of Total	% of this emphasis area for serious injuries on all roads
Priority Level One						
Impairment	71	71.7%	58.1%	52	28.4%	18.6%
Lane Departure	49	49.5%	48.2%	75	41.0%	37.6%
Unrestrained Occupants	29	29.3%	18.9%	31	16.9%	10.7%
Young Drivers 16–25	26	26.3%	31.0%	60	32.8%	34.3%
Distraction	24	24.2%	30.4%	48	26.2%	29.6%
Speeding	23	23.2%	29.4%	46	25.1%	24.2%
Intersections	21	21.2%	22.8%	57	31.1%	34.5%
Priority Level Two						
Pedestrians and Bicyclists	23	23.2%	19.9%	39	21.3%	20.4%
Heavy Trucks	13	13.1%	10.8%	13	7.1%	6.8%
Older Drivers 70+	7	7.1%	13.5%	15	8.2%	9.2%
Motorcyclists	5	5.1%	14.3%	25	13.7%	18.5%
TOTAL	**99**	**100%**	100%	**183**	**100.0%**	100%

Colville Tribal Traffic Safety Coordinator

A major success for tribes and Target Zero over the past three years has been the Confederated Tribes of the Colville Reservations' Tribal Traffic Safety Coordinator position. The Colville Tribe was awarded the contracted position from the WTSC in 2017 and filled the position in 2018. This highly-successful role can serve as a model for other Washington State tribes in effective traffic safety practices.

The first major achievement of the coordinator was updating, compiling, and mapping the Colville Tribes' data. The grant coordinator compiled the fatality information from 2007–2015 to re-justify the coordinator position based upon an alarming uptick in 2015 of crash fatalities, including individuals who failed to wear seat belts.

The coordinator compiled fatality data and incorporated serious injury data as well. In addition, the coordinator:

- Searched Washington State Patrol (WSP) and FARS data for complete information where local records were missing information and to check for duplication or errors in the records.
- Worked with the Tribe's Resource Inventory Analysis (RIA) program in ArcGIS to map crash locations on the Colville Reservation. The coordinator drove out to each location and mapped them individually to confirm accuracy.
- Generated maps for a variety of purposes. The data and mapping has already been used to discuss desired road changes along SR 155 with WSDOT partners.

The coordinator also supported more in-depth research for the Tribe. Two data assessments during the grant have revealed data achievements and future areas for growth. The University of Washington's Star Lab also completed a research permit with the Tribe and hopes to create a tool that can ease and streamline the data collection process for tribes. There is also an identified gap in EMS data gathering and analysis that should be addressed in future grants and projects, as well as creating data share agreements between neighboring local EMS and police agencies.

Traffic Safety Culture: Tribes

Relevant traffic safety culture change education strategies should be based on the values, beliefs, and attitudes of an individual tribe's members. These strategies should seek to grow the positive traffic safety culture already found in the majority of tribal members.

The coordinator also worked with Eastern Washington University to arrange and conduct eight focus groups and surveys across the four districts of the reservation. While focus groups are not generally used to develop statistical profiles, it was clear from these groups that there were vastly different attitudes toward seat belt use while on the reservation as opposed to being off the reservation. The Tribe used the information from the focus groups to develop messaging about seat belt usage in Spring 2019.

The grant also funded community booths for public education. These booths were used to share educational materials, make presentations, and support child passenger safety events.

Another major feature of the grant was relationship-building, including making connections with:

- Okanogan County Community Coalition
- Confederated Tribes Police Department
- LifeLine Ambulance in Omak
- Local media, including the Tribal Tribune

Finally, the coordinator worked with administrative staff to send out tribal email broadcasts of current traffic safety campaigns and safety tips for the public. The Traffic Safety Program now has its own webpage and Facebook page. Current information is posted to the Tribe's website at https://www.cct-psd.com/about-traffic-safety. The Facebook page is also linked within the Tribal Traffic Safety section of the Public Safety webpage.

The Muckleshoot Indian Tribe Traffic Safety Program

The Muckleshoot Indian Tribe (MIT) Traffic Safety Program officially launched in October of 2017. The Traffic Safety Program is funded by both the WTSC's TTSAB and the MIT.

The program is a coalition of several tribal and local partners who are committed to traffic safety on Muckleshoot roads. Committee members include MIT-DOT staff, The City of Auburn DOT staff, The Muckleshoot Tribal School staff, Muckleshoot Youth, Muckleshoot Elders, The Muckleshoot Fire Chief, King County Sheriff's Office, and The City of Auburn Police Department.

The Traffic Safety Program provides outreach and education to the community by attending all community events. Since launch, program staff have held monthly Traffic Safety Committee meetings with participants ranging from age 12 to 70. In addition, that program provides presentations to tribal elders, high school, middle school, and elementary students, the Muckleshoot Early Learning Academy, Tribal Council, and the General Council.

The highlights of the Muckleshoot's Traffic Safety Program include:

- Awarded the Federal Highways Safety Grant for a pedestrian path along SR 164 from 416th to Academy Drive.
- Completed the MIT's first Road Safety Audit (RSA) along with representatives from FHWA, Bureau of Indian Affairs, MIT-DOT staff, City of Auburn staff, WSDOT staff, and representatives from the TTSAB. The RSA deemed SR 164 to be a safety corridor.
- Awarded the BIA Indian Highway Safety Program Grant for Child Passenger Safety. With the funds from this grant, the Tribe provided their community with 250 car seats and completed over 100 car seat checks. Because of the success of the program, the MIT has agreed to fund the program moving forward.
- Awarded a Federal Transit Administration grant that funds part of the Tribe's Traffic Safety Program personnel, such as traffic safety officers and the Traffic Safety Committee.
- The MIT's Director of the Department of Transportation was asked to speak at the Centennial Accord to all tribal councils represented and to Governor Inslee regarding Traffic Safety data and disparities among Washington State's AIAN people.
- The Transportation Department Manager worked diligently to offer a Child Passenger Safety Class on the Muckleshoot Reservation. The MIT funded the course and certified 12 people.
- Over 350 surveys have been collected in regard to traffic safety on the reservation. The number one priority for the majority of tribal members is the integration of pedestrian paths along the reservation roads, in housing villages, and along SR 164.

Strategies for Reducing Fatalities and Serious Injuries on Tribal Reservations (TRB)		
Objective	Strategies	Implementation Areas
TRB.1. Improve collection and analysis of crash data.	TRB.1.1. Tribes are encouraged to conduct a traffic records assessment to ensure that methods being used to collect, share, and analyze crash data are providing optimal benefit to the tribe. Traffic records assessments can also be an effective tool to establish communication with state and local safety partners. (R, FHWA)	Evaluation, Leadership
	TRB.1.2. Tribes are encouraged to develop transportation safety plans based on an analysis of the available safety data. (R, FHWA)	Evaluation, Leadership
	TRB.1.3. Conduct a systemic safety study of roadway departure crashes to prioritize low cost strategies that mitigate the consequences of leaving the roadway. (R, FHWA)	Engineering
TRB.2. Improve emergency services response.	TRB.2.1. Improve the timeliness of response to emergencies by training tribal employees in CPR, First Aid, and basic lifesaving skills. (U)	EMS
TRB.3. Keep vehicles on the roadway.	TRB.3.1. Install chevron signs, curve warning signs, and/or sequential flashing beacons in curves. (P, CMF)	Engineering
	TRB.3.2. Improve pavement friction using high friction surface treatments. (P, CMF)	Engineering
	TRB.3.3. Install center and/or edge line rumble strips. (P, CMF)	Engineering
	TRB.3.4. Provide or widen shoulders. (R, CMF)	Engineering
	TRB.3.5. Install post mounted delineators. (R, CMF)	Engineering
	TRB.3.6. Install edge lines, especially on curves. (R, FHWA)	Engineering
	TRB.3.7. Ensure visibility of signs at night by implementing a sign management method recommended in the Manual on Uniform Traffic Control Devices (MUTCD). (R, FHWA)	Engineering
TRB.4. Minimize crash severity.	TRB.4.1. Install roadside safety hardware such as guardrail, cable barrier, or concrete barrier. (P, CMF)	Engineering
	TRB.4.2. Update guardrail that does not meet a recent crashworthiness standard such as MASH or NCHRP Report 350. (R, FHWA)	Engineering
	TRB.4.3. Install delineation on fixed objects that cannot be removed from the clear zone, such as guardrails and other roadside hardware. (U)	Engineering
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Fatalities and Serious Injuries on Tribal Reservations (TRB)		
Objective	Strategies	Implementation Areas
TRB.5. Increase use of child passenger safety systems.	TRB.5.1. Enact and strengthen laws that require children riding in motor vehicles to be restrained in appropriate and approved child passenger safety systems based on their age, height, and weight. (P, CTW)	Leadership
	TRB.5.2. Provide approved child passenger safety systems to parents and caregivers, combined with scheduled locations and dates/times for inspections of child passenger safety system installation and education that instructs parents and caregivers installation. (R, CTW)	Education
	TRB.5.3. Conduct community-wide Information and Enhanced Enforcement Campaigns based on beliefs, attitudes and behaviors of tribal members that include mass media, information and publicity, child passenger safety system displays, and other targeted strategies such as checkpoints, dedicated law enforcement officials, or alternative penalties. (R, CDC)	Education
	TRB.5.4. Provide incentive and education programs that offer parents, caregivers, and/or children rewards for properly using child passenger safety systems, and education that varies in content, duration, intensity, and delivery methods. (R, CDC)	Education
TRB.6. Increase use of seat belts.	TRB.6.1. Enact or strengthen seat belt laws that require motor vehicle occupants to wear seat belts. This works best if it covers all drivers on the reservation, regardless of destination, but an incremental strategy is for tribes to mandate use of seat belts by tribal employees when they are using tribal vehicles or when using other vehicles for tribal business. (P, CTW)	Leadership
	TRB.6.2. Enact primary (vs. secondary) seat belt enforcement laws for all seating positions. Primary enforcement laws allow police to stop motorists because someone in the vehicle is unbelted. (P, CTW)	Leadership
	TRB.6.3. Conduct enhanced seat belt enforcement that includes publicity, increased citations, and increased the number of officers on patrol. (P, CTW)	Enforcement
	TRB.6.4. Conduct sustained education programs based on beliefs, attitudes and behaviors of tribal members that educate drivers about the importance of seat belts and use of seat belts during all trips with varying content, duration, intensity, and delivery methods. (R, FHWA)	Education
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Fatalities and Serious Injuries on Tribal Reservations (TRB)		
Objective	Strategies	Implementation Areas
TRB.7. Decrease use of cellular phones and other devices by drivers.	TRB.7.1. Enact or strengthen laws prohibiting use of electronic devices while driving. This works best if it covers all drivers on the reservation but an incremental strategy is for tribes to prohibit electronic device use while driving tribal vehicles or while driving other vehicles on tribal business. (U)	Leadership
	TRB.7.2. Develop a policy for tribal employees prohibiting participation in teleconferences while driving. (U)	Leadership
TRB.8. Reduce impaired driving.	TRB.8.1. Enact laws that make it illegal for a driver's BAC to reach or exceed 0.08% (0.08 g/dL) for drivers aged 21 years and older. (P, Meta)	Leadership
	TRB.8.2. Enact Minimum Legal Drinking Age (MLDA) laws. MLDA laws specify an age below which the purchase or public consumption of alcoholic beverages is illegal (21 years of age). (P, Meta)	Leadership
	TRB.8.3. Enact laws setting lower BAC limits for young or inexperienced drivers. These laws set a lower illegal BAC (for example, 0.02% or lower) for young or inexperienced drivers under the age of 21 (the minimum legal drinking age in the U.S.) than for older or more experienced drivers. (P, Meta)	Enforcement, Leadership
	TRB.8.4. Conduct publicized sobriety checkpoint programs that involve high visibility enforcement conducted by law enforcement stopping drivers systematically to assess alcohol impairment. (P, CTW)	Enforcement
	TRB.8.5. Require ignition interlocks for DUI offenders. Ignition interlocks are devices that are installed in motor vehicles mandated by a court system to prevent operation of the vehicle by a driver who has a BAC above a specified level (usually 0.02%). (P, CTW)	Enforcement, Leadership
	TRB.8.6. Develop multicomponent interventions with community mobilization that can include components such as sobriety checkpoints, training in responsible beverage service, education, and awareness-raising efforts, and limiting access to alcohol. (R, FHWA)	Education, Enforcement, Leadership
	TRB.8.7. Conduct public education campaigns based on the beliefs and norms of the tribe to educate individuals to avoid drinking and driving. (R, FHWA)	Education
	TRB.8.8. Develop school-based instructional programs that address the problem of riding with alcohol- and other drug-impaired drivers or driving impaired. To increase the effectiveness of this strategy, these programs should be peer-developed and led and include parental involvement. (U)	Education, Leadership
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Fatalities and Serious Injuries on Tribal Reservations (TRB)		
Objective	Strategies	Implementation Areas
TRB.9. Support tribal law enforcement.	TRB.9.1. Encourage purchase of current and appropriate equipment by tribal law enforcement. (R, FHWA)	Enforcement
	TRB.9.2. Encourage participation by tribal law enforcement agencies in professional and continuing education and training. (R, FHWA)	Enforcement
TRB.10. Reduce fatalities and serious injuries for pedestrians, bicyclists, and other active transportation users.	TRB.10.1. Create public education campaigns for both motorists and active transportation users regarding pedestrian and bicyclist safety to promote the health and welfare of tribal members, especially children. (P, NCHRP)	Education
	TRB.10.2. Create tribal ordinances to reduce speed limits in reservation towns and villages and enforce speed limits aggressively. Partner with state, county, and city governments to reduce speed limits on other jurisdiction's roads that travel through reservation lands and enforce speed limits aggressively. (R, CTW)	Enforcement, Engineering
	TRB.10.3. In partnership with state and federal partners, create active transportation plans that are used to prioritize education, enforcement, and roadway improvements, maintenance, and construction. (U)	Education, Enforcement, Engineering, Leadership
	TRB.10.4. Conduct systematic safety studies of crashes that result in fatal or serious injury to pedestrians, bicyclists, or other active transportation users of Native American descent or occurring on reservation lands. (R, FHWA)	Evaluation
	TRB.10.5. Include reservation lands in statewide roadway inventories. Comprehensive information regarding tribal jurisdiction roadways should include context, traffic controls, sidewalks, crossings, connections with trail systems, and posted and travel speeds. (R, FHWA)	Engineering, Evaluation
	TRB.10.6. Invest in and construct roadway reconfigurations, roundabouts and other recommended FHWA safety countermeasures specific to pedestrian and bicyclist safety. (R, FHWA)	Engineering
	TRB.10.7. Increase use of automated speed enforcement, especially in school walk areas. (P, CTW)	Enforcement
P: Proven R: Recommended U: Unknown		

For a complete list of statewide strategies, refer to the other chapters in Target Zero.

Traffic Safety Culture

When Washington adopted the Target Zero goal in 2000, our traffic safety partners recognized that the only acceptable number of deaths and serious injuries on our roadways is zero. A 2018 survey showed that most Washingtonians agree: 74% responded that the only acceptable number of deaths and serious injuries on our roadways is zero.

We all depend on our ability to get to school, work, grocery stores, and doctor appointments. Our roads bring families together, connect friends, and allow us to enjoy entertainment. The cost of getting from one place to another should never be death or a life-changing injury. It makes sense. After all, we are all in this together.

However, we are far from zero.

From 2015 to 2017, just three years, 1,650 people were killed and 6,537 were seriously injured while using Washington roads.

The costs are tremendous. The estimated economic and social costs of those three years of crashes are more than $3.3 billion.

Current policies and strategies have made a big difference. In 1967 the state experienced 4.9 deaths for every 100 million miles traveled. By 2016, the rate had dropped by 0.88. If the fatality rate continued at 4.9, there would have been 2,982 traffic deaths in 2016, 5.5 times more deaths than we actually had in 2016.

To get to zero, traffic safety professionals must take the lead in exploring new and innovative ways to improve traffic safety performance. In this spirit, Washington joined with 15 other states on a cooperative effort called the Traffic Safety Culture Pooled Fund Program. With the funding, the Montana Center for Health and Safety Culture (CHSC) developed a primer that defines traffic safety culture and explains how culture influences people who use our roadways.

Traffic Safety Culture Definition

A traffic safety culture is the shared belief system of a group of people that influences road use behavior and stakeholder actions that impact traffic safety.

This study explored our traffic safety beliefs. What behaviors are and are not acceptable on our roadways? By identifying those beliefs and working to change them in our culture, Target Zero partners can address the root cause of many fatal and serious injury crashes: risky behaviors on the part of a few that make the roadways more dangerous for all of us.

Washington's Current Traffic Safety Culture

In Washington, we have many indicators of a strong traffic safety culture:

- Our seat belt use rate is one of the best in the nation at 93%.
- Most people (78%) do not drive after drinking.
- Most people (85%) do not drive after using cannabis.
- Most drivers (91%) keep their focus on the road.

These are proactive traffic safety behaviors, deliberate choices most of us make every day that show a commitment to a safe roadway transportation system.

Improving our Traffic Safety Culture

We can leverage this large group of people making safe choices by integrating efforts to grow our traffic safety culture into existing programs and influence the smaller group of Washingtonians who are engaged in risky road user behaviors.

To accomplish this, we must seek allies who can influence those risky road users. Think of all the people and spaces surrounding an individual: family members, friends, teachers, coaches, co-workers, bosses, health professionals, law enforcement officers, community leaders, and legislators. Each contact helps to shape an individual's beliefs and attitudes. And each can influence an individual's intention and willingness to engage in the desired behavior.

In Washington, we are building proactive traffic safety culture strategies to reduce high risk driver behavior categories such as impaired driving, distracted driving, and unrestrained passengers. These include:

- Developing research methods to gather accurate data about beliefs and attitudes of Washingtonians, and using that information to understand how those beliefs and attitudes influence behaviors.
- Developing a shared language and understanding about traffic safety culture among Washington Traffic Safety Commission (WTSC) staff, Target Zero Managers, and Target Zero partners.
- Changing the way we talk about traffic safety to grow our existing positive traffic safety culture.
- Forming new partnerships to reinforce pro-active traffic safety rules within families, schools, businesses, agencies, and governments.

What would it look like if leaders, organizations, and people across Washington shared a strong positive traffic safety culture?

It might look like drivers being fully engaged in the driving task: obeying speed limits and taking extra care around people who walk or bike. It might look like wearing a seat belt and reminding others to wear one, too.

Getting to zero will require more than just focusing on drivers. It could include families talking about traffic safety and creating family rules. Schools would be promoting traffic safety in health classes. Driver education classes would integrate innovative curriculum changes. Workplaces would be establishing policies and providing training to employees to establish strong traffic safety practices.

More healthcare providers would be talking to patients about child car seats and how to use medications appropriately to avoid increasing crash risk.

Community leaders and elected officials would advocate for and pass laws to reduce risky driving behaviors. They could make sure evidence-based programs are used with those who violate the law so it doesn't happen again.

Traffic safety professionals from tribal, local, state, and federal traffic safety agencies can take the lead to promote growing a positive traffic safety culture. These leaders can help communities form and sustain effective coalitions and partnerships to support the goal of zero fatalities and serious injuries on our roads.

These agencies can provide tools and resources to communities, workplaces, and families to help them create a positive traffic safety culture. They can invest in developing innovative new strategies.

Pooled Fund Research Program, Montana Department of Transportation in partnership with the Center for Health and Safety Culture (CHSC, Montana State University)

Positive Social Norms for Traffic Safety

Many people mistakenly believe that risky behaviors are more widespread than they actually are. They mistake these risky behaviors for being the norm, when in fact they are not. For instance, most people in Washington (78%) do not drive after drinking. By framing the facts as a positive — 78% do not engage in risky behavior — as opposed to a negative — 22% do engage in it — members of the culture begin to see what the actual norm is.

Throughout the plan, readers will see boxes highlighting suggestions for making specific cultural changes for certain types of behaviors or roadway users, such as impairment, distraction, or motorcyclists. Included in this chapter is also a list of more general examples for encouraging traffic safety culture change.

Readers are encouraged to consider culture change as a new and powerful approach to traffic safety, and to employ cultural change strategies along with the more traditional educational strategies. For an example of a culture-oriented educational campaign, please see the Driving Under the Influence of Cannabis and Alcohol (DUICA) at https://www.wtscpartners.com/culture. Future materials will become available on the CHSC website at https://chsculture.org/

Examples of Proactive Traffic Safety Behavior for Distracted Driving

Individuals:

- Follow the law: no cell phone use while driving.
- Go beyond the law: no hands-free cell phone use while driving.
- Encourage others to put their phone away while driving.
- Avoid conversations or conference calls with people who are driving.
- Conduct a self-assessment of all driving distractions.
- Challenge themselves to maintain focus on the driving task.
- Practice safe walking skills by keeping eyes on traffic.

Family:

- Talk about and make rules about cell phone use and other distractions while driving.
- Promote and support distracted driving rules at schools and in workplaces.
- Avoid calling family members while they are driving.

Schools:

- Grade school: Teach students to speak up to remind drivers to keep their focus on driving.
- High school: Encourage student-led projects that clarify norms about distracted driving and asking other drivers to focus on their driving; encourage students not to call their friends while they are driving.
- Clarify school district policies about distracted driving such as impacts to extracurricular activities for distracted driving tickets.

Driver Education Classes :

- Teach focused driving and narrative driving skills.
- Teach concepts such as inattention blindness.
- Teach distracted driving law and best practices that go beyond the law.
- Promote family rules about distracted driving.

Workplaces:

- Implement and discuss model distracted driving policies.
- Clarify and discuss workplace norms about distracted driving.
- Establish clear expectations for non-driving staff about calling colleagues who are driving.
- Establish clear expectations about the role of passengers and others to speak up if they are concerned about a driver's engagement.
- Promote workplace rules about distracted driving.

Law Enforcement:

- Consistently enforce distracted driving laws.
- Participate in statewide distracted driving campaigns by enforcing distracted driving laws and conducting educational outreach.
- Establish policies about law enforcement cell phone use.
- Train law enforcement officers using Training, Research, and Education for Driving Safety (TREDS) distracted driving training.

Traffic Safety Leaders:

- Develop shared language and understanding among traffic safety professionals about proactive strategies to reduce distracted driving.
- Train others about proactive strategies to reduce distracted driving behaviors.
- Develop initiatives that support proactive behaviors to reduce distracted driving among individuals, families, schools, driver's education classes, workplaces, law enforcement, government and tribal leaders.
- Develop research methods to gather accurate data about beliefs and attitudes of Washingtonians about distracted driving and use that information to grow a shared understanding about how those beliefs and attitudes drive proactive behaviors.
- Develop a shared language and understanding about distracted driving traffic safety culture among staff, Target Zero Managers, and our partners.
- Build tool kits to help others talk about ways to grow a positive traffic safety culture and prevent distracted driving.
- Grow relationships with schools and workplaces and form new partnerships to reinforce proactive distracted driving traffic safety rules.

Government Leaders:

- Leverage your powerful voice to promote Washington's positive traffic safety culture.
- Maintain Washington's strong distracted driving laws.
- Advocate for strong workplace policies and programs in public agencies.
- Promote strong workplace policies and programs in private workplaces.

Tribal Leaders:

- Prohibit cell phone use for employees driving tribal-owned vehicles.
- Discuss distracted driving through tribal communication channels.
- Establish a tribal ordinance prohibiting driver cell phone use on tribal lands.

Communications and Messaging

Approaches to traffic safety communications and messaging are evolving in Washington. Continual changes in traffic safety behaviors require an increased understanding of community norms around driving behaviors and the mechanisms necessary to positively change them.

Telling the Real Story

Traffic safety advocates have worked for years to raise awareness about the deadly consequences of high risk driving behaviors. However, if we only focus on the risky behavior, we lead our audiences to believe those risky behaviors are more widespread than they actually are. They mistake these risky behaviors for being the norm, when in fact they are not. When we design these messages we want to tell the real story. This means discussing the risky behavior, acknowledging that most people do not engage in the behavior, and promoting the proactive safety behaviors that lower crash risks.

For example, a high school program that uses violent car crash scenes can lead to individual trauma and hopelessness. When students actors "die in a car crash" the dead student becomes the hero of the story. Calling on a student to "die" every 48 minutes distorts a national statistic by applying it to the population of a single high school.

Instead, tell the real story. In Yakima in 2017, 47 people were killed in traffic crashes:

- Impaired driving was the leading cause of fatal crashes (25).
- Speeding and unrestrained occupants were the second most common factors (10 each).
- Distracted driving was the third most common factor (nine).
- Three 16–17 year olds were seriously injured and none were killed in traffic crashes.

The real story also lets the audience know that most people do not engage in these behaviors. Ninety-four percent of Yakima drivers buckle up. Seventy-eight percent of adults in Washington do not drive after drinking. Ninety-one percent keep their focus on the road.

The real story highlights students and adults who take actions that reduce the risk of traffic injury, such as always wearing their seat belt, driving the speed limit, focusing on driving tasks, or riding only with sober drivers.

Word Choices

Language shapes our understanding of transportation. The vocabulary used in discussions about traffic safety affects how people view necessary improvements to the transportation system. Language changes can create clearer and more accurate communications in relation to Target Zero initiatives. For example, use of the word "accident" to describe a preventable incident that involved choices and behaviors should be discouraged and replaced by "crash" or "collision." It is also important to challenge language that assumes a car-centered environment. For example, use the term "roadway user" instead of "non-motorist" to avoid assuming that driving is the norm and all other modes of transportation are alternatives to driving. Below are language changes that will communicate more clearly and accurately.

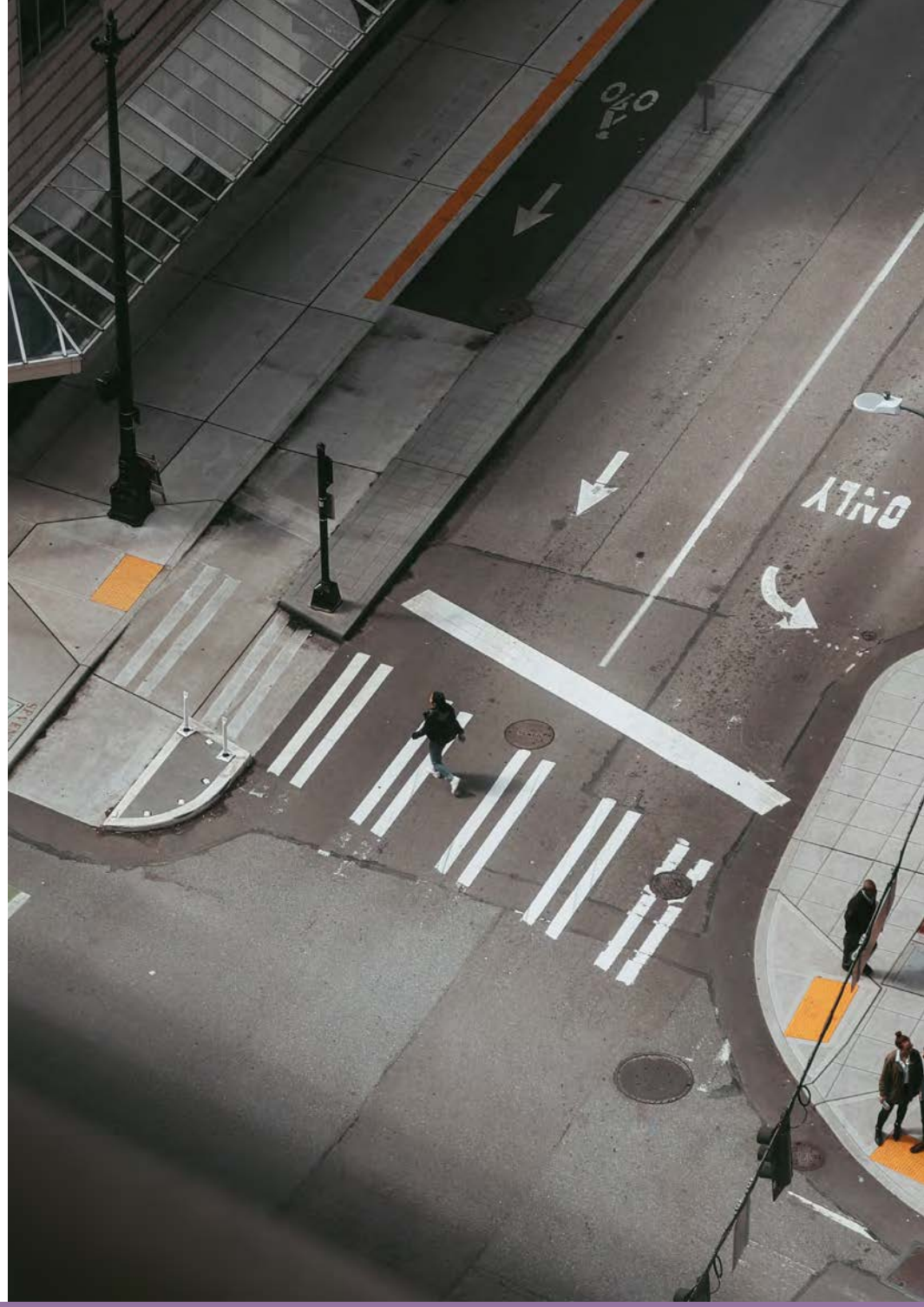
Use in state law, administrative code, documents, and media communications	Instead of	Why?
crash or collision	accident	The recommended terms are consistent with usage recommended by the National Highway Traffic Safety Administration (NHTSA), public health practitioners, Associated Press, and others. Crashes and collisions are not accidents, they are preventable, and their severity can be reduced.
driver, motorist, or person driving	car or vehicle	Do not refer to the vehicle as taking actions on its own, e.g., "the car then turned right and proceeded down the road."
roadway user, people who walk, people who bike, pedestrian, or bicyclist	non-motorist	Particularly with the emergence of connected and autonomous vehicles, media coverage and official reports should be clear and specific in labeling the actions of the driver rather than the vehicle. Using the term roadway user purposefully avoids assuming that driving is the norm and all other modes of transportation are alternatives to driving. The Bicycle and Pedestrian Advisory Councils advocate for using people-first language, such as "people who walk" and "people who bicycle." Target Zero uses the terms "pedestrian" and "bicyclist" when these definitions have a specific meaning in the data definition.
bicycling, walking, or active transportation	non-motorized transportation or alternative transportation	Using the term non-motorized or alternative transportation reinforces a priority within the transportation system for the use of motorized vehicles. The preference should be to directly label or describe each mode of travel being used on roadways. The term active transportation is used to include walking, bicycling, using a mobility assist device like a wheelchair or walker, or using a small-wheeled device such as a skateboard, foot scooter/e-scooter, or inline skates.
cannabis	marijuana	Washington State's cannabis industry has requested the use of the term cannabis, which does not have the same past connotations to race, culture, and income as "marijuana," especially prior to legalization.

Messaging Shift

Public health approaches of the past have often used scare tactics to raise awareness about dangerous activities. Studies show that this approach can lead to a distorted view of the targeted activity, making it appear that it is more common and ignoring that healthy, safe choices are most often the norm. Studies confirm this is true about Washington drivers. For example, 90 people who died in crashes in 2017 were not wearing their seat belt. However, it is important to acknowledge that Washington has achieved a 93% seat belt use rate, meaning the vast majority of Washingtonians buckle up on every trip. Positive norming would focus on the 93% usage rate, as opposed to scare tactic messaging about the result of not wearing seat belts.

Communications Committee

Washington recently established a Target Zero Communications Committee to round out the guidance provided by Target Zero's Steering Committee, Data Group, and Project Team. This committee will coordinate communications in relation to the creation, unveiling, and implementation of the plan. This group is represented by the same partner agencies and organizations as the other guiding committees.



Multicultural Engagement

With fatalities and serious injuries increasing, there has never been a more critical time for state agencies to succeed in their efforts to strengthen diversity, equity, and inclusion. To reach all road users in the state of Washington, traffic safety practitioners must intentionally address the needs of diverse populations in our communities through traffic safety educational messaging.

Traffic safety practitioners must be committed to:

- The creation of traffic safety messages that will culminate in healthy driving.
- Ongoing learning about the diverse cultural and communication needs of Washingtonians.
- Expansion of the vision for multicultural communication and engagement efforts.

Traffic safety practitioners must develop educational campaigns and statewide traffic safety culture change projects that effectively and equitably serve all members of a diverse community. Given the complexity of the differing needs of populations, in addition to the constriction of limited resources, this can be a daunting task. Despite this, building and sustaining a traffic safety culture in the state must include all communities if we want to reach Target Zero.

Data Support Multicultural Engagement in Traffic Safety Funding Decisions

Washington residents represent vibrant, diverse cultures. According to the U.S. Census update of July 1, 2018, Washington's population is 7,535,591, and 32% of its residents are people of color. Nineteen percent of Washingtonians speak a language other than English at home, which means that even if they are fluent in English, they also identify themselves with another culture. Past behavioral studies have shown that these cultural differences can influence memory and perception. Traffic safety messaging and educational materials need to be tailored to effectively communicate with these various cultural groups in our state.

This is why it is not sufficient to translate a message word for word but instead we must transcreate it: make the message easier to be perceived in the intended way, under the appropriate cultural context.

What is Transcreation?

Transcreation: The process of adapting a message from one language to another, while maintaining its intent, style, tone, and context. The aim of a transcreated message is to successfully evoke the same emotions and contextual relevance in the new language as the original or source language. This includes words, graphics, video, audio, and cultural nuances.

The Legal Basis for Multicultural Communication

Although language access is not the only barrier to providing culturally relevant educational materials, it is one of the biggest barriers to accessing services and is linked to low income and literacy challenges. Providing meaningful access to all services, programs, and messaging for people with Limited English Proficiency (LEP), including through a language access plan, is a longstanding requirement under Title VI of the Civil Rights Act of 1964 (Title VI), and Executive Order 13166.

These laws require each federal agency and every state, local, or private entity receiving federal funding to promote meaningful access to all services and programs for persons with LEP. Washington's traffic safety projects are predominantly funded through the U.S. Department of Transportation and the U.S. National Highway Traffic Safety Administration, and are subject to the requirements of Title VI. Failure to adequately address issues about inclusivity can lead to racial profiling, police brutality, or other harmful outcomes. These can negatively affect people in multiple population groups, including African Americans, Hispanic/Latinos, American Indian/Alaska Natives (AIANs), LGBTQ, and people whose immigration status is unclear.

Legal compliance is fundamental. However, beyond this, creating educational messaging that is relevant to all populations in the state is simply the right thing to do to give everyone the opportunity to learn about traffic safety. Traffic safety practitioners cannot hope to influence behavior change if they ineffectively communicate to road users who have language or cultural barriers.

Data Driven Traffic Safety Funding Decisions

Most funding decisions in traffic safety programs are data driven, and this one is no different. The inclusion of some cultural groups that are easily identified in traffic safety data has always been a part of the discussion in solutions for high risk behavior. These easily-identified groups include gender, age, race and ethnicity, and fatality and serious injury counts by state regions.

For other cultural groups defined by characteristics not commonly collected in crash data, such as primary language, opportunity exists to further analyze other available data sources and to identify data gaps for informing traffic safety messaging. As seen in the strategies table, increasing access to this data is an important next step.

Engagement Strategies and Next Steps

Future partners, stakeholders, and grantees will need to comply with diversity, equity, and inclusion expectations:

- Community projects funded with federal dollars will have to follow multicultural engagement strategies, and be inclusive of all populations within the areas their specific projects cover.
- Traffic safety agencies should address diverse populations and socioeconomic groups at all levels of planning and implementation.
- All traffic safety projects should apply creative solutions to identify and know the communities we serve.

Meaningful engagement of all Washingtonians should be a priority to reach people of varied cultural backgrounds. Diversity, equity, and inclusion will help Washington State reach zero deaths and serious injuries.

Strategies for Multicultural Communication (MCC)		
Objective	Strategies	Implementation Areas
MCC.1. Increase awareness of inclusion of all populations in a project area by traffic safety agencies and partners.	MCC.1.1 Engage in open deliberate dialogue about inclusion to turn intention into action. (U)	Leadership
	MCC.1.2 Provide training opportunities for traffic safety agencies and partners on cultural competence, multicultural engagement, and multicultural communications. (U)	Education
MCC.2. Increase the quality of traffic safety educational materials and the quantity of languages it is available in.	MCC.2.1 Transcreate traffic safety educational materials. (R, GSA)	Education
MCC.3. Increase data collection of population demographics.	MCC.3.1 Include comprehensive demographic questions in surveys. (U)	Leadership
	MCC.3.2 Examine the relationship between traffic safety outcomes and sociodemographic characteristics, such as income. (U)	Education
	MCC.3.3 Explore methods for measuring equity, such as comparing transportation systems in lower-income communities and communities of color to those systems in adjacent neighborhoods or to regional averages. Identify areas of vulnerability for targeting traffic safety resources. (U)	Evaluation
MCC.4. Increase the inclusion of all populations in all projects.	MCC.4.1 Implement traffic safety projects in tribal and rural areas. (R, FHWA)	Education, Enforcement, Engineering
	MCC.4.2 Understand project focus areas and develop ways to ensure traffic safety countermeasures reach everyone in those communities. (U)	Education
	MCC.4.3 Identify and recruit ambassadors who represent their communities and can assist with language/cultural barriers. (U)	Education, Leadership
	MCC.4.4 Ensure grantees and project managers have knowledge of the populations in the project area they serve and solutions to include them. (U)	Education, Leadership
P: Proven R: Recommended U: Unknown		

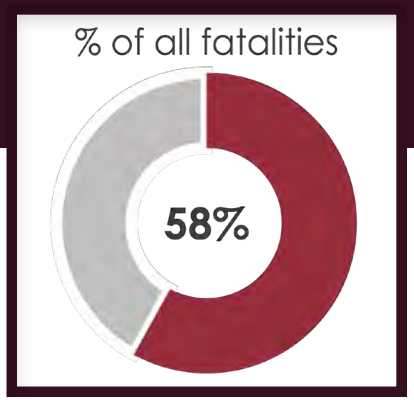
For additional strategies affecting multicultural communication, refer to the Safe Systems Approach chapter.

High Risk Behavior

Driver behavior is a factor in a majority of fatal and serious injury crashes. It is clear that affecting driver decisions is a key part of improving traffic safety, whether it is by changing behaviors through education and enforcement, or minimizing their effects through engineering.

Some behaviors have been known for decades to be dangerous, such as speeding or driving while impaired by alcohol or drugs. Others are relatively newly recognized, such as distracted driving. This chapter will evaluate which behaviors are likely to result in fatal and serious injury crashes, and how to address those behaviors and their effects to get to Target Zero.

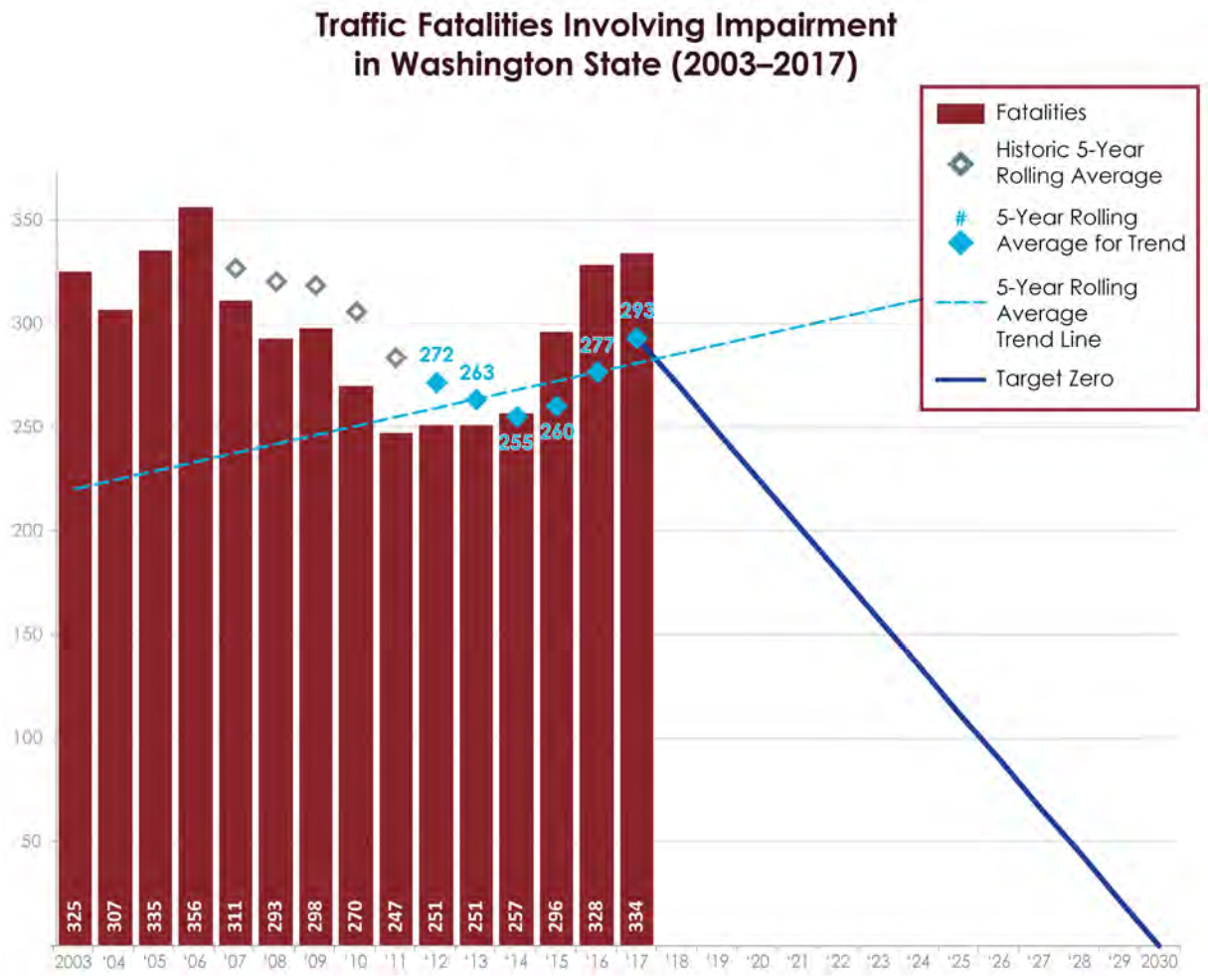
Impairment

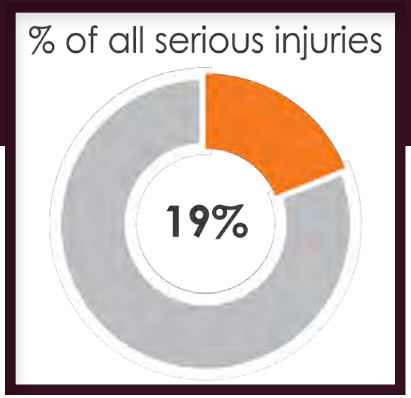


Washington has been combating impairment in motor vehicles crashes for decades and has made good progress. Despite this, impairment continues to be the main factor in 58% of fatal crashes in Washingto.

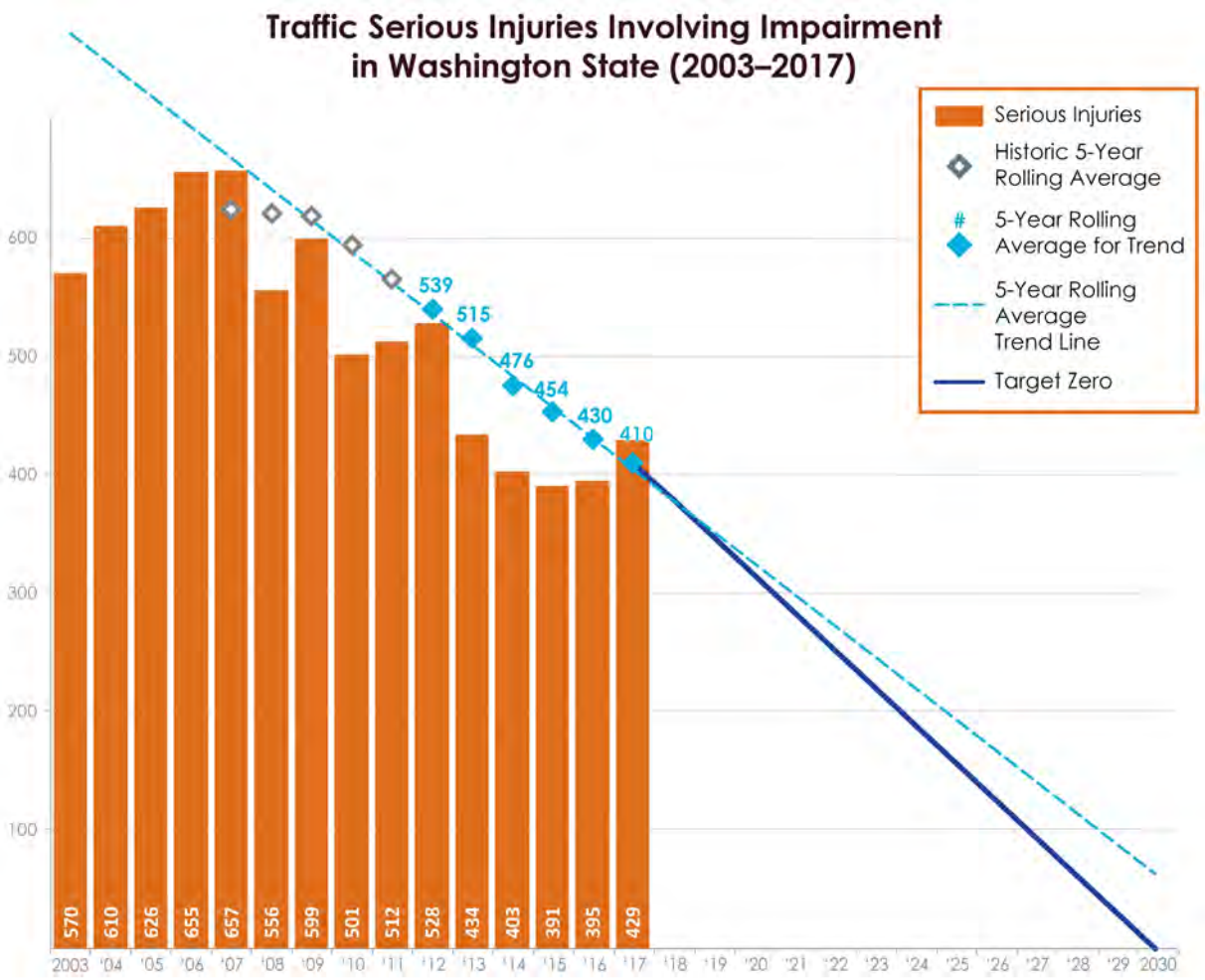
Key Issues in Impairment

- The impacts of two Washington state initiatives continue to bring new challenges: Initiative 1183, which privatized liquor sales and distribution, and Initiative 502, which legalized the production, possession, delivery, and distribution of cannabis. The number of stores with hard liquor licenses increased from 328 in 2010 to 7,976 in 2019. Meanwhile, cannabis is easily accessible with over 500 retail stores statewide, and more licenses are being sold monthly.
- Polydrug use – combining two or more drugs, or one or more drugs mixed with alcohol – is becoming more prevalent in fatal crashes. In Washington, the most common polydrug in fatal crashes is alcohol combined with cannabis. During the last five years, polydrug impaired drivers involved in fatal crashes have increased 15% per year.





Priority 1



Key Areas of Concentration for Impairment Include:

- Public awareness and education
- Prevention
- Treatment/rehabilitation
- Law enforcement and training
- Toxicology
- Prosecution
- Adjudication and probation
- Driver licensing
- Legislation
- Data and traffic records for impairment

BETWEEN 2015–2017 THERE WERE

958 FATALITIES AND

1,215 SERIOUS INJURIES

INVOLVING IMPAIRMENT

FATALITIES INVOLVING IMPAIRMENT OFTEN INVOLVE OTHER FACTORS

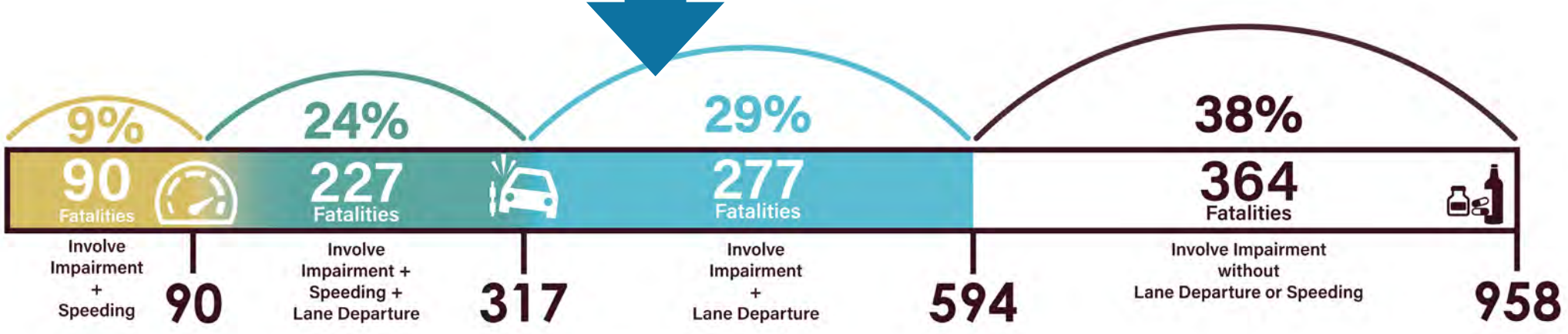
The top two factors that overlap with Impairment are **SPEEDING** and **LANE DEPARTURE**

OUT OF **958 FATALITIES**:

33% also involved SPEEDING

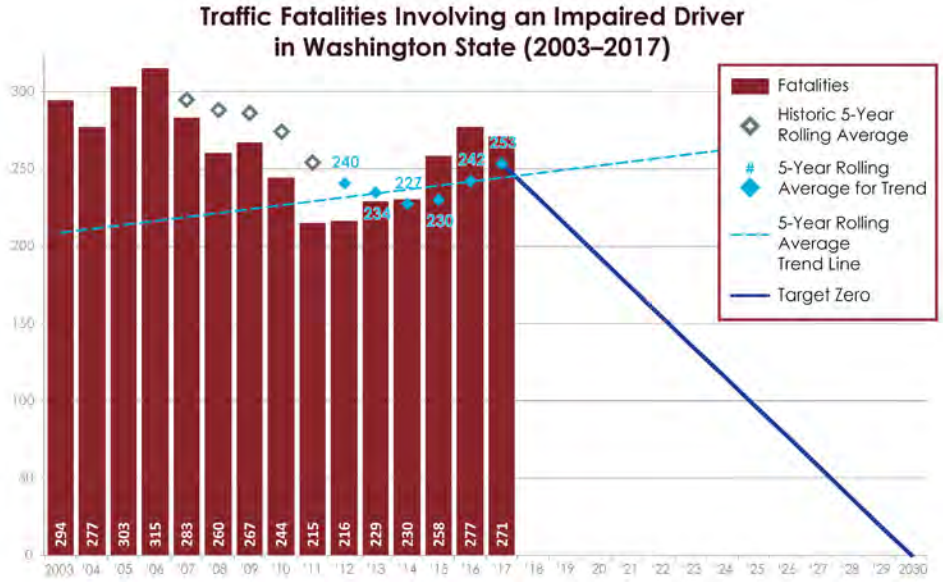
53% also involved LANE DEPARTURE

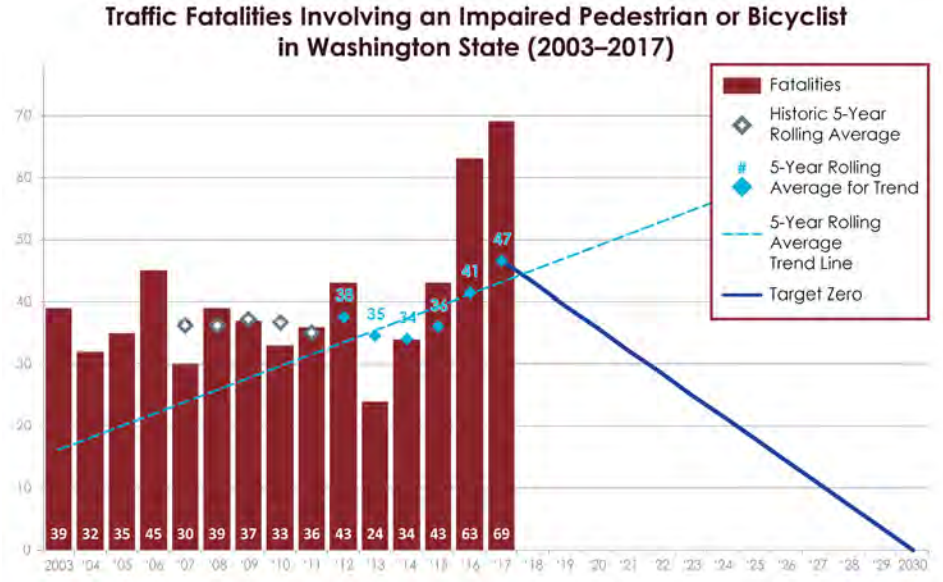
and 24% involved a combination of both

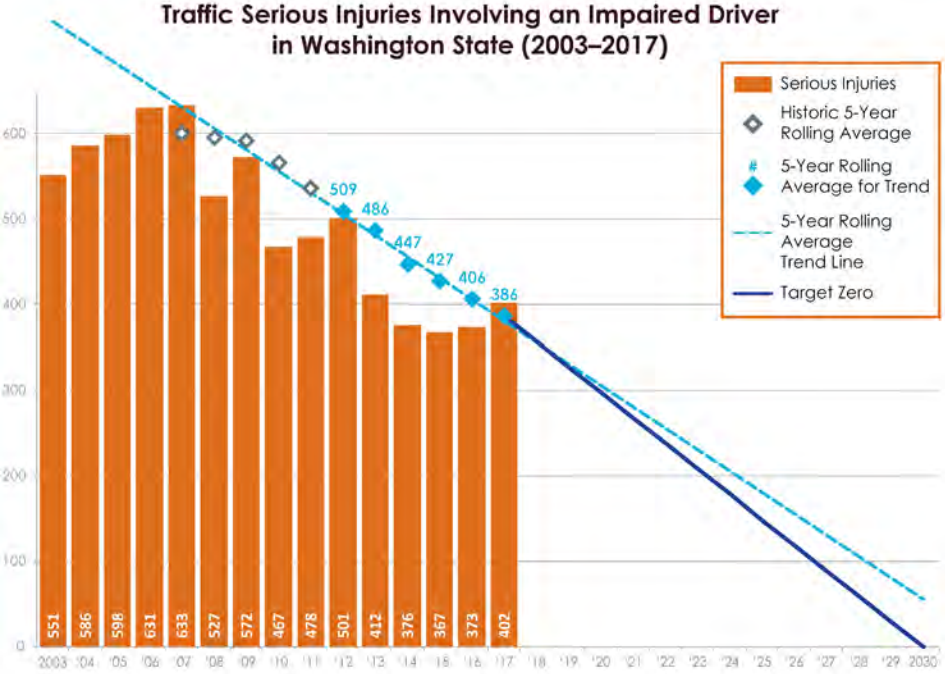


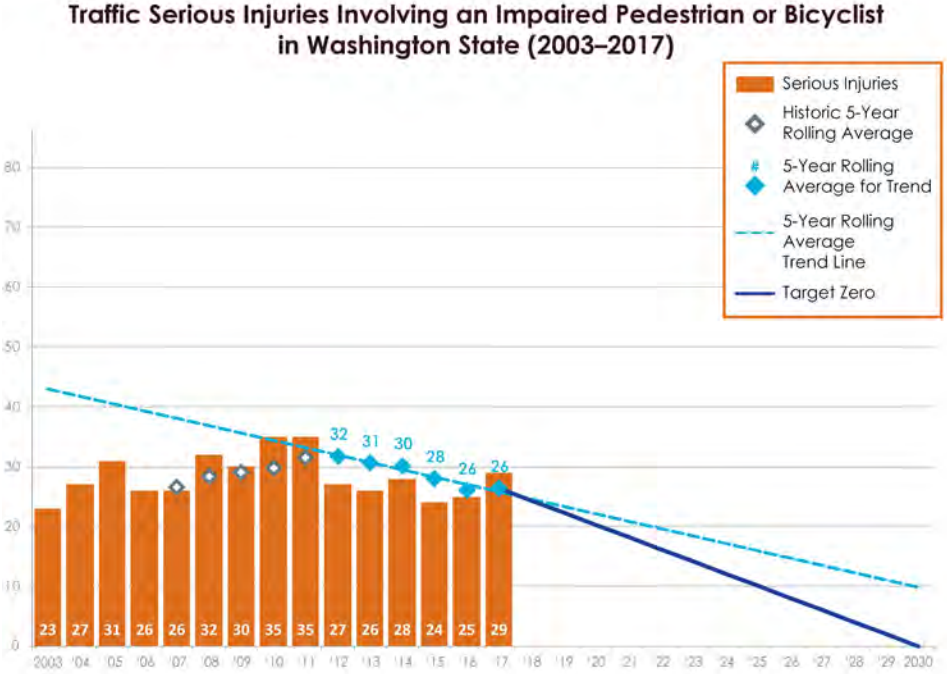
Impairment in Pedestrians and Bicyclists

Target Zero impairment data includes drivers, pedestrians, and bicyclists who tested positive for alcohol or drugs. The Pedestrians and Bicyclists chapter (page 120) explores ways to address contributing factors for all people who are walking and biking, including those who are impaired. Simply, we believe that the consequences of walking or bicycling while impaired should not be serious injury or death.

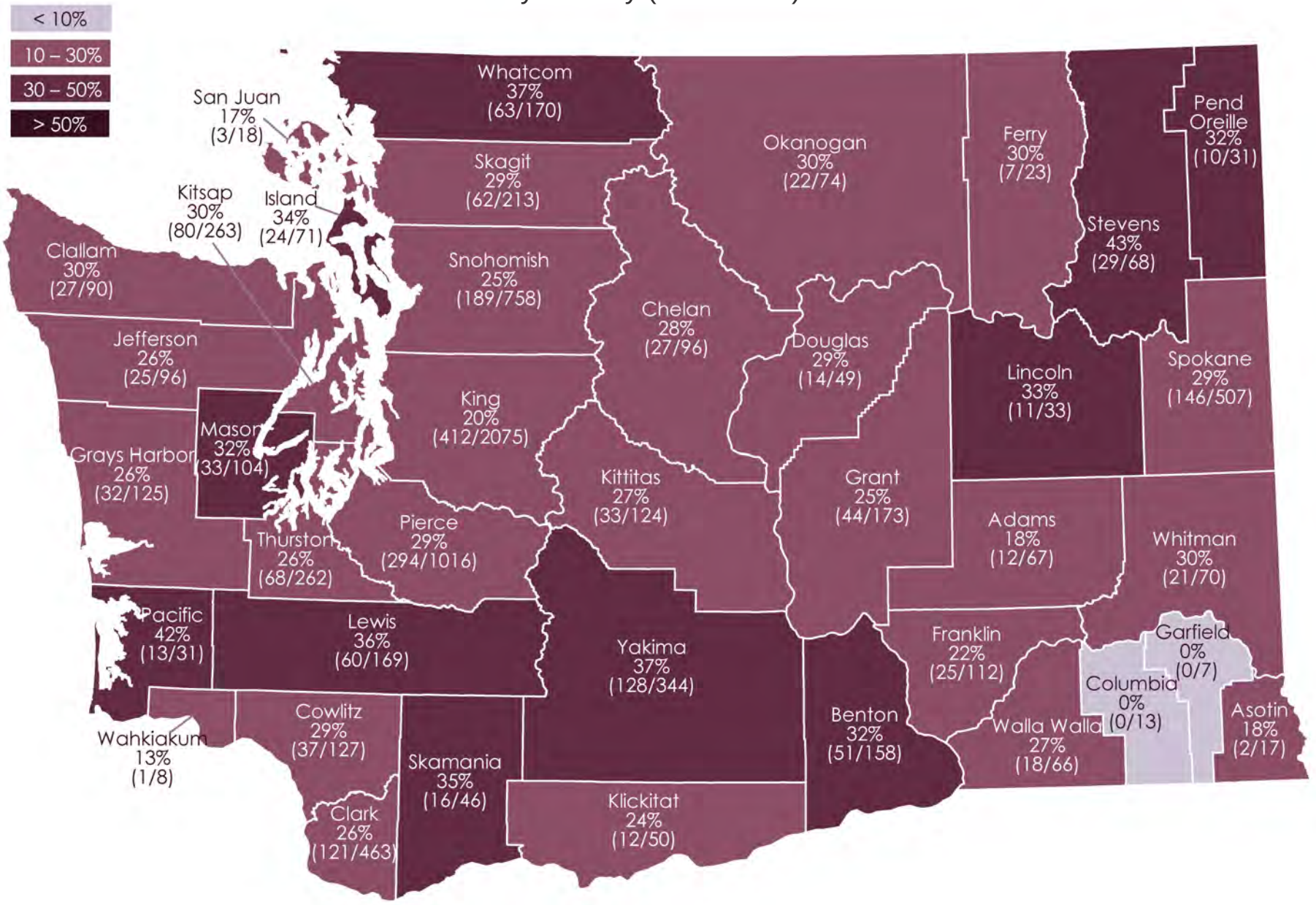

Traffic Fatalities Involving an Impaired Driver
in Washington State (2003–2017)
Fatalities
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
294 277 303 315 283 260 267 244 215 216 229 230 258 277 271
240 234 227 230 242 253
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Fatalities Involving an Impaired Pedestrian or Bicyclist
in Washington State (2003–2017)
Fatalities
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
39 32 35 45 30 39 37 33 36 43 24 34 43 63 69
38 35 34 36 41 47
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Serious Injuries Involving an Impaired Driver
in Washington State (2003–2017)
Serious Injuries
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
551 586 598 631 633 527 572 467 478 501 412 376 367 373 402
509 486 447 427 406 386
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Serious Injuries Involving an Impaired Pedestrian or Bicyclist
in Washington State (2003–2017)
Serious Injuries
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
23 27 31 26 26 32 30 35 35 27 26 28 24 25 29
32 31 30 28 26 26
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030

Percent of All Fatal and Serious Injury Crashes That Were Impairment Related, by County (2015–2017)



Note: Alcohol and drug impairment are significantly underreported as a factor in serious injury crashes in Washington State.

Comprehensive Approach

Reducing the rates at which people are killed or seriously injured in impaired-driving car crashes must become a priority across the social ecology. Washington State has implemented various best practices and strategies with great success, but these strategies alone are not enough to prevent impaired-driving deaths and serious injuries. The number of impaired-driving deaths and serious injuries in Washington continues to climb without a significant decrease in decades.

Public and private sector partnerships need to retool current approaches in order to unravel the complex knot of impaired driving. Washington is in a unique position because our state has access to a rich body of subject matter experts who make up the Washington Impaired Driving Advisory Council (WIDAC). The WIDAC includes public and private partners who are well acquainted with every facet of the impaired-driving problem. They have identified nine areas of concentration to guide the coordination and prioritization of this difficult work, and coordinate together to implement the related countermeasures.

While maintaining focus on current successful strategies, WIDAC supports new approaches such as:

- Implementing proactive traffic safety such as bystander intervention, and promoting positive community norms messages around sober driving. See the Traffic Safety Culture chapter on page 28 and Impairment Areas of Concentration for 2019 on page 46 for more information.
- Rural directed strategies.
- Substantive policy changes that have the potential to create more meaningful change, such as sobriety checkpoints. See the Legislation and Policy chapter on page 206 for more information.

Additionally, in the next few years, partners will be challenged to develop better ways to aggregate and distill all available data from across the different disciplines, with the goal of gaining a comprehensive understanding of the impaired driver.

Washington Impaired Driving Advisory Council

The Washington Impaired Driving Advisory Council (WIDAC) serves as an advisory body to the Washington Traffic Safety Commissioners. It includes approximately 20 organizations. The WIDAC representatives seek to enhance traffic safety through coordinated planning, training, programs, and research to reduce the incidence of impaired driving in line with the Target Zero goal of zero deaths and serious injuries.

Impairment Areas of Concentration for 2019

Public Awareness and Education

The main focus for public awareness and education is to provide factual information promoting sober driving. This information includes:

- Impairment is not always easy to detect, and the signs can be subtle.
- Using multiple drugs (polydrug use) – including cannabis, illicit substances, over-the-counter drugs, and/or prescription medications – can cause interactions that create greater impairment than one drug on its own.
- Mixing alcohol with other drugs can cause interactions that create greater impairment than one drug or only alcohol on its own.
- Prescription medications and over-the-counter medicines can cause impairment.
- Most people do not drive impaired.

Approaches to sharing this information include:

- Peer-to-peer outreach to young drivers addressing the impairing effects of cannabis.
- Promote positive community norms (see page 28 for more on Traffic Safety Culture).
- Encourage bystander intervention to prevent people from driving impaired.

Traffic Safety Culture: Impairment

In 2018, WTSC worked with the Center for Health and Safety Culture (CHSC) to study the increase in drivers who are involved in deadly crashes testing positive for multiple substances. The most common combination is alcohol and cannabis. CHSC developed surveys to examine the culture associated with driving under the influence of cannabis and alcohol of a representative sample of adults in Washington State.

Most adults (91%) reported not driving within two hours of consuming alcohol and cannabis, have a negative attitude about such behavior (81%), and believe it is unacceptable (83%).

Those drivers who Drive Under the Influence of Cannabis and Alcohol (DUICA) (9%) are more likely to have very different beliefs. Based on the results of this survey, the following should be emphasized:

- Consuming cannabis does not make it safer to drive (it increases crash risk).
- Consuming cannabis after drinking does not make it safer to drive (it increases crash risk).
- Most people agree that driving after consuming alcohol and cannabis is unacceptable.
- Most people do not drive under the influence of alcohol and cannabis.
- Most people agree that impairment begins as soon as an individual consumes alcohol or cannabis.

Interventions to change these beliefs could include a variety of strategies including updated education in secondary school health classes, information on the impairing effects of alcohol and cannabis in driver's education programs, universal media campaigns, updating impaired driving programs to address misperceptions about cannabis, or information provided though cannabis retailers.

Universal media campaigns are a common strategy to influence behavior. As people who DUICA are more likely to value power, it may be important that messaging efforts on DUICA frame messages in such a way as not to threaten an individual's sense of power as these messages may be more likely to elicit psychological reactance and be rejected. When messaging about DUICA, using language that fosters an individual's choice and sense of autonomy is recommended.

Prevention

The best way to reduce impaired driving deaths and serious injuries is primary prevention: prevent impaired driving, period.

Education of young Washingtonians. Programs must reach out to elementary school-aged children to warn them about the overall dangers of substance abuse, with impaired driving as an aspect of that education. Education should continue through middle school and high school. Parental influence is also an important factor in helping keep children from drinking and drug use.

Promote public awareness and positive community norms around sober driving. Drivers need more awareness that driving after taking drugs – whether illicit, prescription, or over-the-counter – is a safety risk that can amount to a violation of the law. Additionally, promoting positive community norms – such as 91% of drivers do not drive while under the influence of alcohol or drugs – is another approach to preventing impaired driving.

Enforce to prevent over-serving. About 50% of people arrested for DUI were drinking at a licensed establishment; further, data show that 70–89% of bars will serve alcohol to intoxicated persons, in violation of the law. Identifying and enforcing at those locations is a key to success.

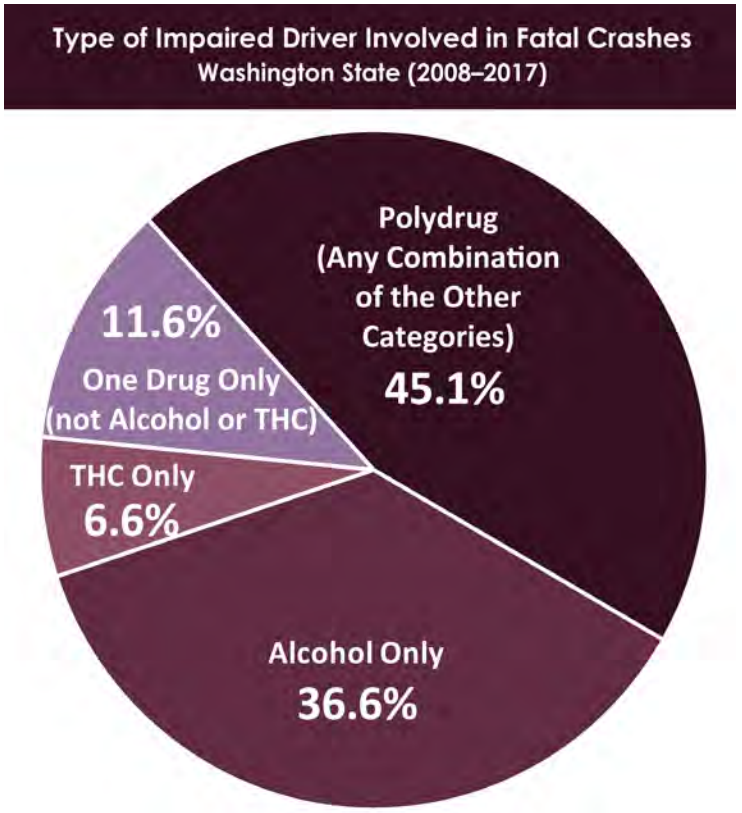
Treatment/Rehabilitation

A key part of reducing impaired driving is to identify substance use/mental health disorder DUI offenders early, and encourage immediate treatment.

Provide alternatives to incarceration that promote treatment. In deferred prosecution, the prosecutor grants amnesty in exchange for substance use/mental health disorder defendant meeting certain requirements during two years of treatment and an additional three years of monitoring. These requirements can include total abstinence monitoring, education, and group and individual sessions. DUI courts are another way to encourage treatment. Increasing access to strategies such as these can create more opportunities for drivers prone to impairment to address underlying issues and access rehabilitation services.

Address first-time offenders. A first DUI arrest in an ideal crisis point at which to intervene and change behavior. For the crisis to be used as a successful intervention point, the action, including legal consequences and/or legal incentives to enter treatment or required education, should be swift. Once the crisis has passed, that opportunity has been lost.

An assessment to determine medical necessity for treatment and following treatment recommendations *immediately* will result in a better treatment outcome. To that end, changes to the current law are needed to result in a quicker process. An additional change would be to give first-time DUI offenders with substance use/mental health



disorders the option of treatment, along with *a legal incentive to enter treatment*. For first-time DUI offenders who do not have a significant substance use/mental health disorder, consequences and education such as alcohol and drug classes will be most beneficial if immediate.

A brief intervention and screening by a substance use/mental health professional in the jail prior to arraignment would also be effective.

Law Enforcement and Training

Around Washington, over 10,000 commissioned officers at the state, local, and tribal levels enforce DUI and DUID laws (Driving Under the Influence of Drugs). A subset of these officers are Drug Recognition Experts (DREs).

High Visibility Enforcement (HVE) campaigns for alcohol impairment are a highly effective national model of law enforcement patrols supported with relevant and impactful media. Data show that where a high number of fatal and serious crashes occur, law enforcement agencies can work together in those locations to stop drivers from committing violations that cause these crashes.

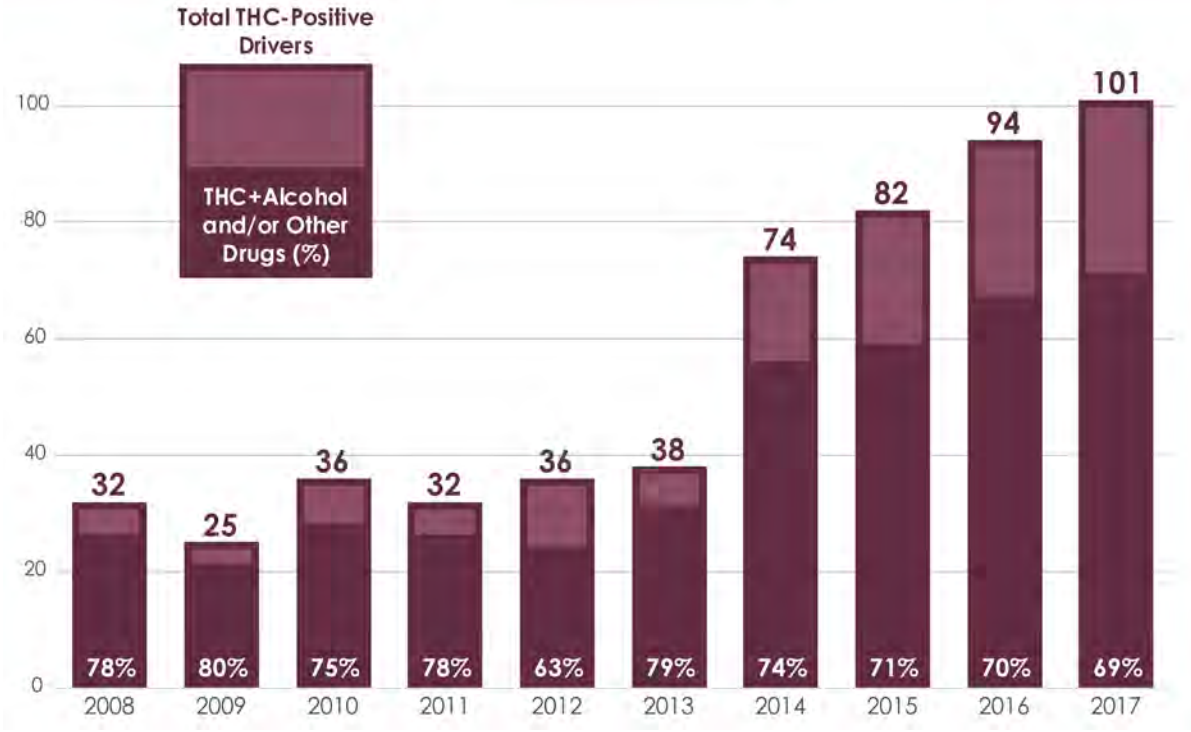
The Washington Traffic Safety Commission (WTSC) funds quarterly statewide DUI patrols called "Drive High Get A DUI." Over 150 law enforcement state, local, and tribal agencies participate in these campaigns. Partners fund media campaigns to inform the public of the increased enforcement. A combination of HVE patrols, with information campaigns in advance and follow-up reporting of the results, has proven an effective combination, as documented in Countermeasures that Work.

A 2016 survey of members of law enforcement in Washington showed that there are some key areas that challenge an agency's level of participation in proactive traffic enforcement, which applies to impaired driving.

The top concerns include:

- Insufficient staffing.
- Competing overtime/lack of interest in overtime.
- Traffic enforcement is a low administration priority.
- Inadequate training on DUI investigation.
- Complexity of DUI investigation.
- Personnel motivation challenges.
- Conflicts with responding to calls for service.

THC-Positive Drivers Involved in Fatal Crashes and Proportion Combining Alcohol and/or Other Drugs with THC
Washington State (2008–2017)



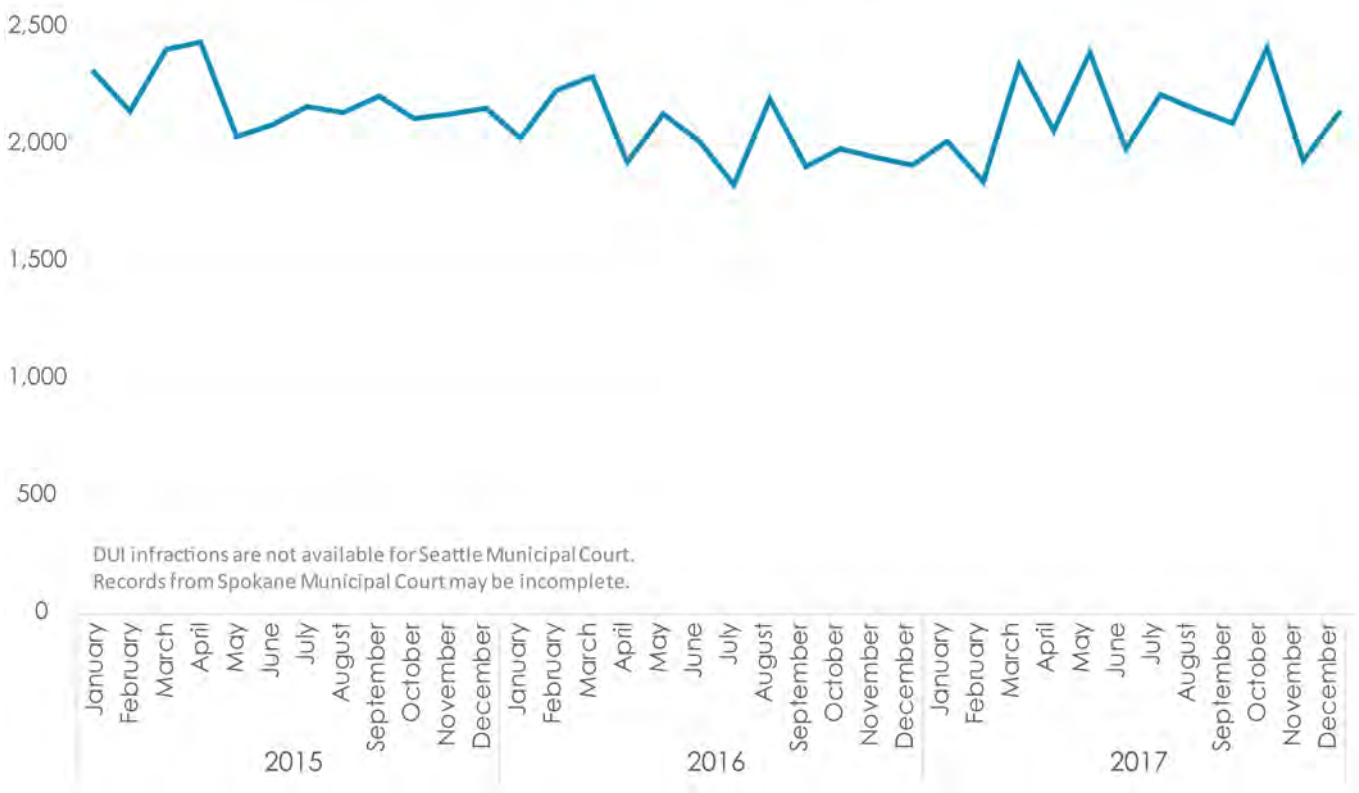
Departments are now working on filling officer vacancies. WIDAC is addressing the lack of training of law enforcement in DUI investigations and making strides to reduce redundancy in DUI reports and forms.

Washington also offers programs in some areas for local law enforcement to address the need for impaired driving enforcement training. For instance, the Seattle Police Department has used these trainings to make impaired driving enforcement an increasingly important part of their culture.

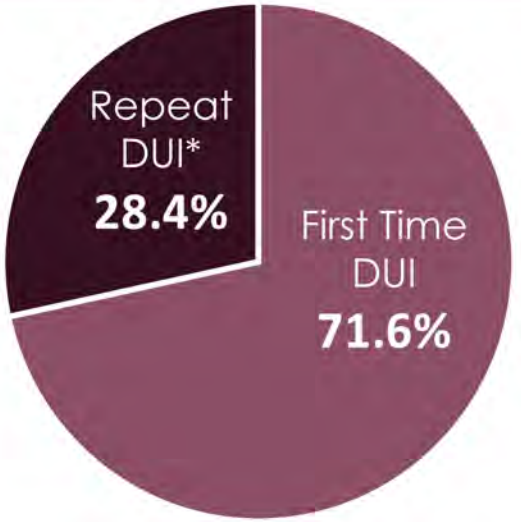
Toxicology

The Washington State Patrol (WSP) Toxicology Laboratory Division (TLD) is a centralized laboratory system that performs testing for all suspected impaired driving cases and death investigations in the state. The centralized laboratory design provides consistency in testing and reporting for all submitted casework. Reports generated by TLD are used by numerous entities, including law enforcement, the judicial system, medical examiners/coroners, public health organizations, and the WTSC.

Administrative Office of the Courts DUI Case Filings
(Filed under RCW 46.61.502 or 46.61.504)



Drivers Recieving a DUI
Washington State (2008–2017)
Source: DOL Driver DataMart



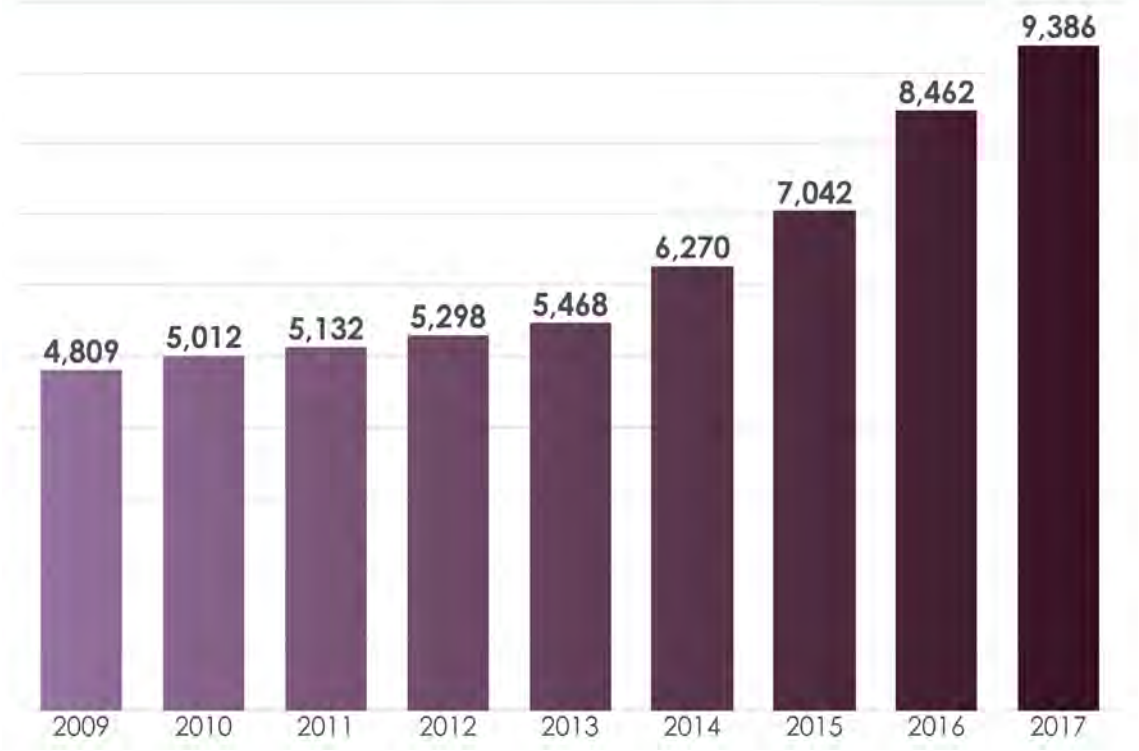
*A repeat DUI is an administrative DUI charge appearing on a driver's record where they also had a previous administrative DUI on the driver record. Not all administrative DUIs occurring in other states are captured, but that is improving over time. A criminal discharge of a DUI to a lesser charge may still appear as an administrative DUI on the driver record.

Toxicology case submissions increase every year; funding needs to be available for the TLD to accommodate the increase in staff, equipment, and space that will be needed to test these cases in a timely manner.

Approximately 90% of people who die in fatal crashes, whether driver, occupant, pedestrian, or bicyclist, receive a toxicology screen for drugs and alcohol. Drivers suspected of vehicular homicide could have their blood drawn even if they weren't suspected of being impaired.

However, for serious injury crashes, law enforcement officers don't always interpret events as rising to the level of vehicular assault, a designation which allows for a blood draw. Therefore, blood testing to confirm impairment in serious injury cases is much lower. As a result, both alcohol impairment and testing positive for drugs are significantly underreported as a factor in serious injury crashes. Increasing drug testing is the most important goal for this area of concentration. In order to provide timely and comprehensive testing in these fatality or serious injury cases, it's imperative for the toxicology lab to have adequate resources.

Blood Sample Submissions for DUI Investigation
Washington State (2009–2017)
Source: Washington State Patrol Toxicology Laboratory



Prosecution

Prosecution helps enforce the existing impairment laws. However, budgetary concerns, time constraints, and fragmented focus can reduce the effectiveness of DUI prosecutions.

The addition of a felony DUI offense law in July 2007 has increased the focus of prosecutors and judges on DUI. Unfortunately, they are often expected to handle hundreds of cases at a time, and may lack the experience necessary to effectively prosecute a scientifically and legally complex caseload of DUIs. In smaller cities and towns, criminal prosecution may only be covered by a part-time assistant city prosecutor.

To improve filings and successful prosecution of these cases, elected prosecutors must be educated about expert testimony and scientific evidence. This includes how to establish a DRE's expert background and qualify such an individual to give testimony in court, how to conduct a proper examination of a toxicologist, and how to read a toxicology report.

Adjudication and Probation

Washington State's court system imposes a sentence (consequences) for a defendant's choice to drive impaired. As part of a sentence, many judges will order a defendant to acquire a chemical dependency evaluation and comply with the recommendations.

Washington State has a decentralized court system: generally there are county courts; however, some cities have their own municipal courts. Each county court or municipal court will have guiding state laws to provide some consistency, but a great deal of discretion is provided to each court to apply the law to each adjudication. This system makes standardizing impaired driving adjudications and probation challenging across Washington State.

Target Zero partners support and promote prioritization of impaired driving cases in the following ways:

- Provide a dedicated DUI prosecutor to manage charging and disposition of impaired driving cases:
  - Modeling or providing support to other prosecutors
  - Prosecuting DUI cases that are within the prosecutor's capacity to handle
- Encourage best practice DUI prosecution by relying upon properly trained staff for impaired driving cases.
- For efficiency, encourage and fund centralized services for prosecutors though the Traffic Safety Resource Prosecutors (TSRP) program or other centralized program (including brief banks, jury instructions, and motions in limine).
- Regularly, and at every hearing or appearance, confirm the defendant's compliance with all conditions of release.
- Promote sentencing DUI defendants to appropriate terms, recognizing that mandatory minimums should be reserved for those deserving the maximum leniency.

Impairment in Older Drivers

In 2018, the American Automobile Association (AAA) performed a survey of older drivers (by AAA's definition, ages 65–79) to determine their prescription drug use. This study found that older drivers took a median number of seven medications. The findings also showed:

- 10% took two or fewer.
- 25% took four or fewer.
- 25% took 11 or more.
- 10% took 16 or more.
- 1% took 26 or more medications.

The most frequently-used medications were cardiovascular medications, central nervous system agents, electrolyte pills, hormones, and vitamins. The study noted that previous research has found that only 17.6% of drivers 55 and older had been counseled by a health care provider about how their medications might affect their driving.

AAA proposes the following strategies for prescription medication and older drivers:

- Drivers, their families, and their prescribers need to increase their vigilance to improve medication safety in older drivers.
- Drivers and their families can help facilitate communication between treating clinicians by keeping a list of medications, and not adding new medications without having their physicians and pharmacists check for drug interactions.
- Physicians should prescribe the fewest medications necessary and the lowest dose needed to achieve therapeutic results, and keep track of the all medications taken by a given individual, irrespective of prescriber. Physicians and pharmacists should alert drivers about potentially impairing side effects.

The Roadwise Rx program (www.roadwiserx.com) can also help drivers determine how their prescription drugs might affect their driving.

- Enforce the requirement in RCW 10.05 that defendants promptly request and petition for deferred prosecution, thereby encouraging early treatment and maximum benefit.
- Require good cause to continue DUI cases, encouraging prompt resolution of cases.
- Encourage judges, prosecutors, and defenders to attend regular training focusing on impaired driving issues, treatment, and probation.
- Tier the prosecution of DUI cases: assign alcohol-only to younger, inexperienced prosecutors, and drugged driving prosecutions to more experienced prosecutors.
- Participate in therapeutic courts (DUI Court).
- Establish pre-trial release conditions that include: ordering abstinence from possessing or consuming alcohol, non-prescribed controlled drugs, and cannabis, and one of the following to require compliance:
    - Random urinalysis (for drugged driving cases).
    - The installation of an ignition interlock device.
    - Participation in the 24/7 sobriety monitoring program.
    - The filing of a sworn statement with the court that the individual will not operate a motor vehicle without an ignition interlock device.

Probation is the post-conviction monitoring and supervision of defendants. The intensity of supervision is based on the nature of offense, the defendant's criminal history, and other relevant factors, such as treatment requirements and risk to self or others. Effective probation reduces risky behaviors by requiring the defendant to comply with appropriate sentencing conditions, producing long-term behavioral change and reducing recidivism.

To promote successful probation for impaired driving cases, Target Zero partners support:

- The use of active and supervised probation in all courts.
- Training and staffing probation offices to work collaboratively with treatment agencies monitoring impaired driving defendants.
- Verifying the documents provided to prove compliance (AA, NA, 24/7, treatment) through routine in-depth audits.
- Promoting the use of standardized probation conditions ordering the defendant to do the following, including but not limited to:
    - Do not drive a motor vehicle without a valid license and proof of insurance.
    - Do not drive a motor vehicle with a BAC of .08 BAC or 5 ng/mL or higher of THC.
    - Submit to breath or blood alcohol testing upon reasonable request.
    - Apply for and install an ignition interlock as required by the Department of Licensing (DOL) (or if a discretionary interlock is imposed, monitor that as well).
    - Do not commit any criminal law violations or alcohol or drug related offenses.
    - Obtain a proper chemical dependency evaluation and comply with all required treatment.
    - Attend an in-person victim impact panel.
    - Do not use or possess any alcohol, non-prescribed drugs, or cannabis.
    - Notify probation of any change in address.
    - Do not refuse any alcohol or drug-related testing request (PBT, UA, BAC).

    - Do not use or possess any drug paraphernalia, including cannabis paraphernalia.
    - Pay any restitution owing to the victim, if any.
- Expanding community-based probation.
- Addressing understaffing issues in probation offices, and in some instances, the lack of a probation office.
- Providing on-going training to probation staff on effective oversight of impaired drivers, substance abuse, and treatment resources.

Target Zero partners recognize that these practices may not work in every jurisdiction due to staffing, caseloads, and courtrooms. However, where possible, they would ideally be imposed as described or with minor adjustments, to increase prosecutor confidence, competency, and positive prosecution outcomes.

Driver Licensing

DOL has three main roles with regard to impaired driving. To address impaired driving, DOL:

- Takes action against drivers, including suspension and revocation for drivers who refuse a breath test, or who are over the legal limit per notification of conviction from the courts.
- Conducts hearings to provide drivers with a fair and independent review of their driving privilege sanctions initiated by DOL.
- Manages the Ignition Interlock Device (IID) Program in conjunction with WSP's Impaired Driving Unit. The IID program issues restricted licenses to individuals with IID requirements. The program also manages an IID subsidy program for indigent Washington residents, to help cover their costs and prevent cost from limiting their access to this important tool.

Some of DOL's greatest challenges for preventing impaired driving include:

- Getting timely information for hearings.
- Closing loopholes that allow individuals to circumvent IID requirements. An example is someone having an active and functioning device in one car receiving credit toward compliance, but driving another car without a device in it.
- Misuse of financial assistance. Some individuals allow their devices to go out of compliance by not going to calibration appointments or by attempting to drink and drive. Once an individual has been granted indigent status for the year, DOL pays for the device regardless of driver compliance with the law.

To tackle these challenges, DOL supports:

- Taking actions to prevent IID circumvention, such as:
    - An audit program.
    - Creating a data exchange between WSP's Impaired Driving Unit and DOL that will identify individuals with restrictions who do not have IIDs installed.
- Tying IID compliance to the continuation of subsidy funding for IID financial assistance.
- Developing a more robust approval process surrounding employer exemptions.

Legislation

WIDAC plans to form an impaired driving policy sub-committee. This group will monitor and review legislation related to impaired driving. They will develop recommendations to reduce impaired driving based on best practices in traffic safety.

The following legislative strategies are high priority for the WIDAC:

- Explore the feasibility of sobriety checkpoints.
- Research reducing the legal driving BAC level from .08 to .05.
- Seek funding for integrating and modernizing data systems that hold impaired driving data. See Data and Traffic Records for Impairment on page 55 for more information.
- Seek solutions so WSP's Toxicology Lab is able to reduce wait times for toxicology reports. See Toxicology on page 49 for more information.
- Continue to provide excellent local training to all interested law enforcement, prosecutors, judicial officers, and other traffic safety stakeholders to address the latest trends in impaired driving and best practices in investigation and prosecution.
- Study the latest impaired driving data and propose legislative fixes when needed to address changes in data trends, including drug-DUI and polydrug DUI.
- Continue to monitor, review, and update legislation related to public safety to address best practices in traffic safety, promote public safety, and decrease impaired driving on our roadways.
- Clarify the law as it pertains to physical control of a vehicle to improve public safety.

For more on Legislation, see the Legislation and Policy chapter on page 206.

Washington State Laws Relating to Impaired Driving

- RCW 46.61.502 Driving under the influence
- RCW 46.61.503 Driver under 21 years of age consuming alcohol or marijuana
- RCW 46.61.504 Physical control of vehicle under the influence
- RCW 46.61.5055 Alcohol violators—Additional fee—Distribution
- RCW 46.61.506 Persons under influence of intoxicating liquor or drug—Evidence—Tests—Information concerning tests
- RCW 46.61.507 Arrest upon driving under the influence or being in physical control of vehicle under the influence, notation required if child is present—Arrest upon drug or alcohol-related driving offense, child protective services notified if child is present and operator is child's parent, guardian, or custodian
- RCW 46.61.508 Liability of medical personnel withdrawing blood
- RCW 46.61.517 Refusal of tests—Admissibility as evidence
- RCW 46.61.520 Vehicular homicide—Penalty
- RCW 46.61.522 Vehicular assault—Penalty
- RCW 46.25.110 Operating a commercial motor vehicle while having alcohol or THC in system

Data and Traffic Records for Impairment

Data and traffic records are covered in general on page 168. Currently, the three most important issues for impaired driving data and traffic records are:

Lack of comprehensive drugged driving information. Typically, there is no toxicology information available for non-fatal crashes, and driver drug testing rates in fatal crashes have decreased. Officers investigating a fatal or serious injury crash may get results for alcohol impairment, then stop the DUI investigation before testing for drugs. This reduces understanding of polydrug driving, because the officer only focuses on alcohol impairment.

Data integration. In addressing recidivism and the "lifecycle of the DUI," Washington needs data systems to link, such as:

Citation → Location → Arrest → Crash → Toxicology → Adjudication → Injury Surveillance → Mental/Physical Health → Treatment → Social Services → Corrections → Licensing

Further, partners must identify and prioritize which impairment data needs to be integrated, and focus on modernizing existing data systems.

Impaired roadways users. There is a lack of information regarding non-fatal, pedestrian, and bicyclist impairment. This data would help Washington State adopt the most effective countermeasures for these impaired road users.

RELATED AREA: Drowsy Driving

Drowsy driving is another form of impaired driving. It was a factor in 44 deaths and 236 serious injuries from 2015 to 2017, which reflect 13% and 8% increases, respectively, from 2012–2014. Data on drowsy driving are most likely underreported since drivers may be reluctant to admit they dozed off prior to a crash. A recent American Automobile Association (AAA) study reveals that drowsy driving is a factor in one of 10 fatal crashes nationally.

A driver who has been awake for 18 hours experiences cognitive impairment similar to that of driver with a blood alcohol content (BAC) of .05. After 24 hours of being awake, a driver's impairment is similar to a BAC of .10 or higher. In addition to drowsiness from lack of sleep, factors such as alcohol, drugs, and over-the-counter and prescription medications can contribute to drowsiness.

Washington addresses drowsy driving through both engineering and education efforts:

- Shoulder and centerline rumble strips
- Rest areas
- Drowsy driving education campaigns targeting the general driving population
- Education regarding medical conditions and medications that increase a driver's risk of drowsy driving

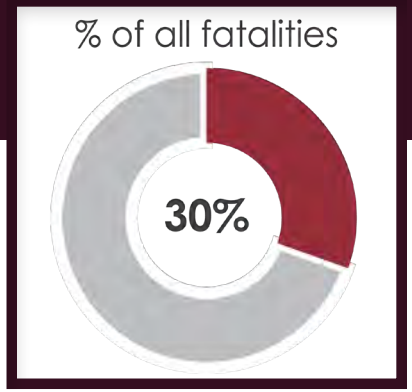
Strategies for Reducing Impairment (IMP) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
IMP.1. Prevent excessive drinking, underage drinking, and impaired driving.	IMP.1.1 Encourage parents to talk with their children about the risks of alcohol, cannabis, and other drugs. (R, WHY Coalition)	Education
	IMP.1.2 Continue mandatory alcohol server training and explore expanding responsible beverage service policies for alcohol retailers. (U)	Education, Leadership
	IMP.1.3 Continue and expand use of brief intervention and screening. (P, CTW)	Education, EMS, Leadership
	IMP.1.4 Conduct well-publicized compliance checks of alcohol retailers to reduce sales to underage persons. (R, CTW)	Enforcement
	IMP.1.5 Conduct well-publicized enforcement aimed at underage drinking parties. (R, CTW)	Enforcement
	IMP.1.6 Support transportation services such as transit (especially at night), designated driver programs, and other ride programs to help eliminate need for impaired individuals to drive. (U)	Education
	IMP.1.7 Support mandatory cannabis salesperson (budtender) training. (R, LCB)	Education, Leadership
	IMP.1.8 Continue statewide media campaigns to prevent underage use of alcohol and/or cannabis, prevent youth from riding with impaired drivers, and reduce overall misuse/abuse by adult consumers. (R, DOH)	Education
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Impairment (IMP) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
IMP.2. Enforce and publicize DUI laws.	IMP.2.1 Continue statewide High Visibility Enforcement (HVE) and media campaigns to reduce impaired driving. (P, CTW)	Education, Enforcement
	IMP.2.2 Enforce and publicize zero tolerance laws for drivers under age 21. (R, CTW)	Enforcement
	IMP.2.3 Enhance law enforcement DUI training with Standard Field Sobriety Test (SFST) training and refresher training. (P, NHTSA)	Education, Enforcement
	IMP.2.4 Enhance law enforcement DUI training with Advance Roadside Impaired Driving Enforcement (ARIDE) training. (P, NHTSA)	Education, Enforcement
	IMP.2.5 Expand the use of Drug Recognition and Classification Program. (R, CTW)	Enforcement
	IMP.2.6 Support law enforcement phlebotomy programs. (U)	Enforcement
	IMP.2.7 Support strategies for simplifying and streamlining the DUI arrest process, such as electronic DUI case filing and electronic warrants. (R, NHTSA)	Enforcement
	IMP.2.8 Utilize the Mobile Impaired Driving Unit (MIDU) or additional testing stations for processing to support DUI enforcement. (R, WSP)	Enforcement
	IMP.2.9 Support local integrated and dedicated DUI enforcement. (R, CTW)	Enforcement
	IMP.2.9 Discourage expansion of access to alcohol, cannabis, and other drugs. (U)	Leadership
	IMP.2.10 Support the enhancement of the Liquor and Cannabis Board's enforcement ability to meet the needs of addressing impaired drivers during compliance checks.	Enforcement
IMP.3. Prosecute, sanction, and treat DUI offenders.	IMP.3.1 Expand use of ignition interlocks. Improve exchange of information between agencies regarding compliance. (P, CTW)	Enforcement, Leadership
	IMP.3.2 Support the Traffic Safety Resource Prosecutor Program. (R, NHTSA)	Enforcement
	IMP.3.3 Conduct alcohol/drug assessments on all DUI offenders and enhance treatment and probation when warranted. (P, CTW)	Enforcement, Leadership
	IMP.3.4 Match treatment and rehabilitation to the diagnosis. Emphasize screening for co-occurring conditions contributing to DUI behavior. (P, NIH)	Education, Leadership
	IMP.3.5 Require stronger penalties for BAC test refusal than test failure. (R, CTW)	Enforcement, Leadership
	IMP.3.6 Encourage attendance at DUI Victim's Panels. (U)	Education
	IMP.3.7 Place limits on plea agreements. (R, CTW)	Enforcement, Leadership
	IMP.3.8 Expand 24/7 sobriety program statewide. (R, CTW)	Enforcement, Leadership
	IMP.3.9 Support local dedicated DUI prosecutors. (R, WTSC)	Enforcement, Leadership
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Impairment (IMP) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
IMP.4. Control high-BAC and repeat DUI offenders.	IMP.4.1 Monitor DUI offenders closely to reduce recidivism. (P, CTW)	Enforcement
	IMP.4.2 Support and establish DUI Courts. (P, CTW)	Enforcement, Leadership
IMP.5. Foster leadership to facilitate impaired driving system improvements.	IMP.5.1 Build effective partnerships designed to reduce impaired driving. (P, NCHRP)	Leadership
	IMP.5.2 Conduct publicized sobriety checkpoints. (P, CTW)	Enforcement, Leadership
	IMP.5.3 Conduct enforcement in locations where data suggests a high rate of impaired driving. (P, NCHRP)	Enforcement, Evaluation
	IMP.5.4 Encourage laws that use any money collected from DUI fines to support impaired driving reduction efforts. (R, GHSA)	Leadership
	IMP.5.5 Lower the per se BAC limit from .08 to .05. (P, NTSB, NAS, NSC)	Leadership
	IMP.5.6 Support the Judicial Outreach Liaison program. (R, NHTSA)	Leadership
	IMP.5.7 Promote zero tolerance laws for drug-impaired driving. (R, WTSC)	Leadership
	IMP.5.8 Monitor reports from ignition interlock vendors and conduct compliance checks. (P, CTW)	Enforcement
	IMP.5.9 Prevent ignition interlock circumvention attempts. (P, CTW)	Enforcement
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Impairment, refer to the Young Drivers, Motorcyclists, and Pedestrians and Bicyclists chapters.

Distraction

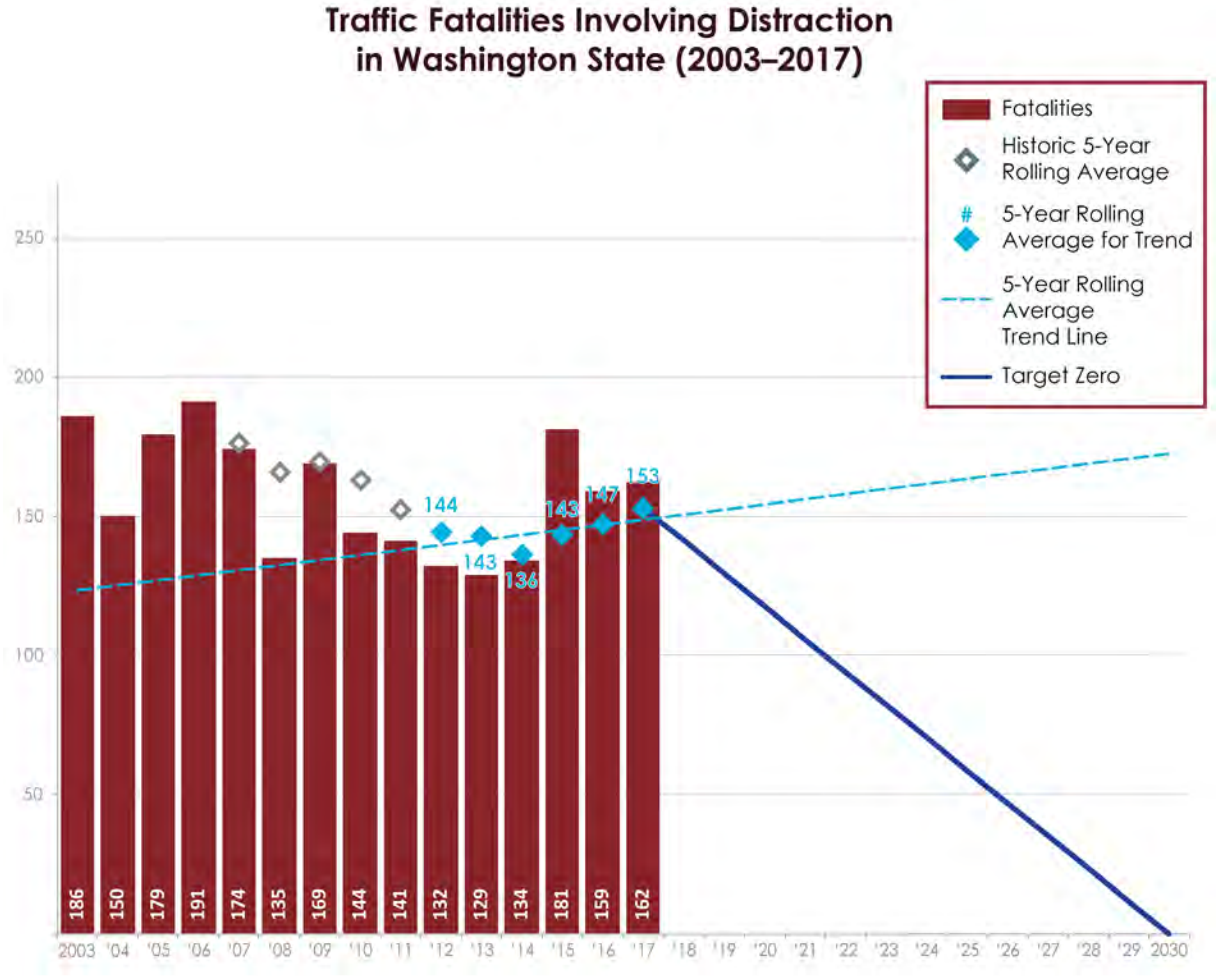


From 2015–2017, 502 people died in crashes involving distracted drivers, pedestrians, or bicyclists. Crashes involving distraction are believed to be underreported, especially for cell phone use. Despite this, distracted driving has risen to be the second most common emphasis area under high risk behavior, just after impairment.

Distraction is often associated with electronic device use while driving, but it does not have to be. Distracted driving is any activity that takes attention away from the task of driving. Distracted driving comes in three different forms:

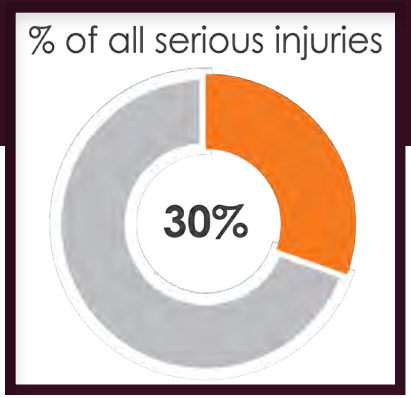
- **Cognitive/mental distraction.** The driver's mind is not focused on driving.
- **Visual distraction.** The driver looks at anything other than the road ahead.
- **Manual distraction.** The driver takes one or both hands off the wheel for any reason.

Driving distracted is a choice and a risky behavior that can increase the probability of fatalities and serious injuries on the road.



Risk Populations

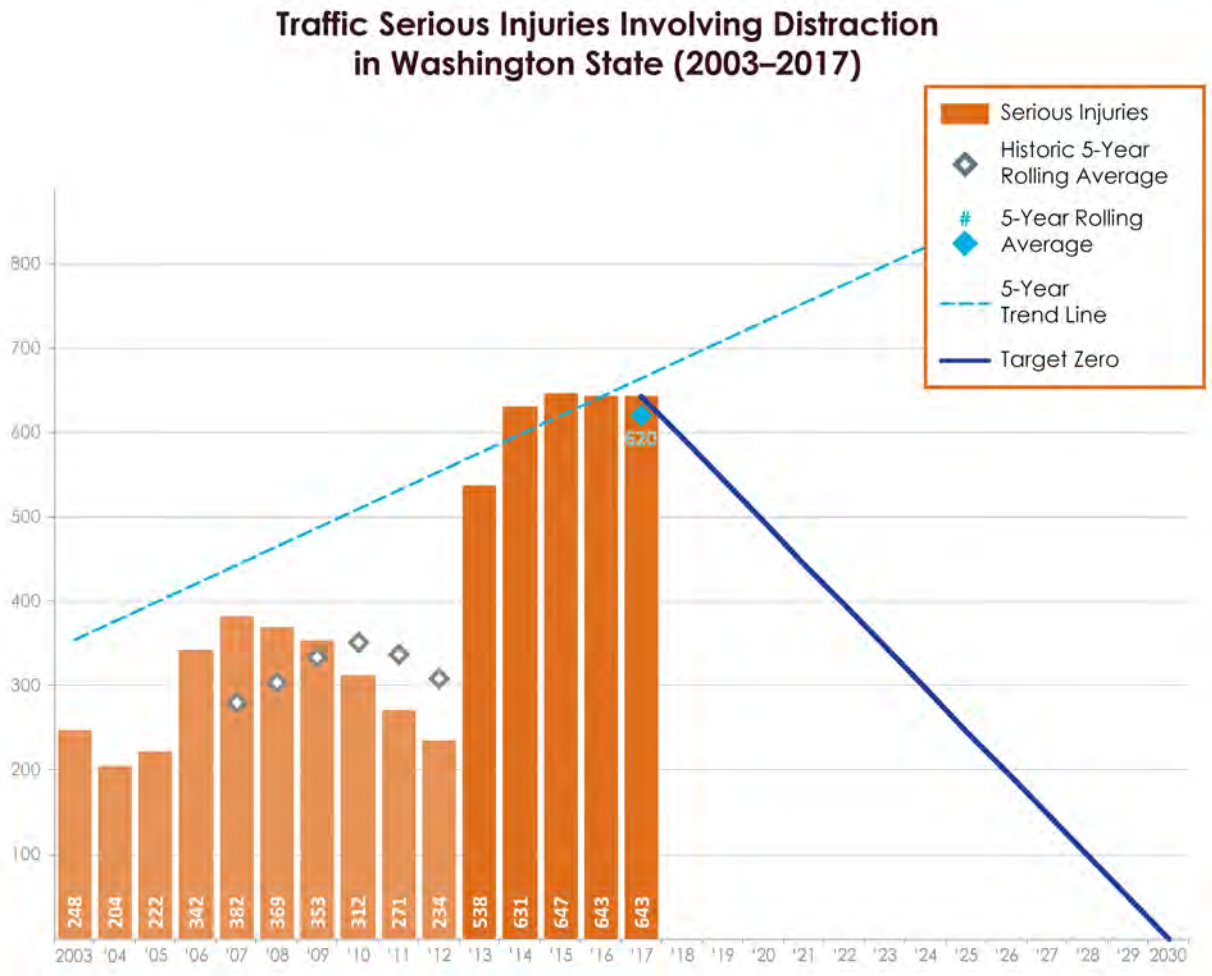
Young drivers (page 110), older drivers (page 148), and pedestrians and bicyclists (page 120) are all at-risk populations for distraction-related crashes. Please see the corresponding chapters to read further.



Priority 1

Key Countermeasures for Distraction Include:

- High Visibility Enforcement Campaigns
- King County Distracted Driving Prevention Campaign Project
- Training, Research, and Education for Driving Safety (TREDS) program
- Reducing distracted driving in the workplace



On January 1, 2013 a change to crash record coding was implemented, making the previous year of data non-comparable. Comparable data years are shaded in the same color. The trend is based on the 5 calendar years of data available since 2013.

BETWEEN 2015–2017 THERE WERE

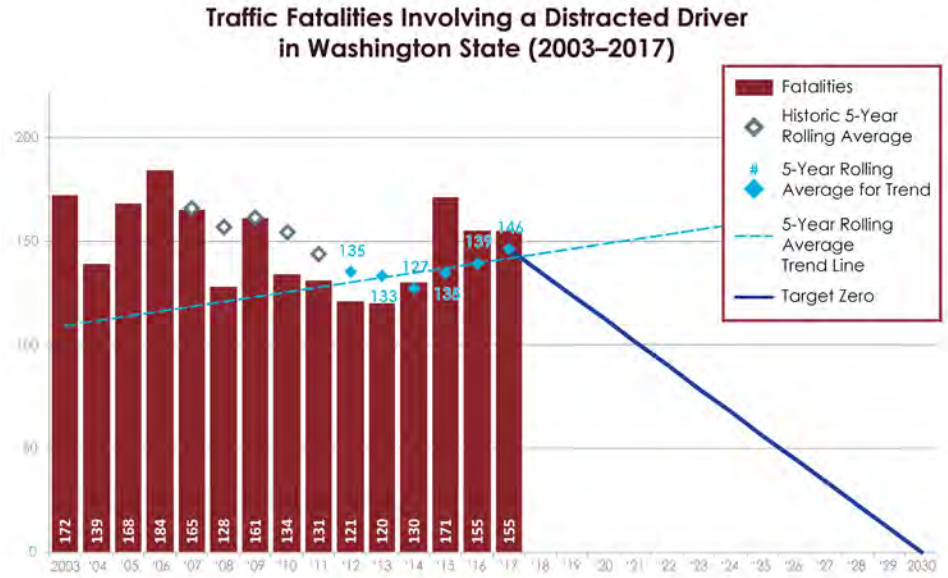
502 FATALITIES AND 1,933 SERIOUS INJURIES INVOLVING DISTRACTION

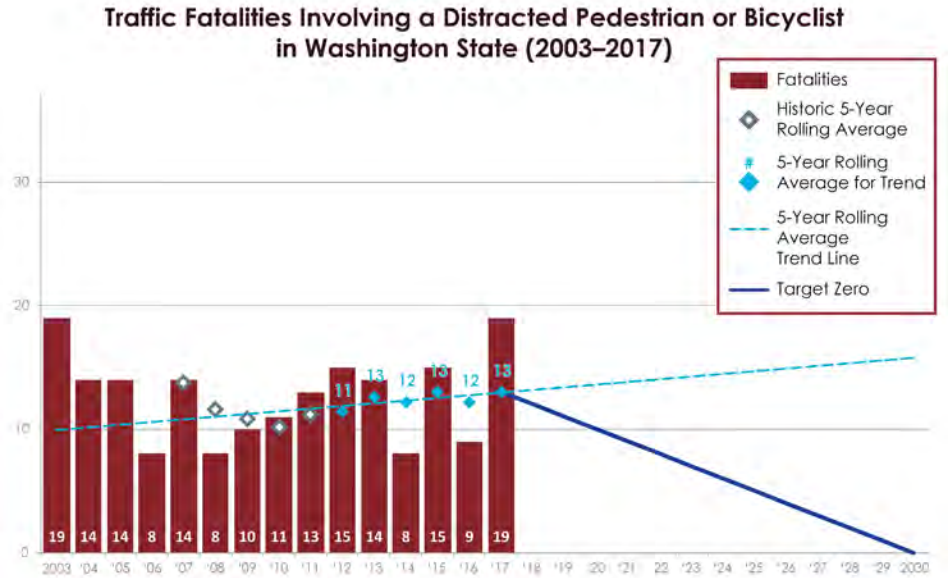
FATALITIES INVOLVING DISTRACTION OFTEN INVOLVE OTHER FACTORS

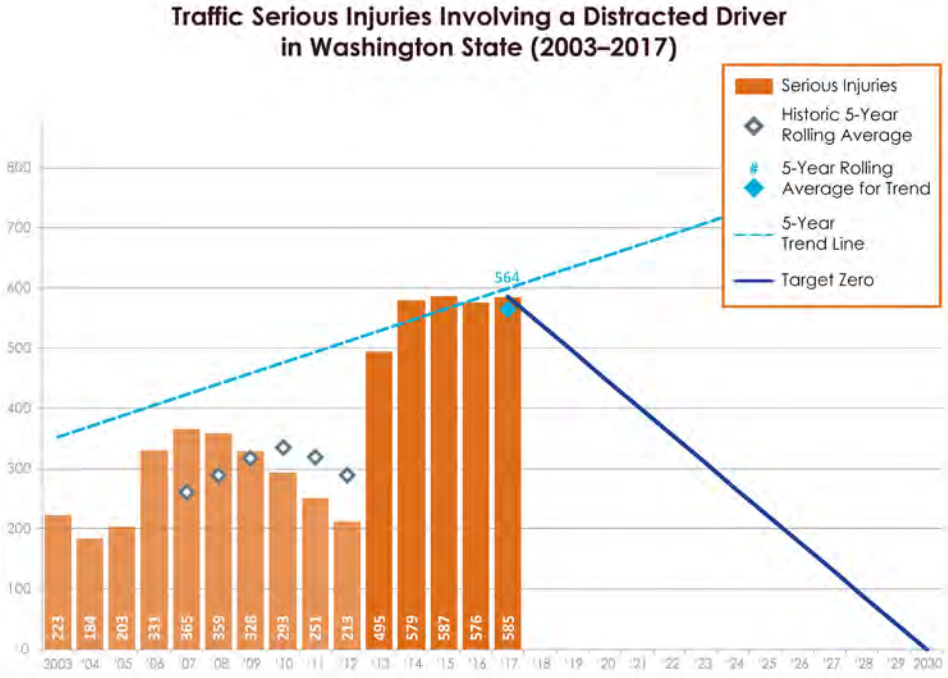
The top two factors that overlap with Distraction are **LANE DEPARTURE** and **IMPAIRMENT**

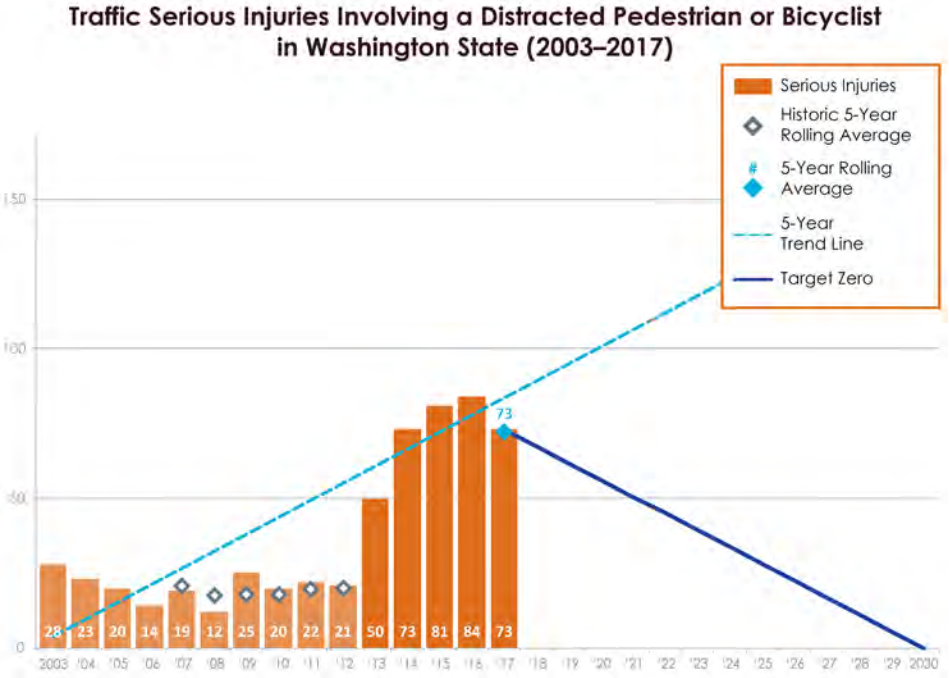
OUT OF **502 FATALITIES**:

38% also involved LANE DEPARTURE
51% also involved IMPAIRMENT
and 20% involved a combination of both

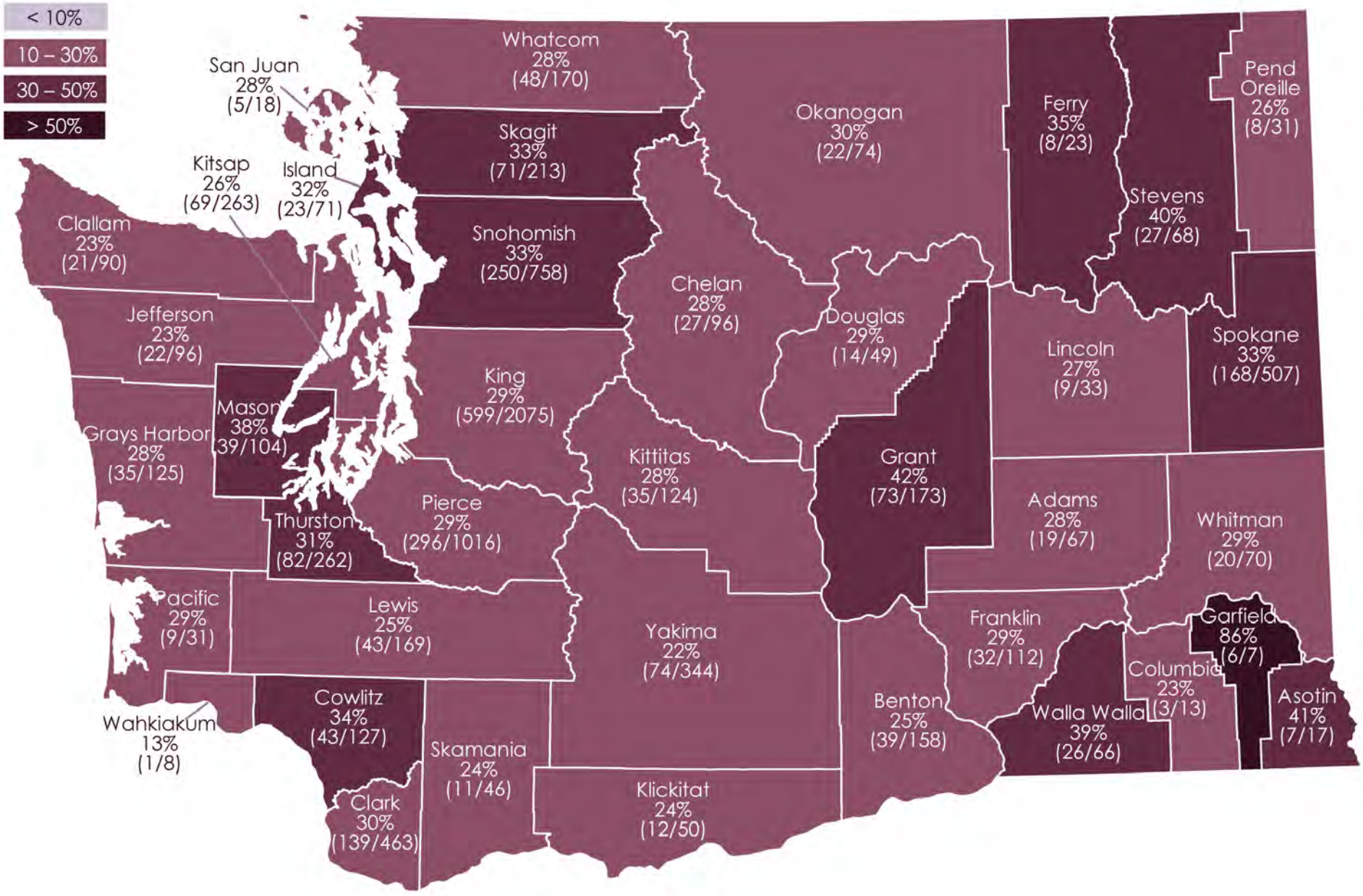

Traffic Fatalities Involving a Distracted Driver
in Washington State (2003–2017)
Fatalities
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
172 139 168 184 165 128 161 134 131 121 120 130 171 155 155
135 133 127 136 144
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Fatalities Involving a Distracted Pedestrian or Bicyclist
in Washington State (2003–2017)
Fatalities
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Rolling Average Trend Line
Target Zero
19 14 14 8 14 8 10 11 13 15 14 8 15 9 19
11 13 12 13 12 13
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Serious Injuries Involving a Distracted Driver
in Washington State (2003–2017)
Serious Injuries
Historic 5-Year Rolling Average
5-Year Rolling Average for Trend
5-Year Trend Line
Target Zero
223 184 203 331 365 359 326 293 251 213 495 579 587 576 585
564
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030


Traffic Serious Injuries Involving a Distracted Pedestrian or Bicyclist
in Washington State (2003–2017)
Serious Injuries
Historic 5-Year Rolling Average
5-Year Rolling Average
5-Year Trend Line
Target Zero
28 23 20 14 19 12 25 20 22 21 50 73 81 84 73
73
2003 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 2030

Percent of All Fatal and Serious Injury Crashes That Were Distraction Related, by County (2015–2017)



Key Issues for Distraction

Washington State's data indicate that people understand the risk and danger of distracted driving, but some still choose to drive distracted.

Misconceptions about Distracted Driving

Misconceptions make a person feel that it is socially acceptable to drive distracted. Some examples are:

Misconception: Everyone does it.

Fact: Not everyone chooses to drive distracted. In fact, the Washington Traffic Safety Commission's (WTSC's) 2018 Observational Survey shows that only 8.2% of drivers were distracted, down from 9.2% in both 2016 and 2017. This means that 92% of drivers were NOT driving distracted.

Misconception: I can look at my phone while I drive because I am a good driver.

Fact: Even if a person is a very skilled driver, that person cannot perform well in the driving environment while distracted. In a survey conducted in March 2017, the WTSC asked questions regarding distracted driving to 847 female drivers ages 16–34. Ninety-six percent of these drivers agreed that using a cell phone while driving is dangerous; however, 55% said they felt safe driving using just one hand on the steering wheel while using a phone, and 81% said they felt safe using a hands-free device to talk while driving.

Inattention Blindness and Perception

Inattention blindness occurs when a person's attention is on one thing and that person does not notice unexpected things entering the visual field. The explanation for inattention blindness is that a person's attentional, cognitive, and processing resources are limited. Attention plays a major role in visual perception.

Driving distracted allows the driver's attention to shift, choosing another task to be the focus. Even when looking ahead at the road, a driver's visual field can be limited if the driver is focused on something other than driving. For instance, when talking on the phone – even hands free, looking ahead, and with both hands on the wheel – a driver's visual field will be limited because the focus is on being present on the phone call.

Misconception: I am a good multitasker. I can do multiple things and drive at the same time.

Fact: A person can only do one task at a time. You can toggle from one task to the other, but it is impossible for a person to do any two tasks at the same time. Further, drivers who toggle between other tasks while driving might experience inattention blindness and visually miss things in the environment. Returning a driver's focus to the road is not instant. A period of readjustment occurs after the driver's eyes have returned to the road and will delay response time.

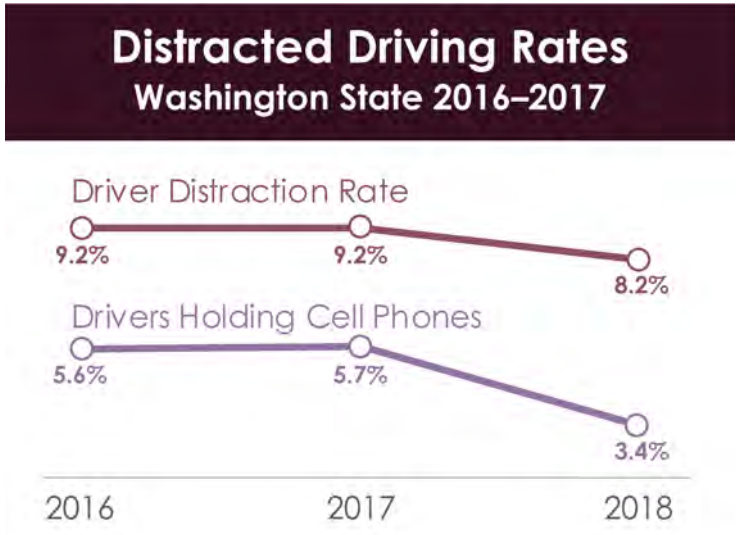
Observational Surveys

The WTSC has been conducting distracted driving observational surveys since 2016. WTSC plans to continue conducting these surveys to measure the impact of the distracted driving law and culture change.

The 2018 survey revealed behavior changes since the first survey and provides the baseline measure of driver distraction prior to the new law's effective date and one year following.

The survey findings, as shown in the graph on this page, estimate the driver distraction rate decreased in 2018, although this change was not significant.

- In 2018, there was a significant decrease in the percentage of observed drivers holding or manipulating cell phones.
- In 2018 there was also a significant increase in drivers engaged in "other distracting behavior," such as eating, tuning a radio, or attending to pets or children.
- In 2016 and 2017, cell phones were the source of three quarters of distractions. In 2018, due to the decrease in handheld cell phone use and the increase in "other distractions," cell phones were the source of just over half of driver distractions.



Washington State Laws Relating to Distraction

RCW 46.61.672 Using a personal electronic device while driving

RCW 46.61.673 Dangerously distracted driving

RCW 46.20.055(3)b Instruction permit

RCW 46.20.075(4) Intermediate driver license holders

Key Countermeasures for the 2019 Plan

High Visibility Enforcement Campaigns

Since 2014, Washington State has participated in a national, annual High Visibility Enforcement (HVE) campaign to reduce distracted driving. This statewide mobilization will continue to be funded. There are two elements to an HVE campaign: enforcement and education. Over 150 law enforcement agencies participate in this multi-jurisdictional campaign. In 2018, during the distracted driving HVE campaign, law enforcement issued 1,776 citations for cell phone use and texting statewide.

King County Distracted Driving Prevention Campaign Project

The King County Distracted Driving Prevention campaign is an ongoing project that aims to change behavior among drivers through HVE and education outreach campaigns. It also includes a driver survey to assess behavior, perceptions, and knowledge related to Washington's Driving Under the Influence of Electronics (E-DUI) law (see the box to the right for more information).

In 2018, this mobilization campaign resulted in contacts with more than 900 drivers over two weeks by 14 law enforcement agencies. The project's education outreach campaign included paid and earned media through radio and television interviews, paid radio and online PSAs, blog posts and news stories, and social media outreach through King County Target Zero Task Force agencies.

Training, Research, and Education for Driving Safety Program

Emergency responders – who often use technology in their vehicles in order to effectively do their jobs – are not subject to the distracted driving law. To reduce the effects of distraction in patrol cars, Washington collaborated with the Training, Research, and Education for Driving Safety (TREDS) program at the University of California at San Diego. The pilot course attracted 44 attendees from 21 different law enforcement agencies, varying from local to federal entities. The state expects each of those 44 trainees to host at least one of these classes in their own jurisdiction or region.

This project is ongoing. The course includes:

- Strategies to manage distraction and reduce distracted driving.
- National and state distracted driving data.
- Reviews of state law.
- Law enforcement risks and consequences, including civil liability.
- Alcohol law enforcement speaker who recently caused a distracted driving crash involving three other vehicles.

The Driving Under the Influence of Electronics Act

In 2017, families, employers, legislators, traffic safety advocates, and insurance companies worked together to pass a new distracted driving law known as the Driving Under the Influence of Electronics (E-DUI) Act. The E-DUI Act states:

- You cannot hold your phone or any other electronic device with your hands while you drive.
  - Even when stopped in traffic or at traffic signal
  - Includes all electronic devices even tablets, laptops and video games
  - No typing messages or accessing information
  - No watching videos or using cameras
- You can use your electronic devices if you are:
  - Hands-free and can start use by a single touch or swipe of your finger.
  - Parked or out-of-the-flow of traffic.
  - Contacting emergency services.

The first ticket for E-DUI costs the driver $136, but the fine goes up to $234 for repeat and subsequent offenses. The new law also makes it possible for these citations to be reported to the driver's insurance company.

The law came from the Legislature with a start date of January 2018. Washington State Governor Jay Inslee vetoed the start date and changed it to July 2017, stressing the urgency and importance of this law.

During the first 12 months, law enforcement issued 27,822 cell phone citations, including 784 for dangerously distracted. Most importantly, there was a 13% reduction in distracted driving in the two-week period following the new law.

Reducing Distracted Driving in the Workplace

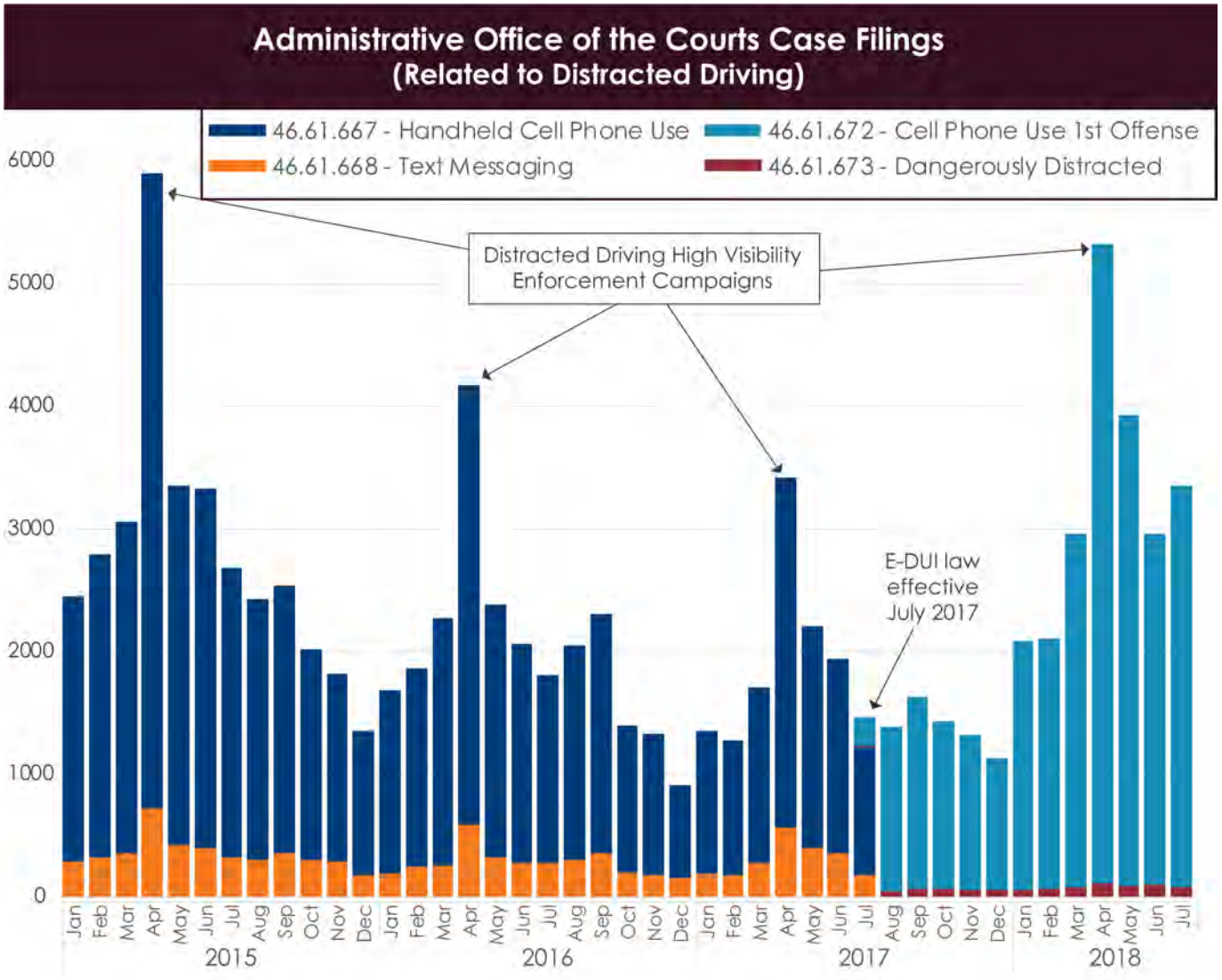
In 2019–2020, the Center for Health and Safety Culture (CHSC) at Montana State University will implement and evaluate a culture-based intervention to address distracted driving in the workplace. This project will include strong policy, training, and communication.

Pre- and post-intervention employee surveys will evaluate effectiveness. The intervention will result in a toolkit for future dissemination to other businesses across the state.

CHSC will report the results from the online surveys as well as impact of the project. The final report will also include guidance on best practices and ways to revise a workplace distracted-driving policy to use with other businesses across the state.

Traffic Safety Culture: Distraction

The CHSC project will focus on the creation of a Target Zero workplace community, and focus on culture change to help people choose to be safer, and influence their coworkers to be safer.



RELATED AREA: Work Zones

From 2015–2017, there were 18 fatalities and 70 serious injuries related to work zones. Of these people seriously injured or killed in work zones, 83% were vehicle drivers or passengers. The most frequently occurring factors are driver distraction and inattention (39%), lane departure (31%), young driver involvement (30%), and speeding (26%).

Safety of workers and the traveling public is a high priority during project development and construction, maintenance work, or any other roadway activities. Detailed work zone policy and guidance documents help agencies develop comprehensive transportation management plans to address work zone safety impacts.

Work zone policy and guidance areas of emphasis include:

- Developing site-specific multimodal traffic control plans to address unique work zone safety and mobility impacts.
- Using positive protection devices, such as concrete barriers or transportable attenuators whenever possible. This protects workers from nearby traffic, and the traveling public from equipment, materials, or excavation.
- Using larger, brighter signs and channelizing devices than required by federal regulations.
- Managing work zone congestion by conducting work during off-peak traffic hours.
- Training WSDOT employees and local agencies on the policy and guidance applications.
- Requiring contractor personnel to be trained when involved with work zone operations.

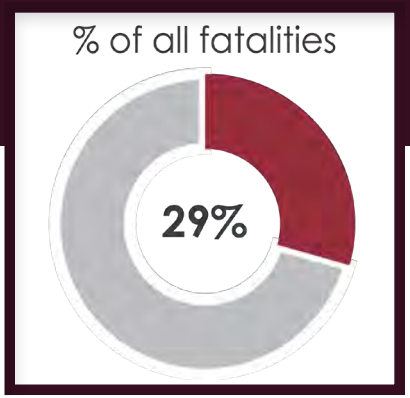
More information can be found at WSDOT's Work Zone Safety website (http://www.wsdot.wa.gov/Safety/Brake/default.htm).

Strategies for Reducing Distraction (DIS) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
DIS.1. Increase awareness of the risks of distracted driving while implementing multicultural engagement.	DIS.1.1 Conduct statewide distracted driving High Visibility Enforcement (HVE). (R, CTW)	Education, Enforcement
	DIS.1.2 Conduct statewide education campaigns focused on the dangers of driving distracted in work zones. (R, WSDOT)	Education
	DIS.1.3 Develop educational tools for law enforcement on how to identify drivers violating Washington's distracted driving laws. Make these materials available for patrol briefings prior to distracted driving HVE campaigns. (U)	Education, Enforcement
	DIS.1.4 Conduct statewide road education campaigns focused on the dangers of driving distracted. The campaigns should address the diversity of the project/enforcement area in the appropriate cultural context. (U)	Education
	DIS.1.3 Implement community level projects that promote culture change. (U)	Education
DIS.2. Improve data collection.	DIS.2.1 Collect better statewide crash data involving distraction to support distracted driving projects and educational campaigns. (R, NCHRP, MMUCC)	Evaluation
DIS.3. Encourage employers to adopt anti-distracted driving policies and programs.	DIS.3.1 Encourage employers and other agencies to adopt anti-distracted driving policies that are more restrictive than the law, such as also banning the use of hands-free devices while driving. (R, WTSC)	Leadership
	DIS.3.2 Educate emergency responders, such as EMS and police, about the dangers of distracted driving. (R, WTSC)	Education
	DIS.3.3 Educate commercial vehicle and fleet drivers about the dangers of distracted driving. (R, WTSC)	Education
	DIS.3.4 Encourage the implementation of employer-based programs that prevent distracted driving, especially among employers with fleets. (U)	Leadership
DIS.4. Increase programs targeted at school-aged children focused on preventing distracted driving.	DIS.4.1 Implement programs to educate school-aged children that are not of driving age about the dangers of distracted driving and empower them to do bystander interventions with whomever they are riding with. (U)	Education
	DIS.4.2 Support programs for children of driving age based on evidence-based behavior change frameworks, such as Positive Community Norms and the Social Ecological Model. School-based programs should be peer-led and involve parents. (U)	Education
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Distraction, refer to Young Drivers, Pedestrians and Bicyclists, and Older Drivers chapters.


Swift Blvd

Speeding



One in every three fatal crashes between 2015 and 2017 involved speeding as a contributing factor. Most people speed on a daily basis with no adverse consequences, making speeding one of the most difficult behaviors to modify.

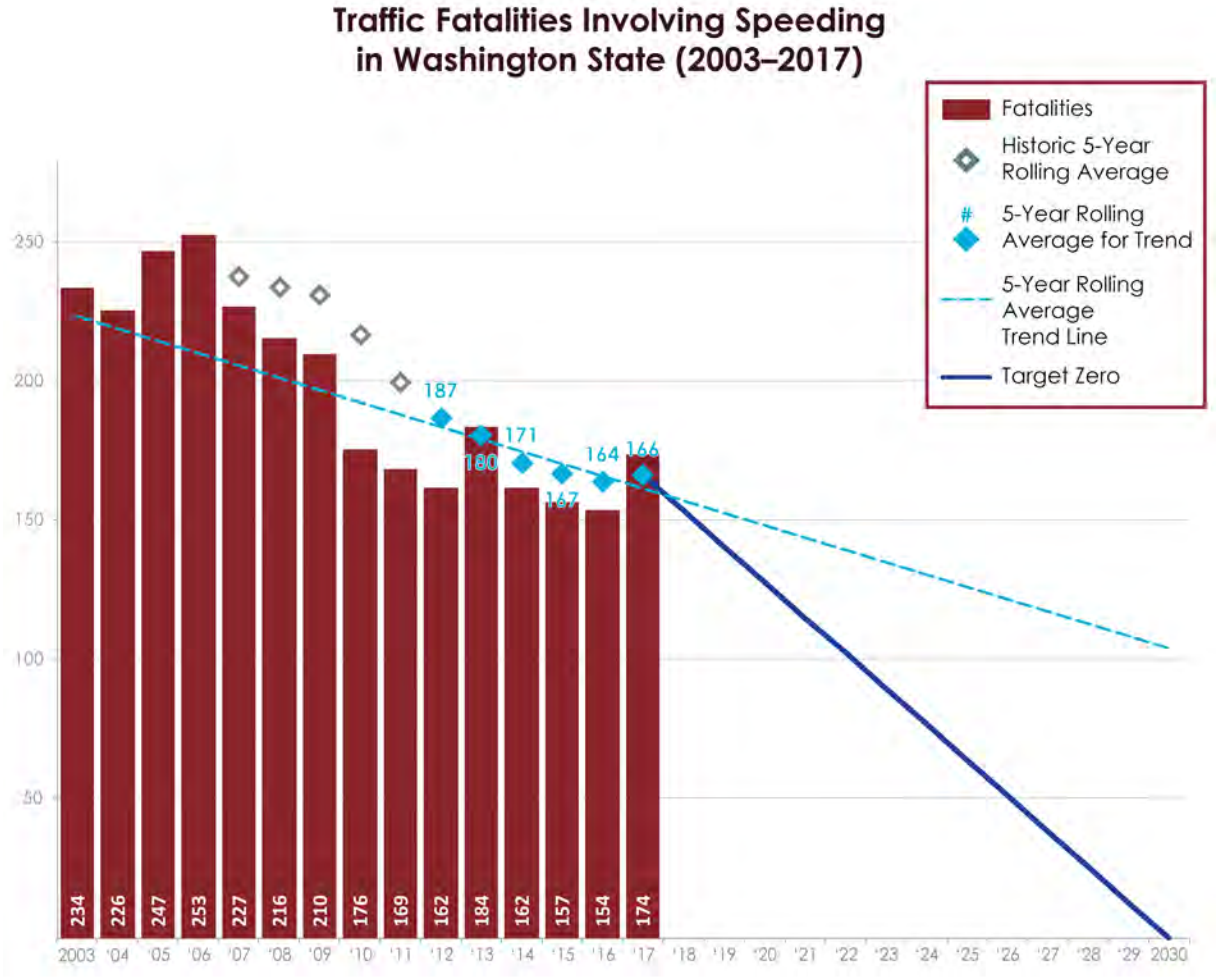
Key Issues for Speeding

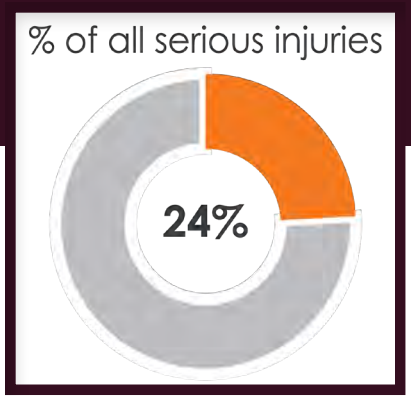
Changing Conditions

Exceeding reasonable safe speeds or exceeding posted speeds affects the vehicle's closing speed on a roadway obstruction or traffic. From 2015–2017, 64% of speeding drivers involved in fatal crashes were exceeding reasonable safe speed – traveling too fast for conditions.

Aggressive Driving

Vehicles that are traveling at vastly different speeds from the traffic around them can create safety issues. In 2012, the Insurance Institute on Highway Safety (IIHS) reported that aggressive driving behaviors were involved in 51.9% of fatal crashes. Aggressive driving is defined as an individual committing a combination of moving traffic offenses so as to endanger other persons or property. Speeding is the most common aggressive behavior.

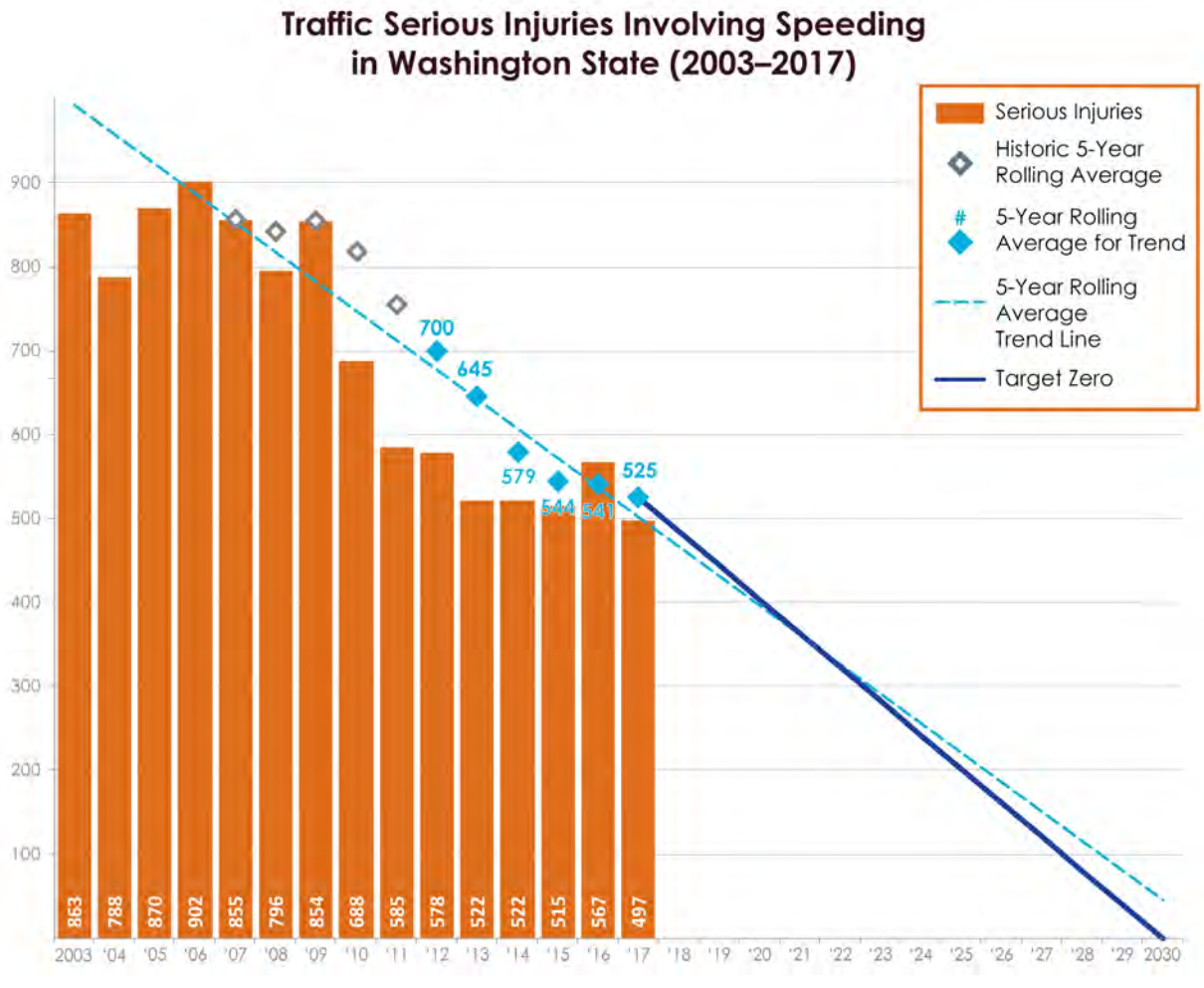




Priority 1

Key Countermeasures for Speeding Include:

- Driver education and campaigns
- Enforcement
- Engineering and road design



The speed of a vehicle is a factor in all crashes. The more force applied, the more damage to the vehicles and injuries to the occupants or pedestrians. Controlling vehicle speed can prevent crashes and reduce their impact by lessening the severity of injuries sustained by the victims.

For more on the effects of speed, see page 124 of the Pedestrians and Bicyclists chapter and page 197 of the Safe Systems Approach chapter.

BETWEEN 2015–2017 THERE WERE

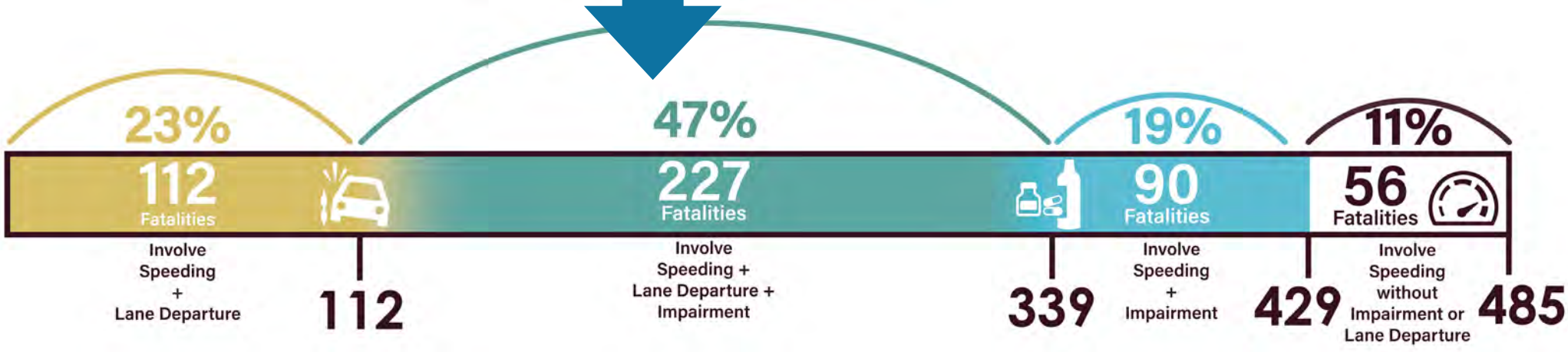
485 FATALITIES AND 1,579 SERIOUS INJURIES INVOLVING SPEEDING

FATALITIES INVOLVING SPEEDING OFTEN INVOLVE OTHER FACTORS

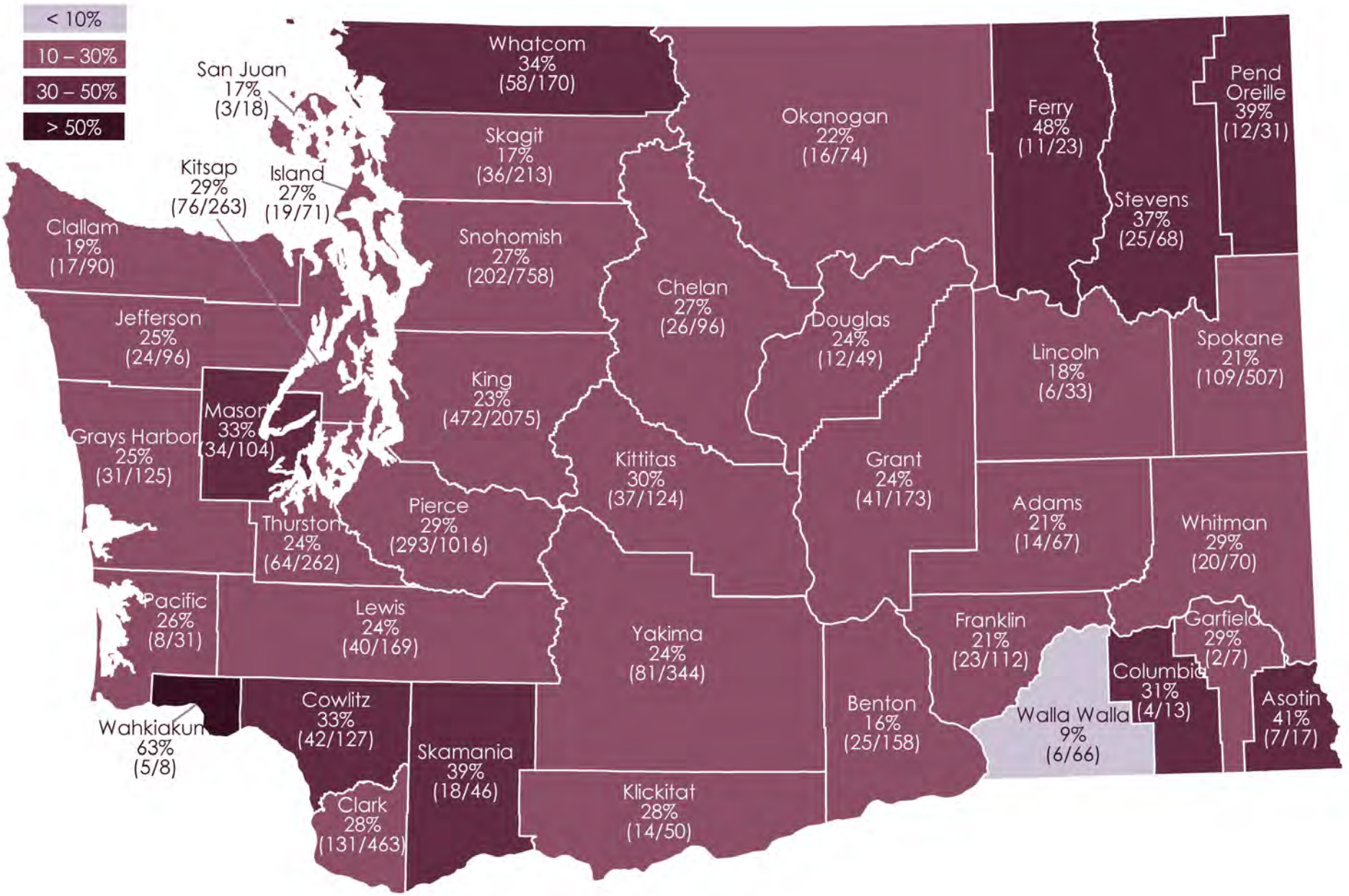
The top two factors that overlap with Speeding are **LANE DEPARTURE** and **IMPAIRMENT**

OUT OF **485 FATALITIES**:

70% also involved LANE DEPARTURE
66% also involved IMPAIRMENT
and 47% involved a combination of both



Percent of All Fatal and Serious Injury Crashes That Were Speeding Related, by County (2015–2017)



Key Countermeasures for the 2019 Plan

Driver Education and Campaigns

Public outreach and education about the dangers of speeding is most effective when used in conjunction with High Visibility Enforcement (HVE). Media campaigns, behavioral change components, and an increase in driver education focusing on the relationship between speeding and aggressive driving behaviors have been shown to boost the effectiveness of HVE. Other types of information that are intended to reduce speeding include:

- Increasing the information provided to drivers around road conditions. This can be accomplished through the use of education or electronic aids that allow greater awareness of changing traffic or roadway conditions.
- National and statewide media campaigns run in conjunction with HVE.

Washington State Laws Relating to Speeding

RCW 46.61.400 Basic rule and maximum limits

RCW 46.61.410 Increases by Secretary of Transportation. Maximum speed limit for trucks

RCW 46.61.440 Maximum speed limit when passing school or playground crosswalks

RCW 46.61.465 Exceeding speed limit — reckless driving

RCW 46.61.470 Speed traps defined, certain types permitted. Measured courses, speed measuring devices, timing from aircraft.

RCW 46.61.275 Reporting of certain speed zone violations — Subsequent law enforcement investigation

Enforcement

Aggressive driving is not only a speeding violation, but a combination of illegal behaviors that endanger the lives of other drivers. It can include speeding, illegal lane changes, following too closely, and other aggressive actions on the road. National Highway Traffic Safety Administration (NHTSA) research suggests that apprehending aggressive drivers has shown little statistical evidence of success; however, it is the best existing enforcement tool. The Washington State Patrol (WSP) operates aggressive driver enforcement patrols in all eight of their districts. Local law enforcement operate patrols throughout the year.

In addition, Automated Speed Enforcement (ASE) would allow for more consistent and standard coverage. Automated enforcement is currently limited by statute, although it has been shown to be effective. Expanding the use of automated traffic safety cameras has been shown to reduce crashes by 20-25% if placed at conspicuous fixed locations. According to the Centers for Disease Control and Prevention, allowing wider use of speed cameras in Washington would annually save about 21 lives, prevent about 1,700 injuries, and save nearly $68 million in avoided crashes. See the Legislation and Policy chapter on page 206 for more information.

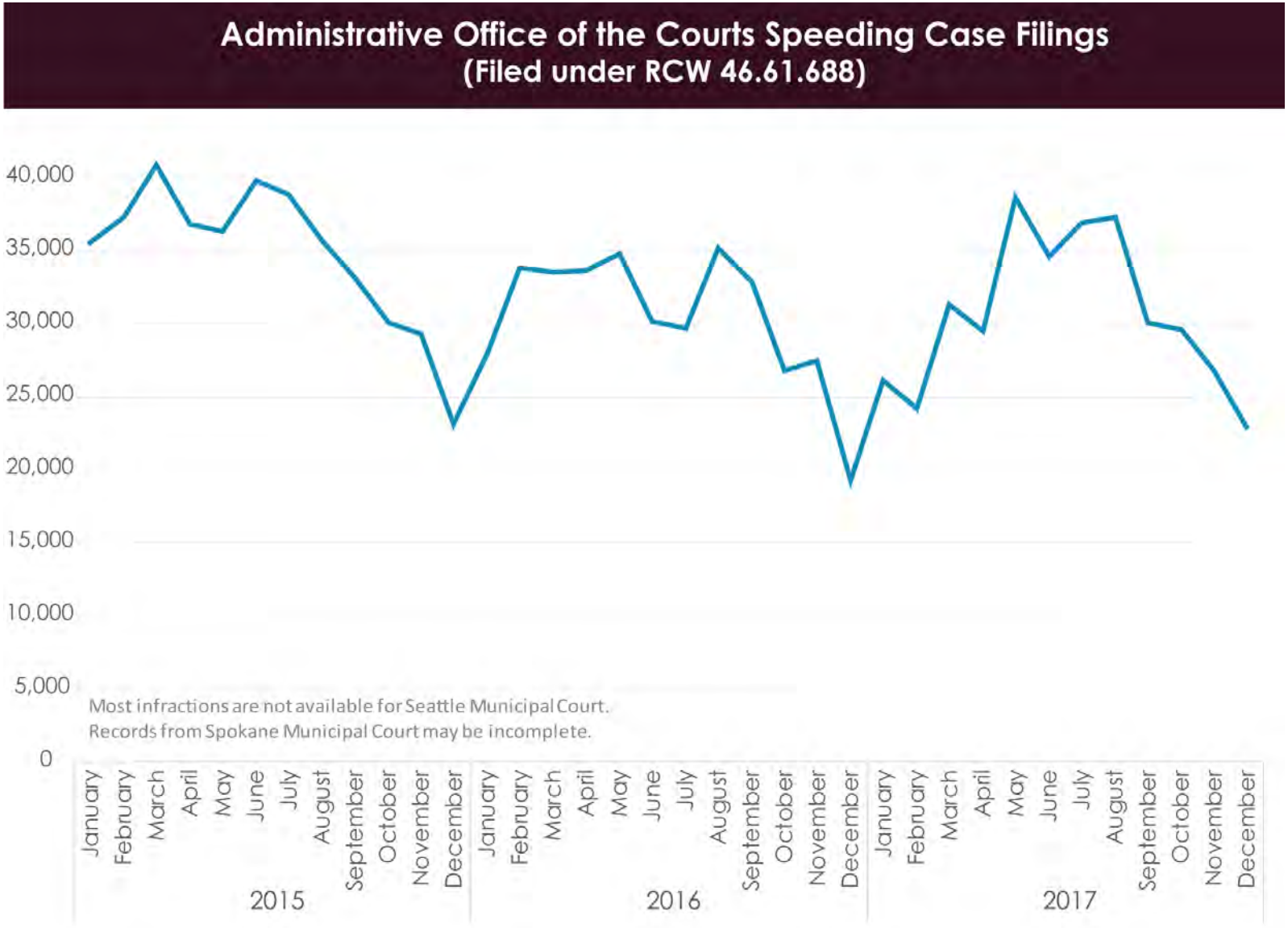
Engineering, Road Design, and Vehicle Technology

Engineering countermeasures to address speeding commonly focus on advanced warnings, increased roadway visibility, and traffic calming. Examples include:

- Real-time warning to drivers of slowed traffic conditions ahead (interstates).
- Improved signing and delineation of curves (rural roads).
- Use of speed feedback signs (urban roads).
- Narrowed roadways or use of speed bumps (residential roads).
- Road diets with typical features, such as curb extensions (urban roads.

For in-vehicle technology, IIHS reports a 20%+ lower claims rate in certain collision types for vehicle equipped with advanced or automated collision warning systems.

For more information, please see the Safe Systems Approach chapter on page 192.

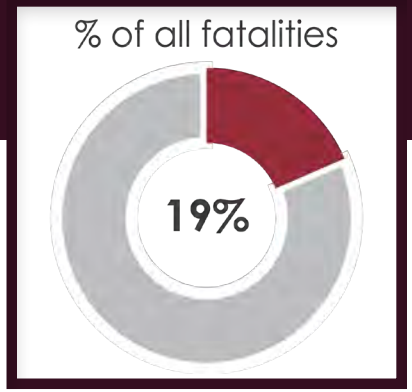


Strategies for Reducing Speeding (SPE) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
SPE.1. Reduce motorist speed through enforcement activities.	SPE.1.1 Increase use of automated speed enforcement. (P, CTW)	Enforcement
	SPE.1.2 Conduct High Visibility Enforcement efforts at locations where speeding-related crashes are more prevalent. (P, NCHRP)	Education, Enforcement
	SPE.1.3 Increase penalties for repeat and excessive speeding offenders. (R, CTW)	Leadership
	SPE.1.4 Equip law enforcement officers with appropriate equipment for speeding enforcement. (R, WSP)	Enforcement
	SPE.1.5 Increase use of aerial speed enforcement. (U)	Enforcement
SPE.2. Use engineering measures to lower motorist speed.	SPE.2.1 Set speed limits which account for roadway design, traffic, and environment. (R, NCHRP)	Engineering
	SPE.2.2 Implement traffic calming strategies at road sections and intersections along the types of streets for which they are intended, primarily low-volume residential and, occasionally, collector and arterial streets. (R, NCHRP)	Engineering
	SPE.2.3 Place speed limit signs so they are visible and installed at appropriate intervals. (R, NCHRP)	Engineering
	SPE.2.4 Use electronic variable speed limit signs that change according to conditions such as weather and congestion. (R, NCHRP)	Engineering
	SPE.2.5 Support the limited use of speed feedback signs to warn motorists that they are exceeding the speed limit; continue to research the most effective locations for these signs. (R, NCHRP)	Engineering
	SPE.2.6 Implement timed and coordinated traffic signals to improve traffic flow, reduce red-light running, and manage speeds. (R, NCHRP)	Engineering
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Speeding (SPE) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
SPE.3. Build partnerships to increase support for motorist speed-reduction strategies.	SPE.3.1 Educate the public about the dangers of excessive speed and speeding too fast for conditions, and its role in traffic fatalities. (R, NCHRP)	Education
	SPE.3.2 Implement neighborhood speed watch/traffic management programs in low speed areas. (R, NCHRP)	Enforcement
	SPE.3.3 Increase data sharing between local officers, tribal police, and engineering agencies to identify and develop solutions for areas where speeding is a problem. (R, DDACTS)	Evaluation, Leadership
	SPE.3.4 Educate prosecutors and judges to ensure speeding violations are treated seriously and fairly. (R, NCHRP)	Education, Enforcement
	SPE.3.5 Work with Washington Trucking Association and WSP's Commercial Vehicle Enforcement Division to encourage company policies which, when backed with speed monitors or speed regulators, can reduce speeding in commercial vehicles. (R, WSP)	Leadership
	SPE.3.6 Educate about the effects of roadway conditions on appropriate motorist speed, such as weather, congestion, daytime/nighttime, and roadway user mix. (U)	Education
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Speeding, refer to the Impairment, Intersections, Young Drivers, and Pedestrians and Bicyclists chapters.

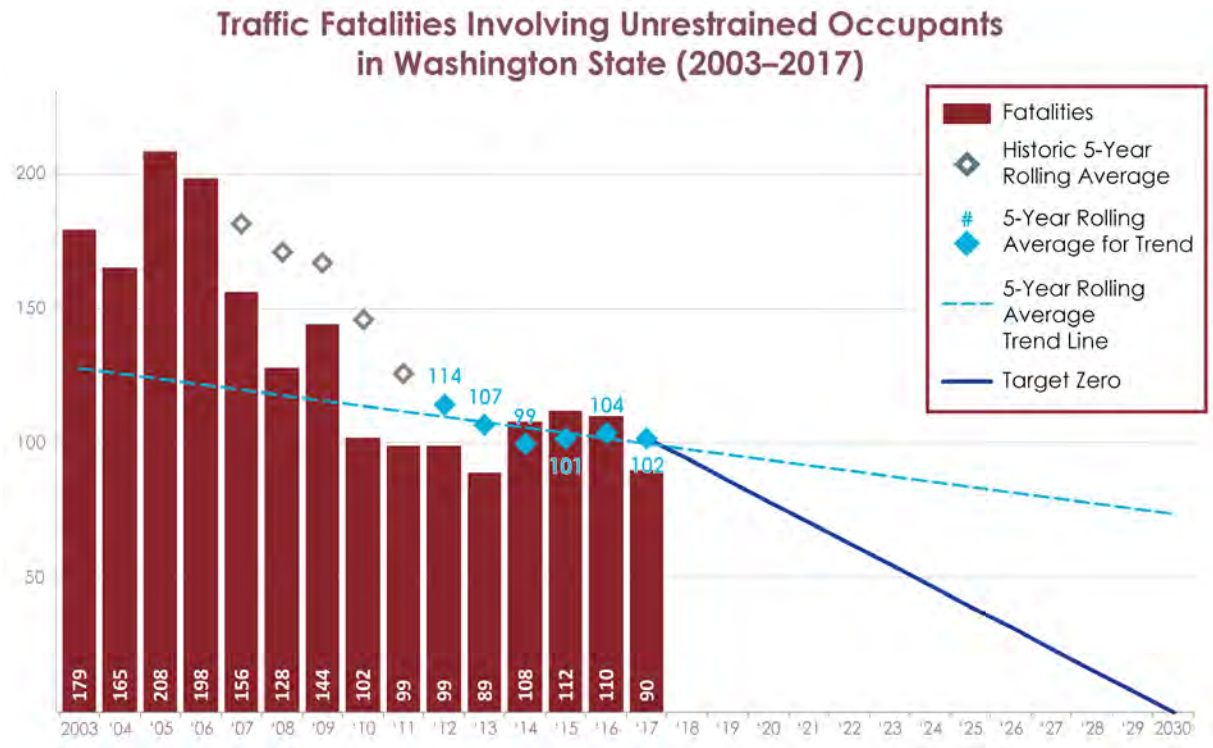
Unrestrained Occupants

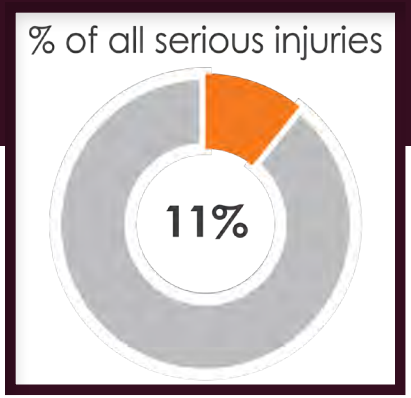


Generally, restraining occupants of a vehicle to improve safety involves use of two categories of devices – safety restraint systems (seat belts) installed in the vehicle, and child passenger safety systems that are added to increase the safety and security of children riding in vehicles (car and booster seats).

Washington's 2018 observed seat belt use rate was 93.2%, one of the highest rates in the nation. Washington's seat belt use rate has been over 90% since the primary seat belt law was implemented in 2002. Despite Washington's consistently high seat belt use rate, from 2015–2017, nearly one in five fatally injured persons were not using, or not properly using, a seat belt or child passenger safety system.

In Washington State, all children under the age of 13 are required to ride in the back seat. Other requirements focus on keeping children in appropriate child passenger systems, either car seats or booster seats. The number of fatalities for unrestrained or improperly restrained children fell from seven in 2012–2014 to four in 2015–2017. That news is tempered somewhat by having no change in reported serious injuries for unrestrained or improperly restrained children, an average of 10 every year since 2012.

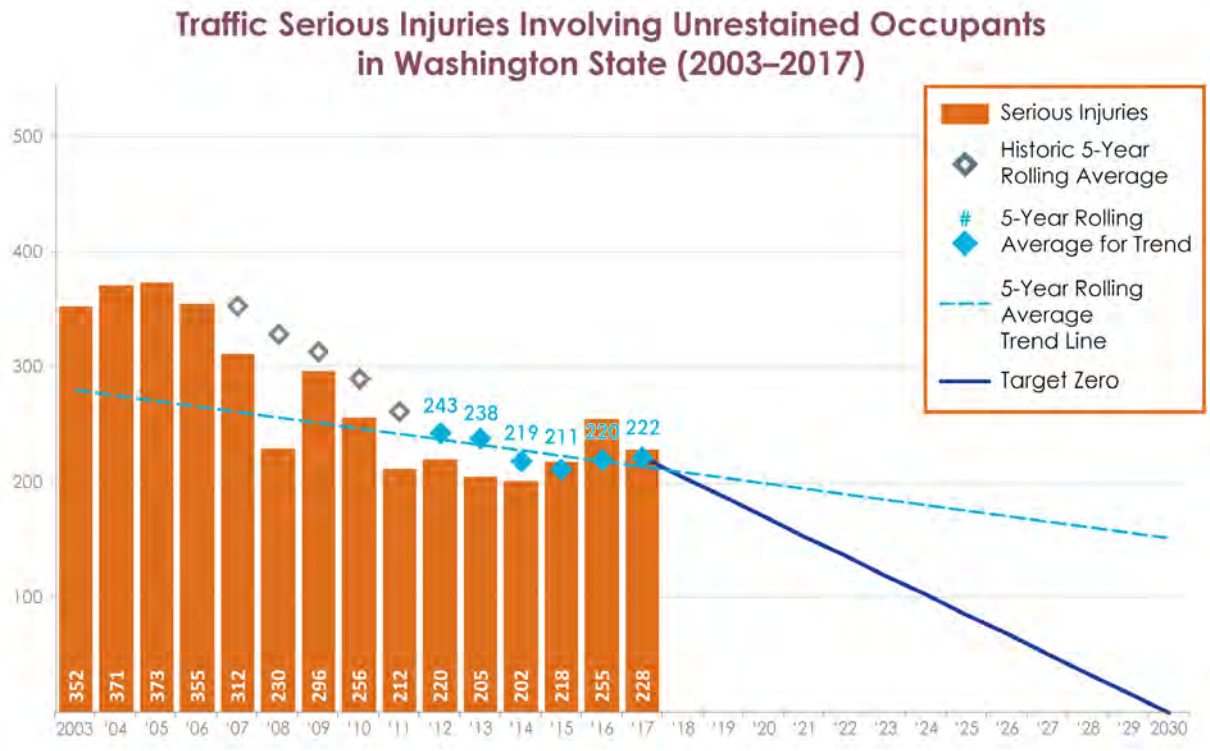




Priority 2

Key Countermeasures for Unrestrained Occupants Include:

- Maintaining Washington's high seat belt use rate
- Focusing on high risk populations
- Safest Ride Campaign
- Improving law enforcement understanding of car seats



BETWEEN 2015–2017 THERE WERE

312 FATALITIES AND 701 SERIOUS INJURIES

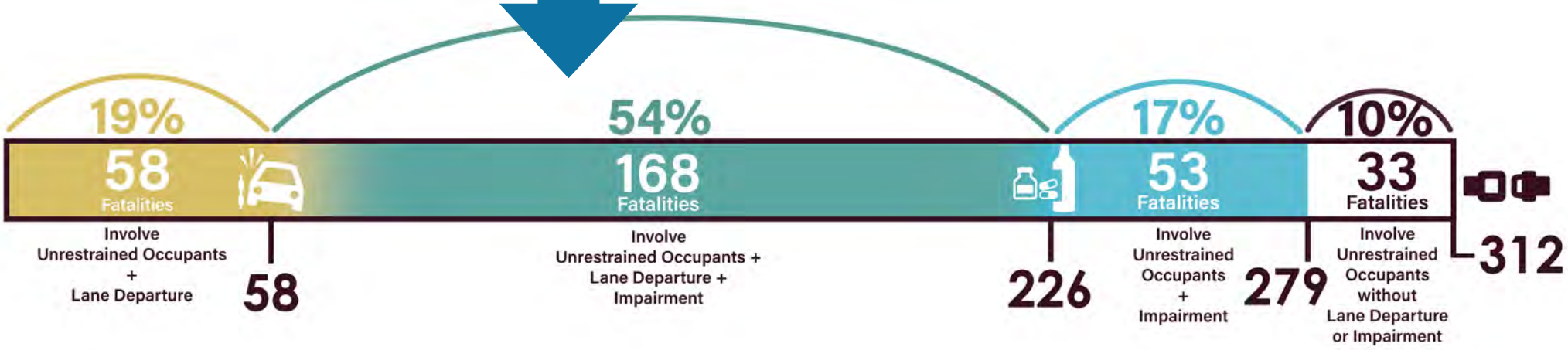
INVOLVING UNRESTRAINED OCCUPANTS

FATALITIES INVOLVING UNRESTRAINED OCCUPANTS OFTEN INVOLVE OTHER FACTORS

The top two factors that overlap with Unrestrained Occupants are **LANE DEPARTURE** and **IMPAIRMENT**

OUT OF **312 FATALITIES**:

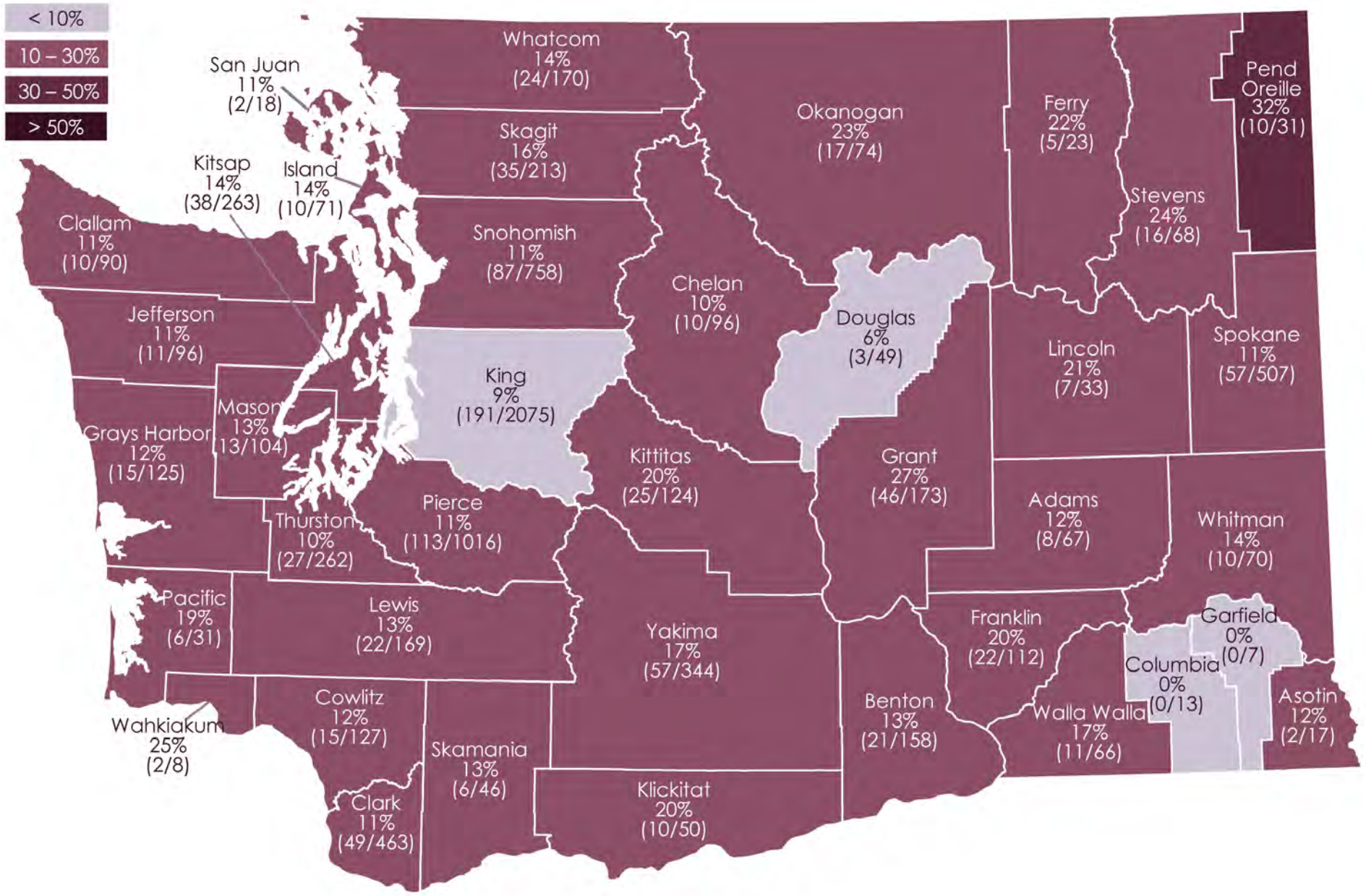
73% also involved LANE DEPARTURE
71% also involved IMPAIRMENT
and 54% involved a combination of both



Washington State Laws Relating to Child and Adult Restraints in Vehicles

- RCW 46.61.688 covers passengers over 16 years of age. People driving or riding in a motor vehicle shall wear a seat belt. Drivers are responsible for ensuring all child passengers under the age of sixteen years either wear a seat belt or use an approved child restraint device.
- RCW 46.61.687 (effective at the start of 2020):
  - Children under age 2 must ride in a rear-facing car seat.
  - Children ages 2–4 must ride in a car seat rear or forward-facing with a harness.
  - Children 4 and older must ride in a car or booster seat until they are 4'9" tall.
  - Children under 13 must ride in the back seat (when practical).

Percent of All Fatal and Serious Injury Crashes That Were Unrestrained-Related, by County (2015–2017)



Key Issues for Unrestrained Occupants

Staying in the Vehicle is the Best Protection in the Event of a Crash

Much of the success in reducing traffic fatalities and serious injuries has occurred because of vehicle design and seat belt use. For example, all vehicles sold in the United States beginning with the 2009 model year were required to feature "crumple zones" in which the vehicle literally folds up to absorb the impact from a crash, thus reducing the potential for harm for vehicle occupants. Because vehicle design protects occupants in the event of a crash, the best protection for vehicle occupants is to stay in the vehicle during the crash. The best way to stay in the vehicle is to use seat belts.

Some Populations are Less Likely to Use Seat Belts

For American Indians and Alaskan Natives (AIANs) in Washington State, the lack of seat belt use results in an unrestrained occupant fatality rate that is 8.8 times higher than the rate for all other races/ethnicities combined. Of the AIANs who died in 2015–2017 traffic crashes, 39% were not buckled at the time of the crash.

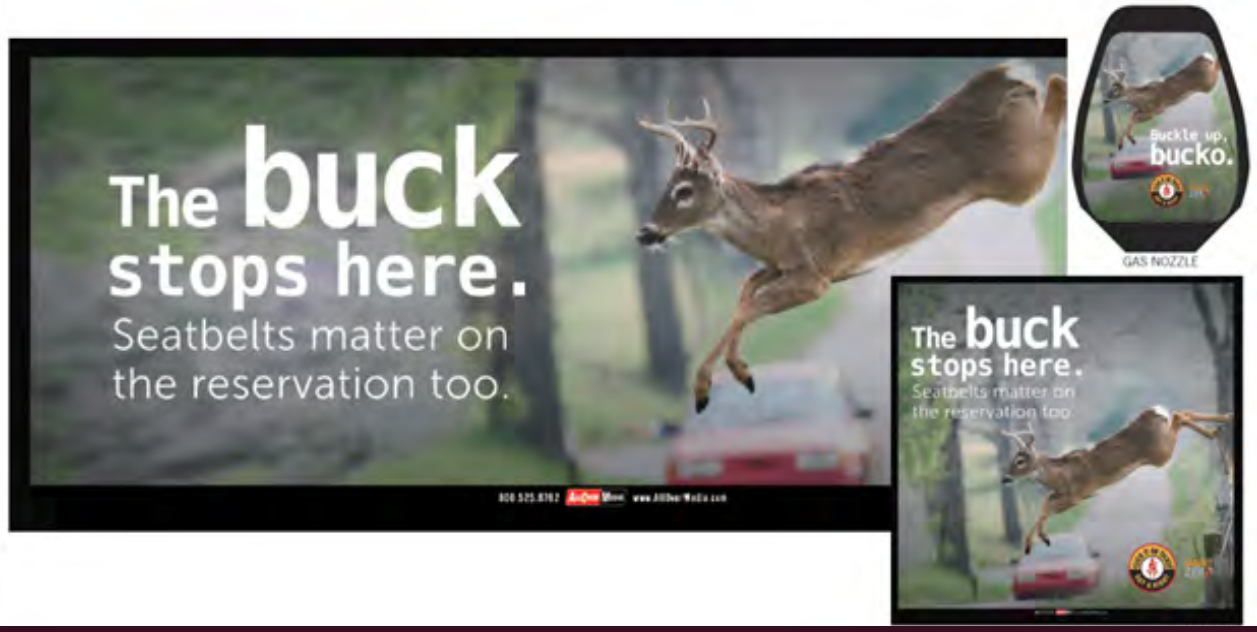
An observational seat belt use survey on a large reservation in Washington State – conducted with the cooperation of the tribe – showed seat belt use rates were as much as 30% lower on roadways located on the reservation than on roadways located just off the reservation. Other tribes in Washington State have conducted their own observational seat belt surveys and have found various rates of usage, but almost all were substantially lower than the overall state rate.

In addition, younger drivers are particularly likely to be involved in crashes involving unrestrained occupant deaths. Only 68% of drivers ages 16–25 involved in fatal crashes were restrained at the time of the crash, the lowest belted rate among all ages of drivers involved in fatal crashes. Roadway users between the ages of 16-25 account for 27% of unrestrained fatalities.

As with crashes involving other risky behaviors, the highest percent of unrestrained occupant crashes occur on weekends and on rural roads.

Other High Risk Behaviors

It is critical to understand the behaviors and attitudes of unrestrained drivers better so that effective interventions can be developed to encourage seat belt use. Unrestrained occupants are often involved in other high risk driving behaviors, as seen in the infographic on page 82. Therefore finding ways to get them to use their seat belts is likely to result in reductions in other high risk driving behaviors as well. Changing these high risk behaviors would result in a reduction of fatalities and serious injuries.



Child Passenger Safety

Motor vehicle crashes remain one of the leading causes of death for children four years and older. Using the correct car seat or booster seat can help decrease the risk of death or serious injury by over 70%.

The most common mistakes in Washington State are:

- No restraint used
- Children 12 and under are illegally seated in the front seat.
- Premature graduation from the booster seat to a seat belt.
- Child restraint not installed in vehicle properly
- Harness does not have a correct fit on child

Priorities for Occupant Protection in Washington State

- Approximately 6%–7% of Washington State's drivers still do not use seat belts.
- On some tribal reservations, seat belt use is dramatically lower than the state rate.
- Road injuries are the leading cause of preventable deaths and injuries to children in the United States. (Safe Kids Worldwide). Correctly-used child safety seats can reduce the risk of death by more than 70%. Three out of four car seats are not used or installed correctly.
- Lack of current data regarding usage of child passenger safety products.

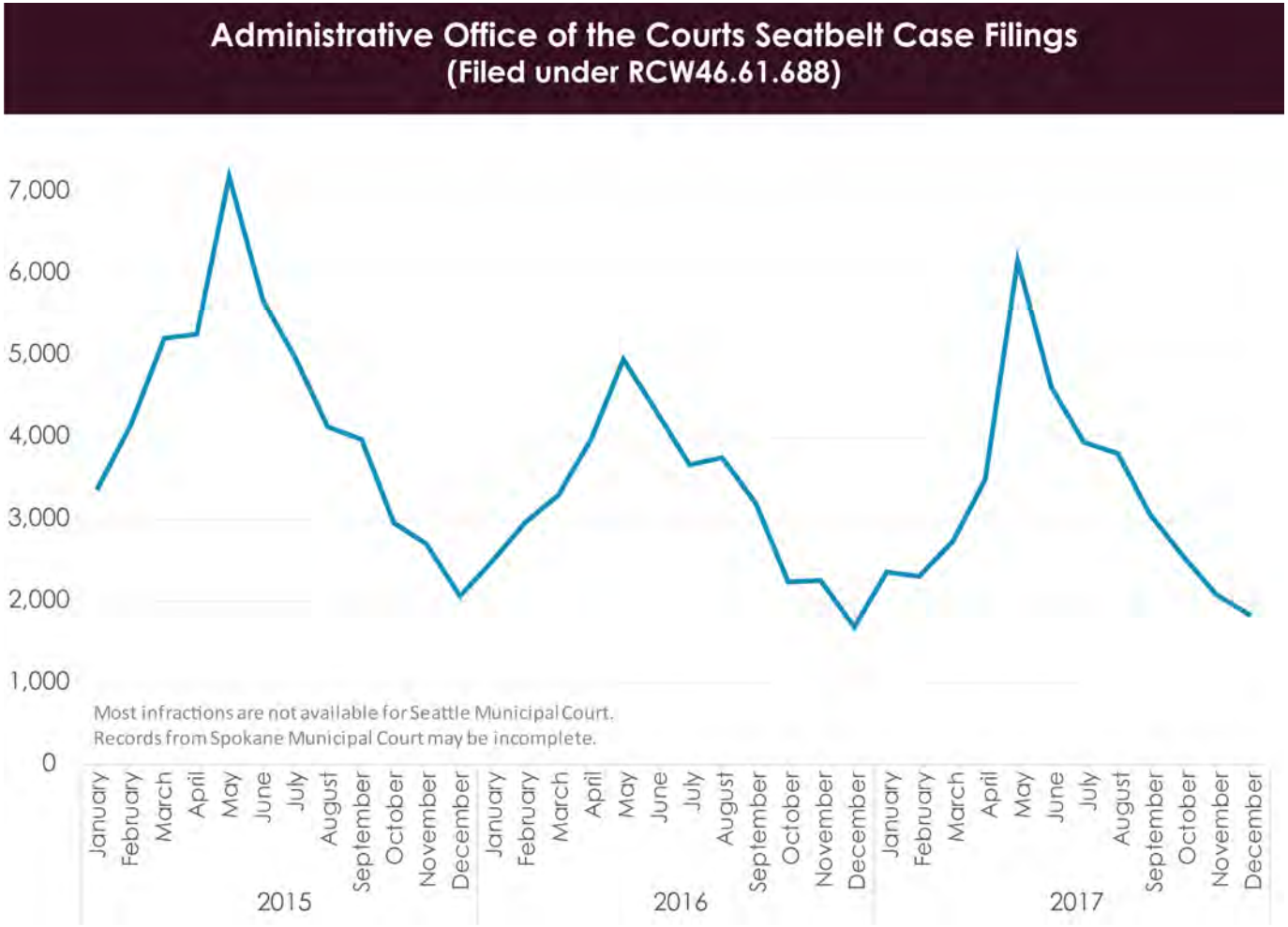
The American Academy of Pediatrician's latest evidence-based recommendations call for the following:

- Infants and toddlers should ride in a rear-facing car seat as long as possible, at least until they reach the highest weight or height allowed by their seat. Most convertible seats have limits that will allow children to ride rear-facing for two years or more.
- Once they are facing forward, children should use a forward-facing car safety seat with a harness for as long as possible, at least until they reach the height and weight limits for their seats. Many seats can accommodate children up to 65 pounds or more.
- When children exceed these limits, they should use a belt-positioning booster seat until the vehicle's lap and shoulder seat belt fits properly. This is often when they have reached at least 4 feet 9 inches in height and are eight to 12 years old.
- When children are old enough and large enough to use the vehicle seat belt alone, they should always use lap and shoulder seat belts for optimal protection.
- All children younger than 13 years should ride in the rear seats of vehicles for optimal protection.

Key Countermeasures for 2019–2021

Maintaining Washington's High Seat Belt Use Rate

Washington adopted its first seat belt law in 1986, resulting in a 36% seat belt use rate. The primary seat belt law is estimated to have saved 91 lives and prevented 253 serious injuries since its introduction in 2002. Primary seat belt laws allow law enforcement officers to ticket a driver or passenger for not wearing a seat belt, without any other traffic offense taking place. Secondary seat belt laws state that law enforcement officers may issue a ticket for not wearing a seat belt only when there is another citable traffic infraction.



Washington State supports aggressive efforts to publicize seat belt patrols and seat belt use, and law enforcement aggressively enforces the state's seat belt law. Target Zero Managers (TZMs) in 17 regions share messages on seat belt use to the local communities they work with. At the same time, participation in the annual Click It Or Ticket program provides a statewide platform to discuss the importance of seat belt use. For more information on the TZMs, please see page 228.

An Example of Why People do Child Passenger Safety Work

"At the time, my knowledge of car seats derived from a magazine article and my pediatrician. Neither had the proper training or provided me with the information to keep my children the safest in the car. Fortunately, instincts directed me to a rear-facing-only seat for my five-day-old baby and to keep my five-year-old in a harness seat as long as possible. Only a mile away from home, a young driver ran a red light and crashed into our vehicle as we crossed the intersection. We all survived; my newborn baby didn't even wake up and my son complained of the cold air outside of the car. It was then I realized that car seats really do save lives! I became a car seat technician in 2013 and a CPST [Child Passenger Safety Technician] Instructor in 2016. I hope to empower parents to make the right choice for their children."

- Kathleen Clary-Cooke, SafeKids Coordinator, Benton-Franklin Counties.

Focusing on High Risk Populations

Increasing the state's seat belt usage rate will involve a renewed focus on finding ways to convert non-users to users. The state has identified specific groups of people most likely to not use seat belts based on a review of seat belt citations and other research. Some of the groups of people who have been identified as being more likely to not use seat belts are:

- American Indian/Alaska Native (AIAN) males younger than 25.
- Hispanic/Latino males younger than 25.
- White farmers and ranchers older than 55.

From the identification of these focus populations has come some new approaches to media and public education. One example was creating messaging directed at AIAN young men featuring animals native to the reservation, especially deer. The messaging was physically located on top of self-serve gas pumps.

Another example is a tribe that conducted a series of focus groups in spring of 2017 in the communities on its reservation to find out what peoples' attitudes and beliefs were about seat belt use. The information from the focus groups will be used to develop community-specific seat belt use messages.

Safest Ride Campaign

The 2014 statewide child restraint observational survey results showed approximately one in five child passengers under age 13 were illegally riding in the front seat. This places those children at greater risk of injury.

Washington's Child Passenger Safety program (CPS) collaborated with Safe Kids Washington to develop a 2016 media campaign about the importance of children riding buckled up in the back seat. They launched The Safest Ride during CPS week in September of that year. Several SafeKids Coalitions and Target Zero Task Forces participated. The group designed three community awareness activities in addition to conducting pre- and post-observational surveys at targeted elementary schools. Safe Kids Washington provided mini-grants, while Washington's CPS program provided educational tools and resources. Post-observation results from the mini-grants found an average 12.3% increase in the number of children correctly riding in the back seat.

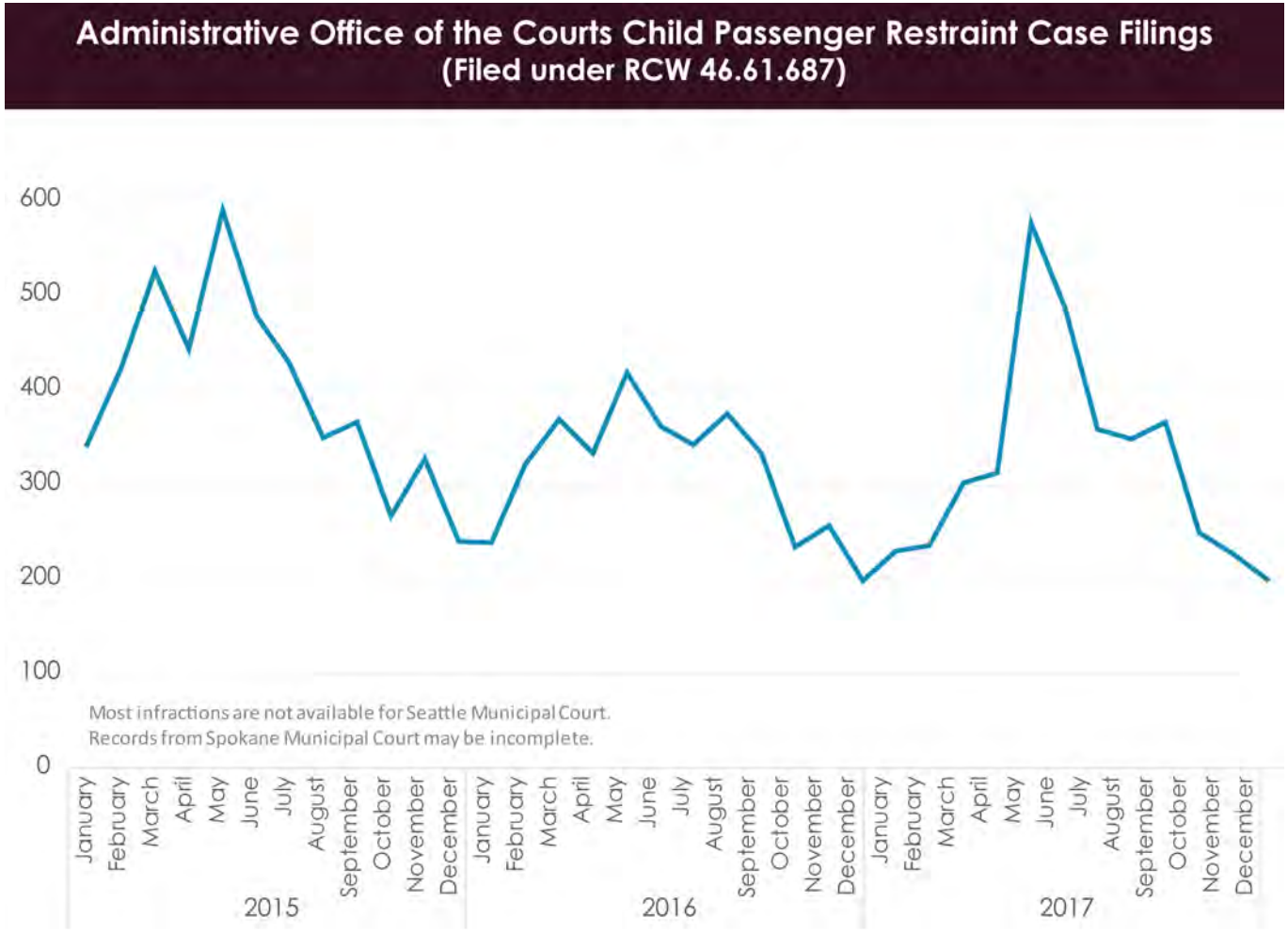
This media campaign continues to be used throughout Washington State and has had materials translated into Spanish.

Improving law enforcement understanding of car seats

Law enforcement officers determine if a child restraint system is appropriate for the child's individual height, weight, and age.

Because of the duration of time required for a formal certification training in child seat use, in 2011 the Washington Traffic Safety Commission (WTSC) supported the creation of a Car Seat Awareness training for law enforcement agencies.

Between May 2015 and 2018, the online class has had 4,147 sessions, considerably more people than could be served in-person.



Washington State's Child Passenger Restraint Safety Program Funds Efforts to Improve Child Safety in Vehicles

Washington's Child Passenger Safety Program provides direct support to a network of over 430 nationally certified car seat technicians. This network has identified local leaders consisting of 17 Target Zero managers, 13 SafeKids coordinators, and other community child passenger safety leaders. The program provides grant funding:

- To increase visibility of child passenger safety issues in Washington.
- To maintain and support the statewide network of child passenger safety technicians and inspection stations.
- To strengthen efforts to increase compliance, enforcement, and adjudication of the seat belt and child restraint law.

Strategies for Reducing Unrestrained Vehicle Occupants (UVO) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
UVO.1. Strengthen efforts to increase compliance, enforcement, and adjudication of the seat belt and child restraint laws.	UVO.1.1 Engage and collaborate with all levels of law enforcement to effectively carry out high visibility communications, outreach, and enforcement of seat belt use, such as the Click It or Ticket campaign. (P, CTW)	Education, Enforcement
	UVO.1.2 Implement Click It or Ticket-style child car seat short-term, high visibility education and enforcement campaigns. (P, CTW)	Education, Enforcement
	UVO.1.3 Identify population groups with lower than average restraint use rates and implement communications, outreach, and enforcement campaigns directed at groups/ areas where restraint use is lowest, particularly rural areas. (R, CTW)	Education, Enforcement, Evaluation
	UVO.1.4 Conduct nighttime patrols during Click it or Ticket statewide seat belt mobilizations. Combine short-term, high visibility seat belt use enforcement with nighttime enforcement programs. (R, CTW)	Education, Enforcement
	UVO.1.5 Encourage law enforcement and other emergency responders to adopt seat belt use policies for their employees. (R, NHTSA)	Leadership
	UVO.1.6 Host car seat awareness and instruction classes, especially in diverse community locations with populations that have lower than average proper car seat use. Target child transport agencies, hospitals, childcare centers, schools, etc. Collaborate with Target Zero Manager, SafeKids Coalition, or local Child Passenger Safety Team. (R, CTW)	Education, Evaluation
	UVO.1.7 – Promote use of currently available online continuing education instruction for current law enforcement officers to train them about what to look for in enforcing child passenger safety law and work with Washington's Criminal Justice Training Commission and the WA State Patrol Academy to conduct trainings for new law enforcement officers and seasoned officers on Washington's child restraint law. (R, CTW)	Education, Enforcement
	UVO.1.8 Promote child car seat distribution programs. (U)	Education
UVO.2. Promote Washington's restraint use laws through education and development of accurate and culturally-appropriate educational materials.	UVO.2.5 Ensure educational materials follow the most recent recommendations issued by the American Academy of Pediatrics. (P, AAP)	Education
	UVO.2.1 Ensure that education about proper child restraint use is provided to people who transport foster children and Medicaid participants. (R, ABACCL)	Education
	UVO.2.2 Ensure that people who provide medical and other transport receive education about not allowing unrestrained humans in the back of moving pickup trucks. (R, IIHS)	Education
	UVO.2.3 Provide education to city and county governments about the science involved with using photo enforcement to increase seat belt compliance. (U)	Education, Leadership
	UVO.2.4 Develop a briefing paper regarding the effects of adding a $25 administrative fee for violators to fund child passenger safety efforts. (U)	Leadership, Evaluation
P: Proven R: Recommended U: Unknown		

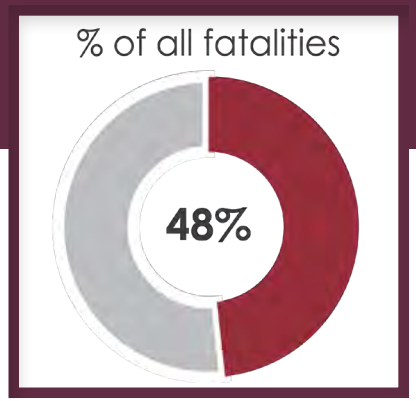
Strategies for Reducing Unrestrained Vehicle Occupants (UVO) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
UVO.3. Maintain and support the statewide network of child passenger safety technicians.	UVO.3.1 Support opportunities for child car seat inspection events, CPS Technician certification courses, and recertification of technicians. Work collectively with Washington's Target Zero managers, SafeKids Coalitions, and local child passenger safety teams. (R, CTW)	Education, Leadership
	UVO.3.2 Continuously monitor fatality and serious injury crash data involving unrestrained or improperly restrained child passengers to help direct geographic/demographic areas of focus. (R, DDACTS)	Evaluation
	UVO.3.3 Convene a group of CPS stakeholders from different disciplines and areas of the state, including existing network of Washington's Target Zero managers, SafeKids Coalitions, and other local child passenger safety teams, to participate in product review, media efforts, trainings, and local project implementation. (R, WTSC)	Leadership
	UVO.3.4 Explore options for gaining a measure of statewide child restraint use. (R, WTSC)	Evaluation
	UVO.3.5 Establish a database to collect all of Washington's car seat inspection data. Analyze information received to determine major misuse issues; share with statewide CPS network; incorporate findings into media campaigns. (U)	Evaluation
UVO.4. Increase visibility of child passenger safety issues in Washington.	UVO.4.1 Provide access to appropriate information, materials, and guidelines for implementing media and programs to increase proper child restraint use. (R, CTW)	Education
	UVO.4.2 Develop and implement media campaigns targeting major misuse issues in Washington State, which are currently booster age children and riding in the front seat. (R, CTW)	Education
	UVO 4.3 – Utilize Safest Rides protocols to offer positive reinforcement to parents/guardians correctly transporting children. (R, DOH)	Education
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Unrestrained Vehicle Occupants, refer to the Impairment, Young Drivers, and Older Drivers chapters.

Crash Type

Certain types of vehicle crashes are more serious for drivers and other road users. The data show that crashes that involve lane departure and intersections are top priorities.

Lane Departure



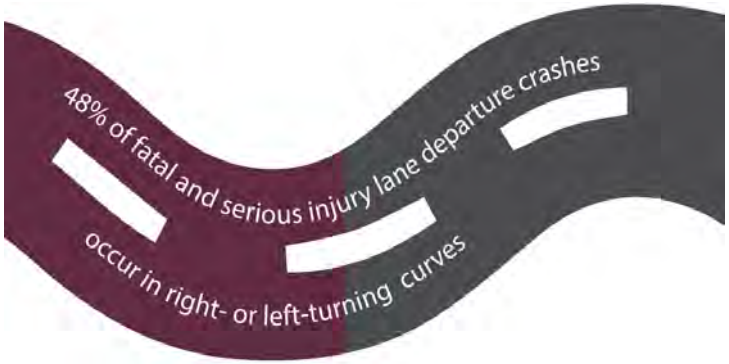
Lane departure crashes involve a vehicle unintentionally leaving its lane of travel. This includes both vehicles leaving a lane to the right (run-off-the-road crashes) as well as vehicles leaving a lane to the left (either opposite-direction crashes or run-off-the-road crashes).

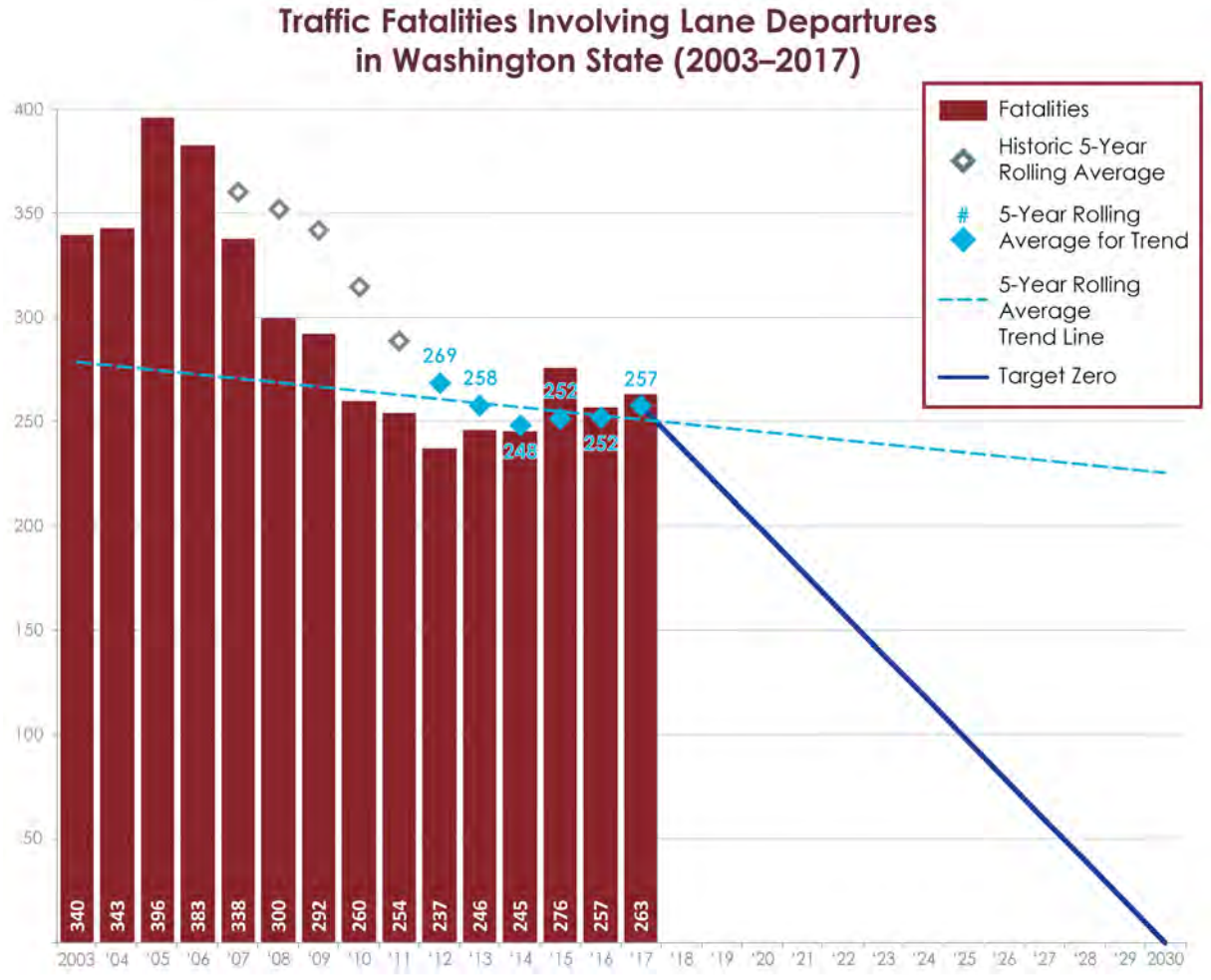
Key Issues for Lane Departures

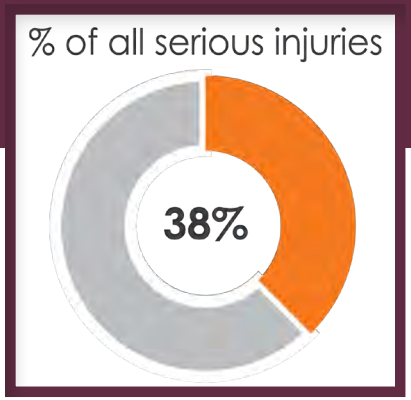
Roadside conditions. Nearly two-thirds of all fatal or serious injury lane departure crashes involve a vehicle leaving the road and hitting a fixed object.

Horizontal (left- or right-turn) curves. Nearly half of all fatal or serious injury lane departure crashes involve a vehicle traveling in a left- or right-turning curve.

Nighttime and lighting conditions. Nearly half of all fatal or serious injury lane departure crashes (44%) happen at night. Twenty-five percent happen during darkness where no roadside lighting is present. This is despite the fact that the majority of driving, and of all crashes, occurs during daylight hours.





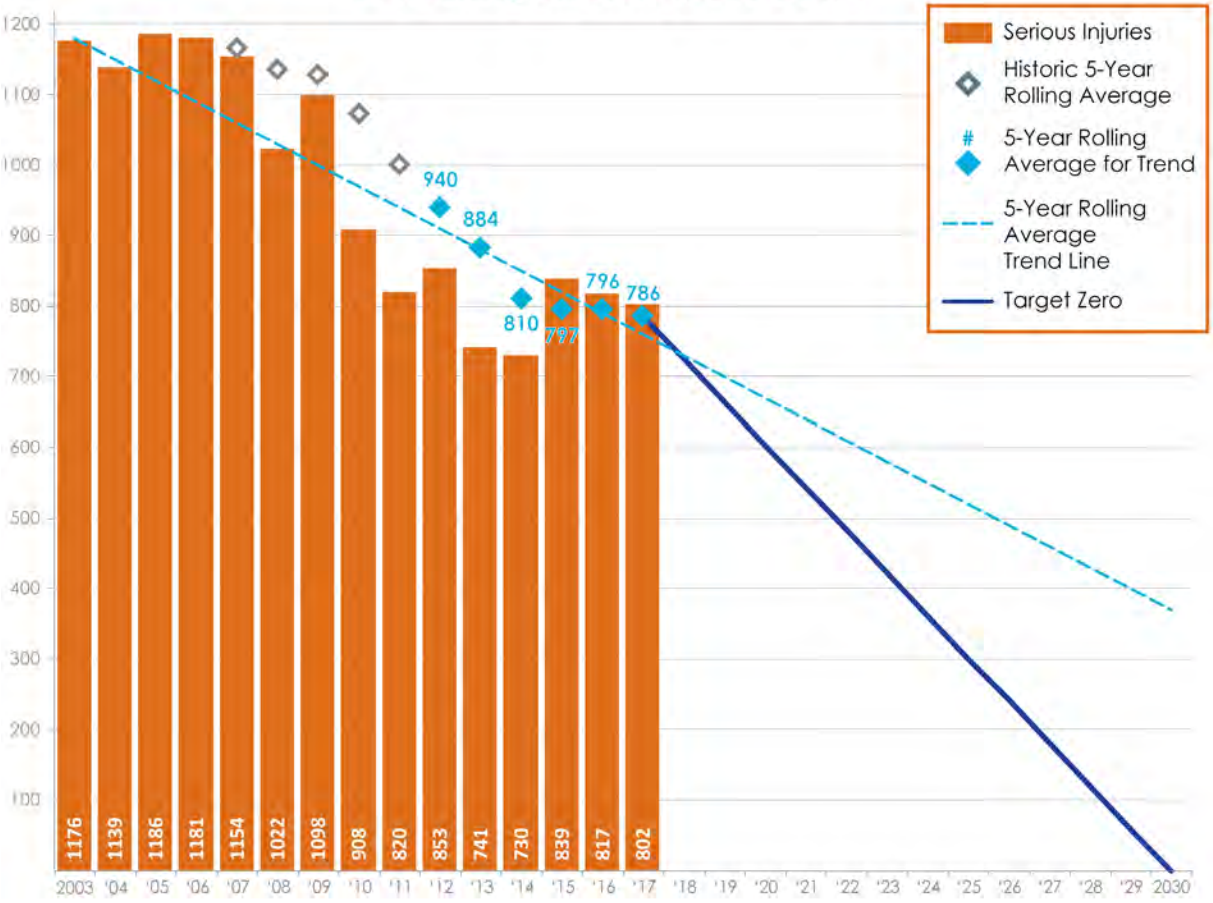


Priority 1

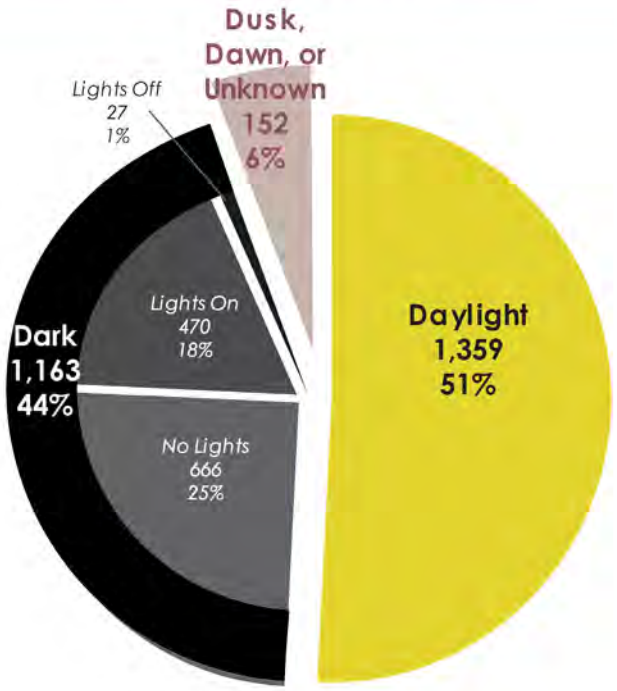
Key Countermeasures for Lane Departures Include:

- Local Road Safety Plans
- High friction surface treatments
- Improved roadway visibility

Traffic Serious Injuries Involving Lane Departures in Washington State (2003–2017)



Light Conditions for Lane Departure Fatality and Serious Injury Crashes
Washington State 2015–2017



BETWEEN 2015–2017 THERE WERE

796 FATALITIES AND 2,458 SERIOUS INJURIES

INVOLVING A LANE DEPARTURE

FATALITIES INVOLVING LANE DEPARTURES OFTEN INVOLVE OTHER FACTORS

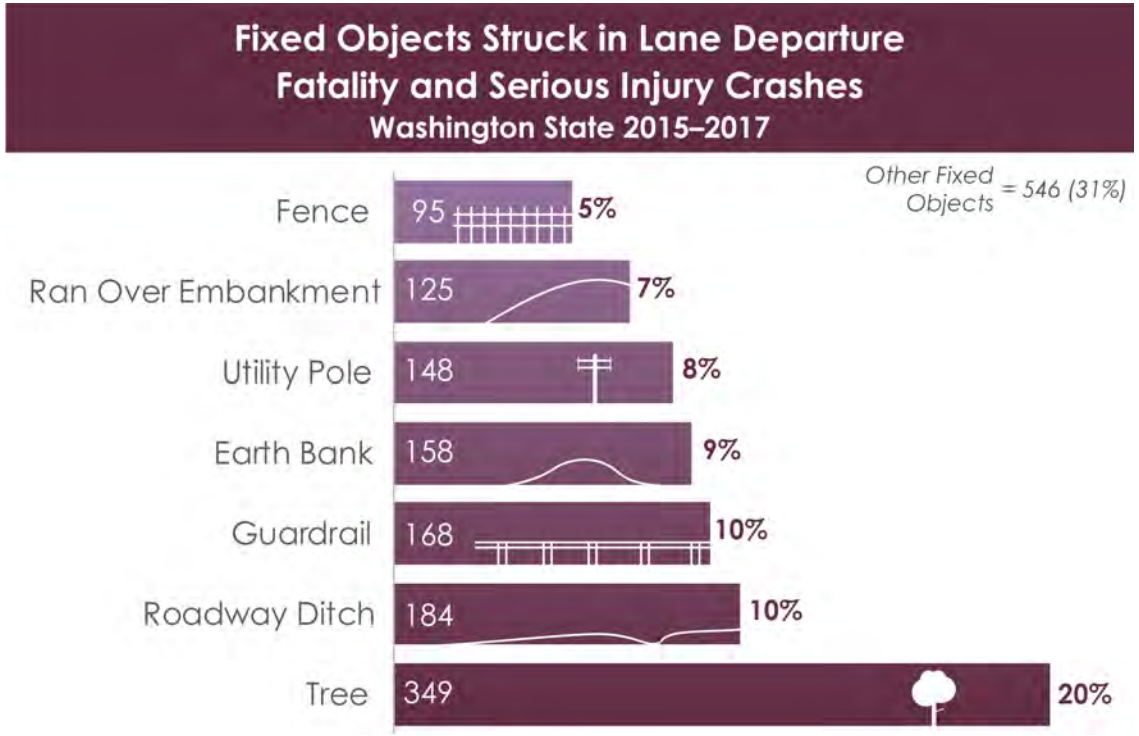
The top two factors that overlap with Lane Departures are **IMPAIRMENT** and **SPEEDING**

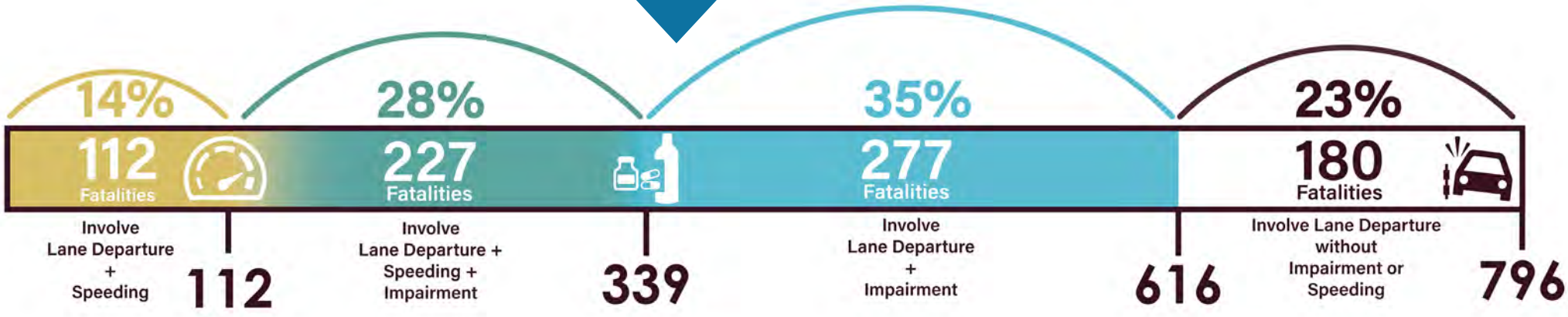
OUT OF **796 FATALITIES**:

63% also involved IMPAIRMENT

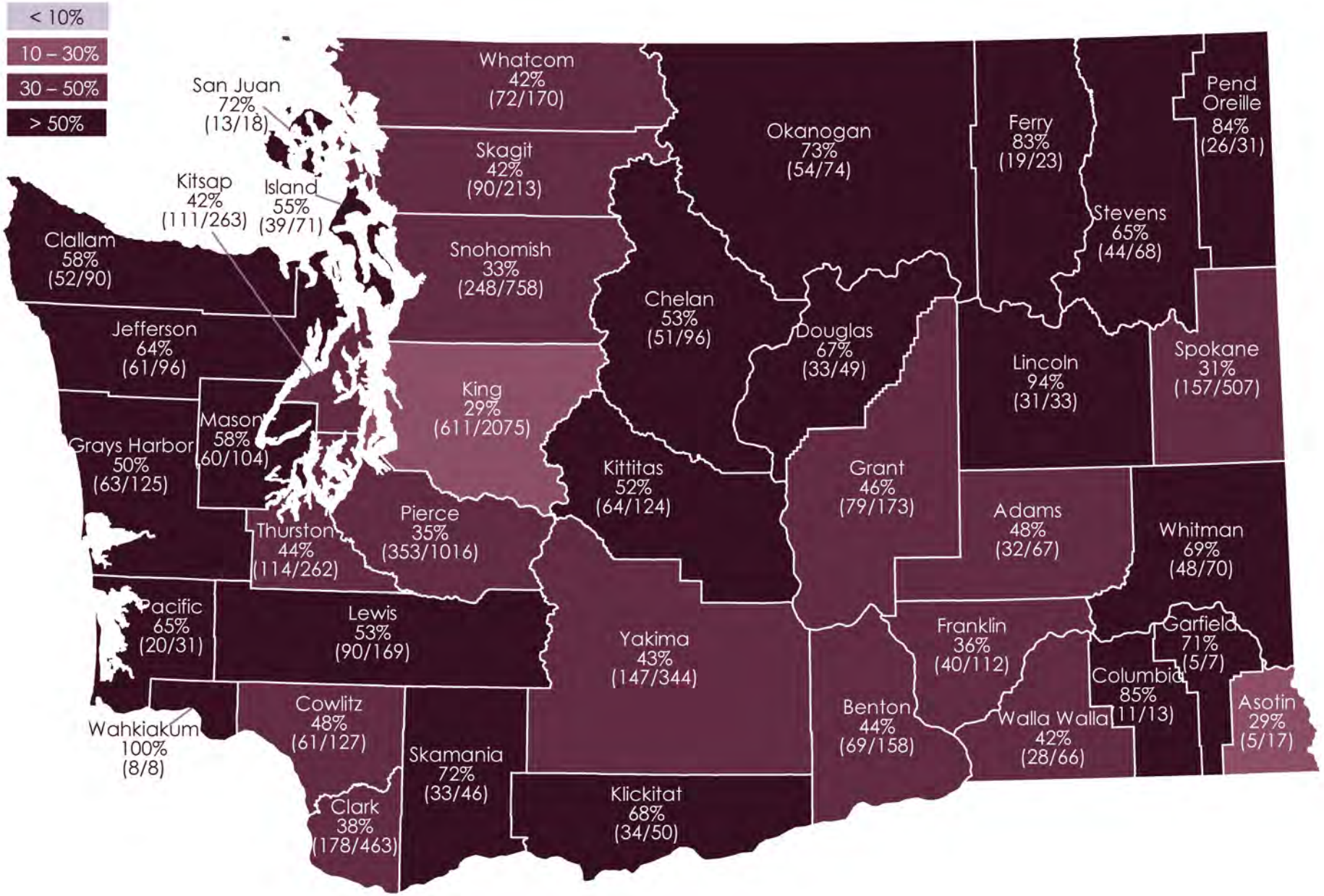
43% also involved SPEEDING

and 28% involved a combination of both





Percent of All Fatal and Serious Injury Crashes That Involved Lane Departures, by County (2015–2017)



Key Countermeasures for the 2019 Plan

Local Road Safety Plans

These plans use a systemic approach to identifying priority locations to be addressed. The plans identify the most common roadway and operational factors associated with fatal and serious injury crashes – for example, posted speeds, traffic volumes, horizontal curves, and roadside condition – and then prioritize locations that have the greatest number of these factors present.

This systemic analysis helps to prioritize investments, which can be difficult due to the scattered nature of actual lane departure crashes. With over 39,000 centerline miles on county roads alone, in addition to state highways and city streets, it can be difficult to isolate specific locations based solely on crash data. Investing in these systemic locations has the greatest potential to prevent future fatal or serious injury crashes from occurring.

Local Road Safety Plans have been developed by 85% of the counties in Washington. In addition, more than 20 cities have developed these plans (or Vision Zero plans) as well.

Local Road Safety Plans are relatively recent developments in our state. The majority of county plans were developed in 2014 and updated in 2017; most city plans were developed in 2018. While it is too early to draw any conclusions from the deployment of countermeasures identified in these plans, the initial trends on county roads look promising. For instance, there have been greater decrease in fatal and serious injury crashes on county roads than for roads owned by other jurisdictions; early 2018 data indicate that county roads have experienced a ~12% drop compared to 2017, while other roadway types increased slightly.

High Friction Surface Treatments

This specialized road surface treatment involves putting down a thin, strong epoxy (glue) with a very sharp rock layer that greatly increases the friction between vehicle tires and the roadway. The treatment stays in place for many years without needing to be reapplied. High Friction Surface Treatment (HFST) is one of the best methods to keep vehicles on the roadway, especially in horizontal curves and when roadway and tire friction are typically low, such as during wet weather.

HFST has been deployed by at least eight counties and two cities in Washington, as well as on WSDOT-maintained roads. Some of these entities have done a single project/section, while others have addressed a large number of areas – for example, King County has installed HFST in 49 locations. The majority of the locations addressed have been horizontal curves, with some work on ramps and at intersections.

HFST projects in Washington have only recently been deployed – most have been constructed in the past three years. In addition, many of the locations where they have been deployed have been based on Local Road Safety Plans, which use roadway and operational factors to determine which locations to address. Therefore, it may take a while to determine the crash reduction benefits. However, other states with longer histories of using HFST have shown significant benefits. According to information available in the Crash Modification Factor (CMF) Clearinghouse, HFST shows a 24% reduction in total crashes, with a 52% reduction in crashes on wet roads.

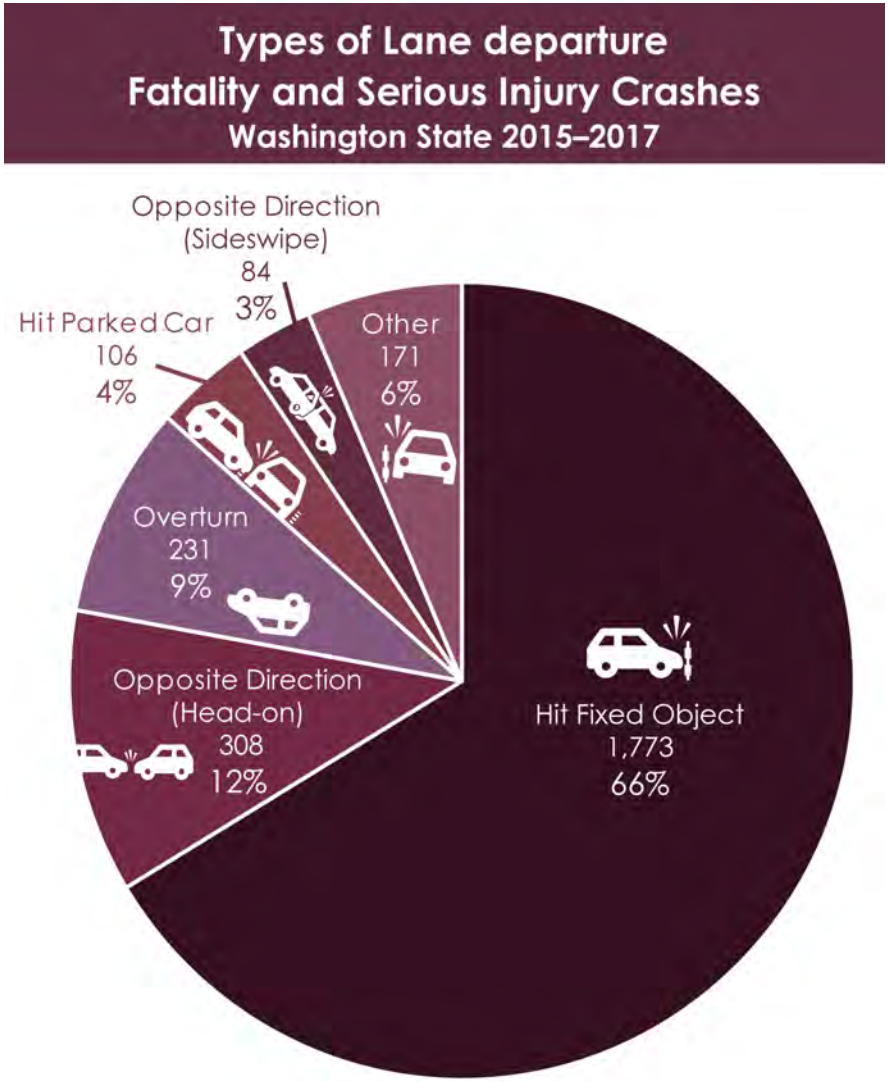
Improved Roadway Visibility

Nearly half of the fatal or serious injury roadway departure crashes in Washington occur during low-visibility conditions. Because of this, deploying countermeasures that increase visibility during all conditions can be very effective at keeping vehicles on the road. Roadway visibility modifications could include upgraded signing, pavement markings, roadway lighting, and delineation. Examples include flexible guideposts and reflective markers on guardrail.

A large number of agencies all across Washington have made visibility additions to the roadway network. This is especially true in the case of additional or larger signing, particularly on horizontal curves, with nearly a decade of significant investment in this countermeasure by both WSDOT and many counties.

There are a variety of studies and measures of effectiveness available in the CMF Clearinghouse for different roadway visibility contexts and visibility related modifications, both in Washington and nationally. While not all the studies indicate the same level of change, some examples include:

- Installing a combination of chevron signs, curve warning signs, and flashing beacons on horizontal curves has shown a 40% reduction in crashes.
- Installing a combination of edge lines, center lines, and flexible guideposts has shown a 45% reduction in injury crashes.
- Installing illumination has shown a 30% reduction in injury crashes.



Strategies for Reducing Lane Departure (LDX) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
LDX.1. Analyze lane departure data to prioritize safety investments.	LDX.1.1 Develop and implement a Local Road Safety Plan. (P, WSDOT)	Engineering, Leadership
	LDX.1.2 Inventory horizontal curves and gather data to support development of programs and projects to reduce the severity of lane departure crashes. (R, WSDOT)	Evaluation
	LDX.1.3 Locate and inventory fixed objects inside the clear zone to support development of programs and projects to reduce the severity of lane departure crashes. (R, WSDOT)	Evaluation
LDX.2. Reduce opposite direction crashes.	LDX.2.1 Install centerline rumble strips. (P, CMF)	Engineering
	LDX.2.2 Install raised medians or median barriers. (P, CMF)	Engineering
	LDX.2.3 Install raised pavement markers or profiled center lines. (R, CMF)	Engineering
LDX.3. Reduce the number of vehicles leaving the roadway.	LDX.3.1 Install chevron signs, curve warning signs, and/or sequential flashing beacons in curves. (P, CMF)	Engineering
	LDX.3.2 Improve pavement friction using high friction surface treatments. (P, CMF)	Engineering
	LDX.3.3 Install center and/or bicycle-friendly edge line rumble strips. (P, CMF)	Engineering
	LDX.3.4 Install lighting. (R, CMF)	Engineering
	LDX.3.5 Install edge lines, especially on curves, where adequate shoulders exist. (R, CMF)	Engineering
	LDX.3.6 Install wider edge lines. (R, CMF)	Engineering
	LDX.3.7 Install delineation on fixed objects that cannot be removed from the clear zone, such as guardrails and other roadway hardware. (U)	Engineering
	LDX.3.8 Install edge line rumble stripes and profiled center and bicycle-friendly edge lines. (U)	Engineering
	LDX.3.9 Install dynamic curve warning signs. (U)	Engineering
LDX.4. Minimize the consequences of leaving the roadway.	LDX.4.1 Increase distance to roadside features on high-speed roadways by removing/ relocating fixed objects, such as trees and utility poles, in the clear zone. (P, CMF)	Engineering
	LDX.4.2 Flatten side slopes to reduce the potential for rollover crashes. (P, CMF)	Engineering
	LDX.4.3 Install roadside safety hardware such as guardrail, cable barrier, or concrete barrier. (P, CMF)	Engineering
	LDX.4.4 Install safety edge treatment to reduce edge drop-off crashes. (P, CMF)	Engineering
	LDX.4.5 Implement roadway design to be consistent with the surrounding context. (R, NCHRP)	Engineering
	LDX.4.6 Remove or replace existing barrier that is damaged or non-functional. (R, FHWA)	Engineering
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Lane Departure, refer to the Impairment, Speeding, and Distraction chapters.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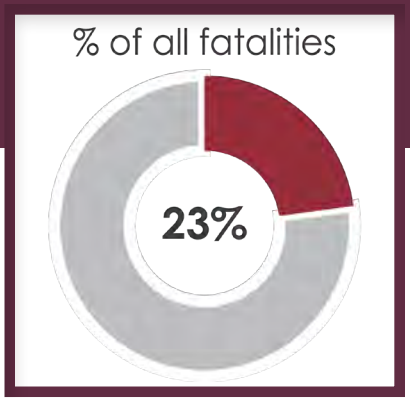
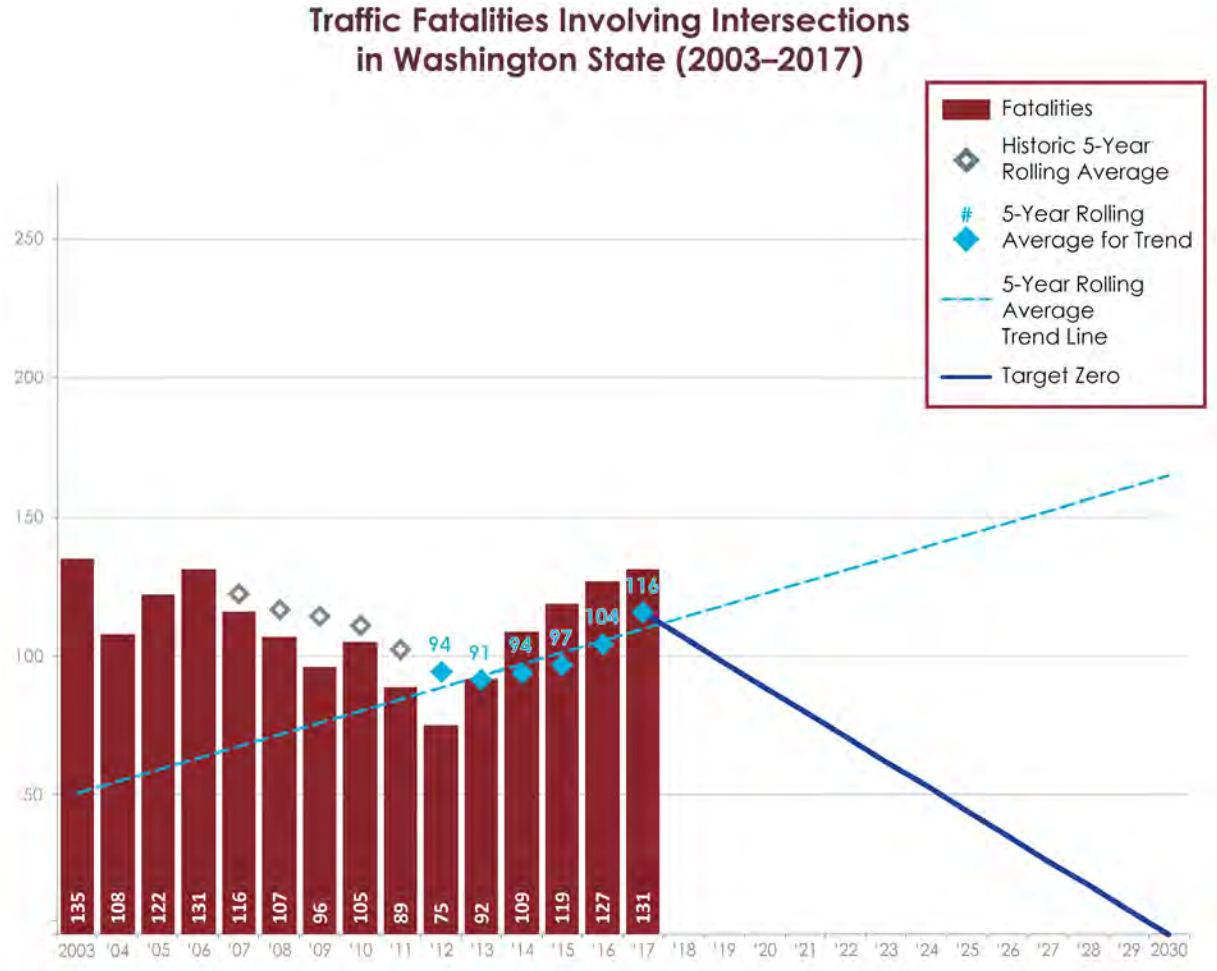
Intersections

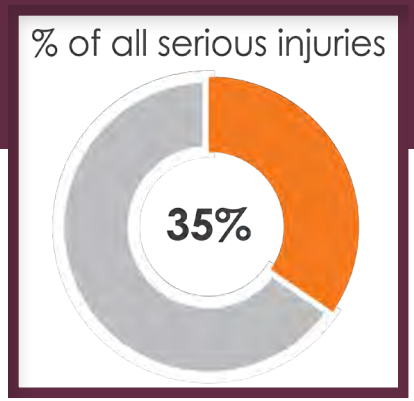


Intersections are a conflict point for traffic. Because of this, when people make mistakes at these locations, it often results in a crash. One of the major objectives of addressing intersection-related crashes is to reduce the severity of those crashes when they occur.

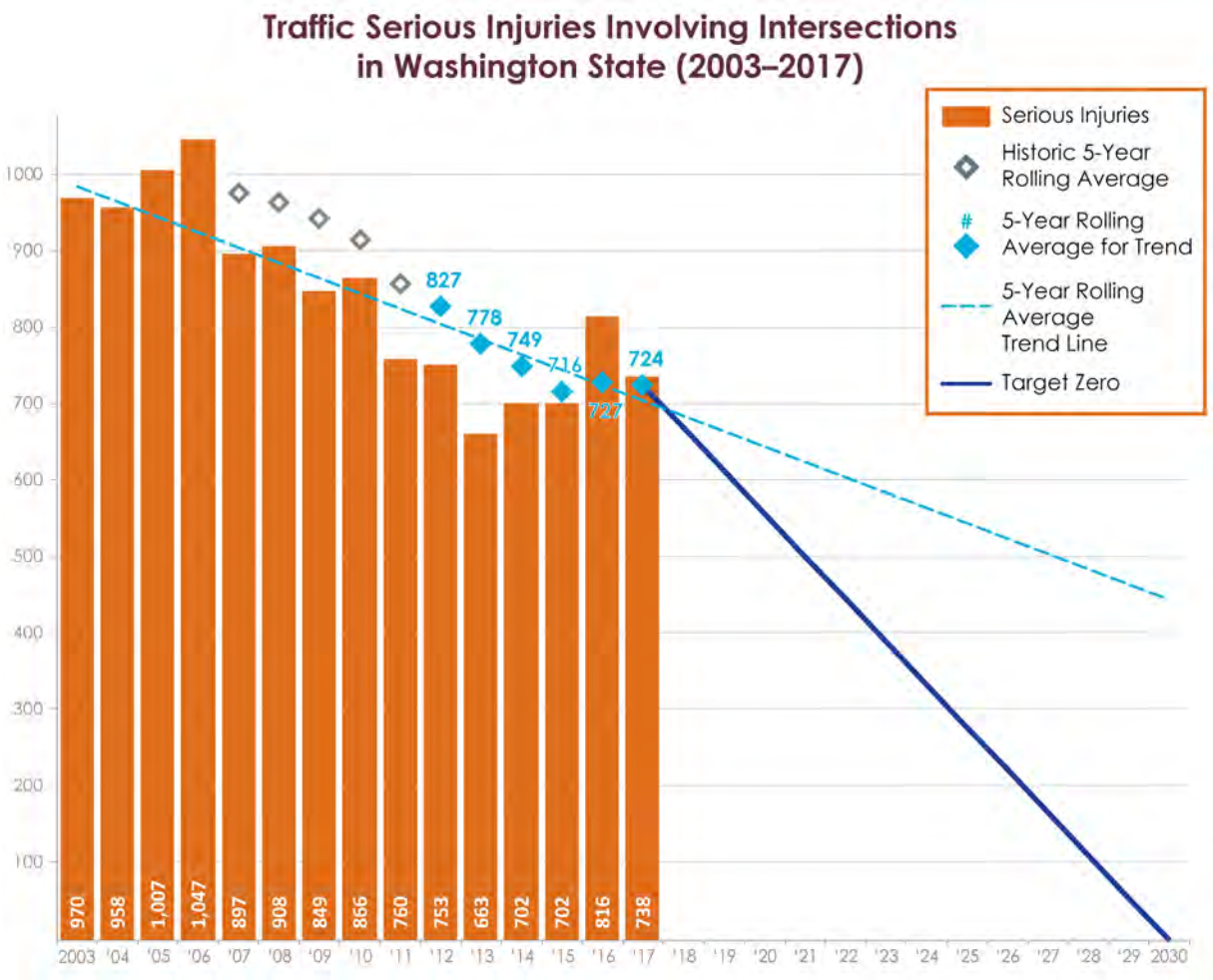
Key Issues for Intersections

- **Angle crashes.** Almost half of all fatal or serious injury intersection-related crashes involve an angle crash. This involves a vehicle being hit in a T-bone style crash, either turning left in front of oncoming traffic (one-third of fatal or serious injury angle crashes), or entering from a side street and pulling out in front of oncoming traffic (two-thirds).
- **Nighttime conditions.** More than one-third of all fatal or serious injury intersection-related crashes happen at night. This condition disproportionately impacts pedestrians, as less than one-fifth of daylight-hour fatal and serious injury intersection crashes involve a pedestrian, but more than one-third of nighttime crashes do.
- **Bicyclist and pedestrian crashes.** Nearly one-third of all fatal or serious injury intersection-related crashes involve a pedestrian or bicyclist. Refer to the Pedestrians and Bicyclists chapter page 120 for more information.





Priority 1



Key Countermeasures for Intersections Include:

- Roundabouts
- Improved intersection visibility
- Signal operations improvements

BETWEEN 2015–2017 THERE WERE

377 FATALITIES AND 2,256 SERIOUS INJURIES

INVOLVING AN INTERSECTION

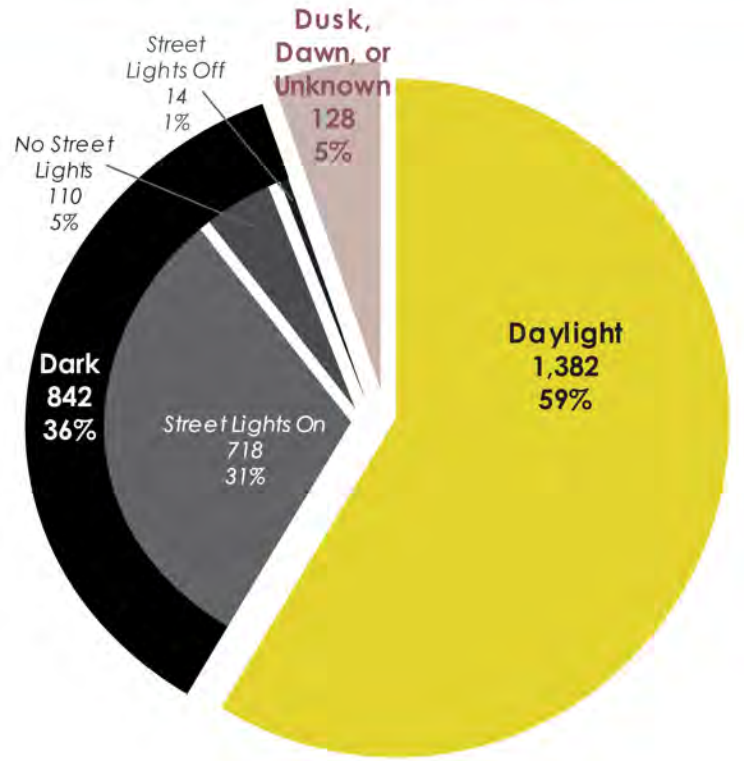
FATALITIES INVOLVING INTERSECTIONS OFTEN INVOLVE OTHER FACTORS

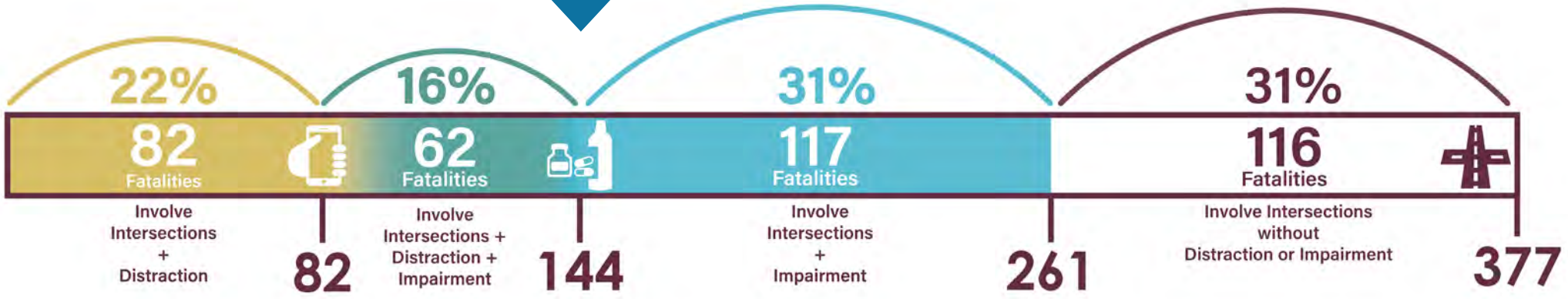
The top two factors that overlap with Intersections are **DISTRACTION** and **IMPAIRMENT**

OUT OF **377 FATALITIES**:

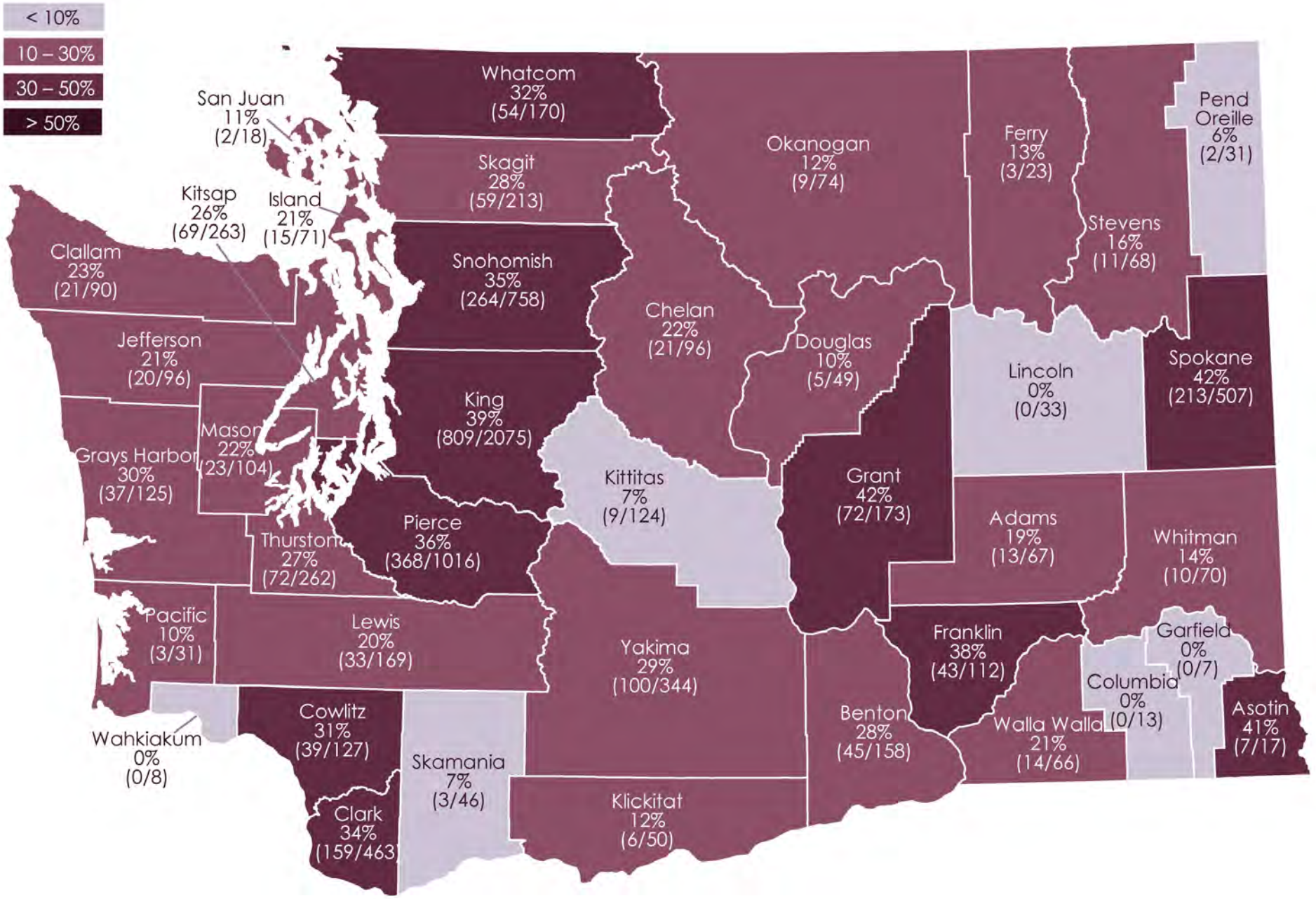
38% also involved DISTRACTION
47% also involved IMPAIRMENT
and 16% involved a combination of both

Light Conditions for Fatality and Serious Injury Crashes at Intersections
Washington State 2015–2017





Percent of All Fatal and Serious Injury Crashes That Involved Intersections, by County (2015–2017)



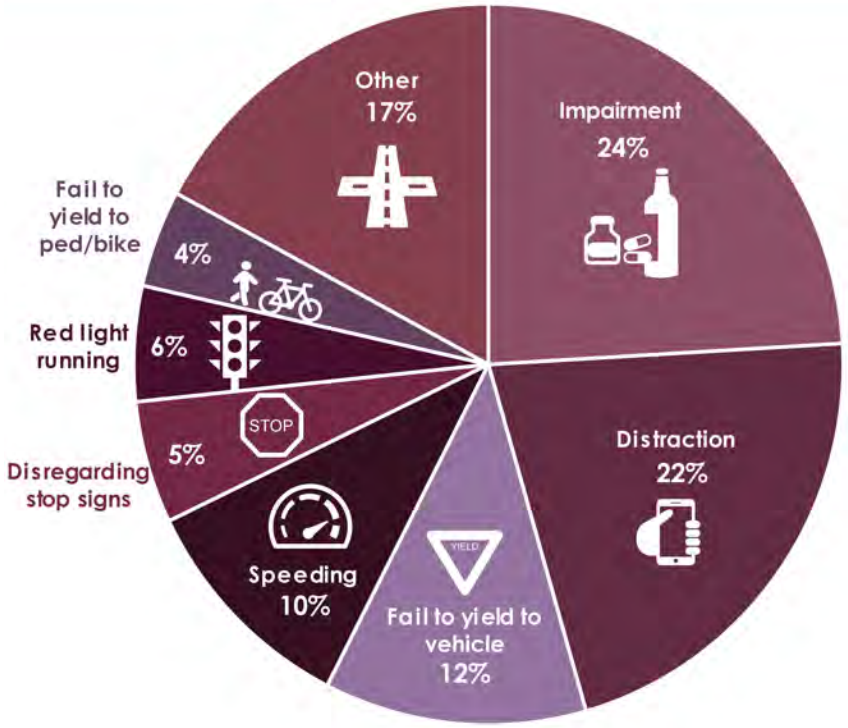
Roundabouts

Beyond being a great countermeasure at reducing intersection-related fatal and serious injury crashes overall, roundabouts are especially effective at reducing angle crashes. First, they create a low speed environment. Perhaps more importantly, the physical channeling of vehicles almost entirely eliminates angle crashes: drivers cannot "run" a roundabout like they do a red light or a stop sign. In addition, there are no left-turn movements at a roundabout, as exiting drivers are always making a through or right-turn move. This can be particularly helpful for older drivers (see page 152).

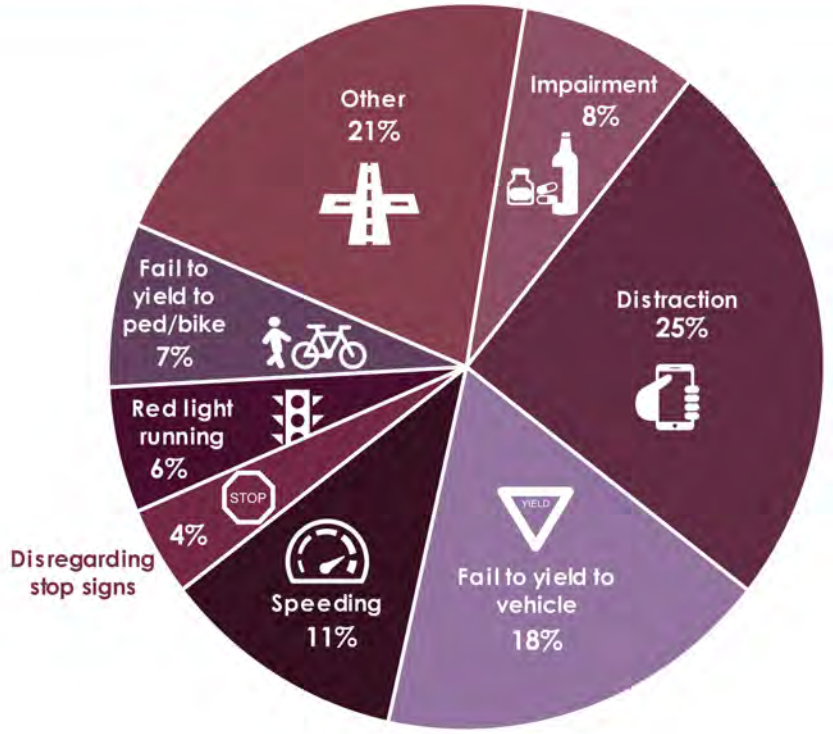
Washington has more than 400 roundabouts on the state and local system. Of 39 counties in the state, 24 (62%) have at least one roundabout.

According to information from the Crash Modification Factors (CMF) Clearinghouse, both in Washington and nationally, significant safety benefits result from deploying roundabouts. Most studies (depending on previous conditions) put the reduction in fatal or serious injury crashes at 50–100%.

Fatal Crashes at Intersections
(% of Driver Contributing Circumstances)
Washington State 2015–2017



Serious Injury Crashes at Intersections
(% of Driver Contributing Circumstances)
Washington State 2015–2017



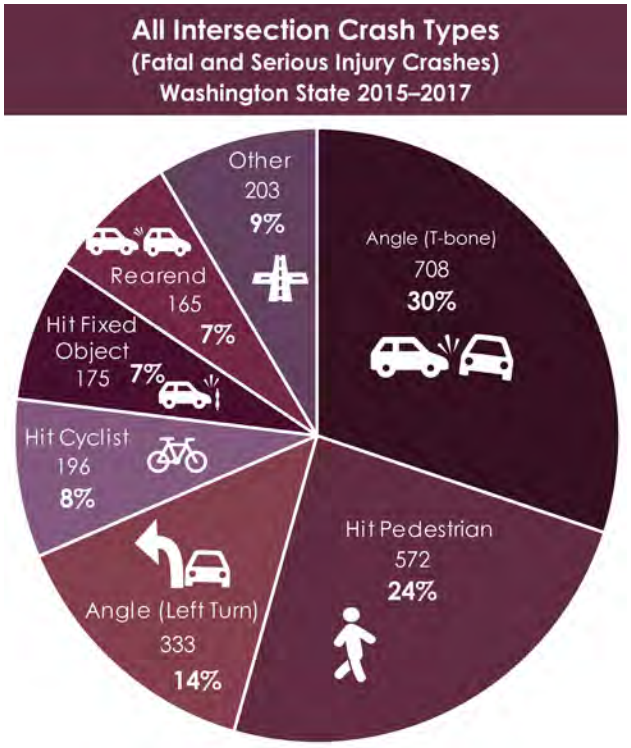
Improved Intersection Visibility

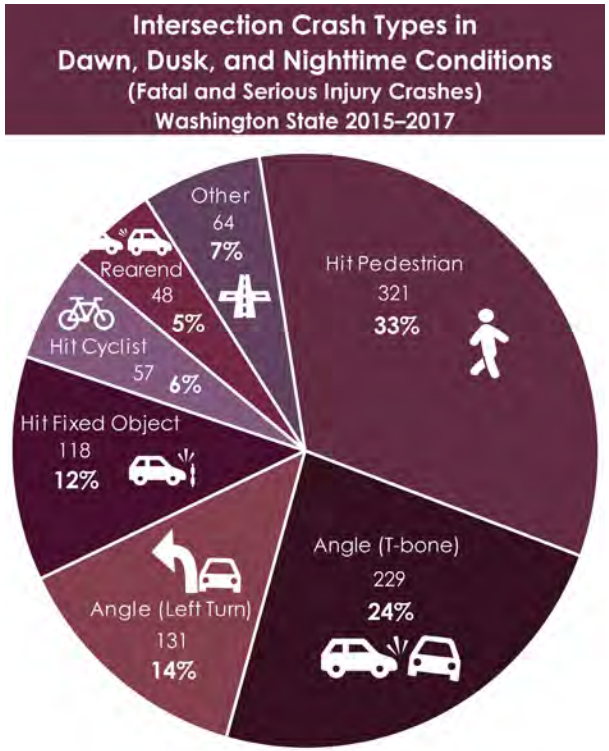
Improved intersection visibility starts with roadway lighting and markings. However, many of the nighttime intersection crashes already occur at lighted intersections. Additional visibility and driver recognition of moving through an intersection is also needed, especially to help combat distracted driving. These include upgraded signing, targeted lighting, and delineation such as reflective markings on signals and on sign posts.

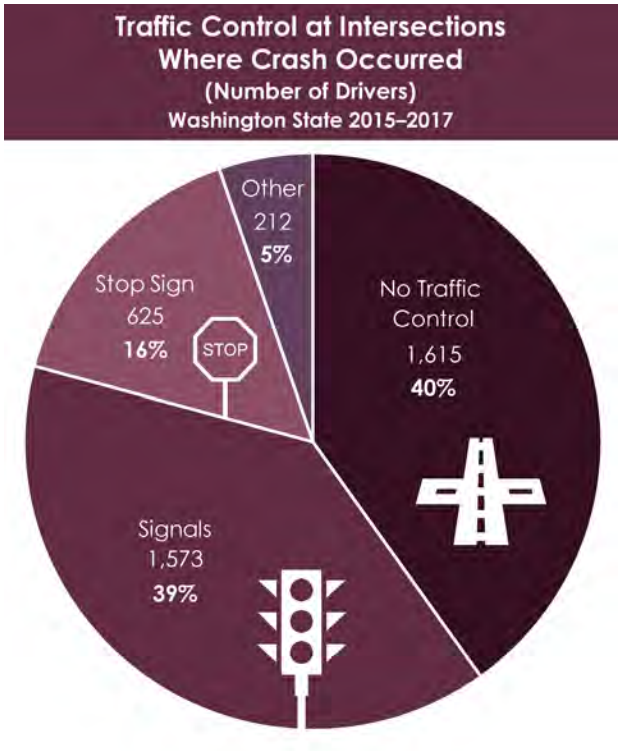
City, county, and state engineers have been implementing best practices for visibility modifications on roadways around the state.

The CMF Clearinghouse includes a variety of studies and measures of effectiveness for different roadway visibility countermeasures in different roadway contexts, both in Washington and nationally.

- Intersection lighting leads to a approximately 40% reduction in nighttime crashes.
- Signing and marking improvements at stop-controlled intersections lead to approximately 10% reduction in fatal and injury crashes (25% in rural areas).
- Signing and visibility improvements at signalized intersections lead to approximately 10% reduction in fatal and injury crashes (15% in urban areas).
- Reflective markings on signals lead to approximately 15% reduction in crashes.







Signal Operations Improvements

Roughly 40% of crashes related to intersections occur at intersections equipped with traffic signals. Making operational changes to traffic signals may offer reduction in crash potential to a variety of users of the intersection, especially pedestrians. Those modifications include leading pedestrian intervals, protected-only left-turn movements, and restricting turn movements (left or right).

A few agencies have begun widespread implementation of leading pedestrian intervals for their signalized network. Restricting turning movements and limiting left turns to protected-only movements have been done by many agencies, but only on a site-by-site basis — there has been no coordinated, statewide implementation campaign.

While widespread implementation of leading pedestrian intervals is very recent in Washington, studies from the CMF Clearinghouse have shown a 59% decrease in pedestrian crashes at locations implementing this treatment. Eliminating or restricting turning movements has the potential to almost completely prevent certain crash types. As an example, national studies show a 99% decrease in left-turning crashes in locations where protected-only left turns are implemented.

RELATED AREA: Vehicle-Train Crashes

The train data in Target Zero is limited to fatal and serious crash events between trains and motor vehicles at highway-rail grade crossings.

Between 2015 and 2017, there were 12 fatalities and four serious injuries involving trains and vehicles at railroad crossings. Railroad crossings are intersections used by two very different modes of transportation. The crossings are multi-jurisdictional, meaning both roadway and railroad authorities are responsible for different aspects of design and maintenance.

The Washington Utilities and Transportation Commission (UTC) has regulatory authority over safety at most public railroad crossings. The UTC's Rail Safety Program oversees rail operations in the state, inspects railroad crossings, resolves complaints received from the public and other stakeholders, and funds rail safety projects. The commission also promotes public awareness in partnership with the national nonprofit Operation Lifesaver Program.

The UTC is working to prevent train and vehicle crashes by:

- Providing Operation Lifesaver outreach and education in communities across the state.
- Funding projects to improve railroad safety at public crossings by administering grants through the Grade Crossing Protective Fund.
- Routinely inspecting safety and maintenance at railroad crossings.
- Identifying opportunities to upgrade safety at crossings in partnership with road authorities and railroads.

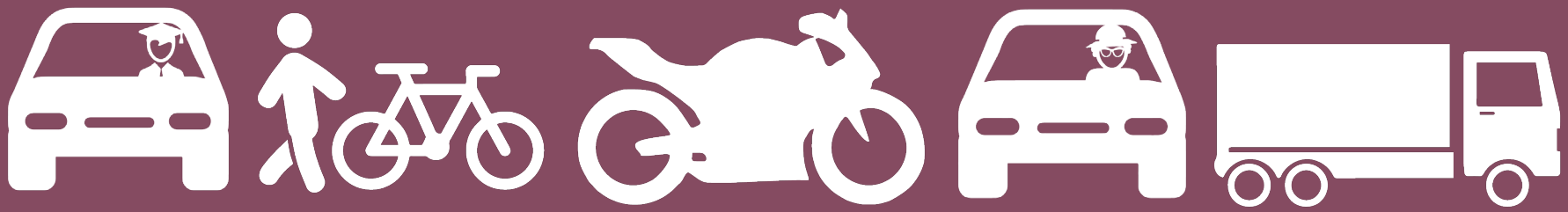
For more information, please visit the UTC website (www.utc.wa.gov/publicSafety/railsafety).

Strategies for Reducing Intersection (INT) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
INT.1. Reduce crashes at intersections.	INT.1.1 Develop and implement a Local Road Safety Plan. (P, WSDOT)	Engineering, Leadership
	INT.1.2 Install or convert intersections to roundabouts. (P, CMF)	Engineering
	INT.1.3 Convert four-lane roadways to three-lane roadways with center turn lane (road diet). (P, CMF)	Engineering
	INT.1.4 Convert permitted left turns to protected left turns at signals. (P, CMF)	Engineering
	INT.1.5 Install left turn lanes. (P, CMF)	Engineering
	INT.1.6 Install intersection conflict warning systems (real time warning) to warn drivers on mainline or side streets of conflicting vehicle traffic at rural intersections. (P, CMF)	Engineering
	INT.1.7 Increase pavement friction using high friction surface treatments. (P, CMF)	Engineering
	INT.1.8 Remove unwarranted signals. (P, CMF)	Engineering
	INT.1.9 Modify signal phasing to implement a leading pedestrian interval. (P, CMF)	
	INT.1.10 Install lighting. (R, CMF)	Engineering
	INT.1.11 Coordinate arterial signals. (R, CMF)	Engineering
	INT.1.12 Convert to flashing yellow arrows at signals. (R, CMF)	Engineering
	INT.1.13 Optimize traffic signal clearance intervals. (R, CMF)	Engineering
	INT.1.14 Restrict or eliminate turning maneuvers at intersections. (R, NCHRP)	Engineering
	INT.1.15 Implement restricted access to properties/driveways adjacent to intersections using closures or turn restrictions. (R, NCHRP)	Engineering
	INT.1.16 Implement systemic signing, marking, and visibility improvements at intersections. (R, CMF)	Engineering
INT.2. Improve driver compliance at intersections.	INT.2.1 Install red light cameras (automated enforcement) at locations with angle crashes. (P, CMF)	Enforcement, Engineering, Leadership
	INT.2.2 Implement automated speed enforcement cameras for approach speeds. (P, CMF)	Enforcement, Engineering, Leadership
	INT.2.3 Provide targeted stop sign/signal enforcement at intersections and intersection approaches. (R, NCHRP)	Enforcement
	INT.2.4 Implement automated enforcement for “block the box” violations. (U)	Enforcement, Engineering, Leadership
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Intersection (INT) Fatalities and Serious Injuries		
Objective	**Strategies**	**Implementation Areas**
INT.3. Improve driver awareness of intersections.	INT.3.1 Add retroreflective borders to signal back plates. (P, CMF)	Engineering
	INT.3.2 Install transverse rumble strips on rural stop-controlled approaches. (P, CMF)	Engineering
	INT.3.3 Provide advanced dilemma zone detection (real time warning) for high speed approaches at rural signalized intersections. (R, CMF)	Engineering
	INT.3.4 Increase sight distance (visibility) of intersections on approaches. (R, CMF)	Engineering
	INT.3.5 Increase visibility of signals and signs at intersections. (R, NCHRP)	Engineering
	INT.3.6 Provide targeted public information and education about crash-contributing factors found at specific intersections. (R, NCHRP)	Education
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Intersections, refer to the Impairment, Distraction, and Pedestrians and Bicyclists chapters.

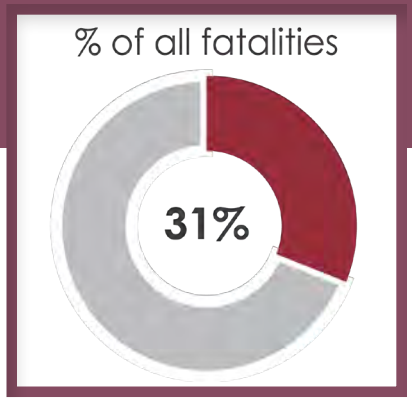
Road Users



Certain road users are more susceptible to fatal and serious injury crashes. Some are types of drivers, such as younger and older drivers. Others are more vulnerable in crashes, such as pedestrians, bicyclists, and motorcyclists.

Reducing crash potential for all users is an important aspect of health equity for Washington. In this section of the Target Zero plan, we analyze who are susceptible road users, why they are more likely to be involved in fatalities and serious injuries, and how to safeguard them.

Young Drivers (16–25 years old)

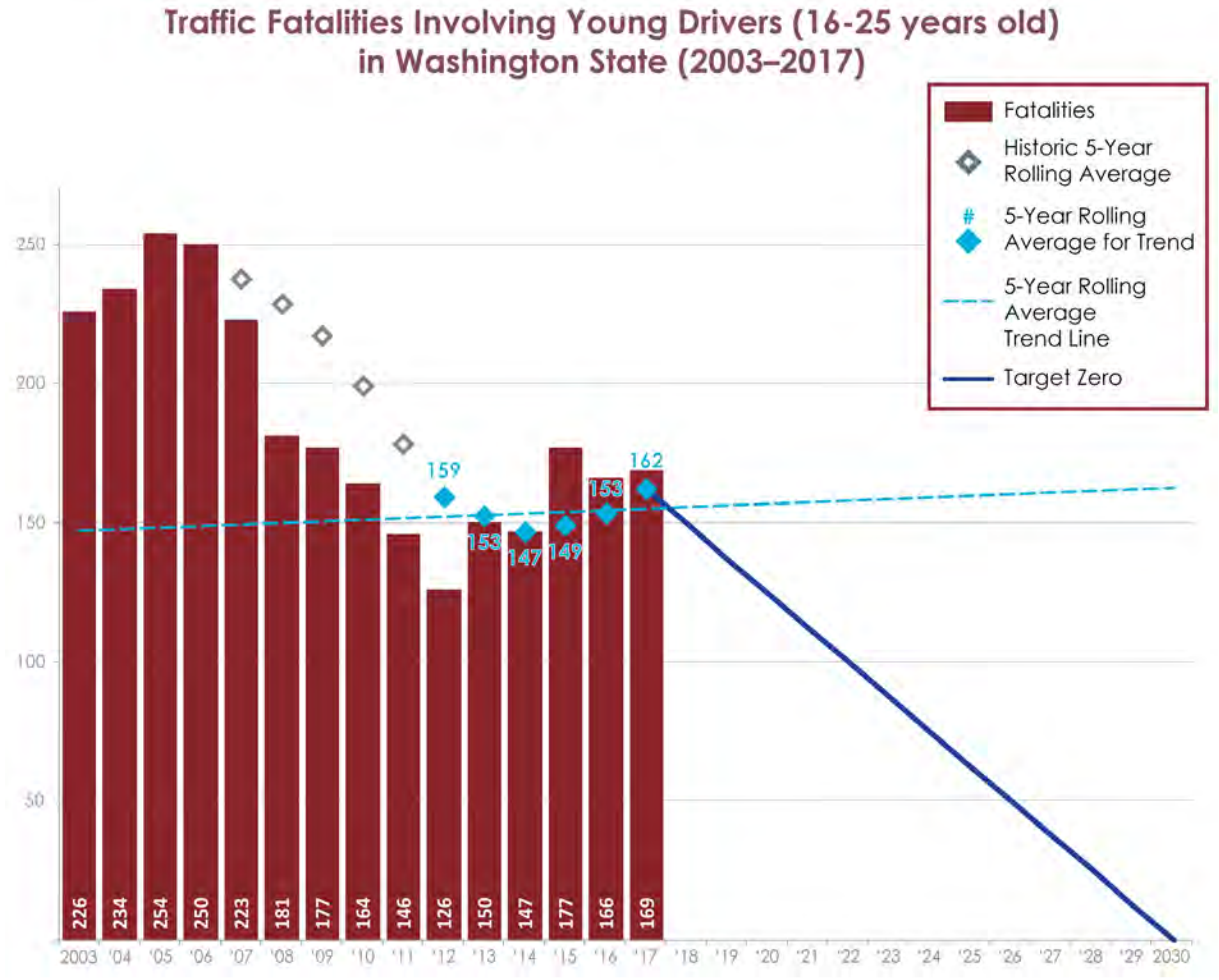


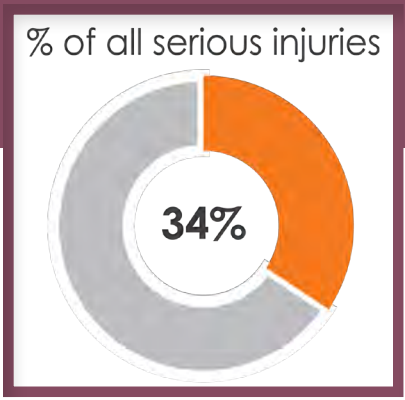
Compared to the average driver, young drivers are more than twice as likely to be in a crash resulting in either a fatality or serious injury. While young drivers make up just 13.5% of the driving population, they were involved in 31% of all fatalities and 34% of all serious injuries in 2015–2017.

Young drivers are defined as those between the ages of 16 and 25. This 10-year age span has three distinct sub-groups:

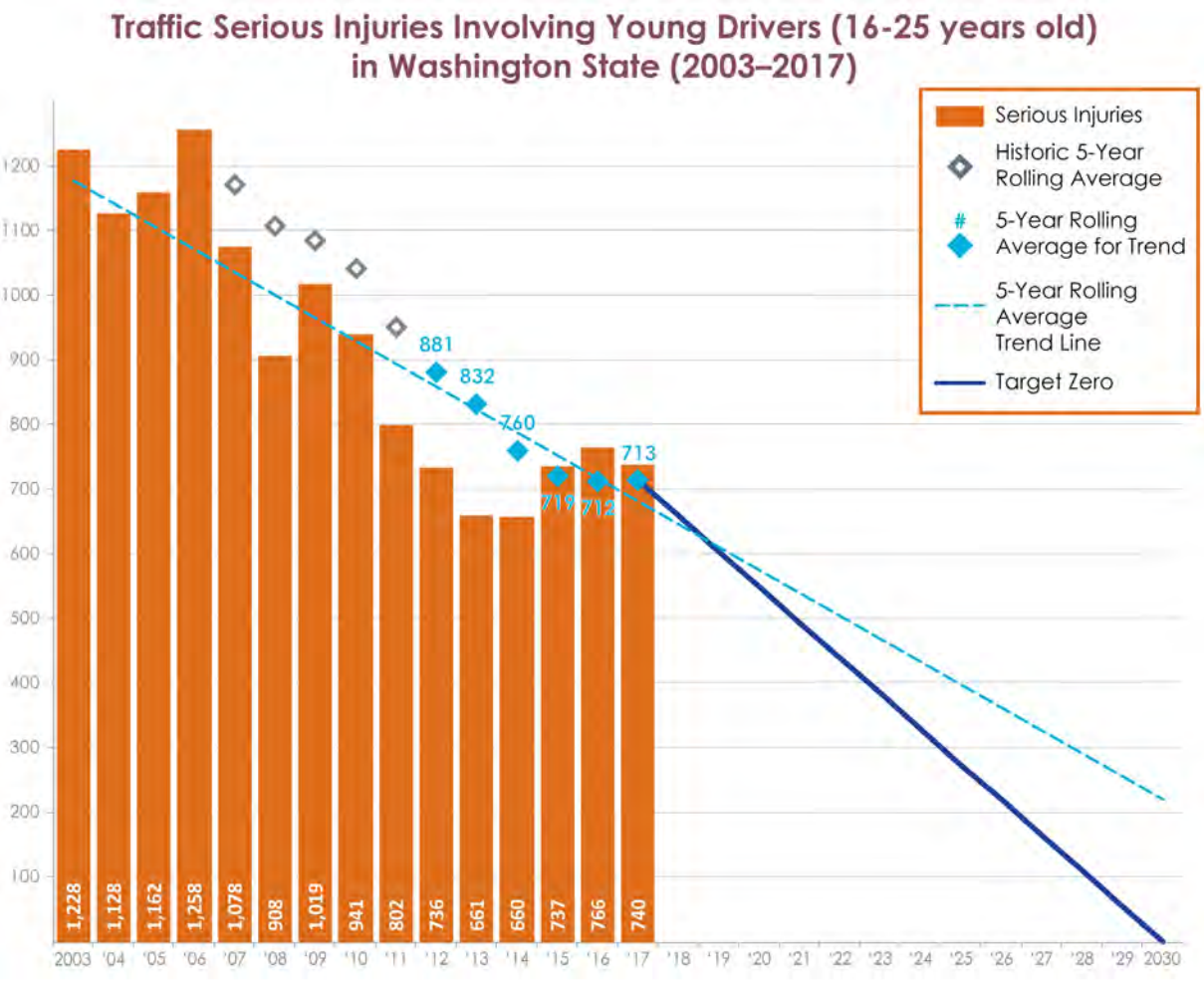
1. **Drivers aged 16- and 17-year-old,** newly licensed under the Graduated Driver Licensing (GDL) program. This group represents the largest number of newly licensed drivers annually in Washington.
2. **Drivers aged 18–20,** which includes newly licensed drivers who are not subject to driver training and GDL restrictions, as well as drivers who were licensed at 16 or 17 under the GDL.
3. **Drivers aged 21–25,** who often have driving experience but are of legal drinking age and are more likely to drive impaired.

Because of these unique characteristics, drivers in these three groups behave differently on the road. Reducing young-driver-involved fatalities and serious injuries requires different strategies based on these differences.





Priority 1



Key Countermeasures for Young Drivers include:

- Improve the GDL law.
- Publicize and enforce safety belt laws.

Drivers Testing

In 2016, the Department of Licensing (DOL) updated the Driver Guide and the knowledge exam to better address the top contributing factors for young drivers: distraction, impairment, and speeding. DOL also increased the number of knowledge exam questions from 25 to 40. This means the exam taker has to study more, have a better understanding of the traffic laws, and possess broader knowledge to pass the test. As a result of these changes, Washington State saw a sizeable decrease in the knowledge exam passing rates. DOL will also explore ways to continue to improve the driver skill test to increase the quality of our licensed drivers and reduce fatalities and serious injuries.

BETWEEN 2015–2017 THERE WERE

512 FATALITIES AND 2,243 SERIOUS INJURIES

INVOLVING A YOUNG DRIVER

FATALITIES INVOLVING YOUNG DRIVERS OFTEN INVOLVE OTHER FACTORS

The top two factors that overlap with Young Drivers are **LANE DEPARTURE** and **IMPAIRMENT**

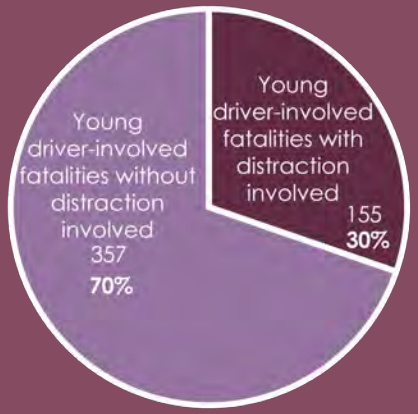
OUT OF **512 FATALITIES**:

53% also involved LANE DEPARTURE
61% also involved IMPAIRMENT
and 34% involved a combination of both

Overlapping Factors

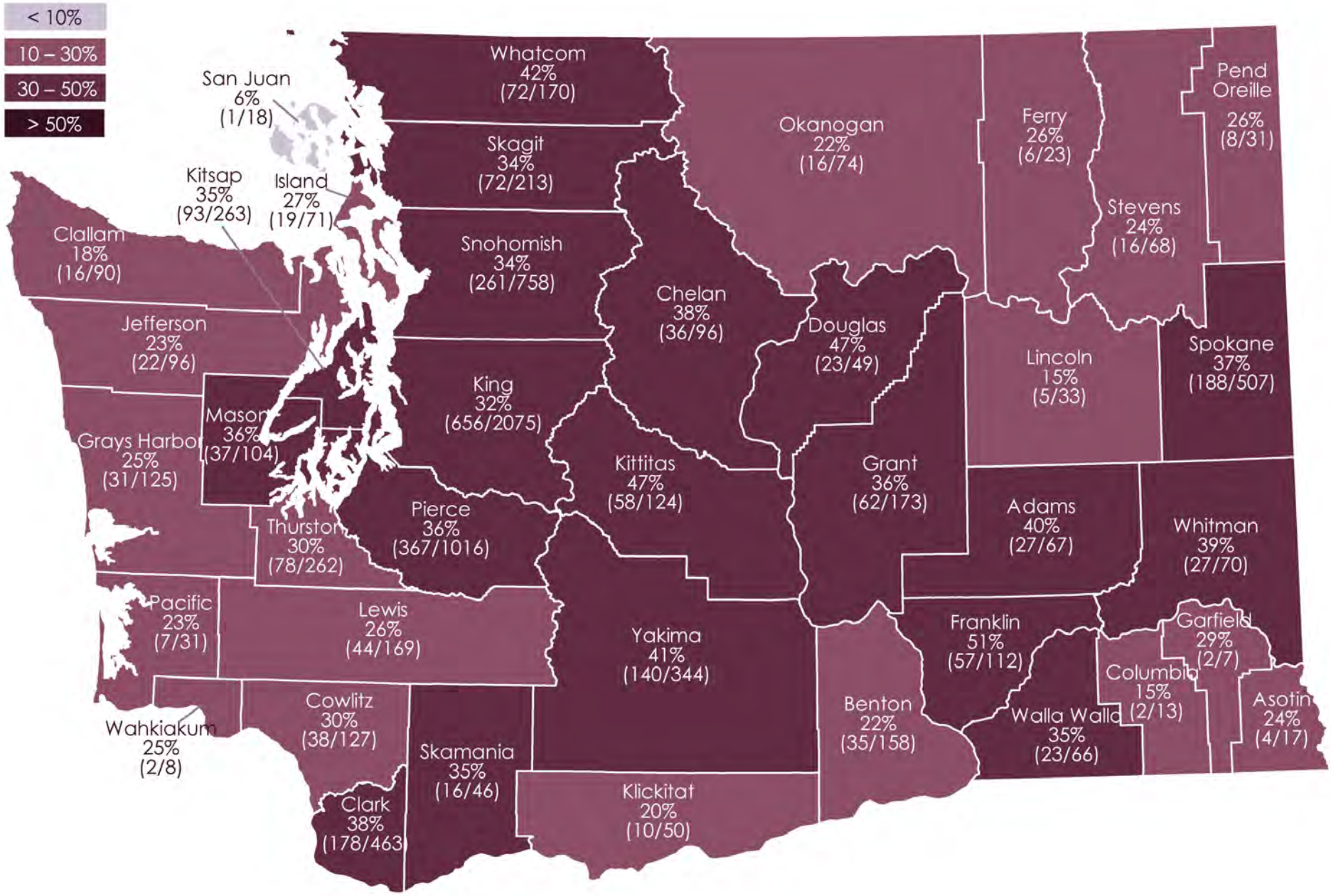
Speeding and distraction also emerge as high risk behaviors for young drivers in fatal crashes. When a young driver is in a crash and at least one driver was speeding, 86% of the time it was the young driver who was speeding. Finally, when both a young driver and distraction are involved in a fatal crash, 84% of the time the young driver is the one distracted.

Though lane departure is another top factor, this chapter specifically addresses high risk driver behaviors. For strategies related to lane departure, refer to the lane departure chapter.



When both a young driver and impairment are involved in a fatal crash, 78% of the time the young driver is the one impaired.

Percent of All Fatal and Serious Injury Crashes That Were Young Driver Related, by County (2015–2017)

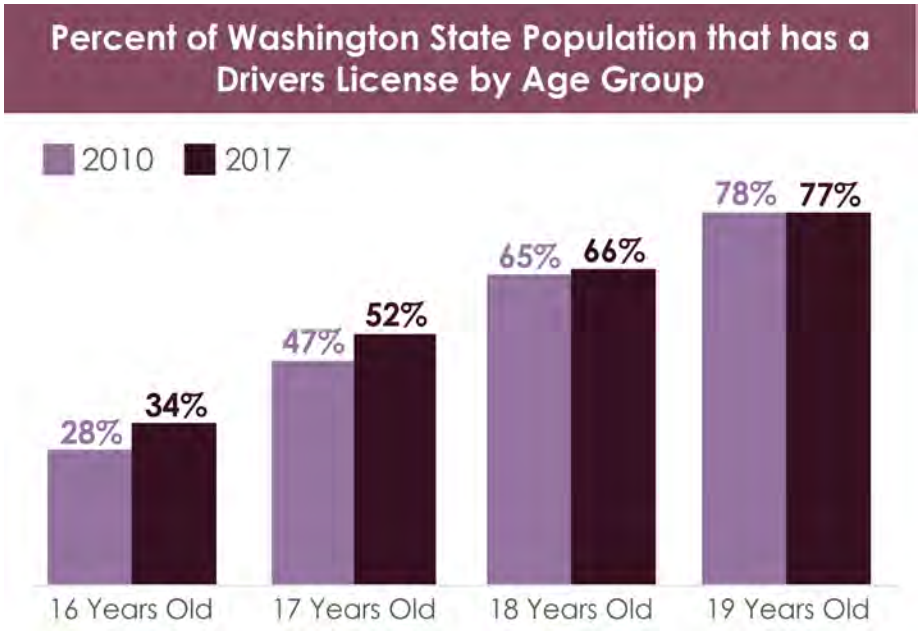


Key Issues for Young Drivers

Inexperience and Developmental Changes

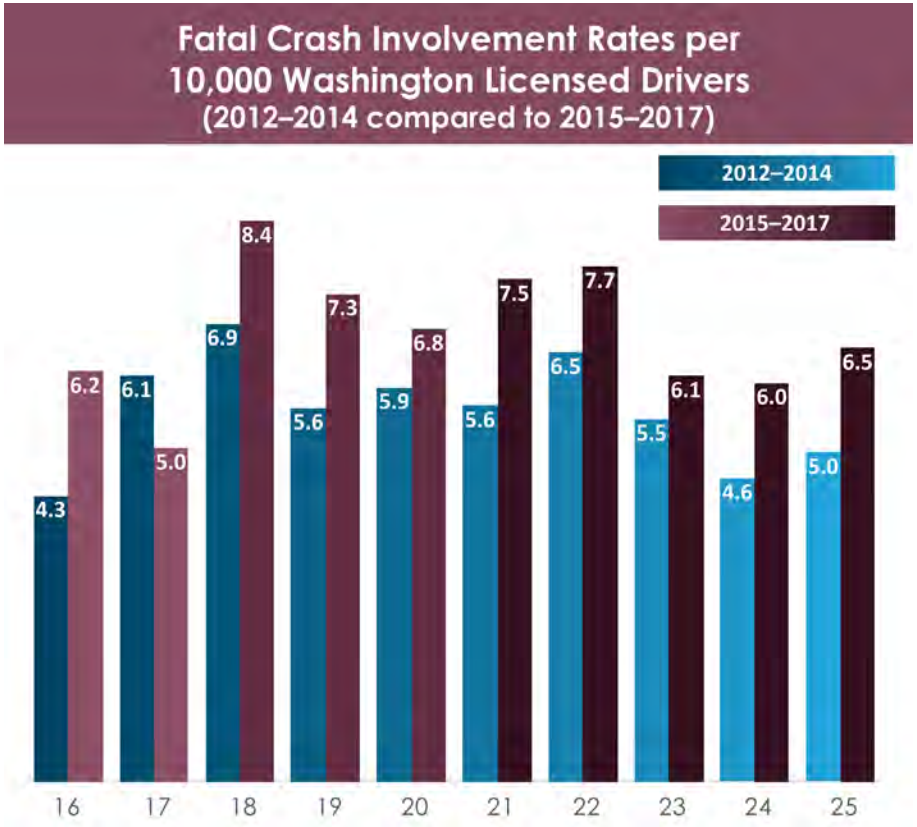
Young drivers face an increased crash risk due to both their inexperience and immaturity. Young drivers, who are just learning to drive, lack the skills and experience necessary to recognize and respond to risk appropriately. Additionally, their age-related immaturity and willingness to take risks, which is associated with adolescent brain development, is a key factor in dangerous decision-making on the road. Further research on adolescent development suggests key areas of the brain—especially in the prefrontal cortex, the brain center for judgment, decision-making, and deferring immediate reward—are not fully developed until about age 25.

For these reasons, the strategies to reduce young driver involved fatality and serious injury crashes must take a two-pronged approach: helping these drivers gain valuable experience, while mitigating their risk by keeping them out of dangerous situations.



Missing the Graduated Driver License Window

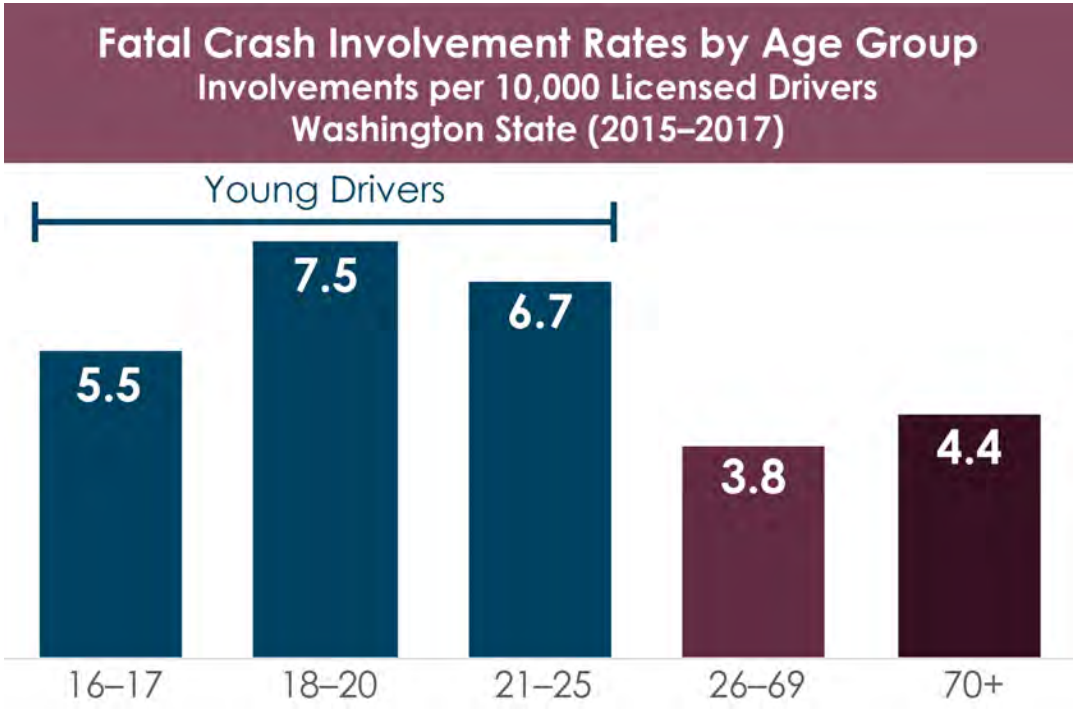
The GDL helps young drivers gain valuable experience safely, but a substantial proportion of Washington's young drivers are waiting until age 18 to get their licenses. In Washington, drivers aged 16–17 receive an intermediate (graduated) driver license that carries several restrictions, including around nighttime driving, passengers, and phone use. See page 212 of the Licensing and Regulation chapter for more information. As these newly-licensed drivers mature and gain experience, they're no longer subject to these restrictions. These young drivers can lose their driving privilege for certain violations, however. After a third violation, the young driver's license is suspended until age 18.



Parental Involvement

Parents play an important role in teaching teens to drive. Because of this, WTSC and DOL recently developed a resource page for parents of young drivers to share positive actions they can take to help educate and encourage safety behavior from their teen drivers (wadrivetozero.com/young-drivers). The page highlights the DOL Parent Guide to Teen Driving, lesson plans, driving tips, as well as the Road Ready app to track their teens driving experience. This site will continue to be improved to provide even more robust assistance for parents as they teach their teens to drive.

In 2018, the Washington Department of Health received a grant from the Centers for Disease Control and Prevention to address fatalities and serious injuries involving young drivers. In partnership with WTSC, they created a library of parent/teen driver graphics that were made available to all traffic safety partners (www.wtscpartners.com/teen-driver-safety-social-media). Some of these graphics were featured during Washington's participation in the 2018 National Teen Driver Safety Week.



Between 2010 and 2017, Washington has seen an increase in the percentage of 16- and 17-year-olds who have a driver license. This appears to be good news: a larger percentage of the population is getting licensed as a teen subject to driver training and GDL requirements. The percentage of 18 and 19 year olds who are licensed has remained relatively unchanged.

Even with this change, however, a substantial proportion of drivers are still waiting to get licensed at older ages. Further, that later licensure occurs disproportionately among low-income groups and people of color, who more frequently lack the resources to access classes and to pay for vehicle and driving costs. These equity issues create a barrier to safer driving. See page 217 for more information on health equity and traffic safety.

From 2015–2017, fatal crash involvement rates for young drivers peaked at age 18 and again at age 21-22, the ages at which young drivers can be licensed without a GDL and reach the legal drinking age, respectively. The peak at age 18 implies that young drivers newly licensed at age 16 or 17 and under a GDL have better safety outcomes than those who miss the GDL window.

GDL address both the inexperience and immaturity of young drivers. It provides a structure in which beginning drivers gain substantial driving experience in less-risky situations. GDL's effectiveness in reducing young driver crashes has been demonstrated many times.

A current topic of discussion in the traffic safety community is whether standard GDL policies that are applied in the United States for younger novice drivers should be applied to older

Health Equity and Youth Risk Behavior

Although not a perfect overlap with the 16–25 range of Target Zero, young adults ages 15–24 have highest age-adjusted traffic death rate of all ages. In 2016:

- 7% of high school students (surveyed 10th and 12th grade students) reported driving one or more times in the previous 30 days while they were under the influence of alcohol; 17% of high school students reported riding one or more times in the previous 30 days with someone else who had been drinking.
- l2% of high school students reported driving one or more times in the previous 30 days within three hours after using cannabis.
- 23% of high school students reported texting while driving one or more times in the previous 30 days.

Traffic Safety Culture: Young Drivers

WTSC is working with the Center for Health and Safety Culture to build tools to bolster the skills of parents to improve driving behaviors among their children as they learn to drive. These tools are based on positive culture framework that develops the social and emotional skills of children (as well as the adults).

novices not presently covered by them. For more details, please see page 213 of the Licensing and Regulation chapter.

Distracted Driving Among Young Drivers

In Washington, young drivers make up the highest proportion of distracted drivers involved in fatal crashes; therefore, enhanced efforts are needed for young drivers. Young drivers are avid users of cell phones and other technologies, are easily distracted by other young people in the car, are inexperienced, and are still undergoing development in areas of the brain responsible for decision-making and risk management.

Distraction is an ongoing dilemma in fatal crashes for young drivers, possibly due to increased cell phone use that is observed in naturalistic studies of young drivers. A National Institutes of Health (NIH) study found 58% of the teens who participated in the study engaged in driver distraction, with the most prevalent types being: interaction with a passenger, talking, external distraction, and texting/dialing the cell phone.

For more information on Distracted Driving, please see page 60.

Key Countermeasures for the 2019 Plan

Improve the GDL Law

To date, GDL systems have been the most effective way to reduce fatal and serious injury crashes involving young drivers in the United States. All states, including Washington, have adopted some type of GDL system, though the specific restrictions vary from state to state. Washington's GDL system was given a rating of Good by the American Association of Motor Vehicle Administrators (AAMVA), on a scale of Good to Poor. Nevertheless, there are several improvements that Washington could make to align with the national best practices for GDL systems. These include:

- Extending the nighttime driving restrictions to start at 9 p.m. or 10 p.m. instead of 1 a.m.
- Strengthening teen passenger restrictions.
- Increasing the number of required practice hours.

If Washington adopted these provisions for GDL components, our state would have an estimated 34% reduction in fatal crashes. For more information on Washington State's licensing requirements and GDL best practices, see page 212 of the Licensing and Regulation chapter.

Publicize and Enforce Seat Belt Laws

Properly worn seat belts can dramatically reduce the risk of injury or death to vehicle occupants in the event of a crash. Seat belt usage is lower among young drivers than among adult drivers. From 2015–2017, 35% of young drivers who were killed in crashes were not belted. Because young drivers have a substantially higher crash risk than adult drivers, failure to wear seat belts makes them especially vulnerable to death or injury.

Primary safety belt laws, which allow police officers to stop and cite a motorist solely for an observed seat belt violation, have also proven effective at increasing belt use among teens. Washington State has a primary seat belt law.

Well-publicized enforcement programs and primary seat belt laws have increased belt usage for all drivers, including teen drivers. Partners will consider how to employ social media communication channels such as Facebook, Twitter, and Instagram to more effectively publicize seat belt law to young drivers. For more information on seat belts, please see page 80.

Washington State Laws Relating to Young Drivers

- RCW 46.20.055 Instruction permit
- RCW 46.20.075 Intermediate license
- RCW 46.20.267 Intermediate licensees

Driver Training

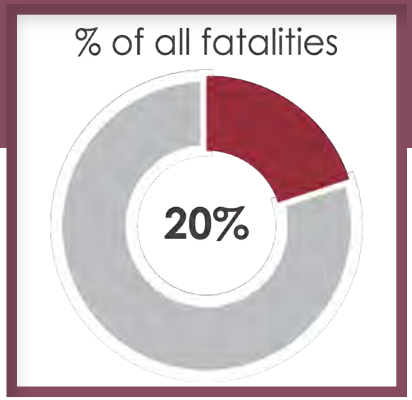
On August 1, 2018, DOL and the Office of Superintendent of Public Instruction (OSPI) jointly published the new Washington State Driver Training Required Curriculum to reduce fatalities and serious injuries on our roads (https://www.dol.wa.gov/business/drivertraining/docs/required-curriculum.pdf). The Curriculum describes the understanding, skills, and awareness needed for safe and responsible driving. We want novice drivers to increase their driving competencies and willingness to continue their learning process beyond the driving exam. To do this, students must also learn how to assess themselves as drivers – including their personal attitudes, beliefs, and behaviors – so they can identify areas for improvement based on the best practices found in the Required Curriculum. This driver training improvement work is being continuously evaluated and DOL and OSPI will implement additional improvements.

Strategies for Reducing Young Driver Involved (YDI) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
YDI.1. Foster compliance with Washington State's GDL laws.	YDI.1.1 Encourage tribes to pass GDL laws. (P, CTW)	Leadership
	YDI.1.2 Provide resources to the Young Driver Action Council to improve awareness — especially for parents and teens — and compliance with the GDL law. Highlight high risk situations where clear parental limit-setting will be most effective. (R, CTW)	Education
	YDI.1.3 Promote increased enforcement of GDL by passing legislation requiring a sticker program to identify vehicles used by GDL license holders. (R, LIT)	Enforcement, Leadership
	YDI.1.4 Provide local Target Zero Task Forces with information and materials about GDL for teens, parents, law enforcement, and driver education programs. (R, WTSC)	Education
	YDI.1.5 Facilitate parental supervision and management of learners and intermediate drivers. (R, NCHRP)	Education
YDI.2. Strengthen GDL restrictions.	YDI.2.1 Adjust nighttime restrictions to begin at 9 p.m. (P, CTW)	Leadership
	YDI.2.2 Lengthen permit holding period beyond six months. (R, CTW)	Leadership
	YDI.2.3 Extend passenger restriction to one full year after licensed. (R, NCHRP)	Leadership
	YDI.2.4 Strengthen requirements for parents around the documentation and certification of the 50-hour behind-the-wheel time young drivers are to complete before licensure. (U)	Leadership
	YDI.2.5 Strengthen restrictions so penalties kick in with the first ticket GDL driver gets. (U)	Leadership
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Young Driver Involved (YDI) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
YDI.3. Improve young driver education and intervention.	YDI.3.1 Review and revise the Driver Guide, testing process, curriculum guidelines, and training standards to construct an overall driver training package focused more on hazard identification and less on skill training. (R, CTW)	Education, Leadership
	YDI.3.2 Support the development of traffic safety instructors through an improved training program, required regular instructor evaluations, required 3-year recertification, promoting continuing education that is meaningful and criteria-based, and developing a website containing both content and delivery resources. (R, DOL)	Education, Leadership
	YDI.3.3 Support novice driver mentorship by developing and promoting a full range of practical resources for parents and other mentors. (R, DOL)	Education
	YDI.3.4 Promote teen/parent safe driving contract. (R, DOL)	Education
	YDI.3.5 Facilitate parental supervision and management of learners and intermediate drivers (R, NCHRP)	Education
	YDI.3.6 Support expanding driver restrictions and driver education requirements to new drivers of all ages. (U)	Leadership
	YDI.3.7 Update model traffic safety education curriculum to match NHTSA standards. (U)	Education
	YDI.3.8 Support implementation of licensing standards used in countries with superior driving statistics such as the United Kingdom. (U)	Evaluation, Leadership
	YDI.3.9 Seek legislation to allow for financial assistance to underserved populations for some portion of the driver training curriculum. (U)	Leadership
YDI.4. Strengthen licensure exams for all novice drivers.	YDI.4.1 Implement an electronic delivery method for the knowledge exam for the licensing service office and all contracted testing locations. (U)	Evaluation, Leadership
	YDI.4.2 Improve the scoring of the skills exam to accurately account for high risk danger potentials. (U)	Evaluation, Leadership
	YDI.4.3 Review and revise the skills exam to incorporate standards used in countries with superior driving statistics such as the United Kingdom. (U)	Evaluation, Leadership
YDI.5. Make traffic safety culture change.	YDI.5.1 Implement traffic safety citizenship – an innovative approach that strategically shifts our focus to the engagement of the larger majority of safe road users to influence the behaviors of the smaller group engaging in risky behaviors. (U)	Education, Leadership
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Young Drivers, refer to the Impairment, Speeding, Distraction, and Licensing and Regulation chapters.

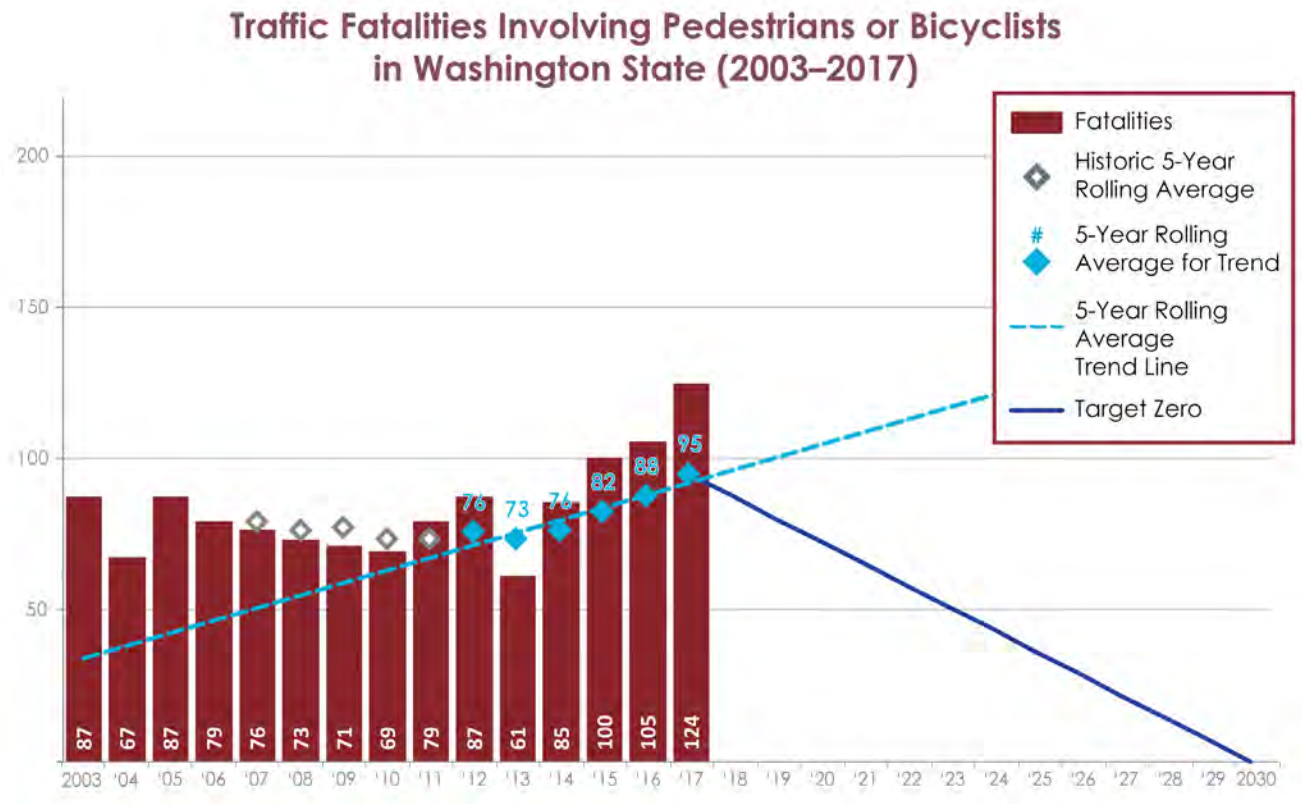
Pedestrians and Bicyclists

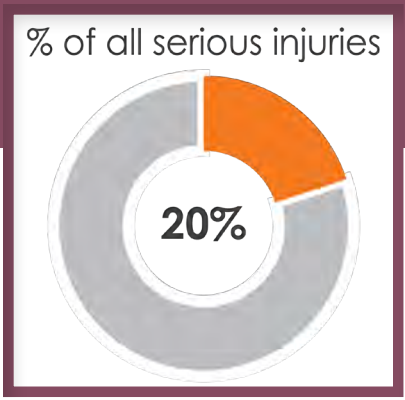


In 2015–2017, 20% of all traffic fatalities in our state, and 20% of all traffic serious injuries, were people walking or biking. These figures continued to climb in 2018. At 109 fatalities, pedestrian deaths reached their highest number in more than 30 years.

Compared to 2012–2014, the 2015–2017 figures show a 41% increase in fatalities for people who walk and bike, and an 11% increase in serious injuries. Unfortunately, Washington lacks complete data on the total number of people regularly walking and bicycling, as well as the distance that they travel in those modes. Therefore, it is difficult to say whether crashes have increased due to exposure—more people walking and biking for longer distances—or whether exposure has remained the same, but crash potential has grown due to other factors. Two potential contributing factors to the upward trend could be the increase in overall vehicle miles traveled in Washington, and the increase in larger passenger vehicles such as trucks and SUVs on the road.

It is important to note that walking and bicycling are distinct modes with some differences in trip characteristics, and in the infrastructure and operational strategies that may be recommended; they are combined here for purposes of discussion because they share many factors in common.

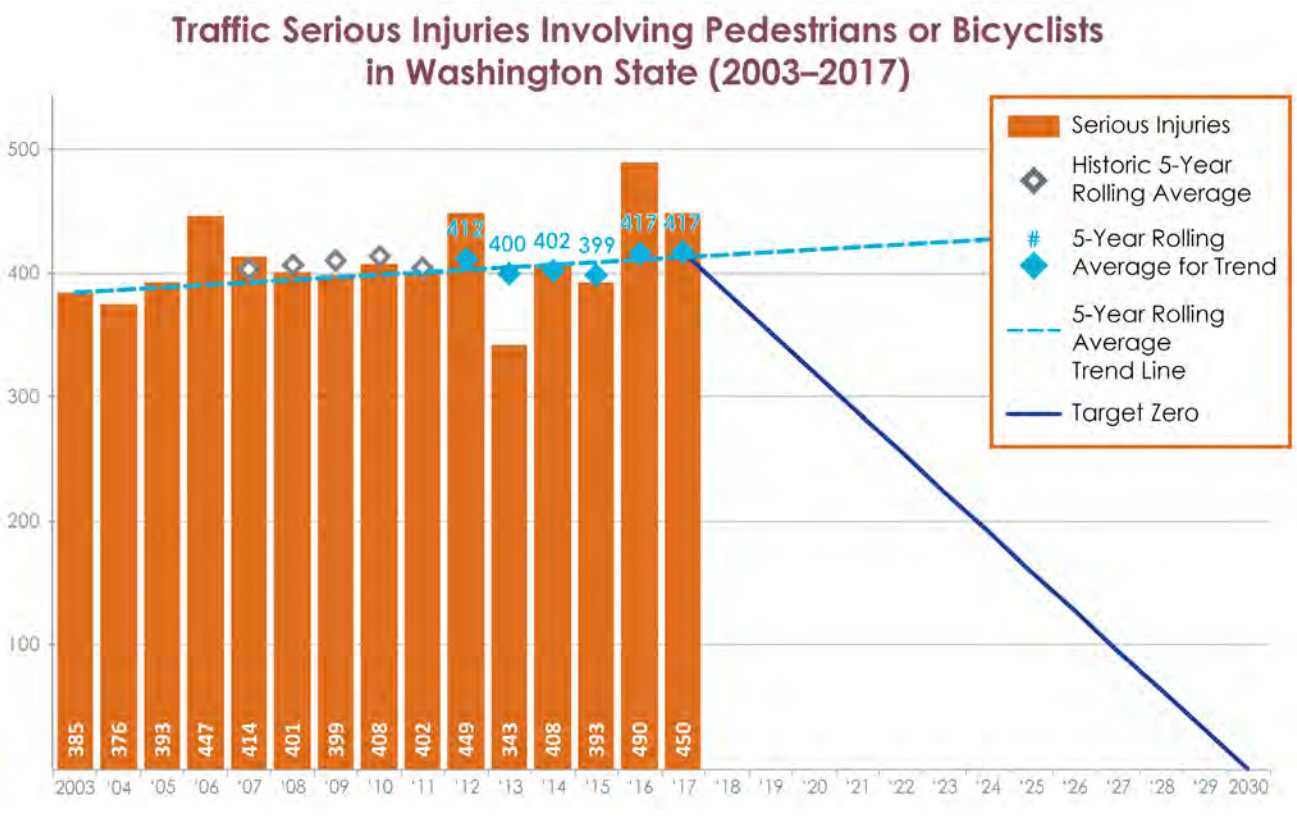




Priority 2

Key Countermeasures for Pedestrians and Bicyclists Include:

- Designing to reduce speeds
- Address crossings
- Separated infrastructure and complete networks
- Reducing the risk of impaired crashes



Who Is a Pedestrian?

In Target Zero, "pedestrians" and "people who are walking" are people who are on foot, as well as people using electric foot scooters, skateboards, in-line skates, etc. References to "pedestrians" or "walking" also include people using any type of mobility assistive device such as a wheelchair, walker, or scooter. Serious injury data are not available to fully account for these as separate categories.

BETWEEN 2015–2017 THERE WERE

329 FATALITIES AND 1,333 SERIOUS INJURIES

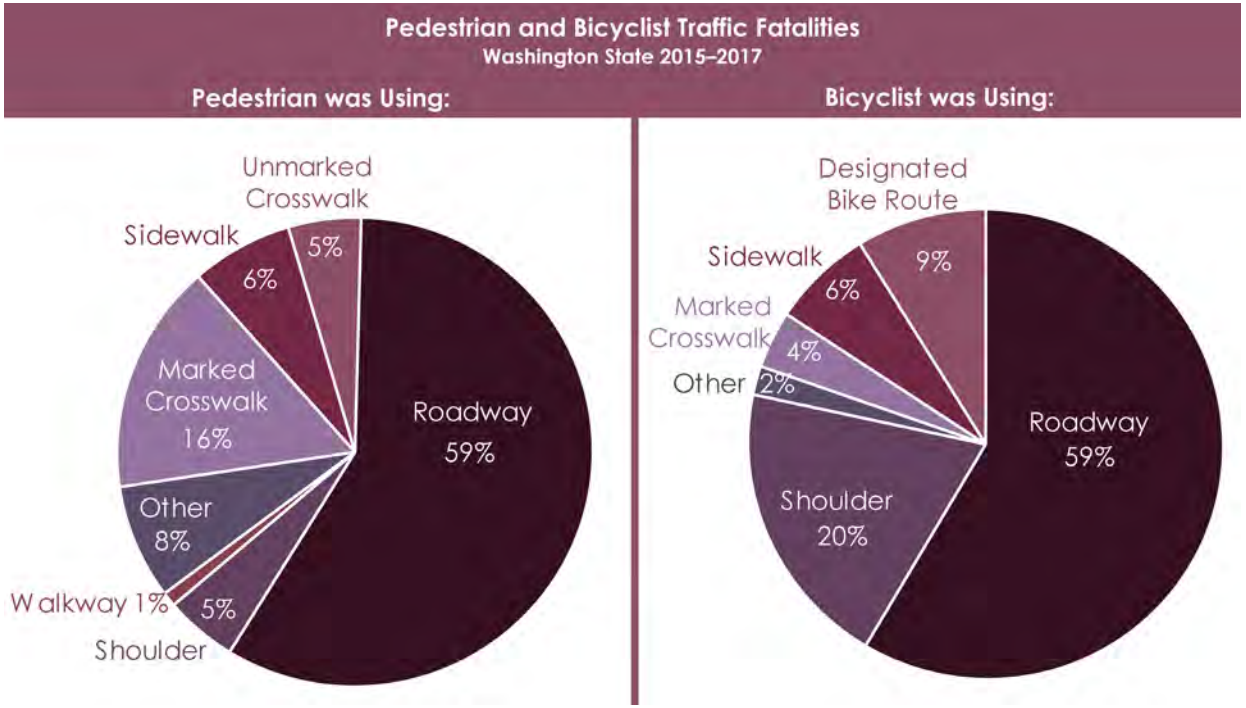
INVOLVING A PEDESTRIAN OR BICYCLIST

FATALITIES INVOLVING PEDESTRIANS OR BICYCLISTS OFTEN INVOLVE OTHER FACTORS

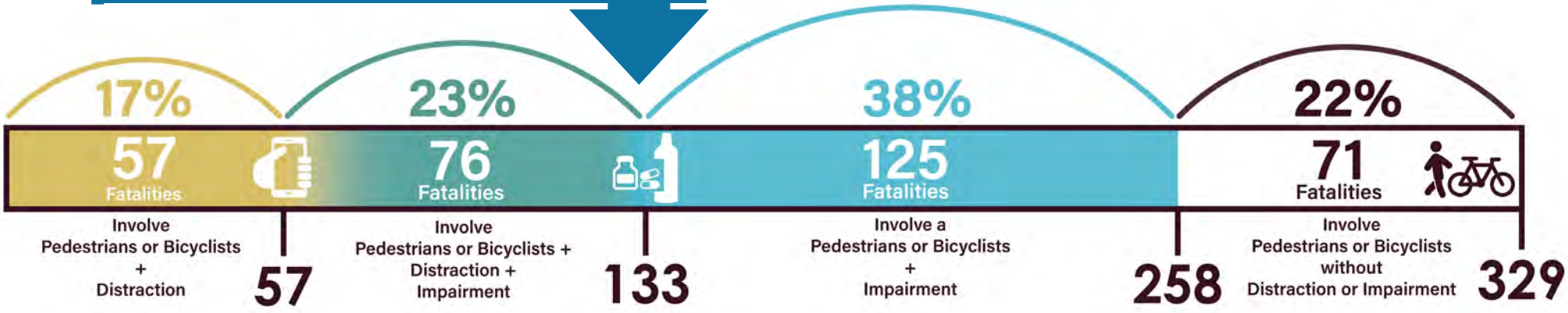
The top two factors that overlap with Pedestrians and Bicyclists are **DISTRACTION** and **IMPAIRMENT**

OUT OF **329 FATALITIES**:

40% also involved DISTRACTION
61% also involved IMPAIRMENT
and 23% involved a combination of both

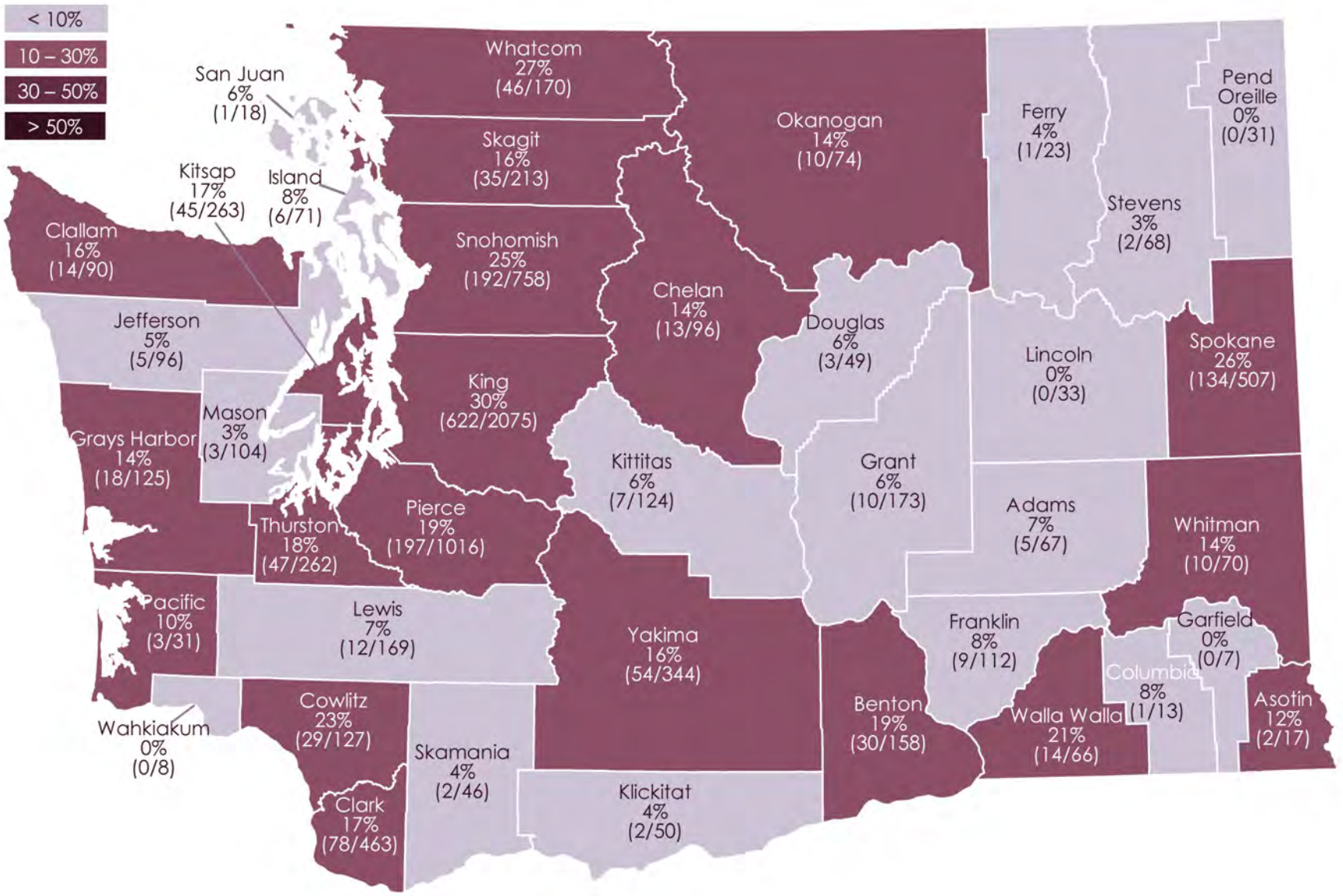


Total percentage adds up to 101% due to rounding



Of the 201 pedestrian and bicyclist deaths involving impairment, 26 (12.9%) involved only an impaired driver; 152 (75.6%) involved only an impaired pedestrian or bicyclist; and 23 (11.4%) involved both an impaired pedestrian or bicyclist and an impaired driver.

Percent of All Fatal and Serious Injury Crashes That Were Pedestrian or Bicyclist Related, by County (2015–2017)

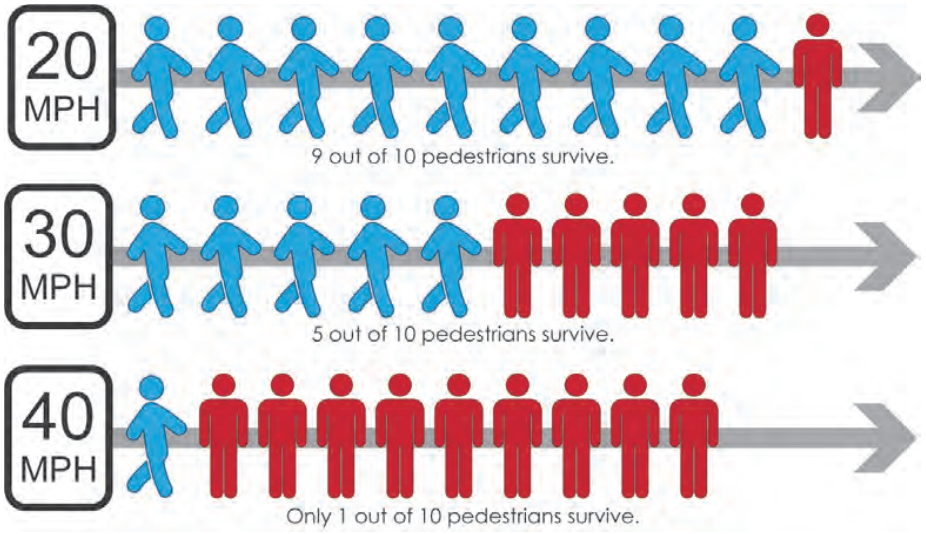


Key Issues for Pedestrians and Bicyclists

The following issues are major factors for pedestrian and bicyclist roadway safety outcomes. Addressing these areas will have the beneficial effect of reducing crash exposure not only for pedestrians and bicyclists, but for all road users.

Speed

Pedestrians and bicyclists who are struck by a motor vehicle are more likely to suffer a fatality or serious injury where drivers are traveling at higher speeds, regardless of whether or not the driver is traveling over the posted speed limit. Almost all of the bicyclist fatalities (93.5%) and most pedestrian fatalities (75.3%) occurred on roads with a posted speed greater than 25 mph. A motorist driving over 25 mph is less able to see and respond to other road users, which increases the likelihood of a crash, as seen on page 196 of the Safe Systems Approach chapter. In addition, high vehicle speeds have a major effect on the severity of injuries to all people involved in a crash, and especially people who are walking, biking, or using an assistive mobility device.



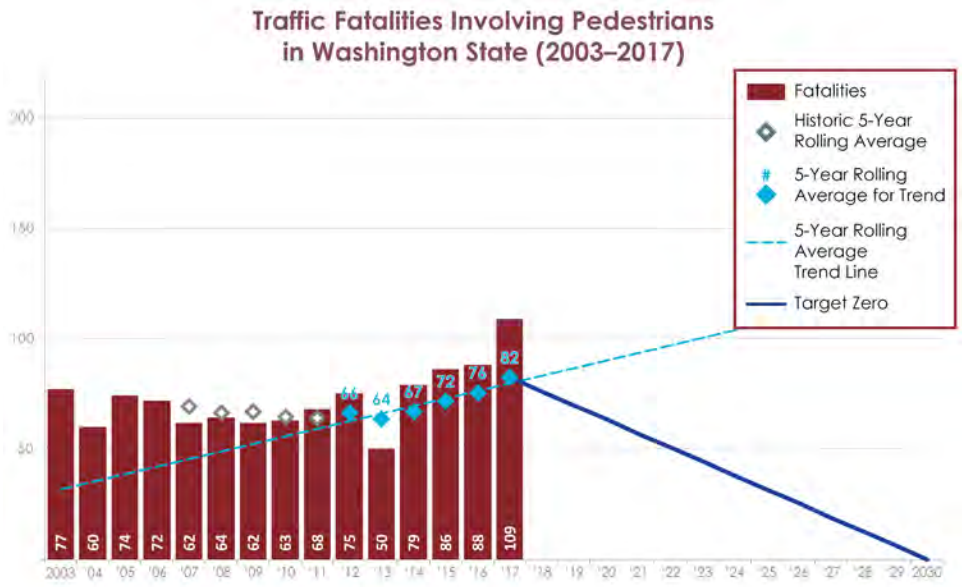
Crossings

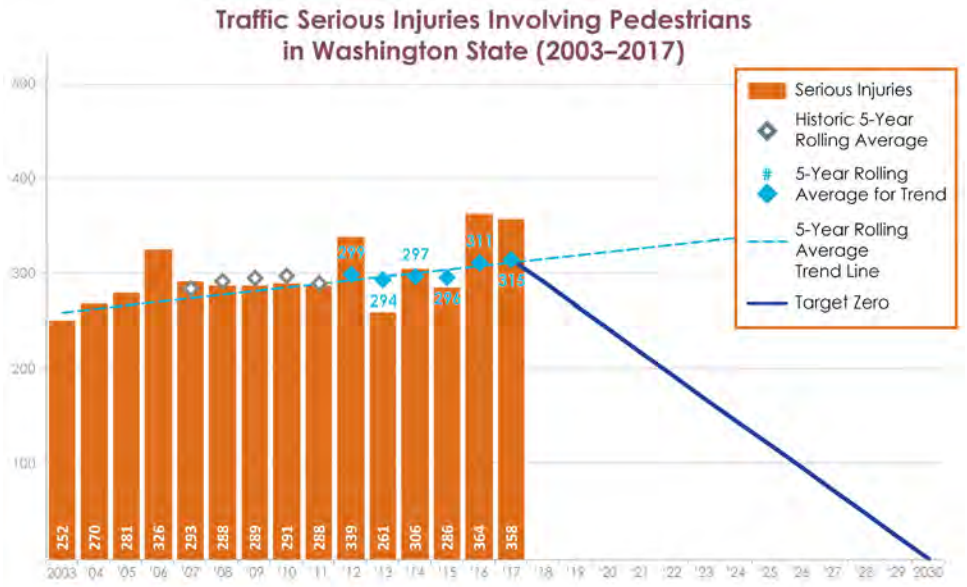
Many pedestrian and bicyclist fatalities and serious injuries occur when the pedestrian or bicyclist is crossing the road. Crossings that are appropriately located, designed for context, and ADA-accessible are not available everywhere they are needed, meaning people may cross in conditions that increase crash risk.

Between 2015 and 2017, 54% of pedestrian and bicyclist fatalities and serious injuries occurred when the pedestrian or bicyclist was crossing the road.

- About 67% of these pedestrian and bicyclist crossing fatalities and serious injuries occurred at or related to intersections.
- In 52% of these pedestrian and bicyclist crossing fatalities and serious injuries, there were no stop signs or traffic signals requiring motorists to stop. This requires pedestrians and bicyclists to find a gap in the flow of passing drivers in order to cross.
- In about 35% of crossing pedestrian and bicyclist fatalities and serious injuries there were traffic signals present, and in 5% there was a stop sign.
- In 43% of crossing pedestrian and bicyclist fatalities and serious injuries, the pedestrian or bicyclist was using a marked crosswalk.

The Intersections chapter on page 100 has additional information on crossings.





Lack of Separated Infrastructure and Incomplete Networks

The most fundamental concept of transportation is network connectivity: connecting people to where they want to go. Those using cars, heavy trucks, and motorcycles can rely on having access to a complete network. However, this is not the case for people who are walking or riding a bike. Lack of connected infrastructure creates conflict zones with drivers, and higher potential for crashes. Access to a complete separated or protected network of walking and biking facilities is especially important where there are large numbers of motorists traveling at higher speeds. Sometimes this requires the removal of parking spaces.

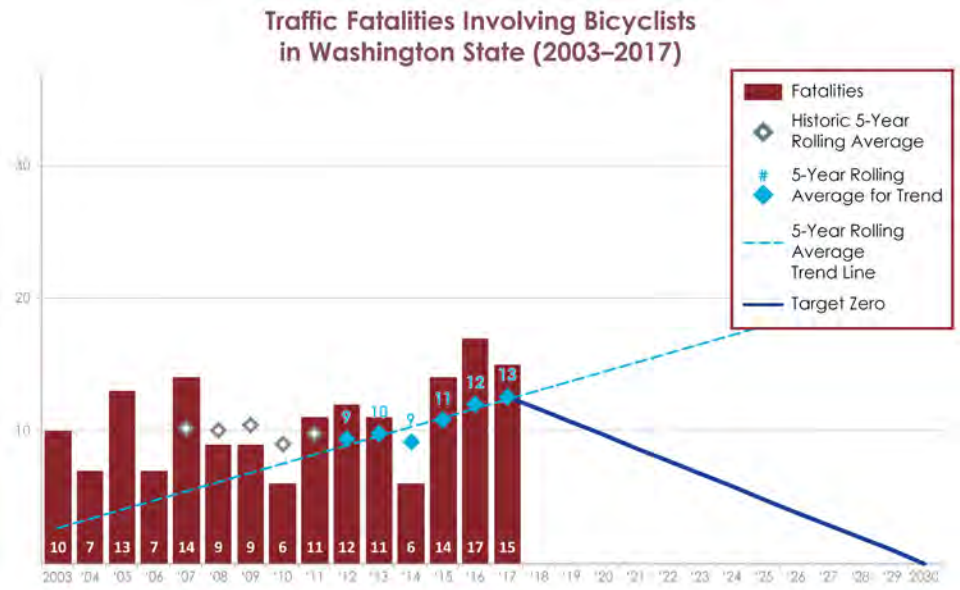
Additionally, motorized electric scooters, powered skateboards, solo-wheels, hoverboards, and other new personal mobility devices will require our transportation system to consider new lanes, protected lanes, or multi-use paths to accommodate them in order to decrease the possibility of conflicts on roads and sidewalks.

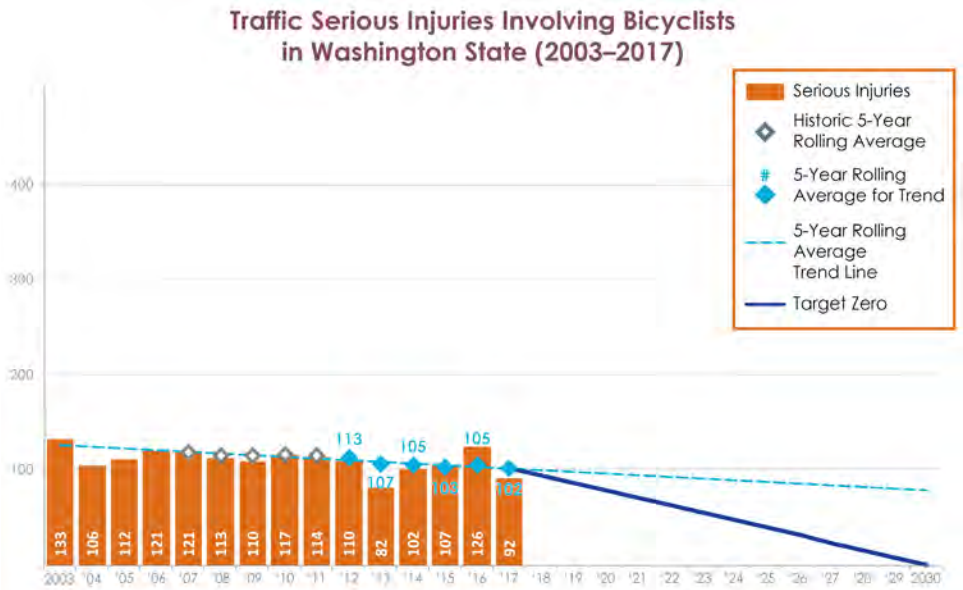
Crash data from 2015–2017 indicate that the network in Washington State is not complete for people who walk and bike: the most common action that bicyclists are taking during fatal and serious injury crashes is riding in the road in the same direction as motorists, with no bicycle infrastructure noted in the crash report.

Impairment

Of all of the behavioral circumstances, impairment was the most common factor in fatal pedestrian and bicyclist crashes in Washington State. In 54.1% of all traffic fatalities involving pedestrians, the person walking was impaired; in 47.8% of all traffic fatalities involving bicyclists, the person biking was impaired.

In order to provide thorough evaluation of contributing factors for bicyclists and pedestrians, Target Zero must consider all factors, including impairment. However, discussing impairment as a contributing factor should not be confused with blaming pedestrians and bicyclists for their death or injury. The goal of this review is to understand the





types of crashes that are occurring, so partners are able to design effective interventions.

Among drivers striking pedestrians or bicyclists, only those who demonstrate impairment at the crash scene or volunteer are subject to blood tests to determine if they have used alcohol or other drugs. An impaired driver is more likely to cause a serious injury or fatality because of their impaired state than impaired individuals who are walking, bicycling, or using other active transportation modes. At least 12.7% of drivers fatally striking pedestrians and 23.9% of drivers fatally striking bicyclists were impaired at the time of the crash.

Infrastructure changes that separate and protect vulnerable road users such as walkers and bicyclists—regardless of their impairment—reduce the number and severity of crashes for all.

Additional information can be found in the Impairment chapter on page 40.

Key Countermeasures for the 2019 Plan

Reduce Speeds Through Design and Speed Limits

Although it has emerged at the national level as an essential strategy, the practice of setting and designing for speed limits to minimize injuries and fatalities for pedestrians and bicyclists is relatively new for Washington State. See the Safe Systems Approach chapter on page 192 for more information. The Washington State Department of Transportation (WSDOT) has convened a group of state and local transportation professionals who are working together to better understand this approach, and to create policy and guidelines for its implementation. That work is scheduled to be complete by the end of 2019.

Pedestrians, Bicyclists, and Health Equity

Crash statistics for pedestrians and bicyclists show that risk is not evenly distributed. Crashes resulting in fatalities and serious injuries for pedestrians and bicyclists disproportionately affect certain groups. More detail about health equity and traffic safety can be found in the Transportation and Health Equity chapter on page 217.

Design roadways to reduce speed. To achieve Target Zero, partners must prioritize self-enforcing speed reduction countermeasures wherever pedestrians, bicyclists, and motorists are likely to interact on the roadway. The pictures on this page and the following pages show several types of infrastructure that reduce motorist speeds. One of the best approaches is to use road reconfigurations (road diets) to narrow the travel lanes, reduce the number of motor vehicle lanes while providing space for bicyclists and pedestrians, or a combination thereof.

This work is particularly important where there are community destinations, such as schools, parks, libraries, and shopping centers, within three miles of each other. This is a short enough trip, with enough density of uses—including access to connections to other methods of transportation such as transit—to make active transportation more efficient and thus more attractive. In Washington State, 89% of fatal crashes and 95% of serious injury crashes occur within a half-mile of a community destination.

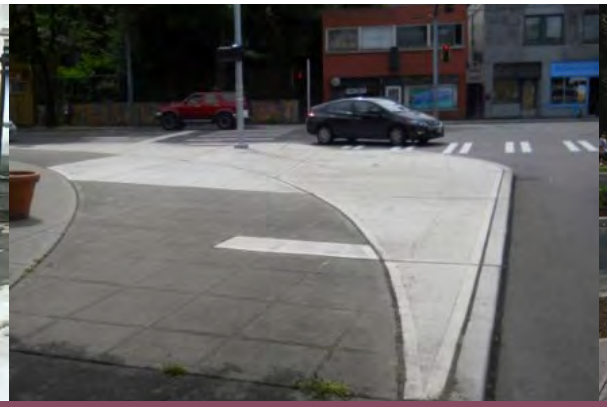
Speed reduction countermeasures should focus on these destination types regardless of location. The urban core, as well as urban, suburban, and rural town center areas, should also be prioritized for speed reduction. Demographic, density, crash, and infrastructure data can help identify areas with the highest overall need.

Self-enforcing road infrastructure design treatments have been implemented throughout Washington. Perhaps the best examples are in the City of Seattle. The city has installed road reconfigurations (road diets) on several arterials, resulting in reductions in driver speed and all crash types. A road reconfiguration in Seattle on Rainier Avenue resulted in a 16% reduction in 50th percentile speeds, a 52% reduction in all speeding, and an 80% reduction in top-end speeders. Other jurisdictions have seen similar results.

Where it is not possible or appropriate to reduce driving speeds to 25 mph or less, a complete network of separated pedestrian and bicyclist facilities is essential. Strategies include installation of separated facilities adjacent to the roadway, as well as a sufficient number of appropriately designed and operated roadway crossing treatments, installed with a frequency consistent with destination and connection crossing needs.

Roundabout

Reduced Curb Radii



Raised Crossings

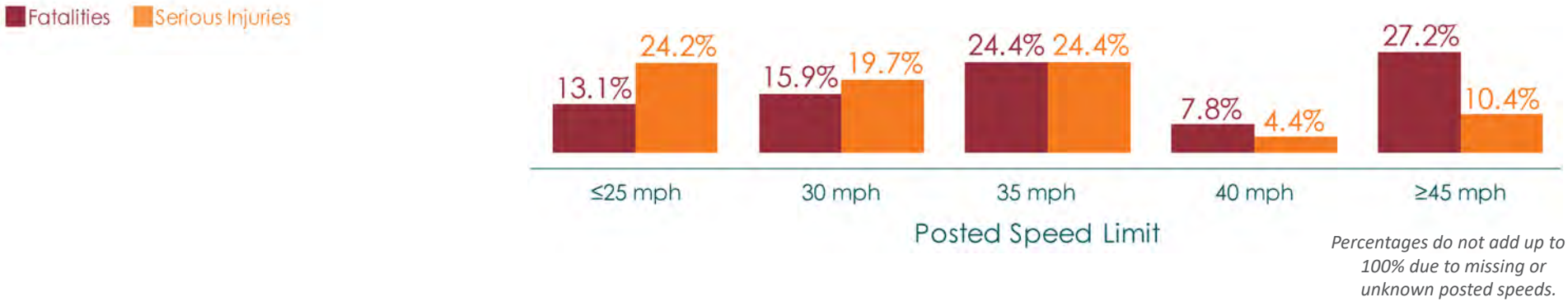
Pedestrian Fatalities and Serious Injuries

Road Characteristics, Driver/Pedestrian Actions and Circumstances

Posted Speed Limit Where Pedestrian Fatalities and Serious Injuries Occurred

Washington State 2015–2017

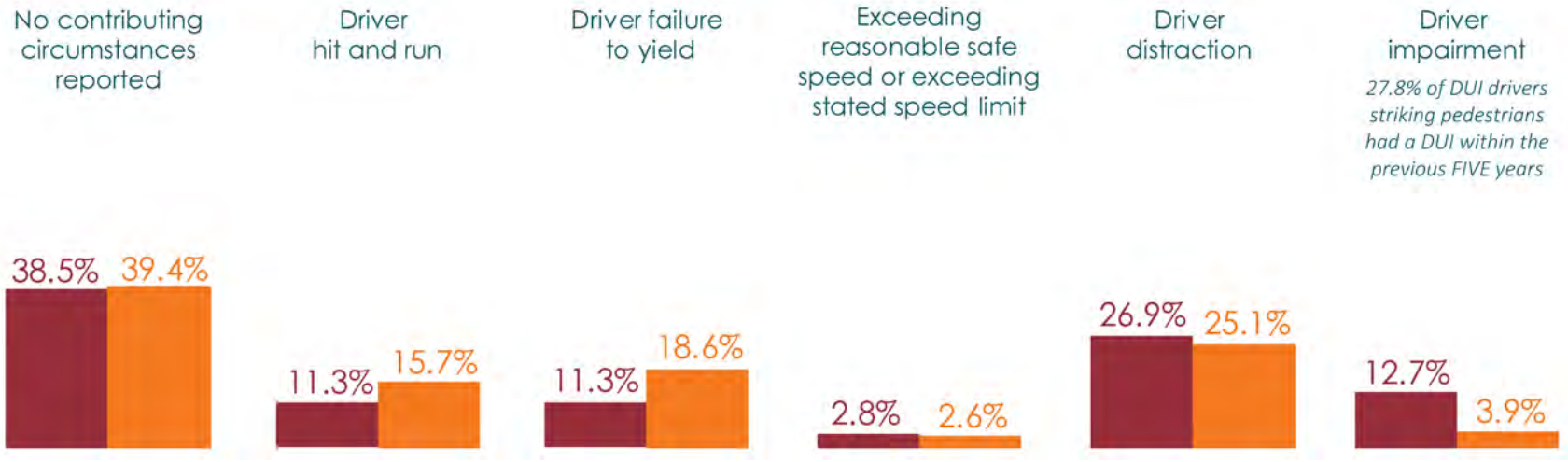
75.3% of pedestrian fatalities and 58.9% of serious injuries occurred on roads with posted speed limits above 25 mph.



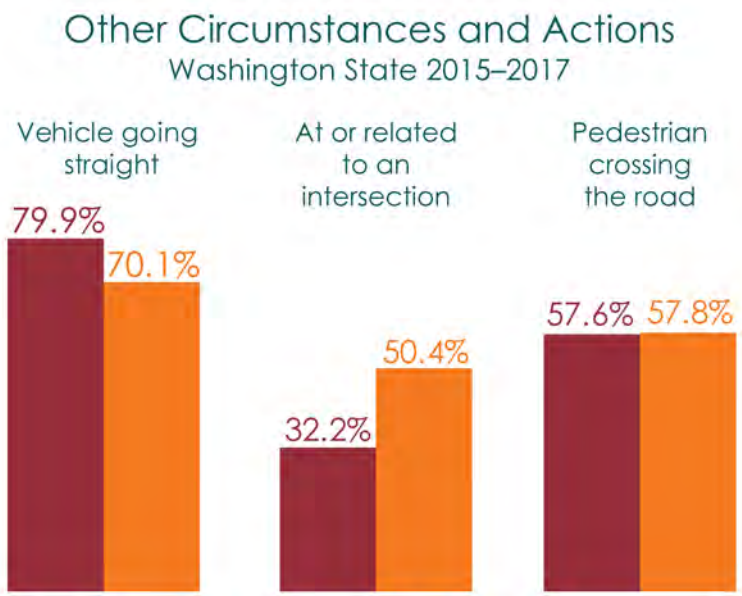
Percentages do not add up to 100% due to missing or unknown posted speeds.

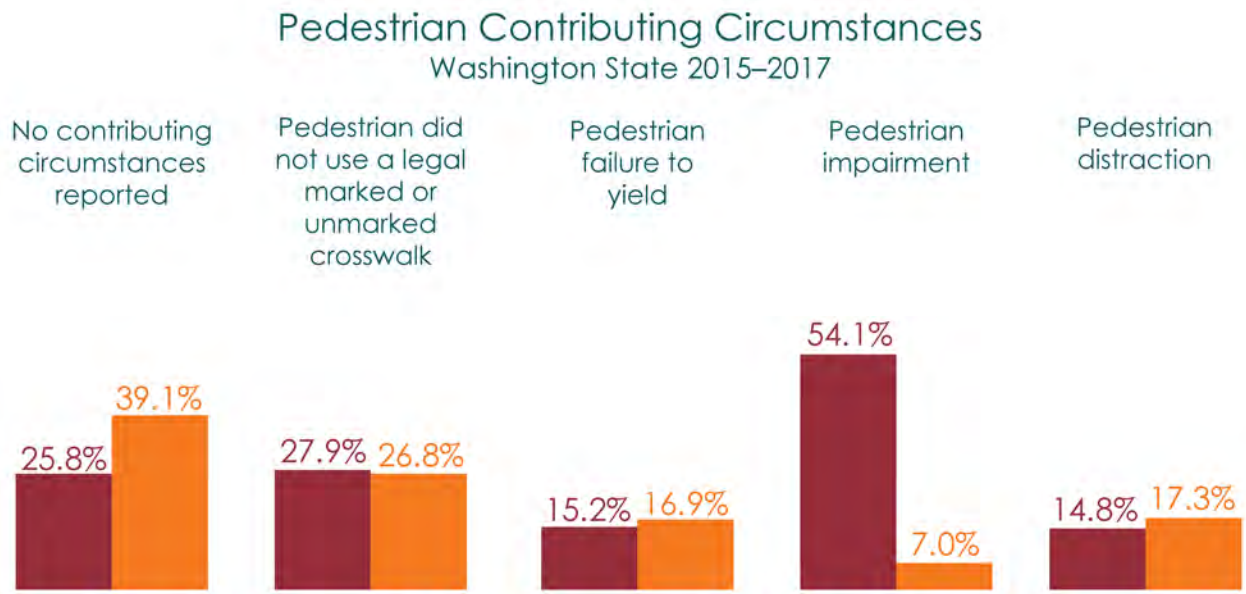
Driver Contributing Circumstances

Washington State 2015–2017



27.8% of DUI drivers striking pedestrians had a DUI within the previous FIVE years





Exposure Data for Pedestrians and Bicyclists

One difficulty with evaluating crashes related to pedestrians and bicyclists is we only have partial counts of the actual number of people who are walking and biking. Are crashes going up because there is more overall walking and riding in our state than in past years? Currently, it is not possible to answer that question.

We would like to have more complete information about where, when, and how much people are walking and biking. First, we will know the level of exposure: have the rates of crashes, fatalities, and serious injuries changed because the number of people walking and biking has changed? This information is also important because it will allow us to determine where crashes might occur, and whether countermeasures we have implemented are effective.

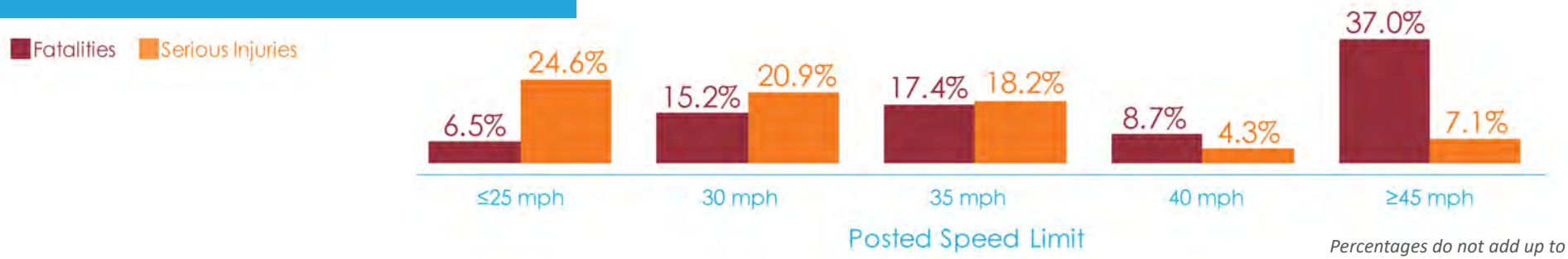
WSDOT's bicyclist and pedestrian documentation project is working to provide more comprehensive data through automated counters of pedestrians and bicyclists. There are currently 53 permanent counters located across the state as well as 402 manual sample count sites active in 56 Washington cities. Through partnerships with local agencies, WSDOT is working to add 20 more permanent counters to the network by September 2019. Additionally, WSDOT is exploring a statewide household travel survey to collect walk and bike data.

As these efforts expand, Washington will have better data to analyze crashes involving people who walk and bike.

Bicyclist Fatalities and Serious Injuries

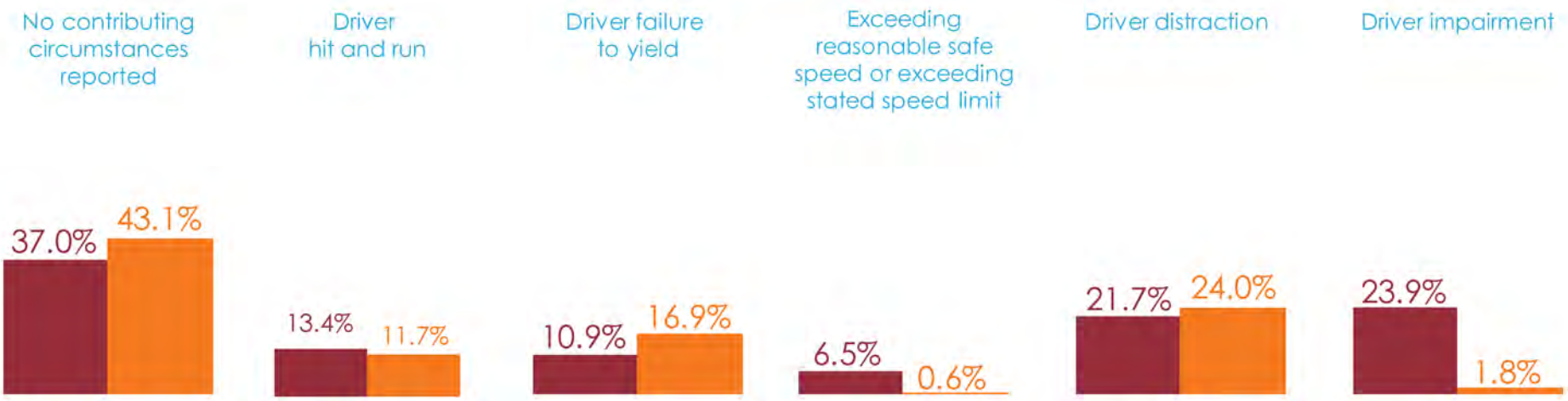
Road Characteristics, Driver/Bicyclist Actions and Circumstances

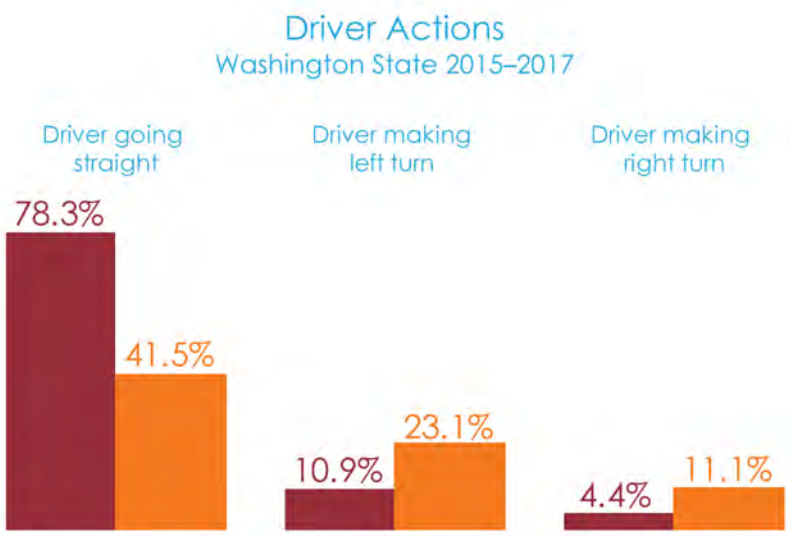
Posted Speed Limit Where Bicyclist Fatalities and Serious Injuries Occurred
Washington State 2015–2017

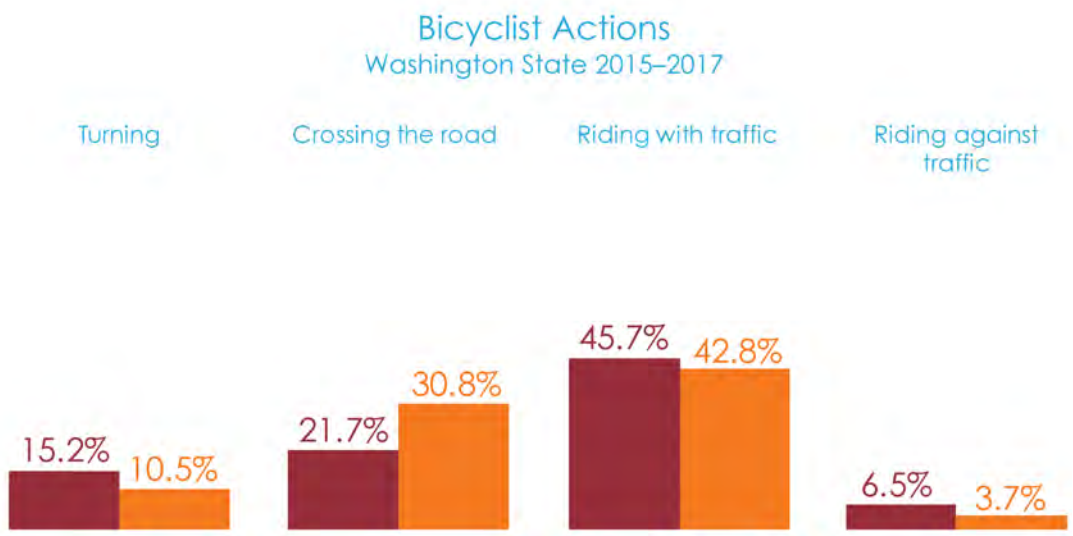


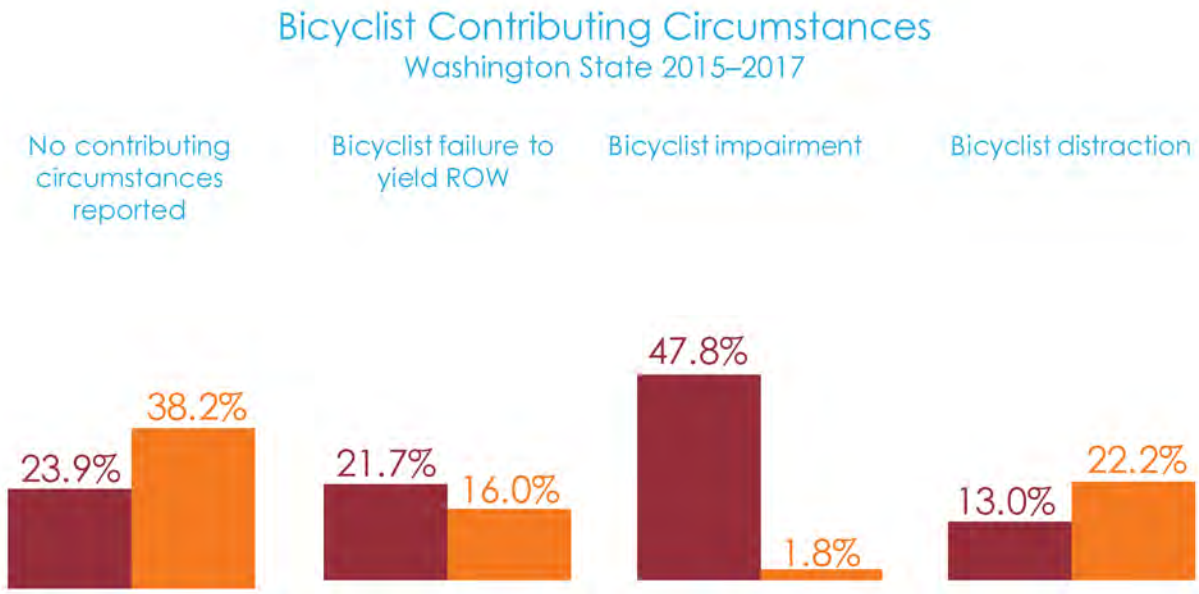
Percentages do not add up to 100% due to missing or unknown posted speeds.

Driver Contributing Circumstances
Washington State 2015–2017









Safety in Numbers

There is a growing body of research indicating that more people walking and biking leads, unexpectedly, to fewer crashes with vehicles for these road users. Although research is not clear, one leading theory is that drivers become more cautious when they see more people walking and biking in their vicinity, and adapt their behavior to be safer.

Reduce and enforce speed limits. Another approach to addressing speed includes measures to reduce and enforce speed limits. For instance, Washington State law gives cities and towns the authority to establish 20 mph speed limits on non-arterial roadways that are within a residential or business district. A related step is enforcing existing limits through law enforcement officers and automated speed enforcement.

Address Pedestrian and Bicyclist Crossings

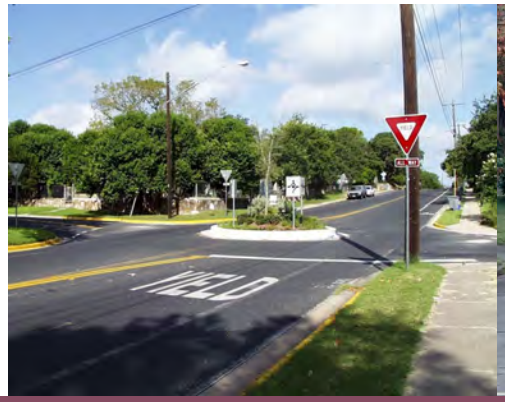
There are a variety of strategies to address crossing issues for pedestrians and bicyclists.

First, policymakers should use demographics, land use, infrastructure, and crash data to identify areas with highest overall need for crossing strategies. This would likely be any locations where the pedestrian and bicyclist network, sidewalks, bike lanes, shared use paths, or designated walkways are interrupted by roads that do not have sufficient traffic control devices to accommodate pedestrian or bicyclist crossings. It should also include locations lacking ADA-accessible infrastructure. With funding from the Federal Highway Administration (FHWA), WSDOT is currently conducting a study of approaches to identify and prioritize crossing needs on state highways; this study will be completed in 2019.

Once the locations are identified, they will be prioritized and specific recommended countermeasures will be chosen based on road conditions. These countermeasures will draw from current best practices for crossing safety, including:

- Pedestrian hybrid beacons.
- Road reconfiguration.
- Rectangular rapid flashing beacons.
- Pedestrian refuge islands and curb extensions.
- Reduced curb radii.
- In-street pedestrian crossing signs.
- Raised crosswalks.
- Pedestrian-scale lighting.
- Accessible pedestrian signals.
- Curb cuts, curb ramps, and other ADA accessibility measures.
- High visibility crosswalks with illumination.
- Gateway treatments.

Traffic Circles



Chicanes

Leading Pedestrian Interval Phase

Pedestrian Hybrid Beacons

Pedestrian Refuge Islands

Rectangular Rapid Flashing Beacons

Modifications to reduce crash potential at signalized crossing locations may include:

- Accessible pedestrian signals.
- Bicycle detection.
- Implementation of leading pedestrian intervals or exclusive pedestrian phasing.
- Bicycle traffic signals.
- Updated signal timing for appropriate crossing time for all users.

Many of these countermeasures are seen in the pictures within this chapter.

The City of Federal Way has successfully implemented several crossing treatments, including rectangular rapid flashing beacons, which resulted in 43% fewer crashes.

Separated Infrastructure and Complete Networks

Building separated facilities for people who are walking and biking is a critical strategy to reduce fatal and serious injury crashes. For pedestrians, these include sidewalks and multi-use paths. For bicyclists, these include buffered bike lanes, protected separated bicycle lanes where motorists are prevented from entering the bike lane, and separated bicycle facilities or shared-use paths, especially in urban areas. It could also include bicycle boulevards, sometimes called neighborhood greenways or quiet streets, on low volume, low speed streets.

Within efforts to reduce bicycle crashes, the most valuable countermeasures are those that prevent crashes from occurring and reduce the severity of the crash when it does occur. Bicycle crashes and injuries can be reduced by programs that make helmets, headlights, and taillights widely available, especially for those who have financial barriers to obtaining bicycle safety equipment.

Washington State Laws Relating to Bicyclists

RCW 46.04.169, 46.61.710, 46.61.723 Electric-assisted bicycles. E-bikes are defined as bicycles, with some restrictions on where Class 3 e-bikes may be ridden unless permitted under local ordinance.

RCW 46.61.110 Overtaking on the left. Drivers overtaking a pedestrian or bicyclist must pass at a safe distance and not return to the right side of the roadway until safely clear.

RCW 46.61.620 Opening and closing vehicle doors. Drivers may not open their car door into the path of oncoming traffic, including bicyclists.

RCW 46.04.670 Bicycles defined as vehicles.

RCW 46.61.700 Parents or guardians may not knowingly permit bicycle traffic violations by children.

RCW 46.61.755 Traffic laws apply to bicyclists. When riding on a roadway, a bicyclist has all the rights and responsibilities of a vehicle driver. When in a crosswalk, a bicyclist has all the rights and responsibilities of a pedestrian.

RCW 46.61.750 Bicyclists who violate traffic laws may be ticketed.

RCW 47.04.330 Street projects, consultation with local jurisdictions, and context-sensitive design solutions.

RCW 47.36.025 Traffic control signals are required to detect bicycles.

RCW 46.61.770 On roadways and bicycle paths, bicyclists may ride side by side, but not more than two abreast. Bicyclists may choose to ride on the path, bike lane, shoulder, or travel lane as suits their safety needs.

RCW 46.61.780 Night bicycle riding requires a white front light visible for 500 feet, plus a red rear reflector.

Protected Bike Lane

Bicycle Boulevard

Reducing the Risk of Impaired Crashes

Strategies specific to crashes involving impaired pedestrians and bicyclists should focus on providing infrastructure that reduces the likelihood of a crash occurring, and the severity of a crash if one does occur.

The strategies described on the preceding pages provide benefits for all users, including those who are impaired. This includes lowering vehicle speeds, providing crossing opportunities, and developing separated and complete infrastructure for people who walk and bicycle.

Another approach is to identify locations and corridors with the presence of places where people buy liquor, which suggests the potential for a higher number of people who will be using the roadway while impaired. These locations can then be evaluated for appropriate engineering, education, and enforcement countermeasures.

In addition, the Impairment chapter on page 40, and the Washington Impaired Driving Advisory Council (WIDAC) strategic plan, go into depth about reducing driving under the influence of drugs and alcohol.

Washington State Laws Relating to Pedestrians

RCW 46.61.050 Pedestrian responsibilities

RCW 46.61.235 Marked and unmarked crosswalks

RCW 46.61.240 Pedestrians yield the right-of-way to vehicles at non-crosswalk locations.

RCW 46.61.245 Driver responsibility to avoid colliding with any pedestrian

RCW 46.61.250 Pedestrians must use sidewalks, or walk on the left side of the roadway or shoulder facing traffic.

RCW 46.61.261 Drivers and bicyclists must yield to pedestrians on sidewalks and in crosswalks.

RCW 46.61.526 Negligent driving and vulnerable user victims (pedestrians and bicyclists)

RCW 46.61.415 (3)(a) Cities and towns may establish a maximum speed limit of 20 mph on certain roads.

RCW 46.61.606 Driving on sidewalk prohibited

RCW 46.61.710 Mopeds and gas powered bikes and scooters are not allowed on sidewalks or trails.

Vulnerable Users Law

In 2019, the Legislature passed a bill amending several RCWs that address traffic safety and vulnerable road users. It included language to strengthen the law specific to passing movements and intersection/driveway right-of-way. It doubles the fine when a motor vehicle driver is found to be in violation and a vulnerable road user is involved. Funds raised will be used to train law enforcement officers, prosecutors, judges and the public.

Washington State's Cooper Jones Active Transportation Safety Council

In 2019, the Washington State Legislature created the Cooper Jones Active Transportation Safety Council. With this act, they combined the Pedestrian Safety Advisory Council (formed by legislation in 2015) and the Cooper Jones Bicyclist Safety Advisory Council (formed by legislation in 2017). The Cooper Jones Active Transportation Safety Council is named in honor of Cooper Jones, a 13-year-old boy who died after a driver struck him from behind while he participated in a bicycle road race in Spokane County.

The new, combined council's purpose is to:

- Review and analyze data and programs related to fatalities and serious injuries involving pedestrians, bicyclists, and those using other forms of active transportation.
- Identify points at which the transportation system can be improved, including when possible privately-owned areas of the system such as parking lots.
- Identify patterns in pedestrian, bicyclist, and other active transportation fatalities and serious injuries.

Additionally, the Council may monitor progress on implementation of existing recommendations, and seek opportunities to expand consideration and implementation of the principles of systematic safety, including areas where data collection can be improved.

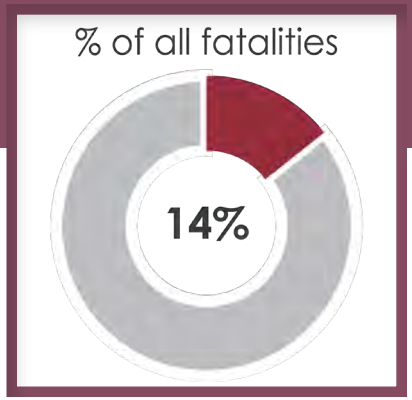
Strategies for Pedestrian and Bicyclists (PAB) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
PAB.1. Reduce the effect of motorist speeds where pedestrians or bicyclists are expected.	PAB.1.1 Increase public awareness of the significance of speed on pedestrian and bicyclist injury severity. (R, NCHRP)	Education
	PAB.1.2 Invest in and construct roadway reconfigurations, roundabouts and other recommended FHWA safety countermeasures specific to pedestrian and bicyclist safety. (R, FHWA)	Engineering
	PAB 1.3 Revise design practices to emphasize context and target speed to reflect the needs of people walking and biking. (R, FHWA)	Engineering
PAB.2. Expand and improve pedestrian and bicyclist crossing opportunities.	PAB.2.1 Reduce crash exposure safety at pedestrian and bicyclist crossings by investing in and installing refuge islands and raised crossings, and shortening crossing distances with bicycle friendly curb extensions where these crosswalk enhancements are needed. (P, NCHRP)	Engineering
	PAB.2.2 Invest in and increase the use of rectangular rapid flashing beacons and pedestrian hybrid beacons where these crosswalk enhancements are needed. (R, CMF)	Engineering
	PAB.2.3 Increase sight distance and visibility at pedestrian and bicyclist crossings by clearing vegetation, extending crossing times, adding pedestrian and bicyclist leading intervals and/or adding pedestrian scale illumination. At mid-block locations, provide adequate distance between stop bars and the crossing. (R, NCHRP).	Engineering
PAB.3. Complete a network of pedestrian and bicyclist facilities.	PAB.3.1 Invest in and construct separated pedestrian facilities (sidewalks and multi-use paths), especially in urban areas and adjacent to schools, bus stops, and school walk areas. (P, NCHRP)	Engineering
	PAB.3.2 Create neighborhood greenways with pedestrian and bicyclist priority on low volume, low speed streets. (R, CMF)	Engineering
	PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas. (U)	Engineering
	PAB.3.4 Increase infrastructure investments in underserved areas. (U)	Leadership
	PAB.3.5 At traffic signals, use bicycle signal heads. At intersections install colored bicycle boxes. (U)	Engineering
	PAB.3.6 Remove permissive left turn signals that conflict with pedestrian/bicyclist movements and eliminate right turn on red at signals. (U)	Engineering
P: Proven R: Recommended U: Unknown		

Strategies for Pedestrian and Bicyclists (PAB) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
PAB.4. Improve safety for children walking and bicycling to school.	PAB.4.1 Expand automated speed enforcement cameras to locations outside of school zones that are included in safe routes to school plans. (P, CTW)	Enforcement, Leadership
	PAB.4.2 Expand high visibility speed enforcement in school zones. (R, CTW)	Education, Enforcement
	PAB.4.3 Apply consistent signing and other pedestrian crossing features in school zones as appropriate (based on the number of lanes, speeds, age of pedestrians, etc.). (R, FHWA)	Engineering
	PAB.4.4 Distribute and encourage the use of "School Walk and Bike Routes: A Guide for Planning and Improving Walk and Bike to School Options for Students" to assist in creating school walk route maps. (R, WSDOT)	Education
	PAB.4.5 Implement pedestrian and bicycle safety training curriculum in schools. Develop and implement an additional module focused on teachers, parents, volunteers, and other school personnel. (R, CTW)	Education
	PAB.4.6 Implement education, enforcement, and engineering elements of the Safe Routes to School program, including campaigns such as Walking School Buses and Bike Trains. (R, CTW)	Education, Leadership
	PAB.4.7 Invest in and implement the Safe Routes to School Program to construct pedestrian and bicyclist facilities near schools. (R, CTW)	Engineering
	PAB.4.8 Provide liability protections to school districts who develop school walk route maps. (U)	
PAB.5. Improve data and performance measures.	PAB.5.1 Develop performance measures to evaluate completeness and quality of pedestrian and bicyclist networks, including levels of traffic stress, infrastructure inventory, and other appropriate metrics. (P, NCHRP)	Evaluation
	PAB.5.2 Expand the bicyclist and pedestrian count program to collect miles walked/biked data (similar to collecting VMT), where people walk/bike, and walk/bike demand. (P, NCHRP)	Evaluation
	PAB.5.3 Initiate a statewide household travel survey to collect walk and bike data. (P, NCHRP)	Evaluation
	PAB.5.4 Continue to conduct the Washington State Student Travel Survey. (P, NCHRP)	Evaluation
P: Proven R: Recommended U: Unknown		

Strategies for Pedestrian and Bicyclists (PAB) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
PAB.6. Improve traveler behavior.	PAB.6.1 Support passing a state law requiring bicycle helmet use for children. (P, CTW)	Leadership
	PAB.6.2 Support local jurisdiction ordinances requiring bike helmets. (R, CTW)	Leadership
	PAB.6.4 Provide bicyclist and pedestrian safety awareness as part of driver education programs. (U)	Education
	PAB.6.5 Develop a pedestrian/bicyclist safety education module for use by state agencies; phase in a requirement for completion of this module for utilization of a state vehicle. Make the module available to other jurisdictions, Commute Trip Reduction, and the private sector. (U)	Education
	PAB.6.6 Strengthen the vulnerable user law. (U)	Leadership
	PAB.6.7 Revise lane restrictions for passing that would require motorists to change lanes (including when there is a double yellow line) when passing people riding bicycles when there are no oncoming roadway users and travel lanes do not have sufficient width to provide a minimum of three feet of separation. (U)	Leadership
	PAB.6.8 Conduct education and outreach regarding the risks of using active transportation modes while impaired or distracted. (U)	Education
	PAB 6.9 Encourage bicycle helmet use for children and adults. (R, DOH)	Education
PAB.7. Improve education and enforcement of laws pertaining to motorists, pedestrians, and bicyclists.	PAB.7.1 Implement pedestrian and bicyclist safety zones, targeting geographic locations and audiences with pedestrian/bicyclist crash concerns. (R, CTW)	Education, Enforcement, Engineering, Evaluation
	PAB.7.2 Expand the use of high visibility crosswalk enforcement of motorists who fail to yield to pedestrians combined with culturally appropriate campaigns designed to take into account equity issues in underserved high-need communities with high crash rates. (R, CTW)	Education, Enforcement, Evaluation
	PAB.7.3 Improve training on pedestrian and bicyclist laws for law enforcement officers at state, tribal, and local levels, including training on equity issues for enforcement. (R, CTW)	Education, Enforcement
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Pedestrians and Bicyclists, refer to the Intersections, Safe Systems Approach, and the Transportation and Health Equity chapters.

Motorcyclists

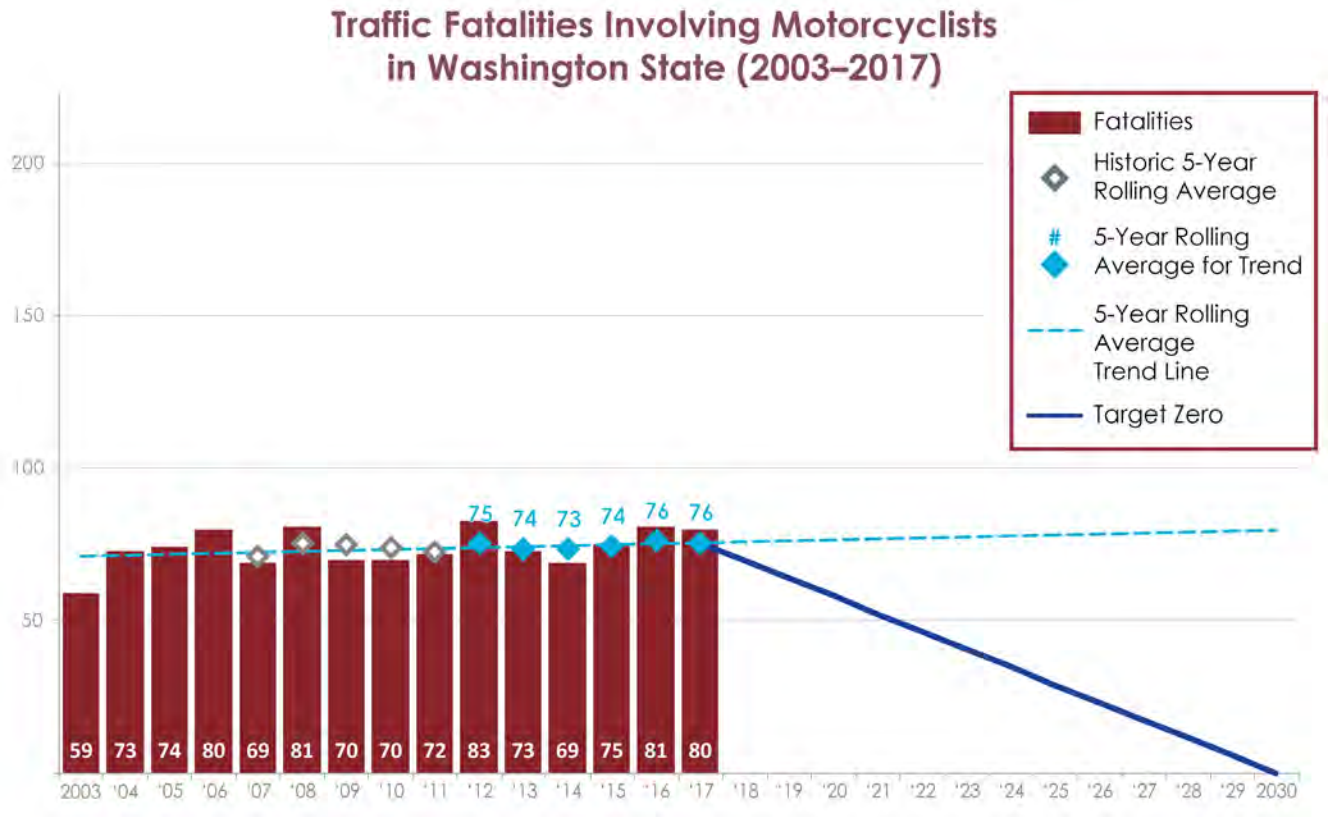


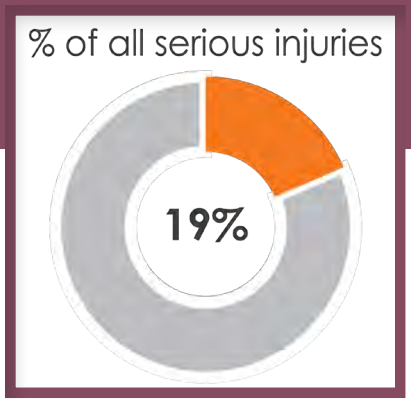
Motorcycles only comprise 3% of the vehicles registered in Washington State, but accounted for 14% of all fatalities and 19% of serious injuries in crashes in the last three years (2015–2017). About one in five motorcycle crashes result in a fatality or serious injury and, on average, 75 riders die every year in crashes on Washington roads. Of the motorcyclist fatalities from 2015-2017, 42% involved a crash with only the motorcyclist and no other vehicle. There has been no meaningful reduction in motorcycle fatalities for at least the last 15 years. An internal review of motorcyclist-involved crash reports conducted by the Department of Licensing (DOL) revealed that in 75% of the motorcyclist-involved crashes, the rider is at fault.

Washington motorcycle riders want the freedom to ride, and Washington wants riders to have the freedom to ride safely. Both can be accomplished through trained and disciplined riding, with the support of an engaged community. Linking a safe riding culture with training and education, best practices, and community involvement creates an environment where riders can enjoy a lifelong, safe riding experience.

Key Issues for Motorcyclists

- Behavior and motorcycle types
- Endorsement and training
- Other high risk behaviors

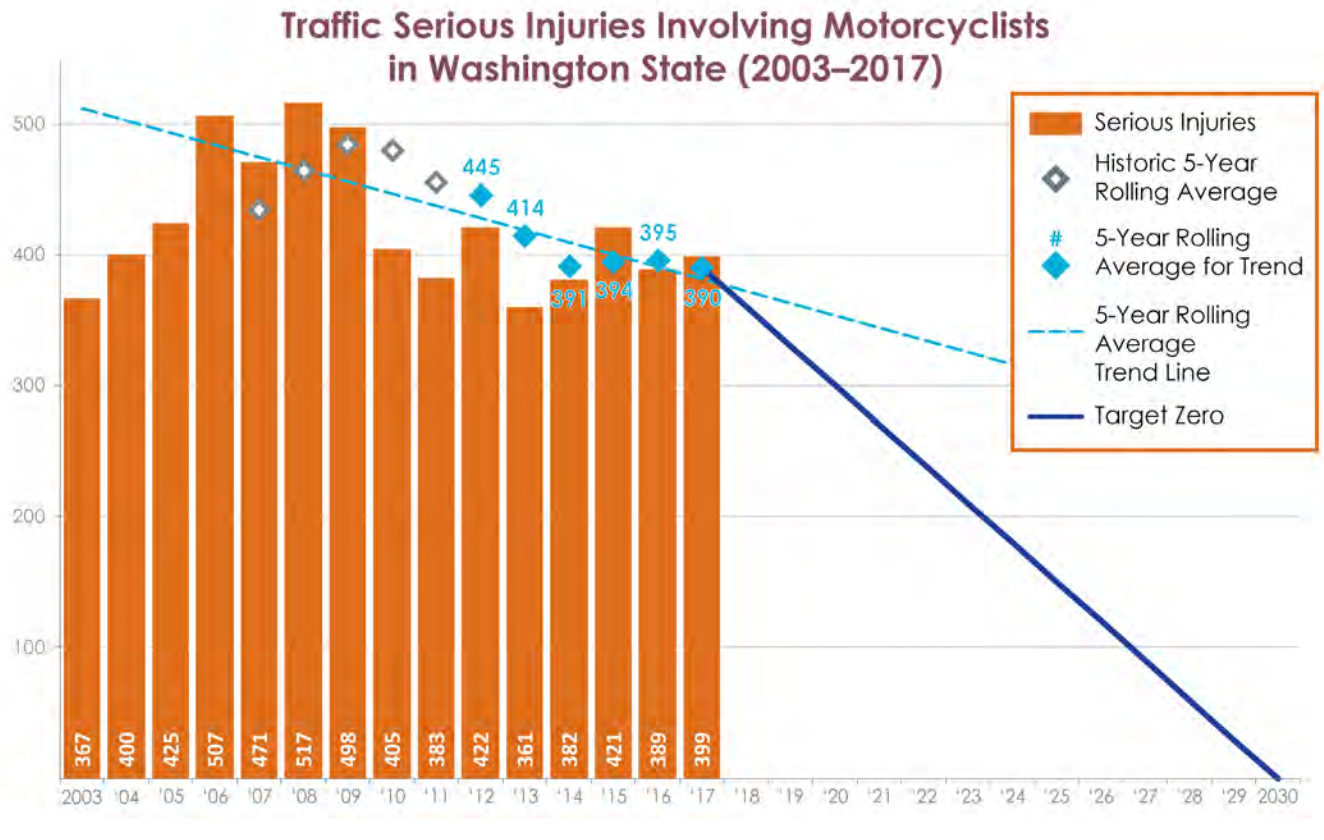




Priority 2

Key Countermeasures for Motorcyclists Include:

- Improved training and endorsement.
- Universal helmet laws and enforcement.
- Developing a culture of rider safety in Washington.



Motorcycles, unlike passenger vehicles, offer no protection to the rider in the event of a crash, and therefore riders are more susceptible to fatalities and serious injuries in crashes. The risk of injury to motorcyclists is elevated when the rider chooses to not wear additional personal protective equipment or to engage in other high risk behaviors such as impairment or speeding.

BETWEEN 2015–2017 THERE WERE

236 FATALITIES AND

1,209 SERIOUS INJURIES

INVOLVING A MOTORCYCLIST

FATALITIES INVOLVING **MOTORCYCLISTS** OFTEN INVOLVE **OTHER FACTORS**

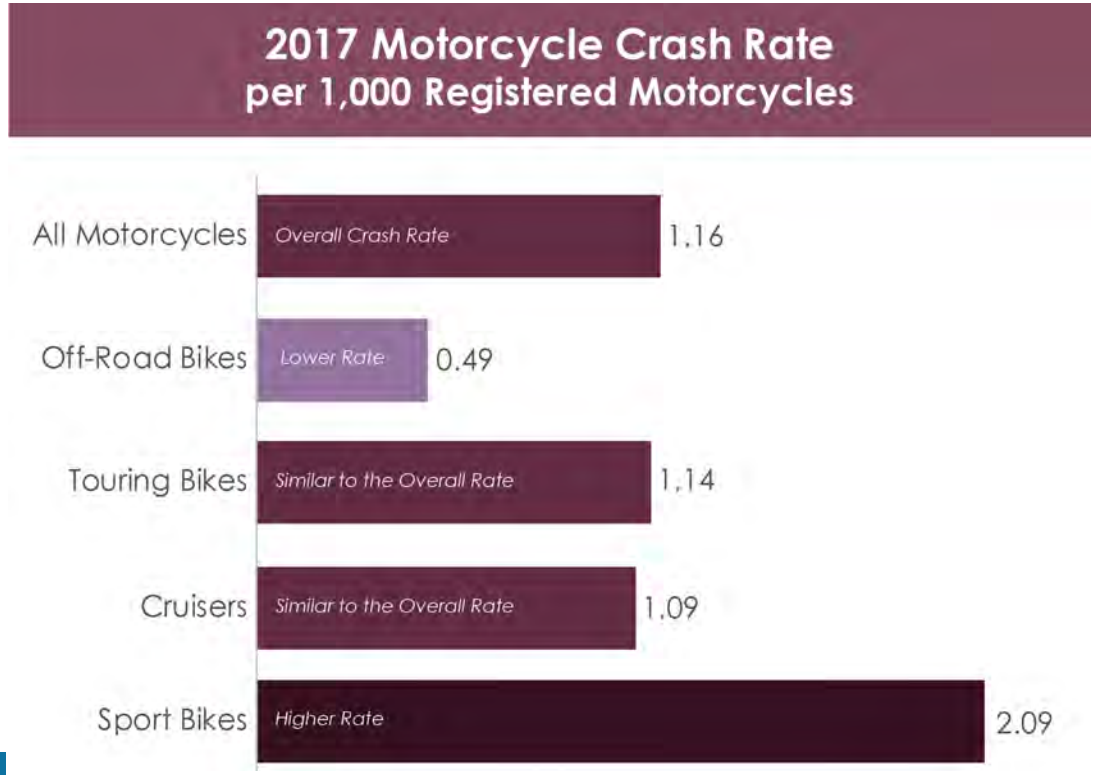
The top two factors that overlap with Motorcyclists are **SPEEDING** and **IMPAIRMENT**

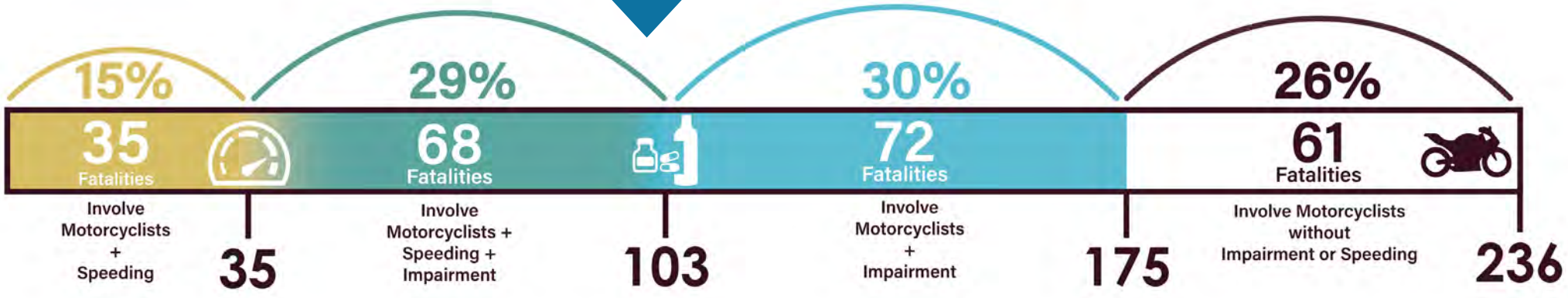
OUT OF **236 FATALITIES**:

44% also involved SPEEDING

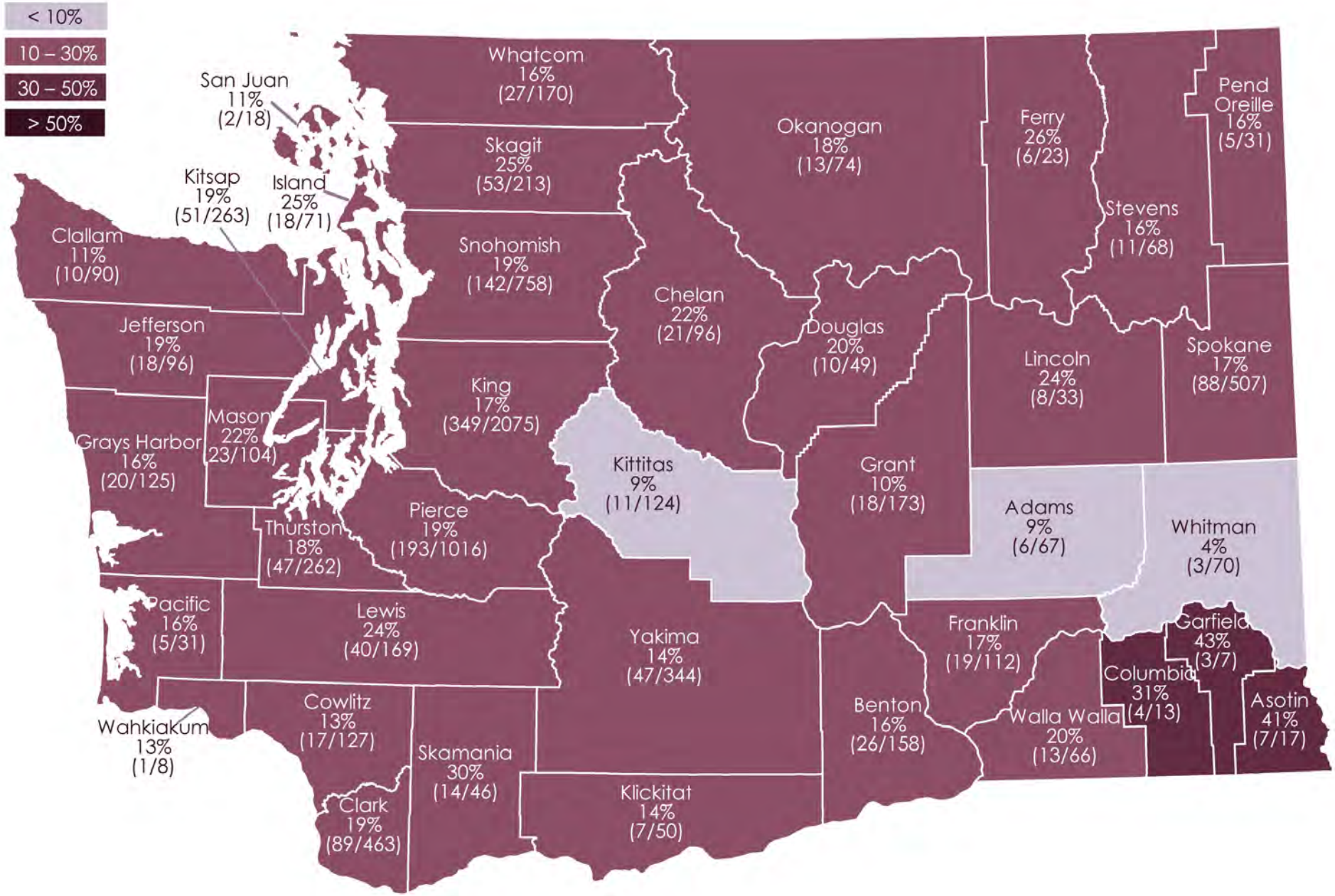
59% also involved IMPAIRMENT

and 29% involved a combination of both





Percent of All Fatal and Serious Injury Crashes That Were Motorcyclist Related, by County (2015–2017)



Behavior and Motorcycle Types

When we study the types of motorcycles on the roads, the motorcyclists who crash, and how often these crashes occur, some interesting trends emerge. While terms such as cruiser, sport, touring, and enduro are marketing descriptions, rather than strict definitions of weight, power, and intended usage, the data show that motorcyclists who ride different motorcycle types exhibit different behavior patterns. Sport bikes are involved in both fatal and serious injury crashes at a significantly higher rate than all other motorcycle types. Cruisers and touring bikes crash at rates consistent with all motorcycles, while motorcycles designed for both on and off-road use (enduro/dual-sport) crash at a significantly lower rate.

Sport bikes are typically ridden by younger riders, while older riders are crashing on touring bikes and cruisers.

Endorsement and Training

Based on DOL motorcycle endorsement data, 78% of riders involved in a fatal crash had an endorsement. It is often unknown if these riders had any training prior to endorsement, or how long ago their training occurred. Trends indicate that training can reduce skills-based crashes, but traffic safety practitioners must also focus on improving behavior and decision-making to further reduce fatality and serious injury crashes. Over a lifetime of riding, static training events—taken only one or two times—will only go so far.

The first years of riding are the most dangerous for a motorcyclist. While Washington State has increased the number of endorsed riders in recent years, that alone is not enough to reduce the number of motorcycle crashes.

The crash potential for motorcyclists is not limited to new or young riders. Although there is a reduced crash likelihood associated with more years of on-road riding experience, rider engagement surveys conducted by the DOL indicate that many older riders may actually be returning to riding after an extended period of not riding. Extra training could improve skill and bring returning riders up to date and license assessment or re-training is recommended for an increasing population of older riders.

Other High Risk Behaviors

The top two factors observed in fatal motorcycle crashes were impairment and speeding. In fact, impairment and speed are more likely to be seen in fatal motorcycle crashes than in crashes involving any other type of road user.

For fatal motorcycle crashes involving impairment as a factor, 93% of the time the motorcyclist is the one who is impaired. This holds true for speeding as well: in 95% of fatal motorcycle crashes, the motorcyclist is the one speeding. The prevalence of these factors reinforces that the biggest contributor to motorcycle-involved crashes is poor decision-making. Other factors also present often in motorcyclist crashes include distraction, novice riders, and unendorsed riders.

- The lack of a motorcycle endorsement is more likely an indicator of risk-taking behavior rather than a cause of fatalities.
- Young riders, novice riders, and returning riders of all ages are at elevated likelihood of crashes due to a lack of experience.
- Speeding and impairment are conscious choices made by the rider or driver that can have devastating effects leading to a crash. These are compounded when the rider fails to wear protective equipment.

Traffic Safety Culture: Motorcyclists

Education and training programs like It's A Fine Line and DOL's Motorcycle Safety Program promote community involvement and culture change surrounding safety, awareness, education, and endorsement.

These risk-taking behaviors, along with poor decision-making and lack of experience, are the biggest contributors to motorcycle crashes—and the unprotected rider is too often a fatality in an otherwise avoidable crash.

Key Countermeasures for the 2019 Plan

Improved Training and Endorsement

A recent joint study by Washington Traffic Safety Commission (WTSC) and DOL examined all motorcycle-involved crashes between 2013 and 2017 and found that while most riders were endorsed, 39% of riders received no evaluation of their skills prior to their crashes. These represent a subset of the riding population that are choosing to ride without endorsement or with an instruction permit only.

By ensuring more riders get endorsed, and that the permitting and endorsement process is a more meaningful evaluation of rider skill and ability, Washington may reduce the number of crashes caused by inexperienced riders. Subsidy programs may encourage novice riders to seek training rather than forgo it in favor of "testing out." Strengthening the testing and evaluation process will provide better assessments prior to permitting or endorsement.

Increasing the difficulty level of the endorsement tests will push more riders into training; they will need to gain the skills necessary to pass the exam. This should result in an increase in the demand for additional training above a basic/novice level course, and result in riders gaining the skills and knowledge needed to avoid crashes. The current penalty for riding without an endorsement is $136; this amount is significantly lower than the cost for obtaining the endorsement through training. The passage of House Bill 1116 in the 2019–2020 Legislative Session includes increases in the penalty for riding unendorsed and raises the penalty so that it is no longer significantly lower than the cost for obtaining the endorsement through training. This will incentivize training and discourage unendorsed riding.

RELATED AREA: Wildlife Crashes

Wildlife-involved crashes accounted for 0.5% of fatalities (eight) and 0.8% of serious injuries (53) in 2015–2017. Of the fatalities, six (75%) were motorcyclists. Of the serious injuries, 47 (89%) were motorcyclists.

WSDOT identifies locations with high rates of wildlife strikes through crash data and carcass removal data. These numbers suggest that, annually, there are a minimum of 5,000 vehicle crashes with deer and 200 vehicle crashes with elk in our state.

To prevent future wildlife crashes in those locations, WSDOT has used:

- Variable message signs.
- Flashing beacons.
- Yellow diamond-shaped warning signs.
- Wildlife crossing structures.
- Wildlife fencing: eight-foot-tall barrier fencing to prevent wildlife from accessing the roadway.
- Wildlife detection systems. Elk with transmitter collars activate a flashing beacon when detected near the highway.
- Cutting back roadside vegetation to improve sight distance for road users

For more information, please visit WSDOT's "Reducing the risk of wildlife crashes" page at www.wsdot.wa.gov/environment/protecting/wildlife-crashes.

Universal Helmet Laws and Enforcement

Washington maintains a universal helmet law that requires all riders, regardless of age or motorcycle type, to wear a USDOT-compliant helmet. Of the riders killed in crashes, only 8.5% were helmetless. However, a joint study conducted by DOL and WTSC revealed riders wearing a helmet were 37% less likely to be in a fatal or serious injury crash.

This is important because there are annual challenges to Washington's helmet laws by advocates wishing the law repealed. In 1977, Washington's helmet law was repealed. Up to this time, there was an average of 49 motorcyclist fatalities per year. In 1977 there were 75 motorcyclist fatalities and that number jumped to 115 in 1978 and 119 in both 1979 and 1980. In 1990, Washington's helmet law was fully reinstated, leading to an average of 41 motorcyclist fatalities per year the following decade. Based on Washington's own history, motorcyclist deaths increased 40% percent following the repeal of the helmet law, and declined 45% when the helmet law was re-enacted. To reach zero fatalities and serious injuries, it is important that this law stay in place.

Developing a Culture of Rider Safety in Washington

Motorcycle riding is a perishable skill that is easily lost if not constantly practiced. However, motorcycle riding is often seen as a hobby and a seasonal recreation. Ridership in Washington peaks in the summer months.

Additional training or a "Training for Life" approach can improve rider skill and judgment. Outreach efforts made with current riders, other motorists, and youth can educate and inform roadway users on the inherent risks of riding. Through this outreach, Washington can foster a culture of motorcycle safety in which riders make better decisions, including training, protective equipment, and risk analysis. Also, this outreach approach can better inform other motorists of the vulnerability of riders and how to safely operate around motorcycles.

Washington State Laws Relating to Motorcyclists

RCW 46.37.530 Motorcycles—Helmets, other equipment

RCW 46.81A Motorcycle skills education program

RCW 46.61.608 Operating motorcycles on roadways laned for traffic

RCW 46.61.610 Riding on motorcycles

RCW 46.61.611 Motorcycles—Maximum height for handlebars

RCW 46.61.612 Riding on motorcycles—Position of feet

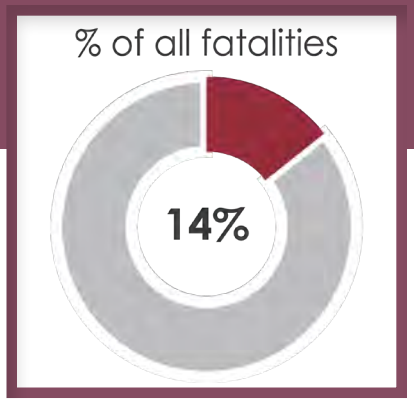
RCW 46.61.613 Motorcycle temporary suspension of restrictions for parades/public demonstrations

RCW 46.61.614 Riding on motorcycles—Clinging

Strategies for Reducing Motorcyclist (MCX) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
MCX.1. Increase the percentage of riders who are trained and endorsed.	MCX.1.1 Collaborate with dealers and manufacturers to promote motorcycle training and endorsement. (R, NCHRP)	Education
	MCX.1.2 Increase number of riders participating in safety training. (U)	Education
	MCX.1.3 Provide incentives for riders' completion of training. (U)	Education
	MCX.1.4 Conduct targeted safety/endorsement media outreach and education. (U)	Education
	MCX.1.5 Conduct outreach to registered owners of motorcycles who are not endorsed. (U)	Education
	MCX.1.6 Increase opportunities for motorcyclist field training. (U)	Education
MCX.2. Reduce numbers of impaired, unskilled, and unsafe riders.	MCX.2.1 Increase motorcyclist awareness of the risks of impaired motorcycle operation. Promote self-policing within the motorcycle community by expanding existing prevention programs, including at specific motorcycle events. (R, NCHRP)	Education
	MCX.2.2 Re-establish a tiered endorsement program with specific endorsements based on motorcycle engine size or power-to-weight ratio. (U)	Leadership
	MCX.2.3 Implement re-testing for endorsement every five years. (U)	Education, Leadership
	MCX.2.4 Require novice rider training (including knowledge and skills testing) to obtain permit. (U)	Education, Leadership
	MCX.2.5 Implement mandatory on-street training and testing. (U)	Education, Leadership
	MCX.2.6 Increase the number of riders seeking on-going training throughout their riding lives. (U)	Education
MCX.3. Increase rider safety awareness.	MCX.3.1 Identify and promote rider visibility-enhancement methods and technology. (R, NCHRP)	Education
	MCX.3.2 Educate all motorists about the vulnerability of motorcyclists. (U)	Education
	MCX. 3.3 Increase outreach to high risk motorcyclists to inform them of the inherent dangers of riding and how to minimize their risks. (U)	Education
MCX.4. Increase Law Enforcement Motorcycle Awareness.	MCX.4.1 Maintain resistance to proposals to law changes that work to repeal motorcycle helmet safety standards. (P, CTW)	Education, Enforcement
	MCX.4.2 Support specialized law enforcement training in motorcycle DUI detection and motorcycle crash investigation. (R, CTW)	Education, Enforcement
	MCX.4.3 Create and implement specialized training to educate law enforcement on motorcycle specific laws. (U)	Education, Enforcement
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Motorcyclists, refer to the Impairment, Speeding, and Licensing and Regulation chapters.

Older Drivers (70+ years old)

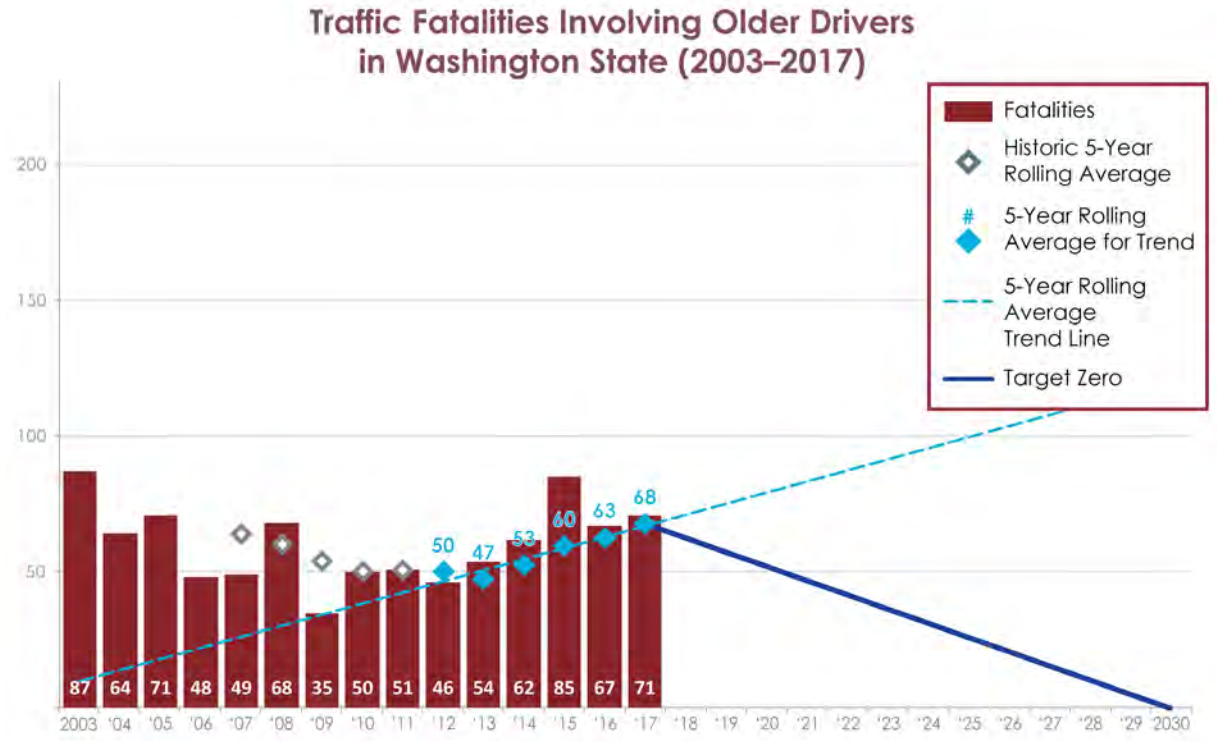


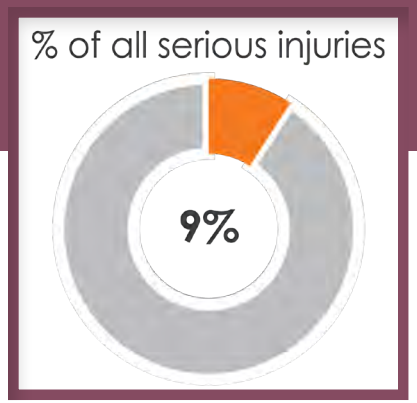
Fatalities involving older drivers in Washington have been trending upward for the past several years. This is partially due to increased exposure: there are a greater number of older adults in the state, and they are keeping their licenses longer and driving more than previous generations. Because of this, the rate of fatal crashes involving older drivers has remained relatively flat over the past decade, with the increase proportionate to the increase in older drivers.

The aging of the state's population brings with it new issues and challenges, including how to keep older drivers safe and mobile. Older adults tend to self-regulate their driving in response to physical, visual, and cognitive change. For example, many seniors avoid driving on unfamiliar roads and limit their trips at night, on highways, or during rush hour. Most older adults reduce their driving mileage or surrender their licenses in their later years. In 2017, 96% of the population between the ages of 70 and 74 held a valid driver license; only 57% of the population ages 85+ had a driver license.

Key Issues for Older Drivers

- High risk behaviors like distraction and impairment
- The older driver population in Washington State is expanding
- Older drivers are at increased risk of dying in crash

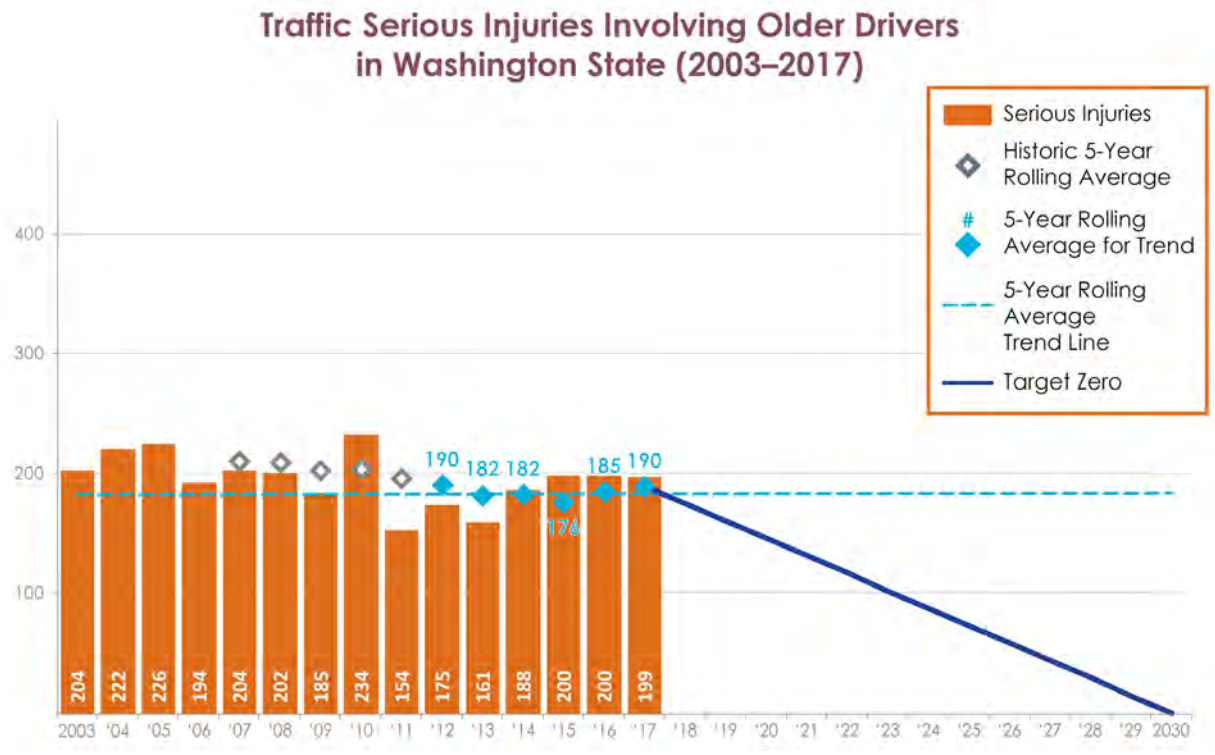




Priority 2

Key Countermeasures for Older Drivers Include:

- Highway design and traffic control for older drivers.
- Crash prevention classes for older drivers.
- Continue requiring in-office driver license renewals for drivers age 70+.
- Research on licensing for older drivers.



BETWEEN 2015–2017 THERE WERE

223 FATALITIES AND 599 SERIOUS INJURIES

INVOLVING AN OLDER DRIVER

FATALITIES INVOLVING OLDER DRIVERS OFTEN INVOLVE OTHER FACTORS

The top two factors that overlap with Older Drivers are **DISTRACTION** and **LANE DEPARTURE**

OUT OF **223 FATALITIES**:

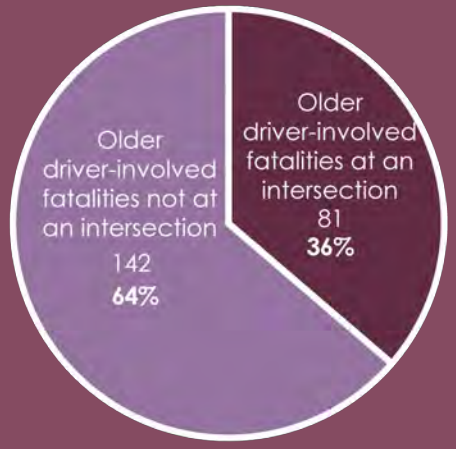
40% also involved DISTRACTION
39% also involved LANE DEPARTURE
and 13% involved a combination of both

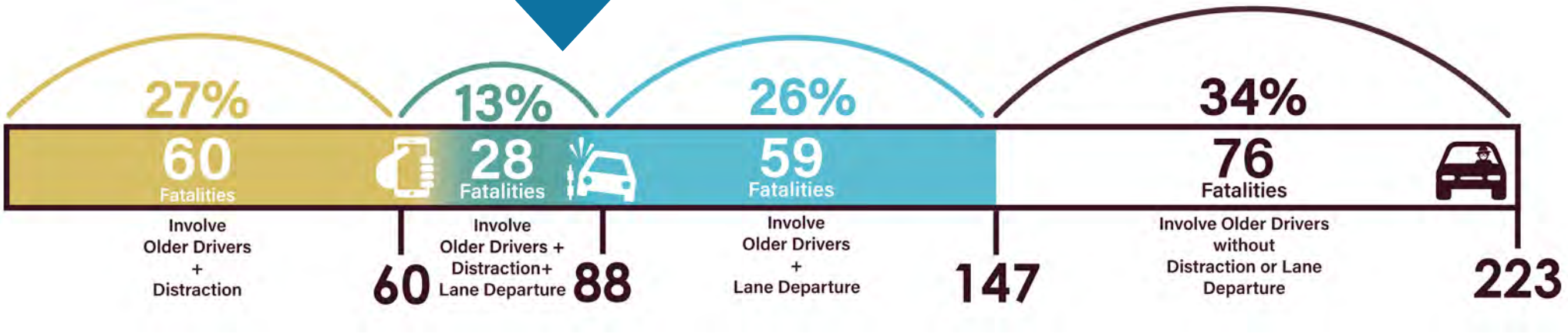
Overlapping Factors

For older driver-involved fatalities, impairment is second to distraction as the most common high risk behaviors. Unlike younger drivers, older drivers are more likely to be impaired by drugs than by alcohol. See Older Drivers and High Risk Behaviors on page 152 for more information.

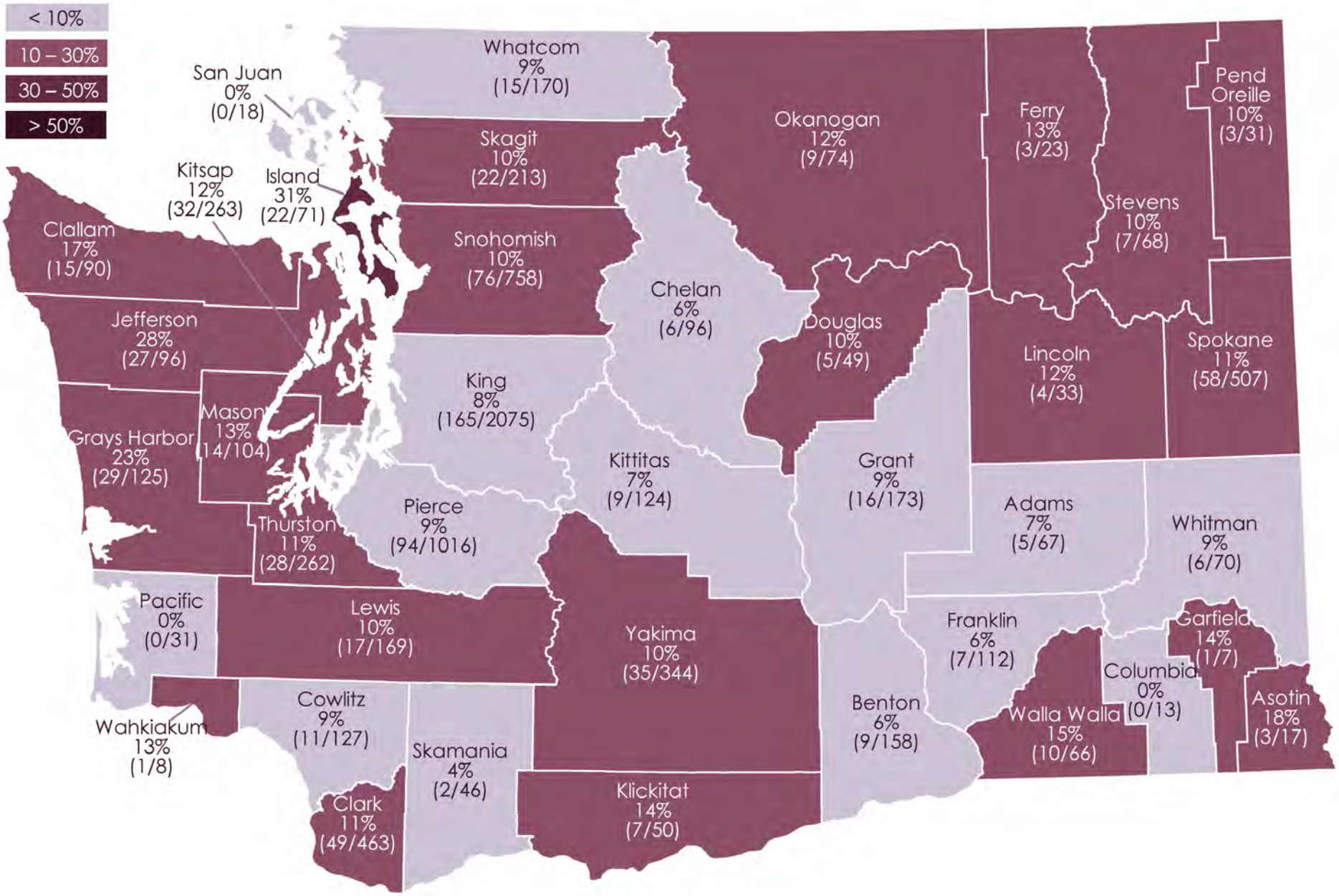
Intersections also emerge as an overlapping factor in many older-driver involved fatal crashes. More than a third of older driver fatalities occurred at an intersection, compared to less than 23% of all traffic fatalities.

Lane departures and intersections are covered under the Crash Type section of Target Zero. This chapter specifically addresses high risk driver behaviors. For strategies related to lane departure, see page 98 and for strategies related to intersections, see page 107.





Percent of All Fatal and Serious Injury Crashes That Were Older Driver Related, by County (2015–2017)



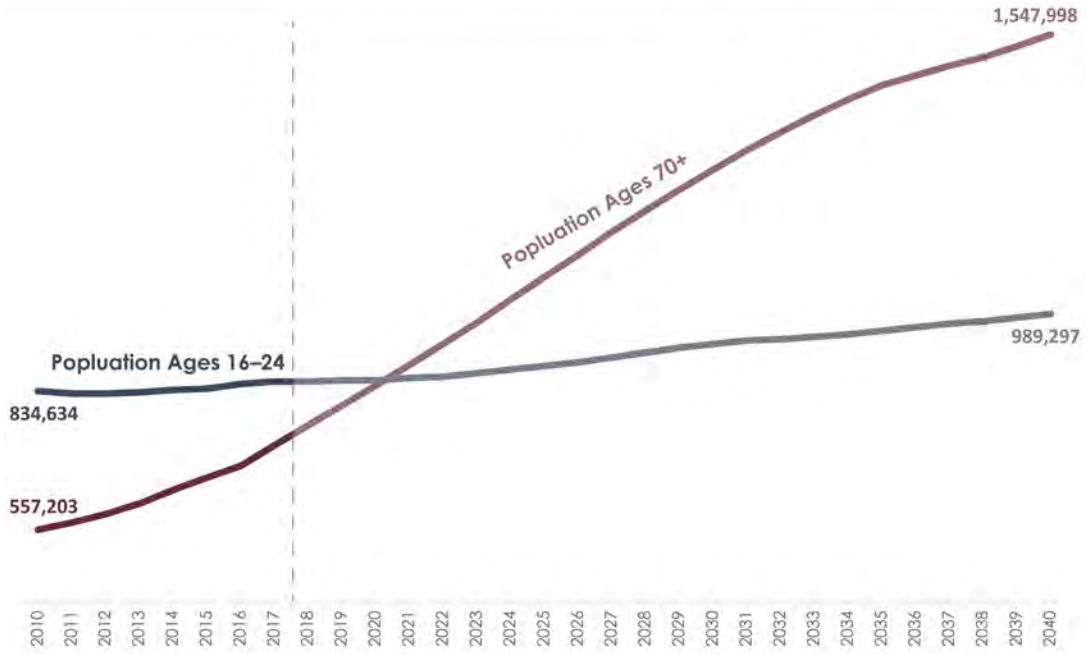
Older Drivers and High Risk Behaviors

Distraction is the top contributing factor associated with older-driver-involved fatalities. When both an older driver and distraction are factors in a fatal crash, 60% of the time the older driver is the one distracted. While young drivers are more likely to be distracted by passengers or electronic devices, the nature of distraction tends to be different for older drivers and includes surveillance errors or secondary driving tasks, such as searching for roadside targets like poles, signs, guard rails, and vegetation. Among all older drivers ages 70+ involved in fatal crashes, 28% were distracted, versus only 19% of drivers ages 16–69.

Drug impairment is also a common overlapping factor associated with older driver involved fatalities. Among crashes involving older drivers, 19% of older drivers tested positive for drugs, compared to only 9% of the under-70-years-old drivers involved in these crashes. Older drivers often test positive for prescription drugs, whereas other drivers most often test positive for cannabis. While prescription medications may be necessary to control disease or treat health conditions, they can also cause drowsiness or affect driving. According to research on medication use among older drivers conducted by the American Automobile Association (AAA) Foundation for Traffic Safety, 97% of study participants reported taking at least one medication, and the median number reported taken was seven medications. For more information on older drivers and drug impairment, see the Impairment chapter on page 40.

Older drivers are also disproportionately involved in fatal crashes that occur at an intersection or involve a driver failing to yield right-of-way. Angle-impact crashes, which tend to occur at an intersection when a driver fails to yield to an oncoming vehicle or when making a left turn, are the most common type of fatal crash among older drivers.

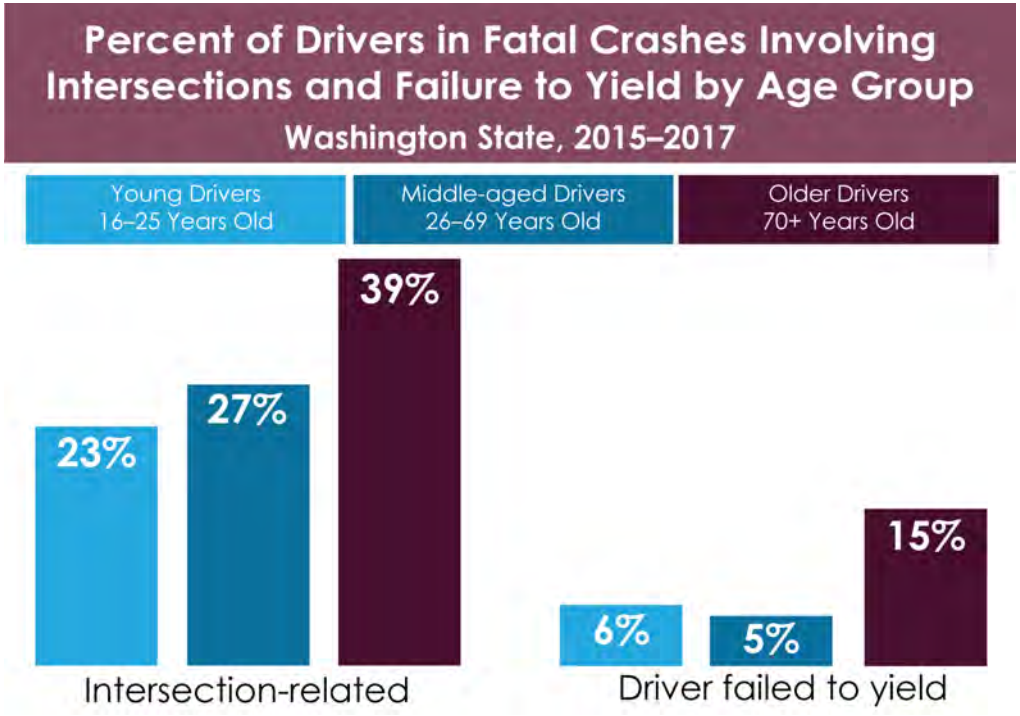
Population Growth in Washington for Ages 16–24 and Ages 70+
Actual to 2017, Projected to 2040



Mobility is Key to the Well-Being of Older Adults

Addressing older drivers on the road is important for several reasons:

- As people age, they may experience declines in their driving abilities as a result of age-related medical conditions.
- Seniors are particularly vehicle-dependent because they tend to live in more remote, rural areas with few, if any, transportation choices.
- Car ownership and driving are strongly linked to independence and life satisfaction for older adults.
- Most people still outlive their ability to drive. The average American man outlives his ability to drive by six years, and the average American woman by 10 years.



Older drivers are over-represented in these types of crashes primarily due to advancing age-related cognitive and physical decline. For example, declines in neck and torso mobility can make it difficult for older drivers to turn and look to the sides of the car to monitor for oncoming vehicles. Deteriorating visual quality can make it difficult for older drivers to see at night and in low contrast conditions. Navigating through intersections requires the ability to make rapid decisions, react quickly, and accurately judge speed and distance, which are all abilities that can diminish with age.

Older Driver Population in Washington State is Expanding

People aged 70 years and older are the fastest growing segment of the population in Washington State. As shown in the graph on the previous page, this age group is expected to grow significantly in the next 20 years. Aging Baby Boomers (the generation born between 1946 and 1964) are contributing to the rapid growth in the senior population—the oldest boomers are now in their early 70s.

Older adults today tend to be more active than previous generations, keeping their driver licenses later into life. Between 2010 and 2017, the number of licensed drivers aged 70 years or older increased 37%, which translates to an additional 167,000 older drivers on Washington roadways. In Washington, there are now almost as many licensed drivers ages 70 years or older as there are licensed drivers ages 16–25.

Older Drivers are at Increased Risk of Dying in Crashes

Older drivers have a lower overall crash rate than other drivers. However, they are involved in fatal crashes at a higher rate than drivers aged 26–69, and are more likely than not to be at fault in fatal crashes.

When an older driver is involved in a fatal crash, they are the one most likely to be killed in that crash:

- Older drivers represented 10% of all drivers involved in fatal crashes between 2015 and 2017, but accounted for 14% of all the drivers who were killed.
- Between 2015 and 2017, when older drivers experienced a fatal crash, they were more likely to be killed than drivers ages 16–69: 63% versus 42%.
- According to the National Highway Traffic Safety Administration, at the national level, drivers aged 75 to 79 are 3.5 times more likely to be killed in an automobile crash than drivers 30 to 65 years old. This likelihood jumps to 9.5 after age 80.

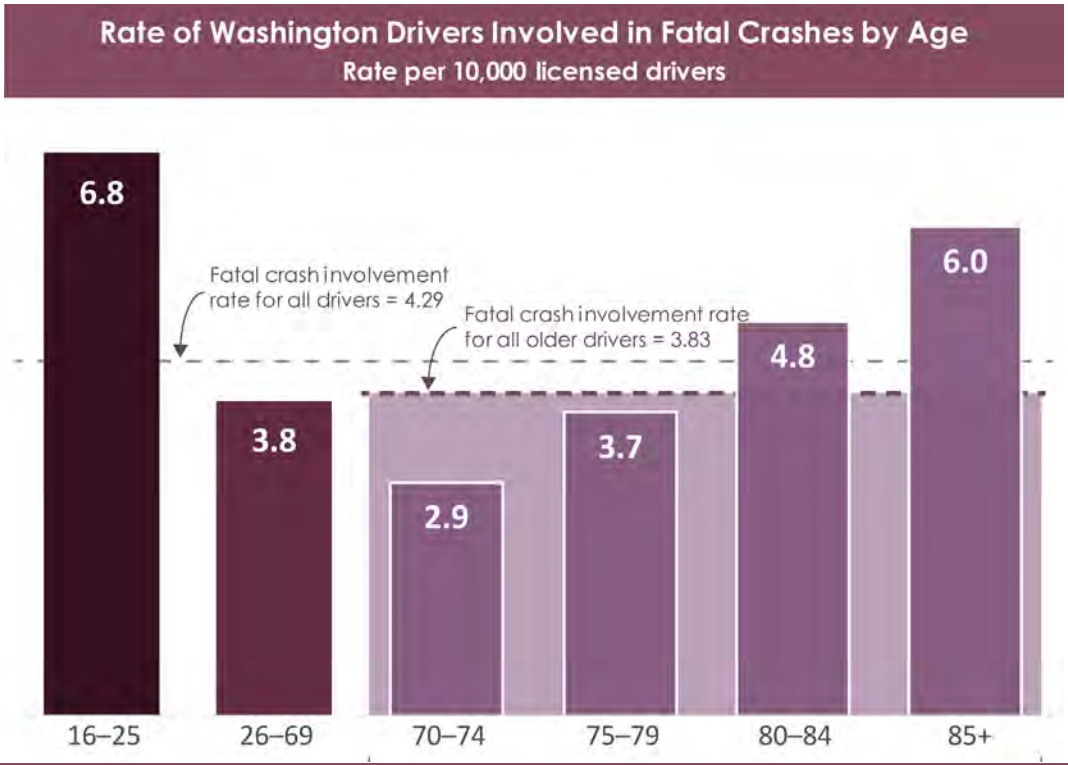
The over-representation of older drivers in fatal crashes is largely due to fragility that is common in older adulthood – for a given crash force, an older person will sustain a greater level of injury and have a harder time recovering from a resulting injury.

Key Countermeasures for the 2019 Plan

Highway Design and Traffic Control for Older Drivers

Statewide, partners are implementing design changes that can help the growing older-driver population:

- With the installation of roundabouts, road designers are working to remove the need to make left turns, a common source of fatal and serious injury crashes for older drivers. For more on roundabouts, please see page 104.
- Converting permitted left turns from green circles to flashing yellow arrows helps avoid driver confusion that might lead some to assume they can go on the green without yielding.
- Engineers are increasing sign sizes to make their messages clearer, especially for those with diminishing vision such as older drivers.



Crash Prevention Classes for Older Drivers

Drivers age 55 and over may enroll in educational classes such as AAA's Roadwise Driver Course. These programs focus on high risk situations all drivers face, as well as providing tips and techniques for addressing factors more typical among aging drivers. These include changing vision, reduced response times, and effects of various prescription medications. Older drivers that complete one of these eight-hour courses can also qualify for an insurance discount.

Requiring In-Office Renewals for Driver License

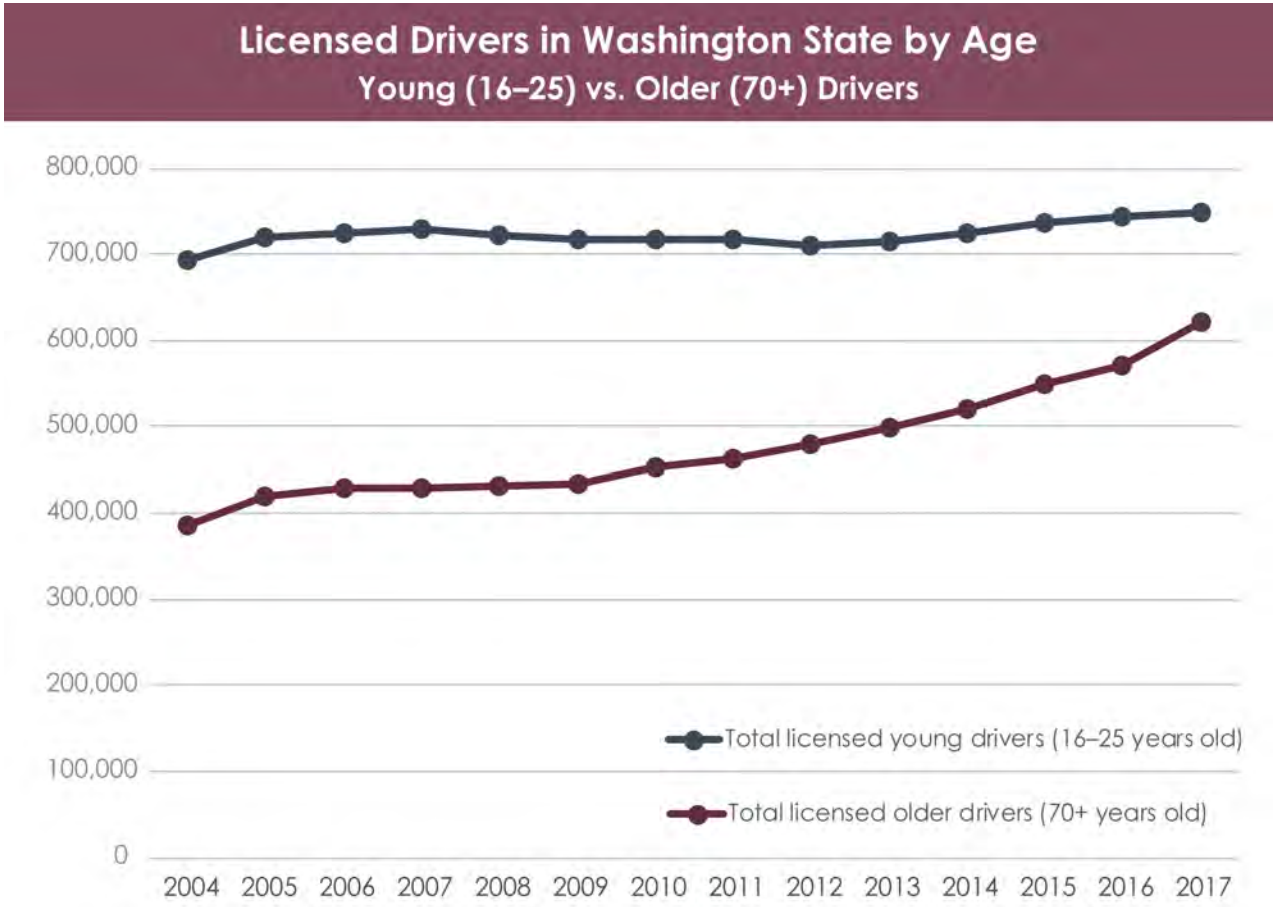
In Washington State, all drivers must renew their license every six years. Drivers have the option of renewing online every other cycle up until the age of 70. However, drivers aged 70 years and older must renew their license in person every six years at a licensing office, which also requires them to pass the vision test at every renewal. This gives the Department of Licensing (DOL) staff an opportunity to see firsthand whether a driver's ability to operate a vehicle should be evaluated more closely. Any obvious impairment that might interfere with safe operation of a motor vehicle should alert the representative to question the customer further regarding the possible impairment. Research has found an association between mandatory in-person renewal and a reduction in fatal crash involvement rates among older drivers.

Research on Licensing for Older Drivers

DOL researched older-driver crash data and policy approaches in other jurisdictions, primarily other states and some countries. Based on this research, DOL has identified a series of recommendations that the agency can focus on to address the impacts of our growing older driver population.

These include:

- Provide more training to DOL representatives to watch for medical issues.
- Allow older drivers to opt for a shorter license renewal period.
- Offer a local/restricted license option.
- Offer no-cost identification cards for drivers over 70 who wish to surrender their license.
- Develop and distribute informational materials on older driver safety and resources.



Related Washington State Laws

RCW 46.20.031 DOL is prohibited from issuing a license to a person who has a physical or mental condition that could impact driving.

RCW 46.20.041 Permits DOL to require a medical evaluation if it has reason to believe that a person may have a physical or mental condition that could impact driving

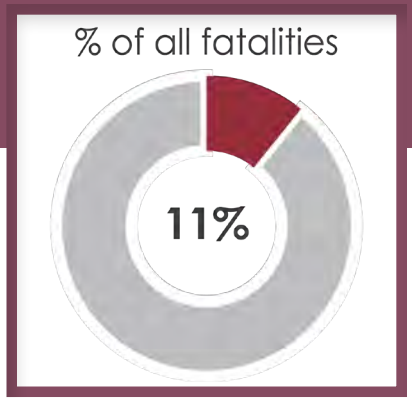
RCW 46.20.305 Permits DOL to require a driver license examination if it has reason to believe that a person is incompetent or otherwise not qualified to be licensed

Strategies for Reducing Older Driver Involved (ODI) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
ODI.1. Identify older drivers who are at an elevated crash risk.	ODI.1.1 Implement Model Driver Screening and Evaluation Program Guidelines for Motor Vehicle Administrators for screening and evaluating older drivers' physical and cognitive abilities and skills. (R, CTW)	Education
	ODI.1.2 Provide training to law enforcement, medical professionals, licensing representatives, and community members for recognizing physical and cognitive deficiencies affecting safe driving in older drivers, including submitting reevaluation referrals to DOL. (R, CTW)	Education, Enforcement, EMS
	ODI.1.3 Establish a State Medical Advisory Board to develop guidelines to determine medical conditions, regardless of age, when driver license restrictions or revocations might be needed. (R, NCHRP)	Leadership
	ODI.1.4 Continue to require drivers age 70+ to renew their license in person (not online or by mail) and complete a vision test for each renewal at a licensing office. (U)	Leadership
	ODI.1.5 Develop and distribute educational materials that provide information and resources for older driver safety, including self-assessment tools, driving evaluation programs, effects of medications and health conditions on driving, resources for car comfort and safety and adaptive equipment for vehicles, tips for family conversations about driving cessation, and additional transportation options. (U)	Education
	ODI.1.6 Conduct research on how to better identify older drivers most at risk for a fatal or serious injury crash, and develop strategies for early intervention with at-risk senior drivers. (U)	Evaluation
ODI.2. Improve older driver competency.	ODI.2.1 Increase driver education opportunities for older drivers. (R, NCHRP)	Education
	ODI.2.2 Develop classes and partner with vehicle dealerships to better educate older drivers on how to use the technology in their newly purchased vehicles to operate the vehicle more safely. (U)	Education
P: Proven R: Recommended U: Unknown		

Strategies for Reducing Older Driver Involved (ODI) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
ODI.3. Reduce risk of serious injury and fatalities.	ODI.3.1 Increase seat belt use by older drivers and passengers. (P, NCHRP)	Education, Enforcement
	ODI.3.2 Promote safe mobility options for seniors by providing guidance and assistance on identifying safe transportation options within the community, and incentivizing transportation options. (R, NCHRP)	Education, Leadership
	ODI.3.3 Involve caregivers and family members of older drivers in discussions and education about aging and driving and provide techniques they can use to help the older driver assess safe driving, and, when necessary, transition from driving. (R, NHTSA)	Education
	ODI.3.4 Improve the roadway to better accommodate the special needs of older drivers. This could include providing advance warning and guide signs, improving pavement markings, improving the readability of roadway signs, providing more protected left-turn signals and offset left-turn lanes at intersections, reducing speed limits, and improving the lighting at intersections and in curves. (R, NCHRP)	Engineering
	ODI.3.5 Issue restricted licenses to older drivers that pose excessive risks only in certain situations. Common types of restrictions could include daylight driving only, limit driving to a specific geographical area, or limit driving only to low-speed roads. (R, CTW)	Leadership
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Older Drivers, refer to the Impairment, Distraction, and Unrestrained Occupants chapters.

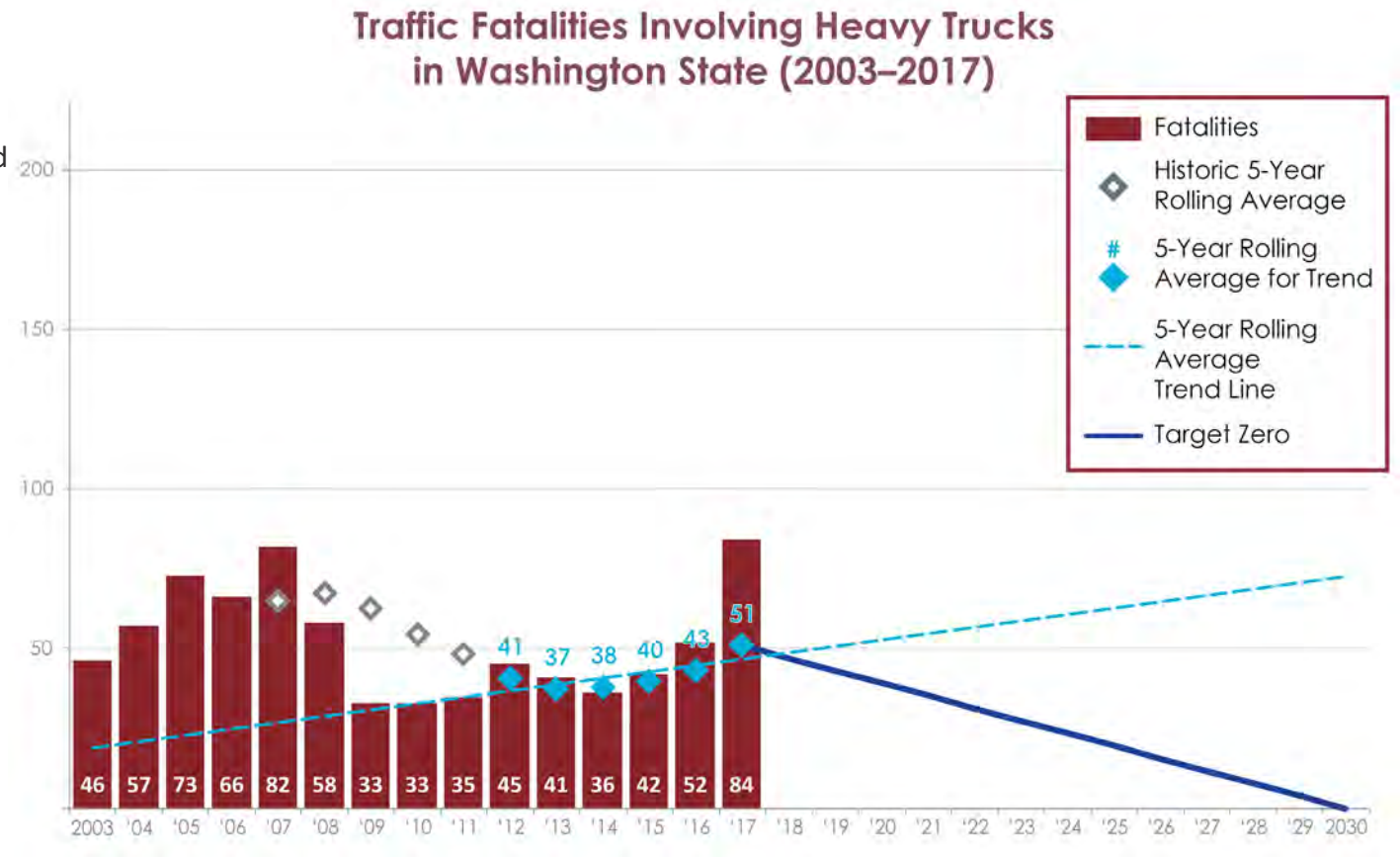
Heavy Trucks

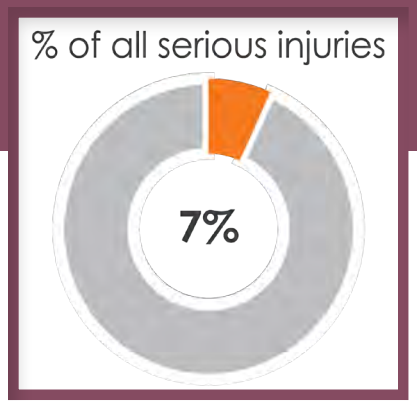


Due to their size, weight, and numbers on the roadways, heavy trucks pose a higher risk of crashes that result in death and serious injuries. In 2015–2017, there was a 46% increase in the number of fatalities involving a heavy truck compared to 2012–2014. An internal review of fatal crash reports conducted by the Washington State Patrol (WSP) revealed that 60% of heavy-truck-involved crashes were caused by passenger car and motorcycle drivers, while heavy truck drivers caused only 27% of the crashes. The remaining 13% of these crashes were due to other causes, predominately pedestrians or bicyclists who failed to yield the right-of-way to the heavy truck.

While heavy-truck-involved fatal crashes in Washington State have increased, the rate is still slightly lower than the national rate. During 2015–2017, heavy trucks were involved in 12% of all fatalities nationally. In Washington for the same period, they were 11% of all fatalities.

There are many factors that contribute to heavy-truck-involved crashes and combating those factors is an ever-evolving effort. Target Zero partners use resources strategically in an effort to decrease these crashes statewide. To address these types of crashes, Target Zero partners are pursuing enforcement and education and outreach strategies focused on not only heavy truck drivers, but also the passenger car and motorcycle drivers who share the road with them.

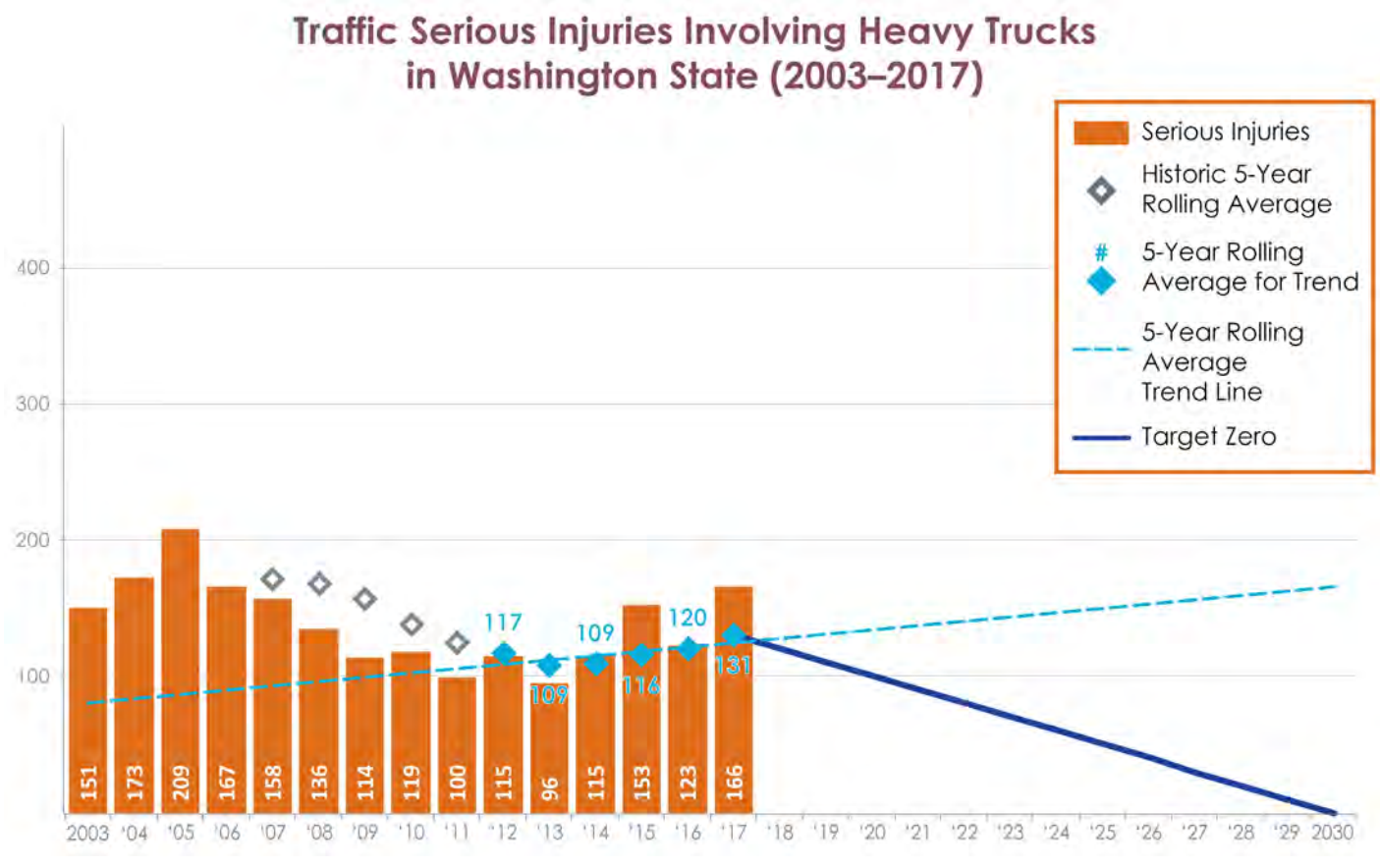




Priority 2

Key Countermeasures for Heavy Trucks Include:

- Enforcement
  - Heavy truck inspections
  - High crash corridors
  - The Ticket Aggressive Cars and Trucks (TACT) Program
- Education and outreach
  - Passenger car drivers
  - Heavy truck drivers



BETWEEN 2015–2017 THERE WERE

178 FATALITIES AND 442 SERIOUS INJURIES

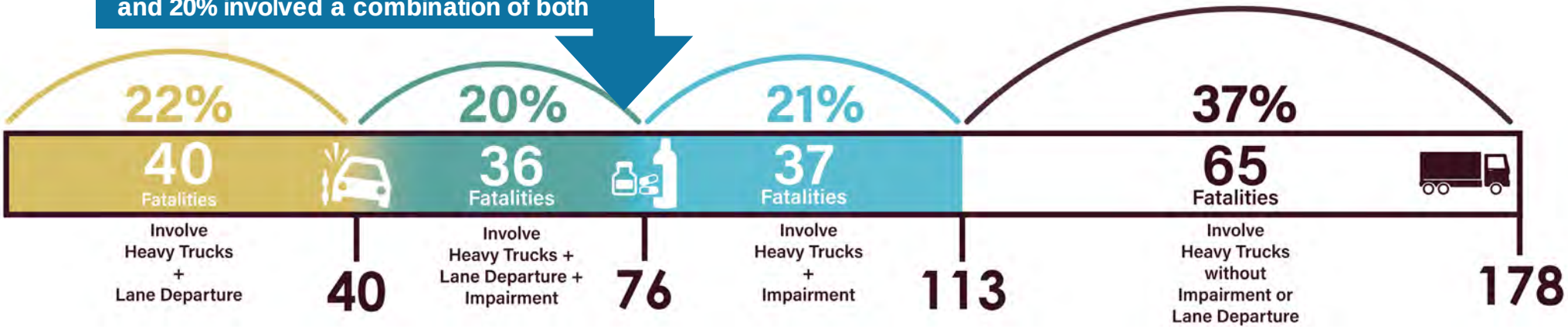
INVOLVING A HEAVY TRUCK

FATALITIES INVOLVING HEAVY TRUCKS OFTEN INVOLVE OTHER FACTORS

The top two factors that overlap with Heavy Trucks are **LANE DEPARTURES** and **IMPAIRMENT**

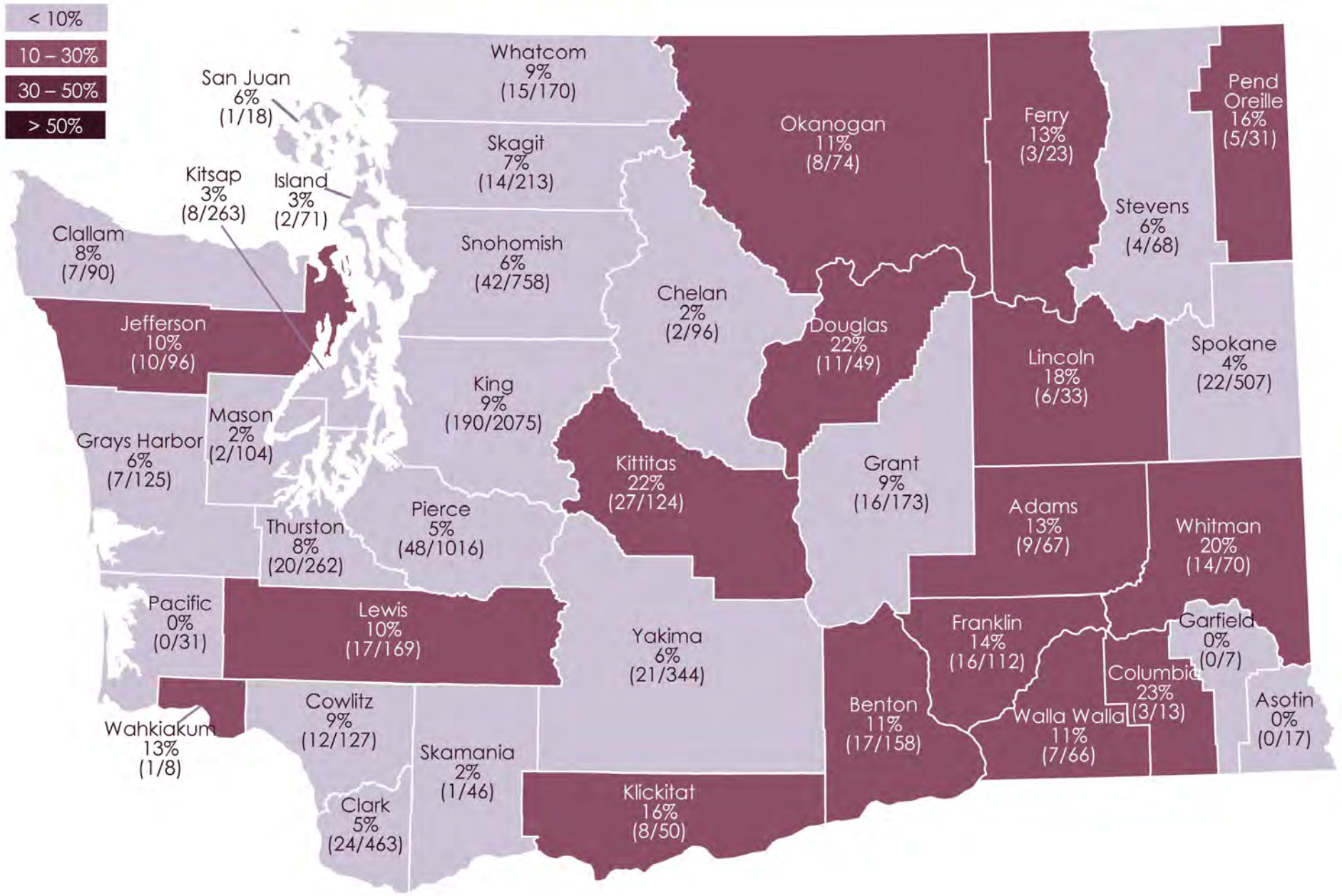
OUT OF **178 FATALITIES**:

42% also involved LANE DEPARTURES
41% also involved IMPAIRMENT
and 20% involved a combination of both



In 2015–2017, of the 73 fatalities that involved both a heavy truck driver and impairment, only eight of those deaths (11%) involved an impaired heavy truck driver. The remaining impaired individuals were other drivers, pedestrians, or bicyclists.

Percent of All Fatal and Serious Injury Crashes That Were Heavy Truck Related, by County (2015–2017)



Key Countermeasures for the 2019 Plan

Enforcement

Continue heavy truck inspections. WSP personnel decreased by 4% during 2015–2017. Even with a 4% reduction in personnel, in this same time period WSP performed 65% more inspections than the national average.

WSP is working to train more officers and other allied law enforcement agency personnel in how to conduct inspections and stop heavy trucks that display high risk driver behavior.

Analyze high crash corridors. The WSP Commercial Vehicle Division (CVD) analyzes fatal and serious injury crash data involving heavy trucks to determine high crash corridors. Analyzing heavy truck crashes and looking for trends is a continuous process. Analysts in CVD review crashes to determine the at-fault unit, location, and primary violations that caused the crash. This breakdown provides WSP with the necessary information to determine where an emphasis should be held.

Promote the Ticket Aggressive Cars and Trucks (TACT) Program. WSP also uses the TACT Program in other high risk crash locations throughout the state. The TACT officers are specially trained in seeking out the most dangerous driving behaviors in both heavy trucks and passenger vehicles (including motorcycles).

From 2015–2017, WSP's nine TACT officers contacted 22,365 drivers of all vehicle types who committed the following violations:

- 4,771 driving aggressively
- 11,781 speeding
- 705 not wearing seat belts
- 28 driving negligently
- 10 DUI
- 108 drug and warrant violations
- 28 reckless and negligent driving

In addition, TACT officers completed 2,734 roadside heavy truck inspections.

Education and Outreach

Education and outreach efforts focus on heavy truck drivers, passenger car drivers, and motorcyclists.

Updated passenger car driver training. Sixty percent of fatal crashes involving heavy trucks are the fault of a passenger car or motorcycle driver. In partnership with the trucking industry and associations, the Department of Licensing (DOL) is analyzing the most influential training materials to improve basic driver training. This training would provide new passenger car and motorcycle drivers with improved skills and knowledge in how to operate around a heavy truck.

Commercial Vehicle Enforcement Bureau (CVEB) Inspections

Washington State Patrol (WSP) is recognized as a national leader in implementing technology to reduce heavy-truck-involved crashes, as well as support freight mobility. Washington commercial vehicle enforcement officers focus on crash-causing violations. According to the Federal Motor Carrier Safety Administration (FMCSA) SafetyNet data, Washington enforcement officers inspected 286,944 heavy trucks from 2015–2017. WSP uses SafetyNet data to identify high risk carriers at roadside and weigh station inspection facilities, and to prioritize compliance reviews.

The state of Washington was recognized by FMCSA for having one of the lowest commercial vehicle fatality rates for a medium-sized state.

Training for the Commercial Driver License (CDL). To decrease heavy-truck-involved fatal and serious injury crashes, DOL recently implemented more specific training requirements for individuals seeking to obtain or upgrade their CDL. The training includes specific curriculum and training hour requirements for obtaining all Class vehicles (A, B, and C) and for each endorsement (Passenger, School Bus, and Hazmat). The curriculum is developed to require compliance for drivers, and provide the same core curriculum for all training schools and employers who teach drivers to obtain a CDL.

DOL partners with Workforce Training and Education Coordinating Board to verify that the training schools are following the required training. DOL actively reaches out to CDL training schools, heavy truck industry, transportation agencies, Federal Motor Carrier Safety Administration (FMCSA), and law enforcement to improve training requirements.

DOL also partners with American Association of Motor Vehicle Administrators (AAMVA) to specify CDL knowledge and skills testing. The knowledge and skills tests are developed to verify that a driver has the skills necessary to operate a commercial vehicle safely on our nation's highways. Skills test examiners are required to complete a complex training for conducting skills test. These examiners are also required to attend yearly "In Service Training" and must pass a re-certification training every four years. DOL actively conducts covert and overt audits ensuring the testing standards are met statewide and across all industries.

DOL has strict requirements for the disqualification of drivers who are convicted of certain violations. Washington is among a few states that actively disqualifies and takes unsafe drivers off the road for drug and alcohol test refusals and test positives.

RELATED AREA: School-Bus-Related Crashes

From 2015–2017, there were four fatalities and 17 serious injuries involving a school bus. None of the fatalities were school-aged children, and only one serious injury was a school bus occupant.

The Office of Superintendent of Public Instruction (OSPI) has overall responsibility for school bus safety. Statewide, five regional transportation coordinators liaison between OSPI and local school districts. The transportation coordinators assist with school bus driver certification, initial and continuing driver training, and development of guidance documents for school districts.

The OSPI and regional coordinators also collaborate with the WSP's Commercial Vehicle Division (CVD) for executing annual, high-quality, and thorough school bus safety inspections.

In considering students' traffic safety, Target Zero partners are not just concerned with school bus riders. In February 2015, The Washington State Department of Transportation (WSDOT), in collaboration with the Washington Traffic Safety Commission (WTSC), OSPI, and Department of Health (DOH), updated the state's School Walk and Bike Routes guide. (www.k12.wa.us/Transportation/pubdocs/WalkRoutes.pdf) This guide is used by school districts to develop, modify, and maintain safe school walk and bike routes.

To prevent injuries related to school buses, OSPI supports:

- Annual training on student management, which helps lessen distractions from students on the bus.
- Annual training on rules and regulations related to school bus operations and Rules of the Road.
- Higher visibility LED lighting on school buses.
- Approval of exterior-mounted back-up cameras.
- Approval of the use of Electronic Stability Control on school buses.
- Approval of Collision Mitigation Technology on school buses.

Outreach in partnership with the trucking industry. To successfully decrease heavy-truck-involved fatal crashes, WSP partners with the heavy truck industry and others in providing education and outreach. At the ports of entry, WSP provides safety talks, along with tours of the weigh stations, to heavy truck drivers from local truck driving schools. This allows the new heavy truck drivers the opportunity to familiarize themselves with the requirements for driving heavy trucks.

Meanwhile, new trucking companies receive New Entrant Safety Audits within six months of operation. The audit examines the companies' operations and provides educational and technical assistance on the safety and operational requirements of the FMCSA regulations and applicable hazardous materials regulations.

WSP actively reaches out to the community and heavy truck industry to educate on laws and safety involving heavy trucks. WSP presents to the trucking industry, other transportation agencies, school groups, and school bus transportation personnel, as well as other police and law groups. From 2015–2017, WSP conducted 1,214 presentations reaching approximately 52,358 stakeholders statewide. WSP will continue these efforts in the immediate future.

Washington State Laws Relating to Heavy Trucks

- RCW 46.25 Uniform Commercial Driver's License Act. Implements the federal Commercial Motor Vehicle Safety Act of 1986 (CMVSA), Title XII, P.L. 99–570
- RCW 46.32 Vehicle Inspection. Defines "commercial motor vehicle" along with the rules and regulations for the inspection of commercial motor vehicles
- RCW 46.44 Size, Weight, Load. Contains the rules and regulations on size, weights, loads and special permitting for oversized loads
- RCW 46.48 Transportation of Hazardous Materials. Contains the rules and regulations pertaining to the Washington State Patrol's authority to regulate motor carriers who transportation hazardous material
- RCW 46.61 Rules of the Road. Contains information on the operation of all vehicles exclusively upon highways with exceptions
- RCW 46.72 Transportation of Passengers in For Hire Vehicles. Regulates for hire vehicles that transport passengers for compensation with exceptions
- RCW 81.80 Motor Freight Carriers. Defines, sets policy and regulates motor carriers who carry freight for compensation along the highways of this state

Strategies for Reducing Heavy Truck (HVT) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
HTX.1. Increase safety and reduce crashes through quality driver and vehicle inspections and enforcement.	HTX.1.1 Increase and strengthen commercial vehicle safety and performance inspections, including focus on heavy truck and commercial vehicle drivers. (P, NCHRP)	Enforcement
	HTX.1.2 Promote industry safety initiatives by performing safety consultations with carrier safety management. (P, NCHRP)	Education
	HTX.1.3 Provide ongoing education and outreach utilizing ‘“Share the Road” information. (R, NCHRP)	Education
	HTX.1.4 Establish commercial vehicle emphasis patrols in areas identified as high risk for crashes involving heavy trucks and commercial vehicles. (R, DDACTS)	Enforcement, Evaluation
	HTX.1.5 Increase commercial vehicle enforcement contacts targeting the top five crash-causing moving violations. (R, DDACTS)	Enforcement, Evaluation
	HTX.1.6 Increase enforcement personnel use of FMCSA’s PORTAL for identifying high risk carriers. (U)	Enforcement, Evaluation
	HTX.1.7 Provide Commercial Motor Vehicle Training (CMV) training to enforcement officers at the state, county, and local levels. (U)	Education, Enforcement
HTX.2. Improve roadway infrastructure to reduce heavy truck/commercial vehicle crashes.	HTX.2.1 Install interactive truck rollover and curve warning signage. (P, NCHRP)	Engineering
HTX.3. Improve heavy truck driver skills and safe behaviors.	HTX.3.1 Identify and promote opportunities to prevent fatigued driving by increasing the availability of commercial truck parking. (R, WSDOT)	Education, Engineering
	HTX.3.2 Partner with CDL Driver Training schools to improve safety and hazard awareness training to increase entry-level driver skills. (U)	Education
	HTX.3.3 Conduct CDL examiner education and audits. (R, NCHRP)	Education, Evaluation
	HTX.3.4 Increase education efforts and training curriculum for all drivers focused on how to safely operate around heavy trucks. (U)	Education
P: Proven R: Recommended U: Unknown		

For additional strategies affecting Heavy Trucks, refer to the Speeding and Licensing and Regulation chapters.

Supporting Systems and Technologies

Behavior, crash type, and road users are only part of the story of traffic safety. Several supporting systems and technologies contribute to roadway safety in our state:

- Traffic Data Systems
- Emergency Medical Services (EMS) and Trauma Care System
- Evaluation, Analysis, and Diagnosis
- Cooperative Automated Transportation—Includes Automated Vehicles
- Safe Systems Approach

Some of these elements are having an immediate effect on our safety outcomes, such as EMS and Trauma Care System, and Evaluation, Analysis, and Diagnosis. Others are having a smaller immediate effect currently, but have the potential to have major decreases in fatalities and serious injuries over time, such as Safe Systems and Cooperative Automated Transportation. These systems and technologies are relatively new, but will mature over time to be more widespread. As they enter full-scale deployment, they have the potential to have increasingly powerful effects on traffic safety.

Traffic Safety Data Systems

Washington State's Traffic Records Systems (TRS) provides the primary source of knowledge about Washington's transportation environment. The TRS is a collection of information about crashes, vehicles, drivers, citations, legal outcomes, and injuries in Washington. Collectively, these systems help partners determine how to reduce injuries and fatalities on our roadways.

TRS provides Target Zero the quality data needed to:

- Diagnose the contributing factors to crashes.
- Analyze the roadway system to identify locations or corridors with higher numbers of fatal and serious injury crashes compared to similar locations on the system.
- Assess the effectiveness of implemented countermeasures.
- Identify innovative and targeted strategies that will have the greatest effect on achieving the goal of zero fatalities and serious injuries.

In order to help us save lives and prevent injuries, TRS must be able to provide uniform, timely, complete, accurate, integrated, and accessible data. This data is essential to the ability of our multidisciplinary safety partners to focus resources and monitor progress toward the Target Zero goal.

In addition, Washington State must develop an ongoing inventory system that provides comprehensive information about roadway systems, including context (what the road was originally designed to do versus what it is being asked to do now), traffic controls, presence and condition of sidewalks, roadway-crossing opportunities, connections between roadways and trail systems, and areas where speed management strategies could be implemented to reduce traffic crashes. This information is essential for local, county, and state roadway development, planning, and engineering.

Partnerships Make Traffic Records Systems a Success

The Washington Traffic Records Committee (TRC) is a partnership of federal, state, and local stakeholders from the fields of transportation, law enforcement, criminal justice, and health. The statewide TRC was created to foster collaboration and develop projects to improve the state's traffic records system. They work to achieve this through four goals:

1. Remove barriers to data sharing and integration.
2. Provide quality data, analysis, and tools to customers.
3. Sustain high levels of collaboration and acquired knowledge within the TRC.
4. Identify and secure targeted investments to sustain TRC initiatives.

Current TRC projects include:

- Development of a sustainability and funding plan for the collection, dissemination, and integration of enforcement information through the Electronic Traffic Information Processing program (eTRIP).
- Collaboration between the County Road Administration Board (CRAB) and Washington State Department of Transportation (WSDOT) to study how their two unique roadway data systems can share data and create a more seamless experience for their engineering users.
- Development of updated grant proposal requirements, gap analyses, and performance measures in accordance with National Highway Traffic Safety Administration (NHTSA) guidelines.

- Enhancement of the ability of partner agencies to collaborate on projects and exchange information.

Programs and Successes

Electronic Traffic Information Processing Program (eTRIP) Integrates Ticketing and Collision Data

eTRIP is a collaboration between WSP, WSDOT, DOL, Washington Administrative Office of the Courts (AOC), the Washington Association of Sheriffs and Police Chiefs (WASPC), and Washington Technology Solutions (WaTech). eTRIP created a seamless and integrated system for electronically gathering and distributing collision reports and traffic tickets, then tracking subsequent activity on those events. This system has been in use since 2006 and currently captures 92% of crashes and 84% of tickets issued in Washington State.

Washington's Traffic Records Data Integration Program Finds a New Home

With support from the Governor's Office, in 2018 the Washington Traffic Safety Commission (WTSC) and Washington State Department of Health (DOH) participated in a National Governors Association (NGA) Learning Lab for improving integrated traffic records. This six-month process included exploration of data governance, data sharing, and program efficiencies.

At the end of the learning lab, WTSC determined that there were other state agencies in Washington that are better resourced and experienced in managing large-scale data integration programs than WTSC.

Based on this finding, WTSC developed program specifications and requirements and conducted an invitational proposal process. The successful proposer was Washington State's Office of Financial Management (OFM) Forecasting and Research Division, with over 25 years of experience integrating data. OFM also manages an integrated education and workforce data warehouse, a justice data warehouse, and the all-payer hospital claims warehouse; these are all data warehouses that integrate data from several sources. The integrated traffic records program will officially move to OFM in 2019.

Washington's traffic information and support data systems are composed of hardware, software, and accompanying processes that capture, store, transmit, and analyze a variety of data. The following systems make up Washington's Traffic Data ecosystem:

- Driver (DOL)
- Vehicle (DOL)
- eCitation and eCrash
- Crash
  - WSDOT
  - WSP
- Roadway
  - CRAB
  - WSDOT
- Adjudication (AOC)
- Injury Surveillance
  - EMS (DOH)
  - Emergency Department (DOH)
  - Hospital Data (DOH)
  - Trauma Registry (DOH)

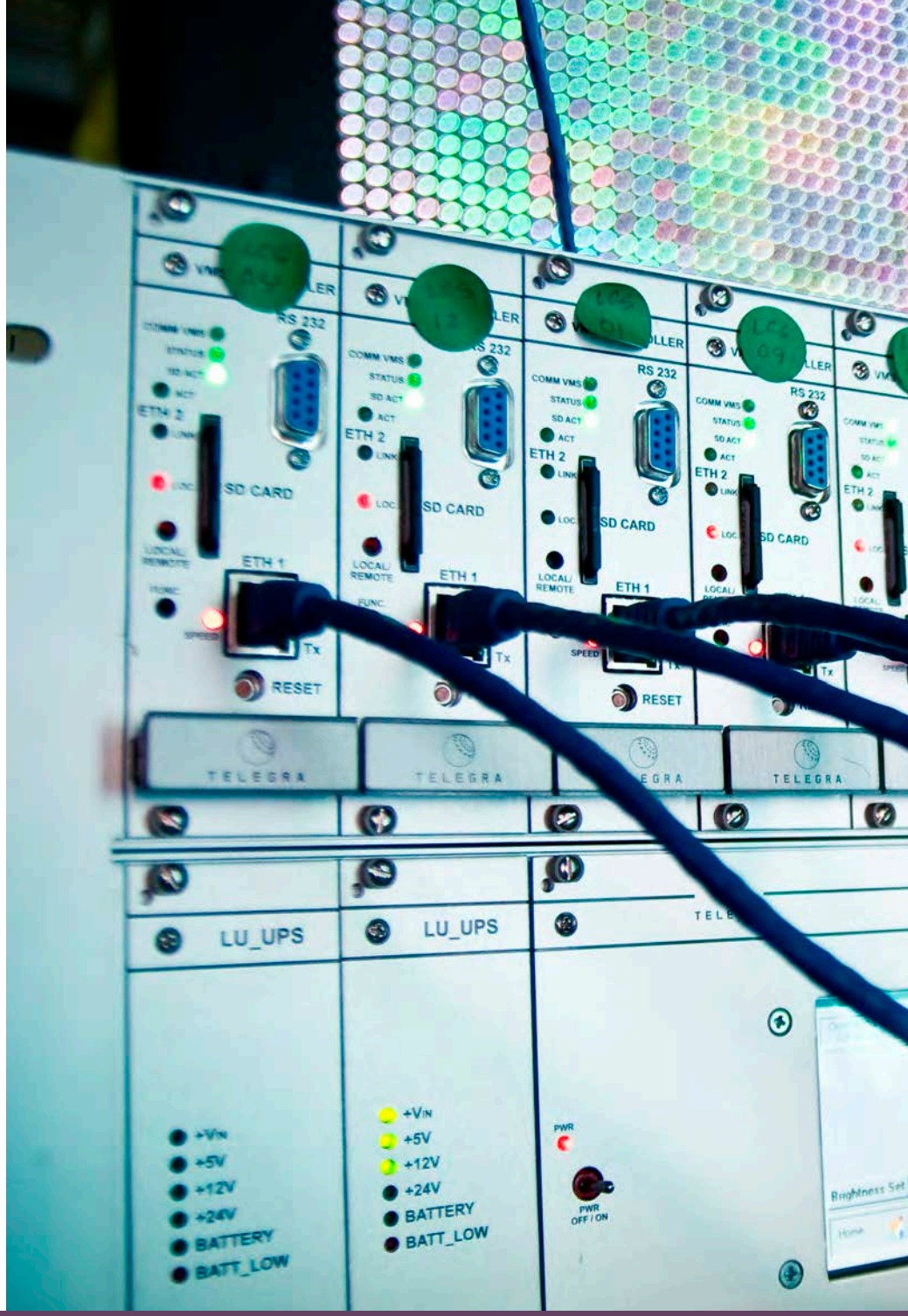
WSDOT's Crash Data Portal

The Crash Data Portal contains standard sets of reports built by data experts who have working knowledge of the crash data fields, data relationships, database structure, and the query tools. The Crash Data Portal provides access to crash data to WSDOT safety partners and the general public.

The portal is updated on a weekly basis, allowing users to access current and historical data at the state, county, or city level. Users can also query data for emphasis areas identified in Target Zero.

Linking Local and State Roads for Better Engineering Data Analysis

WSDOT and CRAB are working together to facilitate integration into their Highway Performance Monitoring System and Collision Location Analysis System by improving capabilities to provide services in support of safety data stewardship, extraction, analysis, and reporting through the use of GIS and Linear Referencing System technologies.

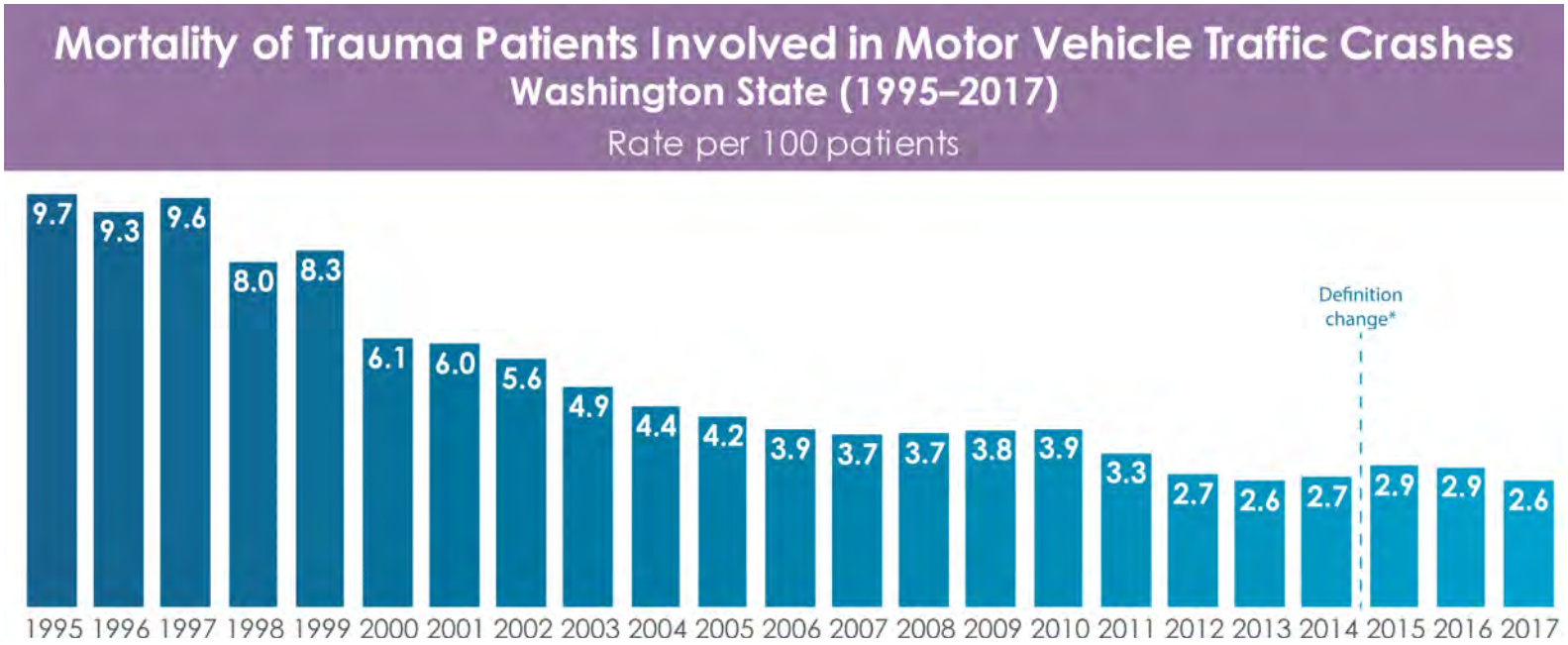


Strategies for Traffic Data Systems (TDS)		
Objective	Strategies	Implementation Areas
TDS.1. Provide quality data, analysis, and tools to customers.	TDS.1.1 Increase electronic reporting of crashes and traffic violation tickets. (R, TRC)	Enforcement, Evaluation
	TDS.1.2 Provide officers with roadside access to driver and vehicle history information from the Department of Licensing. (R, TRC)	Enforcement, Leadership
	TDS.1.3 Find ways to address and eradicate the data nuances identified in Target Zero. (R, TRC)	Evaluation
	TDS.1.4 Revise the Police Traffic Collision Report to improve crash data quality and completeness. (R, MMUCC)	Evaluation
	TDS.1.5 Develop performance measures for all core traffic data systems for each of the six system attributes (accuracy, completeness, uniformity, timeliness, accessibility, and integration). (R, TRC)	Evaluation
	TDS.1.6 Implement Data-Driven Approaches to Crime and Traffic Safety (DDACTS) model in local law enforcements agencies statewide. (R, DDACTS)	Enforcement, Evaluation
TDS.2. Remove barriers to data sharing and integration.	TDS.2.1 Create a central repository for integrated, linked data records including crash records, health (EMS, Trauma, CHARS) records, court records, licensing records, and state toxicology records. (P, CODES)	Evaluation, Leadership
	TDS.2.2 Derive a clinical classification of injury severity based on medical records to augment the investigating officer's assessment of injury severity. (P, CODES)	EMS, Evaluation
	TDS.2.3 Create connections for systems with similar or duplicate data to eliminate duplicate entry and data redundancies. (R, TRC)	Evaluation, Leadership
TDS.3. Sustain high levels of collaboration and acquired knowledge within the TRC.	TDS.3.1 Provide more frequent and enhanced traffic safety trend reporting. Present data/ trends in a manner that is easy to understand and is actionable. (R, TRC)	Education, Evaluation
	TDS.3.2 Support training opportunities to enhance traffic safety data analysis and research skills. (U)	Education, Evaluation
TDS.4. Identify and secure targeted investments to sustain TRC initiatives.	TDS.4.1 Create a maintenance and support model for electronic crash and ticket reporting that further improves operations, speeds change request implementation, and enhances user support. (R, TRC)	Leadership
P: Proven R: Recommended U: Unknown		

Emergency Medical Services and Trauma Care System

Emergency Medical Services (EMS) is one of the five "Es" of traffic safety. Timely and appropriate emergency medical response to traffic crashes saves lives and reduces disabilities. Nearly 40% of all deaths from trauma occur within hours of injury, and many trauma-related deaths are preventable with timely access to an effective, organized EMS and Trauma Care System.

Washington's EMS and Trauma Care System is a coordinated system to provide appropriate and adequate care, with the goal of reducing death and disability. It strives to get the right patient to the right facility in the right amount of time. Over the past 20 years, improvements to this system have contributed to the lowest mortality rate of trauma patients involved in motor vehicle crashes in recent history, 2.6 per 100 patients in 2017 compared to 9.7 in 1995.



Note: Motor vehicle traffic crashes from 1995–2014 were defined using primary and secondary ICD-9 external cause of injury codes E810.0–E819.9, E958.5, E968.5, E988.5; 2015–2017 were defined using primary and secondary ICD-10 external cause of injury codes [V02–V04](.1,.9), V09.2, [V12–V14](.3–.9), V19(.4–.6), [V20–V28](.3–.9),[V29–V79](.4–.9), V80(.3–.5), V81.1, V82.1, [V83–V86](.0–.3), V87(.0–.8), V89.2. Data provided from the Washington Trauma Registry for patients who met inclusion criteria.

The EMS and Trauma Steering Committee

The Committee is made up of 30 members representing:

Washington State Patrol

Washinigton State Department of Licensing

Washington State Health Care Authority

Washington State Department of Transportation

Washington State Department of Social and Health Services

Office of Superintendent of Public Instruction

Emergency Medical Physicians

Trauma Surgeons

Medical Program Directors

Washington State Fire Chiefs

Washington Firefighters Council

Fire Commissioners

Emergency Medical Technicians and Paramedics

Trauma Nurses

Emergency Nurses Association

Neurosurgeons

Neurologists

Cardiologists

Washington City/County elected official

Washington Ambulance Association

Air Medical Services

Washington Poison Center

In addition to the minutes immediately following an injury, a patient's outcome is also dependent on prevention activities, hospital, and rehabilitation care.

Data-driven EMS and Trauma Care System

Washington's EMS and Trauma Care System pursues both forward-thinking strategies as well as decisions based on empirical data, recognizing these as critical to continued success. Gathering, analyzing, and archiving EMS and trauma data supports an evidence-based EMS and Trauma Care System. This helps the system realize its full potential, and continue to provide favorable outcomes for injured patients.

Washington State collects data on the care provided by EMS and the hospital-based providers treating the patient. There are three important points of analysis:

- **On-scene time.** The amount of time the patient remains on the scene after the arrival of EMS.
- **Patient destination.** Whether the patient was transported to the appropriate level of trauma hospital.
- **Patient outcome.** Whether or not the patient survived.

These three criteria allow analysts and policy-makers to evaluate the of effectiveness of pre-hospital EMS and trauma care.

The data are obtained from two sources:

- **Washington EMS Information System (WEMSIS).** WEMSIS collects pre-hospital data on all patients cared for by emergency medical personnel.
- **Washington Trauma Registry (WTR).** The WTR collects demographic and clinical data only on trauma patients at trauma-designated hospitals.

WTR is an established registry that was started in the early 1990s and is used for quality improvement of the Trauma Care System.

WEMSIS is relatively new by comparison, starting in the late 2000s. In the last few years, the focus on WEMSIS has been to clean the data, check data for completeness, produce quality reports, and validate data. Moving forward, WEMSIS's focus will be validating and linking data sets. These efforts will give a more complete picture of patient care and outcomes in the state of Washington.

Partnerships Ensure Ongoing Success

The Washington EMS and Trauma Care System has played a strong role in traffic safety through injury prevention, emergency medical services, and trauma activities. Much of this success can be attributed to the system being built upon a diverse group of health care professionals and industry experts. The Washington Traffic Safety Commission is a key partner of the Washington EMS and Trauma Care System. These partners and groups have continuously worked to address the complex political, economic, logistical, legal, and clinical issues associated with trauma care in the state. Addressing these challenges in a collaborative approach allows Washington to continue reducing the number of fatalities and long-term effects of trauma related to motor vehicle crashes.

Strategies for EMS and Trauma Care System (EMS)		
Objective	Strategies	Implementation Areas
EMS.1. Reduce injury deaths and hospitalizations through EMS response and access to trauma care.	EMS.1.1 Promote adequate distribution of Designated Trauma Centers across the state to ensure appropriate access to trauma care. (P, META).	EMS
	EMS.1.2 Promote that all major trauma patients are transported to the highest appropriate level of designated trauma center within a 30-minute transport. (R, DOH)	EMS
	EMS.1.3 Promote injury prevention programs that reduce traffic related injuries and death. (R, LIT)	Education
	EMS.1.4 Promote improvements in EMS on-scene arrival responses that are within state requirements. (R, DOH)	EMS
	EMS.1.5 Promote increasing enforcement and public understanding of the "move-over" law. (U)	Education, Enforcement
	EMS.1.6 Encourage EMS access in engineering development plans. (U)	Engineering, EMS
EMS.2. Improve communication and data capacity.	EMS.2.1 Support seamless communications capabilities among EMS, law enforcement, and fire services agencies through interoperability. (R, NCHRP)	Enforcement, EMS, Leadership
	EMS.2.2 Support the Washington State EMS and Trauma Care System with a statewide robust pre-hospital database with standard definitions and EMS agencies reporting data. (R, NCHRP)	EMS, Evaluation
	EMS.2.3 Increase reporting to WEMSIS. (R, NCHRP)	EMS, Evaluation
	EMS.2.4 Explore the use of WEMSIS data for inclusion with the integrated traffic records program. (R, WTSC)	EMS, Evaluation, Leadership
	EMS.2.5 Promote Public Health Data Interoperability (PHDI) initiative to integrate and link data from all Department of Health data systems. (R, DOH)	Evaluation, Leadership
P: Proven R: Recommended U: Unknown		

Evaluation, Analysis, and Diagnosis

Traffic safety programs achieve success by addressing the factors contributing to crashes. To be most effective in reducing future crashes, Washington uses evaluation, analysis, and diagnosis. This helps us understand what is occurring – or has a high probability to occur – on our roads, based on our understanding of road safety performance. It allows us to identify measures, target investments, track performance, and determine the effects of our efforts.

Washington's Evaluation, Analysis, and Diagnosis approach is recognized nationally as the "Fifth E" of road safety, because the fifth E leads to improved decision-making. Targeted, data-driven decisions allow us to select the appropriate strategies within the other Es: education and outreach, enforcement, engineering, and EMS. Target Zero partners use this information to increase the return on our investments by prioritizing activities and approaches in support of Target Zero goals. Ultimately, this improves the likelihood of achieving our goal of zero fatalities and serious injuries.

Target Zero provides the foundation for partners to allocate resources toward reducing fatal crashes, as well as strategically addressing fatality and serious injury targets. Each year, these targets are set by the Washington State Department of Transportation (WSDOT) and the Washington Traffic Safety Commission (WTSC) through a formal process required by federal law and are submitted in the annual Highway Safety Plan (HSP) report (prepared by WTSC) and the annual Highway Safety Improvement Program (HSIP) report (prepared by WSDOT). WTSC reports progress with their safety programs to the National Highway Traffic Safety Administration (NHTSA); WSDOT reports progress to the

Definitions for Evaluation, Analysis, and Diagnosis of Traffic Safety

	Definition	Example
Evaluation	Assess the big picture or categories of data to evaluate performance against a pre-determined set of criteria. For Target Zero, this means looking at whether or not we met targets for traffic-related fatalities and serious injuries within our priority areas. Each agency may set individual targets or criteria that would indicate a need to take some action. If a location or factor is not meeting expectations, it is identified for analysis.	We find that a specific roadway has more crashes at intersections than we would expect for similar roads.
Analysis	Study the location of factor in depth, using different means or methods in order to interpret the data and understand why a factor or location is particularly high. For instance, using crash statistics to help us understand why crashes are reducing, staying the same, or increasing.	We analyze the data to determine that the majority of those crashes are related to impaired driving.
Diagnosis	Identify contributing factors to an increase or decrease in crashes, similar to the way that a doctor diagnoses patients for the root cause of their symptoms. Done well, diagnostics help us understand the factors leading to a crash or series of crashes.	We diagnose that the problem is coming from bars in the local area, with two locations in particular that are known to overserve.

Federal Highway Administration (FHWA). WSDOT also collaborates with the state's 13 metropolitan planning organizations (MPOs) and Regional Transportation Planning Offices (RTPOs) as part of the annual target setting process. For more information on the targets, please see Appendix I: Performance Based Goals.

Local agency and WSDOT infrastructure projects to address Target Zero priorities are selected and ranked for HSIP funding. HSIP projects addressing Target Zero priorities are then included in the Statewide Transportation Improvement Program. A core metric of this ranking and inclusion is the ability of the investment to reduce the number of fatalities and serious injuries.

Using Data to Measure Performance

By using a common set of metrics, all the safety partners in the state are able to work together toward the same goal: reducing fatalities and serious injuries to zero by 2030. Partners use these metrics to set priorities and identify strategies that are targeted toward the common goal. We use these same measures to track performance over time, and to provide accountability to the public we serve. We also set targets so we can quantify what constitutes progress.

Evaluation: Looking at the Big Picture

The evaluation of the roadway system in Washington provides the foundation for the emphasis areas and priorities in Target Zero. This provides the big-picture look at what we need to focus on and how performance in these areas has changed over time.

Evaluation also enables us to then focus in on the contributing factors to crashes.

- **Human factors** represent the people driving, walking, and biking on the public roadway network. There is a particular focus on user capability, limitations within the road system, and risky behaviors.
- **The vehicle** represents the motorized vehicle, how it is designed and operated, and its safety features (for example, motorcycles and heavy trucks).
- **The environment factors** include the road system design, context, and cooperation. This also includes, for example, the safe systems approach used for designing and operating road facilities. For more information, see the "Safe Systems Approach" on page 192, or Appendix K: Safe Systems.

The emphasis areas, categorized as High Risk Behavior, Crash Type, and Road Users in Target Zero, reflect these factors. Risky behavior includes, for example, impairment and distraction. Crash types include intersection or lane departure crashes. Finally, the different user groups on our system involved in crashes include vulnerable users (people walking, biking, or using motorcycles) and drivers of particular vehicle types such as heavy vehicles. We look for patterns and use the safety (geometric, road user, traffic, crash, etc.) data to identify the contributing factors in these crashes. When we do find a significant and recurrent pattern, and believe we can address the contributing factors, then we select a countermeasure to address them—if one exists.

These factors help us to develop meaningful categories of focus areas, evaluate them to determine the magnitude and nature of these outcomes, and ultimately to set priority areas (see page 11). This information is used to identify statewide, region-specific, or even corridor- or location-specific priorities and specific strategies that can

be used as interventions to reduce fatalities and serious injuries across the roadway system.

For instance, strategies include:

- High visibility enforcement (HVE) campaigns that focus on corridors with many distracted driving and impaired driving crashes.
- Barrier systems that address the severity of run-off-the-road crashes.
- Education programs to teach safe crossing skills to young pedestrians, as well as driver safety education courses for new drivers and chronically high risk drivers.

Evaluating each of these emphasis areas, we can also assess trends in the data. Trends help us to understand whether the fatalities and serious injuries in particular types of crashes are reducing, staying the same, or increasing. This helps us develop projects and programs to address priorities. As stewards of the system, we want to understand whether our interventions are effective and where a shift in our approach would be more effective in the overall reduction of serious injuries and deaths.

Analysis: Understanding Safety Performance Characteristics

Analysis allows education and outreach, enforcement, engineering, and EMS staff to assess how individual locations perform relative to similar locations across the state. This enables those working in injury prevention, enforcement, and education to identify characteristics of users and circumstances of risky behaviors, which in turn strengthens our ability to focus our efforts using specific strategies that are proven effective in those conditions.

For example, WSDOT may analyze the system to identify locations and the characteristics of those locations where more intersection angle crashes involving fatalities and serious injuries are occurring, compared to similar facilities, as part of a roundabout intervention category. WSP might identify locations based on the percentage of speed in excess of 10 miles per hour along with other factors to prioritize corridors for emphasis patrol. DOL might identify priority areas based on total DUI arrests that are related to a particular location over-serving alcohol.

While all partners use analysis, in the area of engineering, dramatic change has occurred with the Highway Safety Manual (HSM), a national document from the American Association of State Highway Transportation Officials (AASHTO). It forms the key toolbox for safety analysis in roadway planning, design and operations. With this toolbox, state and transportation professionals can use quantitative methods and human factors to analyze and evaluate corridors, locations, and projects throughout planning, programming, project development, construction, operations, and maintenance activities in a manner not available before.

Diagnosis: Digging Deeper into the Data

Diagnosis focuses on the factors believed to be contributing to the severity of the crash, types of crashes, and crash patterns. This requires a more thorough and detailed review than the analysis. This in-depth review allows partners to make data-driven decisions about how to target specific characteristics of crashes that are associated with fatalities and serious injuries.

Data-driven decision-making begins with an understanding of:

- What constitutes acceptable or less-than-acceptable safety performance?
- What can we do to reduce the number and severity of crashes?
- What is contributing to the level of safety performance in the first place? This is the most important aspect of good decision-making.

Why is diagnosis important? For example, a doctor does not give a prescription without first understanding the symptoms and conditions that the patient is experiencing, and how these are different from normal expectations for health.

Similarly, when we analyze the roadway, we first need to understand what is contributing to the crash risk, and whether or not the level of crash potential is in excess of what would be expected for that type of roadway. For instance, we will expect different crash numbers and types for a busy interstate highway with high speed and no pedestrians, compared to those of a quiet residential street with low speeds and many pedestrians.

Using Data to Improve Highway Safety

Having diagnosed the contributing factors (human, vehicle, and environment) and crash types associated with deaths and serious injuries, our next step is to develop approaches to address the crash outcomes through the selection of countermeasures proven to reduce fatal and serious crashes for the type of crashes occurring or predicted to occur at a given location.

Re-evaluate and Evolve our Approach as our Technical Abilities and our Challenges Change

What we know about the science of highway safety continues to evolve, as does our knowledge of projects and programs to address crash outcomes. The conditions on the road are evolving as well, such as the increase in automated technology. See "Cooperative Automated Transportation" on page 183 for more information.

It is important that we evaluate and then adjust for both the positive and negative results we see. We will not improve, and we will not achieve our Target Zero goal, if we don't address the interventions that have resulted in less-than-successful outcomes and if we do not maintain data-driven and science-based approaches. To achieve Target Zero, we also need to be proactive in the prevention of crashes associated with high severity injuries. While we recognize we can't prevent all crashes, we can implement treatments (systemic) that are proven to reduce the potential of deaths and serious injuries.

Diagnostics Involve a High Level of Detail to Find Crash Patterns

This crash diagram and data table are examples of the level of detail involved in diagnosis. In considering a location with 23 crashes, the engineer would, for example, assess at minimum the following data, along with other related information:

First crash type	
Entering at angle	14
Left turn opposite direction	5
Run off the road	3
Rear end	1

Contributing circumstances	
Did not grant right-of-way to vehicle	12
Disregarded STOP sign	5
Exceeded reasonable safe speed	2
Improper turn	1
Inattention	2
Impaired by alcohol	1

Crash injury severity	
Fatal injury crash	1
Serious injury crash	2
Evident injury crash	4
Possible injury crash	5
Property damage only crash	11

Using Roadway Characteristics to Identify Locations for Interventions

In the past, we evaluated safety performance in terms of reported crashes: data that represents the past experience. For example, the safety performance of an intersection used to be based solely on crash history over a very short time frame. A location that experienced multiple high severity crashes over this short time would be given priority over one that might be experiencing a more consistent and higher longer-term trend, but had fewer high severity crashes during the range of years when we made project or program selections.

This type of approach results in investments at locations that will not have a major overall effect: if nothing had been done at many of these locations, the crashes would have reduced anyway. In other words, these high-priority locations were not all high-priority locations in reality. Statistically, this is called regression to the mean, but from a practitioner's perspective, this means that investment approaches that solely rely on crash history would not be the best use of limited resources.

Target Zero partners are using more comprehensive and scientifically rigorous analysis methods in research and analysis, which increases the likelihood that investments are made in highest priority locations.

Our Countermeasures Come from National Sources

We have several tools for evaluating countermeasures and their potential to reduce crashes and injury severity. These are referred to as crash modification factors (CMFs) and are used to project the potential outcomes and to compare countermeasure effectiveness for engineering in the FHWA Crash Modification Clearinghouse, or behavioral issues in NHTSA's Countermeasures that Work. See Appendix G: Strategy Definitions and Criteria for more information on countermeasures and their sources.

For example, WSDOT is using the AASHTO Highway Safety Manual Predictive Methods, which incorporates the characteristics of a roadway. These tools allow professionals to determine the potential change in crash frequency and severity associated with a change in the characteristics of the roadway environment. The output from these methods are very helpful in making decisions related to different alternatives (AASHTO, 2010). WSDOT is also actively engaged in projects and activities that support the future updates to this manual.

Predictive Methods and Tools

In addition, Washington's success in reducing fatalities and serious injuries has also brought a new challenge. As fatal and serious injury crashes occur further apart in time and less densely at particular locations or corridors, it becomes increasingly more difficult to identify patterns and specific locations for treatment with some level of certainty. Use of predictive methods and tools that focus on expected trends based on similar roadways are necessary to overcome this challenge. WTSC and WSDOT have used these approaches successfully since the mid-1990s, and will continue to build on them for future analysis.

Meaningful and Usable Data for Partners

With a more proactive, predictive, and systemic approach comes the need for data to be more integrated and accessible to users. Many Target Zero partners use information to identify and address their current safety business needs. In the past, organizations were able to develop effective programs and projects relying only on their own data.

The many competing needs of different users of our road system and the complex nature of traffic safety requires integration of many different data sources to support successful multidisciplinary approaches to achieve Target Zero. For example, in considering an assessment of traffic barriers such as guardrail, an analyst can link data about the roadway characteristics, maintenance efforts, and asset management-related elements in order to optimize decision making for these devices. In the area of impaired driving, linking toxicology reports

with crash records is key in assessing changes across time and the effects of legalizing cannabis, for example.

In 2012, the federal The Moving Ahead for Progress in the 21st Century Act (MAP-2)1 legislation directed FHWA and NHTSA to require state and local safety partners to work collaboratively in the development and implementation of the Strategic Highway Safety Plans, such as Washington's Target Zero. MAP-21 requires federally funded state programs to develop a more integrated, multidisciplinary, and multiagency safety program, across different modes of transportation.

Diagnostics Focuses our Countermeasure Selection

The diagnostics guide us in our treatment. For example, if the primary contributing factor to crashes during late Friday and Saturday nights is speeding, and through our analysis we have found that a high frequency of speeding is occurring during that same time, then an enforcement campaign that targets excessive speed at those times could be more effective than an engineering solution that modifies the highway for all drivers at all times.

On the other hand, if we were to see excessive speed in a residential area, and we also knew that the road was designed for higher speeds and mid-20th-century land use, then permanent traffic calming devices like a roundabout might be appropriate.

We can also select multiple countermeasures when primary and secondary contributing factors indicate that collectively they will reduce the fatalities and serious injuries at a particular location or on a corridor.

Washington is a pioneer and national leader in a partnership style that promotes collaboration among experts from many fields and levels of government in order to achieve the optimal solutions to highway safety issues. Our state's highway safety programs often include the coordinated use of education and outreach, enforcement, engineering, and EMS. For example, a distracted driving campaign might include education campaigns from WTSC, high visibility enforcement by WSP, and rumble strip installation by WSDOT.

Expand the Evaluation, Analysis, and Diagnostic Skills of Target Zero Staff

To be most effective in the evaluation, analysis, and diagnosis of fatal and serious injury reduction opportunities, Target Zero partners must provide training and specialized staff members. We need this skilled workforce to provide services in the overlapping and increasingly complex field of highway, safety education and outreach, enforcement, engineering, and EMS. Staff such as statisticians, epidemiologists, human factors experts, and roadway safety engineers are required to keep up with increasingly analytical and technical needs, as well as with scientific developments in their fields.

Choose Investments that Benefit the Entire System

The value of safety investments must be considered at both the local and system levels. This is important because high costs on one project or program may prevent us from doing other projects and programs at other locations. For example, spending $40 million to build an interchange at a single location, when a $3 million roundabout would reduce the same amount of fatalities and serious injuries, would not provide greater benefit for that location, and would in fact detract from improvements on the entire system. If we build the $40 million interchange, then we forgo $37 million in safety investments that we could have used to target other parts of the system: $37 million that would have saved lives and reduced serious injuries.

Strategies for Evaluation, Analysis, and Diagnosis (EAD)		
Objective	Strategies	Implementation Areas
EAD.1. Implement the Highway Safety Manual (HSM) recommended safety analysis methods.	EAD.1.1 Utilize the HSM Predictive Method as part of project development and operation of infrastructure projects. (P, AASHTO)	Engineering, Evaluation
	EAD.1.2 Integrate requirements of safety analysis as part of standard workflow, work products, and deliverables as part of documentation requirements. (R, FHWA)	Evaluation, Leadership
	EAD.1.3 Provide training in use of the HSM safety analysis methods. (P, AASHTO)	Engineering, Evaluation
EAD.2. Assess performance across emphasis areas as part of the decision-making process.	EAD.2.1 Hire and train highly capable data analysts, statisticians, epidemiologists, GIS analysts, and other data professionals. (R, WSDOT)	Evaluation, Leadership
	EAD.2.2 Integrate results of HSM Predictive method analysis into criteria for project selection and prioritization. (P, AASHTO)	Engineering, Evaluation
EAD.3. Collect and manage spatial and temporal characteristics of roadway, traffic volume, and crash data.	EAD.3.1 Modernize mainframe systems and implement a statewide linear referencing system framework for the public roadway network that can be used by all public agencies in the state. (R, FHWA)	Evaluation
	EAD.3.2 Develop and institutionalize data management practices that meet industry standards and enables data integration across all public roadway related data sets. (R, FHWA)	Evaluation, Leadership
	EAD.3.3 Implement and institutionalize sustainable data collection processes such as mobile LIDAR that allows data to be collected once and used many times across agencies for diverse needs. (R, WSDOT)	Evaluation
EAD.4. Implement evaluation of all safety-specific investments as part of general business practice.	EAD.4.1 Establish and use existing data analyst expertise to support data-driven business decisions and conduct evaluation of safety efforts. (R, WSDOT)	Evaluation
	EAD.4.2 Support workforce development to advance the skills of safety data analysts, statisticians, epidemiologists, and GIS analysts that support programs, projects, and activities aimed at reducing fatalities and serious injuries. (R, WSDOT)	Evaluation, Leadership
P: Proven R: Recommended U: Unknown * These strategies were not voted on at the Target Zero Partners meeting		

Cooperative Automated Transportation

Includes Automated Vehicles

Advances in vehicle automation, connectivity, electrification, and shared mobility are transforming transportation. There are many potential benefits and opportunities associated with the implementation of connected and automated transportation, such as reduced crashes, better use of existing infrastructures and systems, reduced need for new infrastructure, improved energy efficiency, and improved access for people unable to hold a driver license.

However, it is important that we provide stewardship and guide the implementation to advance the positive impacts and minimize possible negative impacts such as increased congestion, inequitable access, and workforce impacts. From a Target Zero perspective, the most important Cooperative Automated Transportation (CAT) benefit is the potential for saving lives on our roadways.

According to the National Highway Traffic Safety Administration (NHTSA), human error is a contributing factor in 94% of crashes. While many Target Zero countermeasures focus on changing driver behavior for this reason, the addition of automation will begin to transition driving tasks that were once performed by the driver to the vehicle. As the role of the human driver is reduced, crashes that are a result of human error should also reduce; the vehicle will provide support to impaired, distracted, drowsy, and inexperienced drivers on our roads. Although not all crashes can be prevented through the use of automation, Washington State can move significantly closer to Target Zero.

Automated Vehicles are Already on the Road

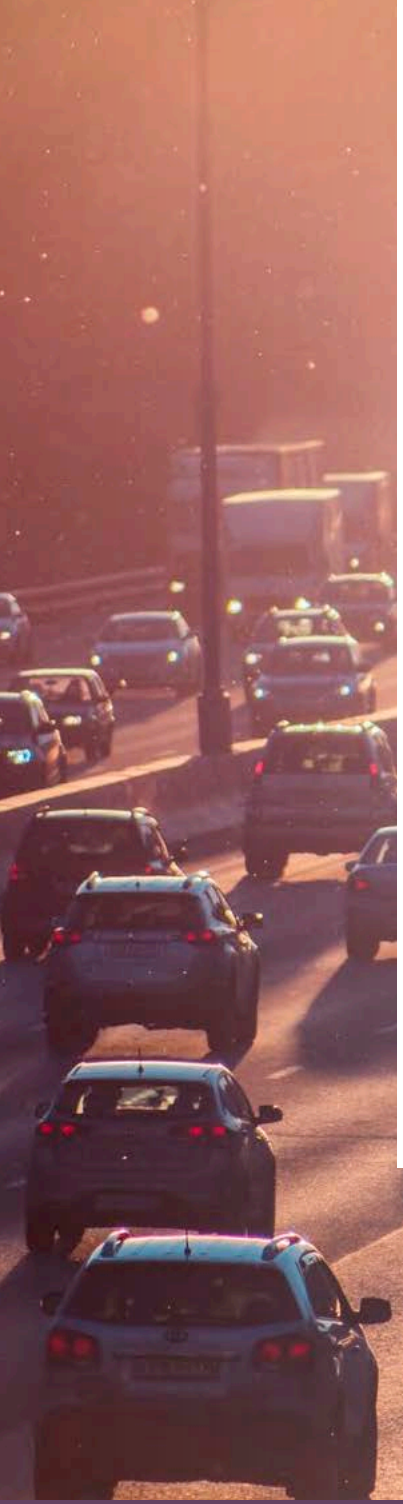
Most people think of automated vehicles (AVs) as driverless, but there are various levels of automation in vehicles, including many cars that are on the road today. The Society of Automotive Engineers (SAE) has established Levels of Automated Vehicles (SAE J 3016-2018). The illustrative graphic below is based on this standard.

Vehicles with Level 1 and 2 automation are already on the road. Advanced driver assistance systems (ADAS) such as rear view cameras, forward collision warning and auto-braking, lane departure warning, and blind spot detection will soon be as common as backup cameras.

VEHICLES WITH AUTOMATION

LEVEL	0 None	1 Assistance	2 Partial	3 Conditional	4 High	5 Full
What car does 	**Nothing**	**Assists;** Accelerate, brake or steer	**Assists;** Accelerate, brake and steer	**Everything** for short periods of time	**Everything** restricted operating environment	**Everything**
What driver does 	**Everything**	**Everything** with some assistance	**Everything** with more assistance	**Remain alert** ready to resume control	**Nothing** restricted operating environment	**Nothing**

Source: Johanna Zmud, Texas A&M Transportation Institute



Additionally, there are Level 3–4 AVs currently being deployed in limited capacities for low speed shuttles and shared ride type applications, providing the public with increased opportunities to experience the technologies.

Real-world Benefits of Advanced Driver-assistance Systems

Highway Loss Data Institute (HLDI) and Insurance Institute for Highway Safety (IIHS) study the effects of advanced ADAS features by comparing rates of police-reported crashes and insurance claims for vehicles with and without the technologies from 23 states:

Insurance Institute for Highway Safety (IIHS) and Highway Loss Data Institute (HLDI). (May 2018)

Forward collision warning

- ▼ 27% Front-to-rear crashes
- ▼ 20% Front-to-rear crashes with injuries
- ▼ 9% Claim rates for damage to other vehicles
- ▼ 16% Claim rates for injuries to people in other vehicles

Forward collision warning plus autobrake

- ▼ 50% Front-to-rear crashes
- ▼ 56% Front-to-rear crashes with injuries
- ▼ 13% Claim rates for damage to other vehicles
- ▼ 23% Claim rates for injuries to people in other vehicles

Lane departure warning

- ▼ 11% Single-vehicle, sideswipe and head-on crashes
- ▼ 21% Injury crashes of the same types

Blind spot detection

- ▼ 14% Lane-change crashes
- ▼ 23% Lane-change crashes with injuries
- ▼ 7% Claim rates for damage to other vehicles
- ▼ 8% Claim rates for injuries to people in other vehicles

Rear automatic braking

- ▼ 62% Backing crashes
- ▼ 12% Claim rates for damage to the insured vehicle
- ▼ 30% Claim rates for damage to other vehicles

Rearview cameras

- ▼ 17% Backing crashes

Rear cross-traffic alert

- ▼ 22% Backing crashes

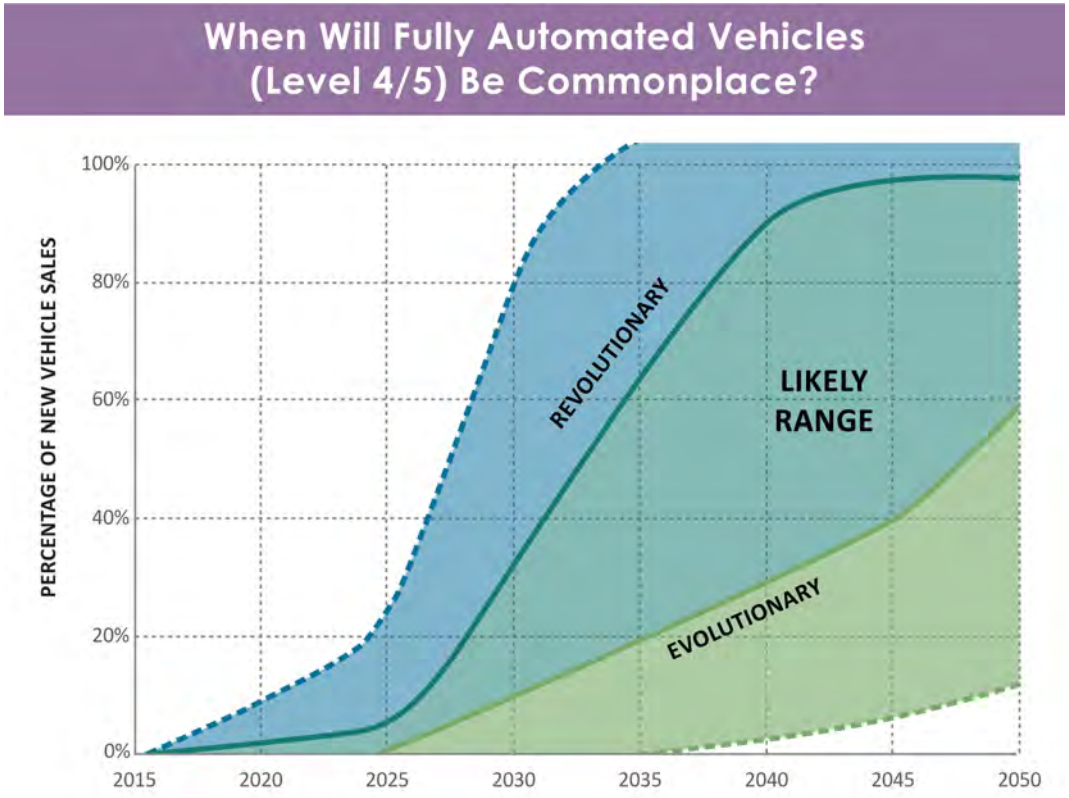
There is currently a gap in the public understanding of ADAS functions and limitations: how they should be used and how they can benefit drivers. This information gap needs to be addressed to ensure the anticipated safety benefits are achieved. Many drivers have these systems in their cars but may not have received adequate instructions from the dealership or the previous vehicle owner. Rental cars with equipment that the drivers are unfamiliar with could create confusion and contribute to increased crashes during some driving situations.

Another possible issue to consider is the potential for over-reliance on ADAS, when drivers stop paying adequate attention because it feels like the car is driving for them, or monitoring items that the drvier should be payhing attention to. Similar to the introduction of seat belts in the 1960–70s and car seats in the 1980s, the federal government regulates the design of these safety features, but people need education to guide the safe adoption of the new technology.

Public Perception

A few studies have found that some people are not yet comfortable with the idea of riding in Level 4 or 5 AVs. Following two high-profile crashes in the first half of 2018 involving vehicles with Level 2 or 3 automated technology, some consumers lost trust in the concept of Level 4 and 5 AVs. In January 2019, 71% of U.S. drivers said they would be afraid to ride in a fully self-driving vehicle, up from 63% at the end of 2017, according to one annual AV survey. However, when consumers experience riding in a vehicle equipped with automated technology, they may gain confidence in the technology.

To increase public trust, it will be critical for manufacturers to have robust and verifiable testing processes to demonstrate the safety of AVs. The public will need assurance that vehicles can consistently handle these edge cases, situations that rarely happen but can be serious if the vehicle does not react correctly.



Source: ITS America – Data and the Digital Highway, ITS America Forum, Nov 5th, 2018

Full Automation Scenarios

The adoption rate for Level 4 and 5 AVs predictions represented in the graphic on this page are based on two high-disruption scenarios. These project the possible percentage of new car sales 2016–2050 that have Level 4 and 5 automation. Under the Revolutionary scenario, there are technology breakthroughs, regulatory resolutions, and shared mobility options that are much lower cost than personal vehicle ownership, along with rapid adoption. In the Evolutionary scenario, technology development and rollout is much slower, premium cost vehicles are owned by individuals at a lower rate, and the adoption rate is much slower.

Developing the Regulatory Landscape

Traditionally, the U.S. Department of Transportation is responsible for regulating all motor vehicle design, safety, and equipment. Meanwhile, state governments have assumed responsibility for regulating human drivers, establishing traffic laws, and other aspects of motor vehicle operation. The regulatory landscape for AVs is still uncertain, with pending legislative action at the federal level. State and local governments are left to consider taking action within their historical roles.

The Current Political Framework in Washington State

In June 2017, Governor Inslee signed Executive Order 17-02, creating an Autonomous Vehicle Work Group and established a self-certification process for AV manufacturers to enable pilot programs for "the safe testing and operation of autonomous vehicles," with or without human operators present. As of June 1, 2019, 11 companies have self-certified to conduct testing and operate AVs on the roads in Washington State.

The following year, the Legislature directed the Washington State Transportation Commission (WSTC) to "convene an executive and legislative work group to develop policy recommendations to address the operation of autonomous vehicles on public roadways in the state."

The Autonomous Vehicle Work Group established an Executive Committee that includes state government agencies, Legislators, private sector, industry, and non-profit organizations. Five subcommittees were created to assess challenges and needs, then generate recommendations to the Executive Committee for consideration.

The five subcommittees, with lead agencies, are:

- **Licensing.** Lead agency: Department of Licensing (DOL).
- **Liability.** Lead Agency: Office of the Insurance Commissioner (OIC).
- **Infrastructure and Systems.** Lead Agency: Department of Transportation (WSDOT).
- **Safety.** Lead Agencies: Washington Traffic Safety Commission (WTSC) and Washington State Patrol (WSP).
- **System Technology and Data Security.** Lead Agency: Washington State Office of the Chief Information Officer (OCIO).

Recommendations are geared to enable Washington State to address the public policy changes necessitated by the emergence of AV technology in an informed, thorough, and deliberate manner, and are provided to the WSTC, which is responsible for submitting final recommendations to the Legislature.

The work group will remain in place through 2023. More information and details on the work group's efforts to date can be found online through WSTC's AV Work Group (wstc.wa.gov/Meetings/AVAgenda/AutonomousVehicleWorkGroup.html).

Initial Safety Focus Areas

A major area for the WSTC AV Work Group is traffic safety. Below are some of the areas identified by the Washington State AV Work Group's Safety Subcommittee in their first few meetings in the fall of 2018.

Educating the Public

As mentioned previously, the public does not have a consistent understanding of the Level 1 and 2 safety features currently in their cars. News articles and advertisements can be confusing to the public about the vehicles' capabilities. This misunderstanding leads to confusion and potentially fatal and serious injury crashes. Key issues include:

- Who should be educating people about the benefits and limitations of today's safety features?
- What should the messages be? What are the most effective ways to distribute the information?
- How can traffic safety practitioners share the most current and accurate information with the public to help them understand the benefits and limitations of automation Levels 3, 4, and 5 vehicles.

Target Zero Partners agree these areas need further discussion.

What is a Health Impact Assessment?

A Health Impact Assessment (HIA) is a process that results in a report which identifies the potential health and safety effects of a proposed major change—such as the transformational effects of automated mobility. An HIA also provides policy and legislative recommendations to improve health and safety outcomes. It includes an emphasis on equity and identifying disproportionate impacts on historically marginalized populations.

Public Health and Equity Impacts

- The subcommittee recommended that a modified Health Impact Assessment (HIA) be done to understand the anticipated public health impacts of AVs. This will help policy makers understand the implications of various approaches before making decisions, as well as provide strategies to maximize positive impacts and mitigate negative ones. Some of the questions that may be addressed include:
- Will there be disproportionate negative impacts to disadvantaged communities?
- What are Washingtonians' concerns about AV, and how can we mitigate those concerns?
- What are the benefits and unintended impacts of more automated transportation on public health and equity?
- What might be the impact on bicyclists, pedestrians, scooters, and other roadway users?

Data Access

When a crash occurs that involves a vehicle equipped with Level 3, 4, or 5 automated technology, questions will likely arise relative to who was in control at the time of the crash: the driver or the vehicle? At lower levels of automation, where the vehicle is providing assistance, the driver is assumed to be responsible. Data security and privacy are of the utmost importance and are directly related to the safety of all persons on the road. Key issues include:

- In crash investigations, what additional data will be needed and how will it be obtained?
- Will the data also be available to establish liability and for insurance purposes?
- What data will need to be gathered for research purposes?

Target Zero Partners agree these areas need further discussion.

Preparing Transportation Systems and Services: Cooperative Automated Transportation at WSDOT

Connected and automated transportation technology is being deployed nationally and is coming to Washington's transportation system. WSDOT is working with many partners, including the WTSC, to prepare for its effective and safe deployment.

The private sector continues to make important advances in the development and deployment of AVs and connected transportation technology. This technology has the potential for both positive and negative effects on the transportation system in Washington State. This further underscores the opportunity and need for stewardship by WSDOT and its partners.

The terms used to describe this new technology have varied from connected to cooperative, and autonomous to automated, as well as others. WSDOT is attempting to lead the conversation about this technology, including building a common definition. WSDOT's recommended common definition and vision assumes that this technology is cooperative and automated. WSDOT is taking an inclusive, interdependent, multimodal, and integrated perspective of automation, hence the term Cooperative Automated Transportation (CAT).

In promoting CAT, WSDOT envisions a future where automated, connected, electrified, and shared mobility contributes toward a safe and efficient transportation system. This system emphasizes public transit and active transportation and promotes livable (walkable/bikeable), economically vibrant communities with affordable housing, and convenient access to jobs and other activity centers.

Benefits of CAT Technology

WSDOT's Cooperative Automated Transportation (CAT) program focuses on how new automated capabilities can advance the state's multimodal transportation system and enhance the communities we serve through a strategic CAT vision that emphasizes safety.

Safety. CAT technology has the potential to reduce the more than 90% of crashes that include human error as a contributing factor. As the deployment of AV technologies increases, human error related crashes are expected to decrease. Managing safety is a top priority during the challenging transition period where non-automated, partially automated, and fully automated vehicles are operating at the same time. CAT technology has the potential to reduce the 94% of crashes that include some form of human error.

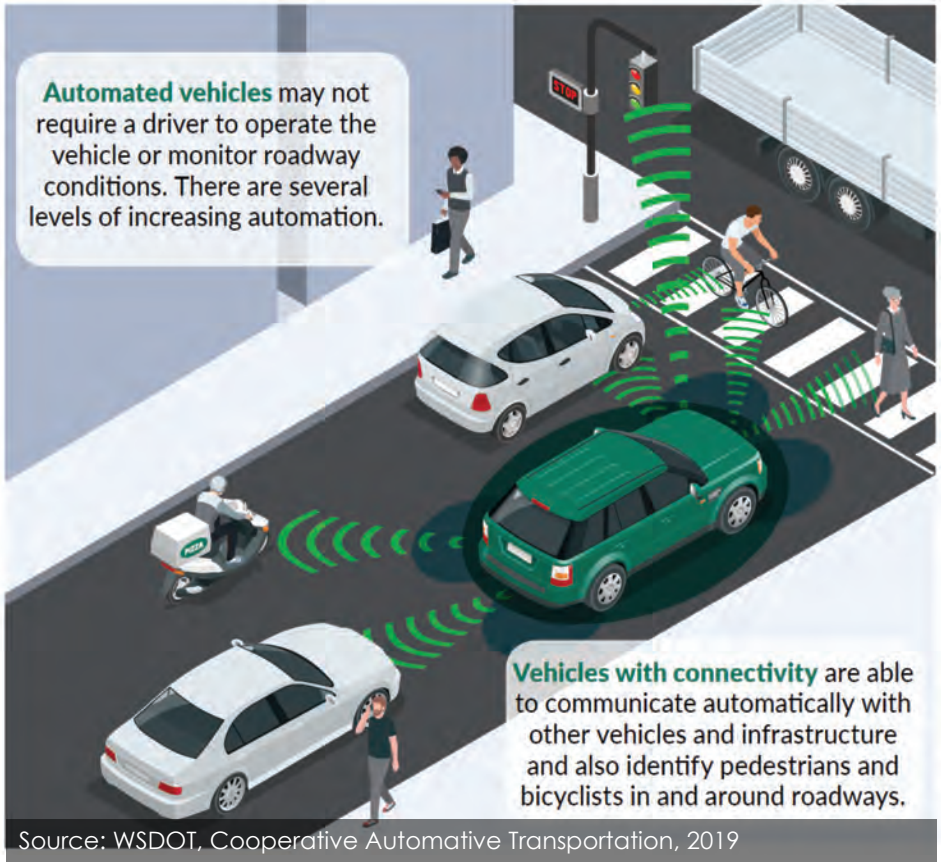
Mobility/Equity. CAT technology has the ability to increase mobility for all, including those who cannot drive, improving independence and quality of life. WSDOT is committed to supporting and enabling equitable mobility options for all communities and improving the availability of safety benefits to disadvantaged communities.

Sustainability/Environment. Vehicles communicating with each other and traffic systems along with shared mobility and electrification of fleets can help reduce congestion, crashes, and idling, providing more efficient travel and reduce emissions and Vehicle Miles Traveled (VMT). It will be critical to encourage the use of electric and shared vehicles to maximize the benefits.

Efficient travel. Technology can make our existing infrastructure and transportation systems more efficient. This can increase the number of people who can travel on an existing roadway, which helps ease congestion.

Strategic CAT Vision

- Develop a CAT policy framework considering both community and regional transportation system needs.
- Develop multimodal CAT goals, including safety, to help determine agency investment priorities.
- Create opportunities for partnerships with industry, local partners, and others.



Source: WSDOT, Cooperative Automative Transportation, 2019

CAT in Action

Examples of current and near-term CAT activities and partnerships that support safety include:

- **Winter operations.** Provide travelers real-time road and weather conditions by sharing connected vehicle data from snow plows and other systems.
- **Traffic signals.** Test and deploy equipment that increases communication with vehicles, bicyclists, and pedestrians to improve intersection safety and overall traffic operations.
- **Automated work zone vehicles.** Test how AVs can improve safety by eliminating the need for a driver in some staging vehicles.

Future opportunities may include:

- **Transit automation.** Help buses avoid blind-spot crashes with pedestrians and bicyclists.
- **Signing and striping.** Minimize the variation in roadway signing and striping and implement improvements that benefit travelers now and also prepare the system for automated vehicle needs.
- **Driver-assisted truck platooning.** Study potential for safety and efficiency benefits and reducing fuel consumption and greenhouse gas emissions.
- **Multimodal connection hubs.** Develop new infrastructure to support multimodal connections to provide safety transition opportunities between modes.
- **Traffic management.** Study how interaction between connected vehicles and infrastructure can help make traffic operations safer and more efficient.
- **EV charging infrastructure.** Expand EV charging stations in Washington to support AVs.

These strategies are a sub-set of recommendations from the following sources:

- NHTSA's Automated Driving Systems 2.0 (www.nhtsa.gov/vehicle-manufacturers/automated-driving-systems).
- USDOT's Automated Vehicles 3.0 (www.transportation.gov/av/3/preparing-future-transportation-automated-vehicles-3).
- GHSA's Autonomous Vehicles Meet Human Drivers: Traffic Safety Issues for States (www.ghsa.org/resources/spotlight-av17).

Most were voted on at the Target Zero Partners Meeting and received at least 60% support of the attendees.

Given the new and quickly evolving nature of automated vehicles, these strategies should be considered concepts for further discussion and refinement by partners and stakeholders.

Strategies for Cooperative Automated Transportation (CAT)		
Objective	Strategies	Implementation Areas
CAT.1. Educate the public and external partners to increase awareness and understanding of AVs.	CAT.1.1 Coordinate programs to educate owners and operators of Level 1-3 vehicles regarding the capabilities and limitations of the vehicles they drive and their responsibilities when operating those vehicles. (R, NHTSA)	Education
	CAT.1.2 Educate the public on how and where Level 4 and 5 AVs will be deployed, how they operate, and what to expect from AVs. (R, USDOT)	Education
	CAT.1.3 Engage with citizens. (R, USDOT)	Education
	CAT.1.4 Ensure driver education instructors are fully informed about ADAS/AV features and include this in their lesson plans. (U)	Education
	CAT.1.5 Encourage purchasing of vehicles with ADAS features for state and local fleets and provide employee training for safe and effective operation. (U)	Leadership
CAT.2. Evaluate the benefits and impacts of AV policies nationwide while encouraging AV data sharing partnerships.	CAT.2.1 Incorporate AV information into traffic violation and crash reports, including level, Operational Design Domain (ODD), and if the vehicle was under driver or vehicle control. (R, GHSA)	Evaluation
	CAT.2.2 Evaluate licensing and registration requirements in place in other states to assess the intended outcomes and whether these policies are achieving or expected to achieve those outcomes. (R, GHSA)	Leadership
	CAT.2.3 Identify data needs and opportunities to exchange data. (R, USDOT)	Evaluation
	CAT.2.4 In the event of a crash, assess how law enforcement, insurers, AVs and other third parties can share data and how that data could be beneficial for crash investigation and assigning responsibility. (R, NHTSA)	Evaluation, Leadership
P: Proven R: Recommended U: Unknown * These strategies were not voted on at the Target Zero Partners meeting		

Strategies for Cooperative Automated Transportation (CAT)		
Objective	Strategies	Implementation Areas
CAT.3. Prepare agency staff and law enforcement to support the safe operations of AV.	CAT.3.1 Assess how agency staff, law enforcement, and other third parties should engage with AVs, including how to identify and communicate with an AV on the road. Increase patrol officer awareness of best practices or procedural recommendations. (R, USDOT)	Education, Leadership
	CAT.3.2 Assess, align, and build the organizational capacity to prepare for AVs within existing organizational structures. (R, USDOT)	Enforcement, Engineering, EMS, Leadership
CAT.4. Provide an environment for safe operation of AV.	CAT.4.1 Assess infrastructure elements, such as signing and striping and the potential need for roadside communication equipment, so that they are conducive to enabling and supporting the operation of AVs. (R, USDOT)	Engineering
CAT.5. Update laws and regulations.	CAT.5.1 Identify and address existing regulatory barriers to the safe and effective operation of mobility on demand service that include AVs. (R, USDOT)	Education, Leadership
	CAT.5.2 Evaluate AV-related laws and regulations in other states and assess the intended outcomes and whether these laws/regulations are achieving or expected to achieve those outcomes. (R, NHTSA)	Leadership
	CAT.5.3 Determine whether traffic law changes or exemptions are needed to enable the safe commercial deployment of AVs. (R, NHTSA)	Leadership
P: Proven R: Recommended U: Unknown * These strategies were not voted on at the Target Zero Partners meeting		

Safe Systems Approach

The Safe Systems approach begins by examining the contributing factors of serious injury and fatality crashes. It focuses on addressing these factors directly in ways that improve outcomes for all users regardless of their mode, actions, or human conditions. The Safe Systems approach recognizes that the human body has a limited tolerance for the forces during a crash, that humans make mistakes, and that all stakeholders —roadway users, designers and managers of infrastructure, vehicle manufacturers, and others—have a responsibility to reduce fatalities and serious injuries.

Safe Systems has been implemented across a number of countries and has proven successful in reducing fatalities and serious injuries. At its core, it includes four main components: speed, infrastructure, vehicles, and users. Some agencies add post-crash care (EMS) as part of the approach. For Target Zero, Safe Systems represents a multidisciplinary approach to reduce the potential for fatalities or serious injuries, or reduce the severity of a crash if one does occur.

Safe Systems works to recognize the responsibility of all components in the system to work together towards zero fatalities and serious injuries, without placing blame. For example, the Washington State Department of Transportation (WSDOT) installs traffic barrier on the roadside because these systems reduce the severity of a crash when a driver leaves the roadway. In providing this infrastructure, WSDOT does not distinguish between the driver who swerved off the road to avoid a crash, the driver who had a heart attack, or the driver who was text messaging. Regardless of the circumstances of the crash, the purpose of the barrier is to reduce the severity of the crash.

What is the *Transportation System* in the Safe System Approach?

The transportation system includes infrastructure, vehicles, user actions and decisions, and other variables that affect people's ability to get where they need to go in a reasonably safe manner using any means of transportation. This chapter focuses primarily on infrastructure to introduce the topic of Safe Systems, and promotes systematic approaches to improve outcomes for all. It is important to recognize that within the Safe Systems approach, all stakeholders and all road users are involved in producing a system with fewer fatal and serious crashes. The other factors are discussed briefly.

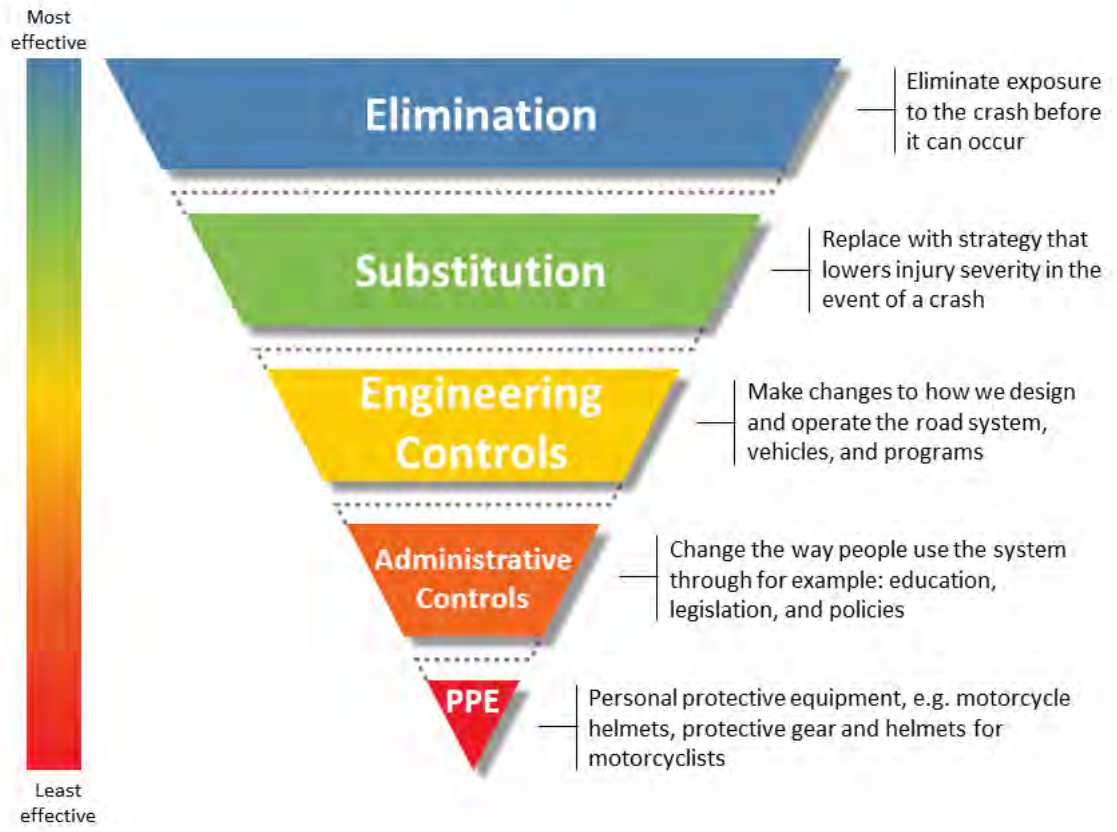
The Hierarchy of Controls, adapted from the field of workplace safety and shown in the diagram on the following page, illustrates the different approaches to user safety. The strategies that focus on elimination are at the top: these approaches are more effective in reducing fatalities and serious injuries because the events themselves are proactively addressed. In this paradigm, elimination is more efficient than substitution, substitution more efficient than engineering controls, and so on. Prioritizing efforts in this way creates a system that is generally more effective and protective. While the most effective approaches may in some cases be more difficult or costly to implement initially within existing systems, total life cycle benefits and avoided tragedies should be greater.

It is clear from this diagram and the extensive research supporting this framework that **focusing on the system itself** is more effective than user protection. Eliminating the source crash exposure is preferable to mitigating the impact of a crash.

The Safe Systems approach recognizes that a vehicle's size and the driver's operating speed, coupled with the roadway design, are factors that determine the most effective methods to reduce crash potential. It is essential to address those elements that are the primary contributing factors to crash exposure for maximum ongoing benefit. In locations where a road user may be hit by a driver, we can systematically address that exposure by providing separation or addressing it in a way that considers all roadway users. For example, a safety campaign that instructs pedestrians and bicyclists to "See and Be Seen" leaves out the existence of blind or low-vision pedestrians and the use of dark windshield tinting on vehicles. To address conditions for all vehicle types and reduce crash exposure for all roadway users, we might make systematic improvements that provide drivers with the time in which to see and respond to the presence of others using the roadway. Depending on the context and operation of the facility, these could include:

- Pedestrian-scale lighting.
- Vegetation maintenance.
- Appropriately marked or signalized crosswalks.
- Speed management treatments.

In some locations it might also be appropriate to prohibit or channelize vulnerable users from a given location, as is done on a limited-access highway.



Hierarchy of Controls for Traffic Safety, adapted from Hierarchy of Controls (National Institute for Occupational Safety and Health, 2017). Transportation system examples added to graphic.

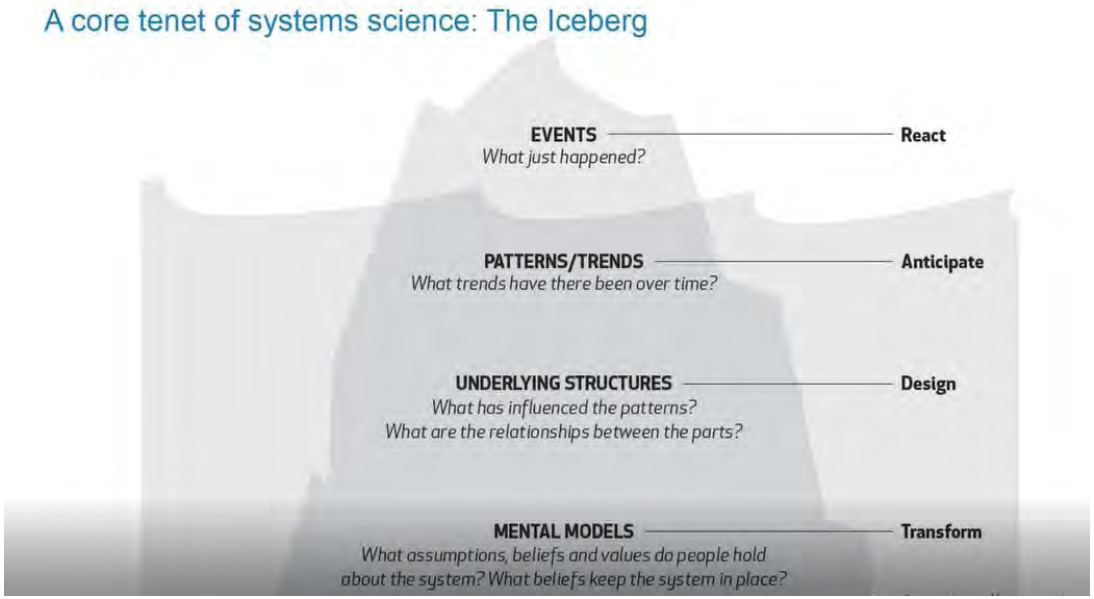
Proactive Approaches to Traffic Safety

Effective approaches to reduce fatalities and serious injuries include strategies to address existing, known crash locations, as well as proactive approaches to reduce fatalities and serious injuries at places where crashes might occur, based on the features of that location. This can be done through infrastructure planning, design, traffic operations, and maintenance.

WSDOT has proven the efficacy of this approach through its existing programs, such as ongoing efforts to reduce rural run-off-the-road crashes for motorists (see page 235). In this type of analysis, WSDOT examines the roadway system to identify features that research has shown are more likely to result in crashes. These might include certain curve types, operating speeds, or other aspects of the roadway and its usage. Engineers use this information to determine locations to implement countermeasures or strategies to proactively reduce the chances that a crash will occur for the given crash patterns and crash types at a given location.

Using data-driven safety analysis helps engineers to identify locations, specific treatments, and an overall structure to provide the maximum benefit for all roadway users.

Many Safe Systems improvements focus on vulnerable road users such as pedestrians and bicyclists. The good news is that designing to reduce exposure to potentially fatal crashes for the most vulnerable road users is a proven, effective strategy to achieve better outcomes for motorists and motorcyclists as well. This represents a shift to focus on the most effective countermeasures to reduce crash exposure for everyone, which is an evolution from a system oriented primarily around modes or numbers of specific types of users.



A systems approach rests on the science of understanding those variables and factors "under the waterline" that are not easily seen. Examining patterns, trends, underlying structures, assumptions, beliefs, and values will offer insight as to why the event happened. These issues can then be addressed.

Video Analytics and Vision Zero

The City of Bellevue is piloting a systematic approach to reducing crashes for all roadway users. Its video analytics project uses Bellevue's existing traffic cameras to identify the number and potential severity of close-call crashes at key intersections between people driving, walking, and bicycling. This insight could help the city proactively identify intersections warranting safety improvements consistent with the city's Vision Zero effort. For more information, please see page 231.

Complete Streets

Reducing motor vehicle travel demand has a direct relationship to crash outcomes. Around the world, cities that have emphasized multimodal mobility strategies around traffic safety performance for people who are walking, bicycling, and using public transportation have seen consistent reductions in traffic deaths for all roadway users. These reported reductions in fatalities among people walking and biking for these cities were partly due to the "safety in numbers" phenomenon, in which increases in the number of bicyclists and pedestrians yield a lower individual exposure to potential crashes with drivers.

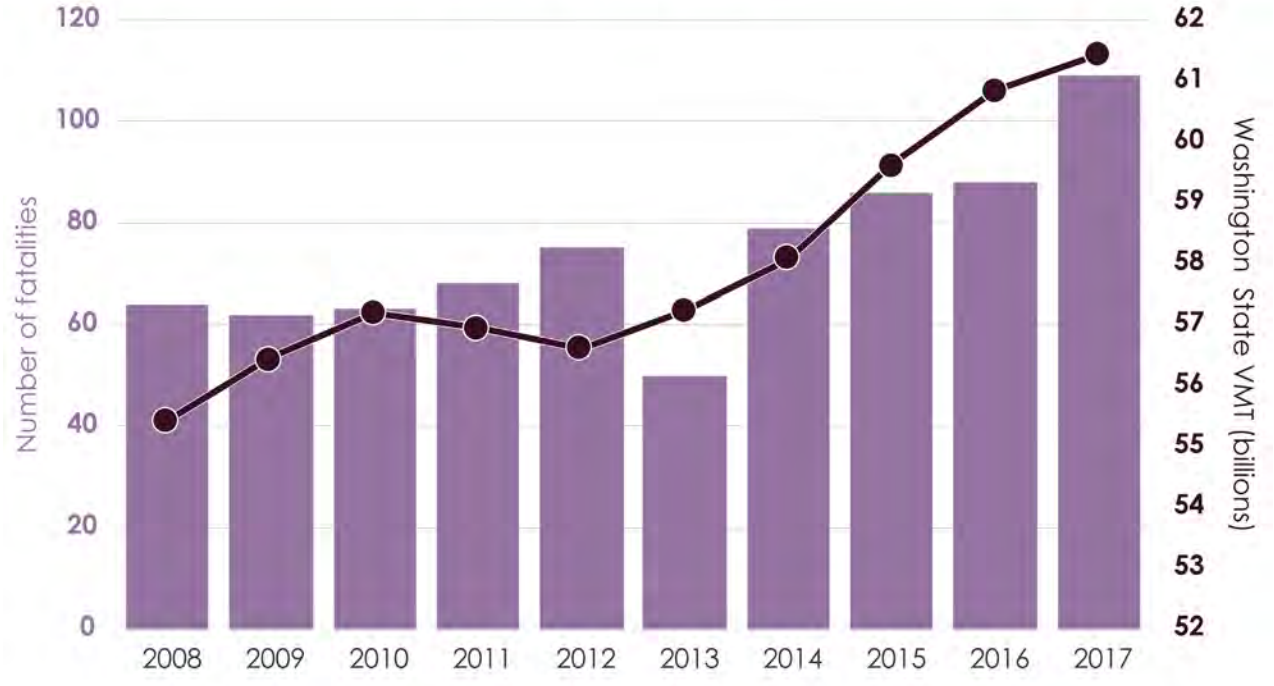
The Complete Streets approach supports safe movements of all roadway users, and demonstrates similar safety benefits. Infrastructure investments are the key element to enabling these benefits: investments in multimodal connections would reduce potential crash numbers and crash severity for all roadway users, even when the funding focuses on multimodal mobility rather than safety performance. This demonstrates the benefits of thinking systematically.

Public transportation, such as buses and light rail, is associated with very few fatalities and serious injuries. In 2017 zero crash-related fatalities of passengers or employees were reported in Washington for either urban or rural public transportation by bus and light rail, and just one serious injury. Across the United States in 2017, 16 fatalities were reported for all forms of public transportation including bus, rail, ferry, and other (such as vanpool, for example). When considering the passenger-miles traveled by different modes, the National Safety Council concluded that passengers on the nation's bus, rail, or commuter rail systems are 40 times less likely to be involved in a fatal crash, and 10 times less likely to be involved in a crash resulting in injury.

Safe Systems Focuses on the Most Serious Outcomes, Not All Crashes

One of the fundamental principles of Safe Systems is this: Humans make mistakes and systems should be designed to provide forgiveness for those mistakes. Designs that reduce the number of—or at least lessen the severity of—tragic outcomes like fatalities and serious injuries are the most effective. Actions and decisions that increase the potential for crashes should be avoided or addressed.

Pedestrian Fatalities and Vehicle Miles Traveled (VMT)
Washington State, 2008–2017



A Driver's Peripheral Vision at 20–25 mph

A Driver's Peripheral Vision at 40+ mph

Data and Safe Systems

Using data- and science-based methods, the Safe Systems approach offers specific ways for traffic safety practitioners across all jurisdictional levels to reduce the number of fatalities and serious injuries on our roadways. The approach relies on continuously improving data systems and using consistent methodologies for collecting and cataloging to allow for data integration, evaluation, and analysis, including both crash data and infrastructure to analyze context. We must act on what we currently know about what works to reduce the frequency and severity of crashes while investing in sustainable data collection and management practices to facilitate data-driven decisions going forward.

What Does the Safe Systems Approach Include?

The design and operation of a roadway system are complex efforts that take place within the context of many decisions around transportation, land use, and other factors that affect the potential for crashes to occur. Planners, engineers, and other transportation professionals work together to develop alternative solutions to a given challenge. They carefully consider the trade offs, costs, and benefits, along with requirements set by policy, existing best practices, and emerging approaches.

Speed Control and Separation

Create a system of self-enforcing roadways: environments that cause drivers to automatically select appropriate speeds, based on the kinds of users likely to be there.

The 2008 Organisation for Economic Co-operation and Development OECD) report noted that safe speeds represent the primary pathway towards a safer transportation system. Drivers self-regulate their speed when they are cued by land use and other contextual and design elements.

Complete Streets in Vancouver, WA

Fourth Plain Boulevard in Vancouver was converted from four lanes without facilities for people walking, biking, or in wheelchairs into a street with two through lanes, a center turn lane, two bicycle lanes, curb ramps, and improved sidewalks. After this investment, motor vehicle crashes dropped 52%, and the number of pedestrian-involved crashes dropped from two per year to zero.

The Complete Streets movement supports integrating public transportation, walking, and cycling into community and transportation system planning efforts. It is based on the premise that streets need to be designed to accommodate multiple transportation modes for improved safety, mobility, and efficiency.

Roundabouts continue to reduce the potential for fatal and injury crashes throughout Washington. From 2004 to 2017 no bicyclist or pedestrian fatalities were reported at roundabouts in Washington state.

Examples of cues include:

- Lane and roadway width.
- Marked crossings, center islands, or raised medians.
- Bicycle infrastructure.
- Gateway treatments entering rural towns.

This principle also makes use of different levels of separation between vulnerable users and vehicles traveling at high speeds. Where land use supports higher operating speeds, more separation is called for so vulnerable road users aren't right next to the high-speed traffic and so drivers traveling in opposite directions are separated.

Approaches in this area include speed management policies that emphasize operating speeds compatible with land use and road user characteristics to minimize injuries and fatalities, as well as increased separation for vulnerable active transportation uses through physical barriers, distance, or time.

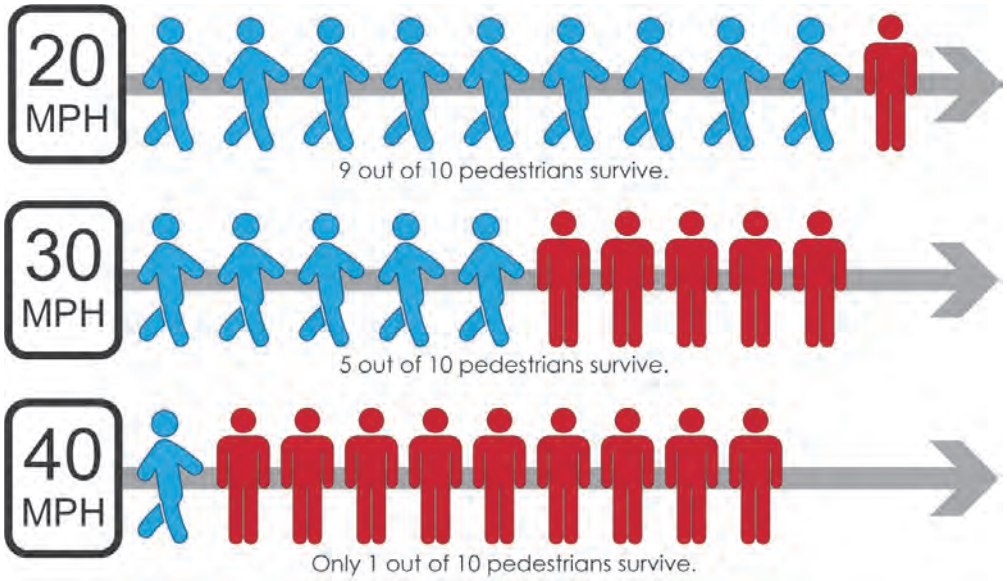
Examples of approaches include:

- An all-walk phase at a signal in a location with high levels of pedestrian traffic.
- A protected bike lane with a bicycle traffic signal and a red left-turn arrow for drivers to prevent turns across the bike lane and adjacent crosswalk while bicyclists and pedestrians have a green signal/WALK sign.
- Median treatments on an arterial or highway.
- A shared-use path separated by concrete barriers from people driving at highway speeds.
- A planter strip, parking lane, or protected bike lane acting as buffers between the vehicle lane and the sidewalk on a busy arterial.

A number of national studies make it clear that focusing on lowering operating speeds is essential to reducing the number and severity of crashes, and saving lives for all roadway users. However, lowering speed limits is not an effective strategy if the roadway is designed for a higher operating speed than that which is appropriate given the land use and mix of roadway users. Some drivers will continue to respond to the environmental and contextual cues to travel faster than is safe for all roadway users. A multidisciplinary approach will apply design, operations, and enforcement to achieve desired operating speeds.

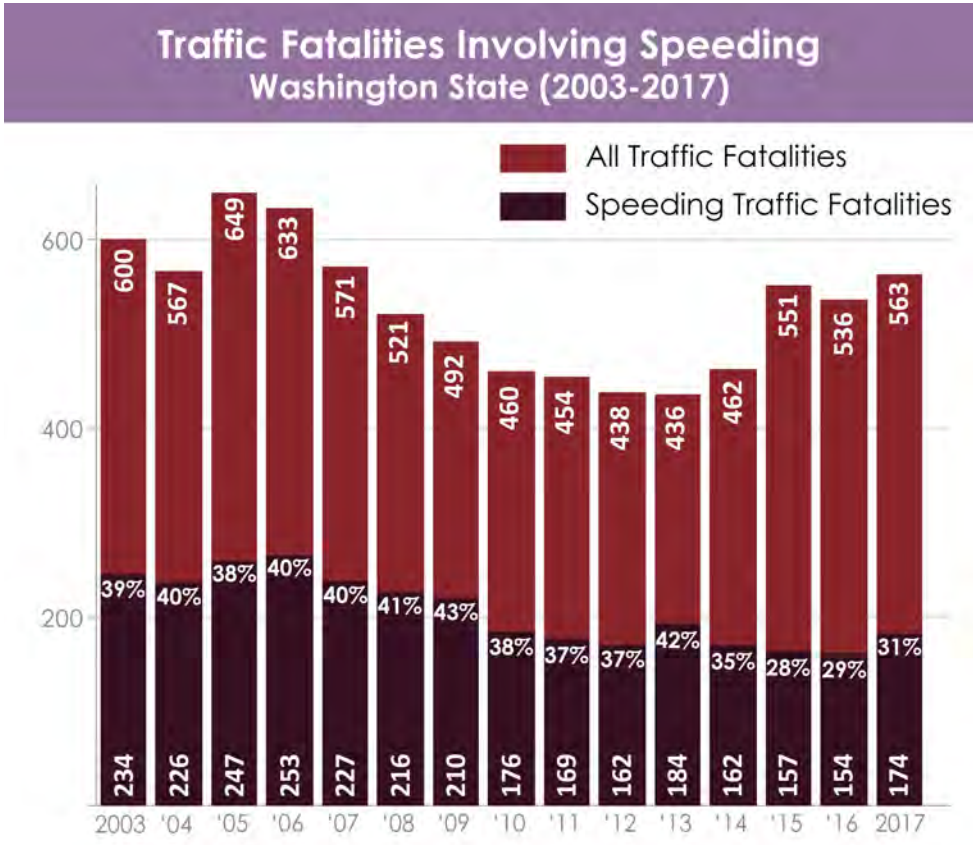
Posted speed is an important factor. Higher operating speed—whether or not the driver is actually exceeding the posted speed limit or driving too fast for conditions—increases exposure to negative outcomes. This is both in terms of the likelihood of being involved in a crash, as well as in terms of the severity of injuries sustained by those involved.

A number of national studies make it quite clear that focusing on speed management is absolutely essential to reducing the incidence



and severity of crashes and saving lives for all modes. Driving speed magnifies driver errors such as driving too close or driving when tired, distracted, or impaired, multiplying the chances of a crash. This is particularly the case when the speeds are not appropriate for context and operation of the roadway.

Most recently, in early 2019 the National Committee on Uniform Traffic Control Devices voted to require that pedestrian and bicyclist activity be considered when determining the speed limit on most urban and suburban streets. WSDOT has had this approach in its manuals for some time. Local jurisdictions should be encouraged to put this new national directive into practice.



From 2015–2017, pedestrians were 17.2% of traffic fatalities in WA State. During this same time period, pedestrians were 17.3% of fatalities nationwide.

Speed management approaches support both the establishment of appropriate speed limits for the land use and users, and changes to roadways in locations where drivers are routinely exceeding the posted speed. That is, the topic concerns both speed and speeding.

WSDOT has convened a work group including state, local, and tribal partners to develop a speed management policy and guidelines focused on injury minimization. The policy will emphasize lower operating speeds on state routes, city streets, county roads, and tribal roads based on context and compatible with the needs of all types of users. Key factors to consider when setting operating speeds include high densities of older adults, transit users, youth, people who walk or ride bicycles—particularly those who are most reliant on active transportation and transit due to income or disability—and land use.

Once this work group develops a speed management policy, traffic safety professionals should pursue education at all jurisdictional levels and associated strategies in engineering, education, and enforcement.

Functional Harmony

Design road characteristics to be consistent with the needs of the expected road user groups and adjacent land-use context.

In environments where people are driving, walking, and rolling to businesses and residences, the road design needs to provide more frequent crossing opportunities, while the road characteristics should signal drivers to maintain lower speeds and expect crossings. One essential approach in this area is to improve integration of transportation in support of land use through collaborative planning across jurisdictions. Currently, Washington State's Growth Management Act does not require consideration of state transportation right-of-way. One example of the safety issues this creates is that local approval of a subdivision along a state highway sets up conflicts between through traffic and local-only traffic.

Functional harmony can also be improved by redesigning roads to reduce potential conflicts created by the different users on the system. For example, fewer access points on a state highway means fewer turns right or left from the system or onto the system, reducing conflicts with other users, although this must be balanced with the needs of those who need to cross the highway where it represents a barrier to a complete network.

The number of access points, speed limit, and travel lanes are all important variables when it comes to reducing the likelihood and severity of crashes. Functional classification is also tied to National Highway System (NHS) designation. The NHS includes the Interstate Highway System and other roads determined to be important to the nation's economy, defense, and mobility. NHS roads typically have higher functional classifications.

Prioritizing safety for Washington roads through our policies and guidance will include taking a closer look at the criteria for functional classification of roads and NHS status, and allowing for greater flexibility in the road characteristics on arterials and collectors based on land use and other factors described above under Speed Management and Separation.

NHS designation is important to WSDOT and local agencies because NHS roads are eligible for certain federal funding that cannot be used for non-NHS roads. In 2012, the Moving Ahead for Progress in the 21st Century (MAP-21) Act authorized by Congress resulted in designation of an additional 1,200 miles of NHS roads in Washington.

Predictability and Simplicity

Make it easier for everyone to use all roadways safely. People make fewer mistakes when they know what to expect, and when their decisions are simple.

The way we design and operate the roadway system helps structure user decisions. For example, intersections that feature protected left turn phases make it simpler for a driver to know when to turn. They can execute this maneuver without having to judge gaps in oncoming traffic, and without potentially failing to observe someone crossing the street in a crosswalk. Median islands allow people to cross a wide road in stages and check for traffic one direction at a time. Sidewalks and bicycle infrastructure that create a complete, connected network with well-designed and appropriately spaced crossing opportunities also contribute to this principle.

Forgiveness and Restrictiveness

Design and operate the roadway so that:

- *A simple mistake does not result in death or serious injury (forgiveness).*
- *The system prevents the user from making decisions that increase the likelihood for death or serious injury (restrictiveness).*

In this way, the road environment is influencing human behavior to reduce crash exposure, rather than increase it. Examples of approaches in this realm:

- Discourage passing where crash potential is high.
- Use median barriers to separate high-speed vehicular traffic on the interstate.
- Require greater passing distance around a vulnerable road user.
- Use curb bulbouts or a tighter turning radius to require a driver to turn more slowly, providing them with more time to see and respond to the presence of people walking in the crosswalk on the street into which they're turning.

This also includes the concept of "social forgivingness," a change in traffic culture to encourage treatment of other roadway users with courtesy and forgiveness for their mistakes since everyone makes them.

State Awareness

The ability of the user to assess their own capability to handle the driving, walking, and biking tasks.

Policy change, enforcement, and education can be used jointly to reduce or eliminate particular behaviors or poor decision-making by inexperienced, impaired, or distracted drivers. Since drivers of motor vehicles carry the majority of kinetic energy into any crash, their operational decisions and behaviors carry more consequences for others in a crash. Developing and distributing information on human factors and road-user interactions will contribute to this principle.

Examples of approaches include:

- Policy change to increase the consequences of driving in a way that endangers others.
- Changes to driver training.
- Education on the much higher odds of fatality for vulnerable users when hit by the driver of an SUV or other larger vehicle as compared with a smaller vehicle, the effects of impact speed on chance of fatality, and the importance of observing posted speed and reducing speeds based on conditions.
- Speed awareness courses, such as those offered in London as an alternative to paying a speeding fine and receiving penalty points for drivers caught driving at inappropriate speeds.
- Riding skills courses for bicyclists, motorcyclists, and users of rideable devices.

Other Considerations in the Safe Systems Approach

A Safe Systems approach broadens the discussion of traffic safety to include everyone, and helps identify structural and institutional contributors. Some of these factors are identified here, although the items below are by no means an exhaustive list.

The most vulnerable users. The likelihood of dying in a crash is influenced by the characteristics of the people involved in the crash. Older individuals walking or bicycling are more likely to die when a driver strikes them, and the mortality rate of vehicle occupants in a crash increases significantly with age (see page 153 for more information). The way we plan, design, operate, and maintain the road environment and vehicles should therefore take into account a context that includes older users of the system; for example, older people walking and using mobility devices require longer to cross a street. Given the large projected increase in the number of older residents in Washington, this is an important consideration for the state.

Roadway users with disabilities are also part of this vulnerable user group. In the first-ever nationwide study of its kind, Kraemer and Benton (2015) found that people using wheelchairs were 36% more likely to die when hit by a driver than the general pedestrian population. A number of their findings point to the need for both design and behavioral solutions. The data showed that in 76.4% of these crashes, the driver had made no apparent effort to avoid hitting the person using the wheelchair, and almost half of these fatal crashes occurred at intersections where someone might be expected to be crossing the road. Approximately 12.8% of Washington's population reportedly have a disability; the percentage varies by county, from 12% to over 29% and may not fully count those who have a temporary disability.

Equity. The need for infrastructure investment is particularly high in historically underserved neighborhoods, many of which were set aside in the past through government action for use by people of color or low-income households. These same areas have suffered from a lack of infrastructure investment over time. In these areas residents experience reduced private vehicle ownership, an increased reliance on walking, biking, and public transportation, and greater vulnerability across a number of indicators.

The discussions in the Transportation and Health Equity chapter (page 217) and in Appendix K: Safe Systems both expand on this important point.

Framing the problem for clearer understanding. Many times, the language we use, media coverage, and information from traffic crash reports combine to describe an individual crash as if it happens in isolation, rather than acknowledging the systemic issues that may be present. This limited perspective prevents communities from recognizing and addressing those issues. The usage discussion in the Traffic Safety Culture chapter (page 28) expands on this point.

Research shows that selective inclusion of some bits of information and not others results in blaming vulnerable road users in particular for crashes that occur for reasons beyond their control—factors that could be mitigated to prevent future loss of life. For example, a newspaper article noting that a person was not in a crosswalk does not provide enough information to fully describe possible contributing factors unless the article also points out, for example, that the nearest crosswalk is over a half-mile away. Crossing locations are a systemic issue that could be addressed through placement of appropriate crossing opportunities designed in alignment with the context of the speed and volume of drivers moving along that road, with markings and controls that take into consideration the driving speeds at which vulnerable road users are more likely to be killed.

To contribute to shifting our traffic safety culture, community leaders, law enforcement, and traffic safety professionals can provide the missing context necessary for a better understanding of possible contributing factors to the crash. When a driver hits someone, whether that is a person walking or biking or another driver, it is essential to identify patterns in contributing factors through evaluation, analysis, and diagnosis. Such analysis should include elements of the environment, the vehicle, and the user. The environment includes road design, land use context and local function of the facility, the presence or absence of individual features, and operating speed. The vehicle includes information on vehicle types, any failures in vehicle components, and vehicle movements. Information on the user includes their characteristics, actions, and behaviors. These three components help frame the real challenge, so we can collectively move toward solutions more likely to change crash outcomes.

Vehicle design. The effects of the driver's operating speed at impact are compounded by trends in vehicle design that can greatly increase the likelihood of death in the event of a crash. As both the National Transportation Safety Board (NTSB) and the Insurance Institute for Highway Safety (IIHS) reported in 2018, the rise in SUV popularity has led to an increased likelihood of death for those outside the vehicle. IIHS found that fatal crashes in which the driver of an SUV struck a pedestrian increased 81% from 2009 to 2016, more than any other type of vehicle, due to their higher carriage, larger body, blunt front end, and greater horsepower, which can encourage speeding. While pedestrian detection and automated braking technologies hold some promise for improved safety performance, older vehicles lacking such equipment will continue to be on the roads for years.

Given the starkness of these numbers, it becomes even more imperative that state and local jurisdictions use a multidisciplinary approach with every available tool for infrastructure planning, design, operations, and maintenance to structure driver decisions and actions, and that driver training and education address how vehicle characteristics affect safety performance for all roadway users so drivers understand and adjust for these factors.

The Safe Systems approach for infrastructure provides Washington State with the opportunity to address increases in fatalities and serious injuries by changing how the different disciplines work together. This includes how agencies plan, design, operate, and maintain the transportation system; the focus and intent of education and enforcement; and more. It is time for Washington to adopt the Safe Systems principles statewide in its policies, programs, projects, activities, and investments. When we do so, we will save lives, provide better stewardship of public resources, and improve the functioning of the transportation system for everyone using it. When we do so, everyone can arrive safely at their destination.

Strategies for Applying a Safe Systems Approach

In addition to the strategies below, other important contributions to a Safe Systems approach were previously identified as recommendations in the 2018 Pedestrian Safety Advisory Council report, the 2018 Cooper Jones Bicyclist Safety Advisory Report, and the 2018 STEP Pedestrian Safety Action Plan developed for WSDOT.

Strategies for Addressing Safe Systems (SYS) Fatalities and Serious Injuries		
Objective	Strategies	Implementation Areas
SYS.1. Apply the Safe Systems approach to prioritize proven countermeasures.	SYS.1.1 Complete infrastructure connectivity for pedestrians and bicyclists and make progress toward providing separation where needed based on crash exposure, crash history, and characteristics of the roadway and adjacent land use associated with higher levels of use. (P, NCHRP)	Engineering
	SYS.1.2 Develop and implement speed management policy, guidelines, and professional training focused on injury minimization. (R, WSDOT)	Education, Leadership
SYS.2. Address equity.	SYS.2.1 Conduct demographic analysis to identify communities of concern. (R, Lit)	Evaluation
	SYS.2.2 Increase investment in infrastructure in historically underserved areas where crash rates and severity are disproportionate to local and regional rates. (R, Lit)	Engineering, Evaluation
	SYS.2.3 Support and report on development of city and county road safety plans based in principles of systematic safety. (R, WSDOT)	Evaluation, Leadership
SYS.3. Improve data and analysis.	SYS.3.1 Develop and disseminate systematic safety data analyses by jurisdiction to provide context for crash rates, severity, contributing factors, and proven countermeasures. (R, WSDOT)	Evaluation
P: Proven R: Recommended U: Unknown		

Achieving Target Zero

Legislation and Policy

Introduction

Policy plays a significant role in increasing positive traffic safety behaviors. Fortunately, Washington has a history of passing good legislative policy. Since 1990, we have had an all-rider motorcycle helmet law, which saves lives and reduces costs. The National Highway Traffic Safety Administration (NHTSA) estimated that, in 2016, our all-rider motorcycle helmet law saved 46 lives and more than $500 million in economic costs. (NHTSA Traffic Safety Facts, Lives and Costs Saved by Motorcycle Helmets, 2016, DOT HS 812 518). In 2002, Washington passed the primary seat belt law. Since then, our seat belt use rate has been consistently among the best in the United States. Most recently, in 2017, we passed the Driving Under the Influence of Electronics law to reduce distracted driving. This law prohibits the use of personal electronic devices behind the wheel. A 2018 observational survey showed a decrease in the number of drivers who were holding their cell phones.

Despite these successful policies, Washington's traffic fatalities and serious injuries are increasing. Traffic safety professionals and advocates agree that this requires the state to take bold steps to change this trend.

This chapter explores key researched-based best practices that have been proven effective at saving lives, but are not currently being used in Washington. Two of these strategies were discussed at the 2018 Target Zero Partners Meeting, which helped to gather input for the 2019 Target Zero Plan: expanding the use of automatic traffic safety cameras for speed, and allowing the use of sobriety checkpoints to discourage impaired driving. An additional policy change strategy discussed is a proposal designed to reduce death and serious injuries among novice—often young—drivers.

Expand the Use of Automatic Traffic Safety Cameras

As traffic deaths increase, traffic enforcement has been down across the state. This decreasing trend since 2007 may have been caused by the recession when law enforcement agencies were unable to run at full staff. Court rulings that have lengthened the time it takes an officer to make a DUI arrest may also play a role. What we know for sure is that traffic infractions have decreased 30%, from over 1 million in 2007 to about 700,000 in 2017. DUI arrests have decreased 38%, from over 40,000 in 2007 to just over 25,000 in 2017. Other types of criminal traffic arrests decreased by half from 140,000 in 2007 to 70,000 in 2017.

Washington already uses automated traffic safety cameras: 28 jurisdictions in Washington have adopted an ordinance for their use. Current Washington law allows automated traffic safety cameras to detect the following violations: running a stoplight, speeding in a school zone, and crossing a railroad against the warning signs. Additionally, the City of Tacoma is authorized by statute to use a single automated speed camera in an area that is not a school zone.

The use of automated traffic safety cameras is regulated. All locations where an automated traffic safety camera is used must be clearly marked at least 30 days prior to activation of the camera by placing signs at the camera locations. The camera can only take pictures of the vehicle and vehicle license plate, and only while the infraction is occurring. The picture must not reveal the faces of the driver or any passengers in the vehicle.

Then, within 14 days of the violation, the jurisdiction must mail a notice of infraction to the registered owner of the vehicle. The registered owner is responsible for the infraction, unless the owner provides a written statement to the court claiming to not be the

driver who committed the infraction. Infractions detected through the use of automated traffic safety cameras are not part of a registered owner's driving record and therefore do not get reported to insurance companies.

At the Partners Meeting, a strong majority of attendees (81%) supported expanding the use of automated traffic safety cameras to include speed enforcement in more places than school zones.

Expanding the use of automated traffic safety cameras has been shown to reduce crashes by 20–25% if placed at conspicuous, fixed locations. According to the Centers for Disease Control and Prevention, allowing wider use of speed cameras in Washington would annually save about 21 lives, prevent about 1,700 injuries, and save nearly $68 million in avoided crashes.

In studying roadway deaths and serious injuries of people who walk, Washington's Pedestrian Safety Advisory Council (PSAC) noted research findings that vehicle operating speed determines the severity of injuries when a vehicle strikes a person who is walking. The more vehicles and the more people, the slower the appropriate operation speeds should be to maximize safety. Getting drivers to slow down in these areas, however, is not easy. Automated traffic safety cameras provide a constant and consistent enforcement of speed limits, and produce real reductions in traveling speeds. For more information on speeding and non-motorists, see the Safe Systems chapter on page 192 and Pedestrians and Bicyclists chapter on page 120.

Because of this, in their 2018 Annual Report, PSAC recommends a change to RCW 46.63.170 to allow placement of automated speed enforcement cameras on any roadway identified in a school walk area (RCW 28A.160.160).

Next Steps for Automated Speed Enforcement

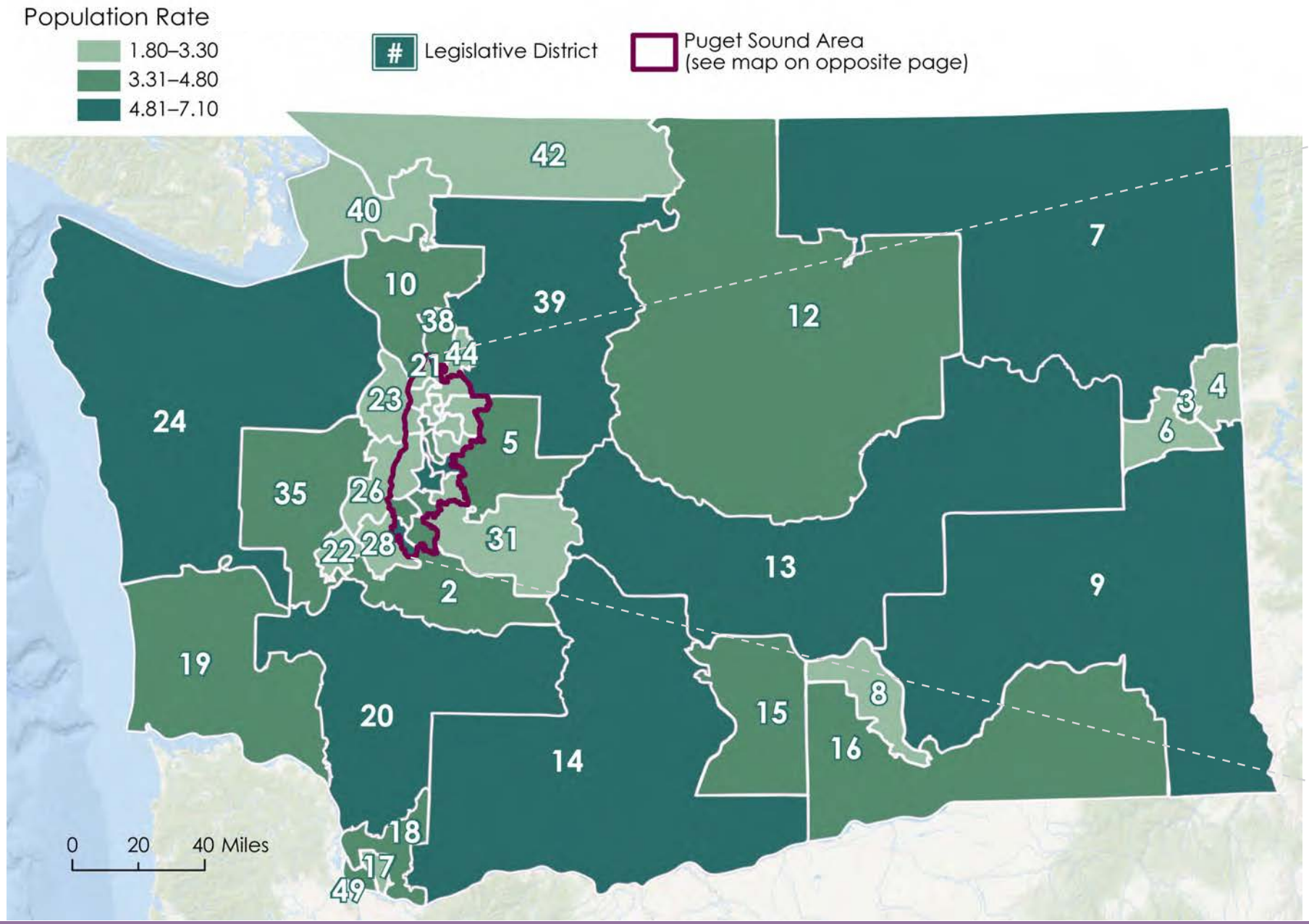
Automated speed enforcement is an emergent, quickly-changing technology. New solutions or applications may provide better alternatives to capturing speeding drivers' license plates than the current fixed-speed cameras.

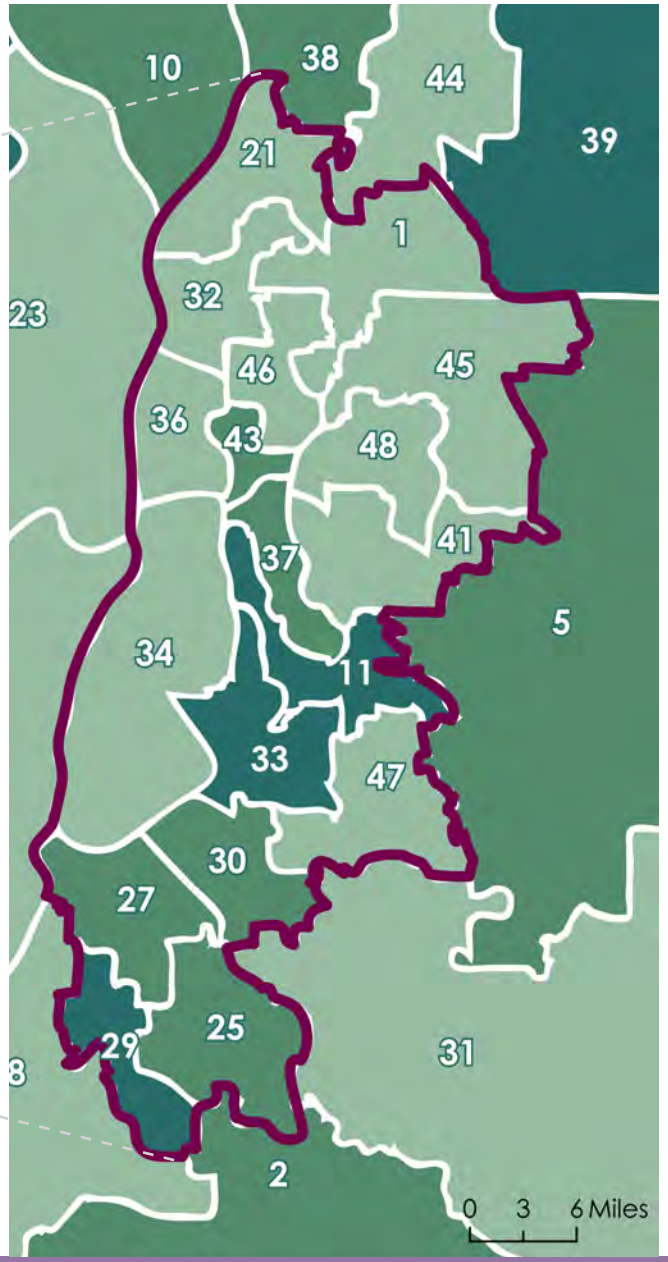
In addition, Washington should follow a best practice for the use of proceeds from automated traffic safety cameras: restrict that funding to traffic safety programs, instead of directing it to general fund expenditures.

The Washington Traffic Safety Commission (WTSC), the Washington State Patrol (WSP), and the Washington State Department of Transportation (WSDOT) will explore these new technologies, their potential in Washington State, and effects on privacy concerns. Any further application of automated speed enforcement would need to be developed into proposed legislation and brought to the Legislature for approval.

Serious Injury and Fatality Rate by Washington State Legislative District

Per 10,000 People, 2015-2017





Legislative District	Average Annual Fatalities + Serious Injuries 2015–2017	Average Annual Population 2015–2017*	Rate per 10,000 population
1	34	155,651	2.2
2	57	149,470	3.8
3	62	139,141	4.5
4	39	146,945	2.7
5	56	150,859	3.7
6	40	144,994	2.8
7	73	141,431	5.1
8	28	150,503	1.8
9	86	151,293	5.7
10	58	144,657	4.0
11	76	146,610	5.2
12	69	143,689	4.8
13	104	145,739	7.1
14	86	141,878	6.1
15	59	142,417	4.1
16	63	143,016	4.4
17	41	148,461	2.7
18	56	151,032	3.7
19	60	138,421	4.3
20	99	142,231	7.0
21	38	151,587	2.5
22	40	150,241	2.7
23	40	142,263	2.8
24	82	140,847	5.8
25	65	145,612	4.5

Legislative District	Average Annual Fatalities + Serious Injuries 2015–2017	Average Annual Population 2015–2017*	Rate per 10,000 population
26	48	146,146	3.3
27	66	142,221	4.6
28	43	143,255	3.0
29	72	144,834	5.0
30	60	144,479	4.2
31	50	148,813	3.3
32	38	142,583	2.6
33	73	143,152	5.1
34	40	147,946	2.7
35	62	142,563	4.4
36	49	160,369	3.1
37	62	152,303	4.0
38	59	144,379	4.1
39	83	144,346	5.8
40	42	142,667	2.9
41	32	148,208	2.2
42	45	146,955	3.1
43	62	164,493	3.8
44	43	150,452	2.9
45	29	147,794	1.9
46	36	146,338	2.5
47	41	146,167	2.8
48	30	148,780	2.0
49	51	146,905	3.5

*Source: Office of Financial Management Population Unit, Legislative district population estimates

Allow for Sobriety Checkpoints

Sobriety checkpoints are traffic stops, or checkpoints, where officers are set up on a roadway to stop vehicles to check for impaired drivers. Law enforcement officers operate sobriety checkpoints at times and places where data show impaired driving is common, such as cities and towns after bars and restaurants close, or heavily-traveled holiday weekend routes. These checkpoints are publicized in advance to give drivers who might be at risk of driving impaired a chance to plan ahead to find safe ways to travel. Target Zero considers sobriety checkpoints a proven strategy, based on Countermeasures That Work.

Sobriety checkpoints are one of the most effective countermeasures to combat impaired driving, and the sole remaining proven impaired driving measure not currently deployed in Washington. Allowing sobriety checkpoints in Washington would save about 15 lives, prevent 1,350 injuries, and reduce taxpayer crash costs by about $47 million each year.

In 1988, the Washington State Supreme Court heard the case of the City of Seattle v. Mesiani. The Court held that the checkpoints conducted without authority of law were unconstitutional. However, some opinions suggested that sobriety checkpoints could be executed constitutionally in Washington when conducted under authority of law and appropriately structured conditions.

Shortly afterwards, at the federal level, in Michigan Department of State Police v. Sitz in 1990, the U.S. Supreme Court found sobriety checkpoints to be constitutionally permissible under the special needs exception, in which law enforcement officers may directly conduct searches and seizures without individualized suspicion for the purpose of minimizing risk of harm to the public. The U.S. Supreme Court held that the removal of impaired drivers pursuant to a sobriety checkpoint program did not violate the Fourth Amendment.

However, the sobriety checkpoint policy does not have a clear path for adoption. In 2008 and 2011, Washington Legislators introduced bills that would provide necessary authority of law to conduct sobriety checkpoints. No committee action was taken on either bill. In addition, Washington's constitutional privacy protections may require seeking a constitutional amendment that specifically allows sobriety checkpoints in Washington.

At the Partners Meeting breakout session, most attendees indicated that they support sobriety checkpoints (89%). A majority reported they would support a constitutional amendment to allow sobriety checkpoints (68%). The attendees also indicated, however, that they would place a higher priority on increasing the use of automated traffic safety enforcement cameras (66%) over sobriety checkpoints (34%).

Next Steps for Sobriety Checkpoints

In the next three years, WTSC will gather an exploratory committee to examine sobriety checkpoints in Washington, including developing specific recommendations on possible ways to balance Washington's constitutional privacy protections with the goals of checkpoints. The group may use the developed recommendations to determine public acceptance for checkpoints that could meet Washington's constitutional standard. The group may also explore alternatives to checkpoints that could provide similar benefits without the privacy protection concerns.

Improve Safety for Novice Drivers

While 16- to 25-year old young drivers make up just 13.5% of the driving population, they accounted for 31% of all fatalities and 34% of all serious injuries in 2015–2017. There are a series of policy changes that Washington State could adopt that would work collectively to reduce crashes involving young and novice drivers (see Young Drivers chapter on page 110 for more information).

Require driver training for novice drivers. Young drivers who complete driver training prior to obtaining their license are less likely to be involved in a crash resulting in serious injury or death. The current requirement to complete this type of course does not apply to anyone 18 or older, even if they are applying to drive for the first time. It is important to consider the effectiveness of the policies already in place as young people are waiting longer than previous generations to obtain a license.

Make driver training available online. Traditional classroom instruction is a component of today's driver education courses, and must be completed in-person through a licensed driver training school or school district. Accessibility to driver education courses is a concern in the more remote, rural areas of the state. By providing an online driver education course, Washington would address an equity issue, and allow more people to have greater access to a tool that research shows is a significant factor in reducing fatality crashes among novice drivers.

Increase behind-the-wheel practice time from 50 to 100 hours. Drivers under age 18 must currently log 50 behind-the-wheel practice hours with a parent or other licensed adult. Behind-the-wheel practice is recognized as an effective way to help inexperienced drivers become familiar with the skills necessary to safely operate a motor vehicle. The Insurance Institute for Highway Safety reports that increasing practice time from 50 to only 70 hours would reduce crash claims by 5% and fatal crashes by 1%. NHTSA recommends increasing behind-the-wheel practice time to 80–120 hours as a best practice.

Next Steps for Novice Driver Safety

Target Zero partners will consider whether to apply Graduated Driver License (GDL)-type restrictions to all novice drivers, and will also pursue best-practice-related changes to the GDL as described on page 215, and changes to driver education and testing as described on page 216.

Funding for Traffic Safety

It is estimated that there is more that an $8 billion societal cost due to traffic crashes each year. Funding for safety-related investments come from a variety of sources. Safety-related funding is used to provide education, enforcement, emergency response, roadway infrastructure and support for Courts. Funding for all these efforts come from a variety of sources that includes city, county, state, tribal, and federal sources. Private sources also support traffic safety efforts in Washington. One of the key questions that needs further evaluation is what amount of funding is needed to address traffic safety in Washington State.

Licensing and Regulation

All new drivers in Washington must pass a knowledge test and a skills test to obtain their license. Washington also provides licensing endorsements for motorcyclists and commercial vehicle drivers. There are a few who are exempted from taking these tests: those who move to Washington holding a valid license from another state, or from some countries with reciprocity agreements, do not need to pass this test.

This chapter will look at the role that licensing plays in traffic safety in our state, and discuss some variations on the traditional licensing practice.

Washington's Driver Licensing and Endorsement Requirements

License Requirements for Teens

Teen drivers have certain additional restrictions when they begin driving. Young drivers are at an increased crash risk due to inexperience and an inability to reliably predict hazards (see page 110 for more information on Young Drivers). Graduated Driver Licensing (GDL) is a tiered licensing system that attempts to reduce this risk. It operates by gradually exposing young drivers to higher risk driving conditions after they gain experience under less risky driving conditions. GDL systems have been identified as the most effective way to date to reduce young driver fatalities and serious injuries.

The requirements for Washington's instruction permit and intermediate license stages, which apply to all drivers age 16 and 17, are as follows:

The learner stage (instruction permit):

- Must be at least 15 years old to obtain an instruction permit if signed up for a driver training course. If not signed up for a driver training course, must be 15½ and pass a knowledge test.
- Must have consent from a parent or guardian.
- Must hold instruction permit for at least six months.
- Complete a minimum of 50 hours (at least 10 at night) of driving with a supervising driver who has been licensed for at least five years
- No traffic violations within six months of applying for license, or alcohol or drug offenses while holding an instruction permit
- Complete an approved driver training course and pass the knowledge and driving skills tests

296,733 new drivers were licensed in Washington in 2017.

Of these:

- 155,074 (52%) were transferring from another state where they were already licensed.
- 141,659 (48%) were getting a license for the first time; 53,225 (38%) of the newly licensed drivers in 2017 were 16-17 years old 24,806 (18%) were 18-20 years old.

The intermediate stage (graduated licensing probation period):

- Must be at least 16 years old to take the driving skills test and qualify for an intermediate driver license
- No non-family teenage passengers during the first six months of solo driving, and no more than three teen passengers during the second six months
- No driving from 1 a.m. to 5 a.m. during the first year of solo driving, unless accompanied by a licensed driver who is at least 25 years old
- No using wireless devices (this includes hands-free devices)
- The passenger and nighttime driving restrictions are lifted after 12 months if the driver has no violations.
- Penalties for violations and crashes for 16- and 17-year-old drivers:
  - **First violation.** Passenger and nighttime restrictions apply until the driver is 18, and a warning letter is sent to the parent/guardian of the driver
  - **Second violation.** License is suspended for six months or until the driver is 18, whichever comes first
  - **Third violation.** License is suspended until the driver is 18

Intermediate license restrictions are immediately lifted once the driver turns 18, regardless of how long they have been licensed.

License Requirements for 18 and Over

Drivers age 18 and older are not subject to the intermediate license restrictions that are outlined above. Once potential drivers are 18 years or older, they have several different options for how to obtain a driver license. They can opt to get an instruction permit and take a driver training course, or learn from a licensed driver with at least five years of experience. However, they can also just take the knowledge and skills tests without previously having a permit or training.

This presents a challenge when young people delay getting their license until age 18 or later—they are no longer subject to the intermediate license restrictions that are designed to help new drivers become gradually exposed to riskier driving conditions while they gain experience. Refer to the Young Driver chapter on page 110 for more information about age of licensure trends.

Motorcycle and Commercial Driver License (CDL) Endorsements

To operate a motorcycle or commercial vehicle on Washington roadways, individuals who already have a valid Washington State drivers license can apply for an endorsement to be added to their license.

Motorcycle endorsement. Drivers can apply for a motorcycle endorsement by passing the knowledge and riding skills tests. Drivers younger than 18 must also successfully complete an approved rider course prior to applying for an endorsement, but this is not required for riders 18 and older. A prospective rider may take the motorcycle training and testing prior to receiving their driver license and have the endorsement added at the time the initial license is issued, provided that the endorsement test is taken no more than 180 days prior to licensing. Individuals who want to practice riding on public roads prior to taking the motorcycle skills test must obtain a motorcycle instruction permit, which is issued after the rider passes the motorcycle operation knowledge test.

CDL endorsement. Individuals age 18 or older can take a knowledge test to obtain a Commercial License Permit. When applying for a permit, drivers must self-certify the type of operation they will be conducting and provide the Department of Licensing with medical documentation if required. Prior to taking the skills test for the CDL, drivers must complete training. While someone can qualify for a CDL at age 18 years old to operate commercial vehicles for interstate travel, a driver must be at least 21 years old. For more information please see www.dol.wa.gov/driverslicense/cdltypes.html.

Overview of the Licensing Landscape in Washington State as of June 2019:

- 5,704,650 licensed drivers in Washington State
- 79,903 (1.4%) are under 18 and subject to Intermediate License restrictions
- 87,483 people with instruction permits
- 427,276 drivers with motorcycle endorsements
- 182,613 drivers with commercial driver license endorsements
- 294,528 drivers with a suspended, revoked, or canceled driver license

License Suspensions and Restrictions

Individuals can have their driving privileges suspended, revoked, or disqualified if they are convicted of certain offenses, including driving under the influence, vehicular assault, or reckless or negligent driving.

Some drivers with a suspended license may be able to apply for a restricted license:

- Individuals with a drug or alcohol-related offense can apply for an Ignition Interlock License (IIL) so that they can drive after getting an ignition interlock device installed in their vehicle. For more on ignition interlock devices, please see page 53 of the Impairment chapter.
- Individuals with offenses such as negligent driving or reckless driving can apply for an occupational restricted license, which allows them to drive for specific purposes such as work, school, or court-ordered community service.

The Role of Licensing in Traffic Safety Culture in Washington

A major challenge in driver licensing is the common belief that driving is a right instead of a privilege. For most Washingtonians, the ability to drive is intrinsically linked to their ability to work, care for their family, and participate in their community. For many people, especially those who live in more remote areas with limited alternative transportation options, driving and car ownership are strongly linked to their independence and life satisfaction. Getting a instruction permit at 15 and a driver license at 16 have long been rites of passage for young people, and a major step into adulthood.

While it is true that being a productive member of society often requires access to a vehicle and the ability to drive, this consideration must be balanced with the safety of that same society. The Department of Licensing has sought to improve the safety culture of commercial and motorcycle licensing:

- In 2018, the Legislature passed a bill that requires CDL and commercial instruction permit holders to submit medical certifications electronically through the National Registry of Certified Medical Examiners, which should reduce the potential for fraud.
- Agency-proposed legislation focused on motorcyclist safety, passed during the 2019–2020 session, will:
  - Eliminate the maximum hours of instruction requirement so that the emphasis is on teaching to meet the standard rather than teaching for a specified amount of time.
  - Require a skills test to obtain a motorcycle instruction permit.
  - Increase the penalty for riding unendorsed.

Each of these law changes attempts to protect all road users by ensuring that unsafe, unskilled drivers are not licensed or endorsed.

Traffic Safety Culture: Licensing

Target Zero advocates a cultural shift in which a driver license is viewed as a privilege that is only earned after rigorous training, education, and testing. Perhaps most importantly, this cultural shift needs to include individuals feeling a personal responsibility for safety when walking, riding a bike or driving: for themselves, their loved ones, and all other people who use our roads.

Best Practices and Areas for Improvement in Driver Licensing Regulations

A major challenge to licensing agencies throughout the country is that more teens are delaying licensure until age 18 or later compared to previous generations. According to national survey data from the American Automobile Association (AAA) Foundation, most young adults who delay getting their license until age 18 or older cite reasons related to opportunity or financial cost—fewer than 25% of surveyed young people said that they delayed licensure to avoid GDL requirements.

A potential strategy for this issue is to extend the GDL restrictions to age 18 and older: apply them to all "novice" drivers, not just teen drivers. For example, GDL restrictions (such as limiting passengers, nighttime driving, and electronic device use) could be imposed on all drivers during their first year after receiving their license, not just 16- and 17-year-olds. While extending GDL requirements to new drivers 18 years and older is not the norm in the United States (only three jurisdictions apply full GDL restrictions to novice drivers through age 20), it is done in several other countries, including Canada, Australia, and New Zealand.

In addition, young people from low-income households delay getting licensed far more often than young people from high income households. Since the cost of driver training can pose a significant obstacle to low-income families, making training more accessible and reducing the cost could encourage more young people to get a license prior to turning 18. Some strategies to address this equity issue include:

- Provide subsidies to low-income students or allowing online driver training as a lower-cost option.
- Online driver training could also improve access to young people living in more remote, rural areas, where there are limited training options.

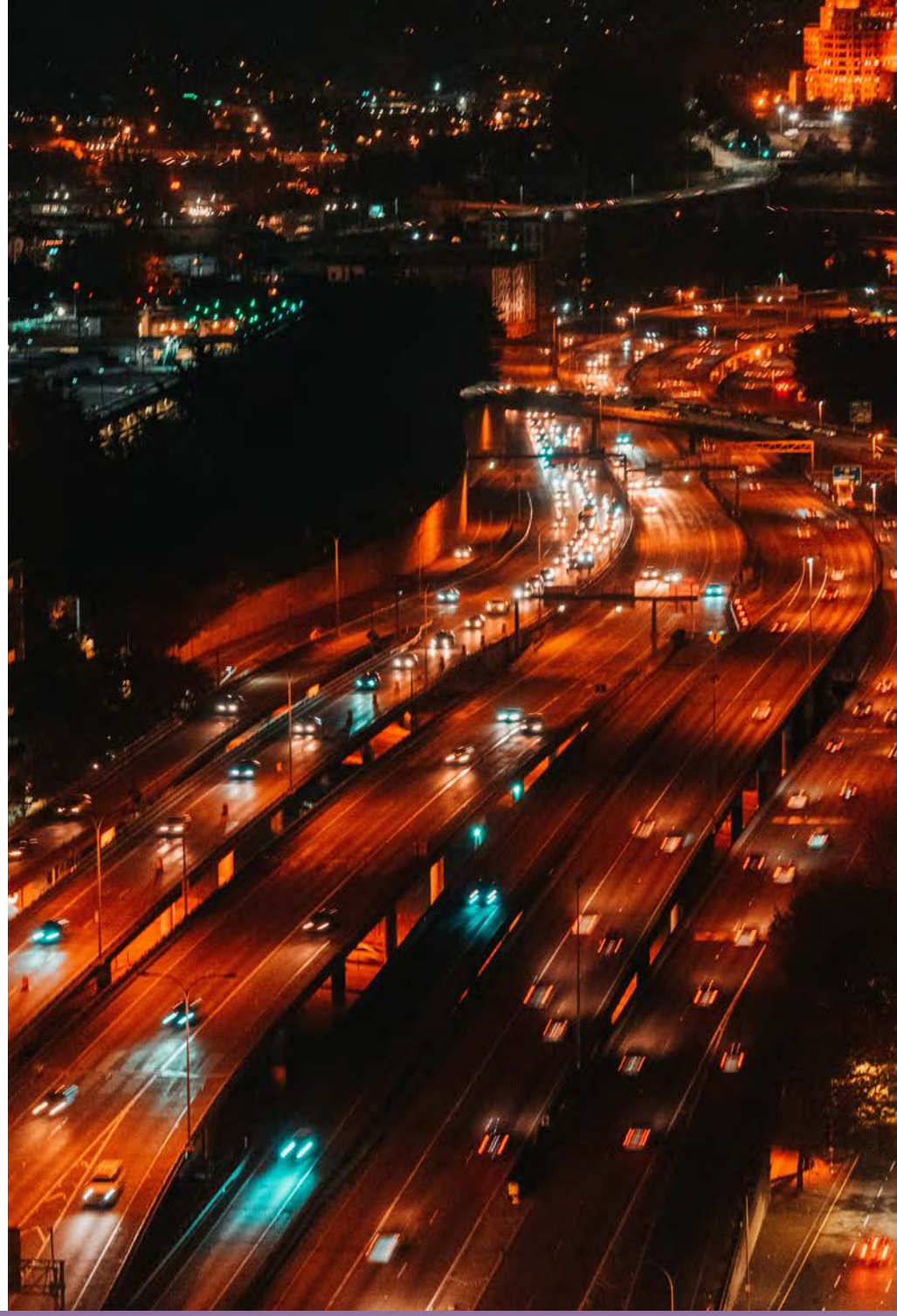
In addition to extending GDL requirements to all novice drivers, there are several notable changes that Washington could make to our current licensing system to align with national best practices and ensure new drivers are gaining adequate experience under lower-risk driving conditions. These strategies include:

- Require a one-year holding period for an instruction permit prior to obtaining an intermediate license.
- Increase the number of supervised hours of practice to more than the currently-required 50, ideally to 80–100 hours.
- Require log books of practice hours to be submitted when applying for a driver license, and requiring a parent to attest that the log book hours are accurate.
- Expand the nighttime driving restriction to start at 9 or 10 p.m.; the restriction currently begins at 1 a.m. (This would not apply if the intermediate license holder was driving after these hours for educational, religious, or employment purposes.)
- Strengthen the passenger restriction so that the new driver can have no more than one teen passenger during the intermediate license phase.

Research findings that demonstrate the effectiveness of each of the above listed proposals can be accessed through the GDL Framework Safety Center (gdlframework.tirf.ca). Developed by the Traffic Injury Research Foundation, this web-based resource offers a comprehensive approach to best practices in young driver safety.

In addition to expanding and strengthening the GDL system, there are potential improvements to be made to driver education and testing:

- A greater emphasis on hazard perception and judgment in education and testing, not just vehicle maneuvers.
- The scoring of the test could be revised to account for high risk danger potentials.
- Greater involvement of parents, who provide the majority of instruction to young drivers. This could be accomplished by requiring parents to attend the orientation that all driver training schools in Washington already offer. See page 115 for more information on parental involvement.



Transportation and Health Equity

Equity is the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically. Health inequities relate to health determinants, and access to the resources necessary to improve and maintain health or health outcomes.

The Centers for Disease Control and Prevention explain that health equity is achieved when every person has the opportunity to "attain his or her full health potential" and no one is "disadvantaged from achieving this potential because of social position or other socially determined circumstances." Health and equity are inextricably linked as you can't have one without the other, and transportation safety, mobility, and access play an important role in both.

Relationship to Public Health

Traffic-related injuries accounted for approximately 2.5% of all emergency department visits reported to the Rapid Health Information Network in 2017–2018. Traffic-related injuries also accounted for 11% of all hospital inpatient admissions related to injury in 2016–2017.

Data show the need to direct prevention efforts to communities with poverty rates higher than the state average as well as vulnerable and marginalized populations, such as older adults, individuals with disabilities, people of color, and youth. This will help us improve safety and public health, and decrease the burden on individuals, communities, and the state's economy.

Traffic crashes are a serious public health problem, especially in communities with poverty rates higher than the state average, and were the 11th leading cause of death for Washington residents. Serious injury and fatal crashes are more likely for people living in poverty, which includes an overrepresentation of people of color, the elderly, and people with disabilities. Additional vulnerable populations include young people, people with limited English proficiency, and people living in rural areas.

In response to this, Target Zero highlights health equity as it relates to traffic safety in the following chapters:

- **Tribes and Target Zero.** American Indian and Alaska Natives had the highest rate of death due to traffic crashes (28.5 per 100,000) of all other race categories.
- **Young Drivers (16–25 Years Old).** Young adults ages 15 to 24 have highest age-adjusted traffic death rate of all ages (13 in 100,000).
- **Pedestrians and Bicyclists.** According to analysis conducted by the Washington State Department of Transportation (WSDOT), from 2013–2017 about 59% of pedestrian and bicycle fatal and serious crashes in Washington occurred in communities with a rate of poverty higher than the state average, despite these areas only accounting for 43% of the population.
- **Older Drivers (70+ Years Old).** According to the National Highway Traffic Safety Administration (NHTSA), drivers ages 75 to 79 are 3.5 times more likely to be killed in an automobile crash than drivers 30 to 65 years old. This ratio jumps to 9.5 after age 80.
- **State, Regional, and Local Implementation: Rural roads.** Response and transport times are longer in rural geographic areas and can be associated with greater risk for time sensitive conditions such as trauma, cardiac events, and stroke.

In each of the chapters above you will find additional information regarding the health equity issues for these groups and how they are affected. Highlighting these inequities and disparities within the system allows for strategies and countermeasures to be targeted towards areas and populations where they will have the greatest impact.

Key Issues in Traffic Safety and Health Equity

Lack of Transportation Infrastructure

Communities with poverty rates higher than the state average also have the highest numbers of households that lack access to a personal vehicle and are therefore more likely to rely on walking, bicycling, and transit for their transportation needs. However, studies show a long pattern of investment inequity in lower-income neighborhoods. Echoing a pattern found across the United States, policies (such as redlining) restricted areas where people of color were allowed to live, and those same areas have suffered from a lack of investment in public safety infrastructure. Lack of sidewalks, crosswalks, lighting, and bicycling paths can increase crash exposure for road users who are walking and bicycling as a primary mode of transportation. These roads often have higher vehicle speeds, wider roads, and higher traffic volumes when compared with more affluent neighborhoods with lower crash rates.

Transportation and Housing

The cost of transportation and housing are inextricably linked and play an important role in traffic safety performance and health equity. For example, housing within walking or bicycling distance of a main street or neighborhood shopping district can allow for the reduction of daily car trips. Expanding public transportation can also provide an alternative to driving that is safer and less expensive. However, it is important to note that areas with these types of options can often be priced out of range in a region with high housing costs.

Case Study: White Center Traffic Playground

White Center is one of the most diverse areas in King County, with 60% communities of color and speaking dozens of languages. It is a historically underserved area in regards to transportation infrastructure including a lack of sidewalks, lighting, bike lanes, and other traffic safety needs. In 2016, Cascade Bicycle Club in cooperation with Alta Planning and King County, transformed an underutilized set of tennis courts into a "traffic playground," where people could learn to be safe and comfortable with walking and bicycling. Designed for teaching road safety awareness, the playground provides a miniature version of a roadway that can be used to practice bike handling and braking practice, familiarity with roadway marking and signing, and skills related to operating a bicycle in and adjacent to traffic.

Photo courtesy of King County Parks

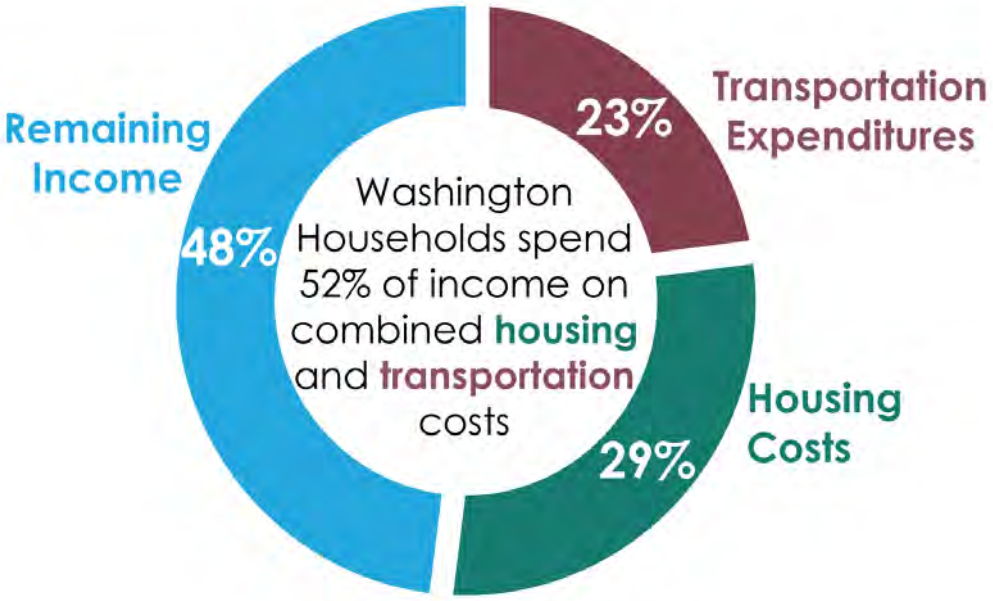
Case Study: State Route 7

Recently a Federal Highway Administration (FHWA) pilot project, constructed by WSDOT, was built on State Route 7 in Spanaway to improve conditions for older road users in an area with a high proportion of older adults. This project included traffic calming, larger font signage, striping improvements, and lighting near transit services.

For households with fewer transportation options, the growing cost burden of housing and transportation cuts into income needed for expenses such as food, other goods and services, education, health care, and savings. During the period ending in 2015, Washington residents spent 52% of their monthly income on housing and transportation combined, and transportation costs alone were 23% of median income.

Disproportionate Transportation Burden

Households below moderate income have higher combined transportation and housing costs relative to their incomes, 63% of average monthly income. Medical costs resulting from crashes—as well as lost productivity, property damage, and higher insurance premiums—affect individuals, their families, their communities, and society as a whole. Transportation systems, open space, healthcare, and food access challenges and inadequacies are connected to neighborhood and residential segregation that can be traced to long-standing government policies and decision-making rooted in prejudice and bias based on race, class, and disability. Dismantling these historic inequities, including within our transportation systems, must be prioritized to improve health equity.



Notes: Percentages based on average median income. Data set contains data from sources with various publication dates, updated in 2017. Adapted from WSDOT 2018 Attainment Report. Data Source: Center for Neighborhood Technology.

The Washington Tracking Network (WTN)

WTN is a web application that provides public access to data about environmental hazards, population characteristics, and health outcomes—all in one place. WTN offers information and resources to help analyze environmental, health, and community impacts. Data are available in tables, charts, and maps at the state, county and community levels. The Information by Location (IBL) mapping tool within WTN displays community rankings from 1 to 10 to show disparities (differences) in health, environmental, and demographic characteristics between locations.

Improving Health Equity Through Transportation Systems

Many of the approaches that transportation agencies can take to increase active transportation, reduce crash potential, and improve connectivity can also advance health equity if improvements are prioritized to specific communities, including low-income, the elderly, rural residents, workers, students, and youth.

The following strategies listed throughout Target Zero would help advance health equity in Washington State. When implementing strategies in these areas, it is important to proactively and meaningfully engage residents, including leaders within these communities in thoughtful planning and decision-making so that their voices and ideas drive strategies and solutions. Other programs such as reduced public transportation fares, targeted demand response, housing affordability, and anti-displacement campaigns are encouraged and could reduce the potential for crashes for vulnerable people.

A note about health equity and diversity, equity and inclusion (DEI) in Target Zero. This is the first time in the Target Zero plan that equity is included as a factor in how we plan to achieve zero deaths and serious injuries in Washington State. As we work with our traffic safety partners in implementation of this plan and in development of the next iteration of the plan, we plan to expand this discussion and the strategies associated with health equity and DEI as they relate to transportation safety.

Section of Target Zero	Strategies Related to Health Equity
Multicultural Communications	MCC.1.1 Engage in open deliberate dialogue about inclusion to turn intention into action. (U)
	MCC.1.2 Provide training opportunities for traffic safety agencies and partners on cultural competence, multicultural engagement, and multicultural communications. (U)
	MCC.2.1 Transcreate traffic safety educational materials. (R, GSA)
	MCC.3.1 Include comprehensive demographic questions in surveys. (U)
	MCC.3.2 Examine the relationship between traffic safety outcomes and sociodemographic characteristics, such as income. (U)
	MCC.3.3 Explore methods for measuring equity, such as comparing transportation systems in lower-income communities and communities of color to those systems in adjacent neighborhoods or to regional averages. Identify areas of vulnerability for targeting traffic safety resources. (U)
	MCC.4.1 Implement traffic safety projects in tribal and rural areas. (R, FHWA)
	MCC.4.2 Understand project focus areas and develop ways to ensure traffic safety countermeasures reach everyone in those communities. (U)
	MCC.4.3 Identify and recruit ambassadors who represent their communities and can assist with language/cultural barriers. (U)
	MCC.4.4 Ensure grantees and project managers have knowledge of the populations in the project area they serve and solutions to include them. (U)

Section of Target Zero	Strategies Related to Health Equity
Pedestrians and Bicyclists	PAB.3.1 Invest in and construct separated pedestrian facilities (sidewalks and multi-use paths), especially in urban areas and adjacent to schools, bus stops, and school walk areas. (P, NCHRP)
	PAB.3.3 Invest in and construct more buffered bike lanes, protected separated bicycle lanes, and separated bicycle facilities or shared-use paths, especially in urban areas and adjacent to schools, bus stops, and school walk areas. (U)
	AB.3.4 Increase infrastructure investments in underserved areas. (U)
	PAB.4 Improve safety for children walking and bicycling to school (including all sub-strategies).
	PAB.6.6 Strengthen the vulnerable user law. (U)
	PAB.7.1 Implement pedestrian and bicyclist safety zones, targeting geographic locations and audiences with pedestrian/bicyclist crash concerns. (R, CTW)
	PAB.7.2 Expand the use of high visibility crosswalk enforcement of motorists who fail to yield to pedestrians combined with culturally appropriate campaigns designed to take into account equity issues in underserved high-need communities with high crash rates. (R, CTW)
	PAB.7.3 Improve training on pedestrian and bicyclist laws for law enforcement officers at state, tribal, and local levels, including training on equity issues for enforcement. (R, CTW)
Older Drivers	ODI.1.6 Conduct research on how to better identify older drivers most at risk for a fatal or serious injury crash, and develop strategies for early intervention with at-risk senior drivers. (U)
	ODI.3.2 Promote safe mobility options for seniors by providing guidance and assistance on identifying safe transportation options within the community, and incentivizing transportation options. (R, NCHRP)
	ODI.3.4 Improve the roadway to better accommodate the special needs of older drivers. This could include providing advance warning and guide signs, improving pavement markings, improving the readability of roadway signs, providing more protected left-turn signals and offset left-turn lanes at intersections, reducing speed limits, and improving the lighting at intersections and in curves. (R, NCHRP)
Young Driver	YDI.3.9 Seek legislation to allow for financial assistance to underserved populations for some portion of the driver training curriculum. (U)
Safe Systems	SYS.2.1 Conduct demographic analysis to identify communities of concern. (R, Lit)
	SYS.2.2 Increase investment in infrastructure in historically underserved areas where crash rates and severity are disproportionate to local and regional rates. (R, Lit)
	SYS.2.3 Support and report on development of city and county road safety plans based in principles of systematic safety. (R, WSDOT)

State, Regional, and Local Implementation

Target Zero is only effective when all of our partners are at the table. State-level policies cannot be implemented only at the state level; they must be taken to the local level for implementation as well. To bring our policies from ideas to successfully-implemented programs and projects, we must involve partners at all levels of government, from all sectors and fields. They must be the right people, involved in the right activities, at the right times.

By themselves, none of the Five Es—Education and Outreach, Enforcement, Engineering, Emergency Medical Services (EMS), and Evaluation, plus Leadership—can get us to zero deaths and zero serious injuries by 2030. At both the state and local levels, each agency must use existing partnerships, or help foster partnership coalitions where none yet exist. This involves bringing the right group of partners together to identify problems, develop a list of potential strategies, and implement the most effective set of strategies. To help implement broad multimodal traffic safety strategies at the local agency level, Washington State must provide the necessary coordination, support, best practices, and training.

State and Local Implementation of the Five Es

Education and Outreach

At the state level, agencies such as the Washington Traffic Safety Commission (WTSC) and Department of Licensing (DOL) are able to address traffic safety directly.

WTSC helps research policy, supports data and analysis, and crafts educational campaigns for traffic safety issues such as culture change and distracted driving. WTSC also works closely with partner agencies on education campaigns. For instance, the Department of Health (DOH) and WTSC share educational campaigns for traffic safety in local communities through partnerships with community Safe Kids Coalitions and Certified Child Passenger Safety Technicians. WTSC also supports the locally-based Target Zero Managers (TZMs) (see page 228).

Current WTSC education and outreach initiatives include:

Proactive traffic safety campaign. WTSC is developing an overarching concept for a proactive traffic safety campaign based on research conducted by the Center for Health and Safety Culture (CHSC). It is expected that this campaign will complement DOL's new driving curriculum and address general road behaviors that affect the culture of roadway users.

Parents of young drivers. CHSC has experience developing tools for parents to support their use of best practices to reduce underage drinking. WTSC will explore adapting these tools to bolster the skills of parents to improve driving behaviors among their children as they learn to drive. These tools are based on framework that develops the social and emotional skills of children, as well as adults.

Bystander engagement. Often, individuals are present when others engage in risky behaviors like driving after drinking or using drugs or not wearing a seat belt. While others often recognize the potential danger, research has shown they often don't have the comfort and confidence to speak up and take any action to prevent the individual from engaging in a potentially dangerous act. WTSC will work with CHSC to develop a comprehensive plan for designing, implementing, and evaluating tools to grow bystander engagement.

Moving forward, the WTSC is interested in addressing cultural change and in improving communications approaches by exploring the root of traffic safety behavioral problems. This work will continue to broaden messaging beyond the threat of enforcement to knowing more about the values that feed the most troubling behaviors and how to change

them. See the Traffic Safety Culture chapter on page 28 for more information.

DOL licenses drivers, sets basic standards, conducts research and analysis, and runs the Graduated Driver License (GDL) program for drivers under age 18. In addition, DOL develops driver education curriculum with a particular emphasis on situational and self-awareness so that every novice driver actively contributes to our responsible driving community, now and in the future. DOL also works with public and private driver training schools and other stakeholders to respond to emerging developments in the industry.

Multifaceted and targeted communication and outreach has been the most effective way to address specific behaviors and change perceptions about the motorist's role in the larger transportation ecosystem. DOL's efforts to engage with motorists about high risk behaviors and impacts of poor decision-making have successfully reduced violations and recidivism in some targeted areas. Most recently, these communication efforts have included raising awareness about how a motorist's attitudes and beliefs affect decision-making.

This emphasis on "how we feel behind the wheel" is a core component in the new curriculum Washington State began implementing in 2018.

Other state agencies are able to implement state-level policies at the local level to support traffic safety efforts. The Office of Superintendent of Public Instruction (OSPI), for instance, sets rules and regulations for school bus drivers, and imparts that information to districts through trainings. The Health Care Authority (HCA) is able to address local implementation through setting rehabilitation treatment protocols, managing Medicare/Medicaid reimbursements, and contract language. HCA also implements statewide policy through primary prevention activities like communications and media campaigns.

Types of Partners

Target Zero Partners come from a wide variety of backgrounds beyond just the five Es. This reflects the multi-faceted nature of the issues underlying traffic safety. Partners include:

- Federal, state, and local agencies.
- Tribes.
- MPOs/RTPOs.
- Law enforcement.
- EMS providers.
- Prosecutors offices.
- School districts and universities.
- Courts.
- Rehabilitation experts.
- Driving schools.
- Transit agencies.
- Hospitals.
- Probation officers.
- The Washington State Legislature.
- Advocacy groups.
- Insurance industry groups.
- Industry businesses and organizations in traffic safety technology.

Enforcement

Currently, law enforcement (LE) is responsible for implementing traffic safety by traditional enforcement, education and outreach, and coordinating with local partners. Strategies include:

- **Enforcing** to deter people from risky driving behaviors.
- **Education and outreach**, such as safety talks with the public. This includes presentations to military organizations, schools/universities, and other community partnerships.
- **Assisting local law enforcement.** Washington State can provide direct assistance to local law enforcement. For instance, during a Driving Under the Influence (DUI) high visibility enforcement (HVE) campaign, WSP provides evidence collection processing through a mobile DUI unit, bringing the breath test tools to the location of arrests. This allows local LE to focus on arrests and leave the processing to WSP, making it easier for local LE to be proactive. The state also funds training for officers and deputies in a variety of disciplines, and provides grants to for enforcement supplies, such as Radar and Lidar, to local agencies.
- **Coordinating with local TZMs.** TZMs convene Traffic Safety Task Forces around the state to focus community resources on traffic safety strategies like emphasis patrols. This is one of the ways that LE helps implement impairment policy at the local level. LE organizes and executes emphasis patrols and gives input to prioritize their individual agency efforts on traffic safety enforcement.
- **Ensuring media coverage** for events such as HVEs for impairment.
- **Supporting law changes** that make a behavior illegal, such as texting and driving.

In many places, tribal police departments work with local and state agencies to enforce state traffic safety laws in their jurisdictions. These are cooperative efforts that recognize the autonomy of the tribe.

A focus for the future would be improving evaluation to provide more evidence based results or models and examples.

Engineering

At the state level, The Washington State Department of Transportation (WSDOT) currently uses the Target Zero emphasis areas to determine the structure for implementation of both the federal and state components of its programs. This includes crash types, such as lane departure and intersection-related, that have a high potential to lead to fatal and serious injury. WSDOT reviews and updates its 10-year program on a yearly basis. Determinations are made based on the most current traffic safety information.

The state safety program for local agencies engineering is funded with Highway Safety Improvement Program (HSIP) funds and is administered through WSDOT's Local Programs office. The program methodology is developed with Target Zero goals, emphasis areas, and strategies in mind. The primary safety funding programs for local agencies are the County Safety Program and the City Safety Program. Both cities and counties address fatal and serious injury crash risk through the development of Local Road Safety Plans (LRSPs). Cities also address fatal and serious injury crash history in a statewide, competitive program. For more on the LRSPs, please see page 96.

Individual local agencies, through these programs, are encouraged to analyze their own data to determine fatal and serious injury crash priorities to address. Specific locations are identified either by risk or by crash history. Local agencies then determine which strategies to implement to address these locations, starting with the strategies identified and recommended in Target Zero for their target crash types.

To work towards zero deaths and serious injuries by 2030, WSDOT's safety program headquarters and region staff work through Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Organization (RTPOs), local programs, the Transportation Improvement Board (TIB), and the County Road Administration Board (CRAB). WSDOT is finding new and better ways to dialogue with its regions and other parts of the agency to implement Target Zero strategies. This work is driven and supported by the agency's vision, mission, values, and strategic plan goals. WSDOT is increasingly going on the road to support and partner with WSDOT's regional and Local Programs staff in order to build enhanced awareness and understanding, then provide support on the implementation efforts.

Additionally, the Safe Systems approach described on page 192 discusses engineering countermeasures that will reduce the likelihood of a crash between vehicles, people walking, and people biking. These engineering changes will support better outcomes not just for these vulnerable road users, but for all users.

EMS and Trauma Care System

Getting the right patient to the right facility in the right amount of time is the guiding principle for the EMS and Trauma Care System in Washington. Injury and medical emergencies are time-critical events. They require quick and appropriate medical care. The time it takes to get the patient to the hospital after a roadway crash can make the difference between life and death. It can also determine whether the patient will suffer long-term disability, or return to a healthy and productive life.

Washington is a recognized leader in meeting these demands through its EMS and Trauma Care System. This reputation is a result of the leadership and collaboration of physicians, nurses, EMS leaders, committees, commissions, and communities who work together to ensure a quality system.

Washington's system provides a continuum of care from prevention to trauma rehabilitation. A strategic plan serves as a guiding document that directly influences how emergency and trauma care are provided in each community in Washington state. It is a dynamic plan that is led by the Department of Health's Office of EMS and Trauma, in collaboration with the Washington State EMS and Trauma Care Steering Committee (see page 173 for more information), its technical advisory committees, and eight EMS and Trauma Care Regions. The plan's objectives, strategies, and action plans are updated continuously.

The components of the plan are:

- Injury and Violence Prevention
- Pre-hospital
- Hospital
  - Quality improvement/patient outcomes
  - Rehabilitation
- Cost reimbursement/finance

The State EMS and Trauma Strategic Plan serves as a blueprint for the eight EMS and Trauma Regions to develop and implement their regional plans. EMS and Trauma systems planning is a grass roots process that begins at the local level and proceeds through counties and regions to the state office—an approach designed to build consensus along the way.

Regional plans form the foundation for emergency care and help operationalize the planning and implementation of guidelines for emergency transport and care of patients at the local level. For example, each county in Washington develops patient care procedures for transporting patients from the field or site of a traffic crash to an appropriate level hospital.

Evaluation

Evaluation—the Fifth E—is critical to the effort to reduce fatality and serious injury crashes. It provides the basis for decision-making and the selection of emphasis areas, strategies, and locations to reduce crashes and their severity. A successful Target Zero effort requires the ability to improve the quality of our safety programs, to refocus and refine our strategic efforts, and to stop doing those things that are not beneficial. This requires that Target Zero partners quantitatively assess the data to address quality and reduce crashes.

Currently, a Data Analyst Group (DAG) supports the Target Zero effort. It includes representatives from many contributing Target Zero agencies. This group works to collaboratively analyze data, determine rules for data quality and usage, collaborate on data sharing, and promote initiatives to increase the quantity and quality of available traffic data. For more information on DAG, please see Appendix J: Target Zero Plan Development.

The Five Es and Leadership

The Target Zero strategies focus on the Five Es, with the addition of Leadership strategies.

Education and Outreach. Give road users the information to make good choices, such as driving unimpaired, wearing a seat belt, and avoiding distractions.

Enforcement. Use data-driven analysis to help law enforcement officers pinpoint and address locations with a high number of behavior-driven fatal and serious-injury crashes, such as speeding and impairment.

Engineering. Design roads and roadsides using practical solutions to reduce crashes, or to reduce the severity of crashes if they do occur.

Emergency Medical Services (EMS). Provide high-quality and rapid medical response to injury crashes.

Evaluation. Determine how Washington is doing in meeting goals, understanding what is contributing to crash occurrences, and selecting appropriate countermeasures to reduce those crashes using the approaches listed above.

Leadership. Bring together key state and local agencies, traffic safety advocates, partners, and stakeholders to set the vision and direction for traffic safety and support the necessary collaboration needed to achieve zero fatality and serious injury crashes by 2030.

Leadership

Traffic safety champions use partnerships and collaboration to provide a strong basis to effectively deliver strategies in support of Target Zero. Washington has a long history of traffic safety leaders who bring together key state and local agencies, traffic safety advocates, partners, and stakeholders to collaborate across organizational boundaries. These coalitions create a united front and support firm commitment to the ultimate achievement of our Target Zero goal.

Since 1967, Washington State agencies and organizations have shared traffic safety responsibility with the establishment in code of the WTSC. The Commission has provided a high level of visibility through its chair, the Governor, and the following members: the Secretary of the Department of Transportation, the Chief of the Washington State Patrol, the Secretary of the Department of Licensing, the Secretary of the Department of Health, the Secretary of the Health Care Authority, the Superintendent of Public Instruction, and representatives from cities, counties, and the judiciary.

WTSC has provided leadership and accountability across state, local, and tribal boundaries to create a culture of traffic safety. This leadership is built on broad-based representation at the state and local level, close working relationships, and a commitment to a clearly communicated and aggressive safety goal.

Across counties in Washington, similar coalitions have brought partners together to plan traffic safety activities at the county level. Led by TZMs, this coalitions are critical to implementing projects designed to increase education and enforcement. Some cities have also formed coalitions to address traffic safety, becoming Vision Zero Cities to focus funding and activities on the most critical concerns within their jurisdiction.

Washington's Target Zero community will continue to invest in leadership by building collaboration, providing technical assistance, embracing the principles of traffic safety culture, and exploring innovation to support processes and partnerships needed to achieve zero traffic deaths and serious injuries by 2030.

Traffic Safety Culture: Leadership

This leadership has allowed a strong traffic safety culture to flourish. For example, a 2018 survey of Washingtonians showed that most adults (81%) are concerned about safety on roadways. And most (74%) agree that the only acceptable number of deaths and serious injuries on our roadway should be zero. The overall support voiced by the public for strong traffic safety policies and programs is significant.

Implementing Target Zero

This chapter, and the Tribes and Target Zero chapter, contain several examples of locally- and regionally-led, inclusive efforts to prevent fatal and serious injury crashes on local roads. To support efforts to reduce these crashes at the local level, Target Zero partners, stakeholders, and traffic safety leadership will:

- Get more local projects initiated, sustained, and replicated.
- Emphasize development of best practices for implementing traffic safety projects at the local level.
- Promote successful local efforts statewide, through websites and conferences.

To implement the plan most effectively, in the years covered by the 2019 plan, Target Zero partners, stakeholders, and traffic safety leadership will:

- Be oriented toward all modes of transportation, recognizing traffic safety as a universal issue for all road users.
- Focus on fatal and serious injury crashes, rather than the frequency of all crashes.
- Design traffic systems to be more accessible for enforcement and EMS access.
- Continue to prioritize and pursue evaluation, analysis and the diagnosis of crashes as a critical component of traffic safety.

- Bring the updates on the implementation of the plan, and examples of best practices, regularly before the Washington Traffic Safety Commission for their quarterly meetings.

Target Zero Implementation at the Local Level

Target Zero Managers

TZMs operate on the local level, in a network that covers the entire state. They are funded and supported by the WTSC. The TZMs build regional coalitions of partners who implement solutions to local traffic safety issues. For more information on the TZMs, please see page 229.

Regional Transportation Planning Organizations and Metropolitan Planning Organizations

As coalitions at the local government level, RTPOs/MPOs are good places to share implementation ideas. They include local partners who are less directly connected with state government, such as tribes and ports. RTPOs and MPOS can serve as distribution networks for funding and information. For more information on RTPOs and MPOs, please see page 232.

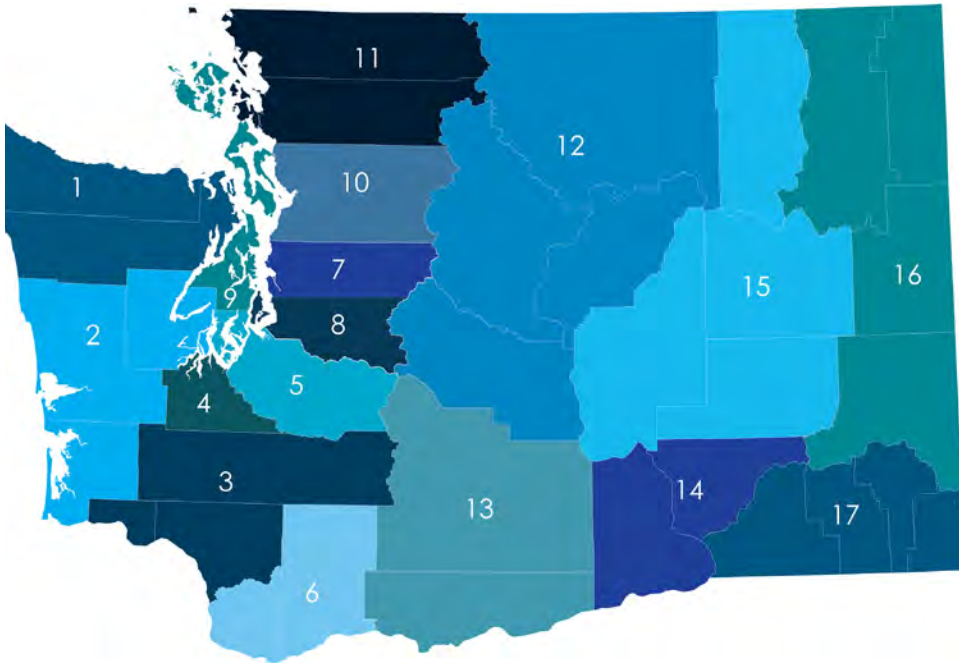
Local Implementation

Approximately two of out three traffic fatalities and serious injuries in Washington occur on local roadways. Therefore, Washington's progress toward Target Zero relies on the critical work being done by local agencies and traffic safety stakeholders. This section details some of the issues and challenges specific to local agencies, as well as the tools available to local traffic safety professionals to identify needs specific to their communities to take action.

Local Data Guides Local Investments

Local partners' work on Target Zero is most effective when it is guided by robust data sources. The data presented in the Target Zero plan is shown at the statewide level, but it can also be broken down by county, city, or smaller levels. This data can be very useful for prioritizing resources and programs, using the same data-driven approach as with statewide programs.

Regions with an Assigned Target Zero Manager (TZM)



An important component of the Target Zero plan is that the information highlights which factors are contributing locally to the most fatalities and serious injuries. The most common factors in one county or city might be very different from another, requiring different strategies. Traffic safety professionals should use data specific to their locale to determine which strategies are best suited for local conditions.

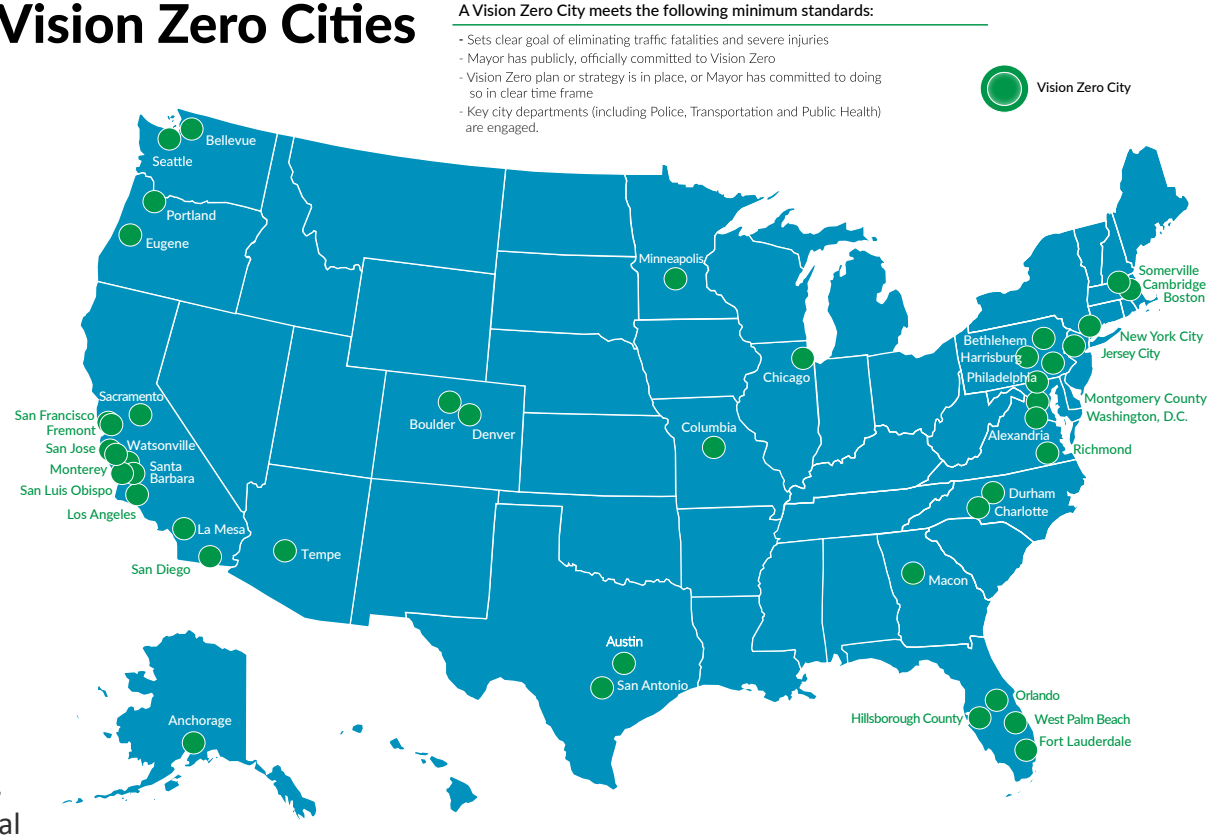
Target Zero analysts update this information regularly on the Research and Data section of the Washington Traffic Safety Commission website and it can also be found at the WSDOT Crash Portal (remoteapps.wsdot.wa.gov/highwaysafety/collision/data/portal/public/). This community-specific data helps local and regional agencies prioritize their traffic safety projects and programs, and also assists in developing localized Target Zero plans. A data-driven approach to problem identification and prioritization can provide local-level justification for allocating funds and resources. Further, local emphasis area priorities can vary significantly from statewide priorities, based on the data, local road conditions and political considerations.

Target Zero Managers Guide Local Efforts

Washington State is known for strong state and local partnerships in traffic safety efforts. For over 30 years, our state has invested in a coordinated network of local traffic safety professionals. This network has evolved over time as the traffic safety picture has changed at the local, state, and national levels.

Today, we have TZMs to guide local task forces around many counties and tribal reservations in the state. These task forces are ideally composed of engineering, enforcement, education, and emergency medical services (EMS) experts, as well as other community agencies and organizations with an interest in traffic safety. The TZMs and task forces coordinate local traffic safety efforts and resources by tracking data, trends, and issues in their area. They develop and provide a variety of traffic safety programs, services, and public outreach throughout their communities by working with local partners.

Vision Zero Cities

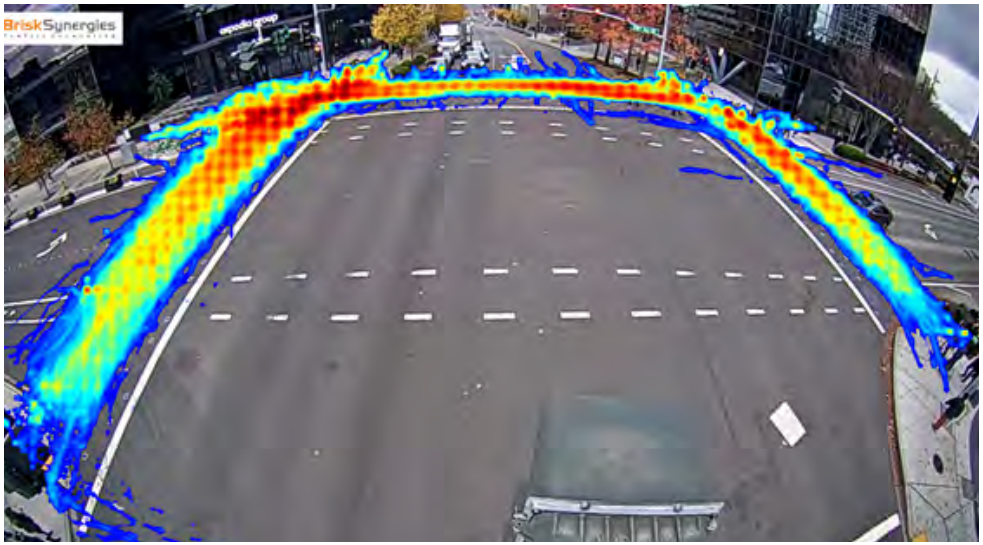


VISION ZERO		TRADITIONAL APPROACH
Traffic Deaths are PREVENTABLE		Traffic Deaths are INEVITABLE
Integrate HUMAN FAILING in approach	VS	PERFECT human behavior
Prevent FATAL AND SEVERE CRASHES		Prevent COLLISONS
SYSTEMS approach		INDIVIDUAL responsibility
Saving lives is NOT EXPENSIVE		Saving lives is EXPENSIVE

Vision Zero

Vision Zero is a national traffic safety initiative. Like Target Zero, Vision Zero also has a goal of zero deaths and serious injuries from traffic crashes. While Vision Zero and Target Zero have the same goal of reducing traffic safety deaths and serious injuries to zero, they are implemented differently. Vision Zero is typically implemented at the local level and focuses heavily on design and traffic safety systems.

In recognition of the mutual goal of zero traffic fatalities and injuries, staff from both Target Zero and Vision Zero have been working together to promote traffic safety, especially at the local level. TZMs in King County have been part of the Seattle and Bellevue initiatives. Also, city staff for Seattle, Bellevue, and Tacoma all attended the 2018 Target Zero Partner meeting. Seattle and Bellevue have also contributed to this chapter of Target Zero.



The Video Analytics Towards Vision Zero Partnership between City of Bellevue and Brisk Synergies leverages Bellevue traffic cameras and machine learning to classify traffic conflicts—near-miss almost-crashes—so that the city can undertake proactive safety countermeasures before someone gets seriously injured.

Vision Zero in Seattle

Seattle adopted Vision Zero in 2015. The city's multifaceted program approaches safety from the engineering, enforcement, education, and evaluation perspectives, with an emphasis on safe systems (see Safe Systems Approach on page 192).

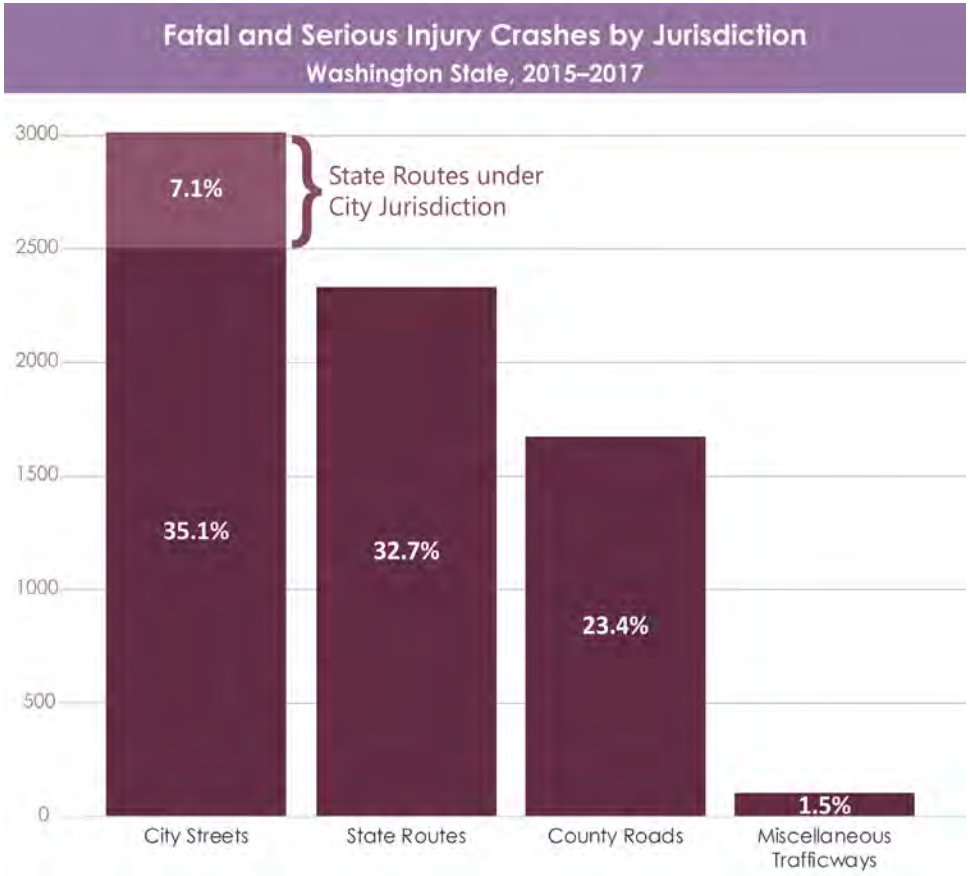
Since adopting Vision Zero, Seattle has used engineering techniques to reduce persistent crash patterns on the most crash-prone corridors in the city. The city focuses on decreasing speeding as well as enhancing infrastructure for all modes of travel, including pedestrians, bicyclists, and other non-motorized traffic.

Since excessive speed—or speed too fast for conditions—is the critical factor in crash severity, the Seattle Department of Transportation (SDOT) has thoroughly reviewed and adjusted speed limits throughout the city. In 2016, SDOT reduced the speed limit on all 2,400 miles of non-arterial streets to 20 mph, and reduced the speed limit on 75 miles of center city arterial streets to 25 mph. Since then, SDOT has focused speed limit evaluations on the City's Urban Villages (neighborhood business districts) where 80% of pedestrian crashes occur. Seattle is on-track to complete that work by 2020.

Over the next three years, Seattle will focus new efforts on pedestrians, who are overrepresented in Seattle's fatality and serious injury data.

Seattle has compiled a robust plan to address pedestrian safety issues, including:

- Continue the speed limit evaluation program.
- Install leading pedestrian intervals at 50+ intersections per year.
- Deliver more than 12 safety corridor projects to change street design on the most crash-prone streets.
- Launch pedestrian safety emphasis patrols and pedestrian safety communications.
- Use technology to help drivers track their habits and change behaviors.



Seattle's Vision Zero Team meets regularly with the local King County TZMs to review recent crashes, data, and enforcement efforts. The two groups coordinate messaging and enforcement patrols, support legislative and policy initiatives, collaborate on research, and help each other understand emerging issues in traffic safety.

Vision Zero in Bellevue

Bellevue's Vision Zero effort reflects the city's commitment to reduce traffic deaths and serious injury crashes on city streets to zero by the year 2030. In 2015, the City Council passed a resolution providing a framework to achieve this goal. Then in 2016, the City Council passed an ordinance adopting Vision Zero amendments into the city's Comprehensive Plan.

Bellevue hosted a Vision Zero Summit in February 2019 that invited industry leaders to join Bellevue staff and partner agencies. This event promoted an exchange of ideas to collectively work towards zero deaths and serious injuries from traffic crashes. Bellevue is also developing its Vision Zero Action Plan with a Safe Systems approach, which the Bellevue Transportation Commission has endorsed.

Bellevue has developed a crash map that allows for interactive searching of fatal and serious injury crashes on Bellevue streets over a 10-year period. Knowing where, when, and what type of crashes occur is critical to the city's goal of eliminating them.

Over the next three years, Bellevue's Vision Zero program will focus on:

- Implementing projects identified in Bellevue's Pedestrian and Bicycle Implementation Initiative to improve safety for people walking and biking on city streets.
- Coordinating Bellevue's Vision Zero initiative with other organizations through partnership agreements, including:
  - Business partner Volpe, on a Bellevue case study in support of the U.S. Department of Transportation's (USDOT's) Safety Data Initiative.
  - Business partner Brisk Synergies, to use Bellevue traffic cameras to detect near-miss street conflicts to proactively identify corrective measures.
  - The Bellevue School District and Washington DECA to raise awareness about distracted driving among teenagers and reduce crashes caused by it.
- Completing a Vision Zero Action Plan to promote coordinated solutions in engineering, education, encouragement, evaluation, equity, and enforcement based on best practices that are successful elsewhere and applicable to Bellevue.

The City of Bellevue is coordinating with Target Zero partners on the 2019 Target Zero plan update. Bellevue's Vision Zero program and Target Zero have a mutual goal to link local safety priorities with the wider Washington State community. Target Zero also provides

a framework within which the city can identify its own goals and strategies.

Regional Approaches to Target Zero

In Washington State, there are 17 RTPOs, which were created as part of the state's Growth Management Act in 1990 to ensure that transportation planning conducted by local governments is coordinated at a regional level. Of the state's 39 counties, all but San Juan County participate in the voluntary RTPO Program.

In areas of the state where a federally-authorized MPO exists, state law requires RTPOs to be the same organization as the designated MPOs. The RTPO Program extends transportation planning to rural areas currently not covered by the federal program, thus establishing a regional framework for planning in Washington.

RTPOs and MPOs are increasingly important Target Zero Partners, and will be part of the implementation of the 2019 plan. They are required to conduct transportation planning that contributes to several policy goals, among which is safety. With both federal and state mandates to plan for safety, MPOs and RTPOs play an important role in meeting the goal of Target Zero. All adopted regional transportation plans are required to address safety and identify areas for improvement. Safety is also considered in awarding federal Surface Transportation Block Grant funds for local projects to member jurisdictions of RTPOs and MPOs. To receive funds, jurisdictions must prove that their projects will improve safety, and in some regions, projects that specifically address identified safety issues receive additional points during the project selection process.

There are several RTPO projects consistent with the goals of Target Zero. Below are some examples of successful regional strategies.

Whatcom Council of Governments

In 2017, the Whatcom Council of Governments received a Pedestrian Safety Grant from the WTSC in the amount of $25,080. The goals of the project were to apply proven enforcement and education strategies as identified in Target Zero and to educate transportation planners and engineers on infrastructure treatments that will increase safety for vulnerable users (primarily pedestrians) on Whatcom County's roads. The project also included organizing a county-wide event to observe the World Day of Remembrance, which commemorates "the many millions killed and injured on the world's roads."

Specific strategies drawn from Target Zero included:

- Revising design practices to emphasize context and to target speed to reflect the needs of all road users.
- Educating pedestrians about the risks of distracted walking.
- Expanding targeted crosswalk enforcement and education for both motorists and pedestrians.
- Promoting the use of reflective apparel by pedestrians.

Palouse Regional Transportation Planning Organization

The Palouse RTPO established its first Palouse Driver Safety Campaign in 2016 in response to significant data showing the frequency of serious injury and fatal crashes along SR 26 and US 195, and the community petitions that followed to improve these two highways. According to the U.S. 195 Corridor Crash Analysis Study, the cause of almost 68% fatal crashes was due to one of three factors: most drivers were either distracted, drowsy, or young (inexperienced).

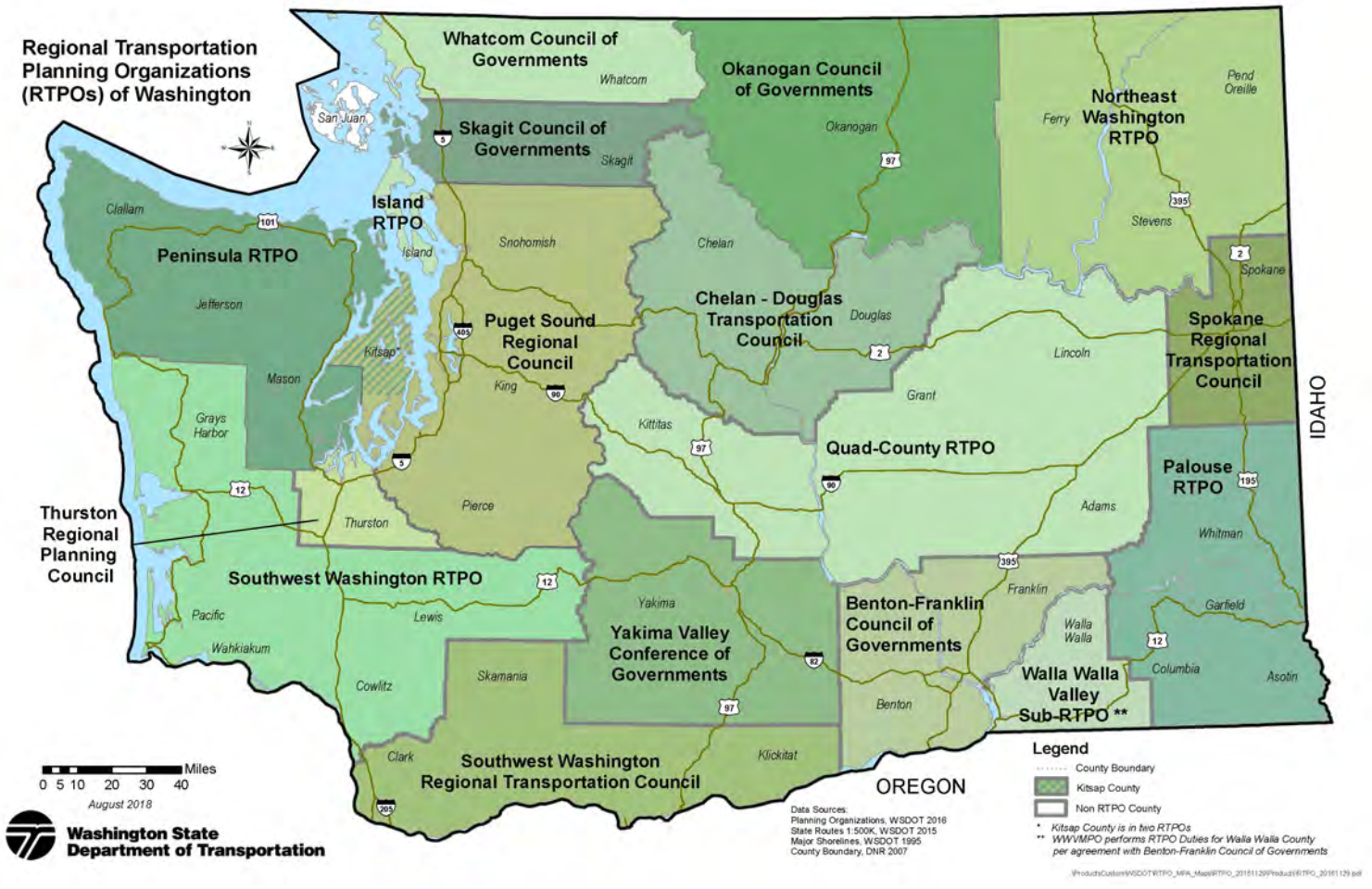
The Palouse RTPO and WSDOT initially started the public awareness campaign. Over time, they partnered with other agencies including WSP, local police and sheriffs' offices, and many others. Partnering with Washington State University has also led to WSU's Driver Safety Committee, where partners routinely meet to discuss strategies to communicate and improve the driving behavior and safety of students, their families, and community members who travel for school and sports in and out of the Palouse region. The goals are to increase public awareness, driver safety-related education, and weather updates, and to instill safe driving habits for Eastern Washington drivers.

According to WSDOT crash data, from 2013–2015 in Whitman County, 41 out of 49 (84%) fatal and serious injury crashes involved distracted, drowsy, or young drivers (16–25 years old). Along with many local and state partner agencies, the public awareness campaign may have helped to reduce the crash rate. Between 2016–2018, only 31 out of 50 (62%) fatal and serious injury crashes involved distracted, drowsy, or young drivers.

Other MPOs and RTPOs

Many MPOs and RTPOs perform similar safety-related activities through various plans that each MPO/RTPO writes and implements. The Walla Walla Valley MPO is researching implementation of a multi-agency and cross-jurisdictional traffic-safety education campaign as a part of its 2019 transportation planning work program.

Coordination between MPOs/RTPOs and WSDOT ensures unified improvement in the various safety initiatives to support Target Zero's goal of zero fatal and serious injury crashes by 2030.



Rural Roads

RCW 82.14.370 defines rural counties as those where the population density is between 60–100 people per square mile. In 2010, 31 of Washington State's 39 counties—nearly 80%—met that definition. That percentage has held steady since 1990.

There are a number of challenges and issues specific to addressing safety on rural roads as compared to more urban roads around the state. At the most basic level, one of the fundamental challenges of addressing safety on rural roads is that many of these roads were never designed in the first place. Many developed over time, even before cars, as the paths people would take to or from their residence or farm to town, to neighboring properties, or to more distant locations. These paths were eventually upgraded, including paving, to make this travel easier. But these roads, without the benefit of intentional design, did not have safety of the user as a significant element in how and where they came to be.

This issue is becoming more prominent as formerly rural areas are urbanizing, resulting in increased traffic and conflicts in these locations. In addition to this fundamental issue, some other key challenges for achieving Target Zero in rural areas include:

Engineering limitations. From the engineering perspective, there are a variety of strategies that offer potential benefits for rural roads. However, many of these strategies have limitations when applied to rural areas. For example, rumble strips are effective at reducing lane departure crashes. But significant portions of the rural roadway network, especially county roads, have insufficient pavement depth to allow for this treatment.

Another example is improved delineation, such as pavement markings or flexible guideposts. These improvements are low-cost, but while safety funds are typically available for an initial installation, both of these have a high cost to maintain the improvement, straining limited agency budgets.

Rural Health Care and Health Equity

- In Washington, there are 101 acute-care hospitals with emergency departments across the state. Counties that do not currently have a hospital include: Douglas, Skamania, and Wahkiakum.
- There are 43 rural hospitals, and of those 39 are Critical Access Hospitals.
- Rural counties have a higher percentage of citizens age 65 and older, with 14.6% in 2017 for urban areas and 20.3% in rural counties. This disproportionate percentage of older adults is predicted to rise sharply.
- Response and transport times are longer in rural geographic areas and can be associated with greater risk for time sensitive conditions such as trauma, cardiac events, and stroke.
- People in rural areas are less likely to have health insurance, use fewer preventive services, and overall have lower income and less education on average, leading to disparities in health outcomes and life expectancy.

High Risk Rural Roads

The High Risk Rural Roads (HRRR) Program is outlined by Congress as including small, rural roads (rural collectors and local access roads). Each state is allowed to define what High Risk Rural Roads are to implement the federal program. Washington State defines those roads at the county level, identifying HRRR counties as those that rank in the top 10 based on either fatal and serious injury crash rate per A) mile of road or B) million vehicle miles traveled.

Enforcement challenges. From the enforcement perspective, access to funding sources is a challenge in rural areas. Traditional funding for high visibility enforcement (HVE) requires a certain frequency of contacts per hour to be eligible for funding. However, most rural roads lack the traffic volumes required to achieve those contact rates. Beyond that, physical deployment of enforcement efforts is also limited by the nature of the rural roadways being addressed. Most of these roads do not have anywhere for a law enforcement officer to observe traffic, much less a safe location to pull over a driver on the road.

Complex coordination. There may be multiple jurisdictions involved in implementing a strategy on rural roads. From a coordination and partnerships perspective, this adds complexity. For example, there are many rural areas in the state that are within a tribal reservation boundary. Implementing engineering or enforcement strategies requires agreement and coordination among tribes, counties, and state agencies. While there are areas in the state where partners have overcome this added challenge, there are other areas in the state where this complexity has limited traffic safety efforts.

Large road system with low crash concentrations. For many years, Washington traffic crashes were more numerous and highly dispersed in rural areas, and less frequent and more concentrated on urban roadways. Additionally, use of rural roads is not in proportion to their lane-miles; while about seven of every 10 lane-miles on Washington roads were located in rural areas, the vehicle miles-traveled (VMT) on rural roads amounted to just over one-fourth of all VMT statewide.

There are few proven strategies for reducing rural traffic safety crashes that appear to be practical at this time. There are challenges unique to rural areas, such as small law enforcement agencies and great distances between cities. Three approaches that hold some promise are:

- Working to change Washington's traffic safety culture so that motorists, motorcyclists, and people who walk or ride bicycles adopt safer travel behaviors.
- Spreading low-cost county road improvements across the state to maximize the benefits of those improvements.
- Promoting wider use of non-traditional practices like automated traffic enforcement.

Risk-based Approaches to Rural Road Crashes

WSDOT has begun taking a more risk-based focus to investing resources on rural roads. This approach focuses on identifying roadway characteristics that are common to fatal and serious injury crashes, then prioritizing and improving the locations with these characteristics present. See the Lane Departure chapter page 92 and the Evaluation, Analysis, and Diagnosis chapter page 176 for more details. The risk-based approach is being undertaken with the development and implementation of local road safety plans. Currently, 33 of 39 counties have developed at least one iteration of a local road safety plan.

Since the first local road safety plans were developed in 2014, fatal and serious injury crashes on county roads have remained relatively unchanged, while other jurisdiction types have experienced an increase in these crashes. Preliminary data from 2018 indicate that these crashes on county roads are decreasing while remaining steady for other jurisdictions. While addressing safety on rural roads remains a significant challenge, taking this risk-based approach may be one of the ways to keep pushing the data trend in the right direction.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Appendices

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Appendix A: Acronyms

Target Zero contains many acronyms for agencies, organizations, special programs, and other elements of traffic safety. One purpose of Target Zero is to create a common language for traffic safety practitioners in Washington State. This acronym list will help practitioners easily familiarize themselves with the acronyms used by the diverse groups — educators, engineers, law enforcement officers, academics, and many others — who are attempting to reduce traffic fatalities and serious injuries in our state.

AAA	American Automobile Association
AADT	Average Annual Daily Traffic
AAMVA	American Association of Motor Vehicle Administrators
AAP	American Academy of Pediatrics
ABACCL	American Bar Association Center on Children and the Law
ADA	Americans with Disabilities Act
AIAN	American Indian and Alaskan Native
AOC	Washington Administrative Office of the Courts
ARIDE	Advanced Roadside Impaired Driving Enforcement
ASE	Automated Speed Inforcement
AV	Automated Vehicle
BAC	Blood Alcohol Content
BIA	Bureau of Indian Affairs
CAT	Cooperative Automated Transportation
CDC	Centers for Disease Control and Prevention
CDL	Commercial Driver License
CFR	Code of Federal Regulations
CHSC	Center for Health and Safety
CLAS	Collision Location and Analysis System
CMF	Crash Modification Factor
CMV	Commercial Motor Vehicle
CPS	Child Passenger Safety
CPST	Child Passenger Safety Technician
CRAB	County Road Administration Board
CTW	Countermeasures That Work
CVD	Commercial Vehicle Division
CVEB	Commercial Vehicle Enforcement Bureau
DAG	Data Analyst Group
DDACTS	Data-Driven Approaches to Crime and Traffic Safety
DEI	Diversity, Equity, and Inclusion
DOH	Washington State Department of Health
DOL	Washington State Department of Licensing
DOT	Department of Transportation
DRE	Drug Recognition Expert
DUI	Driving Under the Influence
DUID	Driving Under the Influence of Drugs
DUICA	Driving Under the Influence of Cannabis and Alcohol
E-DUI	Driving Under the Influence of Electronics
EMS	Emergency Medical Services
eTRIP	Electronic Ticketing and Collision Reporting Program
FARS	Fatality Analysis Reporting System

FAST Act	Fixing America's Surface Transportation Act
FMCSA	Federal Motor Carrier Safety Administration
FHWA	Federal Highway Administration
GDL	Graduated Drivers License
GHSA	Governors Highway Safety Association
GIS	Geographic Information System
GSA	United States General Services Administration
GVWR	Gross vehicle weight rating
HBD	Had Been Drinking
HCA	Health Care Authority
HFST	High Friction Surface Treatment
HIA	Health Impact Assessment
HLDI	Highway Loss Data Institute
HPMS	Highway Performance Monitoring System
HRRR	High Risk Rural Roads
HSIP	Highway Safety Improvement Program
HSP	Highway Safety Plan
HSM	Highway Safety Manual
HVE	High Visibility Enforcement
IBL	Information by Location
IID	Ignition Interlock Device
IIHS	Insurance Institute for Highway Safety
IIL	Ignition Interlock License
LCB	Liquor and Cannabis Board
LE	Law Enforcement
LEP	Limited English Proficiency
LIDAR	Light Detection and Ranging
LIT	Literature; refers to a strategy supported by extensive literature but lacks a metastudy
LRS	Linear Referencing System
LRSP	Local Road Safety Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
META	Metastudy; refers to a strategy supported with published, favorable outcomes in the form of a metastudy (a review of several related studies for methodological strength and consistent outcomes)
MIDU	Mobile Impaired Driving Unit
MLDA	Minimum Legal Drinking Age
MIT	Muckleshoot Indian Tribe
MMUCC	Model Minimum Uniform Crash Criteria
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NATEO	The Northwest Association of Tribal Law Enforcement Officers
NCHRP	National Cooperative Highway Research Program
NGA	National Governors Association
NHS	National Highway System
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
OCIO	Washington State Office of the Chief Information Officer
OECD	Organisation for Economic Co-operation and Development
OFM	Office of Financial Management
OIC	Office of the Insurance Commissioner
OSPI	Office of Superintendent of Public Instruction
PBT	Preliminary Breath Test

PSA	Public Service Announcement
PSAC	Pedestrian Safety Advisory Council
PTCR	Police Traffic Collision Report
RCW	Revised Code of Washington
RIA	Resource Inventory Analysis
ROW	Right of Way
RSA	Road Safety Audit
RTPO	Regional Transportation Planning Organization
SAE	Society of Automotive Engineers
SDOT	Seattle Department of Transportation
SFST	Standard Field Sobriety Tests
SHSP	Strategic Highway Safety Plan
STEP	Safe Transportation for Every Pedestrian
SURTCOM	Small Urban and Rural Transit Center on Mobility
TACT	Ticket Aggressive Cars and Trucks
THC	Tetrahydrocannabinol
TIB	Transportation Improvement Board
TLD	Toxicology Laboratory Division
TRC	Traffic Records Committee
TRS	Traffic Records Systems
TREDS	Training, Research, and Education for Driving Safety
TSRP	Traffic Safety Resource Prosecutors
TTPO	Tribal Transportation Planning Organization
TTSAB	Tribal Traffic Safety Advisory Board
TZD	Toward Zero Deaths
TZM	Target Zero Manager
UA	Urinalysis
USDOT	United States Department of Transportation
UTC	Utilities and Transportation Commission
VIN	Vehicle Identification Number
VMT	Vehicle Miles Traveled
WASPC	Washington Association of Sheriffs & Police Chiefs
WaTech	Washington Technology Solutions
WEMSIS	Washington EMS Information System
WIDAC	Washington Impaired Driving Advisory Council
WITPAC	The Washington Indian Transportation Policy Advisory Committee
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WSTC	Washington State Transportation Commission
WTN	Washington Tracking Network
WTR	Washington Trauma Registry
WTSC	Washington Traffic Safety Commission

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Appendix B: Glossary

Target Zero contains many specialized terms related to traffic safety in Washington State. One purpose of Target Zero is to create a common language for traffic safety practitioners in Washington State. This glossary is intended to help explain the meanings of specific terms used by the diverse groups—educators, engineers, law enforcement officers, academics, and many others—who are attempting to reduce traffic fatalities and serious injuries in our state.

Alcohol-Impaired Driver

Any driver with a BAC of .08 or higher.

Blood Alcohol Concentration

BAC is measured as a percentage by weight of alcohol in the blood (grams/deciliter). A positive BAC level (0 .01 g/dl and higher) indicates that alcohol was consumed by the person tested. A BAC level of 0.08 g/dl or more indicates that the person was intoxicated.

Contributing Circumstance

An element or driving action that, in the reporting officer's opinion, best describes the main cause of the crash. First, second, and third contributing causes are collected for each motor vehicle driver, bicyclist, and pedestrian involved in the crash.

Cooperative Automated Transportation

Cooperative Automated Transportation includes both autonomous and connected vehicles. Vehicles with connectivity are able to communicate automatically with other vehicles and infrastructure, and also identify pedestrians and bicyclists in and around roadways. Automated vehicles, also called autonomous or self-driving, do not require a driver to operate the vehicle or monitor roadway conditions.

Crash

An unintended event that causes a death, injury, or property damage, and involves at least one motor vehicle or bicyclist on a public roadway.

Death Certificate Records

The Department of Health manages all of Washington's vital statistics, including death events. Death certificates include information about the primary and underlying causes of death as determined by medical examiners and coroners. This information is used to reconcile deaths involving traffic crashes to determine if the death was traffic-related (death as a result of injuries sustained in a crash) or non-traffic-related (death occurs and then the crash occurs, such as a heart attack while driving).

Distracted Driver

Distracted driving is any activity that takes a driver's attention away from the task of driving. It includes any driver with the following attributes as recorded by the investigating officer: looked but did not see; distracted by vehicle occupant or object; while using a cell phone (talking, listening, dialing, etc.); adjusting vehicle controls; distracted by object/person outside the vehicle; eating, drinking, or smoking; emotional or lost in thought; other or unknown distraction.

Driving under the influence (DUI) (legal definition)

In Washington State, a person is guilty of driving while under the influence of intoxicating liquor, cannabis, or any drug if the person drives a vehicle within this state and:

- Has, within two hours after driving, an alcohol concentration of .08 or higher as shown by analysis of the person's breath or blood made under RCW 46.61.506; or
- Has, within two hours after driving, a THC concentration of 5.00 or higher as shown by analysis of the person's blood made under RCW 46.61.506; or
- Is under the influence of or affected by intoxicating liquor, cannabis, or any drug; or
- Is under the combined influence of or affected by intoxicating liquor, cannabis, and any drug.

Electronic Traffic Information Processing (eTRIP) Initiative

A collaborative effort among state and local agencies to create a seamless and integrated system through which traffic-related information can travel from its point of origin to its end use and analysis. The intent of this undertaking is to move from the current paper-based process to an automated system that will enable law enforcement agencies to electronically create tickets and crash reports in the field and transmit this data to state repositories and authorized users.

Fatality

A person who died within 30 days of a crash as a result of injuries sustained in the crash.

Fatality Analysis Reporting System (FARS)

A database system containing data on a census of fatal traffic crashes within the 50 states, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway customarily open to the public and result in the death of a person (occupant of a vehicle or a non-occupant) within 30 days of the crash. FARS collects information on over 100 different coded data elements that characterize the crash, the vehicle, and the people involved.

Fatality Rate

Number of deaths resulting from reportable crash for a specified segment of public roadway per 100 million vehicle miles of travel or per 100,000 people.

Heavy Truck

1. Any vehicle with a trailer classified at gross vehicle weight rating (GVWR) of 10,001 lbs. or more, a single vehicle with GVWR of 26,001 lbs. or more, or a single vehicle of 26,000 lbs. or less that is commercial driver license (CDL)-required, or a commercial vehicle supplement to the crash report.
2. A vehicle type of truck and trailer, truck tractor, truck tractor and semi-trailer, or truck-double trailer combinations.
3. A vehicle usage classification of concrete mixer, dump truck, logging truck, refuse/recycle truck, van over 10,001 lbs., tanker truck, or auto carrier.

Impaired Driver

Any driver with a BAC of .08 or greater and/or any driver with a positive result on a drug test or through an investigating officer or drug recognition expert (DRE) assessment of impairment.

Impairment Involved

A fatal or serious injury crash involving a driver, pedestrian, bicyclist, etc., with a BAC of .08 or greater and/or a positive result on a drug test.

Licensed Driver

A person who is licensed by any state, province, or other governmental entity to operate a motor vehicle on public roadways.

Motor Vehicle

Any motorized device in, upon, or by which any person or property is or may be transported or drawn upon a public roadway, excepting devices used exclusively upon stationary rails or tracks. This includes every motorized vehicle that is self-propelled or propelled by electric power (excluding motorized wheelchairs), including that obtained from overhead trolley wires but not operated on rails.

Non-motorist

Any person who is not an occupant of a motor vehicle in transport; includes the following:

4. Pedestrians
5. Bicyclists, tricyclists, and unicyclists
6. Occupants of parked motor vehicles
7. Others such as people riding on animals and persons riding in animal-drawn conveyances

Older Driver Involved

A fatal or serious injury crash involving a driver age 70 or older. Involvement does not indicate fault.

Passenger

Any occupant of a motor vehicle who is not a driver.

Pedestrian

Any person not in or upon a motor vehicle or other vehicle but includes persons on personal conveyance devices, such as foot scooters, skateboards, in-line skates, etc. Pedestrians also include people using any type of mobility assistive device such as a wheelchair, walker, or scooter.

Per se Alcohol Limit

No further proof is needed. When a person is found to have, within two hours after driving, an alcohol concentration of .08 or higher or a THC concentration of 5.00 nanograms per milliliter of blood or higher, that person is guilty “per se” of driving under the influence.

Polydrug Use

Using multiple drugs, including cannabis, illicit substances, over-the-counter drugs, and/or prescription medications. This can cause interactions that create greater impairment than one drug on its own.

Restraint

A device such as a seat belt, shoulder belt, booster seat, or car seat used to hold the occupant of a motor vehicle in the seat at all times while the vehicle is in motion.

Rural

Any area, incorporated and unincorporated, with a population of less than 5,000.

Serious Injury

Any injury other than a fatal injury that prevents the injured person from walking, driving, or normally continuing the activities the person was capable of performing before the injury occurred. This definition applies to traffic crash data only. This is not the legal definition or medical definition of serious injury.

Speeding

Speeding occurs when drivers travel above the posted speed limit or too fast for conditions. Drivers may be traveling well under the posted speed limit, but may be considered speeding when road, traffic, or weather conditions such as such as icy roads, poor visibility, or fog may cause drivers to lose control of their vehicles or increase normal stopping distance.

Traffic Safety Culture

The shared belief system of a group of people that influences road use behavior and stakeholder actions that impact traffic safety.

Transcreation

The process of adapting a message from one language to another, while maintaining its intent, style, tone, and context. The aim of a transcreated message is to successfully evoke the same emotions and contextual relevance in the new language as the original or source language. This includes words, graphics, video, audio, and cultural nuances.

Trauma Injury

A major single or major multiple injury requiring immediate medical or surgical intervention or treatment to prevent death or permanent disability.

Urban

Any incorporated area with a population of over 5,000.

Vehicle Miles Traveled (VMT)

The number of miles traveled annually by motor vehicles.

Work Zone

Any activity involving construction, maintenance, or utility work on or in the immediate vicinity of a public roadway. A work zone may be active (workers present) or inactive.

Young Driver Involved

A fatal or serious injury crash involving a driver age 16–25. Involvement does not indicate fault.

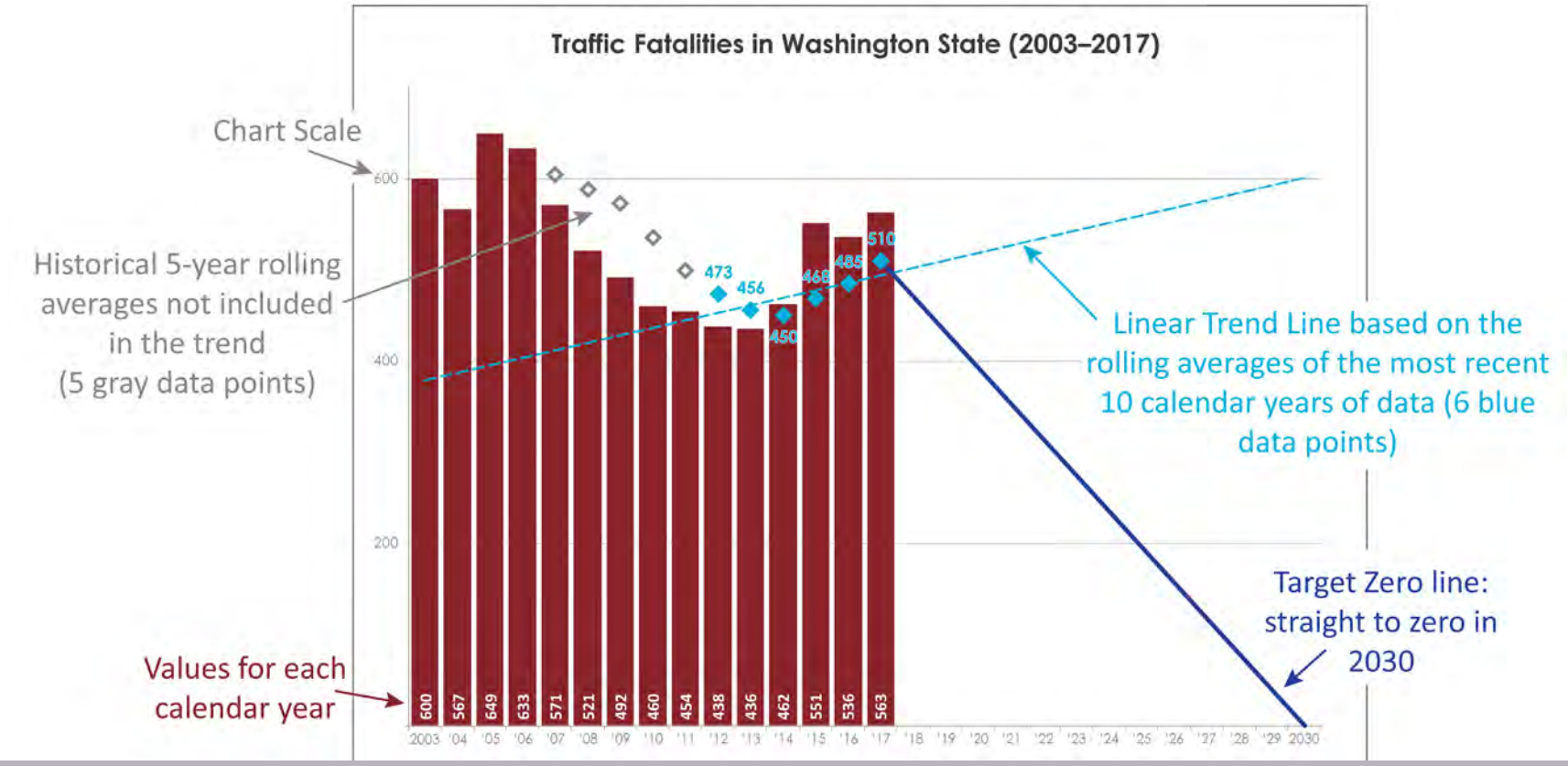
Appendix C: Methodologies

This appendix explains the methodology used in developing the Target Zero fatality and serious injury charts and maps. For information on the sources of data, please see Appendix D, Data Sources and Appendix E, Data Definitions.

Five-year Rolling Averages and the Performance Trend Line

In 2000, Washington State formed its Target Zero vision: zero deaths and serious injuries by 2030. This edition of Target Zero provides the most recent 10 years of traffic fatality and serious injury data for our state, 2008–2017. The vision of zero by 2030 itself is a linear concept: a direct relationship between the two variables of fatalities and time (or, of serious injuries and time) converging at zero in 2030. Therefore, it makes sense to use a linear measure of progress to compare with a linear goal. The linear performance trend line may indicate a declining, flat, or increasing trend, depending on the change among the series of five-year rolling averages.

Each five-year rolling average contributes equally to the change driving the direction of the trend. The rolling averages smooth the effect of a single year's fluctuation on a linear trend. The most recent 10 years



of data are used to derive six five-year rolling averages on which the performance trend is based: data for 2008–2017 result in rolling averages of 2008–2012, 2009–2013, 2010–2014, 2011–2015, 2012–2016, and 2013–2017. An additional five years of historic data and the historic five-year rolling averages are also shown but not included in the trend line.

The performance trend line represents a future projection assuming all variation, fluctuation, and preventive measures stay at historic and current levels. In practice, by continuously implementing new strategies and enhancing and maintaining existing strategies, we can drive the trend downward, closer to the overall goal of zero by 2030.

The Target Zero Goal Line

For this edition of Target Zero, the Data Analysts Group projected fatality and serious injury trends out to the year 2030. This approach allows us to measure incremental progress within the entire 2030 time-frame and see what's required to reach zero by 2030. The Target Zero goal line is simply a straight line to zero in 2030, starting from the middle of the most recent five-year average (2013–2017). From the Target Zero line, we can estimate the annual fatality and serious injury reductions that must occur to reach zero in 2030.

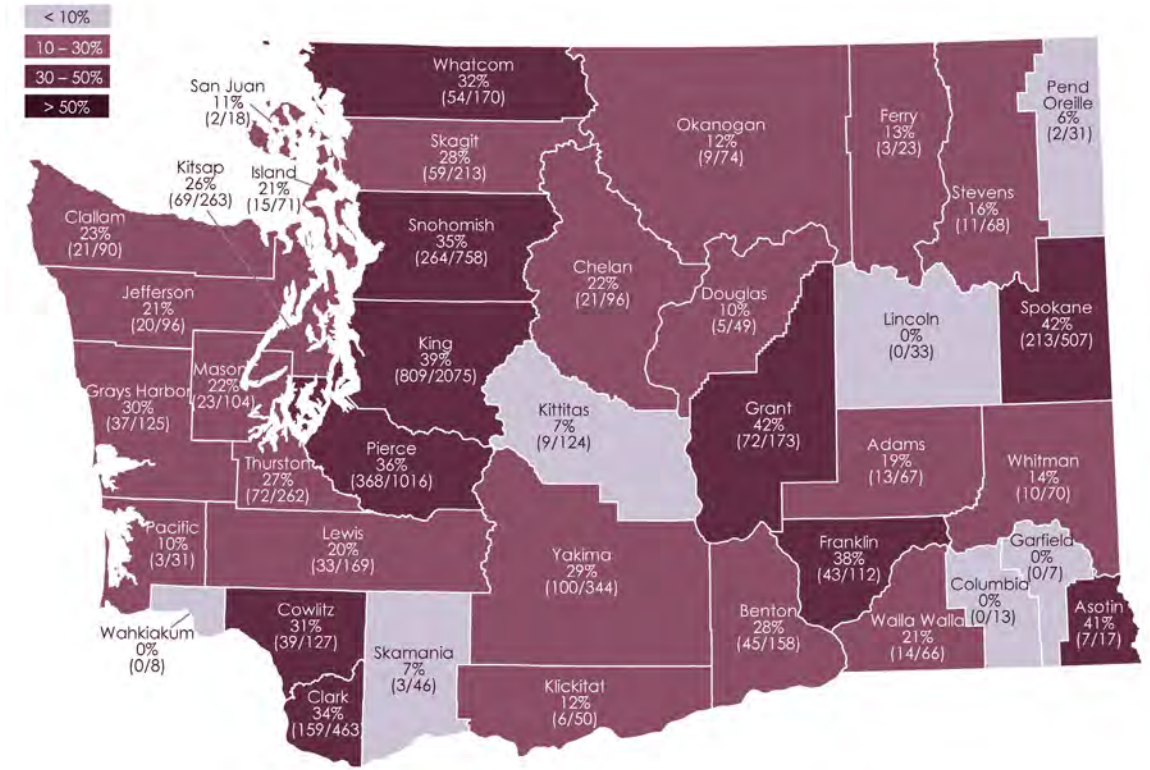
The Performance Gap

The solid line on trend charts represents the Target Zero line—the downward trend needed to reach zero by 2030. The performance gap is the space between the Target Zero goal line and the performance trend line projected from the five-year rolling averages.

The performance gap may also be used as a monitoring tool. For example, if the performance gap is smaller in 2018 and grows on its way to 2030, it indicates we need not only a greater decrease in overall counts, but also a greater average annual decline than we have had. This type of gap represents areas in need of new and expanded strategies. However, if the gap is of similar width in 2018 as it is in 2030, then we have achieved the necessary average annual decline, but need an immediate downward drive in annual counts to close the gap.

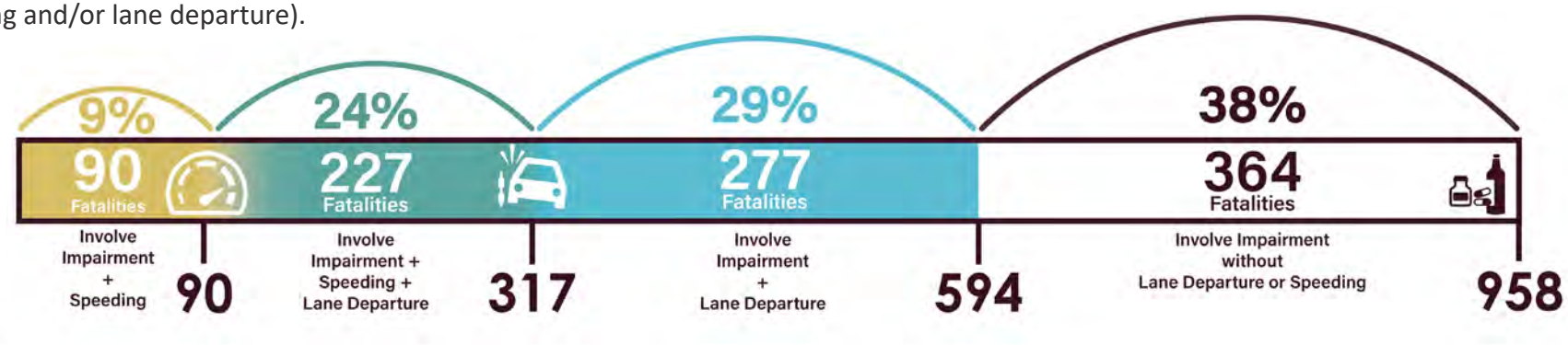
Emphasis Area County Maps

Each emphasis area chapter includes a map that shows the percent of each county's fatalities and serious injuries that involve a specific emphasis area, such as impairment. The maps are color coded to identify counties with higher proportions of fatalities and serious injuries around a specific emphasis area. This also helps individual counties to identify their traffic safety priorities and see how they compare to other counties.



Top Two Factors Overlap Graphics

Each emphasis area chapter includes a factor overlap graph. For each emphasis area, the top two additional overlapping fatal crash emphasis areas from the priority table were identified and the overlap displayed. For example, of all impairment involved fatalities, 62% also involved lane departure and/or speeding (9% involved speeding, 29% involved lane departure, and 24% involved BOTH speeding and lane departure; combined this means that 62% of impairment fatalities also involved speeding and/or lane departure).



Fatality and Serious Injury Rates

We reference rates in some chapters of this Target Zero edition. There are three types of rates in our analysis:

1. Rates based on vehicle miles traveled (VMT)

The most common rates used in traffic safety statistics are the number of fatalities or serious injuries per 100 million VMT. These rates represent the measure of risk for traffic deaths or serious injuries based on estimated annual traffic volume. VMT is available for state, county, rural, and urban classifications.

2. Rates based on population

Rates of fatalities and serious injuries specific to population subgroups, such as racial/ethnic and age-specific groups, are calculated per 100,000 people. Comparisons of these population rates enable identification of high risk groups. Such groups may be at higher risk for traffic death or serious injury than other population subgroups, as is the case with the Native American population.

3. Rates based on licensed or endorsed drivers

Some rates are presented based on the number of licensed or endorsed drivers. These rates are similar to population rates, but represent a measure of risk of traffic death or serious injury based on the estimated number of drivers. The rates are useful when comparing different categories of drivers, such as motorcyclists.

As we get closer to zero fatalities and serious injuries, it gets harder to affect the trends. Target Zero Partners recognize that there are factors related to traffic deaths and serious injuries outside the reach of listed strategies. Additionally, we recognize most strategies have immediate benefits that level off over time. As we look to the future, we also realize that as overall fatal and serious injury counts are driven downward, it will be harder to meet average annual reduction goals.

These recognitions are particularly true related to affecting fatality and serious injury trends among the more isolated, higher risk, and/or less receptive members of Washington's population.

As linear trends flatten and we get closer to 2030, we will need more sophisticated statistical methods to monitor and predict outcomes. Our challenge is to continue to accurately identify and monitor changing trends, and keep ahead of them with new and expanded strategies. This challenge is addressed in the Evaluation, Analysis, and Diagnosis chapter on page 176.

The factors contributing to traffic fatalities and serious injuries are an intimate web of environmental, behavioral, and vehicular factors. Some factors are related to the triggering of the event, while others are related to the severity of the event. Using various facets of Enforcement, Education, Engineering, Emergency Medical Services, and Evaluation, we will continue to prevent these crashes from happening in the first place, and to mitigate the harm incurred when they do happen.

While we may not be able to prevent all crashes, we can eliminate those that result in deaths and serious injuries, our vision for Washington State.

Appendix D: Target Zero Data Sources

To develop the data that drive Target Zero, practitioners draw data from multiple sources in Washington State. This appendix describes those sources.

The Fatality Analysis Reporting System

The Fatality Analysis Reporting System (FARS) is the source of Target Zero's fatality data. The Washington Traffic Safety Commission (WTSC) contracts with the National Highway Traffic Safety Administration (NHTSA) to provide FARS data for Washington State. FARS is a nationwide census of traffic fatalities that characterizes the crash, the vehicles, and the people involved in each reported fatal crash. FARS contains more than 140 coded data elements that are collected from official documents, including Police Traffic Collision Reports (PTCR), state driver licensing and vehicle registration files, death certificates, toxicology reports, and emergency medical services (EMS) reports.

To be included in FARS, a crash must involve a motor vehicle traveling on a trafficway that is customarily open to the public, and result in the death of a person (either an occupant of a vehicle or a pedestrian/bicyclist) within 30 days of the crash.

The Collision Location and Analysis System

The Collision Location and Analysis System (CLAS), a crash data repository, is the source of Target Zero's serious injury data. CLAS is housed at the Washington State Department of Transportation (WSDOT). Most of the data in CLAS comes from law enforcement officers via the PTCR. Citizens may also submit non-police assisted reports of crash events via the Citizen Vehicle Collision Report.

CLAS stores all reportable traffic crash data for Washington State public roadways. A crash needs to meet at least one of the two following criteria to be considered reportable: 1) a minimum property damage threshold of $1,000, and/or 2) bodily injury occurred as a result of the crash.

Target Zero uses CLAS crash data for counts of seriously injured people. However, there are sections within Target Zero that also use CLAS crash information for deriving counts of fatally injured people through record merging with FARS. Those sections are Lane Departure and Intersection. CLAS crash data were also used to reconcile jurisdictional assignment in FARS for road type/jurisdiction analysis.

It is widely acknowledged that serious injury classifications assigned by investigating officers are not as accurate as injury severity derived from health records. The serious injury data presented in this edition of Target Zero is classified by the investigating officer at the scene. However, Washington's Traffic Records Committee is making progress on a collaborative, multi-agency effort to get more accurate injury severity data, particularly for serious injury crashes. For more information about the efforts of the Traffic Records Committee (TRC), see page 168.

Vehicle Miles Traveled Estimates

Vehicle Miles Traveled (VMT) is a measure of the total number of miles traveled by all vehicles over a segment of road over a specific period of time, usually either a day or a year. WSDOT collects and reports several different types of road and street data to the federal Highway Performance Monitoring System (HPMS) each year. WSDOT collects traffic data for state highways and relies on local jurisdictions to provide traffic data for their roads and streets.

VMT is calculated as follows:

VMT = (length of road segment) x (the Average Annual Daily Traffic [AADT] traveling on that road segment)

The total VMT for a highway network or region is a summation of VMT for all segments of roads that make up the network or region. Statewide VMT is a summation of all segments of road statewide.

Department of Licensing Driver Record Data

The Washington State Department of Licensing (DOL) provides the driver record data used in Target Zero from their Drivers Data Mart database. This data is updated daily from several sources, and contains the complete driver records for all Washington drivers.

Administrative Office of the Courts Citation Data

Washington Administrative Office of the Courts (AOC) provides court and citation data, which includes enforcement and court processing. For example, AOC collects the number of texting while driving citations when they are filed with the court.

Data gaps exist, which Target Zero Partners address, such as tracking a single DUI case through the myriad of internal and external data systems that the information passes through. The AOC actively participates in the Traffic Records Committee and is working to identify and find solutions for these data gaps, and to develop methods for linking AOC data with WTSC and WSDOT crash data.

Office of Financial Management Population Estimates

Washington's Office of Financial Management (OFM) has been providing annual population estimates for revenue allocation purposes since the 1940s. OFM provides population estimates, including breakouts by county, age, gender, and race/ethnicity, on their population page.

Appendix E: Data Definitions

Measures	Fatality Definition **From FARS database**	Serious Injury Definition **From CLAS database**
High Risk Behavior	Fatality resulting from a collision that involved…	Serious injury resulting from a collision that involved…
Impairment Involved	Any driver, pedestrian, or bicyclist with a Blood Alcohol Concentration (BAC) of 0.08 or higher or a positive drug result as confirmed by the state Toxicology Laboratory.	Any driver, pedestrian, or bicyclist in which the investigating officer indicated that the person was impaired by drugs or alcohol and reported in contributing circumstances as 'Under the Influence of Alcohol', 'Under the Influence of Drugs', or 'Had Taken Medication' or sobriety reported as 'HBD – Ability Impaired' or 'HBD – Ability Impaired (tox test)'.
Distraction Involved	Any driver with the following driver-related factors (2009 and earlier): emotional; inattentive/ careless; cellular telephone; fax machine; cellular telephone in use in vehicle; computer; computer fax machines/printers; on-board navigation system; two-way radio; or head-up display. Any driver with the following driver distractions (2010 and later): looked but did not see; by other occupants; by moving object in vehicle; while talking or listening to cellular phone; while dialing cellular phone; adjusting audio or climate controls; while using other device integral to vehicle; while using or reaching for device brought into vehicle; distracted by outside person, object, or event; eating or drinking; smoking related; other cellular phone related; distraction/ inattention; distraction/careless; careless/inattentive; inattentive or lost in thought; or other distraction AND/OR (2015 and later) a driver charged with a violation of using a telecommunications device. Any pedestrian or bicyclist with an action of inattentive (talking, eating, etc.) or person-related factors of inattentive or portable electronic devices (e.g. cell phones, MP3 Player, PDA, etc.)	Any driver, pedestrian, or bicyclist with the following attributes reported in contributing circumstances: inattention; driver operating handheld telecommunications device; driver operating hands-free wireless telecommunications device; driver operating other electronic device; driver adjusting audio or entertainment system; driver smoking; driver eating or drinking; driver reading or writing; driver grooming; driver interacting with passengers, animals, or objects inside vehicle; other driver distractions inside vehicle; other driver distractions outside vehicle; or unknown driver distraction.
Speeding	Any driver exceeding the posted speed limit or driving too fast for conditions at the time of the collision as indicated by the investigating officer.	Any driver exceeding the posted speed limit or driving too fast for conditions at the time of the crash as reported by the investigating officer in contributing circumstances.

Measures	Fatality Definition **From FARS database**	Serious Injury Definition **From CLAS database**
Unrestrained Passenger Vehicle Occupants	A fatally injured driver or passenger of a passenger vehicle (excluding limousines, three-wheel automobiles, motorhomes, school and transit buses, and medium/heavy trucks used to haul trailers) who was either not restrained or improperly restrained at the time of the crash.	A seriously injured driver or passenger in a vehicle type of 'Passenger Car', 'Pickup, Panel Truck or Vanette under 10,000 lb', 'Taxi' AND restraint system type of 'No Restraints Used'.
Crash Type	Fatality resulting from a collision that involved…	Serious injury resulting from a collision that involved…
Lane Departure	Derived from CLAS and flagged in FARS. Uses the same criteria described in the "Serious Injury" column.	A run-off-the-road event defined as the primary collision type is reported as 'one parked-one moving', 'struck fixed object', 'struck other object', or 'vehicle overturned' AND object struck is NOT 'Animal-Drawn Vehicle', 'Closed Toll Gate', 'Domestic Animal (ridden)', 'Drawbridge Crossing Gate Arm', 'Fallen rock hit by vehicle (on the road)', 'Fallen Rock or Tree Hit by Vehicle', 'Fallen tree hit by vehicle (on the road)', 'Falling rock on vehicle (on the road)', 'Falling Rock or Tree Fell on Vehicle', 'Falling tree on vehicle (on the road)', 'Manhole Cover', 'Miscellaneous Object or Debris on Road', 'Mud or Landslide', 'Not Stated', 'Railway Crossing Gate', 'Reversible Lane Control Gate', 'Snowslide', 'Toll Booth', 'Toll Booth Island', 'Underside of Bridge', or miscellaneous object or debris on road AND junction relationship is 'At Driveway but Not Related', 'At Intersection and Not Related', 'At Roundabout but not Related', 'Not at Intersection and Not Related' AND the first impact location code is NOT 'A1', 'A2', 'A3', 'A4', 'A5', 'A6', 'AA', 'AB', 'AC', 'C1', 'D1', 'D2', 'D3', 'D4', 'D5', 'D6', 'DA', 'DB', 'DC', 'H1', 'H2', 'H3', 'H4', 'H5', 'H6', 'L1', 'L2', 'L3', 'L4', 'L5', 'L6', 'M1', 'M2', 'M3', 'M4', 'M5', 'M6', 'N1', 'N2', 'N3', 'N4', 'N5', 'N6', 'P1', 'P2', 'P3', 'P4', 'P5', 'P6', 'Q1', 'Q2', 'Q3', 'Q4', 'Q5', 'Q6', 'R1', 'R2', 'R3', 'R4', 'R5', 'R6', 'S1', 'S2', 'S3', 'S4', 'S5', 'S6', 'V1', 'V2', 'V3', 'V4', 'V5', 'V6', 'X1', 'X2', 'X3', 'X4', 'X5', 'X6'. Lane Departure also includes collisions resulting from opposite direction travel (head-on) defined as the primary collision type reported as 'From opposite direction – both moving – head-on', 'From opposite direction – one stopped – head-on', 'From opposite direction – both going straight – sideswipe', 'From opposite direction – both going straight – one stopped – sideswipe', 'From opposite direction – all others. Exclude cases if the vehicle action is 'Going Wrong Way on Divided Highway', 'Going Wrong Way on Ramp', 'Going Wrong Way on One-Way Street or Road' and cases with corresponding junction relationships of described in the intersection definition.'

Measures	Fatality Definition **From FARS database**	Serious Injury Definition **From CLAS database**
Intersections	Derived from CLAS and flagged in FARS. Uses the same criteria described in the "Serious Injury" column.	A junction relationship reported as at intersection and related; intersection-related but not at intersection; at driveway within major intersection; entering roundabout; circulating roundabout; exiting roundabout; roundabout related but not at roundabout; or traffic calming circle.
Road Users	Fatality resulting from a collision that involved…	Serious injury resulting from a collision that involved…
Young Driver Ages 16-25 Involved	Any driver between the ages of 16 and 25 years. Counts of fatalities involving a certain driver group do not imply that driver to be "at fault".	Any driver between the ages of 16 and 25 years. Counts of serious injuries involving a certain driver group do not imply that driver to be "at fault".
Pedestrians	A fatal person type coded as pedestrian or person on personal conveyances.	A seriously injured person coded as pedestrian (includes person on foot, roller skater/skateboarder, wheelchair, flagger, roadway worker, and EMS personnel).
Bicyclists	A fatal person type coded as bicyclist or other cyclist.	A seriously injured person coded as pedcyc driver or pedcyc passenger (includes bicycles and tricycles).
Motorcyclists	A vehicle body type coded as motorcycle; moped/ motorized bicycle; three-wheel motorcycle/moped; off-road motorcycle; motor scooter, unenclosed/enclosed three-wheel motorcycle/autocycle; and other motored cycle types (mini-bikes, pocket motorcycles, "Pocket bikes").	A vehicle type reported as motorcycle, scooter bike, or moped.
Older Driver Involved (age 70+)	Any driver age 70 years or older. Counts of fatalities involving a certain driver group do not imply that driver to be "at fault".	Any driver age 70 years or older. Counts of serious injuries involving a certain driver group do not imply that driver to be "at fault".
Heavy Truck Involved	Any vehicle coded as 'step van >10,000lbs', 'single-unit straight/cab chassis, GVWR >10,000lbs or unknown', ' Truck-tractor', 'Medium/Heavy P/U >10,000lbs', 'Unk unit or combination >10,000lbs', 'Unk medium/heavy truck type', OR 'Unk truck (light, medium, heavy) with one or more trailers'. Counts of fatalities involving a certain driver group do not imply that driver to be "at fault".	Any vehicle that also has a vehicle classification of 'trailer with GVWR of 10,001 lbs. or more, if GVWR of combined vehicle(s) is 26,001 lbs or more – CDL required', 'single vehicle with GVWR of 26,001 lbs. or more; or any school bus regardless of size – CDL required', 'single vehicle of 26,000 lbs. or less, designed to carry 16 passengers or more; or any vehicle regardless of size which requires HAZ MAT Placard -CDL required' or a commercial vehicle supplement to the collision report; OR a vehicle type reported as 'truck (flatbed, van, etc.)', 'truck and trailer', 'truck tractor', 'truck tractor and semi-trailer', or 'truck-double trailer combinations'; OR a vehicle usage classification reported as concrete mixer, dump truck, logging truck, refuse/recycle truck, vannette over 10,001 lbs., tanker truck, tow truck, or auto carrier. Counts of serious injuries involving a certain driver group do not imply that driver to be "at fault".

Measures	Fatality Definition **From FARS database**	Serious Injury Definition **From CLAS database**
Other Monitored Areas	Fatality resulting from a collision that involved…	Serious injury resulting from a collision that involved…
Drowsy Driver Involved	Any driver with a driver related factor coded as 'drowsy, sleepy, asleep, fatigued' (2009 and prior) or a driver condition coded as asleep or fatigued (2010 and later).	Any driver apparently asleep or apparently fatigued as reported by the investigating officer in the contributing circumstances.
Work Zone Involved	A work zone status coded as construction; maintenance; utility; or work zone, type unknown.	A work zone status reported as within work zone or in external traffic backup caused from work zone.
Wildlife Involved	A sequence of events coded as animal.	A collision type reported as non-domestic animal (2008 and prior) or a collision type reported as vehicle strikes deer; vehicle strikes elk; or vehicle strikes all other non-domestic animal (2009 and later).
School Bus Involved	A vehicle coded as school bus.	A vehicle type reported as school bus.
Vehicle Train	A sequence of events coded as railway train.	A collision type reported as train struck moving vehicle; train struck stopped or stalled vehicle; vehicle struck moving train; or vehicle struck stopped train.

Appendix F: Data Nuances

What the Data Can and Cannot Tell Us

Crash data analysis is complex and can include many different levels of focus, including crash factors surrounding:

- **Event:** weather, lighting conditions, road surface conditions, and other circumstances.
- **Vehicle:** motorcycles, heavy trucks, and other vehicles.
- **People:** such as drivers, vehicle passengers, and people walking and biking—both surviving and deceased.

Unit of Reporting

The unit of reporting also adds a level of nuance to crash data. The unit of reporting for most of Target Zero is the people who are killed or seriously injured. For example, the Distraction chapter reports on fatalities and serious injuries involving any distraction, either a distracted driver or other road user. However, it does not include data on the number of distracted drivers or road users. For instance, in a fatal crash between a motorist and a pedestrian, it is possible that both parties were distracted, but in the data this would only be counted as one distracted fatality. In some cases, the distracted driver or pedestrain IS the person fatally or seriously injured, but sometimes it is not. This is true for the data reported in the Impairment, Distraction, Speeding, Young Drivers, Motorcyclists, Older Drivers, and Heavy Truck chapters.

In addition to these complexities, the following data limitations add further nuance to what the data does or does not tell us.

Crash Culpability and Fault

Washington is considered a "no-fault" state, meaning that law enforcement personnel do not indicate which party was actually at fault when investigating crashes. Instead, they record driver and other road user circumstances contributing to the crash, such as impairment or speeding. In crashes where only a single vehicle is involved, or only one driver or road user is recorded as having contributing circumstances, then crash fault can be assumed.

However, in the absence of a standard approach to assigning culpability in crashes involving multiple units and multiple persons with contributing circumstances, comprehensive analysis centered on crash "fault" is not possible. This is important to keep in mind when considering analysis in chapters such as Young Drivers. The data shown are a simple count of all fatalities or serious injuries involving a young driver, but do NOT indicate that the young driver is always the one at fault in these crashes. Occasionally, agencies may conduct internal reviews of crash reports to assign fault for a specific emphasis area. This information is presented in the chapters if it was available.

Data Inclusion Criteria

The Fatality Analysis Reporting System (FARS) is the official source of traffic fatality information for Washington State. Specific criteria must be met in order for a death to be counted in FARS. The crash must involve at least one motor vehicle in-transport on a roadway open to the public and involve at least one fatality that was not a result of intentional or natural causes within 30 days (720 hours) of the crash. For these reasons, other sources of traffic fatality information, such as those from the statewide crash data or vital statistics data, often do not match the counts in FARS.

Advanced Driver Assistance Systems (ADAS)

There are vehicles on the road today that have Level 1 or 2 automation features for safety, or ADAS, such as automatic forward collision breaking and lane keeping. Data regarding the role of these systems when crashes occur are limited. This issue is further complicated by the driver's ability to turn off some of these safety features, and potential driver inattention caused by over-dependence on these systems. Some vehicle manufacturers include ADAS information with the Vehicle Identification Number (VIN), but currently the information is scarce.

Automated technology has the potential to save lives and prevent injury, so it is important that Washington improve data collection regarding ADAS presence and use in crash-involved vehicles. Additional ADAS data needs include:

- The percent of vehicles on the road with ADAS features.
- Systems in operation at the time of a crash.
- Impact of ADAS on crash outcomes.
- Functional differences in the same ADAS feature across different vehicle makes and models.
- Public understanding and acceptance of automated vehicles.

Additional information on automated vehicles and ADAS can be found in the Cooperative Automated Transportation—Includes Automated Vehicles chapter on page 184.

Impairment-Involved Crashes

Only fatal crashes are consistently linked with toxicology reports. Under Washington State law, any person involved in a traffic crash who dies within four hours of that crash will be blood tested for intoxicants. The only other testing that occurs is among surviving drivers where probable cause for impairment is present.

When a toxicology test is performed on any person in a fatal crash, including surviving drivers, the FARS analysts receive those toxicology reports directly from the lab. The statewide crash database relies on officer supplemental reports to complete the impairment information, which is an inconsistent reporting method for toxicology outcomes. For this reason, comparisons between FARS fatalities and fatalities in the statewide database confirm under-reporting of drug and alcohol results to the statewide crash database. Due to this under-reporting, meaningful and complete analysis of impairment involvement is restricted to only FARS data.

Speeding-Involved Crashes

The actual travel speed of a vehicle is not recorded on Washington's crash reporting form, only the roadway posted speed. Technical Reconstructionist reports will sometimes have the calculated travel speed, but not consistently. Therefore, analysts do not know how fast vehicles were actually going at the time of the crash. Furthermore, the majority (at least two-thirds) of speed-related crashes are coded as "Exceeding Reasonable Safe Speed" as opposed to "Exceeding Stated Speed Limit."

Speeding-involved crashes is the only emphasis area that experienced a decrease in both fatalities and serious injuries during the past three years. This is unlikely a meaningful reduction, but rather a function of previous over-reporting. Since Washington strengthened the state's distracted driving laws, it has anecdotally been reported that officers are now coding distraction at a higher rate, versus "Exceeding Reasonable Safe Speed," because now there is a distraction citation that applies to all distraction from cell phones, instead of texting only. While this has not yet been measured, the Data Analyst Group (DAG) will review this issue.

Distraction-Involved Crashes

It is suspected that distraction involvement in serious crashes is generally under-reported. Officers are reluctant to record specific distractions contributing to the crash without defensible proof. Even witness accounts of driver cell phone use in crash report narratives do not always mean that the driver is coded as being distracted in the contributing circumstances. When distraction is coded, in more than two-thirds of the cases the distraction is coded as general "inattention."

Motorcyclist Crashes

For this edition of Target Zero, the definition of motorcyclists was expanded to include motor scooters, mopeds, and motorized bicycles. The extended definition now aligns with the National Highway Traffic Safety Administration's definition of a motorcycle. In Washington, an endorsement is required to operate a motorcycle unless the vehicle is a two-wheeled motorcycle or scooter with a 50 cubic centimeter or smaller engine and has a maximum speed of 30 miles per hour. The definition of motorcycle is driven by how the officer reports the vehicle type and information obtained from vehicle identification numbers (VINs), independent of whether or not an endorsement is required. Therefore, there may be motor scooters, mopeds, and motorized bicycles involved in fatal or serious injury crashes that do not require an endorsement but are classified as "motorcyclists" under the new expanded definition.

Heavy Truck-Involved Crashes

The data used for the Heavy Truck chapter is based on vehicle type and weight, independent of whether or not it is a commercial vehicle. The strategies relate largely to commercial vehicles, yet that is not exactly what is measured. The Washington State Patrol maintains a database for the Federal Motor Carrier Safety Administration (FMCSA) that captures crash data when a commercial vehicle heavy truck is involved. While the data definitions match regarding vehicle weight requirements, the data in FARS that is used in the chapter may also include non-commercial vehicles, such as large vans and heavy pickup trucks. Work is currently underway to better reconcile the FMCSA data with the FARS data and to explore the use of the FMCSA commercial vehicle data for the next edition of Target Zero.

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Appendix G: Strategy Definitions and Criteria

Most chapters of Target Zero contain a list of strategies that practitioners from all disciplines can use to reduce traffic fatalities. This appendix describes how Target Zero analysts evaluate these strategies for inclusion in the plan.

- Strategies listed in Target Zero are given an effectiveness designation of proven, recommended, or unknown as described in the table below. For this review process, Target Zero evaluators chose three main resources to serve as the foundation for the designations:
- Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices (9th Edition 2017), which focuses on behavior.
- The National Cooperative Highway Research Program Report 500 Series, which focuses on both engineering and behavior.
- Crash Modification Factors Clearinghouse, which focuses on engineering.

Disagreement among these sources is rare, but when it happens, evaluators defer to the source that is most aligned with the type of strategy. Therefore, in general, Countermeasures That Work usually takes precedence for behavior/program strategies, Crash Modification Factors takes precedence for engineering strategies, and the NCHRP report prevails when a strategy is not present in either of the first two sources.

Strategy Effectiveness in Target Zero	Target Zero Definition	Countermeasures That Work	NCHRP 500 Report	Crash Modification Factors (CMF) Clearinghouse
Proven	Demonstrated to be effective by several evaluations with consistent results.	★★★★★Demonstrated to be effective by several high-quality evaluations with consistent results.	**Proven (P).** Those strategies that have been used in one or more locations and for which properly designed evaluations have been conducted which show them to be effective.	★★★★★= 14 quality points ★★★★= 11–13 quality points
Recommended	Generally accepted to be effective based on evaluations or other sources.	★★★★ Demonstrated to be effective in certain situations, or ★★★Likely to be effective based on balance of evidence from high-quality evaluations or other sources.	**Tried (T).** Those strategies that have been implemented in a number of locations, and may even be accepted as standards or standard approaches, but for which there have not been found valid evaluations.	★★★= 7–10 quality points
Unknown	Limited evaluation evidence, or experimental.	★★ Effectiveness still undetermined; different methods of implementing this countermeasure produce different results. ★Limited or no high-quality evaluation evidence.	**Experimental (E).** Those strategies representing ideas that have been suggested, with at least one agency considering them sufficiently promising to try them as an experiment.	★★ = 3–6 quality points

Evaluators reviewed each of these publications for the Target Zero plan. They looked for the strategies that Target Zero's statewide partners identified to reduce fatalities and serious injuries, and compared them with the designations adopted according to the table. In some instances, partners slightly modified strategies to be more specific to Washington State, but their strategies were still aligned with the strategies in these publications, and therefore designated the same.

If evaluators could not find a strategy in the three resources described in the table, then they conducted further review, in the following order:

- Was the strategy supported with published, favorable outcomes in the form of a meta-study (a review of several related studies for methodological strength and consistent outcomes)? If yes, these strategies were designated proven with META as the source.
- Was the strategy supported by extensive literature but lacks a meta-study? If yes, these strategies were designated proven or recommended with LIT as the source, dependent on evaluation of the quality and outcomes of the available literature.
- Was the strategy a recommendation supported by a state or federal agency, backed by cited evaluation/data? If yes, these strategies were designated recommended with the supporting agency as the source.
- If a strategy did not meet the proven or recommended criteria, or did not meet one of the criteria listed above, then the strategy was designated unknown. The unknown designation was assigned to strategies when:
    - The strategy was listed in one of the three main resources with lower quality ratings.
    - The literature was insufficient to designate it as recommended.
    - There was sufficient literature, but outcomes were inconsistent and inconclusive between studies.

While the proven, recommended, and unknown designations provide some indication of relative effectiveness, any system for weighting traffic safety strategies is imperfect. The particular context in which a strategy is employed is immensely important and difficult to capture in prioritization systems. Nevertheless, as a general rule, organizations should give priority to strategies listed as proven, followed by those designated as recommended. Strategies listed as unknown should only be utilized when proven and recommended strategies are not viable, or when the unknown strategy is truly innovative and promising. In cases where an unknown strategy is selected for implementation, organizations should develop a straightforward plan for evaluation to add to the body of knowledge and enhance future decision-making.

Appendix H: Federal Requirements

This appendix explains the federal requirements regarding establishing and updating the Strategic Highway Safety Plan (SHSP) for all 50 states. Target Zero is Washington's SHSP.

Two major federal laws influence the content and implementation of Target Zero: Moving Ahead for Progress in the 21st Century (MAP- 21) Act and the Fixing America's Surface Transportation (FAST) Act.

Under these laws, the Federal Highway Administration (FHWA) sets policy that guides the implementation and evaluation of the SHSP.

FHWA published their Highway Safety Improvement Program (HSIP) Final Rules with an effective date of April 14, 2016. These Final Rules implement the HSIP requirements established in MAP-21 and the FAST Act, and establish clear requirements for updating the state's SHSP.

The HSIP is a core federal-aid program with the purpose of achieving a significant reduction in fatalities and serious injuries on all public roads. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The HSIP regulation under 23 CFR 924 establishes the FHWA's HSIP policy, as well as program structure, planning, implementation, evaluation, and reporting requirements which states must follow to successfully administer the HSIP. The HSIP Final Rule updates HSIP requirements under 23 CFR 924 to be consistent with MAP-21 and the FAST Act, and clarifies program requirements.

In addition to clarifying other programs, the HSIP Final Rule contains performance management requirements for SHSP updates. FHWA has been working in partnership with key stakeholders for many years to prepare for these new rules. They will reinforce a data-driven approach to making safety decisions, improve collaboration across a wide range of safety partners, and provide transparency for the American public as states set goals, report on safety targets and, most importantly, save lives.

Meeting Federal Requirements for Target Zero

23 USC 148 requires all states to have an updated, approved SHSP which is consistent with specific requirements under section 148. The updated SHSP must be submitted to the FHWA Division Administrator, who will ensure that the state has followed a process that meets these requirements.

The FHWA provides an SHSP Process Approval Checklist, which is a tool to help Division Offices assess the process and completeness of the SHSP update. The requirements outlined in the Process Approval Checklist include detailed specific Indicators and Considerations which must be met by the state. Washington's plan has met all requirements in the past, and believes that it has met them with the 2019 update as well.

- Consultation with appropriate stakeholders and traffic safety partners during the update process
- Comprehensive use of data to develop plan emphasis areas and safety improvement strategies, including safety data from non-state-owned public roads and tribal land
- Performance management and adoption of performance-based goals which are consistent with established safety performance measures
- Employing a multi-disciplinary approach which addresses engineering, management, operations, education, enforcement, and emergency services elements of highway safety as key features when determining SHSP strategies

- Coordination with other state, regional, local, and tribal transportation and highway safety planning processes; a demonstration of consultation among partners in the development of transportation safety plans; and an SHSP which provides strategic direction for other transportation plans
- An implementation focus which describes process, actions, and potential resources for implementing the strategies in the emphasis areas
- Requirements to evaluate the SHSP as part of the HSIP update process, including confirming the validity of the emphasis areas and strategies based on analysis of safety data, and identifying issues related to the SHSP's process, implementation, and progress
- Special rules which require including the state's definition of High Risk Rural Road and strategies to address the increases in older driver and pedestrian traffic fatalities and serious injuries, if applicable
- A detailed description of the SHSP update process, included as a section, chapter, or appendix in the SHSP
- A requirement to complete the SHSP update no later than five years from the date of the previous approved version
- A requirement that the SHSP be approved and signed by the Governor of the state or a state official that is delegated by the Governor
- Approval by the FHWA Division Administrator

Appendix I: Performance Based Goals

Washington's goal is to reduce traffic fatalities and serious injuries to zero by 2030. While aspirational, this target recognizes that our personal goals and the state's goal should be the same: you, your family, and your friends all make it home safely. To achieve this, partners across the state have a responsibility to implement strategies (countermeasures) that have the highest likelihood of reducing the frequency and severity of crashes.

Washington's safety partners use performance metrics to track and understand system performance and needs over time. The goal is to make our efforts as effective as possible. Data from crashes involving fatalities and serious injuries form the basis for the emphasis areas and their priorities within Target Zero in the categories of high-risk behavior, crash types, and road users. The higher the relative contribution to fatalities or serious injuries statewide, the higher the priority ranking of the particular emphasis area. See the priority table page 11 for more information.

Safety partners can use this information to identify contributing factors that are leading to these high severity crashes throughout the system. For instance, Target Zero has identified lane departure crashes as a Priority Level One emphasis area. The next step would be to screen the network to identify segments or intersections on the road network or characteristics for locations experiencing more than the expected number of high severity lane-departure crashes. Further analysis of the contributing factors to these crashes can then provide insights into the type of countermeasures that would have a high potential to reduce the number and severity of this particular group of crashes. These countermeasures can be in the form of education and outreach, enforcement, engineering (infrastructure), emergency medical services, evaluation, leadership, or a combination of each.

The performance metrics help us evaluate how effective these strategies have been in reducing the targeted types of crashes. Target Zero does not evaluate an individual project's or program's effectiveness. Instead, it focuses on the overall performance of the system, setting performance based goals across emphasis areas.

Washington's Performance Goals

State agencies are responsible for the administration of federal safety funds from the U.S. Department of Transportation report, and set annual performance goals. The Federal Highway Administration (FHWA) and National Highway Traffic Safety Administration (NHTSA) agree that zero fatalities on our nation's roads is the only acceptable goal. However, agencies recognize that reaching zero fatalities will require time and significant effort by many different partner agencies and that interim goals will be necessary.

Targets for FHWA's and NHTSA's performance metrics are interim measures along the way to the zero goal. Washington's annual targets are data-driven, realistic, and intended to be achievable.

In Washington, WSDOT and the WTSC have three overlapping performance goal areas and targets required as part of federal reporting. The three overlapping measures that are set in collaboration between WSDOT and WTSC are shaded in the following table.

Washington State's Traffic Safety Performance Goals	
WSDOT Annual Traffic Safety Performance Goals FHWA Highway Safety Improvement Program (HSIP)* *Due August 31*	WTSC Annual Traffic Safety Performance Goals NHTSA Highway Safety Plan (HSP)* *Due July 1*
Number of traffic fatalities on all public roads (FARS).	
Number of fatalities per 100 million vehicle miles traveled (VMT) on all public roads (FARS/FHWA).	
Number of serious injuries on all public roads (State Data).	
Number of non-motorist fatalities and serious injuries on all public roads (e.g. bicyclists and pedestrians**) (FARS/State Data).	Number of pedestrian** fatalities (FARS).
Number of serious injuries per 100 million VMT on all public roads (State Data/FHWA).	Number of bicyclist fatalities (FARS).
	Number of unrestrained passenger vehicle occupant fatalities, all seat positions (FARS).
	Number of motorcyclist fatalities (FARS).
	Number of unhelmeted motorcyclist fatalities (FARS).
	Number of drivers age 20 or younger involved in fatal crashes (FARS).
	Number of speeding-related fatalities (FARS).
	Number of fatalities involving a driver with a BAC of .08 and above (imputed) (FARS).
	Observed seat belt use for passenger vehicles, front seat outboard occupants (survey).
	Number of seat belt citations, impaired driving arrests, and speeding citations issued during grant-funded enforcement activities.

*Quantifiable targets are set annually and can be found in the HSIP at www.wsdot.wa.gov/LocalPrograms/Traffic/FedSafety.htm and in the HSP at https://www.nhtsa.gov/highway-safety-grants-program/state-highway-safety-plans-and-annual-reports

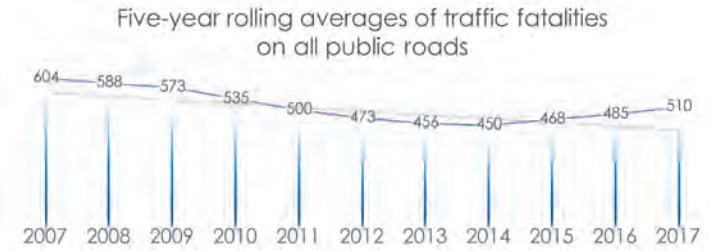
**Although the measure of pedestrian fatalities is from the same data source (the Fatality Analysis Reporting System, FARS), the person type criteria used to define pedestrians differ between FHWA and NHTSA. Therefore, the sum of the NHTSA pedestrian and bicyclist fatality performance measures do NOT match the FHWA non-motorist performance measure fatality counts.

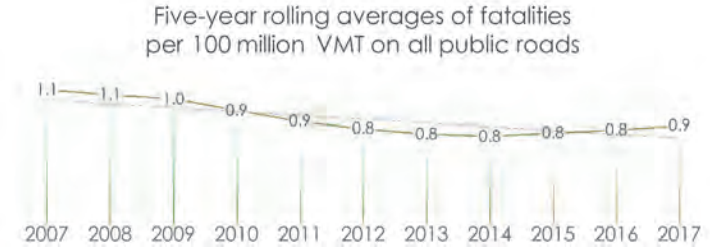
Calculating Annual Targets

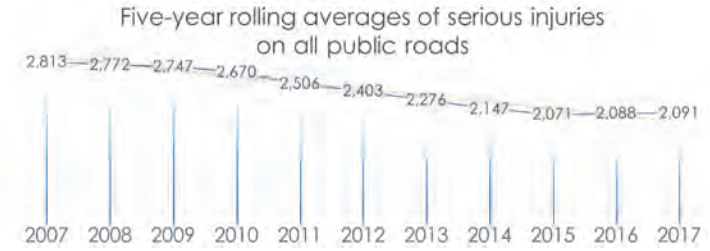
The targets are updated and reported annually in Washington's Highway Safety Plan, submitted by WTSC, and Washington's Highway Safety Improvement Program, submitted by WSDOT.

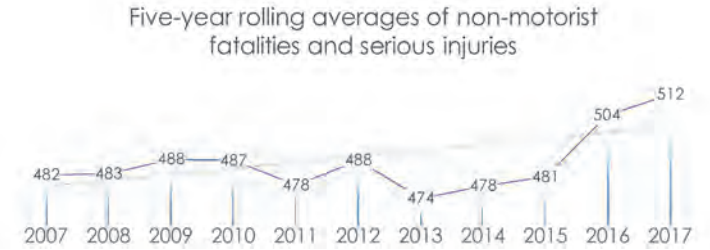
Target-setting methodologies can change, and readers should refer to the HSP and HSIP for the most up-to-date information. Target Zero analysts set annual targets using trend line projections, which are then compared to the Target Zero line. That data, plus the most recent preliminary year of data, is then used to calculate seven 5-year rolling averages for trend line projections. However, Target Zero values do not include the preliminary data, and therefore are only calculated using six 5-year rolling averages. The exception to this method is when the trend line value is higher than the most recent 5-year rolling average. In these instances, the annual goal is set equal to the most recent 5-year average (maintenance goals).

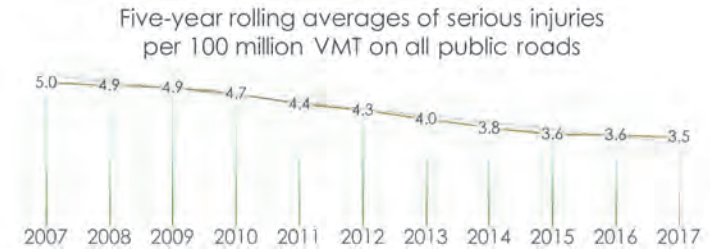
Target Zero generally looks at a projecting trend line towards the 2030 goal. A one-year look at the targets provide only a limited and variable perspective on where Washington State actually is in terms of traffic safety goals. This type of look captures "noise" in the data, while a longer look smooths out that noise and shows overall trends. For these reasons, we present the overall target data in Target Zero, but refer readers to the HSP and HSIP for the current targets and explanation.



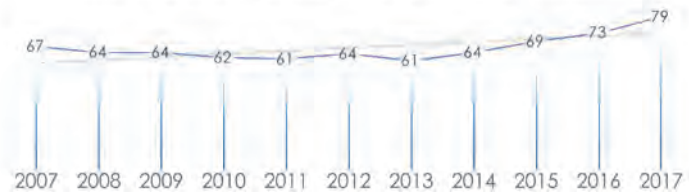




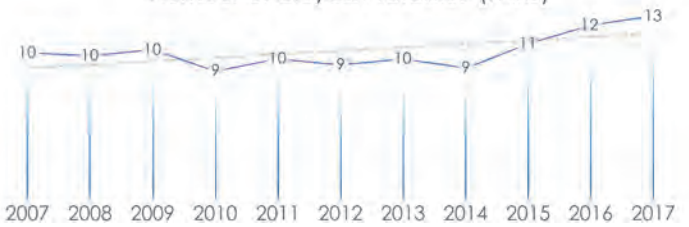




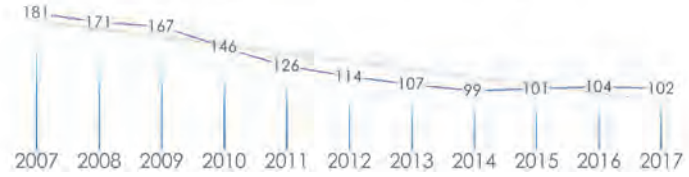
Five-year rolling averages of pedestrian fatalities



Number of bicyclist fatalities (FARS)

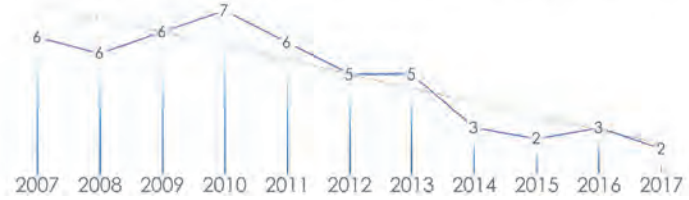


Five-year rolling averages of unrestrained passenger vehicle occupant fatalities, all seat positions



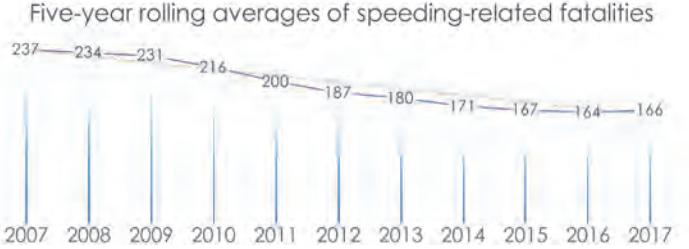
Five-year rolling averages of motorcyclist fatalities

Five-year rolling averages of unhelmeted motorcyclist fatalities

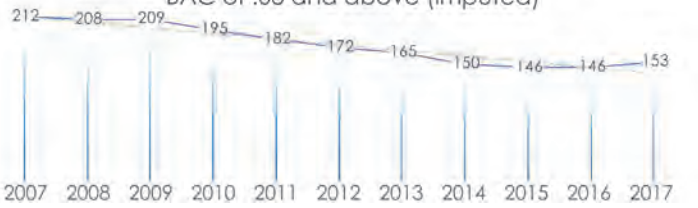


Five-year rolling averages of drivers age 20 or younger involved in fatal crashes

Five-year rolling averages of speeding-related fatalities



Five-year rolling averages of fatalities involving a driver with a BAC of .08 and above (imputed)



Appendix J: Target Zero Plan Development

Developing and writing Target Zero is a multi-year process and a collaboration across many groups. This appendix describes the process of developing the plan.

In 2018, the Washington Traffic Safety Commission (WTSC) and the Washington Department of Transportation (WSDOT) partnered to develop the 2019 Washington State Target Zero Strategic Highway Safety Plan (SHSP). Over 25 organizations directly contributed to the development of this new SHSP, and dozens of others advised the project along the way.

It's the intention of these traffic safety partners to use the plan to coordinate traffic safety programs across the state, align priorities and strategies among the various partners, and provide a common language and approach for traffic safety efforts.

The Target Zero partners have revised and updated the plan several times since the first edition in 2000. In the 2019 plan, faced with increasing trends in fatalities and serious injuries, we took a more action-oriented approach. We believe this will provide critical focus for the many partners who implement the strategies in the plan.

We began the project by establishing the **Data Analyst Group**, a partnership of data experts from state agencies that manage Washington's core traffic safety data systems. The Data Analyst Group coordinated the update of the fatality and serious injury data, made data-based recommendations on which factors were the biggest contributors to deaths and serious injuries on our roadways, and developed the new Priority Table (on page 11). Later, they helped assess the effectiveness rating of the strategies listed in this plan (Proven, Recommended, or Unknown).

Along with the Data Analyst Group, a number of key partners came together in a formal, multi-disciplinary project structure to create the Target Zero Project Team and the Steering Committee.

The **Project Team** consisted of manager-level representatives who developed the project plan and timeline, coordinated a vast amount of work, made decisions regarding plan structure and content, wrote the plan sections and chapters, and evaluated strategies for inclusion in the plan. These contributors made the critical decision to make a more action-oriented plan, in response to the rising numbers of fatalities and serious injuries.

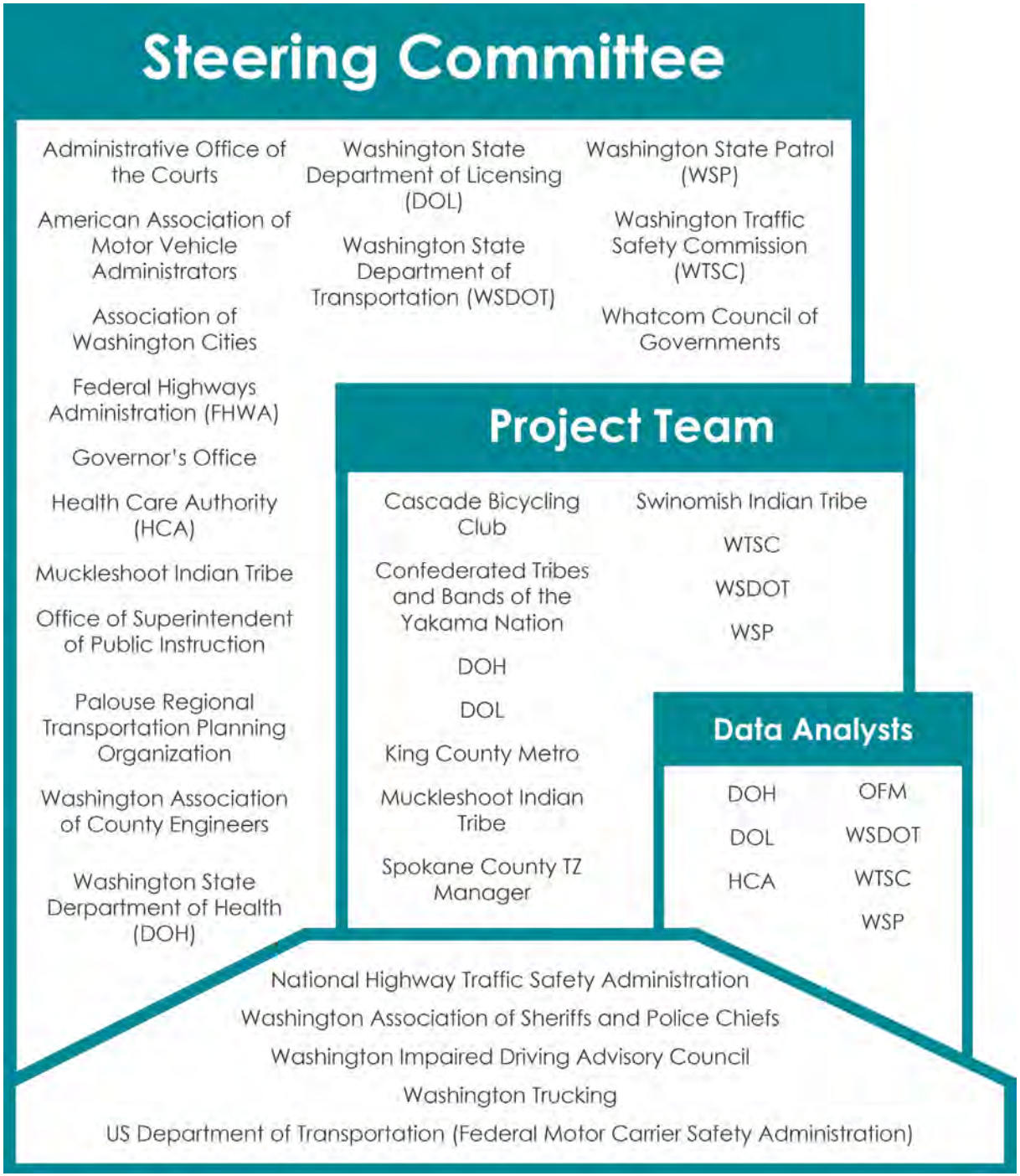
The **Steering Committee** consisted of senior-level management representatives who provided the project with strategic direction and executive guidance, and helped ensure the project had appropriate resources for success. They reviewed the plan, and supported any formal change requests from partners. The Steering Committee also recommended the plan for adoption by the WTSC.

In addition, the Target Zero Project Team received advice from leaders at the state and federal levels, including representatives from the Governor's Office, WSDOT, Administrative Office of the Courts, the U.S. Department of Transportation, the Federal Highway Administration (FHWA), and National Highway Traffic Safety Administration (NHTSA).

To round out the project and gather input from a broader stakeholder group, the Project Team held a Target Zero Partners Meeting in December 2018. More than 200 people involved in traffic safety from across the state attended. Together, they reviewed the preliminary data and new priorities, provided feedback and input on strategies for addressing some of the plan's priority areas, and gave insight into what specific traffic safety messages will best impact our target audiences.

In April 2019, the Project Team and Steering Committee distributed the draft 2019 Target Zero plan for external review by Tribes, partners, and other stakeholders. Over 34 respondents, representing members of the public, agencies, private sector companies, academic institutions, and professional associations, provided formal comment. Their input helped finalize the 2019 plan, and established a baseline for future revisions.

At the concluding stages of the Target Zero plan development, the Steering Committee sent the newly revised plan to the WTSC Commissioners and FHWA for their approval. In October 2019, the Commissioners delivered the final Strategic Highway Safety Plan to Governor Jay Inslee for his approval and signature.



Appendix K: Safe Systems

How does the Safe Systems Approach Relate to Vision Zero, Toward Zero Deaths, and Road to Zero?

Several initiatives with the Safe Systems approach are under way nationally and internationally, including Vision Zero, Toward Zero Deaths, and Road to Zero.

Vision Zero, adopted by Sweden in the late 1990s, and Sustainable Safety, adopted by the Netherlands in the 2000s, are founded in the principles of systematic safety. Vision Zero has been successful across Europe and is gaining momentum in major American cities through the efforts of the Vision Zero Network. In Washington, Seattle and Bellevue have formally adopted Vision Zero policies.

Toward Zero Deaths (TZD) is a national strategy for highway safety in the U.S., echoing the goal of zero fatalities and serious injuries. This initiative shares common components with Safe Systems in terms of users (drivers, passengers, and vulnerable users), vehicles, infrastructure, enhanced emergency medical services, and improved safety management.

Road to Zero is a coalition managed by the National Safety Council that includes USDOT (FHWA, NHTSA, Federal Motor Carrier Safety Administration), the Centers for Disease Control, National Association of State EMS Officials, and many other public and private organizations coming together to collaborate in strategies for zero fatalities by 2050.

While these campaigns each take their own approach to promotion of Safe Systems, they share several solution-oriented components with Target Zero:

- Recognition that deaths caused by motor vehicle crashes are preventable, not inevitable
- Consideration of the entire system (users, vehicles, and the environment), not just one element
- Evidence-based and data-driven approaches
- Embrace of a safe systems approach

And finally, they share a recognition that it takes people from all disciplines leveraging their subject matter expertise and collaborating in order to reach our common goal: zero deaths and serious injuries on our roads.

International Examples of a Safe Systems Approach

In a 2008 report on the Safe Road Transport System Model and the Safe Systems definition, the Organisation for Economic Co-operation and Development's (OECD) International Transport Forum stressed that a Safe Systems approach is "the only way to achieve the vision of zero road fatalities and serious injuries and it requires that the road system be designed to expect and accommodate human error." The report further noted that a Safe Systems approach is appropriate for countries at all levels of road safety performance, with specific interventions likely to differ from country to country.

In places where the Safe Systems approach has been implemented, it has proven to reduce serious injury and fatal crashes.

Equity: Essential Context for Application of the Safe Systems Approach

The Safe Systems approach is grounded in data analysis. It is essential that this analysis be structured to identify and address disparate traffic safety outcomes rooted in past policy decisions. The goal of zero fatalities and serious injuries for all is a universal goal; a targeted strategy that recognizes how different groups are affected in different ways will enable us to move most efficiently and effectively toward that goal.

Today, people living with lower socioeconomic status include an over-representation of people of color, the elderly, and people with disabilities; differing levels of infrastructure for traffic safety create and exacerbate health and transportation inequities.

Infrastructure investment focused on providing for the multimodal needs of historically underserved neighborhoods would be of significant benefit. Nationally, patterns of underinvestment in public safety infrastructure with roots in the public policies of the past have disproportionately affected lower income communities and neighborhoods with higher proportions of people of color. In these areas, residents experience reduced private vehicle ownership, an increased reliance on public and active transportation, and greater vulnerability across a number of indicators.

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Appendix L: Additional Resources

Tribes and Target Zero

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