DRAFT

WASHINGTON STATE

STRATEGIC HIGHWAY SAFETY PLAN 2024




TARGET ZERO

Zero Deaths and Zero Serious Injuries by 2030

Acknowledgments

TRAFFIC SAFETY COMMISSION

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Introduction

TRANSPORTATION SAFETY: A CALL TO ACTION

Imagine a world with zero motor vehicle fatalities and serious injuries. In this vision for the future, the State of Washington's streets and roads provide connections within and between neighborhoods and towns, and goods are carried from ports to their destinations. People can cross the road and keep moving toward their destination while drivers have plenty of time to see them and pause on their trip. Children walk and ride their bikes to get to school, enjoying a healthy activity that sets them up for learning success.

Transit stops provide shelter for people waiting for a community-building trip with their neighbors. City streets and county roads work well for every mode, and highways and freeways operate safely and efficiently for those who live in or visit Washington. These connections link us to each other and the goods and services we need, enhancing the quality of the places where we live, work, learn, and participate in community life.

Unfortunately, this is not our reality.

In Washington state, 810 people died and 3,413 people were seriously injured in crashes involving motor vehicles in 2023. This represents an 85% increase since 2013 in fatalities and a 78% increase for serious injuries. The numbers tell us that someone suffers a serious injury in Washington every 2.6 hours. More often than twice each day, someone is killed in a traffic crash. The individuals in these crashes are parents, children, teachers, students, coworkers, friends, and neighbors. The effects of roadway tragedies are widespread and far-reaching; the toll is both emotional and economic.

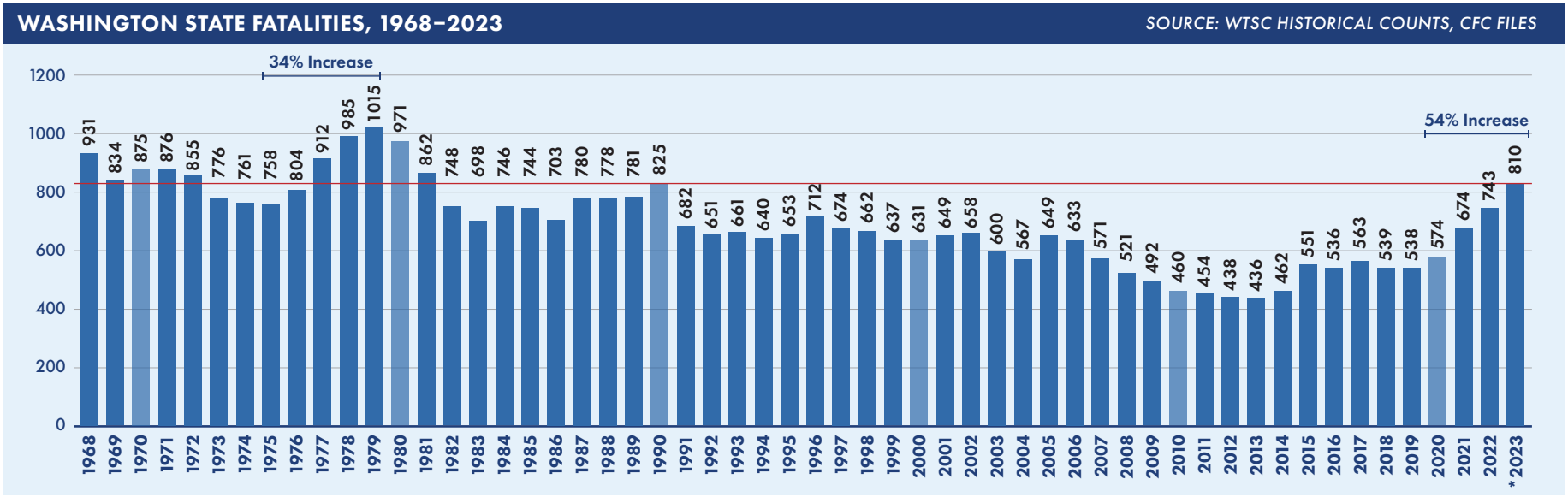

FIGURE 1. WASHINGTON STATE TRAFFIC FATALITIES, 1968-2023

*2023 data is an unofficial estimate, incomplete, subject to change.

Safety is not a luxury. Safer roads and safer communities can save billions of dollars. The societal financial cost of motor vehicle crashes in Washington State for 2022 is estimated to be $20.48 Billion,[1] which is 3.2% of the real gross domestic product (GDP) of the state[2] and represents $2,600 per person in Washington.[3]

While recent increases in fatalities and serious injuries are tragic, we are optimistic about achieving a safer system, but it will take commitment from all safety partners over an extended period. Partners will need to achieve changes in how projects are funded and designed, the public can assist by supporting a prosocial traffic safety culture and encouraging policy makers to commit the funding and resources to achieve our safety goals. We continue to study the most common contributors to roadway crashes, including root causes. The greatest recent increases in fatalities and serious injuries involved impairment, speeding, and unrestrained occupants—three behaviors that can be changed.

This is not a pie-in-the-sky dream. In 2022, Finland saw zero traffic deaths in two-thirds of its municipalities, and they saw their traffic deaths fall to an 80-year low in 2023. These are the result of a prosocial traffic safety culture and a national commitment to achieve zero deaths and serious injuries. Through efforts by government agencies, safety partners, businesses, and the public, a renewed interest and resolve to address roadway safety is growing in Washington State. This was further supported at the national level in 2022 by the U.S. Department of Transportation's first-ever National Roadway Safety Strategy, and the first ever Safety Summit held by the American Association of State Highway and Transportation Officials (AASHTO) in 2023. Washington State has been an early leader and partner in the growing national movement for safer roads. We can leverage the national strategy and summit actions, along with our Target Zero Plan, to save lives in Washington.

In the end, traffic safety is measured by our progress in attaining and sustaining zero fatalities and serious injuries on Washington's surface transportation system. We all want this safe outcome for ourselves, our families, and our friends. This vision must become a positive reality for every person who lives, works, plays, and travels in Washington. We should all arrive at our destinations safe and unharmed, every time.

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1 WSDOT analysis using FHWA method for estimating crash cost for highway safety analysis

2 Bureau of Economic Analysis, GDP by State. https://www.bea.gov/data/gdp/gdp-state

3 WA Office of Financial Management, Total population and percent change website, accessed June 2024. https://ofm.wa.gov/washington-data-research/statewide-data/washington-trends/population-changes/total-population-and-percent-change

What is Target Zero?

Target Zero represents Washington State's goal of eliminating fatalities and serious injuries from our roadways by 2030. However, it represents more than a number to be reached. To paraphrase President Kennedy, our goal is zero, not because it is easy, but because it is hard. And it is the only morally acceptable goal. It is our collective commitment to the shared goal and to creating a transportation system built around safety for every mode and every user. To follow through on this commitment, we must seize the opportunity to reduce the potential for future crashes, so we never have roadway deaths and serious injuries again.

In 2000, Washington State developed the first Target Zero Plan in the U.S., establishing the goal of zero fatalities and serious injuries. At the time, 2030 was an aspirational timeline for this vision. While data has continued to show an increase in fatalities and serious injuries over the past decade, maintaining the original 30-year goal is important because zero is the only acceptable traffic safety outcome. We know it is possible to improve for several reasons:

- We've done it before. From 2005 to 2013, Washington's fatalities reduced by 32%.
- Countries outside the U.S. currently experience traffic fatality rates per population less than half our rates in Washington. Within these countries, some cities have experiences zero fatalities.
- More than xxx incorporated cities within Washington state have achieved zero deaths.[1]

The 2024 Target Zero Plan is the seventh version of this safety plan. As we near 2030, we must act boldly and urgently to continuously improve the way we design, operate, and maintain the transportation system and educate our road users. It has taken decades to build the system we have inherited, so we must continue to push against the status quo with zero fatalities and serious injuries as our expected result, and stay vigilant on this long journey. This updated plan lays out new, challenging initiatives, and a new way of thinking about transportation safety as part of a larger system. Thank you for joining us on this journey.

Local Safety Planning in Washington. While the Target Zero Plan provides inspiration and guidance for statewide roadway safety improvement, much of the day-to-day work of safety occurs at the regional, Tribal, and local levels. While state routes account for 7,000 centerline miles (9% of all public roads), city and county roads account for more than 56,000 miles (72%), making safety on all public roads vital to achieving statewide goals.

More than 100 entities in Washington— local agencies, regional agencies, and Tribal nations—have developed or are developing Local Road Safety Plans, Vision Zero Plans, and Comprehensive Safety Action Plans with the same vision to eliminate fatalities and serious injuries on Tribal roads, city streets, and county roads.

1 Awaiting data analysis

SYSTEMS THINKING

Our surface transportation system is comprised of many parts, such as road users, vehicles, roadways, roadsides, sidewalks, paths, intersections, traffic control devices, policies, and laws. These different parts interact and, in combination, can create the potential for fatal and serious injury crashes. Washington's traffic safety leaders recognize that safety requires systems thinking, which allows us to understand and continuously improve the system to reach desired goals. Crashes (observable events) are relatively random and rare outcomes. Crashes can occur for numerous reasons. Looking only at the crashes presents a limited understanding of the system's operation and the reasons that crashes occur, as **Figure 2** shows.[1] Systems thinking tries to understand the trends and patterns that lead to these events (e.g., run off road crashes in a curve), and also the influence of underlying structures on those patterns (e.g., driver speeds, sharp curve after a long, straight highway). Finally, mental models underlie the structures themselves (e.g., speeding a little is okay), so it is important to recognize the background operating systems at play.

Reaching the goal of eliminating fatalities and serious injuries from our roadways requires transportation safety professionals to think deeply and broadly across disciplines and jurisdictional boundaries. Further, we need to consider how the different supporting structures beyond the traditional roadway system (e.g., transit availability, social services, health policy, etc.) influence each other to contribute to or decrease the likelihood of a crash.

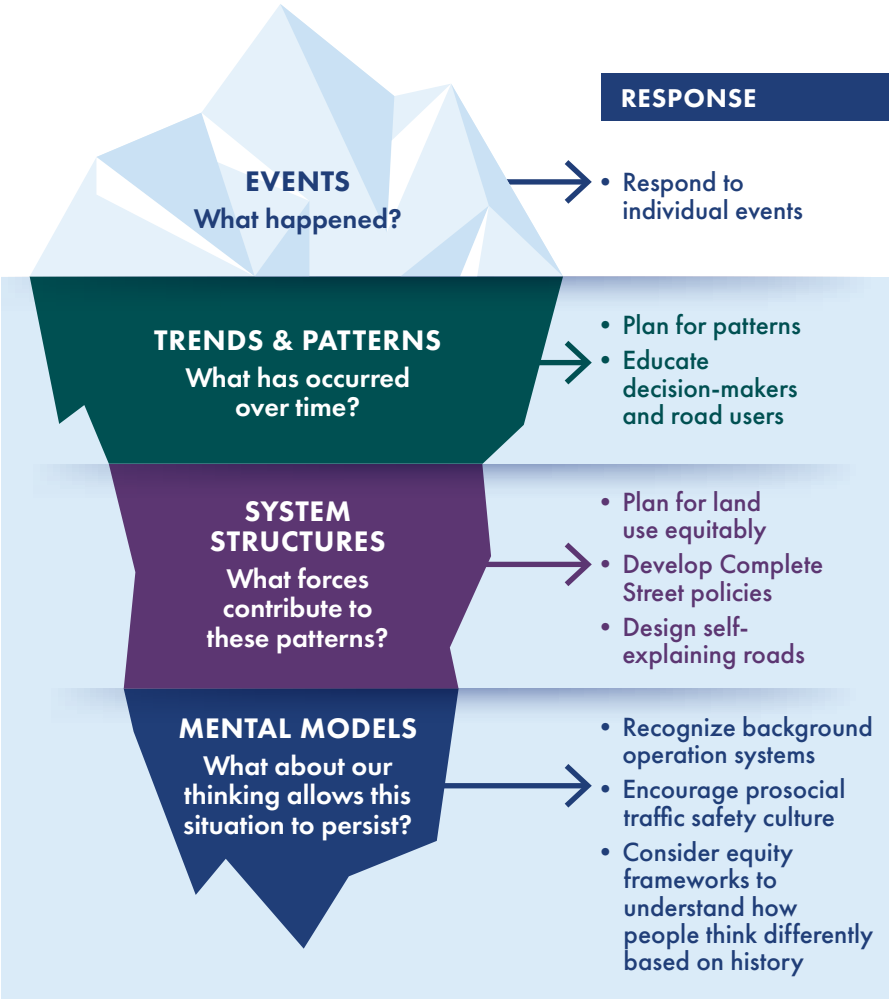

FIGURE 2. SYSTEMS THINKING LEVELS OF CURRENT CONDITIONS

1 Adapted from the iceberg model. https://mutomorro.com/iceberg-model/

Applying Systems Thinking to Traffic Safety

Crashes occur for many different reasons. These contributing factors are often related to errors or failures within the system. In the past we often discussed safety without defining it; this led to different people not talking about the same thing. To discuss safety consistently now, descriptions of three key road safety performance metrics—exposure, likelihood, and severity—must be understood.

- **Exposure.** Increases in motor vehicles miles traveled and miles traveled by walking, rolling, and cycling mean more people are on the system. In addition, crossing widths, time and distance for active transportation, length of road segment, intersection size, and conflict points increase the potential for crashes to occur as those who use the road spend more time and span more distance closer to vehicles.
- **Likelihood.** Many roadway system aspects (e.g., intersection design, roadway geometry, signal timing, lane striping) and vehicle design (e.g., vision-obstructing pillars, maneuverability, safety devices) can increase the likelihood of a crash occurring. Similarly, road users who are distracted, impaired, speeding, or engaging in other high risk behaviors also increase the likelihood of causing or being involved in a crash.
- **Severity.** Vehicle speeds, crash angles, differences in size and weight, and lack of safety equipment use are the primary factors in crash severity. Other influences on severity include lack of protection from crash forces (e.g., occupants not wearing seat belts, pedestrians struck by a driver), physical health of road users involved in a crash, and the availability and responsiveness of post-crash care.

Applying these concepts can help us to recognize how our laws, policies, programs, projects, and strategies create change in the system. To arrive at strategies that will prove effective for all people in Washington, we must include the assessment of safety performance in a multimodal and community-based context. Multimodal assessment recognizes that changes for the safety of people in vehicles may result in offsetting negative effects to other modes of transportation, whereas improvements for pedestrians can result in safety improvements for people using all modes, including drivers.

PROSOCIAL TRAFFIC SAFETY CULTURE

> "The roadway transportation system is a shared community that consists of various users including drivers, motorcyclists, passengers, cyclists, pedestrians, and others. This system is designed, maintained, and managed by various stakeholders including departments of transportation, transportation engineers, maintenance districts, city and county and Tribal road departments, elected officials, policy makers, law enforcement officers, traffic safety leaders... and others. Each of us is a member of the roadway transportation community because we depend on this shared system to connect us with people, places, goods, and services. For this system to meet everyone's needs and be sustained, we have an obligation to one another to act in ways that support the system."
>
> *—Center for Health and Safety Culture, Montana State University, Proactive Traffic Safety*

Traffic safety culture refers to our shared belief system about our individual actions that affect safety.

Prosocial traffic safety culture goes further, referring to shared beliefs about our responsibility for collective actions that create a safe transportation system for everyone. Joint responsibility and collective actions involve two important parts:

- Road operators and partners who are responsible for planning, developing, operating, and maintaining a safe system.
- Road users who act to ensure the safety of themselves and the safety of the other members of the community using the system.

Prosocial traffic safety behaviors are part of our positive daily choices, performed outside a formal safety role. These actions are motivated by a shared identity and social bonds with a group. To foster these prosocial traffic safety behaviors, we must create a traffic safety culture that encourages these behaviors and a social environment that rewards them. Recent data shown in **Figure 3** suggests that many people in Washington state are already comfortable taking actions to help others be safer. This suggests that strategies to grow prosocial traffic safety behaviors may be effective in Washington.

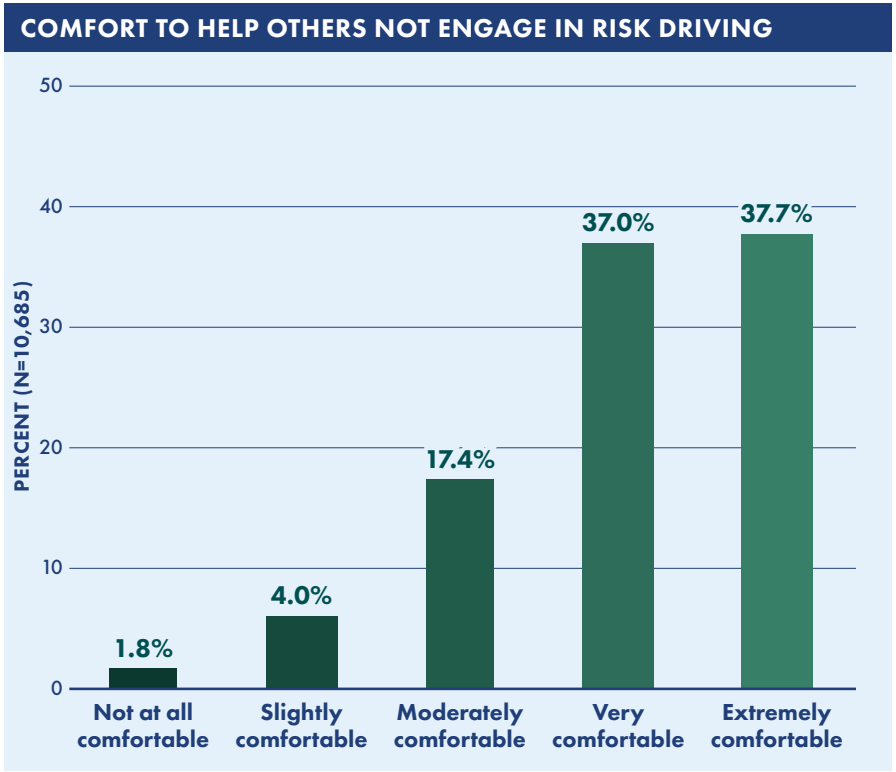

FIGURE 3. SELF-REPORTED COMFORT TO ACT IN WAYS THAT HELP OTHERS NOT ENGAGE IN RISK DRIVING BEHAVIORS

Source: WA Traffic Safety Survey, 2023

Prosocial traffic safety culture creates a collaborative group experience to encourage actions that increase the safety of others, which leads to support for shared traffic safety goals.

> "Seeing the tears in my brother's eyes I knew something horrific had happened. Wrapping his arms tightly around me… his voice barely audible… he whispered, 'Trevor's been killed'. Gasping for breath, the gut-wrenching pain took me to my knees.
>
> In an instant I went from being a banker to dedicating my lifework to preventing impaired driving in memory of my little son and in honor of my then six-year-old daughter who survived the crash. Public safety is up to each of us for all of us."
>
> *—Linda Thompson, mother of Trevor Pierce age 3, killed on August 16, 1986, by an impaired driver (repeat offender)*

EQUITY FRAMEWORK

The Centers for Disease Control and Prevention (CDC) describe transportation as an important social determinant of health that "affects the ability of people to move efficiently and safely through public and private spaces. Active transportation—specifically walking, cycling, and rolling—has direct and indirect impacts on health at both individual and community levels."[1] However, individuals using the transportation system experience significantly different outcomes related to death and serious injury. Some of these differences are attributable to prior policies (including redlining and segregation) that were put in place nearly a century ago in cities across the U.S. Planning decisions are often skewed in favor of some interests over others. Compounding this are disparities in improvements and maintenance over time. Hundreds of separate decisions compound over time and result in substantial disparities in access, resources, and safety. This resulted in neighborhoods with higher speed arterials, less street lighting, and a lack of sidewalks and pedestrian crossing locations. Changes are needed to reduce the higher rates of active transportation user deaths for Black and American Indian and Alaska Native road users, in particular.

CDC researchers concluded: "lower-income neighborhoods often lack sidewalks or have poorly maintained sidewalks with limited connectivity. Structural racism has governed the trajectories of communities across the United States, creating multidecade place-based effects. These effects are often not acknowledged as a fundamental cause of transportation inequities. Individually focused behavioral countermeasures and siloed infrastructure projects cannot sufficiently address present-day inequities. Transportation researchers must understand and address upstream factors—like redlining—that continue to undermine positive population-level transportation outcomes." (CDC, 2023) This linkage allows for understanding these factors' interaction in the analysis and selection of safety strategies and countermeasures to reduce crash and injury potential. A recent example is WSDOT's social equity index to understand the correlation between equity characteristics and vulnerable road user crashes, as outlined in **Appendix XX**.

Systems thinking requires us to proactively address these patterns and trends across multiple systems to bring about equity-based outcomes. The equity framework for achieving Target Zero is based on an understanding that historical interconnections among public policies for transportation, health, housing, and environment could have resulted in inequities. Marginalized communities face disproportionate burdens and impacts that were created by policy makers and funders across these multiple systems.

Inequity in systems also occurred in part because transportation funders, policy makers, and design practices prioritized higher-speed, vehicle-oriented mobility for people in suburban areas. Safety during this time was defined as a reduction in total crashes (versus fatal and serious injury crashes), meaning congestion-related vehicle crashes were prioritized. These crash types usually resulted in property damage or minor injuries, versus the less frequent but higher severity active transportation user involved crashes.

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1 Taylor, N.L., et. al. (2023). Structural racism and pedestrian safety: Measuring the association between historical redlining and contemporary pedestrian fatalities across the United States, 2010-2019. Accessed online, 4/29/2024, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10003496/#:~:text=In%20our%20multivariable%20analysis%2C%20we,Table%202%2C%20model%201.

Projects were often developed to reduce cost and complexity, leading decision makers to place roadways near or through marginalized neighborhoods, instead of other communities that were more costly and difficult to build in. These projects were built without places for the people in those same neighborhoods to walk, bike, and roll, resulting in negative effects on safety, culture, economic vibrancy, and personal security. This is disinvestment, and it is being corrected over time with new projects in these communities.

The current transportation system and network was built over decades, and it will take time to make changes to meet the needs and expectations of today. An equitable approach to transportation safety requires us to:

- Disaggregate data by population demographics such as race/ethnicity, income, housing, disability, English proficiency, other equity-related factors, and mode use to gauge potential negative impacts within traditionally underserved populations.
- Understand how limited transportation options within different road design and operational context might affect transportation safety behaviors, and how to consider these factors in safety projects and programs.
- Address differences in land use policy and prosecution of traffic safety laws by these same demographics.
- Address improvements in all relevant systems (e.g., land use policy, infrastructure projects, transit access) with a focus on historically underinvested communities.
- Include these affected communities in transportation safety decision-making.

Land Use. Historical inequities in city planning led to inequitable zoning laws and practices, including housing segregation via redlining and exclusionary zoning. These policies led to the concentration of certain populations, particularly communities of color, in specific neighborhoods, and in disparate housing values, affordability and quality. These prior choices resulted in those community members experiencing limited access to transportation, food, employment, health care, education, and recreation within a reasonable distance, further exacerbating existing inequities.

Marginalized people, who are in most need of affordable and reliable transportation options, may be the least likely to have these options in their neighborhoods due to prior transportation policies that prioritized automobile-centric development. The lack of reliable options increases their exposure to conditions that may result in roadway crashes. The outcome is a perpetuating cycle of poverty and inequity.

Equity in Transportation Policy

Transportation is now widely understood as a cornerstone of equity across larger interconnected systems, including environmental justice, public health, economic development, and workforce development. Recent legislation in Washington has advanced transportation equity through multiple systems.

HEAL Act. The passage of the Healthy Environment for All (HEAL) Act in 2021 was a historic step toward understanding environmental and health disparities among communities of color, low-income households, and others vulnerable to environmental impacts. It was the first statewide law in Washington to create a coordinated state agency approach to environmental justice, and it includes the following key elements related to transportation safety:

- Provided a voice for disproportionately affected communities.
- Created an environmental justice council to advise the state and an interagency work group to coordinate among agencies.
- Required specified agencies to consider benefits and burdens for vulnerable populations in investment decisions.
- Required specified agencies to track, measure, and report on environmental justice implementation.

Complete Streets. The Move Ahead Washington transportation package passed in 2022 introduced a mandate for consideration of Complete Streets approaches in all significant transportation projects undertaken by WSDOT on state highways. Projects must consider and accommodate all road users and their modes of transportation, including walking, rolling, and using transit. When fully funded and implemented, the Complete Streets approach will mean that each person has a reasonably safe pathway from destination to destination on state routes, whether they are driving, walking, biking, or riding transit, or any combination of modes. Complete Streets are developed within the Safe System Approach that is covered in full detail in the next section of this plan.

While the directive applies to WSDOT projects, many other agencies around the state have adopted a local Complete Streets ordinance and are applying these principles to their transportation projects. Grants awarded by WSDOT's Active Transportation Division and by the Transportation Improvement Board fund projects that create Complete Streets as well.

Growth Management Act. In 2023 the legislature adopted several changes to the Growth Management Act that embed equity and transportation safety. When implemented, these changes will reduce potential crash exposure through support for transportation-efficient land use planning and mode shift away from single occupant vehicle travel. Changes included:

- Requiring use of multimodal level of service standards for roads, transit service, and active transportation, which shifts from a driving-centered evaluation to one that considers all modes.
- Explicitly incorporating requirements to plan for safety. "Priority must be given to inclusion of transportation facilities and services providing the greatest multimodal safety benefit to each category of roadway users for the context and speed of the facility."

- Adding equity language, for example directing transportation and planning authorities to identify system needs to equitably meet current and future demands and to equitably implement the multimodal network.
- Requiring the creation of Americans with Disabilities Act Transition Plans as a part of the transportation element of comprehensive plans

Equity in the Safe System Approach

To implement the Safe System Approach equitably, we must first understand disparities in land use and road placement. Then, policy makers must work toward repairing the locations of historic underinvestment in safe facilities for pedestrians, bicyclists, and motor vehicle drivers in marginalized, underserved, and disproportionately impacted communities. Equity by design and equity in operations must explicitly consider all road users in decision making and recognize that some communities—such as places where more people live in poverty, have disabilities, or experience health disparities—have compounding needs that place an emphasis on transit, walking, biking, and rolling.

Community needs must be prioritized as well. Our work to communicate and engage around traffic safety requires tailoring our message to non-English speakers, developing culturally relevant materials, and establishing platforms and engagements to hear from those who are unable to participate in public meetings because of costs, inability to travel longer distances easily, caregiving responsibilities, and other factors.

Socioeconomic and Demographic Factors in Washington

Responsibility for road design, construction, maintenance, enforcement, and safety is divided among city, county, state, and federal jurisidictions, and Tribal nations. County roads account for the greatest number of road miles, yet they often receive the least funding support per mile. State and county roads in unincorporated areas are those that most frequently cross and abut Tribal lands.

Within Washington, there are substantial differences between urban, suburban, and rural areas of the state. There are several state and national datasets that are helpful in identifying communities that experience persistent poverty (USDOT Areas of Persistent Poverty), are disadvantaged (USDOT Disadvantaged Communities score), are socially vulnerable (the CDC Vulnerability Index), or experience environmental health disparity (Washington Department of Health (WA DOH) Environmental Health Disparities Score). WA DOH provides online maps to visually communicate data on social, health, and safety vulnerabilities by census tract.[1]

1 Washington Tracking Network, WA State Dept of Health. https://fortress.wa.gov/doh/wtnibl/WTNIBL/

The CDC Social Vulnerability Index considers multiple factors in four domains:

HOUSEHOLD COMPOSITION AND DISABILITY

- POPULATION 65+ (%)
- POPULATION UNDER 18 (%)
- POPULATION WITH A DISABILITY (%)
- SINGLE PARENT HOUSEHOLD (%)

SOCIOECONOMIC DETERMINANTS

- MEDIAN HOUSEHOLD INCOME
- NO HIGH SCHOOL DIPLOMA (%)
- POPULATION 19 TO 64 WITH NO HEALTH INSURANCE
- POPULATION LIVING IN POVERTY (%)
- UNEMPLOYED (%)

HOUSING TYPE AND TRANSPORTATION

- HOUSING WITH 10+ UNITS (%)
- MOBILE HOMES (%)
- NO ACCESS TO A PRIVATE VEHICLE (%)
- OVERCROWDED HOUSING (%)
- POPULATION LIVING IN GROUP QUARTERS (%)

RACE, ETHNICITY, AND LANGUAGE

- LIMITED ENGLISH PROFICIENCY (LEP)
- PEOPLE OF COLOR (RACE/ETHNICITY)

Segregation by race, income, and other demographic factors reflected in this concept of social vulnerability is part of the system that produces disparate transportation safety outcomes. As the CDC found in its national study, these systems are interdependent. People in historically marginalized, segregated, and underinvested census tracts in Washington also experience higher rates of serious injuries and fatalities in traffic crashes.

These differences are a part of the system that results in disparate safety outcomes. For example, a person who is less able to afford a personal vehicle is more likely to walk, bike, or roll, either as their primary mode or to access public transit. This leaves them more vulnerable and exposed. The 25-30% of Washingtonians who don't drive at all face the same scenario. Their lack of protection can increase their susceptibility to crash forces from a motor vehicle on some parts of the transportation system.

As living expenses increase throughout Washington, many no-, low- and moderate-income residents must reside in lower-cost areas. These individuals must travel farther to get to their workplaces, schools, medical care, shopping, and other locations as part of their daily lives. This added distance creates additional exposure due to miles traveled to reach these locations on facilities that may lack safety features seen on other roadways.

Part of the reason is that design guidance is often determined using existing conditions, like the amount of traffic on that road segment. This means that some roads will have additional roadway and roadside safety features, like paved shoulders, edge line and centerline pavement marking, guardrail, or sidewalks. These choices are made to optimize the scarce resources available to transportation programs. Washington is reevaluating how these investment choices are made, using the Safe System Approach. To do so means reconsidering how safety decisions are made and how potential safety projects and strategies are assessed in reducing crash potential for all users.

> "Traffic crashes are a legacy of colonization. We did not ask for these roads."
>
> *—Tribal Representative, October 2023, Target Zero Listening Session*

Tribal Land Safety. There are 29 federally recognized Tribes in the State of Washington. They have designated and sovereign Tribal lands. These lands represent a small fraction of the traditional lands upon which Native Americans lived for millennia. While American Indian and Alaska Native people account for a small percentage of the total population, their involvement in fatal and serious injury crashes is grossly disproportionate considering their population size (see p. ___). These crashes occur on and off Tribal lands.

Community Concerns: A Delicate Balance to Achieve Road Safety Outcomes

Historic disparities in traffic stops and arrests in communities of color in Washington and the United States must be acknowledged when we engage these communities around behavioral traffic safety, which has traditionally relied upon traffic enforcement (and the related threats of fines or arrest) as a primary deterrent and countermeasure. Disproportionately affected communities and policy makers have sought to limit some traditional traffic enforcement activities. Recently, Legislation has been proposed to limit traffic stops and high-speed police pursuits. To meet Target Zero goals, we need access to all available tools, including the application of equitable enforcement, particularly when behaviors and actions are placing individuals and those around them at risk for fatal or serious injury.

Some community members clearly experience and view encounters with law enforcement as risky or dangerous. Consequently, the perceived risks of a crash are thought to be more remote or unlikely than the risks they associate with law enforcement interactions. Traffic stops are one of the most common ways in which members of the public encounter law enforcement.

Groups that have historically experienced the greatest disparities in the criminal justice system expressed lower support for traffic enforcement on the Statewide Traffic Safety Survey (2023). While the level of support is lower among Black survey respondents, 54% expressed support for enforcement of distracted driving laws for using a cell phone, and 60% expressed support for enforcement of laws against driving under the influence of alcohol. Support for enforcement of speed laws among Black respondents—specifically for driving 10 or more miles over the posted limit—was 43% (37% were opposed and 20% were neutral). This occurred even though Black respondents were more likely to view speeding as very dangerous or extremely dangerous (43% versus 35% of all other respondents).

Deep and ongoing engagement will be essential to craft effective strategies in disproportionately affected communities. Equitable enforcement practices are likely to be more effective, as enforcement should focus solely on preventing, reducing, and disrupting the most dangerous behaviors on the road.

Advancing Equity to Save Lives

It will take time, effort, patience, and mutual understanding to engage affected communities around solutions that effectively address disparities in social vulnerability, under-investment, enforcement actions, and the steps to provide roadway safety to everyone. There will likely need to be changes and adjustments made to law enforcement practices and strategies to increase trust that traffic enforcement protects all people and all groups equally and equitably.

Addressing the most harmed populations in our society experience will communicate our commitment to equitable outcomes, and reinforce that Washington's goal of zero fatalities and serious injuries is for everyone. Today's transportation and community safety leaders must address the negative legacy created by these prior systemic choices and take action to avoid burdening more people and places with similar decisions today. We cannot reach Target Zero without correcting these disparities.

THE SAFE SYSTEM APPROACH

The Safe System Approach (SSA) recognizes that safety is increased when we examine how all parts of the system interact to support and strengthen all parts of the system. Vision Zero and the Sustainable Safety Approach originated through efforts in Sweden and The Netherlands, respectively, in the 1990s. The combination of their thinking evolved into what we know today as the SSA. Washington began its journey toward this approach when WSDOT adopted the sustainable safety principles in 2013, and then updated the WSDOT design manual in 2015. In the 2019 update of Target Zero, Washington brought the SSA into Washington's safety practices. Since then, Washington has adapted this approach to incorporate local considerations and international advances in safety practices.

The Washington State SSA provides a framework for operationalizing traffic safety among policy makers, system owners and operators, and road users. This approach reflects the obvious truth that preventing death and serious injury requires multiple elements to be in place so that if one fails, other layers of protection are available to prevent the most tragic outcomes. We apply it in an equitable manner, so it benefits everyone using the system. **Figure 4** illustrates Washington's version of the SSA Principles (outer ring) and SSA Elements (inner ring).

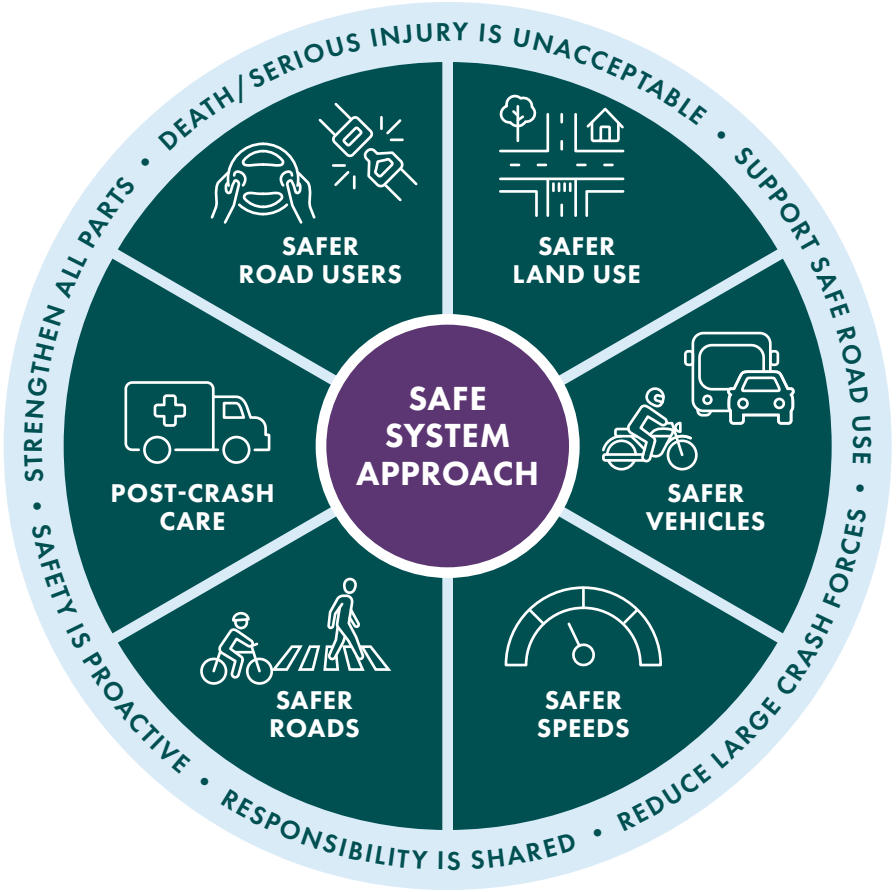


FIGURE 4. WASHINGTON STATE'S SAFE SYSTEM APPROACH

The SSA aims to reduce fatalities and serious injuries by creating a system that supports the following elements: safer land use, safer vehicles, safer speeds, safer roads, safer road users, and post-crash care. These elements are supported by core principles:

- Death and serious injuries are unacceptable
- We support safe road use
- We work to reduce large crash forces because humans are vulnerable
- We all work together with the philosophy of a shared responsibility
- Safety is proactive
- We strengthen all parts of the system to create redundancy

Safe System Approach Principles

Washington's SSA framework is based on six principles, starting with the value statement (deaths and serious injuries are unacceptable), followed by the primary reason for injury outcomes (prevent exposure to large forces) and required actions (safety is proactive, support safe road user behaviors, and shared responsibility). The principles finish with a direct connection to the interdependent SSA elements: strengthen all parts.

PRINCIPLE 1: DEATH OR SERIOUS INJURY IS UNACCEPTABLE

Everyone begins the day with something in mind, often a destination. Then their feet, a bike, a car, a bus, or other transportation mode takes them there. Most people are unaware of the ways in which their potential for a crash is part of the transportation system design and operation. Target Zero partners are focused on understanding these system challenges and prioritizing strategies to prevent death and serious injury.

THESE ARE NOT JUST DOTS ON A MAP.

— Tribal representative, October 2023 Target Zero listening session

High-level officials have committed to the elimination of fatalities and serious injuries, including the WSDOT Secretary's 2023 Executive Order E1085.01: Advancing the Safe System Approach for All Road Users. Its purpose is to achieve the goals of the Target Zero Plan, and it further states, "Through the Safe System Approach, WSDOT intends to systematically reduce fatal and serious injury crash potential statewide."

> “In a well-designed system, safety measures make sure that human fallibility does not lead to human fatalities.”
>
> *—Pete Buttigieg, U.S. Secretary of Transportation*

PRINCIPLE 2: SHARED RESPONSIBILITY

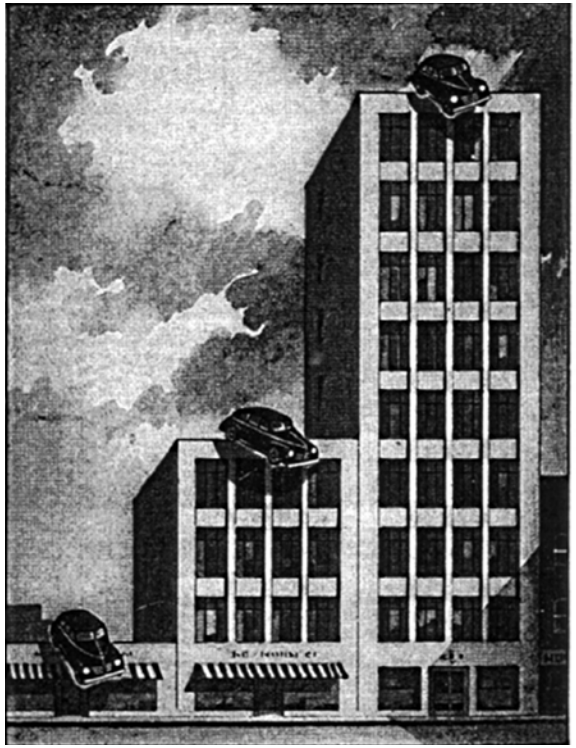
All parties within the system—including government at all levels, private industry (e.g., vehicle manufacturers, consulting firms, etc.), nonprofit/advocacy organizations, the healthcare system, first responders, researchers, and individual road users—are vital to preventing fatalities and serious injuries on Washington’s roadways.

The transportation system is comprised of many elements that influence each other, with many partners who are responsible for these different elements. Partners can be classified as “traditional” (e.g., engineers, law enforcement agencies) and “influencers” (e.g., families, social services, land use). Traditional partners have the highest responsibility and are held accountable for building and operating a safe transportation system; influencer partners are those without a formal traffic safety role but with an interest and influence over safety within their social environment. Target Zero partners include key federal and state traffic safety agencies, along with Tribal governments, cities, counties, regional planning organizations, community-based organizations, and others. Collectively, this partnership is responsible for taking actions to reduce or prevent crashes through safety-focused projects, programs, initiatives, and campaigns all around our state.

PRINCIPLE 3: SUPPORT SAFE ROAD USER BEHAVIOR

People make mistakes and sometimes make behavioral decisions that contribute to crashes. Many systems and factors lie beyond the direct effects of transportation safety professionals (e.g., funding for early prevention and intervention services, availability of treatment facilities for mental health or substance abuse, housing costs, etc.). A transportation system designed to be self-explaining and self-enforcing, meaning that roads are designed and operated to support safe road use, to reduce the ability to travel at excess speeds, and to be forgiving of errors. When supported by education, these designs reduce the potential for road user behaviors that can lead to death and serious injury.

A safe system is one that 1) encourages road users to comply with the safe behavior standards and 2) removes conditions that may influence the violation of those standards. Planning, designing, and operating roadways and active transportation facilities that encourage safe behaviors and remove opportunities for unsafe behaviors will help to protect all road users. Prosocial safety culture; culturally relevant education and training; reminders from signs, pavement marking, and signals; self-explaining roadways; and law enforcement are other layers of defense to encourage safer behaviors.



20 mph
Height: 13.5 ft

40 mph
Height: 54 ft

60 mph
Height 121.5 ft

FIGURE 5. SPEED AND THE FORCE OF IMPACT

PRINCIPLE 4: PREVENT EXPOSURE TO LARGE FORCES

The human body has limits for tolerating crash forces before death or serious injury occurs; therefore, it is critical to design and operate a human-centric transportation system that accommodates and protects physical human vulnerabilities.

The average car weighs 4,000 pounds (which is significantly heavier than 30 years ago).[1] The transfer of force in equation form is $KE=(1/2)mv^2$, where KE = Kinetic Energy; m = Mass of an object; and v = Velocity. When this large object collides with a fixed object, another vehicle, or a person at a high velocity (speed), the impact severity is high. It increases exponentially by the driver's speed.

The connection between the force equation and safety has been understood for a long time, illustrated by this image from 1936 (see **Figure 5**).[2] A vehicle traveling 20 mph generates the same force of impact as that same vehicle dropping from a height of 13.5 feet. At 40 mph, the force is equal to the vehicle dropping from 54 feet.

> "We need to find the balance between speed and efficiency with regard to motor vehicles and pedestrian/bicycle interactions."
>
> *—Listening session participant in Yakima County*

1 How much does the average car weigh? 2024 https://www.consumeraffairs.com/automotive/average-car-weight.html

2 *Man and the Motor Car* by Robert Whitney, 1936.

PRINCIPLE 5: SAFETY IS PROACTIVE

With the proactive approach we identify and address potential contributing factors and crash types in the transportation system, rather than waiting for crashes to occur and reacting afterwards.

Historically, safety investments have been focused on locations where crashes have been reported. While this reactive approach has been beneficial, crashes do not occur repeatedly at the same location over time. From a system perspective, we can take proactive actions that reduce the contributing factors to crashes by mitigating recognizable, predictable trends and factors before future crash events occur.

For example, a jurisdiction may identify lane departure crashes as one of its most common contributors, but upon further investigation, no single location has multiple fatalities or serious injuries in the past few years. In this case, low-cost solutions such as horizontal curve warning signs, pavement marking, and rumble strips can be implemented systemwide. The result of this proactive, systemic improvement is a reduced potential for lane departure crashes for the jurisdiction.

PRINCIPLE 6: STRENGTHEN ALL PARTS

Reducing likelihood, exposure, and severity of crashes requires that all parts of the transportation system be strengthened, so that if one system element fails, the others remain in place to prevent serious or fatal injury. This principle ties directly to the SSA Elements: safer land use, safer roads, safer road users, safer vehicles, safer speeds, and post-crash care.

For example, speeding may be a risk factor when driver operating speeds are too high for the location and type of road use present (e.g., higher pedestrian activity). Strengthening the system could involve multiple layers, including fostering a culture that discourages speeding and reducing post speed limits based on land use context to prioritize injury minimization. In addition, road users can be educated on why their operating speed matters. Deterrence and enforcement through high visibility or emphasis patrols can be layered on to reinforce the posted speed limit. System owners can implement operational and design changes to the roadway itself to separate users and communicate that lower speeds are more appropriate for the given context or make physical changes to the roadway that reduce speeds.

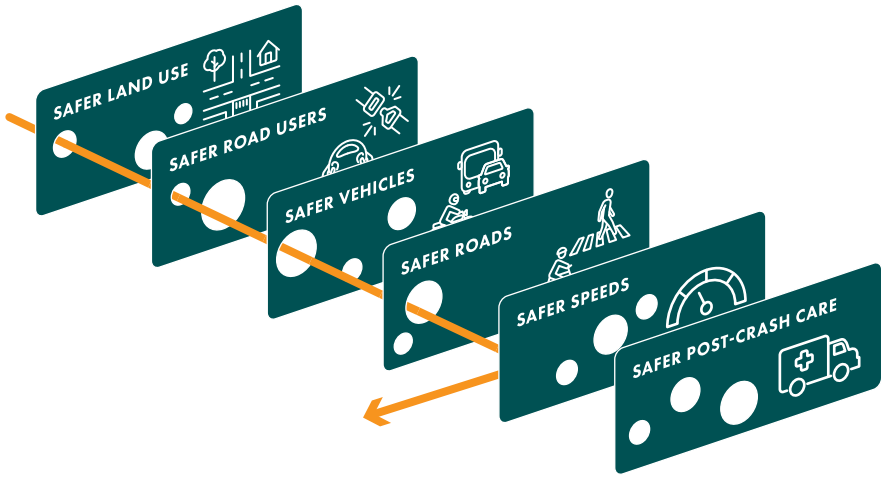


FIGURE 6. THE SAFE SYSTEM APPROACH PREVENTS SERIOUS OR FATAL INJURY EVEN WHEN ONE ELEMENT FAILS

Table 1 demonstrates examples of defense functions across the Safe System Approach elements for speeding involved fatalities (adapted from the Safe System Approach in Action report from the International Transport Forum). It describes how the different partners work together.

TABLE 1. EXAMPLES OF DEFENSE FUNCTIONS ACROSS THE SSA ELEMENTS FOR SPEEDING INVOLVED FATALITIES

SSA PRINCIPLES	SSA ELEMENTS						COORDINATING PARTNERS
	SAFER LAND USE	SAFER ROAD USERS	SAFER VEHICLES	SAFER ROADS	SAFER SPEEDS	POST-CRASH CARE	
PREVENT FATAL AND SERIOUS INJURIES	Encourage transportation-efficient land use that promotes connectivity and considers multiple modes of transportation, reduce vehicle parking requirements, and replace with modal options to encourage active forms of	Create a traffic safety culture that discourages speeding.	Install Intelligent Speed Adaptation systems.	Use self-explaining roads to convey safe speeds.	Automated enforcement with speed safety cameras. Speed management for injury minimization.	Intervention during care to change risk beliefs (Safer People).	WSDOT, WTSC, County and City Planners and Engineers, WSP, DOL, LCB, DOH, HCA, transit agency boards, legislature, judicial system, health care system
REDUCE EXPOSURE	Ensure land use requirements provide for access and mobility of all modes and encourage reductions in vehicle miles traveled. Comply with updates to the Growth Management Act including multimodal level of service standards, requirements to plan for safety of all roadway users, and equitable implementation of a multimodal network that supports mobility for all.	Create a traffic safety culture that encourages observing posted speed limits and wearing seat belts. Provide frequent and reliable transit service to enable mode shift that reduces vehicle miles traveled.	Install mayday systems for post-crash care and speed governors in vehicles owned by people with a pattern of repeated speeding violations.	Provide more recovery area by removing objects near the road without increasing exposure for active transportation users on the sidewalk or shoulder; add signing and delineation at curves; provide separated infrastructure and appropriately controlled crossings for pedestrians and bicyclists.	Update design and operational practices to incorporate human force tolerance limits; apply research-informed speed limit policies aimed at achieving desired target speeds appropriate for the context.	Expand services to reduce response time.	WSDOT, WTSC, County and City Planners and Engineers, Transit Agencies, WSP

The Safe System Approach Elements

The six Washington State SSA elements used in Target Zero are described in the following sections.

ELEMENT 1: SAFER LAND USE

When land use and transportation are planned efficiently, the necessities of daily life can be closer together and easier to access. This reduces exposure to crashes, promotes walking and biking, reduces congestion and air pollution, and increases human interaction, which makes places healthier and more vibrant. The land use and transportation systems work together to create the network within which the users operate and interact with one another and the adjacent land use.

More vehicles within the transportation system results in a greater potential for crashes. Public transportation systems, like buses and light rail help to reduce exposure by removing vehicles from the system, as does active transportation use. Shortening travel distances overall also reduces exposure, and therefore crashes. Safer land use planning is critical to the safe system as it influences how travel will occur and how attractive the use of transportation modes beyond driving are. To achieve optimal transportation safety for people using all modes, land use planning that prioritizes safety and equitable access to mobility is a fundamental starting point.

Land use decisions determine development within the transportation system, the use of different transportation modes, and how much time and effort each trip will take. Land use decisions should facilitate multimodal trips for all purposes, from the 20% of trips for commute purposes to the other 80% of our trips for activities like getting groceries, taking children to school, going to the park, and participating in community life. Separating pedestrians and cyclists from motor vehicle traffic reduces conflicts and allows people to feel safer. Infrastructure investments and land use policies that address people's perceived safety concerns will increase willingness to use multimodal transportation and in doing so reduce the exposure, likelihood, and severity of crashes.

Such approaches are particularly critical in low-income and other under-invested communities where residents are often more dependent upon lower-cost public transit and active transportation options (walking and rolling) rather than travel by private vehicle.

Transportation-efficient locations where many destinations are within close proximity reduce the number and length of trips people need to make. With sufficient density of activity (housing and destinations), roadway infrastructure designs that support active modes and transit access enable mode choices. The associated treatments—e.g., shorter crossings, wide sidewalks, protected bike lanes, etc.—reduce exposure, likelihood, and severity of crashes for all users.

For example, siting primary schools in infill locations (versus greenfield development) makes it easier to provide safe routes to school for students close to housing. While the number and mix of land uses is important in creating vibrant places, the form and scale also matter. Placing limits on block lengths, as was recently codified in the City of Pasco, creates a more favorable environment for pedestrians.[1] Providing housing and services that meet the needs of seniors in locations with frequent and reliable transit service supports their transportation independence as they age out of driving safely.

Infill development in existing urban areas and the creation of town centers all contribute to improving the efficiency of land use and safety. Conversely, greenfield development, especially when it leapfrogs busy roadways, creates unfavorable conditions for people who now must cross busy facilities with high-speed motor vehicles. The potential conflicts are worsened in locations where there is little expectation for the presence of active transportation users. Land use decisions send strong context signals to drivers about what to expect and how to drive to keep everyone safer.

ELEMENT 2: SAFER ROAD USERS

Road user decisions and behaviors fundamentally increase or decrease the likelihood of a crash occurring and the severity of a crash when it occurs. For instance, drivers choosing to drive impaired by substances or drowsy from lack of sleep are less fit to drive, as they have slower reaction times and make poor driving decisions. Another example is road user convenience, which shows up as red light running, speeding, motorcyclists splitting lanes to ride between vehicles, or active transportation users crossing against a Don't Walk traffic signal.

Our safety culture, regulations, and personal values set and define the expectations and boundaries for road user behaviors. These aspects are often articulated and enforced with traffic laws and the "rules of the road."[2] Speeding is one example. Regulatory speed limits are set based on a variety of formulas and definitions of road function. However, the speed a driver selects is affected by more than the law. Just like any human behavior, their speed selection is socially influenced and constructed by what is generally deemed acceptable. For example, neighbors may have shared expectations about an "appropriate" safe speed in their communities, while drivers on a freeway may assume everyone around them has shared expectations about the acceptability of exceeding the posted speed limit. Thus, road users may feel a social obligation to abide by these publicly acceptable behaviors in addition to rules determined through traffic laws.

1 Source to be added

2 Revised Code of Washington (RCW) 46.61, Rules of the Road. https://app.leg.wa.gov/rcw/default.aspx?cite=46.61

Strategies with the goal of increasing road user intentions to behave safely include more formal legal and policy approaches, as well as less formal social norms:

- **Education:** Driver education programs communicate the laws (and norms) that define the standards for safe behavior and the initial development of the skills necessary to practice these safe behaviors. Driver education can also teach skills for road users and prepare them to recognize conditions and scenarios that may pose higher potential for a crash. Public education campaigns—developed and provided in a culturally-relevant manner—help to educate all road users on safe road behaviors. Informally, everyone learns from those around them. Children learn road user behaviors from their parents and other adults by observing them. Employees in businesses and agencies with a fleet may receive training in the workplace.
- **Enforcement:** Traffic laws are intended to separate road users in time and space, providing a level of safety for all road users if the laws are followed. Legal systems communicate the laws associated with safe driving and the penalties for violating these rules. Law enforcement agencies help remind road users of these laws by being visible and present. When necessary, they intervene when road users engage in risky and illegal behaviors. These enforcement functions also deter those who do not come into direct contact with law enforcement. Since law enforcement can't always be everywhere, the system relies upon most road users to follow and model these rules for others.
- **Traffic Safety Culture:** Strategies to grow a positive traffic safety culture can both encourage safe behaviors and discourage violations. Such strategies may rely on social rewards and sanctions from the groups in the social environment, including peers, families, neighbors, employers, co-workers, and other community members. A prosocial traffic safety culture goes beyond the individual to benefit all.

ELEMENT 3: SAFER VEHICLES

Vehicle design serves multiple goals, including efficiency, comfort, status, recreation, business activity, and safety of those inside the vehicle. Ideally, vehicles are designed and regulated to facilitate safe driving behaviors and minimize the frequency and severity of crashes using safety measures that incorporate the latest technologies. Vehicles with increased mass will increase the magnitude of the transfer of force when a crash occurs. In addition, vehicle designs and related policies can increase the likelihood of a crash occurring and the severity when it does occur:

- Most vehicles sold can travel at speeds well above posted speed limits, and no vehicles currently have standard controls to limit driver speeds based on what is safe or legal.
- While electric vehicles are designed to be more energy efficient and reduce emissions, they are heavier and produce more horsepower and faster acceleration compared to similar gas-powered vehicles. This combination can increase crash forces.

- Light duty trucks have become larger over time with a taller box-shaped front grill, making it more difficult for drivers to see objects immediately in front of their vehicle, including young children. When a crash occurs, the vehicle strikes pedestrians or bicyclists higher on their bodies, resulting in head and thoracic injuries that are more serious than a crash involving a vehicle with a low front hood profile. According to an Insurance Institute for Highway Safety (IIHS) review of 18,000 pedestrian deaths, the increased risk of death based upon hood height and shape were:
  - » +26% for a blunt shaped front end (>65 degrees) with a height between 30-40 inches
  - » +45% for hood heights above 40 inches, including sloped (less than 65 degrees) or blunt shapes.[1]
- Vehicle safety improvements over the past few decades have decreased crash forces for vehicle occupants. However, federal regulations have not prioritized improving safety for people outside the vehicle.
- In some states, legislation allowing triple-trailers (a large truck with three separate trailers connected) and vehicle weight limits increases the vehicle mass while decreasing its maneuverability and deceleration, all of which increase crash forces.
- Washington State does not require vehicle inspections, which allows vehicles in poor working order to remain on the road.
- Motorcycles can travel at high speeds and offer riders less stability and protection than cars and trucks.

Clearly, there is a need to improve vehicle design features for safety. There are also new technologies being developed that should be standardized across all vehicles, including technology on the horizon to improve pedestrian detection in automatic braking systems, detection systems that can disable the ignition if impairment is detected, and automatic speed limiters that restrict a driver from exceeding posted speeds. Safety ratings should also evolve to holistically consider all aspects of safety for drivers, other vehicle occupants, and all road users who could be exposed to a collision with the vehicle.

While that state's regulations do not include vehicle safety ratings, we do have regulatory powers associated with driver education and license endorsement requirements that could address growing vehicle sizes and unfamiliar technologies. Taxes and fees can also be structured to incentivize the purchase of vehicles that provide greater safety to vehicle occupants, other motorists, and active transportation users.

1 Hu, W., Monfort, S.S., & Cicchino, J.B. (2023). The association between passenger-vehicle front-end profiles and pedestrian injury severity in motor vehicle crashes. Insurance Institute for Highway Safety.

ELEMENT 4: SAFER ROADS

In the safe system, roadways are designed to reduce conflicts among all road users, including people driving personal and commercial vehicles, transit operators, pedestrians, and bicyclists. Because conflicts cannot be eliminated completely, designing transportation infrastructure to accommodate human mistakes and injury tolerances can reduce the severity of crashes that do occur. Examples include physically separating people using different modes and traveling at different speeds, providing dedicated times for different users to move through a location, and alerting users to objects, encroaching vehicles, and other road users.

Washington State introduced the Safe System Hierarchy of Controls in 2019, a framework prioritizing policies and countermeasures based on their effectiveness. This structure guides WSDOT in design and operational decision-making, supporting the Complete Streets approach and evaluating roadways using the Level of Traffic Stress (LTS) index, which measures factors like roadway width, speed, and traffic volume. In 2024, the Federal Highway Administration (FHWA) adapted this approach into the Safe System Roadway Design Hierarchy, emphasizing physical changes to the road system to enhance safety.

Safety professionals identify, prioritize, implement, and evaluate safety projects, strategies, and countermeasures on the roadway to encourage safe road use. Self-explaining and self-enforcing roadway designs encourage this safe behavior, reducing the potential for fatal or serious injury crashes.

Roundabouts are a good example of self-explaining designs that reduce exposure to crashes by dramatically decreasing the number and type of road user conflicts; reducing the impact angle of vehicles; lowering drivers' operating speeds in the intersection; guiding traffic from all directions in a circular path; and separating traffic by designating travel lanes. Roundabouts also make crossing distance shorter for those walking and biking. Those designed with a divider between directions at the crossing point enable pedestrians to cross only one vehicle travel direction at a time.

ELEMENT 5: SAFER SPEEDS

Reducing speeds can support the Safe System Approach in three ways: improving drivers' field of vision, providing additional time and space for drivers to stop, and reducing impact forces. As speed increases, so does the likelihood of a crash occurring because drivers experience a narrowing of vision, increased response times, and longer stopping distances. And other road users, including active transportation users, are less able to judge or react to the movements of vehicles as speed increases.

Planners and engineers communicate target speeds to drivers by selecting and modifying roadway conditions, setting posted speed limits, and designing the look and feel of the roadway's cross section to provide cues for appropriate speeds. Safer speeds are further supported by communication of regulatory speed limits through signing, driver education, social norms, legal standards, and enforcement. By implementing safe system solutions for safer roads and safer speeds, professionals can reduce both the likelihood that crashes occur and the severity of injury outcomes when they do.

ELEMENT 6: POST-CRASH CARE

Timely and appropriate emergency medical response to traffic crashes saves lives and reduces the severity of injury outcomes. Nearly 40% of all deaths from roadway crashes were delayed; they did not occur at the crash scene. Many trauma-related deaths are preventable with timely access to effective, organized emergency medical services and trauma care systems. People who are injured in crashes rely on first responders to quickly locate and stabilize their injuries and transport them to medical facilities. Post-crash care also includes forensic analysis at the crash site, traffic incident management, and other activities.

CHAPTER 2

Current Conditions

The Target Zero Plan was developed using the best available safety data to identify potential emphasis areas and safety improvement opportunities for all public roads in Washington state. Emphasis Areas were determined from an analysis of 2020-2022 Washington crash data, a comparison of those three years to the previous three-year period (2017-2019), and incorporation of inputs from engagement activities.

CRASH DATA COLLECTION

ANSI D16.1-2017[1] and MMUCC 6th Edition[2] provide guidelines for standard reporting of motor vehicle crashes in the U.S. In Washington, WAC 446-85-010 (reporting threshold), RCW 46.52.030 (reports), and RCW 46.52.070 add requirements. To meet these reporting criteria, a motor vehicle crash must:

1. Have property damage of at least $1000 or injury of any individual;
2. Be on a public roadway;
3. Involve at least one motorized vehicle; and
4. Not involve an intentional act, a legal intervention, or be medically caused.

Crash data are collected from law enforcement by the Washington State Patrol (WSP) and managed by the WTSC and WSDOT. The data from WTSC focuses on fatal crashes and individuals in these crashes while the WSDOT Engineering crash data is enhanced with additional data and covers all reported motor vehicle crashes on public roadways in the state.

Practitioners often use these datasets to determine where, how, and why crashes are happening and what approaches may reduce the potential of crashes happening in the future. WSP, WTSC, and WSDOT provide summaries of the data through online portals:

- WSP Collision Analysis Tool. The collision analysis database stores collision data submitted by law enforcement officers. The web page allows citizens and law enforcement agencies to perform queries and produce reports on collision data within their jurisdiction.
- WTSC Crash Data Dashboards. WTSC maintains crash-level and person-level data for all fatal crashes involving a motor vehicle in Washington. These include official state data reported to the National Highway Traffic Safety Administration (NHTSA) under the Fatality Analysis Reporting System (FARS). Separate dashboards are available by demographics, road user behavior, location, and road type.
- WSDOT Crash Data Portal. This data portal includes high-level and basic summarized crash data of all injury types for members of the public and WSDOT personnel, consultants, and partners.

A fatal crash is a crash within which the most severe injury was a death within 30 days of the crash because of injuries sustained during the crash. A serious injury crash is a crash within which the most severe injury was a serious injury. These injuries can include broken bones; serious lacerations; crush injuries; suspected injuries to the skull, chest, or abdomen; or significant burns.

1 Manual on Classification of Motor Vehicle Traffic Accidents, 2017. 8th Edition

2 Model Minimum Uniform Crash Criteria 5th Edition

COMMUNITY AND LOCAL AGENCY ENGAGEMENT

Transportation leaders are working to align planning and goals for traffic safety with community goals, values, and input. A key success factor in that effort includes engaging directly with community members to ask about their traffic safety concerns and what they feel is important, especially those disproportionately affected by traffic crashes. Robust roadway safety engagement supports projects and strategies that address community needs, especially those that include considerations for differences across cultures. Addressing critical gaps increases equitable outcomes while also building sustainable, inclusive infrastructure, programs, and services that meet the safety needs of all communities.

This Target Zero effort included engagement with traditional roadway safety partners, influencer (non-traditional) safety partners, and the public. Activities included engaging with people who are at a greater likelihood for serious injury and death in traffic crashes and who are most affected by under-investments in traffic safety systems. The team identified Yakima County and South King County as priority geographic areas, given crash history and equity-related data. Alongside intercept surveys at community events and an online survey in these regions, the consultant team hosted facilitated listening sessions with community-based organizations (CBOs) that serve those communities, described in more detail below. The team also hosted facilitated listening sessions with Tribal representatives from around the state (more information below); the purpose was to better understand what they felt was important to address with road safety challenges, to hear concerns, and to invite their recommendations. The Washington Traffic Safety Commission also conducted a large-scale, statewide traffic safety survey.

Along with these engagement efforts, in April 2024, WTSC presented the plan update's current direction to the Washington Transportation Professionals Forum to consult with local and regional agencies.

Target Zero Foundations Workshop

Recognizing that developing the 2024 Target Zero Plan required a departure from the strategies that have become standard in the industry, safety leaders took a significant and crucial early step of bringing together transportation industry leaders, advocates, sponsors, and community organizations for a two-day workshop aimed to align plan authors with shared language, embed shared values within decision-making conversations, and increase readiness for framing and developing the plan.

The Foundations Workshop was held September 26-27, 2023, at St. Martin's University in Lacey, WA, and included a virtual option for those who could not participate in person. Designed to increase collaboration and commitment among traffic safety partners and networks to achieve zero traffic fatalities and serious injuries, the workshop blended essential elements of the Safe System Approach, proactive traffic safety culture, and intersectional equity.

The planning team carefully considered the individuals, advocates, and organizations that should attend, emphasizing collaboration and long-term participation over token involvement. They thoughtfully explored the incorporation of equity principles, meaningful inclusion of community voice, and planned for balance between education, advocacy, and relationship development to reach the objectives over the two-day workshop. The team sent an online survey to invitees in advance of the workshop to tap into partner insights, ensuring the workshop content resonated with the diverse perspectives it sought to represent.

The planning team shaped workshop activities to guide participants through processes that encouraged them to question commonly accepted truths and traditionally held assumptions, and explore new frames for thinking about problems, solutions, and goals.

One workshop exercise included participants identifying system-level challenges and possible actions to overcome those challenges. The challenges identified were:

1. Political climate and policymakers' willingness to make change, especially for potentially unpopular policies.
2. Buy-in at all levels within partner organizations that is needed to support Target Zero and enable the Safe System Approach.
3. Community readiness to change and accept the kind of system needed to achieve Target Zero.

The Foundations Workshop was a critical first step in the plan update, fostering collaboration, innovative thinking, and a commitment to a safer transportation system. The focus was on embracing innovative approaches in our commitment to achieve zero traffic fatalities and serious injuries. Attendees recognized the importance of navigating uncharted territory, particularly in the realm of equity and outreach in strategic highway safety planning. The desire for a "different" plan resonated throughout the conversations, as did the positive response to the inclusion of equity and community sections, underscoring a commitment to a safer, more inclusive transportation system.

King County and Yakima County Surveys

The team identified Yakima County and South King County as priority geographic areas given crash history and demographic disparities. Intercept surveys were conducted in the fall of 2023 at two sites in King County and two in Yakima County. King County surveys were conducted in person at a Kent Community Safety event and in the Skyway neighborhood at a Renton Avenue South community event. Yakima County sites included the Central Washington State Fair and the Yakima Training Center Fall Festival. Survey staff conducted surveys in English and Spanish in Skyway and at both Yakima County events. People were asked to respond to several traffic safety questions. When people named their top three roadway safety concerns, speeding, aggressive or reckless driving, and unsafe roads each made up about 20% of the responses. Distracted driving and lack of pedestrian or biking infrastructure each made up 13% of responses. Uneducated drivers, impaired drivers, and lack of enforcement together made up about 10% of responses.

The survey asked people to choose the two factors that may lead to serious crashes they were most concerned about from a list that included speeding, alcohol or drug-impaired driving, aggressive or reckless driving, other, or none of these. 56% of respondents chose distracted driving, 53% chose aggressive or reckless driving, 43% selected alcohol or drug-impaired driving, and 35% selected speeding.

This table summarizes some of the responses related to enforcement activities:

ENFORCEMENT STRATEGY	SUPPORT	DO NOT SUPPORT	DO NOT CARE
DRIVING UNDER THE INFLUENCE PATROLS	94%	4%	2%
SPEED PATROLS	89%	6%	4%
SEAT BELT PATROLS	88%	5%	7%
DISTRACTED DRIVING PATROLS	76%	10%	14%
RED LIGHT SAFETY CAMERAS	76%	17%	6%
SPEED SAFETY CAMERAS	71%	20%	9%

Among 80 people who responded to questions about what is not working, 59 (74%) of responses were related to enforcement. Respondents said there are not enough patrols, or that the police who are out are not stopping people. They said the penalties for traffic violations were not harsh enough and police are busy with “more serious crimes.” Several described the police as not having the support or the staffing levels needed to properly enforce traffic violations. Some described traffic and red-light cameras as ineffective. Others said there are not enough traffic cameras and red-light cameras.

Community-based Organizations

To learn more about community priorities and perspectives related to improving traffic safety outcomes, the project team organized several listening sessions for CBO representatives (three in October 2023, two in April 2024). Because the data indicated disproportionate crash outcomes for some racial groups, priority audiences included people of color; people who use Spanish as their primary languages, and people who use languages other than English and Spanish. Other focus areas included people with disabilities, people who live in rural areas, people with low incomes, and drivers aged 16-30 years old. Common themes and topics included the following:

- Engaging youth in the process, this may include youth ambassador programs, stipends for participation in traffic safety programs, ongoing training opportunities for safe driving behavior, and youth-focused listening sessions.
- Increasing the language accessibility of essential safety signage. Many people in the state speak Spanish or other languages, so translating signs and other key messages can support safe travel for those who do not use English.
- Providing transit access and safety improvements, including efforts to improve personal safety on public transit.
- Expanding passenger train frequency and speed to reduce traffic loads on major interstates. Improve transit awareness with additional advertisement opportunities designed to promote use.
- Maintaining facilities and providing paths for active transportation users. Lack of upkeep poses challenges for individuals who rely on walking, cycling, or using mobility devices during travel.
- Increasing enforcement for unsafe driver behaviors, including speeding and impairment; coupled with a clear and community-informed definition of safety. Ideas included studying and implementing passive enforcement (e.g., speed feedback signs, empty police vehicle to deter speeding), active enforcement (with a caveat about understanding the potential for negative interactions with police, especially for people of color), and automated enforcement (e.g., red light or speed cameras).
- Designing safer roads, like narrow lanes that require drivers to proceed slowly and cautiously.
- Providing ongoing driver education, including roadway elements like roundabouts and the potential safety implications of driving a large SUV or pickup truck.
- Sharing the road among all users, including people who bicycle and use mobility devices. Lack of sidewalks or shoulders in rural areas introduces potential for crashes for those who use active transportation modes.
- Making safety improvements in areas with high freight traffic, with the installation of additional signing and intersection controls at state highways to provide better and safer connectivity between communities for pedestrians, bicyclists, and rollers. Additionally, updating policies and permits for freight traffic regarding noise controls, air pollution, and loading and unloading zones.

- Updating policies to include developer responsibility in improving traffic safety at the time of development.
- Increasing traffic safety campaigns among all community groups to eliminate disparities in traffic injuries and fatalities.
- Engaging with rideshare providers. These efforts should be led at the community level in languages those communities use.
- Cultivating relationships with vehicle manufactures to ensure human safety and vehicle design are leading to the innovation and design of new vehicles.

Tribal Representation

As part of the Target Zero plan update, WTSC and WSDOT are investing in relationships with Tribes to understand how to better engage and support them, especially in those geographies where they are disproportionately adversely impacted by traffic safety. This includes WSDOT and WTSC participation in Tribal-led traffic safety efforts, including the Yakama Nation Tribal Traffic Safety Committee (TTSC). WTSC also participates in the steering committee for the Northwest Tribal Technical Assistance Program (NW TTAP) and the WA Tribal Transportation Planning Organization (TTPO). The NW TTAP provides free training, technical assistance, and technology transfer to support Tribal transportation programs. WSDOT and WTSC Tribal liaisons also attend the annual Elected Tribal Official Academy Tribal Liaison meeting where all 29 federally recognized Tribes have representatives.

WTSC and WSDOT identified American Indian and Alaska Native people and Tribal lands as a particular safety focus due to overrepresentation found in the reported crash history within and around those sovereign lands. American Indian and Alaska Native people are the most over-represented groups in traffic fatalities relative to their numbers in the general population. The project team engaged Tribal Nations and communities and people within those geographies. In two Tribal listening sessions (October 2023 and March 2024) and other contacts, Tribal representatives provided valuable input, including:

- Identifying concerns about the accuracy of the data about personal injuries and fatalities incurred in roadway crashes.

- Suggesting improved communication between state and Tribal enforcement to have equal accountability and clarity in traffic collision and infraction reporting.
- Requesting additional care be taken regarding the communication of fatalities and serious injuries on Tribal lands, given the personal and traumatic nature of these events. Identifying traffic deaths as "dots on a map" depersonalizes and disrespects the people who were killed.
- Expressing concerns about the plan name and approach, "Target Zero," given the reality of increased roadway crashes in recent years.
- Addressing driver behavior issues, including impairment, speeding, and a concern that lack of seat belt use is becoming an issue again.
- Highlighting the need for increased infrastructure development specifically with the addition of crosswalks, improved lighting, and bike paths.
- Noting the need to align transportation safety improvements with Tribal growth through education and mitigation planning.
- Requesting equal transportation infrastructure investment and maintenance in Tribal areas while sharing stories about the current lack of investment.
- Identifying the need to increase availability of driver education programs for all age groups.
- Addressing specific issues on reservations, including the ramification of freeway crashes resulting in increased traffic on Tribal road arterials that are not designed or operated for this detour.
- Requesting collaborative decision making among jurisdictions that includes Tribal leaders. Many rural Tribal members are often pedestrians bicycle users, and horse riders, while most infrastructure projects in long-range plans are focused on motor vehicles.

Statewide Traffic Safety Survey

The Washington Traffic Safety Survey was a large-scale statewide data collection and analytical effort in 2023 to help gain actionable information to inform WTSC's mission to reduce traffic fatalities and serious injuries within the state. The research team achieved more than 10,000 completed surveys by adults 18+ living in Washington through both mail and online modes. Respondents included participation from all counties in Washington State and all 17 Target Zero regions.[1]

The survey was described as a survey to collect opinions and experiences about traffic safety in Washington. Questions ranged widely among topics, including those shown in **Figure 7**. The analysis of the survey indicated that people felt safest using public transportation and least safe walking, jogging, or riding a bicycle on public roads. These results highlight the need to focus the safety plans on vulnerable road users to ensure they feel safe to use public roads. Most people agreed that zero deaths and serious injuries is the only acceptable goal for Washington public roads. This is a strong positive norm that can support innovative traffic safety plans to support Target Zero.

1 WA Traff Safety Survey Methodological Plan, Market Decisions Research, 2023. https://wtsc.wa.gov/wp-content/uploads/2023/10/2023-Survey-Methodological-Plan.pdf

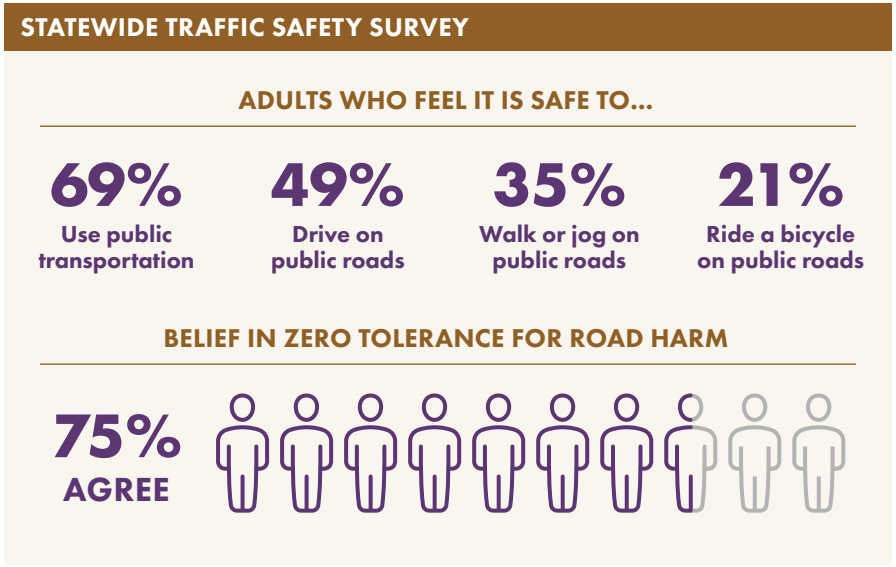


FIGURE 7. SAMPLE SURVEY RESULTS, STATEWIDE TRAFFIC SAFETY SURVEY, 2023

Risky Driving Behaviors. An important part of traffic safety culture is our perception of behaviors by people important to us in our social environment. The survey indicated that most people (86%) believed others disapproved of them engaging in risky driving behaviors such as speeding, driving distracted, driving without a seat belt, or driving impaired. Moreover, the more people believed people important to them disapproved of risky behaviors, the less likely they themselves were to report 1) engaging in those risky behaviors or 2) being involved in at-fault crashes. Such evidence suggests that strategies that emphasize social approval for safe behaviors may be effective in reducing risky behaviors.

Prosocial Behaviors. Most strategies try to change the risky behavior of individuals, but survey results indicated that most people in Washington do not frequently engage in risky behaviors. Most people behave in ways that support safety. This is a strength we can use to encourage the minority of people engaging in risky behaviors to be safer. These strategies encourage people in important social groups to take actions to encourage safer behaviors. These "prosocial" behaviors are intended to benefit others in our social environment. This includes people who do not have traditional traffic safety roles. Examples of prosocial behaviors to improve traffic safety are encouraging passengers to ask the driver to wear their seat belt, friends encouraging each other to not speed, and families creating rules to turn off the cellphone while driving. The survey showed that most people in Washington (92%) are comfortable taking prosocial actions that help others be safer. This suggests there is a strong foundation for supporting strategies that encourage prosocial behaviors to encourage the minority of people in our social environment who are engaging in risky behaviors to drive more safely.

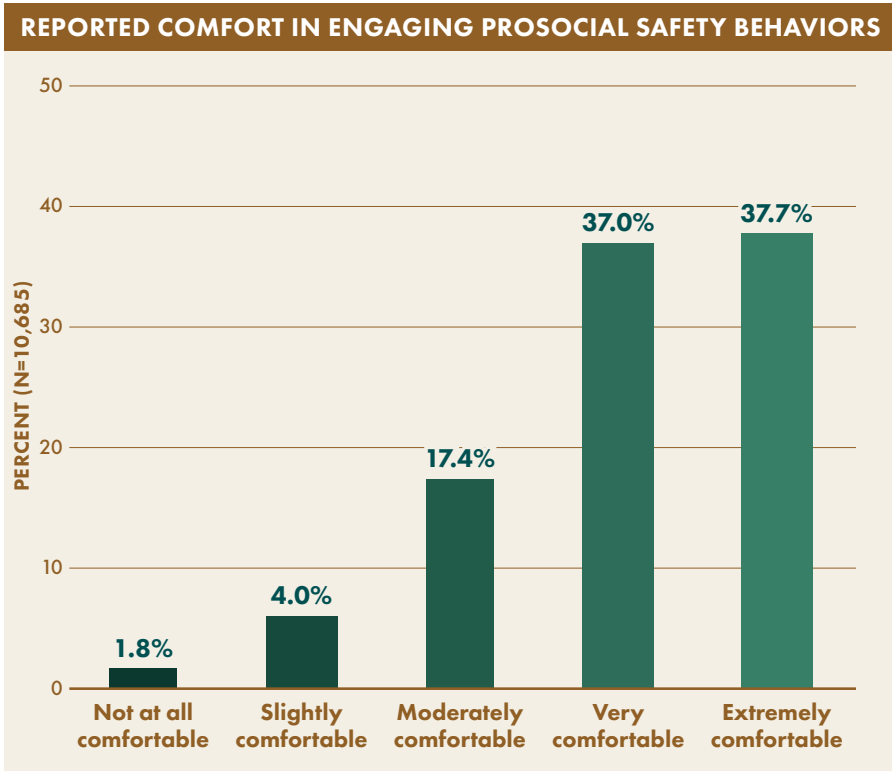


FIGURE 8. REPORTED COMFORT IN ENGAGING PROSOCIAL TRAFFIC SAFETY CULTURE BEHAVIORS

Traffic Safety Culture Strategies. Strategies based on traffic safety culture measure the existing culture to determine which cultural beliefs influence the behavior we want to change. For example, survey results indicated that people who reported speeding more regularly believed it was more common, assumed it to be less dangerous, and perceived less social disapproval from important others. This suggests that the intention to speed could be reduced in several ways:

- **Attitude.** Describe the dangers of speeding
- **Social Support Norm.** Demonstrate social disapproval by the social groups the audience identifies with strongly
- **Perception Norm.** Dispel the mistaken belief that risky behavior such as speeding is common
  - » For example, whereas only a minority of people (17%) reported speeding often or regularly, the perception was that most people (50%+) were frequently speeding more than 30% of the time.

Washington Transportation Professionals Forum

Washington Transportation Professional Forum is a group of practitioners that includes more than 1,000 individuals from Washington's cities, counties, Tribes, regional planning organizations, consultants, vendors, nonprofits, and other organizations. With meetings facilitated by WSDOT, its purpose is to discuss local agency transportation issues of statewide significance. Since 2020 the events have been held as virtual webinars.

On April 30, 2024, WTSC presented to 273 forum attendees, sharing the status of the Target Zero Plan update, identified emphasis areas, and the 2024 update's foundational elements: prosocial traffic safety culture, equity, and the Safe System Approach. During the presentation, participants were asked to complete a questionnaire about their use of the Target Zero Plan and recommendations for the update. Results of the questionnaire included the following feedback:

- 44% reported never using the Target Zero Plan. Most who reported using it do so most commonly when working on a project proposal or funding request.
- Suggested improvements for the 2024 update included the following:
  - » Make the recommendation section more prominent.
  - » Categorize countermeasures by user type.
  - » Reduce length.
  - » Work toward realistic goals. Zero fatalities goal is impossible to meet.
  - » Speak to the life cycle cost of safety enhancements so policy makers understand the cost associated with operations and maintenance.

Additional Consultation with Traditional and Influencer Partners

WTSC and WSDOT staff and consultant team members consulted with partners at the following addition events throughout the development of the Target Zero Plan:

- MPO/RTPO/WSDOT Coordination Committee Meeting, May 14, 2024. Mark McKechnie presented the Target Zero Plan activities to date to regional planning organization leaders, solicited feedback during the meeting, and invited additional feedback through the review process.
- [Other consultation activities to be added]

EMPHASIS AREAS SELECTION

Findings from analysis of crash data, the statewide attitudinal survey of drivers, and discussions with the public at events, community-based organizations, and Tribal representatives led to the primary areas of emphasis for the 2024 SHSP.

One way to analyze crashes that result in fatalities and serious injuries is to categorize them by different attributes. These can include road user behaviors, age, vehicle types, and location type. In Washington, the attributes of focus are called emphasis areas. To support the selection of emphasis areas for this Target Zero Plan, the team studied the most common contributors (proportions) in the three-year period (2020-2022) and the change over time (trends) between the 2017-2019 period and 2020-2022 period.

Proportions. Identify the contributing factors most common to fatal and serious injury crashes, to identify overrepresentation of certain locations, behaviors, and road users that can be feasibly addressed during the life of this Target Zero Plan. **Table 2** lists the Target Zero emphasis areas in order of fatality proportion.

Trends. Systems thinking includes analysis of trends in system performance over time, such as the percentage change in fatalities and serious injuries between two time periods (2017-19 vs 2020-22).

TABLE 2. TARGET ZERO EMPHASIS AREAS

EMPHASIS AREA	FATALITIES 2020-22	FATALITY PROPORTION (% OF TOTAL)	CHANGE IN AVERAGE FATALITIES: 2017-19 TO 2020-22	SERIOUS INJURIES 2020-22	SERIOUS INJURIES PROPORTION (% OF TOTAL)	CHANGE IN AVERAGE SERIOUS INJURIES: 2017-19 TO 2020-22
ALL AREAS	1,991	100%	+21%	8,440	100%	+26%
IMPAIRMENT INVOLVED	1,188	60%	+29%	1,928	23%	+40%
LANE DEPARTURE	877	44%	+10%	3,363	40%	+35%
SPEEDING	633	32%	+25%	2,090	25%	+33%
YOUNG DRIVER (15-24) INVOLVED	519	26%	+23%	2,419	29%	+27%
INTERSECTION RELATED	472	24%	+33%	2,822	33%	+23%
ACTIVE TRANSPORTATION USERS	428	21%	+19%	1,456	17%	+2%
UNRESTRAINED OCCUPANT	417	21%	+31%	978	12%	+48%
DISTRACTED ROAD USER	347	17%	-17%	1,525	18%	-19%
MOTORCYCLISTS	318	16%	+25%	1,440	17%	+18%
HEAVY VEHICLE INVOLVED	255	13%	+10%	506	6%	+17%
OLDER DRIVERS (70+) INVOLVED	251	13%	+11%	838	10%	+26%

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard. For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

To further describe the data above, the following are data definitions, additional information, and subsets of the emphasis area data. Detailed definitions (i.e., data queries) are available in **Appendix X**. In some cases, the fatality and serious injury definitions are not identical because coding criteria differ between the two databases where these data are managed. The summary definitions below are focused on fatalities unless otherwise noted.

Impaired Road Users Involved is defined slightly differently for fatalities and serious injuries.

Fatalities: As 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, or reported as impaired by alcohol or drugs by investigating law enforcement.

Serious Injuries: Any driver, pedestrian, or bicyclist for whom 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)'. In addition, Unit Impairment is identified as 'Impaired by Alcohol', 'Impaired by Drugs', or 'Impaired by alcohol and drugs'. Note that road users that are seriously injured are rarely tested for BAC or drugs.

This emphasis area includes all modes. Of the 1,188 fatalities that occurred in crashes involving impairment by any road user (motor vehicle driver, pedestrian, bicyclist, etc.), 1,012 (85%) involved an impaired motor vehicle driver.

Distracted Road Users. Distraction includes a long list of items, including but not limited to other occupants, a moving object in the vehicle, eating or drinking, or using portable electronic devices.

This is a contributing factor that can be difficult to capture, since law enforcement complete reports after the crash event occurred. Due to a coding change in the Police Traffic Collision Report (PTCR) in 2020 related to distracted driving, WTSC studied the effects of that change, promotion of the Driving Under the Influence of Electronics (E-DUI) Act, and other factors on the Distracted Road User Involved data. Researchers discovered that the discontinuation of the "inattention" code in the PTCR correlated with use of "other distractions" and "unknown distraction" increased at the same rate, essentially replacing that code. In addition, use of the specified distraction codes also increased—most notably cell phone use and distractions outside the vehicle.[1]

> "Roadway design, pedestrian and bike infrastructure, and roadway maintenance came up again and again in both the in-person and online outreach as ways to increase safety and demonstrate investment in rural communities, communities of color, and low-income communities."

Speeding Drivers. Speeding is defined as exceeding the posted speed limit or driving too fast for conditions at the time of the collision as indicated by the investigating officer.

1 Hoff, S. Distracted Driving in Washington State During COVID-19: 2020 Observation Survey, Enforcement, and Crashes, WTSC, 2021. https://wtsc.wa.gov/wp-content/uploads/dlm_uploads/2021/03/Distracted-Driving-in-WA-State-During-COVID.pdf

Unrestrained 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.

Young Driver (ages 15-24) Involved. Involved is defined as a fatal crash or a fatality that involved a specific factor, such as a young driver involved, but that does not necessarily indicate the young driver caused the crash or was the fatality in the crash. This group of motor vehicle drivers and can be further broken down into subgroups.

- *15-17-year-old drivers involved:* 5% of fatalities and a 116% increase from 2017-19
- *18-20-year-old drivers involved:* 9% of fatalities and a 21% increase from 2017-19
- *21-24-year-old drivers involved:* 14% of fatalities and an 11% increase from 2017-19

Older Driver (ages 70+) Involved. Involved is defined as a fatal crash or a fatality that involved a specific factor, such as an older driver involved, but that does not necessarily indicate the older driver caused the crash or was the fatality in the crash. This group of motor vehicle drivers and can be further broken down into subgroups.

- *70-79-year-old drivers involved:* 8% of fatalities and a 12% increase from 2017-19
- *80+ year-old drivers involved:* 9% of fatalities and a 34% increase from 2017-19

Motorcyclist Fatalities and Serious Injuries. Different from the "involved" definitions for some other emphasis areas, this includes only the number of motorcyclists (drivers or passengers) who were themselves killed or seriously injured.

Active Transportation User Fatalities and Serious Injuries. Different from the "involved" definitions for some other emphasis areas, this includes only the number of active transportation users who were killed or seriously injured in a crash involving a motor vehicle. Active transportation users are people who use a human-scale and often human-powered means of travel to get from one place to another. Active transportation includes walking, bicycling, using a mobility assistive or adaptive device such as a wheelchair or walker, using micromobility devices such as skateboards, and using electric-assist devices such as e-bikes and e-foot scooters.

Heavy Vehicle Involved. Defined as a vehicle coded Commercial Motor Vehicle in RCW 46.25.010(06). It's predominantly based on vehicle weight, passenger capacity, transport of hazardous materials, or use as a school bus. The detailed definition is provided in **Appendix X**.

Intersection Related. This 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.

Lane Departure. Includes both run-off-road and opposite direction crashes (excluding wrong-way crashes), as defined in detail in **Appendix X**.

TRIBES AND TARGET ZERO

There are 29 federally recognized Tribes in Washington State, and each one is a sovereign nation. Through the Centennial Accord, the State of Washington and Tribes have formally committed to working together on a government-to-government basis to address several 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 and Tribal government representatives were consulted in listening sessions during development of the 2024 plan and were involved in developing and reviewing the content of this chapter.

From 2020-2022, 107 American Indians and Alaska Natives (AI/AN) died in traffic crashes in Washington State. These crashes occurred on reservation and non-reservation roadways. During that period, the American Indian/Alaska Native (AI/AN) traffic fatality rate by population was 39 deaths per 100,000 people in the population. This rate is more than three times higher than the rate for the next highest race/ethnicity.

> “Federal and state funding sources typically require that grant recipients expend their own resources initially and then submit invoices for reimbursement by the funder . These requirements pose significant risks and barriers to Tribes, including those with members who would benefit most from these programs.”

FATALITY RATE IN WASHINGTON STATE, 2020–2022

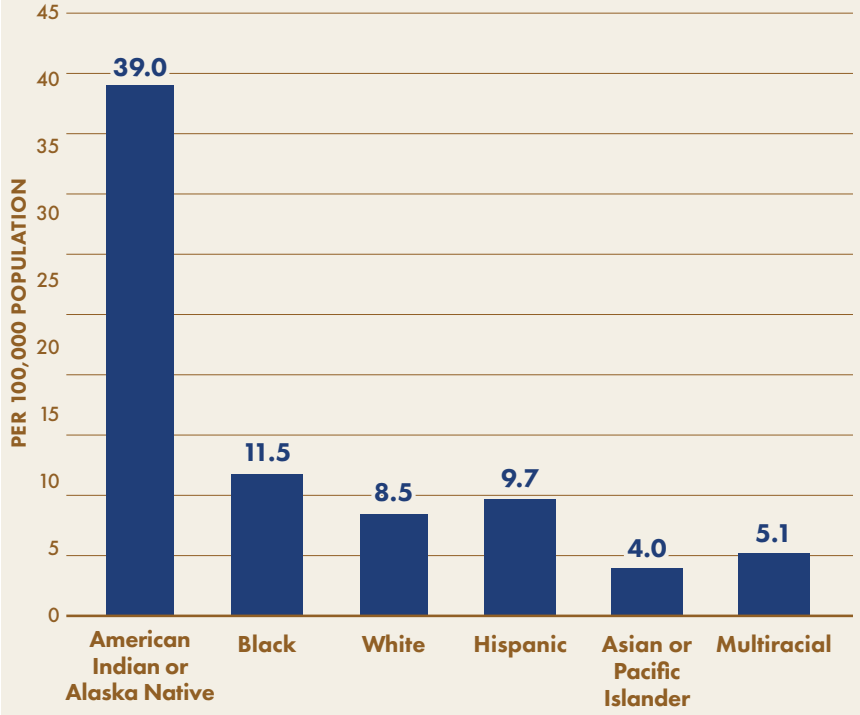


FIGURE 9. FATALITY RATE PER 100,000 POPULATION IN WASHINGTON STATE, 2020-2022

During this period, 69% of the AI/AN people killed in traffic crashes died in events occurring in just six of Washington's 39 counties, as shows in **Table 3**. More than one-third occurred in Yakima County alone. Yakima County also experienced one of the highest proportions of all fatalities that were AI/AN people; this list also includes Ferry County and Okanogan County.

TABLE 3. COUNTIES WITH THE HIGHEST NUMBER OF AMERICAN INDIAN AND ALASKA NATIVE PERSONS KILLED IN TRAFFIC CRASHES, 2020-2022

COUNTY	AI/AN % OF COUNTY POPULATION	AI/AN FATALITIES	ALL TRAFFIC FATALITIES	AI/AN % OF COUNTY FATALITIES
YAKIMA	6.6%	37	154	24.0%
KING	1.1%	12	398	3.0%
SPOKANE	1.7%	7	150	4.7%
OKANOGAN	12.5%	6	22	27.3%
WHATCOM	3.1%	6	43	14.0%
SNOHOMISH	1.6%	6	146	4.1%

TABLE 4. WASHINGTON COUNTIES WITH THE HIGHEST PERCENTAGES OF TRAFFIC FATALITIES THAT INVOLVE AN AMERICAN INDIAN OR ALASKA NATIVE PERSON, 2020-2022

COUNTY	AI/AN % OF COUNTY POPULATION	AI/AN FATALITIES	ALL TRAFFIC FATALITIES	AI/AN % OF COUNTY FATALITIES
FERRY	18.3%	4	8	50.0%
OKANOGAN	12.5%	6	22	27.3%
YAKIMA	6.6%	37	154	24.0%
PEND OREILLE	3.1%	2	10	20.0%
CLALLAM	6.0%	5	27	18.5%
WHATCOM	3.1%	6	43	14.0%

> "For those making recommendations for changes on reservation, please… review some of the legal complications that reservations deal with related to land ownership, right of way procurement, road law enforcement, and other legal challenges Tribes experience."
>
> *—Tribal listening session participant*

Contributing Factors. Attributes related to AI/AN fatalities match statewide emphasis areas. The highest proportion is Impaired Road User Involved, at 67% (72 of 107). See **Figure 10** on the following page.

FIGURE 10. RISK FACTORS INVOLVED IN AMERICAN INDIAN AND ALASKA NATIVE FACILITIES (N=107), 2020-2022

**Note: Categories are not mutually exclusive. N=107*

This list below shows the higher likelihood of an AI/AN person being killed in crashes that involve certain contributing factors. For example, and AI/AN person is 6.3 times more likely to be killed as a pedestrian than all other races/ethnicities in Washington.

- Unrestrained Fatalities: 7.2 times
- Pedestrian Fatalities: 6.3 times
- Impaired Road User Involved Fatalities: 5.4 times
- Total Fatalities: 4.8 times
- Speeding Involved Fatalities: 2.7 times

These are the statistics, but the underlying stories are about real people and the families they leave behind. WTSC also conducts case file reviews of individual crashes, including pedestrian and bicyclist crashes under RCW 43.59.156. Beginning in 2023, once a review scope is defined, crashes involving victims who are Tribal members are intentionally selected to be included in the review. While they are small in number, they are important to understand as American Indians and Alaska Natives are the most overrepresented groups in traffic fatalities, whether they occur on Tribal lands or elsewhere in the state.

The emphasis areas in Target Zero reflect Tribal needs in recognition of the obvious disparate effects. Several Tribes throughout Washington State received funding under USDOT programs to develop their own traffic safety plans for their reservations. The unique priorities of individual Tribes are reflected in those plans.

Barriers. While the same risk factors that contribute to fatal and serious crashes statewide also impact Tribal members, it is important to recognize the disparity in magnitude and the need to identify responses in consultation with Tribal leaders in a manner that respects and reflects Indigenous knowledge and culture.

Transportation planning and engineering, road user behavior, and prosocial traffic safety culture on Tribal lands are important areas of focus in Washington. Reservations 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.

One of the problems that compounds these jurisdictional barriers is the set of complex rules governing federal and state funding. Many Tribes employ few if any people to plan, build, and maintain transportation systems for Tribal members. Like other governmental entities, they rely upon the availability of federal and state funds available through grants. Tribes with few staff members often lack the positions needed to apply for grants and then monitor, track, and account for grant funds. Federal and state funding sources typically require that grant recipients expend their own resources initially and then submit invoices for reimbursement by the funder (usually a state agency). These funding requirements and limitations pose significant risks and barriers to Tribes, including those with members who would benefit most from these programs. Agencies do not have the discretion or flexibility to modify these requirements, even when they believe it would be reasonable to do so.

To address this complex mix of jurisdictions and experts, Tribes have multiple forums that meet regularly for transportation and traffic safety issues. The WA Tribal Transportation Planning Organization (TTPO) holds quarterly meetings to support the development of Tribal transportation planning capacity. The TTPO goal is to improve Tribal government's planning and programming activity through enhanced coordination with Tribal, federal, state, and local governments. Several Tribes throughout Washington State received funding under USDOT programs to develop their own traffic safety plans for their reservations. The unique priorities of individual Tribes are reflected in those plans.

Priority Strategies

The following actions have been identified as priority strategies to reduce the frequency and severity of roadway crashes on Tribal lands and those crashes involving American Indians or Alaska Natives.

Increase Tribal Representation in Leadership Positions. Including the input of Tribes through representation can influence projects and strategies to improve roadway safety for American Indians and Alaska Natives, and reduce the potential for crashes on Tribal lands. In 2019, the legislature passed a law tying state transportation funds to the inclusion of Tribes on regional transportation planning boards.

Tribal Traffic Safety Plan: Tribal agencies seek funding to support the gathering and analysis of traffic crash and fatality data to develop a Tribal Traffic Safety Plan. This plan can help Tribes identify needs specific to their geographies and communities, and then prioritize projects and strategies.

Seat Belt and Child Passenger Restraint Use: The WTSC Tribal Liaison has participated in a partner group to provide input into the development of a "How-To Guide for Increasing Seat Belt Use in Indian Country." The focus was on developing a guide for state transportation officials and other entities to help them be more responsive to Tribes' needs and explore culturally tailored countermeasures and strategies. Information gleaned from these partner meetings will help support countermeasures and strategies to address seat belt use rates amount Washington Tribes. The How-To Guide should be finalized in late 2024.

Child passenger safety technician training courses (CPST) will continue to be offered to Tribal Nations. The COVID pandemic severely disrupted these and other Tribal traffic safety activities. In the past year (2023-24) CPST courses were offered to the Muckleshoot Indian Tribe, Spokane Tribe of Indians, and the Confederated Tribes and Bands of the Yakama Nation.

Tribal Law Enforcement Tools: The WSTC Tribal Liaison is engaging Tribal police chiefs in traffic safety discussions and planning to better understand their needs, which will be unique for each Tribe. These discussions also allow an opportunity for respectful inclusion of indigenous knowledge to support much more meaningful decision making and partnerships with WTSC. The size and location of Tribal lands and police agencies vary widely. Some only have a few officers. In addition to basic equipment and enforcement tools, other effective tools include incentives for positive behavior, which have been effective in the past and fit with their prosocial traffic safety culture.

Examples include the following:

- Bike and pedestrian safety event equipment (bike helmets, pads, bike repair kits, reflectors, coloring books, helmet stickers)
- Incentives for seat belt checks (t-shirts, sweatshirts, reflective vests)
- Safety vests
- Portable Speed Feedback Signs
- Automated External Defibrillators (AEDs) for patrol cars
- Portable Breath Tests (PBT)
- LiDAR Speed Device
- Body cameras for traffic stops
- Traffic batons
- StickBots

Active Transportation Grants: WSDOT's Active Transportation Division oversees grant programs that invest in pedestrian and bicyclist facilities, speed management and traffic calming, and education or encouragement programs. Tribes are eligible for all of these and in 2023 the division began developing an active transportation assistance program prioritizing Tribes and local agencies that haven't received grants in the past, have safety needs based on crash data, and score high on equity or environmental justice measures. This program aims to build capacity and advance the partnerships needed to provide safety improvements on streets and roads that serve Tribal members and lands.

EMERGENCY MEDICAL RESPONSE

People who are injured in crashes rely on first responders to quickly locate and stabilize their injuries and transport them to medical facilities.

Post-Crash Care Challenges. A common challenge that affects all residents in Washington are limited Emergency Medical Services (EMS) and hospital resources. Delays in response across urban, suburban, and rural areas have been shown to result in increased mortality (Byrne, et al., 2019). Rural communities are particularly affected due to long transport distances, weather/geography, limited or non-existent EMS resources, the overall lack of availability and skill of trained prehospital providers, and delays in transfer to the appropriate level of care. These issues can result in poorer outcomes for people in rural communities, with rural residents 14% more likely to die from trauma than their urban counterparts (Jarman, et al., 2016).

Beyond the limitation of EMS resources, rural communities also lack the acute hospital resources to treat the most severely injured crash victims, which results in the transfer of these patients to a level I or II trauma center for definitive care. These delays can often be exacerbated by geography, availability of transport services, and availability of hospital system resources. Much like delays in EMS response and transfer, delays in transfer from rural hospitals to definitive care can result in statistically significant increases in trauma patient mortality (Gough, et al., 2020).

Post-Crash Care Successes. Washington has developed a coordinated system that seeks to provide appropriate and adequate care, with the goal of reducing death and disability. Washington State is fortunate to have an inclusive trauma system that aims to support optimal coordination of care. Inclusive trauma systems are associated with lower morality rates (Utter, 2006).[1] Over the past 25 years, improvements to this system have contributed to the lowest mortality rate of trauma patients involved in motor vehicle crashes in recent history: from 9.7 deaths per 100 patients in 1995, to only 2.6 per 100 patients in 2017.

1 Utter GH, Maier RV, Rivara FP, Mock CN, Jurkovich GJ, Nathens AB. Inclusive trauma systems: do they improve triage or outcomes of the severely injured? J Trauma. 2006 Mar;60(3):529-35; discussion 535-37. doi: 10.1097/01.ta.0000204022.36214.9e. PMID: 16531850.

Priority Strategies to Continue Improving Post-Crash Care. EMS, unlike law enforcement and fire departments, are not considered a foundational public health service by the State of Washington, and as such are not funded at the state level. Promoting EMS to this level could help provide more equitable, sustainable resources for services providers statewide. The following additional priority strategies can improve post-crash care.

- **EMS and Trauma Steering Committee.** The secretary-appointed, 30-member steering committee on EMS and trauma systems consists of representatives from surgeons and physicians, hospitals, prehospital providers, firefighters, local health departments, consumers, and other affected groups. Target Zero leaders should increase participation in its technical advisory committees to increase collaboration.
- **Increase Training.** Support rural EMS and trauma hospital training to improve clinical competency and reduce EMS response time and interfacility transfer times. The Washington Chapter of the American College of Surgeons Committee will be providing Rural Trauma Team Development Courses in counties with higher-than-average traffic fatality rates and who are in areas with 60+ minutes ground transport time to an existing level I or II trauma center.
- **Prehospital Trauma Triage Designation Procedure**[1] education and outreach. These newly updated field triage guidelines represent the current best practice for the triage of trauma patients and allow EMS providers to quickly and accurately determine if the casualty is a major or moderate trauma patient. It also aids in decision making to determine the most appropriate transfer facility location.
- **Share Trauma Resources.** Connect Target Zero Managers with regional trauma resources to engage in their coalitions. Washington has eight trauma care regions with a designated regional administrator that functions in a similar capacity, but with the state trauma system.[2] These regions have regional system plans, regional councils and regional QI committees that address system and provider care concerns. These regional committees and regional administrators could be valuable partners for TZM's when building their coalitions.

1 https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/530143.pdf

2 EMS and Trauma Steering Committee, WA State Dept of Health, https://doh.wa.gov/public-health-provider-resources/emergency-medical-services-ems-systems/ems-and-trauma/councils-and-committees/chairs-and-administrative-staff

TRAFFIC DATA SYSTEMS

Quality traffic records data is required for professionals to provide information that supports the Safe System Approach. With it, they:

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

Traffic records systems include data from crashes, roadway infrastructure, driver licensing and vehicle registrations, citations and adjudications, and injury surveillance. Individually and combined, these data are essential for making informed traffic safety decisions.

Traffic Records Program Structure

The Traffic Records Program (TRP) is managed by the WTSC, Research and Data Division (RADD). The TRP consists of a grant program administered in accordance with 23 U.S.C. 405(c) through coordination with the Traffic Records Governance Council (TRGC) and Committees. Grants are awarded to agencies to implement projects that make traffic records systems improvements.

The TRGC also provides partner coordination and consensus oversight of traffic records systems improvements projects not funded through TRP grants.

The mission of the TRGC is to enhance transportation safety through coordinated projects to provide more timely, accurate, complete, uniform, integrated, and accessible traffic records data.

Many partner state agencies are represented on the TRGC and support the development, maintenance, and improvement to traffic records data systems including:

- Washington Traffic Safety Commission (WTSC)
- Washington State Department of Transportation (WSDOT)
- Washington State Patrol (WSP)
- Washington State Department of Health (DOH)
- Washington State Department of Licensing (DOL)
- Washington Association of Sheriffs and Police Chiefs (WASPC)
- Washington Technology Solutions (WaTech)
- Washington State County Road Administration Board (CRAB)
- Washington Administrative Office of the Courts (AOC)
- Washington State Office of Financial Management (OFM)

Several interrelated systems gather, maintain, store, and manage the data generated by agencies, associations, boards, and organizations.

The primary state traffic records data systems include:

CRASH

- WSDOT Collision Location and Analysis System (CLAS)
- WSP Requests for Electronic Collision Records (WRECR)
- WTSC Coded Fatal Crash Files (CFC)
- WSP Statewide Electronic Collision and Ticket Online Records (SECTOR)
- WaTech Justice Information Network Data Exchange (JINDEX)

DRIVERS AND VEHICLES

- DOL Driver and Vehicle System (DRIVES)

ROADWAY

- WSDOT Traffic Information and Planning Support (TRIPS)
- CRAB Geographic Information System – Mobility (GIS-Mo)
- WSDOT Highway Performance Monitoring System (HPMS)

CITATIONS & ADJUDICATIONS

- WSP Statewide Electronic Collision and Ticket Online Records (SECTOR)
- WaTech Justice Information Network Data Exchange (JINDEX)
- AOC Justice Information System (JIS)

INJURY SURVEILLANCE

- DOH Rapid Health Information Network (RHINO)
- DOH Washington Emergency Medical Services Information System (WEMSIS)
- DOH Comprehensive Hospital Abstract Reporting System (CHARS)
- DOH Trauma Registry
- DOH Death Vital Statistics
- Data Integration
- OFM Traffic Records Integration Program (TRIP)

Traffic Records Governance Council (TRGC) Strategic Framework

The TRGC measures the effectiveness of TRP efforts by tracking the following attributes:

- **Timeliness.** The time between the event and entry of the event into a database.
- **Accuracy.** The degree to which data is error-free and not duplicated in a database.
- **Completeness.** The degree to which records and attributes are present or missing from a database.
- **Uniformity.** The consistency of data from various jurisdictions with the same data definitions and reporting procedures.
- **Integration.** The ability of records in one database to be linked to records in another database using common identifiers.
- **Accessibility.** The ability of legitimate users to successfully obtain data or information.
- **Modernization.** The stability, security, efficiency, and sustainability of systems infrastructure.

The TRGC 2024-2026 Strategic Framework identifies key objectives in each of six different core traffic records systems to achieve traffic data system improvements, as illustrated in **Table 5**.

TABLE 5. KEY OBJECTIVES FOR TRAFFIC DATA SYSTEMS IMPROVEMENT

COORDINATION & COLLABORATION	CRASH	ROADWAY	DRIVER/VEHICLE	CITATION & ADJUDICATION	INJURY SURVEILLANCE
• Develop and implement an Enterprise Performance Management System to track data quality across all core systems. • Implement the Traffic Records Integration Program (TRIP) governance plan. (integration, accessibility) • Upgrade JINDEX from on premise to Azure Logic Apps. (modernization)	• Replace the SECTOR application with TraCS and implement master index functionality. (modernization) • Establish a statewide electronic crash/ticketing training coordinator position. (accuracy, uniformity) • Improve reporting/analysis of vulnerable road users involved in transportation system conflicts. (completeness, accessibility) • Increase MMUCC compliance. (uniformity)	• Implement all MIRE FDE requirements by 2026. (completeness, uniformity) • Improve GIS-MO training for the county roadway network. (uniformity) • Modernize HPMS/LRS legacy traffic and roadway systems. (modernization)	• Develop and maintain a data catalogue in DRIVES. (accuracy, completeness, accessibility) • Design and implement a legal case management system for administrative hearings/appeals. (completeness, uniformity, accessibility) • Develop a linked analytical database for internal and external partner analyses. (integration, accessibility)	• Automate exchange of information between CLJs and DOL. (timeliness, accuracy, completeness) • Improve integration of localized electronic court record systems into statewide case management systems. (completeness, uniformity) • Improve integration of records across court systems using person identifiers for complete court history. (completeness)	• Develop interfaces between EMS, ED, and other hospital data for improving quality and analysis. (accuracy, completeness, integration) • Improve hospital data quality reporting, and engagement. (accuracy, completeness) • Develop hospital data performance measures, key performance indicators, and surveillance tools for traffic safety. (accessibility)

The TRGC provides policy oversight and governance for statewide traffic records strategies and activities and is responsible for implementing the key objectives in the strategic framework. This work is achieved through the TRGC's five committees:

- **Electronic Traffic Information Processing (eTRIP).** The eTRIP committee is a forum for coordinating the technical aspects of traffic records data systems that support the electronic collection, storage, quality control, and transmission/exchange of traffic records data.
- **Grant Management and Review (GMR).** The GMR committee facilitates accountability and shared expertise among TRP grantees to ensure efficient and well-coordinated use of TRP resources.
- **Traffic Records Integration Program (TRIP).** The TRIP committee advises OFM TRIP staff on data governance issues and solutions, provides oversight of data request applications, and contributes traffic record data expertise regarding data use cases.
- **Traffic Data Analysis and Evaluation (TDAE).** The TDAE committee provides consultation and review of traffic records data analyses, research, and traffic safety program evaluation.
- **SECTOR Replacement Governance (SRG).** The SRG committee provides executive level oversight of the SECTOR replacement project. This temporary committee will sunset once SECTOR is decommissioned.

Through the TRGC's highly coordinated efforts and committee partnerships, the TRP can accomplish multiple annual data quality improvements across many traffic records data systems.

Traffic Records Priority Projects

The TRGC will implement multiple projects to address the 2024-2026 Strategic Framework key objectives, and support projects and efforts that fall outside of the key objectives but still make measurable improvements to traffic records data systems. While achieving all the key objectives is the goal, the following projects are TRGC priorities that are already underway and provide significant improvements to the TRP ecosystem.

Traffic Records Integration Program (TRIP). The purpose of TRIP is to develop, maintain, and integrate traffic records datasets across the six core traffic data systems: crash, driver, vehicle, roadway, citation, and adjudication, and injury surveillance. TRIP links existing administrative datasets from multiple partner agencies to create a comprehensive crash-outcome dataset. This dataset enhances capacity to assess collision contributing factors and the human and financial toll from crashes; expands the potential to assess behavioral factors; and adds capacity to assess the burden on the state's legal and administrative systems. TRIP accomplishes this by using crash records as the foundational integration point for linking pre- and post-crash data. TRIP staff and partners perform analysis of TRIP data to generate new information that can only be derived from integrated records to address long standing traffic safety issues as well as identify new crash contributors or protective factors for all road users in Washington.

- **Outcome:** By linking traffic records data, the state will have a comprehensive crash-outcome dataset to support traffic safety research and evaluation.
- **More information:** Traffic Records Integration Program

Statewide Electronic Collision and Ticketing Online Record (SECTOR) Replacement. Law enforcement partners in Washington use the SECTOR system for citation and crash reporting. First implemented in 2007, the SECTOR system is aging and in need of replacement. In June 2022, the SECTOR Replacement Governance (SRG) committee—comprised of those with appropriate knowledge and decision-making authority concerning traffic records systems—was formed to provide multi-agency collaboration on the strategy and policy operations of the SECTOR replacement efforts led by the Washington State Patrol (WSP). Efforts to identify a worthy replacement system led Washington to the Traffic and Criminal Software (TraCS) offered by the Iowa Department of Transportation. The SRG Committee is working with partner agencies, project management professionals, the legislature, and other partners to facilitate this large-scale transition from one system to another, with the goal of implementing TraCS in 2025 and decommissioning SECTOR in 2027.

- **Outcome.** TraCS is a sustainable crash/citation electronic data submission system that will provide flexibility for further enhancements and growth and improve the submission of electronic records.
- **More Information:** SRG Committee Charter

Model Inventory of Roadway Elements: Fundamental Data Elements (MIRE FDE). The MIRE is a set of core data elements developed by FHWA for the purpose of identifying critical roadway characteristics. The FDE are a subset of MIRE elements which must be collected and accessible for all public roads by mid-2026, per MAP-21. The FDEs are categorized by roadway functional classification and surface type. They include three categories for roadway segments: non-local paved roads, local paved roads, and unpaved roads. With the MIRE-FDE data elements and other available safety data, jurisdictions can analyze safety data and evaluate the safety performance of the system given the roadway and traffic characteristics at each location.

These elements are also informed by the requirements of the Highway Performance Monitoring System (HPMS), which is a national level highway information system which includes extent, condition, performance, use and operating characteristic data for public roadways nationwide.

- **Outcome.** The elements illustrated in MIRE FDE are critical to road and safety management in Washington. MIRE FDE helps the Washington State Department of Transportation (WSDOT) improve their roadway data inventory, traffic data inventory, and safety analyses of all roads in all jurisdictions.

More Information. FHWA - MIRE

Washington Emergency Medical Services Information System (WEMSIS) and the Rapid Health Information Network (RHINO). The Department of Health WEMSIS and RHINO systems comprise traffic records injury surveillance records from EMS response and emergency department/urgent care/outpatient facility visits. In addition to traffic injury, these systems support and inform all areas of public health. The TRGC has historically and continues to invest heavily in these systems to improve the data quality and completeness. Both systems are finally at a stage of maturity where meaningful traffic safety analyses are being performed. In addition, both datasets are integrated through TRIP with crash data. The TRGC will continue to invest in these systems to maintain and improve data quality while increasing the accessibility of the information for broader incorporation into traffic safety programming and evaluation.

- **Outcome.** The data quality of traffic records injury surveillance systems is continuously improved, and the information can be made accessible in a format that is easy to understand and informs traffic safety project planning and evaluation.
- **More Information.** DOH WEMSIS and DOH RHINO

CHAPTER 3

Emphasis Areas

INTEGRATING THE SSA ELEMENTS: STRENGTHEN ALL PARTS

Systems thinking leads to solutions to system outcomes by analyzing transportation safety trends, analyzing the influences on those trends from interacting system elements, and adjusting other parts of the system to compensate for those interactions. For the Target Zero Plan, the foundation for successful outcomes begins with data-driven approaches to identify and better understand the contributing factors to fatal and serious injury crashes. We apply the results to determine appropriate strategies to improve the safety outcomes.

This safety management process has resulted in a set of SSA-aligned strategies to address the emphasis areas, which represent different layers of safety countermeasures being taken. For example, as driver speed and vehicle size increase, so do the severity of crashes, leading to more serious injury. Countermeasures to reduce this increased severity include federal and state legislation changes, roadway design changes, additional emphasis patrols, regulation of vehicle size and features, driver training and licensing, enhanced emergency services planning, and public service campaigns educating road users about safe behaviors.

All Target Zero emphasis areas can be addressed by multiple types of strategies, and no emphasis area can be completely addressed by any one SSA element alone. This integrated approach is vital because of the complex nature of roadway safety. In the Safe System Approach, the elements come together to form a single interdependent safe system. Changes to one of these elements (i.e., sub-systems) can affect others, and these interactions are important to understand.

Past and present decisions and actions at the system level can (1) create conditions that prompt unsafe acts, and (2) produce weak defenses against crashes and injury outcomes. Here is a hypothetical example of how these factors can converge:

> A truck driver, driving after a sleepless night, crashed while driving too fast for road conditions (driver error) after a recent snowfall on a rural highway. The driver's speed was motivated by the long-standing company policy to give financial bonuses for on-time or early delivery. The unplowed and unsanded winter road conditions resulted in part from the budgetary decision made the previous year to reduce funding for winter maintenance services.

While the final critical action in the crash causal chain was the driver's, it took place within complex systems the driver does not control. Our truck driver's experience demonstrates that decisions and actions by safety partners and influencers in the past can result in the potential for a future crash. In this case, the crash occurred because the fatigued driver's speeding (individual action) occurred within a weakened system caused by the bonus policy (private company) and budgetary decision (policymakers). Our shared responsibility is to make decisions and take actions that create a system that has adequate defenses to prevent harm.

EMPHASIS AREA CATEGORIES

The emphasis areas are categorized into four groups: *High Risk Behavior*, *Crash Type/Location*, *Road Users by Age Group*, and *Road Users by Mode of Travel*. Neither the categorized groups nor the emphasis areas themselves are mutually exclusive. Safety is a complex system where strategies to address each emphasis area affect other areas too. Each emphasis area chapter includes an introductory description and crash history trends, along with some key issues for that topic. The chapter then focuses on priority strategies to address the data-informed safety characteristics and contributing factors.

EMPHASIS AREAS

HIGH RISK BEHAVIOR

CRASH TYPE / LOCATION

ROAD USERS BY AGE GROUP

ROAD USERS BY MODE OF TRAVEL

Strategies in this this section range from short-term (e.g., high visibility enforcement of existing traffic safety laws, curve warning signs) to long-term (e.g., roundabout installations, support for speed limiters as standard equipment on motor vehicles). They were selected and prioritized to address the most prominent crash types and contributors. During the life of this plan, efforts will further refine and prioritize projects and strategies by location, implement those treatments, and evaluate their effectiveness.

HIGH RISK BEHAVIOR

Road user behaviors are a factor in most fatal and serious injury crashes. In fact, more than three-quarters of fatalities in Washington involve one or more of the "fatal four" road user behaviors: impairment by alcohol and/or drugs, speeding, lack of restraints (seat belts and child passenger seats), and/or distraction. Getting to zero fatalities and serious injuries will require a change in behaviors through education and enforcement, and by minimizing the effects of these behaviors through infrastructure projects. It also requires systems thinking, which can include letting go of judgment around these behaviors as only personal failings. Thinking upstream about root causes, and about transportation as a single system within a complex system of community life, can help us implement the Safe System Approach related to behavior.

This section evaluates 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

Drugs like alcohol, cannabis, opioids (including fentanyl), benzodiazepines, and others affect a person's central nervous system, which in turn impairs cognition, judgment, vision, balance, reflexes, and gross and fine motor control. When these essential faculties are degraded, a person's ability to drive safely is significantly reduced. Impaired drivers are less able to moderate speed, maintain vehicle direction within lanes and roadways, and react appropriately to traffic conditions and emergency situations. Impaired road users may be struggling with addiction, emotional trauma, or other issues that lead to driving under the influence. Someone who is impaired is at high risk of being an unsafe road user. Impaired road users may travel in lanes improperly, depart from appropriate travel lanes or pathways, and fail to yield the right-of-way at signals or intersections. Due to the cognitive impairment that results from alcohol and/or drug use, drivers who are impaired are also more likely to engage in other high-risk behaviors, including speeding and lack of seat belt use.

The Washington Traffic Safety Commission's Together We Get There public education campaign encourages prosocial traffic safety culture and safe road user behaviors. Public service announcements have been created and broadcast to target specific audiences that may engage in higher risk behaviors or be disproportionately affected by traffic crashes.

RCW 46.61.502 states that a person is guilty of driving while under the influence of intoxicating liquor, cannabis, or any drug when:

- The person has a blood alcohol concentration of 0.08 % or higher within two hours of driving.
- The person has a blood THC concentration of 5.00 ng/mL or higher within two hours of driving.
- The person is under the influence or affected by intoxicating liquor, cannabis, or any drug; or
- The person is under the combined influence of intoxicating liquor, cannabis, or any drug.

Violation of this statute is a gross misdemeanor. Violations are classified as a class B felony if:

- The person has three or more prior offenses within 15 years (increased from 10 years by HB 1493 in June 2024).
- The person has been previously convicted of:
  - » Vehicular homicide while under the influence.
  - » Vehicular assault while under the influence.
  - » A comparable out-of-state offense.

RCW 46.61.504 contains similar provisions for a person who has actual physical control of a vehicle while under the influence of intoxicating liquor, cannabis, or any drug.

Violations of RCW 46.61.502 and .504 carry several potential sanctions, including imprisonment between 24 hours and 364 days, electronic home monitoring, 24/7 sobriety program monitoring, monetary fines ranging from $350 to $5,000, license suspension, and/or the requirement of an alcohol detection breathalyzer. Penalties for individuals convicted of multiple offenses, those with an alcohol concentration of 0.15 or higher, or for drivers who refuse to submit to a test may be increased.

RCW 46.20.720 describes Washington's interlock program, which features a compliance-based approach. It is also graduated based upon the offense history of the individual.

EXISTING CONDITIONS: CRASH HISTORY

Impaired drivers were involved in 51% of traffic fatalities during 2020-2022 and 20% of serious injury crashes. Data from the most recent period shows increases in the number of crashes resulting in fatalities that involved an alcohol- or drug-impaired driver. The tables below include fatalities and serious injuries in crashes where one or more road users was impaired.

TABLE 6. IMPAIRED ROAD USER INVOLVED FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	334	292	294	341	408	439	**+29%**
PROPORTION OF FATALITIES	59%	54%	55%	59%	61%	59%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 7. IMPAIRED ROAD USER INVOLVED SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	430	497	452	589	663	676	**+40%**
PROPORTION OF SERIOUS INJURIES	19%	22%	20%	24%	23%	22%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

OVERLAPPING FACTORS

Of the 1,188 fatalities in crashes involving Impaired Road Users (2020-2022):

- 27.6% (328) involved a distracted road user.
- 35.9% (427) involved a speeding driver.
- 48.0% (570) involved a lane departure.

Note: The Speeding Driver or Young Driver involved was not necessarily the impaired road user.

KEY ISSUES

Behaviors: In the 2023 Statewide Road User Survey, 5.4% of respondents reported driving a vehicle under the influence of alcohol within the last 12 months, and 5.6% of respondents reported driving under the influence of cannabis within the last 12 months.

Legal: Public attitudes about impaired driving have evolved significantly and continue to change over time. Washington first established a law prohibiting driving under the influence of alcohol with a *per se* 0.10% BAC limit in 1979. The *per se* BAC limit was reduced from 0.10% to 0.08% in 1998. These limits apply to individuals of legal drinking age or older holding a standard driver license. The BAC threshold for individuals under the age of 21 is 0.00%. Federal law establishes the BAC limit for Commercial Driver's License holders at 0.04%. (It is important to note that a person can be arrested for impairment even if they are below the *per se* limit. In these cases, the officer's observations of impairment and the results of the Standard Field Sobriety Test provide evidence of impairment.[1])

Norway established the first *per se* BAC limit for DUI at 0.05% in 1936. Since then, BAC limits of 0.05% or lower (e.g., 0.03% in Japan and 0.02% in parts of the European Union) have been set in countries that are home to 84% of the world's population. NHTSA found that a driver's risk of a crash at 0.05 BAC is double the risk of a sober driver. The risk is more than triple at 0.07 and nearly quadrupled at Washington's current *per se* limit of 0.08 BAC.

Most impaired drivers are affected by drugs obtained legally. Alcohol is the most common impairing substance found in drivers involved in fatal crashes, followed by cannabis. Washington voters passed Initiative 502 in 2012, which legalized recreational cannabis use for adults ages 21 and older. I-502 also established the current threshold of THC concentration of 5.00 nanograms of delta-9 THC per mL or higher for impaired driving.

Legislation to lower the BAC limit for alcohol to 0.05% has been introduced in the Washington Leg-islature four times, including 2017, 2022, 2023, and 2024. Legislation is expected to be introduced again in 2025. The 0.05% BAC limit is the most common standard internationally, and it has been found to reduce alcohol-involved fatal crashes by 11% on average across several countries studied. In Washington, there were 1,187 fatal crashes involving alcohol-positive drivers over the last decade.

1 See: Driving under the influence, RCW 46.61.502, and Physical control of a vehicle while under the influence, RCW 46.61.504

Beyond the criteria for determining impairment, there are additional legal issues which allow impaired driving to persist at such high rates in Washington. These include delays in processing evidence (e.g., toxicology), delayed or inconsistent charging decisions, lack of experienced DUI prosecutors handling these cases, the current public defender shortage, and coordination of records between agencies and systems. These delays result in delayed access to assessment and treatment, application of sanctions, and delays in driving limits, including license suspensions or ignition interlock requirements.

COVID-19: When Washington first saw increases in fatalities in 2020, there was a suspicion that the impact of the pandemic on the population's emotional health led to increases in substance use. Eventually, surveys and other research documented that emotional wellbeing was harmed and substance use did increase. It was initially thought that this impact was temporary and would begin to resolve as the state and the nation returned to "normal." But after three years, it is clear the "new normal" includes higher rates of substance use and impaired driving. Temporary COVID-19 measures were enacted in 2020 to allow bars and restaurants to sell alcohol during a statewide lockdown. While some of these provisions have ended, Washington continues to allow alcohol sales to include home delivery and takeout of single-serve drinks when purchased with meals.

In addition to changes in driver behaviors towards impaired driving during and after the pandemic, the state's already low staffing levels for law enforcement were reduced further due to both direct and indirect impacts from the COVID-19 pandemic.

Prior to the pandemic, Washington's ratio of law enforcement officer per population was the lowest in the U.S. Additionally, many law enforcement officers became eligible to retire. COVID-19 exasperated the low staffing levels leading to fewer Driving Under the Influence (DUI) stops and arrests.

PRIORITY STRATEGIES

Because impaired driving crashes can occur anywhere, regardless of road conditions or road type, comprehensive behavioral interventions to support safer road use must be implemented broadly to prevent impaired driving, to intervene when it occurs, and to respond in ways that deter future impaired driving and address underlying substance abuse disorders, when they are present.

Impairment and Prosocial Traffic Safety Culture

We are more likely to see more safe, sober road users (Individuals) if they have the:

- Attitude that they are responsible for their own safety and for the safety of others.
- Knowledge that alcohol and other impairing drugs cloud their judgement and have physical and cognitive effects that prevent safe road use and safe driver behavior.
- Skills and awareness to plan safe travel without driving when impaired.

Friends, family, and others in the social network can support safe, sober road use if they:

- Create and reinforce social norms that everyone drives only when sober.
- Provides safe travel alternatives (other than driving themselves) to people who have used impairing substances.
- Intervene if someone is about to drive impaired.
- Model use of other modes of travel when they themselves have consumed impairing substances.
- Do not serve or encourage people to consume impairing substances if they know the person is going to drive.

Organizations support safe and sober road use if they:

- Establish policies and norms for sober road use.
- Support alternatives to impaired driving by offering sober travel options.
- Serve or sell impairing substances legally and responsibly, if they are in that business.

Communities support sober road use if they:

- Establish and support education and prevention programs to prevent substance abuse and misuse.
- Provide transit service, ride-home programs, active transportation infrastructure, free overnight parking, and other opportunities for all residents to get home safely when they have used alcohol and/or drugs.
- Reinforce social norms around sober driving through deterrence, enforcement, treatment, and rehabilitation services.
- Provide self-enforcing roads, separated and protected active transportation infrastructure, and other elements of roadway design that will reduce the likelihood and severity of a crash if a driver chooses to drive impaired.

Policymakers support safe and sober travel if they:

- Appropriate necessary funding for education, prevention, deterrence, enforcement, treatment, intervention.
- Enact laws that are effective to prevent impaired driving and to intervene effectively when someone travels in an unsafe manner due to alcohol or drug impairment.
- Establish regulations for vehicles that prevent someone from driving impaired.
- Establish regulations and funding for infrastructure treatments that reduce the risk of serious injuries or fatalities when an impaired driver is involved.

Safer Road Users: WTSC hosts the Washington Impaired Driving Advisory Council (WIDAC), which is a multi-disciplinary council comprised of citizens, people affected by impaired driving crashes, treatment providers, public health specialists, law enforcement, prosecutors, judges, and other public agency representatives.

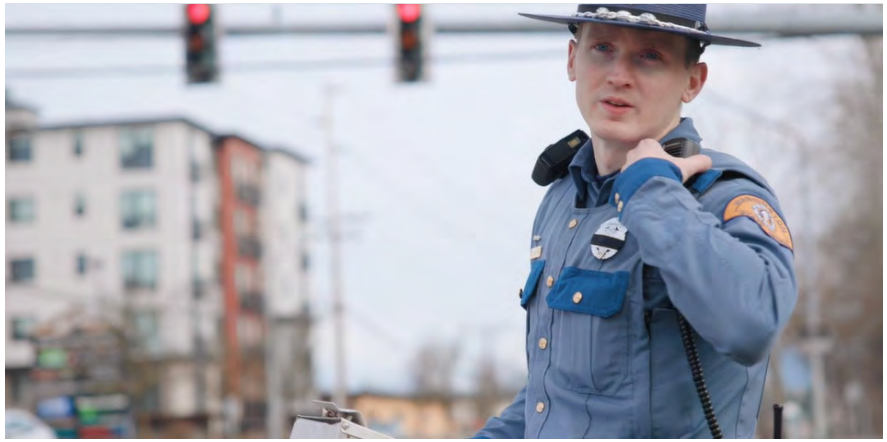
Partnerships in Public Health and Prevention: Through WIDAC, SPE, and the WHY Coalition, WTSC collaborates closely with partners across the local and state levels of public health and prevention. These collaborations include offering and receiving consultation on social marketing campaigns, supporting mutually beneficial legislation, attending training and conferences, collaborating on and disseminating research, and identifying ways to leverage resources to shore up existing programming that promotes mental health and prevents driving impaired. Traffic safety partners collaborate with LCB to ensure the effective enforcement of alcohol and cannabis licensees. WTSC supports coalitions statewide in the implementation of alcohol, cannabis, and opioid prevention programs. Each of these touch points strengthen the overall traffic safety system and offer upstream prevention practices to align with upstream traffic safety strategies.

Education and Prevention: Schools, community coalitions, and public health agencies provide education to children about substance use and abuse to prevent early initiation of substance use. The developing brain is vul-nerable to substance use; eliminating the early consumption of alcohol or cannabis reduces the likelihood they will develop an addiction. Developmentally appropriate education and prevention services throughout school grades can help reduce the incidence of substance misuse, abuse, and dependence during adolescence and early adulthood.

As young people approach driving age, more education is needed on the specific impacts of alcohol and, especially, cannabis use on driving. The general population can also be better educated on the risks of impaired driving and on safer alternatives to driving impaired.

Unfortunately, BAC limits have led some drivers to believe that driving is safe if they are below the 0.08% *per se* limit, and they are unaware that exhibiting signs of impairment (even at lower BAC levels) can result in arrest. Education is necessary to correct this misunderstanding and to provide accurate information on the risks associated with driving after consuming alcohol, cannabis, or other impairing substances, including prescription medications, alone or in combination. The fastest growing type of impairment involved in fatal crashes is polysubstance use—most often involving alcohol and cannabis together.[1]

1 Source pending



Prevention efforts are deployed to avoid impaired driving incidents from occurring. These efforts are directed at all drivers and bystanders. Viable alternatives to driving for someone who has consumed impairing substances are a critical aspect of prevention. These include alternative forms of transportation, including transit, taxis, ride shares, and sober drivers. Positive traffic safety culture encourages bystanders to intervene to prevent friends and family from driving impaired by offering safe alternatives, such as a sober ride or a place to sleep.

For individuals with substance use disorders, access to treatment can also help avoid impaired driving and criminal justice involvement. Training and compliance monitoring for licensed alcohol and cannabis retailers also helps to prevent sales and service to minors and over-service to impaired individuals.

Early Intervention: Washington recently modified the provisions for deferred prosecution on Driving Under the Influence (DUI) charges to encourage defendants to use this option on a first-time offense. The law allows a person to have a second deferred prosecution if they are used on the first and the second offense, in recognition of the nature of substance use disorders. We know that relapse is a predictable occurrence and often a stage in recovery.

Intervention and Treatment: DUI courts combine the benefits of treatment, deterrence, and accountability. Victim impact panels, which are one component of treatment courts, can help DUI offenders understand the devastating impacts of their behavior on victims. Treatment courts are effective when done well. But they are also much more resource intensive, requiring both time and commitment for implementation.

It is also important to maintain fidelity to evidence-based models. An expansion of the number of treatment courts while also ensuring a more consistent approach would support the Safe System.

Effective treatment courts rely upon the availability of treatment services that are accessible, affordable, and effective. Like many states, Washington experiences shortages of qualified and experienced treatment providers. This is particularly challenging in more rural areas and remote geographic regions.

Drivers with multiple DUI charges or convictions are likely to meet the criteria for a substance abuse disorder, as their substance use interferes with major life activities.

The Washington Impaired Driving Advisory Council (WIDAC) has identified several other strategies to reduce impaired driving on Washington roads. The WIDAC will also consider additional strategies and programs for offender accountability and support for

Safer Alternative Modes to Driving Impaired: Safer roads and active transportation facilities reduce the likelihood of impaired driving. Sidewalks, marked crosswalks, taxis and ride-hailing services, and reliable transit service provide safer travel options to those who choose to use impaired substances. Safety features in the built environment—such as rumble strips, median barriers, and separation of modes—can also help reduce the chances of a serious or fatal crash when someone chooses to drive impaired.

Public policy:

- Reduce the legal *per se* limit for DUI from 0.08% to 0.05% blood alcohol concentration.
- Overcome legal barriers to conducting publicized sobriety checkpoints.
- Increase treatment availability and access for DUI offenders, including deferred prosecution and pre- and post-conviction.
- Remedy the DUI case backlog at the State Toxicology Lab by addressing the root causes of the backlog, including turnover of toxicologists. Consider ways to outsource some testing to private labs to relieve and reduce the backlog of testing. Improve data system integration to increase communication about case status among law enforcement, prosecutors, the courts, and the toxicology lab.

Support and justice for victims/families:

- Increase the use of advocates for victims and survivors.
- Enforce accountability for offenders who endanger, injure, or kill while driving impaired.
- **Increased law enforcement capacity:**
- Establish or reinstate dedicated traffic patrol units (will require increased staffing levels overall in many jurisdictions).
- Establish dedicated patrol positions to deter impaired drivers and intervene in suspected DUI.
- Coordinate across city, county, Tribal, and state jurisdictions for data sharing, high-visibility emphasis patrols, crash investigations, data sharing, and opportunities for training and mentoring.
- Continue to increase access and participation for officers to receive Advanced Roadside Impaired Driving Enforcement (ARIDE) and Drug Recognition Expert (DRE) training.
- Expand the capacity of the interlock program, ensure access for indigent clients, increase interlock compliance, and expedite timely adjudication of interlock violations.

Toxicology:

- Increase comprehensive drug testing in crashes and DUI arrests, including expansion of the phlebotomy program (officers trained to take blood samples from suspected impaired drivers subject to a warrant).
- Increase ability to screen for impairing drugs (current and novel substances).

Data sharing and integration:

- Increase the availability and awareness of local-level data regarding locations where DUI-related crashes are occurring.
- Increase efforts to collect "last drink" locations of drivers arrested for DUI for alcohol and disseminate among traffic safety and justice system partners.
- Improve information sharing between law enforcement, Department of Licensing, and the AOC to assess whether pre-adjudication restrictions and requirements (e.g., license suspension or interlock installation) are applied for each DUI defendant and that due process requirements are met.
- Improve information sharing among agencies throughout the DUI case, including adjudication and probation/monitoring to ensure that information about each driver's status is accurate and up-to-date.

Prosecution:

- Direct training to prosecutors to include standards of evidence, trial preparation, use of experts, scientific knowledge of impairment, and changes in case law related to impaired driving offenses.
- Mentoring and supporting prosecutors to handle and specialize in DUI prosecution.
- Discourage some practices like dismissing or pleading down impaired driving charges.

Adjudication and probation:

- Increase treatment availability and promote treatment participation.
- Expand use of a therapeutic court model, including DUI and drug courts.
- Use validated risk assessment instruments to inform pre-adjudication, adjudication, and post-adjudication decisions.
- Consistent monitoring of offenders through visits, drug testing, and/or electronic monitoring to reduce recidivism.

Drowsy driving is another form of impaired driving. A drowsy driver was involved in 39 deaths and 240 serious injuries from 2020 to 2022, which reflect 18% and 15% increases, respectively, from 2017-2019. Data on drowsy driving is most likely underreported since drivers may be reluctant to admit they dozed off prior to a crash.

A driver who has been awake for 18 hours experiences cognitive impairment like that of driver with a blood alcohol content (BAC) of 0.05%. After 24 hours of being awake, a driver's impairment is like a BAC of 0.10% or higher, beyond the current 0.08% legal limit in Washington. 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 education campaigns and infrastructure solutions like rumble strips and rest areas.

Treatment and rehabilitation:

- Increase the use of treatment as an alternative to incarceration.
- Screen all DUI offenders for substance use disorders.
- Increase access to treatment and address geographic inequities across the state.
- Ensure that DUI offenders have access to recommended treatment regardless of financial or insurance status.
- Programs may also include accountability measures to victims or their families impacted by the impaired driver's behavior.

Licensing:

- Educate every licensed driver in the state on the risks and impacts of impaired driving.
- Provide timely and efficient due process to drivers cited for DUI.
- Expand use of interlock devices and support compliance of drivers with interlock requirements.

More expansive and detailed strategies, efforts, programs, and goals are outlined in WIDAC's Strategic Plan (2023).

Speeding

The speed at which a driver operates a vehicle is a factor in all crashes. At higher speeds greater crash forces result during a crash, resulting in more serious the injuries to the occupants and people outside the vehicle. Controlling driving speed can prevent crashes and reduce their impact by lessening the severity of injuries sustained by the victims.

This is true regardless of whether a driver is speeding (driving over the legal posted limit) or traveling at a legal speed that carries these forces into the crash. The SSA's emphasis on Safer Speeds applies to excessive speeds, to speeds too high for current road and weather conditions, and to the need to design roads to achieve target speeds appropriate to the land use, context, and mix of users and modes.

Speeding occurs when drivers are exceeding the posted speed limit or driving too fast for conditions at the time of the crash as reported by the investigating officer. Drivers may be traveling well under the posted speed limit, but they may be considered to be speeding when road conditions, traffic (including people using all modes), or weather conditions such as icy roads, poor visibility, or fog are present.

Crash forces increase exponentially with speed.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 8. SPEEDING FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	174	182	152	173	207	253	**+25%**
PROPORTION OF FATALITIES	31%	34%	28%	30%	31%	34%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 9. SPEEDING SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	499	522	548	647	703	740	**+33%**
PROPORTION OF SERIOUS INJURIES	22%	23%	24%	27%	24%	24%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

OVERLAPPING FACTORS

Of the 633 fatalities in crashes involving a Speeding Driver (2020-2022)

- 66.5% (421) involved an Impaired Driver.
- 61.6% (390) involved the crash type Lane Departure.
- 34.0% (214) involved a Younger Driver (15 – 24).

KEY ISSUES

Perceptions of Speed and Safety: A 2023 WTSC survey of more than 10,000 Washington residents 18 years or older found that 66% of drivers reported driving 10+ mph over the speed limit at some time in the previous 30 days. Only 33% of drivers reported that they never drove 10+ mph over posted speeds in the last month.

Speeding in School Zones: A 2022-2023 study of speed in school zones by the Washington Traffic Safety Commission (WTSC) found that in 118 school zones with permanent or temporary speed reductions in school zones to 20 MPH most drivers were speeding 6+ MPH over the posted speed limit.[1] Nearly 75% of drivers in the study were speeding in school zones. Drivers passing through the school zone on their way to somewhere else were slightly more likely to speed than those entering or leaving the school sites.

Increased Crash Likelihood: There is a limit to the rate at which the visual system and brain can process information, and this ability is reduced as traveling speed increases. The higher the speed, the less information can be processed over the distance traveled. This effectively narrows the field of vision that the brain can process. As a result, a driver's ability to respond to visual inputs is reduced (e.g., the driver is less likely to recognize when another road user or other object enters their field of vision). This, in turn, increases the likelihood of a crash.[2]

Increased Crash Severity: Force in equation form is $KE=(1/2)mv^2$, where KE = Kinetic Energy; m = Mass of an object; and v = Velocity. This means that the energy transferred in a roadway crash increases exponentially by the speed a driver travels, making it the primary factor in the amount of force in a crash. This is particularly concerning when a crash involves an active transportation user, because the force is applied directly to the human rather than to a vehicle designed to direct force away from its passengers.

Over a 10-year period, 58% of active transportation user fatalities occurred on roads with posted speeds of 40 mph or lower. Among these, only 5% included collisions in which the driver was reported to be exceeding the posted limit. These data suggest that higher observed active transportation use should influence changed to posted speed limits.

1 WTSC, 2023, Driver Speeding Behavior in 20 MPH School Zones https://wtsc.wa.gov/wp-content/uploads/dlm_uploads/2023/12/16_Driver-Speeding-in-School-Zones_Dec2023.pdf

2 Speed, Tunnel Vision, and Reaction Time. America Walks, October 2022. https://americawalks.org/part-2-reducing-vehicle-speeds-pedestrian-safety/

COVID-19: The 2020 pandemic response correlated with unprecedented levels of speeding on previously-congested highways and arterials. In addition to changes in driver behaviors towards speeding during and after the pandemic, the state's already low staffing levels for law enforcement were reduced further due to both direct and indirect impacts from the COVID-19 pandemic. Stops and arrests for DUI declined during 2020-2022.

SPEED MANAGEMENT ADVISORY BODIES

Washington State Injury Minimization and Speed Management Policy Elements and Implementation Recommendations: WSDOT convened a multi-agency, multidisciplinary group to study multiple reports, scientific papers, statutes, manuals, and recommendations from across the country on the issues related to speed and safety. As expected, the information reviewed showed a direct link between driver speed and more severe injury outcomes for those involved in a traffic crash. The facts provided robust justification for an injury minimization and speed management policy.

The resulting Washington State Injury Minimization and Speed Management Policy Elements and Implementation Recommendations includes recommendations relevant for cities, counties, and the state:[1]

- Adopt and implement an injury minimization speed setting approach.
- Adopt a broader Safe System Approach to identify and prioritize locations for speed management improvements.
- Consider injury minimization and speed management in all transportation investments and project phases regardless of funding source.
- Collaborate with neighboring jurisdictions for consistency.
- Require training for transportation agency practitioners on injury minimization and speed management techniques.
- Adopt access control, access management policies, and land use development policies/ordinances and practices that consider desired target speeds appropriate to the context, rather than just the existing speeds.

Speed Management Advisory Cooperative (SMAC): The SMAC was established in 2024 by the WTSC to develop a statewide plan to slow speeds and improve traffic safety reflective of the Safe System Approach. It will provide analysis and recommendations for promoting safer speeds. It will encourage the expansion of Local Road Safety Plans to reflect the full complement of principles and elements of the Safe System Approach, including safer speeds. This community approach to improving speed management will be locally developed to be sustainable and reflective of local norms and values.

> A listening session participant in King County said that automated enforcement is effective in areas where she drives. She has observed people driving visibly slower and more safely in areas where speed cameras are used.

1 Washington State Injury Minimization and Speed Management Policy Elements and Implementation Recommendations. https://wsdot.wa.gov/sites/default/files/2021-10/InjuryMinimization-Speed-Management-PolicyElements-Recommendations.pdf

PRIORITY STRATEGIES

States and local jurisdictions should set appropriate speed limits to reduce the significant risks drivers impose on others—especially vulnerable road users—and on themselves. To achieve desired speeds, agencies often implement other speed management strategies concurrently with setting speed limits, such as self-enforcing roadways, traffic calming measures, and speed safety cameras. (Safe System Roadway Design Hierarchy, FHWA, 2024).

Regulatory Speed Limit Setting: Standard maximum speed limits are established in RCW 46.61.400: 25 miles per hour on city and town streets, 50 mph on county roads, 60 mph on state highways. Per RCW 46.61.415 local authorities can establish a higher (up to 60 mph) or lower speed limit based on an engineering and traffic investigation, sometimes called a speed study. Cities, towns, and counties may also set a maximum speed limit of 20 mph on a nonarterial street or road without conducting such a study if they have established procedures for doing so. Additional guidance is found under WAC 468-95-045 to specify that factors such as roadside development and environment, parking practices, pedestrian activity, crash experience, and other factors such as Comprehensive Plans should be considered—in essence, the context for the street or road.

Research-based Speed Limit Policies: Several local jurisdictions in Washington—including the City of Bellevue, City of Richland, and Island County—have developed speed limit setting policies based on NCHRP Project 17-76: Guidance for the Setting of Speed Limits and its outcome, NCHRP Report 966: Posted Speed Limit Setting Procedure and Tool: User Guide. The research identified and described factors that influence operating speed and provided guidelines to make informed decisions related to establishing posted speed limits on roadways. The guidance developed includes contextual elements like functional classification of the roadway and urban/rural context, and relevant data: geometric design, land use, access density, signal density, traffic volume characteristics, bicyclist and pedestrian activity, crash history, and enforcement practices that may impact operating speed.

Self-Explaining Roads and Speed Management: Measures include the use of road and roadside design elements, such as lane narrowing, intersection channelization, roundabout designs, and horizontal and vertical deflection, to elicit lower driving speeds along the roadway.

Smart Signage and School Safety: By alerting the right driver at the right time, with the right message addressing specific behaviors, this smart signage has the unique ability to address a driver's specific behavior. Innovative intelligent driver feedback signs that can identify speeding, distracted driving, and unbelted drivers and notify them in real-time to correct the risky driver behavior that is detected and can be utilized in school zones and walk routes. Pierce County and King County each have a pilot program utilizing this technology. Spokane Public Schools is developing a pilot model for using smart signage to develop a School District Traffic Safety Plan. Advised by the SMAC, the WTSC will collect speed, distraction, and seat belt use data in school zones. These data points will inform the development of local road safety planning efforts.

High Visibility Enforcement (HVE): Washington experienced a 32% increase in fatalities involving speeding drivers (2017-19 to 2020-22). During this time, enforcement of traffic laws dropped due to the COVID pandemic and personnel shortages. Particularly on highways and arterial roads that lack traffic calming designs, HVE is necessary to reduce speeding and intervene when drivers are travelling at speeds that are unsafe for the road context and conditions. Safety improvements from HVE include preventing speeding among drivers generally and intervening with drivers who evidence unsafe behaviors.

Tracking Habitual Speeders: Research is underway by the DOL to gather data about habitual traffic offenders, specifically habitual speeders, and habitual speeders who are also impaired drivers (or vice versa). One gap that has been identified is that Automated Speed Information (ASE) citations are not attributed to a driver, so a habitual speeder could have multiple infractions and ASE citations, but these citations are not included in the DOL record of total citations. There is potential to identify a particular vehicle as a repeat offender via the ASE program, and then tie that data to the registered owner to ascertain if they also have in-person citations.

Speed Safety Cameras: Unlike HVE campaigns which are episodic, automated enforcement can provide reminders and deter speeding motorists at set locations all day every day. Automated speed enforcement is an evidence-based countermeasure that has been found to reduce injury crashes by 20% to 25% in the areas where conspicuous cameras are placed.[1] Currently, there are at least 15 cities in Washington which use speed safety cameras, including Bellevue, Des Moines, Everett, Federal Way, Fife, Kent, Lake Forest Park, Lakewood, Lynnwood, Moses Lake, Renton, Seattle, Spokane, and Tacoma. The legislature passed updated legislation in 2024, making additional changes to local Automated Traffic Safety Camera programs that were amended in 2022 as part of the Move Ahead Washington package. The new law, effective June 6, 2024:

- Authorizes automated traffic safety cameras to be used to detect speed violations on state routes within city limits that are classified as city streets and in work zones on city streets and county roads.
- Authorizes certain civilian employees to review infractions detected using ATSCs and automated bus safety cameras and to issue notices of infraction.
- Establishes a maximum $145 fine amount for all traffic safety camera violations, as adjusted for inflation every five years, and authorizes the doubling of the fine amount for school zone speeding infractions.
- Requires that traffic camera infraction penalties for a first violation and subsequent violation within 21 days of the first violation be reduced to 50% of the penalty for recipients of certain state public assistance programs.
- Restricts the use of revenue generated by traffic cameras to cities and counties for certain traffic safety activities—including capital projects, maintenance, and related costs—and be used in overburdened communities in proportion to their populations, with exceptions.

1 Around the world (e.g., the United Kingdom), automated speed enforcement systems generate citations that go on the driver's record.

Speed Limiters for Motor Vehicles: The WTSC supports the adoption of active or passive speed limiters as standard equipment in commercial and passenger vehicles and encourages the National Highway Traffic Safety Administration (NHTSA) to consider rules that would require this technology. Passive speed limiters alert the driver if they are exceeding the posted speed limit, and active speed limiters restrict the driver's ability to travel at speeds above set limits.

Distraction

Distraction is a risky behavior that can increase the likelihood of roadway crashes. In Washington, many people understand the risk and danger of distracted driving, but some still choose to drive, walk, roll, and bike distracted. Like speeding, engaging or not engaging in distracting activities is a decision that road users can make at any time during their trip.

Distracted driving, riding, walking, rolling, or cycling is any activity that takes attention away from the task of driving. It is often associated with electronic device use, but it doesn't have to be. Distracted motor vehicle driving, for example, 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.

The Driving Under the Influence of Electronics (E-DUI) Act, passed in 2017 in Washington, states:

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

In addition to the E-DUI Act, the Dangerously Distracted law also passed in 2017. The law defines "dangerously distracted" as any activity that a driver does that interferes with safe driving, such as grooming, smoking, eating, or reading. "Dangerously distracted" is a secondary offense. That means that a driver can only receive a ticket for "dangerously distracted" if they have committed another traffic offense, too. A ticket for dangerously distracted will add about an additional $100 dollars to the citation.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 10. DISTRACTED ROAD USER FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	162	128	127	104	128	115	**-17%**
PROPORTION OF FATALITIES	29%	24%	24%	18%	19%	15%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 11. DISTRACTED ROAD USER SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	643	621	617	428	557	540	**-19%**
PROPORTION OF SERIOUS INJURIES	29%	28%	27%	18%	19%	17%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

OVERLAPPING FACTORS

Of the 374 fatalities in crashes involving Distracted Road Users (2020-2022)

- 53.6% (186) involved Lane Departure.
- 50.4% (175) involved an Impaired Road User.
- 35.8% (134) involved an Impaired Driver.

Distracted Driving Data Changes: Due to a coding change in the Police Traffic Collision Report (PTCR) in 2020 related to distracted driving, WTSC studied the effects of that change, promotion of the Driving Under the Influence of Electronics (E-DUI) Act, and other factors on the Distracted Road User Involved data. Researchers discovered that the discontinuation of the "inattention" code in the PTCR correlated with use of "other distractions" and "unknown distraction" increased at the same rate, essentially replacing that code. In addition, use of the specified distraction codes also increased—most notably cell phone use and distractions outside the vehicle.[1]

1 Hoff, S. Distracted Driving in Washington State During COVID-19: 2020 Observation Survey, Enforcement, and Crashes, WTSC, 2021. https://wtsc.wa.gov/wp-content/uploads/dlm_uploads/2021/03/Distracted-Driving-in-WA-State-During-COVID.pdf

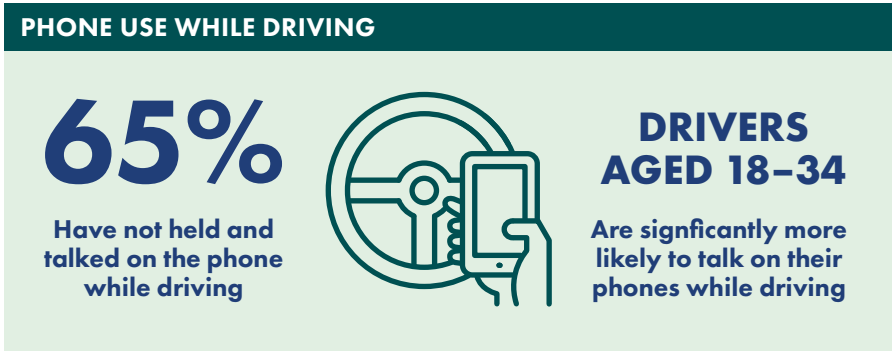
KEY ISSUES

The Science of Attention: Inattentional blindness occurs when a person's attention is on one thing and that person does not notice unexpected things entering the visual field. It limits a person's attentional, cognitive, and processing resources. 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.

Vehicles: While vehicle manufacturers are adding safety features, such as collision alerts and automatic braking, they are also adding features likely to distract drivers, including large video displays. Current vehicles include capabilities to connect smartphones and other devices, allowing drivers to use dashboard screens to check email and use other smartphone applications. Lane-keeping assistance, automatic braking, and other similar features can reduce the likelihood of crashes resulting from distraction. However, it is important that advanced features remain supplementary, and that they are not used as an excuse for drivers to use devices.

Driver Perception of Risk

- **Not everyone chooses to drive distracted.** In fact, the WTSC 2018 Observational Survey shows that 8.2% of drivers were driving distracted, down from 9.2% in both 2016 and 2017. These surveys involve point-in-time observations. The statewide survey conducted in 2023 found that 61-72% of respondents reported that they have not held, talked on, looked at, read, manually typed, or interacted with a cell phone or device in the last 30 days.
- **Avoiding distractions most of the time is not enough.** While most people understand that distracted driving is unsafe and choose to avoid distractions most of the time, people may still lapse into brief behaviors that are distracting, which increases the likelihood of crash involvement. Combining distraction and higher speeds increases the likelihood a crash will result in a serious injury or a fatality.
- **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. A large percent (96%) 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. But research indicates that cell phone use reduces brain activity associated with driving by 37% or more.
- **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 exact 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.



Source: Market Decisions Research

PRIORITY STRATEGIES

Improve Data Reporting: To the extent possible strive to improve crash data collection on crash reports with the inclusion of source of distraction such as hands-free mobile phone, handheld phone, other electronic device, or vehicle integrated devices.[1] Explore the use of other sources of data such as telematics data collected from devices, vehicles, and roadway infrastructure.

Education about Distraction: Educate drivers (teen driver education), walkers, riders, scooters, and skaters about the dangers of distracted driving, walking, riding, or rolling.

Roadway Treatments: Traditional engineering solutions for motor vehicle drivers like warning signs, longitudinal and transverse rumble strips, and roadside devices like guardrail and cable barrier can help reduce the number and severity of crashes resulting from distraction.

Advanced Vehicle Safety Features: Lane-keeping assistance, automatic braking, and other similar features can reduce the likelihood of crashes resulting from distraction. However, it is important that advanced features remain supplementary, and that they are not used as an excuse for drivers to use other electronic devices Additionally, over-reliance on automated driving features can result in increased potential for crashes.

High-Visibility Enforcement (HVE): The objective of HVE is to deter cell phone use by increasing the perceived risk of getting caught by combining paid and earned media with support of enforcement activities. Law enforcement officers actively seek out cell phone users through special roving patrols or through a variety of enforcement techniques such as the spotter technique where a stationary officer will radio ahead to another officer when a driver using a cell phone is detected. Officers report that higher vantage points, SUVs, and unmarked vehicles are strategies useful in identifying violators (Chaudhary et al., 2014).[2] Additionally, semi-automated enforcement systems can detect distracted driving and seat belt violations, sending the information to an officer stationed downstream who can respond to the infraction.

Workplace Efforts: WTSC has developed a program designed to help businesses create a workplace culture of safe and responsible driving. Drive Focused at Work helps employers educate their workforce about distracted driving, keep employees safe, and lower costs. Elements include understanding how distracted driving impacts the workplace, implementing a policy, conducting training, and continuing a dialogue with employees to promote a culture that includes focused driving. Without explicit policies directing employees to avoid distractions, they may feel obligated to conduct business calls while driving, such as answering the phone when a supervisor calls.

1 https://www.nhtsa.gov/book/countermeasures-that-work/distracted-driving/data-surveillance

2 https://www.nhtsa.gov/book/countermeasures-that-work/distracted-driving/countermeasures/enforcement/high-visibility-cell-phone-enforcement

Unrestrained Occupants

One of the most effective tools to reduce the severity of a traffic crash for those inside the vehicle is for drivers and passengers to wear seat belts. Per the Traffic Safety Commission's 2023 study, "Seat Belt Use in Washington State," 93.3% of front seat occupants were using their seat belt.[1]

Restraining all 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 of children riding in vehicles (car seats and booster seats).

Washington State Restraint Laws: 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 16 either wear a seat belt or use an approved child restraint device.

RCW 46.61.687 covers child passengers:

- Children under the age of two must ride in a rear-facing car seat.
- Children between the ages of two and four must ride in a car seat rear or forward facing with a harness.
- Children ages four 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).

EXISTING CONDITIONS: CRASH HISTORY

TABLE 12. UNRESTRAINED OCCUPANTS FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	104	107	108	110	152	155	**+31%**
PROPORTION OF FATALITIES	18%	20%	20%	19%	23%	21%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 13. UNRESTRAINED OCCUPANTS SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	228	232	201	291	341	346	**+48%**
PROPORTION OF SERIOUS INJURIES	10%	10%	9%	12%	12%	11%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

1 https://wtsc.wa.gov/wp-content/uploads/2024/03/Seat-Belt-Use-in-WA-State-2023_Feb2024.pdf

OVERLAPPING FACTORS

Of the 417 fatalities in crashes involving an Unrestrained Occupant (2020-2022)

- 69.5% (290) involved an Impaired Road User.
- 69.0% (288) involved a Lane Departure.
- 44.6% (186) involved a Speeding Driver.
- 31.4% (131) involved a Young Driver (15–24).

KEY ISSUES

Seat Belt Observational Data: Washington has one of the highest front seat seat belt use rates in the country at 93.3%. Despite a sustained high belt use rate for many consecutive years, the number of unrestrained fatalities and serious injuries has increased. Between 2017-19 and 2020-22, the 3-year average unrestrained occupant fatalities have increased 31% and serious injuries increased 48%. In 2020-22, unrestrained motor vehicle drivers and occupants represented 21% of traffic fatalities in the state.

Behaviors and Beliefs around Seat Belt Use:[1]

- 90% said they always wear a seat belt in a vehicle within a few miles of their home.
  - » 93% always wear a seat belt in a vehicle many miles away from their home, and 83% always wear a seat belt when in the backseat of a vehicle.
- 73% asked someone who was not using a seat belt to use a seat belt.
- 92% reported having a family rule about always wearing a seat belt.
- 47% of those employed said their employer has a policy about always using a seat belt.
- 81% said that those important to them would somewhat or strongly approve if they asked someone who was not using a seat belt to use a seat belt.
- 89% believe that people in their community usually or always wear a seat belt.
- 80% would be very or extremely comfortable asking someone to use a seat belt.

WHEN & WHERE ADULTS CONSISTENTLY BUCKLE UP

Source: Market Decisions Research

1 2023 Washington Traffic Safety Survey. https://wtsc.wa.gov/statewide-survey-results/

Risks Associated with Non-use of Seat Belts: According to NHTSA, people who buckle up in the front seat of a passenger car can reduce the risk of fatal injury by 45% and moderate to critical injury by 50%. Wearing a seat belt in a light truck can reduce the risk of fatal injury by 60% and moderate to critical injury by 65%. According to the Insurance Institute of Highway Safety, exposure to unbelted occupants increases the risk of injury or death to other occupants in the vehicle by 40% (MacLennan et al., 2004).[1] In a frontal crash, an unbelted rear-seat passenger sitting behind a belted driver increases the risk of fatality for the driver by 137% compared with a belted rear-seat passenger.[2] NHTSA reports that rear seat passengers (ages 8 and above) are three times more likely to be killed in a crash if they are unrestrained.

Populations Less Likely to use Seat Belts: Currently, we know–based on seat belt citation and fatal crash history data, as well as other research–that some people from population groups are less likely to use seat belts.

- **Race, Ethnicity, and Gender.** There is a variety of evidence demonstrating that Hispanic males, American Indians and Alaska Natives (AI/AN) males, and males aged 55 and older are more likely not to be wearing seat belts while driving. According to the WTSC's Research and Data Division's 2024 brief on AI/AN traffic deaths, one-third of AIAN deaths were unrestrained vehicle occupants, versus less than 20% of all other races.
- **Rural Geographies.** A recent study found states with lower seat belt use among drivers and passengers residing in rural areas. In Washington State, 36% of the unrestrained fatalities occurred within a rural area.
- **Younger Occupants.** From 2020-2022, there were 267 fatalities of drivers and occupant for ages 15-24. Of these, 40% were unrestrained.

1 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1730165/

2 https://pubmed.ncbi.nlm.nih.gov/23411155/

CHILD PASSENGER SAFETY

Between 2018-2022, there were 68 unrestrained vehicle occupant fatalities among children ages 0-15 years old in Washington State. From 2018-2022, 5% of unrestrained passenger fatalities were children ages 0-15 years old.

Knowledge of Child Passenger Restraint Use and State Law: Child restraint systems can be complicated, and many are installed incorrectly. Many parents and caregivers know how complicated these systems can be: rear facing, forward facing, booster seats, and harnesses; different cars have different anchor points; seats are different; and more. Data collected from Washington State car seat checks in FFY 2023 shows 73.6% misuse of child restraints. Misuse was most often found with children 1 to 3 years old and most often occurred with forward-facing harness and lap/shoulder belt use. Much of the observed misuse involved the harness or seat belt being too loose or not being used correctly with the harness slot or lower anchors. A 2023 observational survey showed that the proportion of children in proper restraints and seating positions decreased as the children's age increased (see **Figure 11**).

Availability of Child Restraints for Use by Nondriving Caregivers: No state or federal law requires ride-hailing services such as Uber or Lyft to provide child restraint seats. Taxis do not routinely have them available and are not required to. Micro-transit services that local transit agencies are experimenting with fall under taxi laws. Also, public agencies that transport children should have adequate child passenger restraint devices and training.

Nondriving parents seeking to use these services would be expected to carry a child restraint seat that may weigh up to 30 pounds or more, along with their child, when utilizing these modes of transportation. Since many nondrivers may not drive due to disability, this lack of child-safe transportation represents an equity issue.[1]

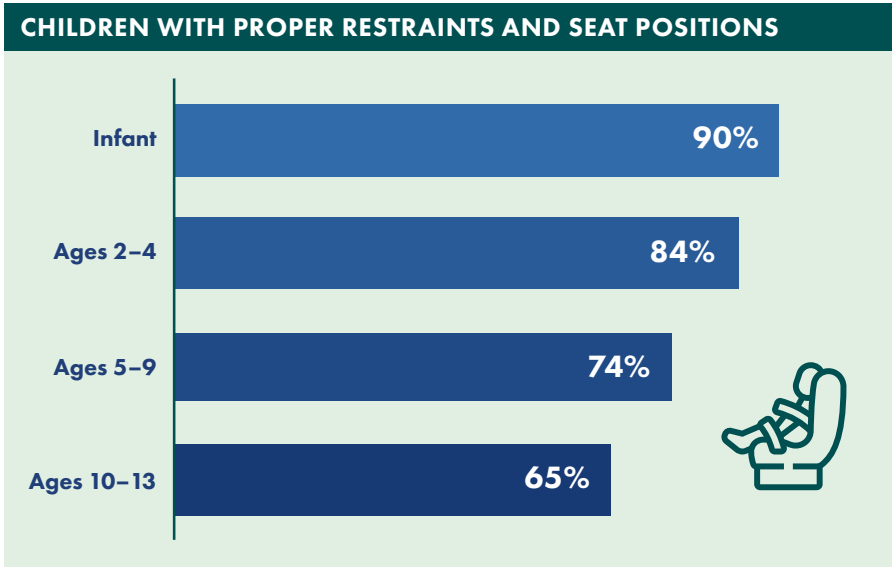


FIGURE 11. PROPORTION OF OBSERVED CHILDREN WITH PROPER RESTRAINTS AND SEATING POSITIONS

Source: 2023 CPS Observational/Intercept Surveys

1 Anna Letitia Zivarts, When Driving Is Not an Option: Steering Away from Car Dependency, 2024, Island Press

Modeling Seat Belt Use: Several studies have identified a link between adult and child occupant restraint status (Benedetti et al., 2017; Lee et al., 2019; Raymond et al., 2018; Starnes, 2003; Vachal, 2019). A study of child passengers in North Dakota found that when drivers were wearing their seat belts, children were 35 times more likely to be restrained than when the driver was not wearing a seat belt (Vachal, 2019). In other words, children are more likely to be restrained when the adults in the vehicle are also restrained. Additionally, a nighttime observational study in Tennessee found a link between front-seat passenger belt use and driver belt use, where 82% of front-seat passengers were restrained when drivers were also restrained, compared to just 42% when drivers were not restrained (Boakye et al., 2019).[1]

PRIORITY STRATEGIES

Proper Car Seat Use: Awareness and Education: Proper use of child restraints is important to improve safety, and parents and caregivers should be educated to install child safety seats appropriately. A study found significant increases in overall observed restraint use and booster seat use following exposure to interventions and concluded that applying messages that increase perception of vulnerability is a promising approach to increase booster seat use.[2]

Proper Car Seat Use: Law Enforcement Training: Trained law enforcement officers determine if a child restraint system is appropriate for the child's individual height, weight, and age based on state law. Because of the duration of time required for a formal certification training in child seat use, in 2011 the WTSC supported the creation of a Car Seat Awareness training for law enforcement agencies.

Modeling Seat Belt Use: Educate parents about the importance of the link between adult and child seat belt use.

Seat Belt Focused Enforcement Patrols: Washington State supports aggressive efforts to publicize seat belt patrols and seat belt use alongside law enforcement aggressively enforcing the state's seat belt law. Traffic and transportation safety professionals sharing seat belt usage messages across communities while participating in annual Click it or Ticket programs provide a statewide platform that communicates the importance of seat belt safety.

Employer-Based Projects: Workplace seat belt programs include a variety of components such as education, messaging, and incentives. Common elements of effective workplace seat belt use programs involved management's commitment to their employees' safety, including formal policies that require the use of a seat belt when in a company-owned vehicle or driving/traveling in a motor vehicle while on the job, education and safety training workshops, and incentives for wearing a seat belt as well as costs for non-compliance.[3]

Real-Time Occupant Restraint Feedback Signage: Smart signage provides immediate feedback to drivers and passengers. These signs are being tested in Washington in 2024.

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1 https://www.nhtsa.gov/book/countermeasures-that-work/seat-belts-and-child-restraints/understanding-problem>

2 https://www.nhtsa.gov/book/countermeasures-that-work/seat-belts-and-child-restraints/countermeasures/other-strategies-behavior-change/programs

3 https://www.nhtsa.gov/book/countermeasures-that-work/seat-belts-and-child-restraints/countermeasures/other-strategies-behavior-change/employer

CRASH TYPE / LOCATION

Certain types of vehicle crashes are more likely to result in fatalities and serious injuries. The data show that crashes involving lane departure and intersections are top emphasis areas because of their high proportion of roadway fatalities and serious injuries.

Safe System Roadway Design Hierarchy[1]: In 2019 Washington introduced the Safe System Hierarchy of Controls as a structure to prioritize policies and countermeasures by effectiveness. Adapted from previous efforts by the Centers for Disease Control (CDC), this structure helps guide design opera-tional decision making for WSDOT. The five tiers are arranged from most to least aligned with the Safe System Approach principles (arranged from top to bottom). This approach emphasizes the im-portance of engineering to support the agency's Complete Streets approach and the use of Level of Traffic Stress (LTS) to evaluate a roadway's active transportation qualities. LTS is a quantitative index that incorporates roadway width, posted speed, and traffic volume measures (factors that contrib-ute to crash exposure and severity). It provides performance metrics that align with the top tiers of the Hierarchy of Controls.

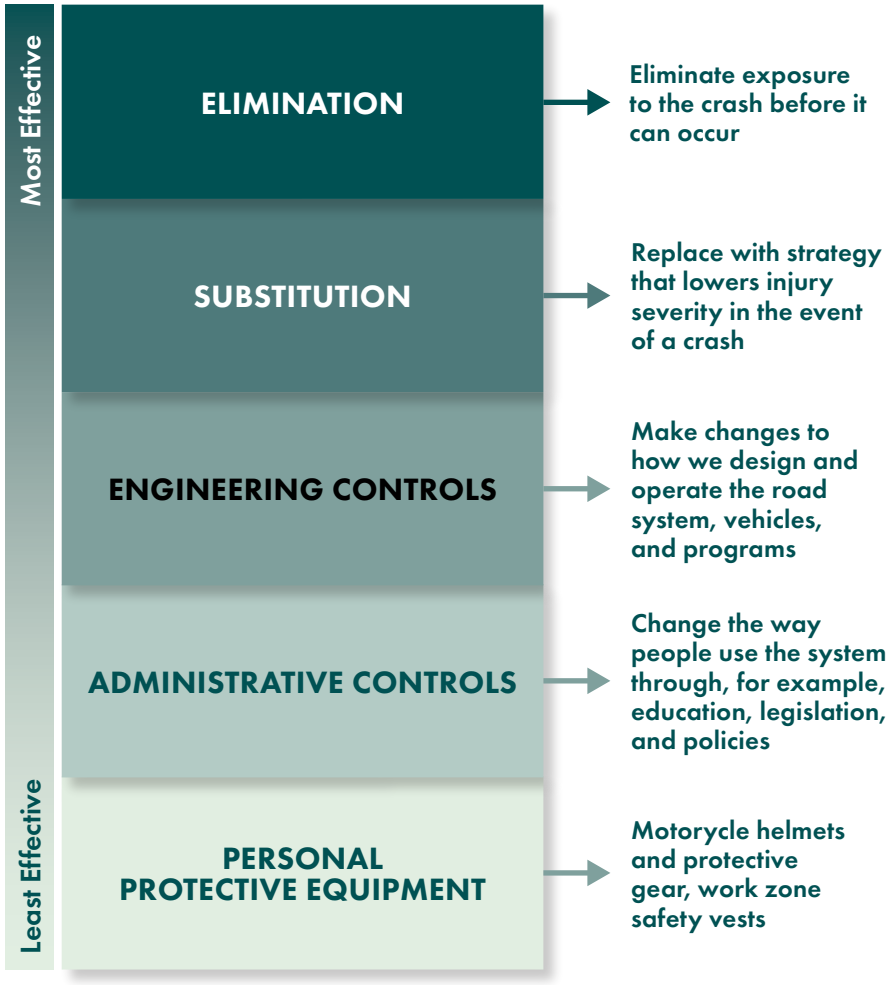

FIGURE 12. HIERARCHY OF CONTROLS FROM THE 2019 TARGET ZERO PLAN

1 Hopwood C., K. Little, D. Gaines, "Safe System Roadway Design Hierarchy: Engineering and Infrastructure-related Countermeasures to Effectively Reduce Roadway Fatalities and Serious Injuries," FHWA-SA-22-069, Washington, DC, 2024.

In 2024, the FHWA adapted and built upon this approach when developing the Safe System Roadway Design Hierarchy to support implementation of the Safe System Approach in the U.S. The FHWA Safe System Roadway Design Hierarchy includes four tiers. In this hierarchy, physical changes to the system are more effective than changes that rely on road users to make safe decisions.

FIGURE 13. SAFE SYSTEM ROADWAY DESIGN HIERARCHY, FHWA, 2024[1]

Lane Departures

A lane departure crash involves a driver unintentionally leaving their lane of travel. This includes leaving a lane to the right (run-off-the-road crashes) as well as leaving a lane to the left (either head-on or run-off-the-road crashes). It excludes crashes where a driver encroaches on another lane of travel in the same direction and wrong way crashes. The surrounding environment, and particularly the roadside, can be designed or modified to reduce the severity of these crashes.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 14. LANE DEPARTURE FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	265	260	272	248	308	321	**+10%**
PROPORTION OF FATALITIES	47%	48%	51%	43%	46%	43%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

1 https://highways.dot.gov/sites/fhwa.dot.gov/files/2024-01/Safe_System_Roadway_Design_Hierarchy.pdf

TABLE 15. LANE DEPARTURE SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	852	785	857	1023	1161	1179	**+35%**
PROPORTION OF SERIOUS INJURIES	38%	35%	38%	42%	40%	38%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

OVERLAPPING FACTORS

Of the 877 fatalities in crashes involving lane departure (2020-2022)

- 64.9% (570) involved an Impaired User.
- 44.4% (390) involved a Speeding Driver.
- 32.8% (288) involved an Unrestrained Occupant.

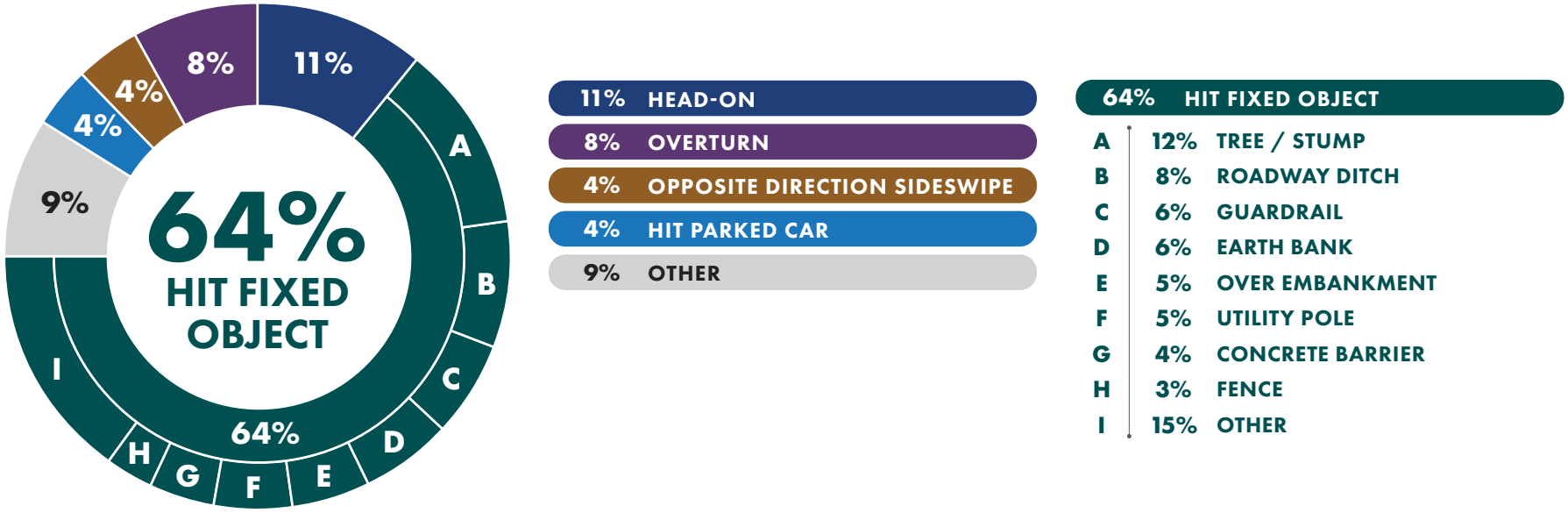

FIGURE 14. TYPES OF LANE DEPARTURE CRASHES RESULTING IN FATALITIES AND SERIOUS INJURIES (2018-2022)

Lane Departure by Location: Lane departure crashes that result in fatalities and serious injuries occur on all types of roadways in Washington State, not just state routes, and not just county roads. For example, only one-third of fatalities and serious injuries involving lane departure occurred on state routes (see **Figure 15**).

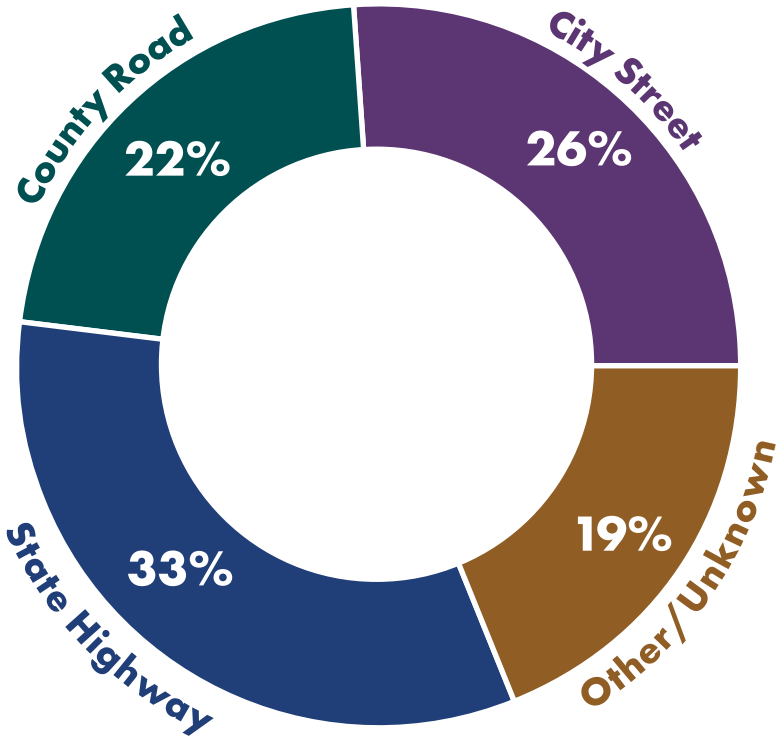

FIGURE 15. LOCATION TYPE OF LANE DEPARTURE FATALITIES AND SERIOUS INJURIES

Safety in Rural Areas: Rural communities face many of the same traffic safety issues as their urban counterparts, but often with a greater proportion of morbidity and mortality. Nationally, nearly half of all fatal crashes (45%) occur on rural roads even though only 19% of the U.S. population lives in rural areas (GHSA, 2022). The risk of dying in a crash is 62% higher on a rural road than an urban road for the same length trip. Crash and mortality rates in rural communities are impacted by many of the same issues that urban communities face but are exacerbated by factors such as poorer roadway infrastructure, limited emergency medical services resources, and increased risky driver behavior.

PRIORITY STRATEGIES

Systemic Data Collection, Analysis, and Evaluation: Analyzing and evaluating data to determine roadway alignments and making an inventory of existing fixed objects will assist in prioritizing safety investment projects, tracking changes, and making modifications over time. Tools like LiDAR and emerging technologies using machine learning can help agencies develop and maintain and inventory of roadside assets.

Lane Departure Safety Framework: Like the Roadway Design Hierarchy, a three-level framework assists in reducing lane departure fatal and serious injury crashes. The most cost-effective countermeasures focus on keeping drivers on the roadway and within their lane. If this fails, then helping a driver return to their lane before a crash occurs is the next best strategy. If a crash does occur, engineers aim to minimize the injury outcome of the crash; this is the most expensive and least effective set of treatments.

FIGURE 16. LOW-COST DELINEATORS APPROACHING A HORIZONTAL CURVE. (WSDOT LOCAL PROGRAMS)[1]

- **Keep drivers on the roadway:** If drivers stay within their intended lane of travel, then by definition, lane departure crashes do not occur. Several design changes increase the likelihood that drivers will stay on the roadway.
  - » Install curve warning signs, chevron signs, and/or delineators at horizontal curves.
  - » Enhance signing with flashing beacons, including actuated beacons based on approaching driver's presence or speed.
  - » Improve friction via high friction surface treatments (HFST) or basic roadway surface overlays.
  - » Install lighting.
  - » Install edge lines, especially on curves.
  - » Install wider edge lines.
  - » Install center lines.
  - » Install delineation on roadside hardware.
  - » Reduce posted speeds in locations where road geography increases the risks of road or lane departure.

1 LRSP Virtual Workshop, WSDOT, 2023. https://wsdot.wa.gov/sites/default/files/2023-02/LRSPworkshop2023.pdf

- **Help drivers re-enter their lane:** Once a driver departs their lane (off the roadway or into oncoming traffic), the following treatments can aid the driver to return to their lane before a crash occurs.
  - » Centerline rumble strips.
  - » Edge line rumble strips.[1]
  - » Pavement edge treatments.
  - » Add and widen shoulders.
  - » Traversable roadsides (slope flattening).
  - » Remove objects from clear zones.
- **Minimize the consequences of leaving the roadway:** If drivers are unable to stay on or get back on the roadway, then the best option remaining is to minimize the consequences of encountering the roadside. Strategies to reduce injury severity on the roadside include the following:
  - » Design necessary appurtenances (signs, lighting, etc.) within the clear zone as breakaway or yielding.
  - » Install crashworthy barriers (guardrail, median barrier, crash cushions).
  - » Install, update, and maintain guardrail end treatments.
  - » Note: There is increasing concern that larger and heavier vehicles are being marketed, such as SUV and light duty truck models, which exceed the design limits of guardrail treatments. This is something that should be considered and addressed as part of the comprehensive Safe System Approach. HB 1674 (introduced in 2023), if passed, would require vehicle dealers to provide written disclosure that describes the increased risk, add fines for certain traffic infractions is committed using a light truck or SUV, and require educational awareness campaigns.

Intersections

Intersections are critical points of access that manage the flows of road users across multiple roadways from urbanized town centers to rural communities. However, where routes intersect and paths cross, each of the resulting conflict points represents potential for crashes. The opportunity for fatal and serious injury crashes increases by approach speed, type of conflict, and by the combination of road users, including vulnerable road users.

Intersection crashes occur because of the operation of the intersection. Intersection types can include traditional intersection designs (i.e., 4 legs, 4 directions of travel intersection at a central point) and circular designs like roundabouts. Minimizing the risks to all by applying kinetic energy management design features, and implementing low-cost countermeasures to lower vehicle speeds, separate road users can remove conflict points and reduce conflict point severity. This can be achieved with traditional and innovative intersection design and treatments.

1 Rumble strips installations should provide room for people to walk, bike, and roll outside the rumble strip, especially areas where people depend on using the shoulder for active transportation.

EXISTING CONDITIONS: CRASH HISTORY

From 2020 to 2022, 24% of fatalities and 33% of serious injuries were intersection related.

TABLE 16. INTERSECTION-RELATED FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	130	111	113	150	147	175	**+33%**
PROPORTION OF FATALITIES	23%	21%	21%	26%	22%	24%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 17. INTERSECTION-RELATED SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	738	800	763	780	973	1,069	**+23%**
PROPORTION OF SERIOUS INJURIES	33%	36%	34%	32%	33%	35%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

> *"Structurally changing the roads to make them safer will improve safety 24/7."*
>
> *—Listening session participant in King Co.*

OVERLAPPING FACTORS

Of the 472 fatalities in crashes within an Intersection (2020-2022)

- 50.8% (240) involved an Impaired User.

PRINCIPAL COMPONENTS OF INTERSECTION SAFETY

There are five main considerations in intersection safety:

1. **Number and Type of Conflict Points.** More potential points of conflict lead to higher likelihood of crashes. Crossing movements, which include left-turns (at unsignalized intersections, or during permissive left phases of signalized intersections and right-angle ("T-bone" crashes) have the highest potential for fatalities and serious injuries.
2. **Speeds at the Intersection.** Higher speeds result in the potential for greater injury severity.
3. **Visibility.** Road users need to know an intersection is upcoming (user expectation). Once they approach, road users need to be able to see other conflicting movements.
4. **Combination of Road User Modes.** Any conflicts involving pedestrians or bicyclists have a relatively high potential for fatal and serious injury outcomes.
5. **Assignment of Right of Way for Crossing and Turning.** How drivers and active transportation operate at the intersection in terms of yielding, stopping, turning, and crossing.

PRIORITY STRATEGIES

Intersection design can limit conflict points, promote lower speeds, increase visibility for all users, and reduce conflicts between different road users.

Minimizing and Modifying Conflict Points

Conflict points at an intersection represent the crossing of potential paths from each entry and exit point of a roadway approach, each of which represents an opportunity for a crash. Depending on the type of conflict, the likelihood of a higher severity injury due to a crash is possible.

- **Crossing conflicts** (often associated with left-turns, or when a driver disobeys a stop sign or red traffic signal indication) result in the greatest potential for fatal and serious injury outcomes.
- **Merging and diverging conflicts points** — where road users are moving in the same direction — are associated with less severe crash types.

Intersection layouts include a multitude of designs including stop-controlled, traditional signalized, roundabouts, Median U-Turn intersections, Reduced Crossing U-Turn, Quadrant Roadway, Displaced Left Turn and Divergin Diamond interchanges. Each type of intersection has different conflict point characteristics. Roundabouts have a quarter of the conflict points of a traditional intersection. To reduce conflicts and lower severity, future designs should move away from traditional intersections wherever possible and replace them with roundabouts and other intersection types described on the following pages.

Source: Guidelines for the Planning and Design of Roundabouts (this image pulled from https://www.mass.gov/info-details/what-are-roundabouts)

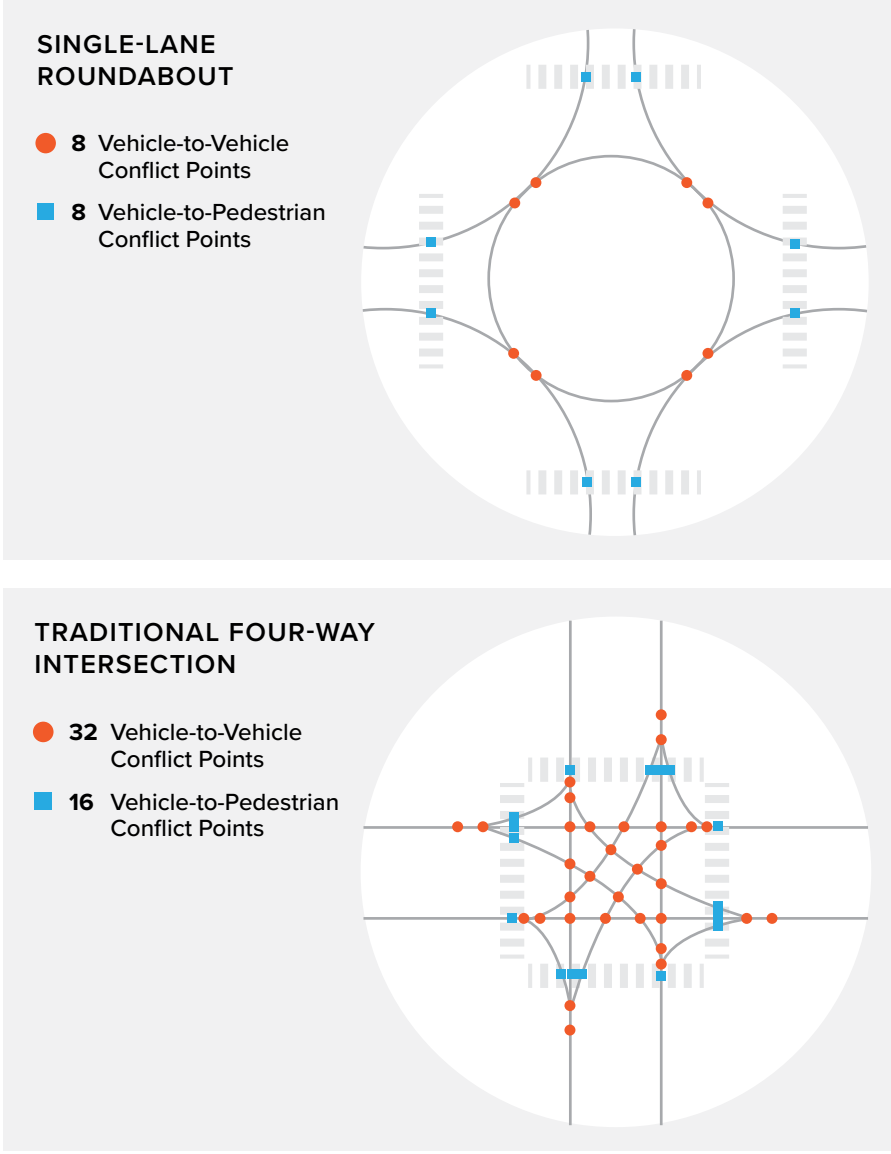

FIGURE 17. INTERSECTION CONFLICT POINTS

In these changes the infrastructure and information provided to roadway users must address the needs of people walking, rolling, and bicycling as well as drivers. Pedestrians who are blind or visually impaired have particular needs in these less common road configurations that can be met through accessible pedestrian signals and design cues.

When right-of-way and funding is available, innovative intersection design has been proven to offer benefits over traditional intersections. Below is a list of a few of these designs.

Restricted Crossing U-Turn (RCUT): intersections can reduce the number of left turn conflicts by half and assist in decreasing crash potential on divided roadways. **Figure 18** illustrates the allowed movements at an RCUT intersection.

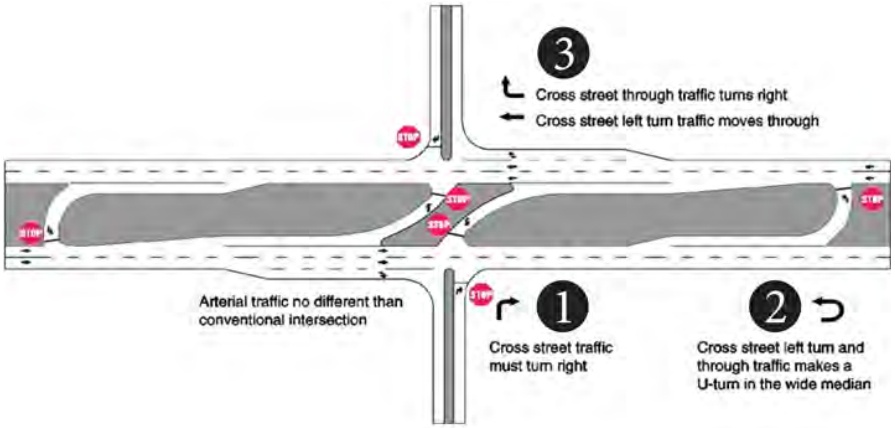

FIGURE 18. RESTRICTED CROSSING U-TURN (RCUT) INTERSECTION [FHWA PROVEN SAFETY COUNTERMEASURES, 2021]

FIGURE 19. DIVERGING DIAMOND INTERCHANGE AT I-5 AND SR-510, LACEY, WA [WSDOT]

Diverging Diamond Interchange (DDI): is also known as a double crossover diamond interchange. The primary difference between a DDI and a conventional diamond interchange is the design of directional crossovers on either side of the interchange. This eliminates the need for left-turning drivers to cross the paths of approaching through-vehicles. It also incorporates what is essentially a two-phase signal operation versus what can be up to eight phases at a traditional diamond interchange configuration. The overall design can increase vehicle throughput and safety without the need to widen beyond the existing road or bridge footprint at a limited access interchange [WSDOT DDI website]. Washington State's first DDI was completed in Lacey, WA, at Interstate 5 and State Route 510.

Roundabouts: Have proven to be the most effective in severity reductions by eliminating all left turn conflicts, reducing speeds, and adjusting the angle of a crash should it occur. Roundabouts also provide benefits for efficiency, resiliency, and sustainability. Despite concerns from pedestrian and bicycle advocates about accessibility and stress that they may experience at a roundabout, numerous studies in the U.S have shown that roundabouts do work for bicyclists and pedestrians, including those who are blind or visually impaired. Washington State has approximately 600 roundabouts with zero recorded pedestrian or bicycle fatalities.

Compact Roundabouts: Where funding or right-way may not be available, agencies have started to implement smaller innovative intersections which can be built faster and cheaper and capture the safety benefits of roundabouts. In the roundabout vernacular, they are called “compact” roundabouts. Compact roundabouts enable investments at a larger number of intersections, increasing the overall safety benefit.

FIGURE 20. LEFT: SINGLE-LANE ROUNDABOUT (WSDOT).[1] RIGHT: COMPACT ROUNDABOUT (FHWA)

1 https://www.wsdot.wa.gov/publications/manuals/fulltext/m22-01/1320.pdf

Stop Controlled Intersections: In some instances, a roadway intersection is controlled with two-way or all-way stop control. This can be due to the lack of suitable design standards at the time of construction, lack of delineation and signing that may be found on higher volume roadways. Further many may not have been officially designed but rather evolved over time due to population growth or land use changes. In many cases rural road intersections are stop controlled with either a two-way stop or an all-way stop control. Several countermeasures can be implemented to prevent future crashes at unsignalized intersections:

- Improved Visibility – Enhanced Signing, Delineation and Lighting
- Improved Sign Maintenance – A suitable schedule for inspection, cleaning and replacement should be established and damaged signs should be replaced without undue delay
- Install Stop Bars – on a minor road approach and where conditions allow a stop bar can be seen by an approaching road user.
- Supplemental Stop Signs Mounted over the Roadway – can provide approaching motorists a clear message that they must stop ahead
- Flashing Beacons – provides a visible signal ahead
- Transverse Rumble Strips – warn motorists that something unexpected is ahead.

Intersection Speeds

Intersection Design: The approach speed and speed through an intersection are critical factors in the outcome of a crash for the occupants of a vehicle or a pedestrian or bicyclist struck by a driver at an intersection. This is connected directly to the angle of entry. Most intersections built in the US prior to 2000 were 90-degree intersections. This angle is least successful in mitigating a crash that will cause bodily harm to users, be it a driver-to-driver crash or a driver striking an active transportation user. Alternative designs like RCUTs and roundabouts modify these approach angles, which reduces vehicle speeds and changes the conflict types to merging and diverging.

Improve Driver Compliance: Speed safety cameras, red light cameras, and high-visibility enforcement can all assist with driver compliance through an intersection.

Intersection Speeds

Intersection Design: The approach speed and speed through an intersection are critical factors in the outcome of a crash for the occupants of a vehicle or a pedestrian or bicyclist struck by a driver at an intersection. This is connected directly to the angle of entry. Most intersections built in the U.S. prior to 2000 were 90-degree intersections. This angle results in the highest crash forces being transferred, be it a driver-to-driver crash or a driver striking an active transportation user. Alternative designs like Restricted Crossing U-Turns (RCUTs) and roundabouts modify these approach angles, which reduces vehicle speeds and changes the conflict types to merging and diverging.

Improve Driver Compliance: Speed safety cameras, red light cameras, and high-visibility enforcement can all assist with driver compliance through an intersection.

Intersection Visibility

Low-cost Treatments: At signalized intersections, low-cost treatments include advance signing, retroreflective backplates, and adding signal heads (per lane and supplemental) to increase visibility. Signing and pavement marking can reduce crashes at unsignalized crashes. Intersection lighting provides greater visibility at night, and the luminaire structures can provide a daytime benefit, designating an intersection ahead.

Intersection conflict warning systems can be installed to warn drivers in real-time (on mainline or side streets) of conflicting motor vehicle traffic. These systems are most often used at high-speed rural intersections or at locations with identified sight distance restrictions.

Separating Movements and Modes

Protected left-turn phases at signalized intersections and turn lanes at all intersections can help separate different driver movements from one another, though care must be taken to consider the effect of additional lanes on pedestrian safety. Leading pedestrian intervals allow for people walking and biking to begin crossing earlier in the phase, allowing for less exposure and increased visibility. Disallowing vehicles to make a right turn on red at traffic signals can reduce conflicts with crossing pedestrians.

IMPLEMENTATION

Intersection Control Analysis/Evaluation (ICE) Policy: Washington State DOT Design Manual Chapter 1300 provides policy directing the way that WSDOT evaluates a change in intersection control. This policy incorporates the three major considerations for intersection safety.

WSDOT Design Manual**:** This manual has been developed for state facilities and may not be appropriate for all county roads or city streets that are not state highways. It is updated annually and now incorporates treatments such as protected intersections, a comprehensive design approach with a suite of design features that keep bicyclists physically separated from motorists and provide benefits for pedestrians as well.

Roundabout First Policy: Washington State is implementing a roundabout first policy to identify roundabouts as a preferable choice in comparison to signalization in most conditions.

Active Transportation Programs Design Guide: WSDOT's 2024 guide is intended to support local agency and Tribal grant applicants in understanding what types of treatments will receive more favorable consideration for active transportation grant program funding because of their proven effectiveness. It brings together guidance from national publications into one place and has material on intersections as well as accessibility and other topics.[1]

Highway-Rail Grade Crossings: The train involved crash data in Target Zero is limited to fatal and serious injury crash events between trains and motor vehicles at highway-rail grade crossings. Between 2020 and 2022, there were one fatality and four serious injuries involving trains and vehicles at these crossings. Active transportation user-involved crashes with a train, even if the crash occurred at the roadway crossing with the rail line, are not included in the typical crash database, but are included in the Washington State Utilities and Transportation Commission (UTC) report.

The Washington 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 partners, and funds rail safety projects. The commission also promotes public awareness in partnership with the national nonprofit Operation Lifesaver Program. Strategies to prevent train and vehicle crashes include outreach and projects to improve safety at public crossings. For more information, visit the UTC website.[2]

1 https://wsdot.wa.gov/sites/default/files/2024-02/WSDOT-Active-Transportation-Programs-Design-Guide_0.pdf

2 www.utc.wa.gov/publicSafety/railsafety

These crossings are multi-jurisdictional, meaning both roadway and railroad authorities are responsible for different aspects of design and maintenance. WSDOT maintains more than 100 at-grade railroad crossings on the state highway system. The agency also works in partnership with railroads, port authorities, cities, counties, and others to improve safety at highway-rail grade crossings. WSDOT provides technical support, standard plans, and design assistance through the Development Division Railroad Liaison.[1] WSDOT has several programs that fund safety improvement projects at railroad crossings.[2] It also participates in Operation Lifesaver, and WSDOT's Railroad Liaison serves on the National Committee on Uniform Traffic Control Devices and the Highway-Railroad Community of Interest dedicated to improving safety at crossings.

Work Zones: From 2020-22, there were 18 fatalities and 98 serious injuries related to work zones. The most frequently occurring factors were 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. Current and upcoming safety strategies include the following:

- RCW 46.61.212 defines roadway work zones and requires drivers approaching a work zone to reduce their speed and, if the opportunity exists, yield the right of way by making a lane change or moving away from the lane or shoulder occupied by a work zone vehicle.
- RCW 46.61.527, directs the secretary of transportation to adopt standards for the use of traffic control devices in roadway construction zones on state highways, including the establishment of reduced speeds. This statute makes it an infraction for drivers to violate posted construction zone speeds.
- Site-specific, multimodal traffic control plans to address unique work zone safety and mobility impacts.
- 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.
- Speed safety cameras. The legislature established provisions to allow WSDOT and WSP to use speed safety cameras in work zones on state highways, including interstates. Enacting legislation through SB 5272 in 2023. A second bill to modify provisions of was enacted in 2024 through SB 6115.

1 https://wsdot.wa.gov/engineering-standards/design-topics/utilities-railroad-agreements/highway-railroad-coordination

2 https://wsdot.wa.gov/business-wsdot/support-local-programs/funding-programs/highway-safety-improvement-program/highway-safety-improvement-program-call-projects

ROAD USERS BY AGE GROUP

Traffic Safety: A Lifelong Journey | Lifecycle of Road Users

Driving a personal vehicle is often considered the normal or default mode of travel in the U.S. However, everyone uses multiple modes of travel across their lifespan. Traffic safety approaches must consider the needs of every road user, including people walking, rolling, and cycling.

A human-centered approach reframes this perspective, considering the needs and experiences of individuals throughout their lives. Such an approach also recognizes that not everyone drives for transportation, due to age, ability, personal choice, or economic factors. It also recognizes that a driver's skill and experience change over time. By considering changing needs and abilities over time an equity-based approach also considers pedestrians, bicyclists, and transit riders, and recognizes that each of us will need to use multiple modes of travel in our lives for safe movement. We can understand this as a multimodal continuum over time.

This new paradigm starts at the very beginning of life, long before someone is responsible for their own transportation. During the pre-novice stage, children can be exposed to age-appropriate traffic safety education, fostering awareness and positive behaviors from a young age. Washington's new school-based bicycle safety education program launched in 2022 will reach 90% of all students in the state at full implementation. This program will reinforce knowledge of traffic laws and train students to be confident and competent riders. The availability of free transit passes for youth around the state is creating a new generation of people riding transit, passenger rail, and Washington State Ferries (where these services are available).

As some become novice drivers in their teens, personalized learning, performance-based assessments, and graduated licensing programs can provide the necessary skills and experience for safe driving.

This approach also acknowledges the dynamic nature of individual needs. As people navigate life transitions, like changes during midlife and their senior years, their abilities and circumstances change that may require a need for different approaches to driving and other travel modes. Neurodivergent drivers, for instance, may require specific accommodations and support. Similarly, adults experiencing cognitive or physical decline may need assistance in planning for transportation independence after their driving years end, if that has been their primary form of transportation. Friends and family members need information to encourage their loved ones to acquire new skills that enable them to maintain their transportation independence for as long as possible Recognizing these diverse needs allows us to provide proactive support and resources throughout the life course, ensuring everyone can navigate the road safely and confidently. People with visual, hearing, or other physical impairments may require other accommodations to allow them to drive or to provide sufficient alternatives for travel. This includes impairments that may be permanent, as well as those that may develop as the result of an injury, illness, or the aging process.

This lifelong approach offers several advantages. By understanding the unique needs of each stage, approaches become more relevant and effective. Tailored education, personalized support, and flexible transportation options create a system that caters to individuals, not just statistics. This, in turn, fosters a prosocial culture of shared responsibility and community engagement with traffic safety, ultimately leading to safer roads for everyone.

Young Drivers

Young drivers face an increased crash risk due to both their relative immaturity and inexperience. According to the National Institutes of Health (NIH), the development of the prefrontal cortex, which is responsible for executive brain functions, is not complete in most humans until the age of 25. Executive functions include the capacity to plan, self-monitor, and control impulses. When a young person is learning to drive, they lack the skills and experience necessary to recognize and respond to risk appropriately. Because if this, it is not surprising that NIH also reports that motor vehicle crashes are one of the primary causes of death and injury for individuals ages 15 to 24 years.[1]

Young drivers are defined in Target Zero as ages 15-24 years old. In Washington, a young person can obtain an instruction permit at age 15. At age 16, they can obtain an intermediate license under RCW 46.20.075, after several conditions are met, including six months with an instruction permit and completion of an approved driver safety education course in accordance with the standards established in RCW 46.20.100. A young person who obtains a license to drive at age 18 or older is not required to meet these requirements.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 18. YOUNG DRIVER (AGE 15-24) INVOLVED FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	151	143	127	143	200	176	**+23%**
PROPORTION OF FATALITIES	27%	27%	24%	25%	30%	24%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 19. YOUNG DRIVER (AGE 15-24) INVOLVED SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	677	605	625	698	824	897	**+27%**
PROPORTION OF SERIOUS INJURIES	30%	27%	28%	29%	28%	29%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

1 Arain, M. et. al. (2013). Maturation of the adolescent brain, *Neuropsychiatric Disorders and Treatments*, 9: 449-461. Accessed online on 5/3/2024: https://pubmed.ncbi.nlm.nih.gov/23579318/

Young drivers ages 15-24 make up just 10.6% of the driving population, but they were involved in crashes that resulted in 26% of all fatalities and 29% of all serious injuries between 2020 and 2022. (Important Note: involvement of a young driver does not imply the young driver was deemed at fault.)

OVERLAPPING FACTORS

Among the 519 fatalities involving a Younger Driver (age 15 – 24) between 2020 and 2022:

- 63.7% (331) involved an Impaired Road User.
  - » Among these, XX% (XXX) were the young driver
- 56.4% (293) involved an Impaired Driver.
- 48.5% (252) involved a Lane Departure.
- 41.2% (214) involved a Speeding Driver.

Impairment, speeding, and unrestrained occupants were the top risky driver behaviors that were present in young driver-involved fatalities between 2020 and 2022 (driver impairment is significantly higher among those 21-24 years old compared to drivers 15-20 years old). Higher rates of these behaviors correlates with brain research which shows that teens and young adults below the age of 25 are more likely to engage in high-risk behaviors because they tend to be more impulsive and less likely to understand or think about the consequences of their decisions to drive after using alcohol or drugs, drive at higher speeds, or to not use a seat belt.[1]

1 Source pending

KEY ISSUES

Washington's graduated driver license system 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. At age 18 they can get a license without going through any professional driver training if they can pass the written and driving exams. Reasons young adults wait to get their license include the expenses associated with being a licensed driver, required driver education classes to earn a license at age 16 or 17 (including the cost of these classes), and lack of access to a motor vehicle.[1] (WTSC, 2020)

The data below show significant differences in fatal and injury crash involvement (i.e., crash rate per population of licensed drivers in that age group) based upon completion of a driver education course. Novice drivers licensed at age 18-20 years old with no driver training prior to licensure had a 78% higher rate of fatal and injury crash involvement, compared to same-age drivers who had completed driver training. Slightly older drivers also showed a significant difference in crash rates between those who have an have not completed driver training. Specifically, drivers age 21-24 who lacked driver education had crash rates that were 67% higher compared to their peers who had completed a driver training course. These findings suggest that formal driver training results in significantly reduced injury and fatality outcomes.

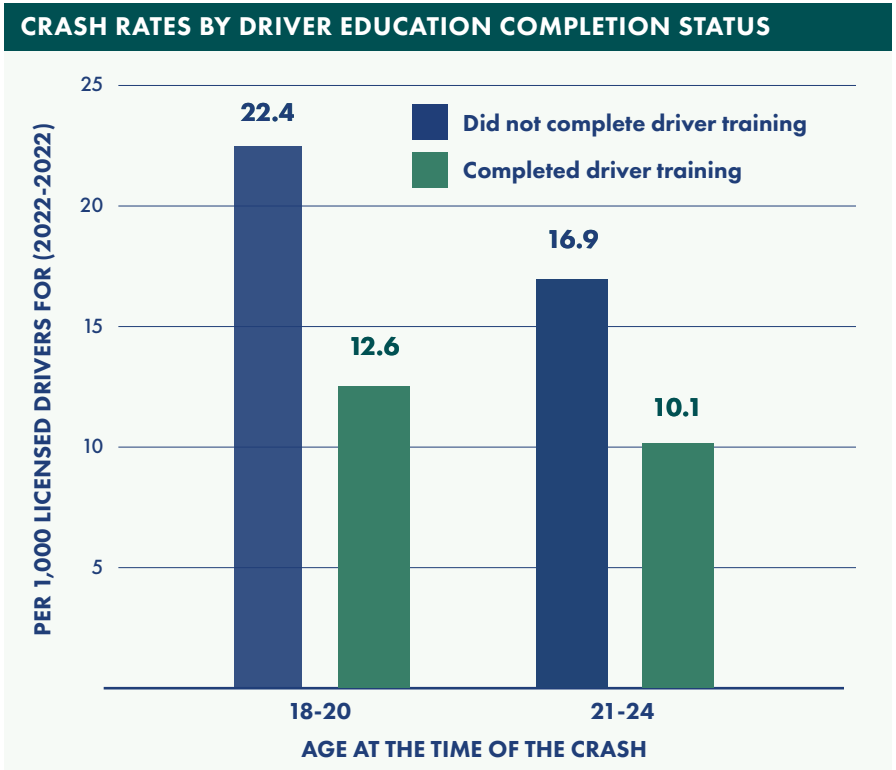

FIGURE 21. YOUNG DRIVER CRASH INVOLVEMENT RATES FOR 18-24 YEAR OLDS, INJURY AND FATAL CRASHES IN WASHINGTON STATE BY DRIVER COMPLETION STATUS

1 https://wtsc.wa.gov/wp-content/uploads/dlm_uploads/2020/09/GDL-Program-Attitude-and-Behavior-Survey-Results-V2_Oct2020.pdf

> “Many (youth) are driving without a license, no driver education background, and lack of familiarity with traffic laws.”
>
> *—Tribal listening session participant*

PRIORITY STRATEGIES

Extend Intermediate Requirements: Extending intermediate license and driver training requirements to older novice drivers (18+ years old) is another approach to increasing safe driving behaviors. In this approach, it would also be advisable to increase access to and affordability to state authorized driver training courses to avoid exacerbating existing inequities. Extending these requirements without improving the accessibility and affordability of driver training could lead to young people further delaying licensure to “wait out” the requirements, or choosing to drive unlicensed. WTSC estimates that extending requirements for driver education and intermediate licensing through age 24 would result in approximately 4,000 fewer injury crashes in Washington per year.

SB 5583 requires DOL to research the feasibility, and provide recommendations, for expanding mandatory driver education as a requirement for obtaining a driver license from age 17 to 24.

This includes, but is not limited to:

- Courses that can satisfy this expanded educational requirement.
- Assessment of public and private resources.
- Current access to drivers’ education (and how to improve access).
- Developing a plan for public outreach and education.
- Collaboration with Educational Service Districts to determine if they can support facilitation.
- Options to address financial need (for students enrolled in schools and private settings).
- Approaches by other states who have similar requirements.
- Requiring DOL to research mandatory driver education refresher courses on the topics of risk management and hazard protections one year after licensure and appropriateness for intermediary card holders, and
- Assessment of directly providing driver training education or facilitating partnerships with driver educators to close availability and accessibility gaps in rural and underserved areas.

Opportunities also exist in Washington to strengthen GDL restrictions, one of which is to adjust nighttime restrictions to begin at 9:00 pm instead of 1:00 am.[1]

1 WTSC Policy Brief: Reducing the Risks of Injury and Fatal Crashes among Young Drivers, 16 through 25 Years of Age. https://wtsc.wa.gov/wp-content/uploads/2024/03/Policy-Brief_Young-Driver-fact-sheet_WTSC_2023.pdf

Improve Driver Education and Intervention: Encourage improvement of training programs and standards with inclusion of hazard identification and traffic safety instructor development to match NHTSA standards. Support mentorships, teen/parent driving contracts, and legislation and funding for financial assistance to underserved populations to cover a portion or the full cost of the driver training.

Foster Compliance with Washington State's Graduated Driver Licensing (GDL) laws and Strengthen Restrictions: Adjust licensing restrictions with extended nighttime restrictions (i.e., start the nighttime restriction earlier), a lengthier permit holding period, and strengthened passenger restrictions. Provide parents, law enforcement, and driver education program providers information about the GDL program to encourage support for legislation. Provide education and training to parents about driving risks their children face and how to set appropriate limits to reduce these risks. Encourage Tribal communities to adopt GDL laws and provide resources to improve awareness.

Make Driver Education Accessible: Policy makers can increase access to driver education by reducing the cost for students generally or subsidizing the cost for low-income drivers specifically. Tribal representatives identified this need, seeking more funding for programs in rural areas that serve Tribal populations and an education incentive program. Making driver safety education more affordable would allow more drivers to receive training and an intermediate license at age 16- or 17-years-old.

Peer to Peer Education: Programs such as Teens in the Driver Seat provide peer-based traffic safety education in Washington high schools, junior highs, and colleges, empowering youth to actively promote traffic safety. The program addresses all major risks for this age group, including impairment, speeding, and distraction. It applies several frameworks—peer-to-peer, traffic safety culture, shared risk, and protective factors—to change behaviors among young people.

Individual Incentives: Incentivizing safe driving choices on the individual level to encourage newer drivers to establish good driving habits. One example of this is the smartphone app "You in the Driver Seat", where any young driver in Washington can earn gift cards for driving distraction free and not speeding.

Education by Community Influencers: Empowering influential community members, such as law enforcement and first responders, to deliver in-school traffic education through assemblies or small group presentations.

Driver Skills Exam Update: A pilot study is underway to modernize Washington's driver skills exam. This effort includes identifying critical components that should appear on a driver skills test to evaluate a driver's potential. The pilot study has the potential to introduce Hazard Perception testing. Washington would be the first state in the U.S. to include this feature.

Provide Active Transportation Options: Providing active transportation facilities and transit availability will help offer additional modal options for young people, which will positively affect young driver safety by reducing their use of motor vehicles. Increasing the frequency, reliability, and availability of transit services supports this. Move Ahead Washington introduced free transit services for riders ages 18 and younger. This was recently expanded to Amtrak services in the state.[1]

Older Drivers

People aged 70 years old and older are the fastest growing segment of the population in Washington State. The aging of the state's population brings with it new issues and challenges, including how to keep older drivers safe and mobile. Driving means independence to an older individual. It enables connection with community and health related visits.

Fatalities involving older drivers in Washington have been trending upward, with a recent fatality increase of 11% from 2017-2019 to 2020-2022. 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.

Between 2020 and 2022, 96% of the population aged 70-74 years old held a valid driver license; and 75% of the population aged 85+ years old had a driver license.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 20. OLDER DRIVER (70+) INVOLVED FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	71	66	89	74	83	94	**+11%**
PROPORTION OF FATALITIES	13%	12%	17%	13%	12%	13%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 21. OLDER DRIVER (70+) INVOLVED SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	199	210	258	256	287	295	**+26%**
PROPORTION OF SERIOUS INJURIES	9%	9%	11%	11%	10%	10%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

1 Youth Ride Transit for Free! https://info.myorca.com/youth-ride-free/#:~:text=Do%20I%20need%20a%20Youth,riding%20the%20Seattle%20Center%20Monorail.

OVERLAPPING FACTORS

Of the 251 fatalities involving an Older Driver (70+).

- 39.0% (98) involved a crash within an Intersection.
- 38.6% (97) involved an Impaired User.
  - » Of these, XX% (xx) were the older driver
- 33.4% (84) involved the crash type Lane Departure.

Note that involvement of an older driver does not imply the older driver was deemed at fault. Also, these overlapping factors may or may not apply to the older driver; for example, the impaired user could be another party in the crash.

KEY ISSUES

As people age, they may experience declines in their driving abilities because of age-related changes and/or medical conditions. Older people are particularly vehicle-dependent because unlike younger people, they live disproportionately in more remote, rural areas with few, if any, transportation choices. Increased availability of transit service, including micro-transit, paratransit, Dial-a-Ride, and other flexible services in addition to fixed-route service can increase transportation independence in such areas.

Car ownership and driving are strongly linked to independence and life satisfaction for older adults who can drive for transportation. However, most people still outlive their ability to drive. The average American male outlives his ability to drive by six years, and the average American female by 10 years.[1]

Fragility is more 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. This is true for older people outside the vehicle as well as inside.

PRIORITY STRATEGIES

Identify Drivers at Elevated Medical Risk: Establish and develop updated guidelines for medical conditions. Driver license restrictions or revocations, when needed, can assist in limiting risks.

Evaluate Driving Abilities: Implement programs that allow for screening and evaluating of older drivers' physical and cognitive abilities along with training for law enforcement, licensing providers, medical professionals, and community members to recognize diminishing abilities. With the new guidelines and education, reevaluation referrals can assist in providing proper screening.

Train driver licensing office representatives on how to best identify customers with physical and cognitive conditions that can interfere with the safe operation of a motor vehicle. Adding restrictions to licenses such as daylight driving only, specific geographical areas, or low speed roads can assist with risk reduction.

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.

1 These data are included on a gender binary because that's how the referenced study collected the data. This plan acknowledges that it does not represent everyone.

Improve Older Driver Competency: Increase driver education opportunities, with the development of classes and partnerships to introduce older road users to new vehicle technologies and roadway technologies to support continued learning of safe vehicle and road use.

Road Visibility Improvements: Improving signage, pavement markings and the readability of roadway signs can better accommodate the needs of older drivers.

Provide Active Transportation and Transit Options: Providing active transportation facilities and transit availability will help keep these drivers active and better drivers by supporting their overall health, and when they are unable to drive themselves, these facilities will offer additional modal options. Access to transit is limited across most of Washington state, as are services to take older individuals to appointments. Making improvements to these options will positively affect older driver safety. Promotion of safe mobility options for older people by providing guidance and assistance on identifying safe mobility options within the community. Increase the frequency, reliability, and availability of transit services, carpooling, etc., to provide lifelong mobility options for older road users.

Older Driver Study Proviso (HB 1125, Section 208): This study has been commissioned by the legislature to develop a comprehensive plan aimed at improving older driver safety, including a report on the plan by December 1, 2024. The plan will include the following:

- A comprehensive review of DOL policies surrounding older drivers and medically at-risk drivers, including the medical assessment review process and the counter assessment process in licensing service office.
- A feasibility analysis of the DOL establishing a medical advisory board to advise on general policy for at-risk drivers, driving privileges for individual medically at-risk drivers, and an appeals process for drivers whose privileges are revoked or restricted due to medical conditions.
- A recommended assessment tool to determine a driver's potential risk to themselves or others when operating a motor vehicle so DOL may make informed decisions on appropriate courses of action within the older driver program.
- Detailed information on how each component of the plan improves the safety associated with older drivers, while preserving the maximum level of older driver independence and privacy.

ROAD USERS BY MODE OF TRAVEL

Active Transportation Users

The Washington State Vulnerable Road Users Safety Assessment, completed in November 2023, is provided in Appendix X.

Active transportation users are people who use a human-scale and often human-powered means of travel. Active transportation includes walking, bicycling, using a mobility assistive or adaptive device such as a wheelchair or walker, micromobility devices such as skateboards, and electric-assist devices such as e-bikes and e-foot scooters. People may use those modes for the entire length of a trip or to access public transportation, passenger rail, ferry service, or airports. They are essential to a multimodal system.

Walking, bicycling, and rolling 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 common factors–most notably vulnerability to crash forces in a vehicle collision.

Between 2020 and 2022, 21% of all traffic fatalities and 17% of all traffic serious injuries were active transportation users. These figures continue to trend upwards. In 2021 active transportation user deaths reached their highest number ever recorded in Washington. Compared to 2017-2019, the 2020-2022 figures show a 19% increase in fatalities for people who walk, bike, and roll; and a 2% increase in serious injuries.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 22. ACTIVE TRANSPORTATION USER FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	124	119	116	123	160	145	**+19%**
PROPORTION OF FATALITIES	22%	22%	22%	21%	24%	20%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 23. ACTIVE TRANSPORTATION USER SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	449	523	460	397	509	550	**+2%**
PROPORTION OF SERIOUS INJURIES	20%	23%	20%	16%	17%	18%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

Between 2017 and 2022, vehicle miles traveled (VMT) decreased by 9%, which should have decreased exposure for active transportation users.[1] This decrease in VMT reflected changes in driving patterns during the COVID pandemic when many commuters shifted to teleworking. However, the number of crashes involving people walking and biking increased during this time. A large increase in drivers traveling at speeds significantly above posted speed limits resulted in more severe injury outcomes in crashes involving active transportation users.

Another trend is the increase in larger passenger vehicles such as light duty trucks and SUVs on the road. The mass, size, and shape of the striking vehicle directly affect the severity and nature of injuries sustained by the active transportation user. Not only are pickup trucks and SUVs heavier than traditional passenger cars, but their height also significantly changes the crash angles when an active transportation user is struck. According to a recent study by the Insurance Institute for Highway Safety, a vehicle hood's leading edge that is 40 or more inches above the road surface increases the risk of a pedestrian fatality in a collision by 45%, compared to vehicles with a leading edge that is only 30 or fewer inches off the ground.[2]

KEY ISSUES

Speed. The speed data tells us that fatal and serious crashes can occur at any speed, but active transportation users are far more likely to be injured or killed as drivers' speeds increase. Still, a high percentage of active transportation user fatalities occur on roads with lower posted speed limits because these are the streets leading to and from destinations that attract both active transportation users and drivers. There is research showing that larger volumes of active transportation users are more likely to be noticed by drivers. But higher numbers of active transportation users in areas where vehicles also travel increases the potential for conflicts between modes. Speeding is also a factor in lower posted speed limit environments, leading to increased severity.

Designing roads at higher speeds often lead to longer intersection spacings and fewer traffic controls, resulting in crossing locations that require the pedestrian to travel longer distances and to judge closing speed of the driver to decide whether they have time to cross. The alternative is to follow along the shoulder or sidewalk—if available—with associated costs and burdens in time, potential security concerns, adverse weather conditions, and other tradeoffs.

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1 Vehicle Miles Traveled. https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwsdot.wa.gov%2Fsites%2Fdefault%2Ffiles%2F2022-10%2Fpublic-roadway-vmt.xlsx&wdOrigin=BROWSELINK

2 IIHS, Vehicles with higher, more vertical front ends pose greater risk to pedestrians. 2023. https://www.iihs.org/news/detail/vehicles-with-higher-more-vertical-front-ends-pose-greater-risk-to-pedestrians

Marked Crossings for Pedestrians. Three out of every five pedestrian fatal and serious injury crashes (60%) occur when the pedestrian is crossing the street. In most of these crashes the person walking was either reported as using the roadway (47%) or a marked or unmarked crosswalk (49%). 56% of the pedestrian crashes documented as being intersection related, yet limited infrastructure data is available to help understand the contributing factors of those crashes. State and local jurisdictions don't have complete, current inventories of the presence or absence of sidewalks or crosswalk markings; a pedestrian may be in the roadway because no other option to cross has been provided.

In 52% of bicyclist fatal and serious injury crashes the active transportation traveler was using the roadway. This may reflect the lack of separated bicyclist lanes, which is especially concerning at intersections where separated bicycle lanes are dropped to make space for motor vehicle turn lanes. More data is needed regarding the availability of bicycle lanes to determine the extent to which this is a factor, and how best to address all road users in these circumstances.

Crash Location and Exposure. It was not a surprise that most fatal and serious injury crashes for both pedestrians (87%) and bicyclists (85%) occur in population centers (cities and census designated places). Of the crashes that occur in population centers, 81% were in high equity index census tracts that is, in locations where it's more likely that people rely on walking, bicycling, and transit access for everyday transportation, and where pedestrian/bicyclist facilities are less likely to be provided.

Only 4% of pedestrian fatal and serious injury crashes and 6% of bicyclist fatal and serious injury crashes occurred in rural areas.

Patterns associated with the road characteristics, user actions, and time of day were like the fatal and serious injury crashes in population center locations. However, underserved road users in rural and Tribal areas use active modes often – sometimes to travel rela-tively long distances. These rural roadways are much less likely to have dedicated pedestrian or bicyclist options. They often have narrow to nonexistent shoulders; and intersections are much far-ther apart.

About 57% of pedestrian fatal and serious injury crashes occurred at night. Of those, 72% occurred at a location where streetlights were on, which may indicate the benefits of providing pedestrian-scale lighting designed to increase the driver's ability to see pedestrians at the side of the road. Fewer bicyclist-involved fatal and serious injury crashes (31%) occurred during nighttime conditions.

Active Transportation User Characteristics and Travel Behaviors: Both pedestrian and bicyclist fatal and serious injury crashes were more likely to occur in high equity score census tracts. While not the only measure of equity related variables, certain racial, cultural, and ethnic group identities are overrepresented in the crash data. People who are American Indian or Alaska Natives comprise 1% of the Washington State population but make up 7% of active transportation fatalities. Those who have a multiple racial heritage make up less than 9% of the population and 14% of fatalities. African Americans make up just over 4% of the population, but 6% of pedestrian fatalities. No data is available on whether a crash victim had a disability or was low-income, both of which are additional factors associated with reliance on walking, biking, and/or transit access.

Active transportation users ages 65 and older are two to eight times more likely to die than younger people when struck by a motor vehicle. Approximately 15% of pedestrians 65 and older die after being hit by a motor vehicle, in part due to a decline in physical resiliency. Population trend predictions indicate that this is an issue that is expected to increase in coming years. In 2022, 17.1% Washington state residents were 65 and older and by 2030, the baby boomer generation (those born between 1946 and 1964) will make up 1 of every 5 individuals in Washington. By the year 2050, the number of adults over 60 is forecasted to represent over 29% of the state's total population.

Data is lacking for traffic deaths of people who are houseless, the numbers of whom have increased in our state over the last 10 years. Focusing implementation efforts on destinations that serve this population will be important for eliminating fatal and serious injury crashes that involve them. Refer to the destination analysis below.

Recognizing the role that policies and environments can serve in shaping our behaviors and decisions, human behavior remains a contributing factor in active transportation user-motor vehicle crashes. Prevention of risky behavior on the roadways is a shared responsibility among travelers using all modes of transportation, but it is especially critical to active transportation user safety. While behaviors such as failure to yield the right-of-way, impairment, and inattention are not exclusive to a singular mode of travel, modern vehicle technology protects occupants from much of the energy impact of a crash, while those outside the vehicle remain particularly susceptible to death or injury.

RELATED PLANS AND PROGRAMS

Several recent plans provide detailed recommendations for specific safety measures. These include the Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations (2018 Safe Transportation for Every Pedestrian (STEP) Plan), Washington State Injury Minimization and Speed Management Policy Elements and Implementation Recommendations (2020), Washington State Active Transportation Plan (2021) and WSDOT Vulnerable Road Users Safety Assessment Report (2023). These documents collectively provide a systematic framework of information and guidance for addressing pedestrian and bicyclist issues and potential safety improvement measures.

In 2019, the legislature passed passed Substitute Senate Bill 5710, which required the WTSC to convene the Cooper Jones Active Transportation Safety Council (ATSC), governed by RCW 43.59.156. The purpose was to use data to identify patterns related to fatalities and serious injuries of active transportation users, with the goal of identifying improvements. The council may monitor implementation progress of ATSC recommendations and seek opportunities to expand consideration and implementation of the principles of systematic safety, including data collection improvement. To better understand active transportation user data, the WTSC conducts fatal case file reviews with members of the ATSC. The observations from the case reviews often lead to the development of study teams, which in turn, can lead to ATSC recommendations. The council provides these recommendations to the legislature annually in the Cooper Jones Active Transportation Safety Council's Annual Report. To date, the legislature has acted on 15 recommendations, including expanding the use of traffic safety cameras, making it easier for local jurisdictions to lower speed limits, and providing funding for research to recommend active transportation user lighting standards.

In 2024 the legislature passed HB 1181, updating the Growth Management Act. This requires jurisdictions to apply multimodal level of service standards and give priority to "inclusion of transportation facilities and services providing the greatest multimodal safety benefit to each category of roadway users for the context and speed of the facility" to Comprehensive Plan updates. Local jurisdictions must include a Transportation Plan as required in Title II of the Americans with Disabilities Act Transition Plan and must consider infrastructure availability as part of an equity analysis in the housing element. Taken together, these policy directives point to the need for robust planning for safe, accessible active transportation and transit access in local land use decisions.

Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations: The STEP Plan provides recommendations for process change to improve current practice and inform a desired future state in which appropriately controlled crossings are available to meet pedestrian needs that have not been addressed in the design and construction of the current driving-oriented facilities.

Recommendations include several policy changes already underway statewide, along with actions that need more work to fully implement. These include the following:

- Ongoing data collection, analysis, and evaluation.
- Land use context and modal facilities and treatments, volume, and behavior analysis to inform facility types and locations.
- Methodologies for prioritizing pedestrian improvements that are responsive, flexible, and transparent.
- Crossing enhancements following guidance that considers posted speed, traffic volume, crossing proximity, and roadway configuration.

Washington State Active Transportation Plan: The Washington State Active Transportation Plan (ATP) describes the state's active transportation network as an incomplete patchwork, with high-quality segments in some locations and no facilities in others. The plan is built on the STEP, the speed management policy framework, and other sources to arrive at recommendations.

In areas with greater population density, there are opportunities to encourage road users to shift from mo-tor vehicles to bicycling and walking. Land use planning plays an important role for increasing population density, planning shorter routes of travel, and reserving spaces for safe active transportation travel.

Network needs include:

- Creating facilities suitable for people of all ages and abilities, using the level of traffic stress (LTS) index to measure how wide, fast, and busy a road is.
- Increasing safe crossings for active transportation users.
- Designing crossings to address the context of the roadway, including road size, speed, and volume of vehicle traffic.
- Installing wayfinding signs to allow active transportation users to navigate an area, like guide signs for motor vehicle users.
- Improving the state's capacity to understand and manage assets.
- Partnering across jurisdictions to provide network connectivity.

ATP implementation is supported by the 2022 Move Ahead Washington legislation, including increased investments in grants to local agencies and the Complete Streets requirement on WSDOT projects changing state routes over time to improve active transportation safety, accessibility, and connectivity (a requirement for projects greater than $500,000 under RCW 47.04.035).

Washington State Injury Minimization and Speed Management Policy Elements and Implementation Recommendations: The recommended elements of this policy framework include adopting a speed limit setting approach that minimizes injury severity; recognizing the limitations of legacy engineering approaches (e.g., adherence to the 85th percentile operating speed); and adopting a broader Safe Systems Approach to identify locations to prioritize for injury minimization and speed management improvements.[1]

Active Transportation Crash Analysis for Washington State Target Zero Plan: Crash data from 2020 through 2022 gives additional insight into the patterns associated with fatal and serious injury pedestrian and bicyclist crashes. The findings point to road characteristics, places, and population groups where safety investments will likely have the greater potential to reduce future deaths and serious injuries among these travelers.

Road Characteristics: Crash Severity, Likelihood and Vehicle Speed: Pedestrian and bicyclist fatalities appear more likely to occur at locations where more active transportation users are found and where posted or actual speeds are higher. More than half (56%) of pedestrian and bicyclist fatal and serious injury crashes occur on roads with a posted speed limit greater than 25 mph. Looking at fatalities alone, 78% of pedestrian fatalities and 74% of bicyclist fatalities occurred on roads with a posted speed above 25 mph. Only 1% of pedestrian and bicyclist serious and fatal crashes occurred on roads with a posted speed of 20 mph.

PRIORITY STRATEGIES

Using the safe system approach to address crash exposure, likelihood, and severity is the core of this Target Zero Plan. For active transportation users, this starts with three main opportunities: lowering vehicle speeds, increasing crossing median treatments, and separating facilities from motorized traffic traveling along the system.

In doing so, we must consider the system as a whole, destinations such as schools, hospitals, food banks, etc., and recognize the interconnectedness with other modes such as transit, and at major factors for pedestrians and bicyclist roadway safety outcomes.

1 Additional information about this policy framework is available in Section XXXX, Speeding.

> “We prioritize maintenance for car features of the road, but not sidewalks or bike lanes.”
>
> *—Community listening session participant in Yakima County*

Much could be done quickly with these systemic changes. While low cost, they will require political leadership and a true commitment to changing the transportation system. They are described in more detail below.

- Road reconfigurations: Set a standard for a change to every road that has less than 15,000 vehicles per day. Reduce the number of travel lanes, assess posted speed limit, narrow travel lanes, and install separated bicycle facilities.
- Increased use of automated traffic safety cameras.
- Use default and/or category speed limit setting practices and post lower speeds, iterating down to the target speed for the land use and mix of people and destinations.
- Leading pedestrian intervals at all traffic signals.
- Raised crossings.
- Right turn lane and slip lane removal at intersections
- Curb extensions, median islands, or other treatments to reduce crossing distance for people walking or biking and make them more visible to drivers who are turning.

The following are recommendations and serve as topics to expand on in the Target Zero Implementation Plan.

Reducing driving speeds

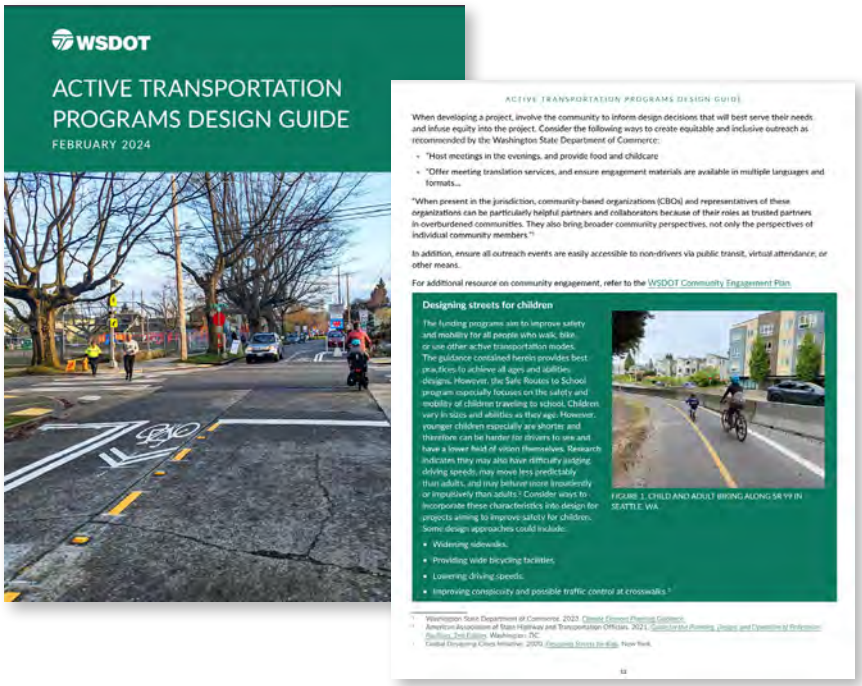
- Inventorying the transportation system to identify multimodal networks and their associated speed limits and differences from target speeds in population centers; tracking progress of speed reduction efforts.
- Communicating the importance of lower speed limits for the safety of all road users to drivers, the public, and elected officials.
- Changing the way that posted speed limits are set with the goal of minimizing injury severity and likelihood, implementing the approach outlined in the Injury Minimization and Speed Management policy framework in population centers.
- Installing speed management treatments such as road diets, roundabouts, automated traffic safety cameras and gateway treatments with culturally relevant installations – refer to the WSDOT Active Transportation Funding Programs Design Guide.
- Right sizing Washington State roads. This process includes the following elements:
  - » Inventorying multilane roads.
  - » Evaluating road reconfiguration.
  - » Systematically implementing road reconfiguration to lower speeds and create space utilized for separated active transportation users.

Investing in pedestrian and bicyclist crossings:

- Implementing the Washington State Safe Transportation for Every Pedestrian Action Plan for Implementing Pedestrian Crossing Countermeasures at Uncontrolled Locations.
- Inventorying the transportation system to identify multimodal roadways where there are destinations, transit connections, and other pedestrian/bicyclist crossing needs with the goal of a route directness index of 2 or less (a measure of the pedestrian detours imposed by lack of crossing opportunities).
- Based on the inventory, installing crossing treatments with higher frequency in population centers at legal crossings and at mid-block crossing locations.
- Utilizing leading pedestrian intervals and pedestrian scrambles at traffic signals.
- Providing adaptive pedestrian signals in locations that can be expected to have higher numbers of slower-moving pedestrians, so time is extended to accommodate their travel speeds.

Providing separated pedestrian/bicyclist linear facilities.

- Installing separated pedestrian and bicyclist facilities such as sidewalks, shared use paths and bicycle boulevards – refer to the WSDOT Active Transportation Funding Programs Design Guide.
- Institute requirements for construction of new roads in population centers to include active transportation facilities.
- Prioritizing walk/bike facilities including appropriately controlled crossings and linear facilities for access to public transportation stops and schools.



Other Opportunities:

- Lowering vehicle miles traveled.
  - » Implementing recommendations in the WSDOT Vehicle Miles Traveled (VMT) Targets – Final Report.
  - » Changing the way the vehicle miles traveled are calculated to include con-sideration for the safer miles traveled via public transportation.
  - » Considering how public transportation systems like buses and light rail help to reduce crash exposure by removing vehicles from the system and invest-ing in transit systems for their contributions to safety and other co-benefits.
- Creating transportation efficient communities through land use policy by reducing walkable/bikeable distances to destinations.
- Focusing on improvements that will serve Tribal communities:
  - » Investing in active transportation and transit on Tribal lands.
  - » Working with Tribal governments to understand and meet their needs.
- Supporting public transportation for safer multimodal travel by:
  - » Completing an equity analysis of gaps in transit service where transit would reduce potential for serious/fatal crashes.
  - » Providing transit passes tied to income, and to seniors, like the youth free passes funded under Move Ahead Washington.
  - » Increasing the frequency of service to decrease the time cost of public transportation and increase ridership, which will mean fewer people driving and save lives by decreasing exposure.
  - » Reduce the potential for crashes at public transportation stops and nearby crossings. When necessary, eliminate stops on high-speed, high-volume roads, which will require alternate routes or changes to the roadway to consider the safety of public transportation riders.

WHO CAN MAKE A DIFFERENCE:

- Policy makers, including those who make zoning decisions for housing, businesses, and public resources.
- Policy makers who set taxes and fees, which create incentives and disincentives to use different modes of travel.
- Owners of public roads, streets, and highways in Washington State.
- Entities who communicate with and inform the public about the importance of lower speeds, their role in driving the speed limit or lower, and what it will take to achieve a positive traffic safety culture.
- Agencies that provide public transportation.
- The public.

Motorcyclists

Motorcyclists constitute a subset of vulnerable road users facing an elevated level of risk, primarily due to the limited protection motorcycles offer riders compared to other types of vehicles. A motorcycle is also smaller, making it less visible to drivers than other motorized vehicles. According to the U.S. Department of Transportation (USDOT), in 2021 a crash involving a motorcyclist was nearly 24 times more likely to be fatal per 100 million VMT than a standard vehicle.[1]

Motorcycles are 3% of registered vehicles in Washington State. From 2020 to 2022, motorcyclists involved in just 1.8% of all reported motor vehicle crashes, but they constituted 16.8% of all people killed in traffic crashes in the state. Between the years 2017-2022 the overall number of motorcycle crashes decreased but the number of fatalities and serious injuries increased. Combined 2020 – 2022 motorcyclist fatalities and serious injuries (1,758) constituted an average of 1.6 crashes in Washington each day that resulted in a rider being killed or seriously injured.

EXISTING CONDITIONS: CRASH HISTORY

TABLE 24. MOTORCYCLIST FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	80	80	95	93	92	133	**+25%**
PROPORTION OF FATALITIES	14%	15%	18%	16%	14%	18%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 25. MOTORCYCLIST SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	400	400	421	424	470	546	**+18%**
PROPORTION OF SERIOUS INJURIES	18%	18%	19%	17%	16%	18%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

1 USDOT Traffic Safety Facts 2021 Data

OVERLAPPING FACTORS

Of the 318 motorcyclist fatalities (2020-2022):

- 53.4% (170) involved an Impaired Driver.
  - » Of these, XX% (xx) were the motorcyclists
- 47.7% (152) involved a Speeding Driver.
- 33.6% (107) involved the crash type Lane Departure.

KEY ISSUES

Interactions between motorcycles and larger vehicles carry additional risks due to the design of motorcycles and the lack of protection for riders and passengers. Motor vehicle drivers may not be aware of required maneuvers for a motorcycle to avoid a crash. Drivers may have a difficult time judging the speed or distance of a motorcycle on the roadway due to its narrow profile.[1] Due to the lack of protection and relative instability, motorcycles and their riders will generally suffer far worse damage and injury.

There is also a significant disconnect between riders' perception of risk and the actual causes and contributing factors of serious crashes involving motorcycles. Most riders involved in motorcycle crashes, regardless of severity, were found to have taken specific actions that contributed to the crash and/or increased its severity.

License Endorsement: In Washington, 20% of motorcycles are registered to individuals without an endorsement. In fatal crashes where a motorcycle driver or passenger were killed, 35% of the motorcycle drivers were unendorsed.

Safe Riding and Risk Reduction

In Washington's 2023 statewide survey, motorcycle riders were asked what they believe are the greatest risks to motorcycle riders' safety. In nearly 75% of the responses provided, riders thought their greatest potential for crashes were other drivers on the road who were impaired, driving too fast, driving aggressive, driving distracted, not looking for motorcyclists or checking blind spots, and not adhering to safety or traffic laws.[2] Some listed pedestrians, weather, and stationary and moving objects including potholes, debris, animals, and children. The reality is that most serious injury and fatal motorcycle crashes (around 75%) are caused by rider error and choices.

From 2021-2024, law enforcement has reported an increase in the number of riders who are traveling at excessive speeds, sometimes over 100 mph. Law enforcement is reporting an increase in the number of riders failing to stop for law enforcement officers (eluding police).[3]

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1 Traffic Safety Facts: Motorcyclists, NHTSA, 2022. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813306#:~:text=Per%20VMT%20in%202020%2C%20the,%2Dtruck%20occupants%20(0.74

2 Source pending

3 Source pending

PRIORITY STRATEGIES

Rider Education and Endorsement: Educate and collaborate with dealers and manufacturers to promote motorcycle training. Include additional incentives, to complete training classes and outreach opportunities.

Prosocial Traffic Safety Culture for Motorcycle Riders: Promote self-policing within the motorcycle community to discourage impaired riding and reckless behaviors. Increase the desire to obtain ongoing training.

Increase Rider Safety Awareness: Education of motorcycle vulnerability and enhancement to the visibility of the rider can provide added safety. Increase outreach to the dangers of riding and how to minimize the risks. Address rider behavior through education, training, and awareness campaigns to enhance overall motorcycle safety in Washington State. Washington's Motorcycle Safety Program promotes safe and sober riding.

Motorcycle-specific Safety Equipment Encourage motorcyclists to wear all the gear all the time: protective equipment includes motorcycle helmets that meet USDOT safety standards, gloves, boots, long pants, and a durable long-sleeved jacket, and eye and face protection. Washington has a primary motorcycle helmet law in RCW 46.37.530.

Proper helmet use can limit lives lost in a motorcycle crash. The NHTSA estimates 37% effectiveness in preventing fatalities for motorcycle riders

Wildlife Involved: Wildlife-involved crashes resulted in 11 fatalities and 60 serious injuries from 2020 to 2022. Of the 11 fatalities where wildlife was involved, 10 were motorcyclists. Forty-eight of the 60 serious injuries sustained in wildlife-involved crashes were motorcyclists. WSDOT identifies locations with high rates of wildlife strikes through crash data and carcass removal data. To prevent future wildlife crashes in those locations, WSDOT has used variable message signs, flashing beacons, warning signs, wildlife crossing structures, barrier fencing, wildlife detection systems, and maintenance of roadside vegetation.

Law Enforcement Motorcycle Awareness: Enforcement is a deterrent for dangerous and illegal behaviors on our roads. Education to law enforcement officers about motorcycle laws increases their understanding of crash causation factors and motorcycle safety violations. In addition to training, information and refreshers are provided through social media and roll call videos designed for law enforcement audiences.

High visibility enforcement (HVE) campaigns are conducted in areas where data show there have been a larger number of serious and fatal motorcycle crashes. Patrols watch for behaviors by motorcyclists and motor vehicle drivers that increase risk, including impairment and excessive speed. Following or riding too closely also endangers motorcyclists. Law enforcement is also encouraged to increase their use of the authority to impound a motorcycle from unendorsed riders. If this becomes a more common practice, it will provide a powerful incentive for those who ride to obtain their endorsements.

Increase Motorist Awareness of Motorcyclists: This countermeasure can reduce motorcycle crashes by addressing the behaviors of other motor vehicle drivers (non-motorcyclists) and raising motorist awareness of motorcycles. These programs include Watch Out For Motorcyclists, Share the Road, and Look Twice-Save A Life. Education and outreach include responsibility as a driver, blind spots, motorcycle visibility, searching for motorcyclists, humanizing motorcyclists, following distance, space management around motorcycles, inattentional blindness, selective attention, distractions, and cultural equity.

Additional Strategies:

- Use relevant communication components in all motorcycle safety outreach and education programs, including peer-to-peer messaging.
- Provide messages that are culturally relevant, multilingual, and appropriate to the audience. We utilize a wide mix of media channels including social media, websites, and traditional including print, TV, and radio.
- Expand the motorcycle safety work group into a more extensive Motorcycle Safety Advisory Council.

> “Truck crashes do not occur in isolation, but as part of a larger system, involving the roadway and environment, vehicle condition, and the other vehicles in the traffic system. If we want to reduce the toll of truck [crashes], we need to broaden our understanding beyond just trucks and truck drivers that human fallibility does not lead to human fatalities.”
>
> *—Daniel Blower, University of Michigan*

Heavy Vehicles

Heavy vehicles play a vital role in Washington State’s transportation industry, facilitating the movement of goods over long distances and within commercial and residential neighborhoods. As an international gateway with commercial seaports, land border crossings, and distribution networks, Washington State relies heavily on heavy trucks to support its economy.[1]

Heavy vehicles present unique safety challenges due to their size, weight, maneuverability, and longer stopping distances compared to passenger vehicles. These attributes result in a small margin of error for drivers.

From 2020 to 2022, 13% of fatalities occurred in crashes that involved a heavy vehicle. Note that involvement does not mean the heavy vehicle driver was at-fault or that they were the party killed in the crash.

1 Source: Washington State Department of Transportation

EXISTING CONDITIONS: CRASH HISTORY

TABLE 26. HEAVY VEHICLE-INVOLVED FATALITIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
FATALITIES	85	64	83	69	96	90	**+10%**
PROPORTION OF FATALITIES	15%	12%	15%	12%	14%	12%	

For updates to fatalities after 2022, refer to the WTSC Fatalities Dashboard.

TABLE 27. HEAVY VEHICLE-INVOLVED SERIOUS INJURIES

	2017	2018	2019	2020	2021	2022	CHANGE: 2017-2019 TO 2020-2022
SERIOUS INJURIES	166	138	128	124	189	193	**+1%**
PROPORTION OF SERIOUS INJURIES	7%	6%	6%	5%	6%	6%	

For updates to serious injuries after 2022, refer to WSDOT Crash Data Portal.

OVERLAPPING FACTORS

Of the 255 fatality crashes involving a Heavy Vehicle (2020-2022):

- 51.3% (131) involved an Impaired Road User.
- 47.0% (120) involved an Impaired Driver.

KEY ISSUES

Driver Behavior: The behavior of heavy vehicle drivers and other drivers sharing the roadway with them influences the outcome of heavy truck crashes. Including heavy vehicles in the Target Zero Plan allows for a focus on initiatives aimed at improving driver training, addressing fatigue management, and promoting adherence to safety regulations such as speed limits and hours-of-service rules.

According to the Insurance Institute of Highway Safety, large truck drivers spending more than 8 hours traveling are twice as likely to be involved in a roadway crash. Longer working hours can cause sleep deprivation, disrupted sleep patterns, and general fatigue.[1]

In 2022, 35% of fatal crashes in Washington involving a large truck involved a large truck driver who had previously been in a recorded traffic crash. In that same year, 25% of fatal crashes involving a large truck involved a large truck driver who had a previous speeding conviction in the previous 5 years.[2]

1 IIHS, https://www.iihs.org/topics/large-trucks#overview

2 Previous Driving Records of Large-Truck Drivers Compared to Drivers of Other Vehicle Types in Fatal Crashes, USDOT. https://explore.dot.gov/views/DV_FARS_LRT/Large-TruckDrivers?

Shared Responsibility: Other Drivers. Other drivers share this responsibility and must be aware of heavy vehicles. A national study of crashes from the 1990s identified drivers of passenger vehicles alone contributed to 70% of fatal, two-vehicle crashes that involved a heavy truck.[1] Most importantly, the research supports the Safe System Approach principles of shared responsibility, supporting safe road user behaviors, and reducing large crash forces.

Safer Vehicles: Truck safety inspections: In 2019, 18% of heavy trucks inspected in Washington State were placed out of service due to critical safety violations. Research performed in Washinton State in the late 1980s, concluded large defective truck and trailer equipment is twice as likely to be involved in a crash than without defects (Jones & Stein, 1989). In addition, improperly loaded cargo can lead to truck instability and crashes. In 2019, 22% of truck inspections in Washington State found cargo securement violations.[2] Increased safety equipment and technologies can help mitigate and potentially prevent significant crash severity. This can be achieved by advancing driver assistance system technologies (rear and side cameras, blind spot detection, adaptive cruise control, etc.) that assist drivers of their surroundings, prevent lane departures, and assist with proper braking.

Post-Crash Care: In 2020, the average emergency medical system response time to heavy truck crashes in Washington State was 14 minutes, with longer response times in rural areas.[3]

PRIORITY STRATEGIES

Motor Carrier Safety Assistance Program (MCSAP): The Motor Carrier Safety Assistance Program (MCSAP) is a Federal grant program that provides financial assistance to states to help reduce the number and severity of crashes and hazardous materials incidents involving commercial motor vehicles . The goal of the MCSAP is to reduce commercial motor vehicle-involved crashes through consistent, uniform, and effective safety programs. Washington State's Commercial Vehicle Safety Plan (CVSP) is required as part of the MCSAP. Federal goals established through the state's Commercial Vehicle Safety Program align closely with state goals and enhance national goals. The full coordination with our federal partners through the MCSAP provides for an exchange of data that Washington State can use to better identify crash reduction goals.

Shifting from Vehicle Inspection Focus: Approximately 3.5 million commercial motor vehicle inspections are conducted each year nationally to ensure trucks and buses driving on the highways are operating safely (Motor Carrier Safety Assistance Program – Grant Comprehensive Policy, FMCSA, 2018). Inspection programs were expanded in the 1980s in response to vehicle quality concerns. Partially because of these inspections, vehicle defects are currently not identified as a primary contributor in most heavy vehicle crashes.

1 Blower, D.F. The Relative Contribution of Truck Drivers and Passenger Car Drivers to Two-Vehicle, Truck-Car Traffic Crashes

2 Source: Federal Motor Carrier Safety Administration

3 Source: Washington State Department of Transportation

Driver behavior does remain a primary contributor in fatal and serious injury crashes involving heavy vehicles, so a shift to a driver-focused program—at the local, regional, state, and national levels—could result in a more effective change to traffic safety outcomes regarding heavy trucks. Research-backed programs focused on heavy truck-involved crash causation could support a shift toward addressing those causes, while maintaining the most vital aspects of the current vehicle inspection efforts.

Provide Additional Road Infrastructure: Due to the potential fluctuations of heavy vehicle loads, these vehicles can be susceptible to overturns on horizontal curves. Installation of curve warning signs, interactive signing, and truck rollover warning signs can aid in the reduction of collisions. In some cases, these signs specifically identify heavy vehicles and only interact with them (e.g., by detecting vehicle height, then turning flashers on a truck rollover warning sign).

Truck Parking and Rest Areas: The USDOT has noted truck parking shortages are a national safety concern. An increase in truck parking can play a role in reducing potential fatigue related crashes by providing locations for heavy vehicle drivers to rest. The 2022 Washington Truck Parking Assessment[1] documents a process of compiling a new truck parking inventory, identifying truck parking needs and issue, and conducting a truck parking conditions analysis.

The 2023 Washington State Safety Rest Area Strategic Plan's[2] mission is to provide "safe, sustainable option for rest during road trips." Its five focus goal areas include safety, commercial truck parking, sustainable operations, customer experience, and resilience.

Driver Training: Heavy Vehicle Drivers and Others: Increasing education efforts, curriculum, and improved safety and hazard awareness can provide more skills to heavy vehicle drivers. In addition, analysis supports the importance of focusing on behavior of the drivers of the other vehicles.[3] Raising awareness of safe driving practices and consideration for sharing the transportation system with trucks can support shared responsibility among road user modes.

Technological Advancements: The inclusion of heavy trucks in the SHSP provides an opportunity to leverage technological advancements in vehicle safety systems, such as collision avoidance systems, lane departure warnings, and electronic stability control, to mitigate the risks associated with these vehicles. Only 15% of heavy trucks in the United States are equipped with advanced safety features like lane departure warning systems and automatic emergency braking.[4]

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1 Washington Truck Parking Assessment, WSDOT, 2022. https://wsdot.wa.gov/sites/default/files/2022-11/Appendix-H-FSP-Truck-Parking-Assessment_0.pdf

2 Washington State Safety Rest Areas Strategic Plan, WSDOT, 2023. https://wsdot.wa.gov/sites/default/files/2023-11/2023-SRA-Strategic-Plan.pdf

3 Driver-Related Factors in Crashes Between Large Trucks and Passenger Vehicles, FHWA, 1999. https://rosap.ntl.bts.gov/view/dot/14276/dot_14276_DS1.pdf

4 Source: American Transportation Research Institute, 2020

School Bus Involved: From 2020 to 2022, there were four fatalities and 20 serious injuries involving a school bus. However, only X of the fatalities and X serious injuries were a school bus occupant. The Office of Superintendent of Public Instruction (OSPI) has overall responsibility for school bus safety. Statewide, 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. To prevent injuries related to school buses, OSPI supports training on student management and school bus operations, and approval of higher-visibility lighting, exterior-mounted back-up cameras, and other advanced safety features (e.g., electronic stability control, collision mitigation technology) on school buses.

Local Law Enforcement Training: WTSC has developed and implemented a program to train local law enforcement to assess heavy vehicle drivers for impairment. While WSP has received this training historically, expanding it to local enforcement provides them the confidence and skills to know what to look for.

In considering students' traffic safety, Target Zero partners are not just concerned with school bus riders. In February 2015, WSDOT,WTSC, OSPI, and the Department of Health (DOH), updated the state's School Walk and Bike Routes guide. This guide is used by school districts to develop, modify, and maintain safe school walk and bike routes. WSDOT intends to update it in the future.[1]

Other Buses: From 2020-2022, only 12 fatalities and 41 serious injuries occurred in traffic crashes involving a non-school bus (e.g., transit bus, charter bus). Riding transit is one of the safest modes of transportation available.

1 https://wtsc.wa.gov/wp-content/uploads/dlm_uploads/2014/09/SchoolWalkBikeGuide_TechnicalUpdate.pdf

CHAPTER 4

Implementation & Evaluation

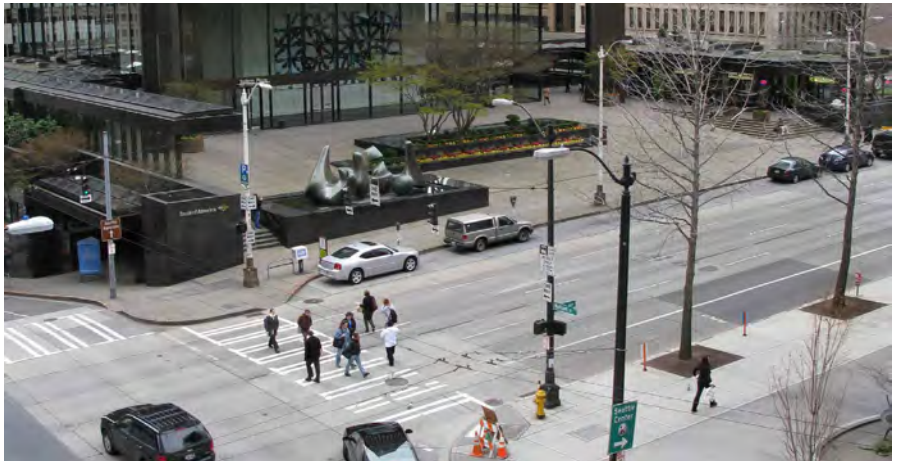
SYSTEM COLLABORATION AND INTEGRATION

To function within the Safe System Approach framework, all relevant partners must collaborate (if not integrate). Partner identification must be part of this process. Collaboration levels as follows:

1. Sharing Information
2. Coordinating/Adjusting Strategies
3. Sharing Resources
4. Defining Shared Goals

For the Safe System Approach to work, we need to change the way we think about the transportation system and traffic safety – including our roles and the way we operate. The "Four E" approach to traffic safety—engineering, education, enforcement, and emergency services—was helpful to describe essential approaches, but it did not necessarily lead to successful integration. The Safe System Approach requires us to think differently and expand upon the Four Es, instead of these areas operating in their own silos. Thinking differently includes changing how we prioritize, collaborate, and select safety projects, activities, and programs. We need to implement a safe transportation system, using the principles and elements of the SSA, that reflects a prosocial traffic safety culture grounded in an equity framework. Otherwise, our efforts for system change may only bring us back to the same conditions we are experiencing today.

Plans for making significant changes can be met with resistance. It is common to hear voices of judgment question the merit of planned change ("this is nothing new"), express cynicism about the intended goal ("zero traffic fatalities is not possible") and convey fear about change itself ("I don't know what to do").



Just as change is an intentional process, managing these voices to support change also requires conscious effort. We must create hope for change and reframe these voices to recognize our strengths:

- **Curiosity:** "Let me dig deeper to learn what is new about the Safe System Approach."
- **Imagination:** "What would it take to make zero fatalities possible?"
- **Optimism:** "Change is possible if we all work together."

The foundations for change are in place and the Target Zero Plan builds upon them. In Washington, this includes committing to safety as the top priority, choosing broad-based influencer partners, and aligning challenges and solutions with the SSA principles and related actions. These three components are helping those leading positive changes in transportation safety to think differently and make progress toward improved safety outcomes.

Traditional Safety Partners

Traditional traffic safety partners have formal roles with associated responsibility and accountability for system safety (e.g., elected officials, state agencies, law enforcement agencies, healthcare providers, etc.). They are often engaged in the development and implementation of strategic plans and establish safety goals. These partners' decisions about how to design, operate, and manage the system (e.g., funding, land uses, capital investments, policy, legislation, programs, and culture) contribute to increase or decrease the likelihood of future crashes. Policymakers control the budgets for safety investments related to the road and road user behaviors, enforcing the rules, and/or educating the road users.

Within the Safe System Approach, each partner needs to understand and implement their role in the context of the entire system and its safety outcomes. This approach includes extending their work to provide expert input for plans beyond their immediate policy areas, building support and action for equitable safety across multiple systems. They can also evaluate internal policies and traffic safety culture around safe driving by their employees while on the job or using agency vehicles, leading their communities by example. Collectively the safety partners can thus maximize their efforts, leverage each other's skills and strengths, and work together to create a system where death and serious injuries are not inevitable.

To truly make progress toward reducing fatal and serious injury crashes, safety needs to be:

1. The primary goal for all transportation and safety agencies (and a secondary goal for other influencer partners), meaning that safety goals are set and measured, and resources are dedicated to improving or maintaining safety.
2. A focus of all transportation and safety staff and leaders, regardless of role.
3. Integrated into agency responsibilities by providing education, training, and tools to help agencies implement safety strategies and countermeasures.
4. Part of an agency's accountability through performance measurement.

Leadership has a key role in creating and sustaining these conditions and in doing so within an equity framework. For example, the WTSC is chaired by the governor and consists of 10 Commissioners representing state, county, and city governments (e.g., WSDOT, WSP, Health Care Authority, and the Washington State Association of Counties, among others). Leadership is also critical to keep the focus on safety when it might appear to conflict with other priorities, such as speed or convenience.

Washington has already developed several standalone safety policies and integrated safety into critical transportation programs and plans. These include the Washington State Department of Transportation Secretary's 2023 Executive Order Advancing the Safe System Approach for All Road Users, Complete Streets legislation adopted in 2022 under Move Ahead Washington, WSDOT Design Manual modifications for Complete Streets using the Safe System, a Roundabouts First Policy, the State Active Transportation Plan published in 2021, and the Injury Minimization and Speed Management Policy Elements and Implementation Recommendations. WSDOT further committed to strategic plan goals that support the equity-based Safe System Approach; the definition of the agency's goals for diversity, equity, and inclusion specifies: "We create good policy that effectively responds to the needs of underserved communities and creates sound, equitable investment strategies."

Each safety policy provides specific opportunities and guidance to integrate the Safe System principles and strategies into decision-making. The goal of these documents is to make it clear for anyone to understand how, when, and where they can consider safety at points in the planning or project development process. Operationalizing the Safe System Approach requires the development of policies, processes, tools, and educating the workforce on how, when, and where safety can be considered in planning and project development. Tools to implement these policies and directives are essential. Additional efforts to engage influencer partners during the education process can also assist influencer partners in understanding their role in a safe system.

Influencer Safety Partners

From a system perspective, multiple factors lead to a crash and determine its severity. Because so many system factors come into play during a crash, we need a broader range of partners at the table. Influencer partners are those without a formal traffic safety role but with an interest and influence over safety within their social environment (e.g., families, schools, workplaces, cultural organizations, etc.). In many cases, these prosocial influencer partners are themselves safe road users, and how they act influences others.

We can engage most road users who are safe as allies to help influence the minority of unsafe road users. Because these behaviors are intended to help others, they are called "prosocial" behaviors. **Examples of prosocial behaviors include modeling safe behaviors, taking actions that encourage others to be safe, and championing community safety goals.** Some examples of prosocial behavior within our social environment including family, schools, and workplaces:

- **Families** can talk about and make rules about cell phone use and other distractions. They can put in place actions like muting phones or using "Do Not Disturb" functions while driving.
- **Friends** can utilize a designated sober driver.
- **Schools** can encourage student-led projects that clarify norms about distracted driving and encourage not using cell phones while driving.
- **Community-based organizations** can deliver culturally relevant educational campaigns, partner in outreach and engagement for transportation plans and projects, and provide access to their buildings and events with the safety of all types of road users in mind.
- **Employers** can implement model safe driving policies, including disallowing participation in calls or meetings while driving, requiring employees to observe the posted speed limit (or drive slower when conditions warrant) while driving for work purposes, and providing updated training as types of facilities and traffic laws change.
- **Voters** can talk with elected officials about the importance of budgets and policies that support traffic safety with a Safe System Approach.

Such behaviors are considered discretionary because they are not formal requirements of an assigned traffic safety role. Instead, these discretionary behaviors are motivated by our relationships with other people in our social environment (social capital).

IMPLEMENTATION STRUCTURE

The Target Zero Plan is the framework for engaging road users, traditional and influencer partners, planners, engineers, law enforcement agencies, and emergency medical service providers across the state in improving transportation safety in Washington. With focus and bold action, the vision of zero fatalities and zero serious injuries on Washington roadways by 2030 can be achieved.

The Target Zero Plan serves as the foundation for the strategy and integration of behavioral and engineering safety practices into all aspects of land use planning, transportation project programming, policy, and other safety-related activities in the state. While safety-specific plans and programs are critical to achieving the goal of zero fatalities and serious injuries in Washington, for a true traffic safety culture change, it also is important that traditional transportation planning, design, operations and maintenance, and programs and policies proactively integrate safety into their decision-making processes. Using the goals, policies, and strategies in the Target Zero Plan, upcoming implementation efforts will include a basic structure for activity implementation, tracking, evaluation, and reporting.

MEASURES AND ACCOUNTABILITIES

Traditional safety partners, including WSDOT and WTSC, continually monitor progress on the performance of transportation programs and measures with annual reporting on the Target Zero Plan, the Highway Safety Improvement Program, and the Triennial Highway Safety Plan.

[More to be added on communication progress on traffic safety outputs and outcomes.]

ANTICIPATED APPENDICES

Appendix A: Acronyms

Appendix B: Glossary

Appendix C: Emphasis Area Strategies

Appendix C: Methodologies

Appendix D: Target Zero Data Sources

Appendix E: Data Definitions

Appendix F: Data Nuances

Appendix G: Strategy Definitions and Criteria

Appendix H: 2023 Vulnerable Road Users Safety Assessment

Appendix I: Federal Requirements

Appendix J: Performance Based Goals

Appendix K: Target Zero Plan Development

Appendix L: Additional Resources

Appendix M: Special Thanks