



MAY 2021

Oregon Transportation Safety Action Plan



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Executive Summary

The Oregon Transportation Safety Action Plan (TSAP) demonstrates the State's commitment to the safety of all road users. It is a data-driven, statewide, multi-year, comprehensive plan that provides long-term goals, policies, strategies, and near-term actions to eliminate deaths and life-changing injuries on Oregon's transportation system by 2035.

Executive Summary

Transportation crashes and resulting injuries have historically been considered by many as an inevitable consequence of mobility. However, more recently this idea has been challenged as countries, states, and cities across the world seek to change safety culture and eliminate traffic fatalities and life-changing injuries entirely. The idea may be difficult to grasp initially, but when people are asked how many traffic fatalities are acceptable for their friends and family, the universal response is: 'zero'.

Why Is the TSAP Needed?

Since 2013, traffic fatalities have generally increased in Oregon, most recently to a 15-year high of 502 in 2018. Over the most recent 5 years of available crash data (2014-2018), nearly every type of fatal and serious injury has increased, and crashes have gone up in every region of Oregon (Figure ES.1).

Vision.

Oregon envisions **no deaths or life-changing injuries** on Oregon's transportation system by 2035

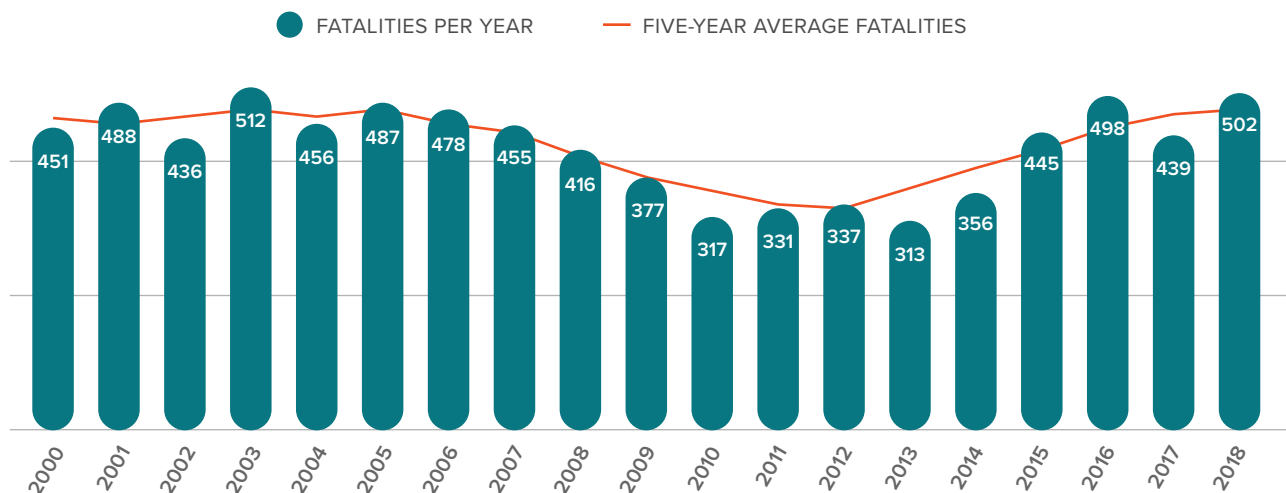


FIGURE ES.1 OREGON TRANSPORTATION FATALITIES (2000-2018)

The number of transportation fatalities normalized by population and vehicular miles traveled shows similar trends. While fatality rates have decreased since the mid-1990s, in recent years, the number of fatalities per capita and per miles traveled has remained relatively consistent (Figure ES.2).

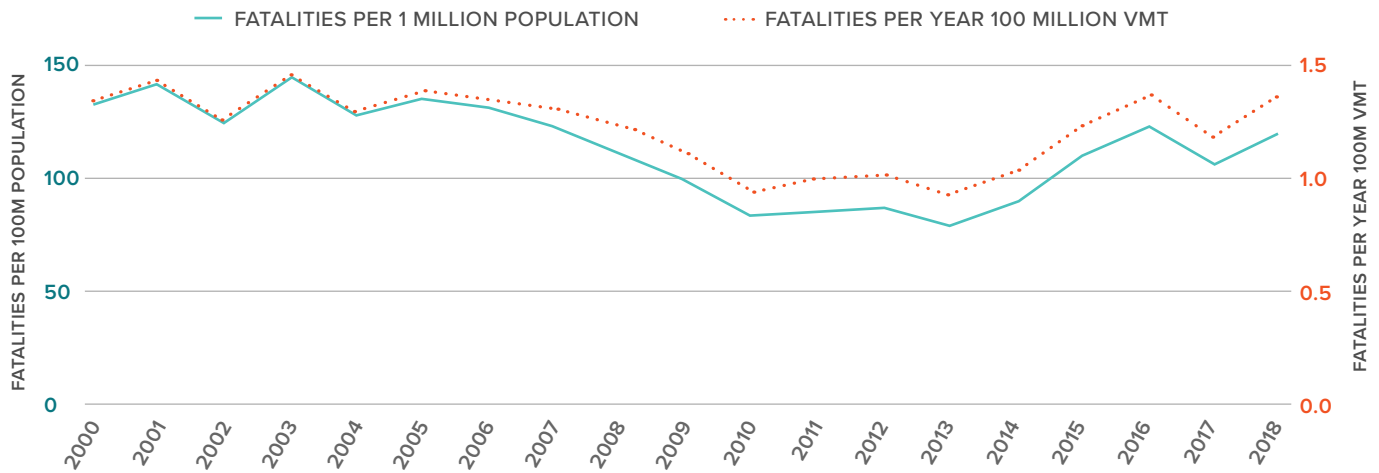


FIGURE ES.2 OREGON HISTORIC TRANSPORTATION FATALITIES PER CAPITA AND PER 100 MILLION VEHICLE MILES TRAVELED (2000-2018)

The Federal Highway Administration (FHWA) requires every state to have a Strategic Highway Safety Plan (SHSP). The SHSP is a data-driven multi-year statewide coordinated safety plan that provides a comprehensive framework for reducing fatalities and serious injuries. The SHSP identifies key safety needs and guides safety investments in infrastructure and safety behavior programs. The TSAP serves as the Oregon SHSP.

The TSAP provides the long-term vision of zero deaths and life-changing injuries and provides goals, policies, and strategies to work toward this vision. The long-term elements of the Plan provide guidance to policy-makers, planners, and designers about how to proactively develop

a transportation system with fewer fatalities and serious injuries. The TSAP also includes a near-term component in the form of Emphasis Areas (EA) and actions. The EAs provide a framework for organizing and implementing near-term actions that will maximize the safety benefits of transportation investments (safety specific and otherwise).

The TSAP addresses all modes of transportation on all public roads in Oregon. This Plan was developed under the leadership of ODOT, but it will be implemented by ODOT and all residents, stakeholders, cities, counties, metropolitan planning organizations (MPOs), tribal governments, and affected State agencies in Oregon.

TABLE ES.1 TSAP SAFETY STAKEHOLDER INTERVIEWS

FOCUS AREAS	INTERVIEWEES
Active Transportation	Jessica Horning, ODOT Active Transportation Section Susan Peithman, ODOT Active Transportation Section
Large Trucks, Freight	Amy Ramsdell, ODOT Commerce & Compliance Division Jess Brown, ODOT Commerce & Compliance Division
Data Collection & Analysis	Robin Ness, ODOT Crash Analysis and Reporting Unit Chris Wright, ODOT Transportation Data Section
Metropolitan Planning Organization	Tyler Deke, Bend MPO
Law Enforcement	Scott Rector, Oregon State Police
Local Public Works	Jocelyn Blake, Association of Oregon Counties Brian Worley, Association of Oregon Counties
Motorcycles Driving Under the Influence	Chris Henry, GAC Motorcycle Safety Committee Chuck Hayes, GAC DUII Committee
Traffic Operations, Maintenance, & Project Delivery	Doug Bish, ODOT Traffic Services Lucinda Moore, ODOT Maintenance Gary Farnsworth, ODOT Region 4 Craig Sipp, ODOT Region
Public Health	Dana Selover, Oregon Health Authority
Social Equity	Nikotris Perkins, ODOT Office of Social Equity

TABLE ES.2 ODOT OUTREACH ACTIVITIES

GROUPS	
<ul style="list-style-type: none"> • TRAFFIC OPERATIONS AND STANDARDS TEAM • PLANNING AND POLICY DISCIPLINE TEAM • AREA MANAGERS MEETING • COMMERCE AND COMPLIANCE DIVISION MANAGEMENT TEAM • QUARTERLY ODOT, METROPOLITAN PLANNING ORGANIZATION AND TRANSIT DISTRICT • OREGON BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE • OREGON FREIGHT ADVISORY COMMITTEE • OREGON TRANSPORTATION SAFETY COMMITTEE • OPERATIONS MANAGEMENT TEAM • GOVERNOR'S ADVISORY COMMITTEE ON MOTORCYCLE SAFETY 	<ul style="list-style-type: none"> • DELIVERY AND OPERATIONS LEADERSHIP TEAM • DEPARTMENT OF MOTOR VEHICLES – DRIVER PROGRAMS TEAM • PUBLIC TRANSPORTATION ADVISORY COMMITTEE • GOVERNOR'S ADVISORY COMMITTEE ON DUII • MOTOR CARRIER TRANSPORTATION ADVISORY COMMITTEE • CENTRAL LANE MPO TRANSPORTATION PLANNING COMMITTEE • CENTRAL LANE MPO METROPOLITAN POLICY COMMITTEE • ROGUE VALLEY AREA COMMISSION ON TRANSPORTATION • SOUTHWEST AREA COMMISSION ON TRANSPORTATION

The public was engaged several times on the project. The COVID-19 pandemic response limited the ability for in-person public outreach, but ODOT provided a safety-specific e-mail to receive feedback, and a stakeholder survey that was completed by 434 respondents.

ODOT also provided information on the TSAP website on a regular basis throughout development, including the following documentation: ¹

- Project Overview and Engagement Opportunities Fact Sheet
- Crash Trend Analysis and Stakeholder Feedback Fact Sheet
- Stakeholder Interview Summary
- Stakeholder Survey Summary

- Crash Trend Analysis Report
- Performance Target Analysis Report
- Technical Memos
 - » Pedestrian Safety and Social Equity
 - » Safety Needs Analysis and Recommendations
 - » TSAP Implementation
 - » Local Agency Safety Planning Support

Appendix A lists members of the Oregon Transportation Safety Committee (OTSC) and the Oregon Transportation Commission (OTC), leadership teams and advisory committees which the TSAP development team engaged, and stakeholders who participated in the Stakeholder Workshops and Performance Target Analysis Meetings. The 2021 TSAP was adopted by the OTC at the recommendation of the OTSC on xxxx, 2021.

¹ <https://www.oregon.gov/odot/Safety/Pages/TSAP.aspx>

Transportation Safety Equity

Oregon’s safety leadership understands that old ways of addressing transportation problems are not serving everyone equitably. Agencies and partners across the State recognize the need to operate the entire transportation system in a fair and unbiased way that improves the quality of life of every Oregonian. All Oregonian’s deserve safe and accessible transportation, especially those that have been historically-underserved.

In order to develop and maintain a transportation system that works for everyone, **programs must involve the people most impacted.**

In order to develop and maintain a transportation system that works for everyone, programs must involve the people most impacted – so as to align safety investments with the unique needs of Oregonians. Agencies and partners work to improve the quality of life and transportation connected to how communities live, work, and play; ensuring age, gender, ability, ethnicity, race, language, income and geography, such as, rural and highly rural areas are not barriers. While communities strive to implement unbiased safety solutions and services that overcome issues such as health, marginalization, inequity, and uneven income distribution.

The 2021 TSAP update focuses on revisions to emphasis area actions (Chapter 6), and transportation safety equity served as a key consideration in the revision of the short term actions. Saving lives in Oregon requires a focus on equitable and unbiased solutions for all transportation system users and all modes of travel so that the burdens and benefits of movement do not disproportionately impact one community over another.

TSAP Long-Term Goals

The goals, policies, and strategies in the TSAP are focused on changing safety culture and proactively planning, designing, operating and maintaining a transportation system that eliminates fatalities and serious injuries. Transportation Safety is a shared responsibility among transportation system owners and users. Only when residents and visitors adopt safe traveling behaviors and decision-makers invest

in safety programs, policies, and infrastructure projects will we meaningfully reduce the number of fatalities and serious injury crashes in Oregon. Recognizing that decision-makers and stakeholders must balance competing demands for insufficient resources, the Plan was developed with a safety first perspective to envision the safest transportation system possible.

Over the long term, the goals of the TSAP are:

1 SAFETY CULTURE

Transform public attitudes to recognize all transportation system users have responsibility for other people's safety in addition to their own safety while using the transportation system. Transform organizational transportation safety culture among employees and agency partners (e.g., state agencies, MPOs, Tribes, counties, cities, Oregon Health Authority, stakeholders and public and private employers) to integrate safety considerations into all responsibilities.

2 INFRASTRUCTURE

Develop and improve infrastructure to eliminate fatalities and serious injuries for users of all modes.

3 HEALTHY, LIVABLE COMMUNITIES

Plan, design, and implement safe systems. Support enforcement and emergency medical services to improve the safety and livability of communities, including improved health outcomes.

4 TECHNOLOGY

Plan, prepare for, and implement technologies (existing and new) that can affect transportation safety for all users, including pilot testing innovative technologies as appropriate.

5 COLLABORATE AND COMMUNICATE

Create and support a collaborative environment for transportation system providers and public and private stakeholders to work together to eliminate fatalities and serious injury crashes.

6 STRATEGIC INVESTMENTS

Target safety funding for effective engineering, emergency response, law enforcement, and education priorities.

Near-Term Emphasis Areas

Emphasis areas (EA) provide a strategic framework for developing and implementing the near-term component of the TSAP. Emphasis areas are near-term implementation focus areas directly related to the TSAP's long-term goals, policies, and strategies. The EAs were developed using the results of crash data analysis and input from committees, stakeholders, and the public. From this, four broad emphasis areas were chosen:

RISKY BEHAVIORS. Reductions in fatalities and serious injuries can be accomplished by deterring unsafe or risky behaviors made by drivers and other transportation users. For this emphasis area, actions are identified to minimize impaired driving, unbelted, speeding and distracted driving crashes.

INFRASTRUCTURE. Multimodal transportation assets in Oregon can be constructed or retrofitted to reduce fatal and serious injury crashes. Opportunities to do this include implementing safety treatments at intersections and along and across roadways. For this emphasis area, actions are identified to minimize intersection and roadway departure crashes.

VULNERABLE USERS. Vulnerable road users can be characterized by the amount of protection they have when using the transportation system – pedestrians, bicyclists, and motorcyclists are more exposed than people in vehicles, making them more susceptible to injury in the event of a crash. Aging drivers and pedestrians can also be more vulnerable to severe injuries in the event of a crash. Oregon neighborhoods with low-income populations

or people of color experience a higher rate of pedestrian fatalities and serious injuries per capita.¹ Causes of these disparate pedestrian injury outcomes include disproportionate use of walking and transit in these communities as well as a built environment less conducive to safe walking and transit activity. For this emphasis area, actions are identified to minimize pedestrian, bicycle, motorcycle, and aging road user crashes with a focus on low-income communities and communities that have been historically excluded based on race and ethnicity.

IMPROVED SYSTEMS. Crash and other types of safety data can be advanced to better understand the causes and locations of crashes, leading to effective solutions. One framework is the USDOT's data quality attributes: timeliness, accuracy, completeness, uniformity, integration, and accessibility. Training is used to educate planners, engineers, designers, and construction staff about the importance of safety and how to incorporate it into their everyday job responsibilities. Fully funded, staffed, and trained law enforcement and emergency response agencies can direct their efforts toward keeping users safe and, when crashes do occur, can ensure traffic incident management and emergency medical services personnel are available to respond. Commercial vehicle safety relies on licensing, training, and vehicle safety to decrease the frequency and severity of crashes. For this emphasis area, actions have been identified to continually improve data, train and educate transportation and safety staff, support law enforcement and emergency responders, and minimize commercial vehicle crashes.

¹ Roll, J., Analysis of Pedestrian Injury, Built Environment, Travel Activity, and Social Equity, Oregon Department of Transportation Research Section, 2020.

Moving Forward

The success of this plan will be measured by monitoring the number and rate of fatalities and serious injuries and the combined number of non-motorized fatalities and serious injuries.¹ FHWA requires annual targets be established, monitored, and reported – and there are ramifications for not achieving the targets. Annual targets will be documented and approved through an annual target setting process with the OTSC.

TABLE ES.3 TSAP PERFORMANCE TARGETS (FIVE-YEAR AVERAGES)

BASE PERIOD	FATALITIES	FATALITY RATE	SERIOUS INJURY	SERIOUS INJURY RATE	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES
2021 BASELINE (2014-2018 DATA)	448	1.48	1,739	5.03	257
2022 TARGET (2015-2019 DATA)	444	1.46	1,722	4.98	254

The TSAP is the framework for engaging residents, stakeholders, employers, planners, engineers, enforcement agencies, emergency medical service providers, and others across the state to improve transportation safety in Oregon. Over time, and with focus, the vision of zero fatalities and life-changing injuries on Oregon roadways by 2035 can be achieved. The partnerships developed in creating this plan provide an understanding of the roles everyone can play to address safety and build trust in and ownership of the TSAP. The result will be a coordinated, multidisciplinary approach to implementing transportation safety improvements that reduce injuries and save lives.

¹ Non-motorized is defined as travel by means other than a motor vehicle or motorcycle.

1

Call To Action

Hundreds of thousands of Oregonians travel safely to and from work, recreation, and excursions on a daily basis. Even so, more than 500 people died on Oregon's transportation system in 2018. The Oregon Transportation Safety Action Plan (TSAP) aims to eliminate this tragedy.

Call To Action

The TSAP is a strategic safety plan for all users, all roadways, and all transportation agencies in Oregon. The plan outlines the vision, goals, policies, and strategies for long-term safety and actions to achieve near-term opportunities for transportation safety in Oregon.

The broad reach of the plan is matched by the broad array of partners that will need to commit to implementing plans, policies, and programs to save lives and prevent injuries. These partners include state, regional, tribal, county, and city agencies, and the private and non-profit sectors, including, but not limited to:

Oregon envisions **no deaths or life-changing injuries** on Oregon's transportation system by 2035

- **TRANSPORTATION PLANNING AND ENGINEERING ORGANIZATIONS**
- **ENFORCEMENT AGENCIES**
- **EMERGENCY MEDICAL SERVICE PROVIDERS**
- **EDUCATION PROVIDERS**
- **PUBLIC HEALTH AGENCIES**
- **SAFETY ADVOCACY GROUPS**
- **PRIVATE EMPLOYERS**
- **THE TRAVELING PUBLIC**

Collectively these stakeholders have the opportunity to improve Oregon's transportation system and save lives by integrating safety into all aspects of planning, programming, project development, operations, and maintenance. Not only is the system improved with responsive investments targeting specific safety issues, the transportation system also is improved by investing in projects, programs, and policies that proactively save lives and prevent injuries.

This plan provides background on the TSAP's history and programs in Chapter 2. It summarizes existing transportation safety conditions in Chapters 3 and 4. Long-term vision, goals, policies, and strategies to eliminate fatalities and life-changing injuries on the Oregon transportation network are presented in Chapter 5. Detailed actions for stakeholders to begin implementing are documented in Chapters 6 and 8. Chapter 7 outlines how the state will measure and report progress towards achieving the safety vision.

TO ACHIEVE THE PLAN VISION, ALL STAKEHOLDERS WILL NEED TO:

- ▶ **SUPPORT THE ONGOING TSAP PLANNING PROCESS AND FIND OPPORTUNITIES TO IMPLEMENT RECOMMENDED SAFETY STRATEGIES AND ACTION STEPS IN ALL PLANNING, PROJECT DEVELOPMENT, PROGRAMMING, OPERATIONS AND MAINTENANCE ACTIVITIES**
- ▶ **COMMUNICATE AND IMPLEMENT THE TSAP VISION, GOALS, POLICIES, AND EMPHASIS AREAS TO AGENCY STAFF AND PARTNER**
- ▶ **INTEGRATE SAFETY PLANNING, PROGRAMMING, AND POLICIES INTO CURRENT WORK RESPONSIBILITIES AND AUTHORITIES**
- ▶ **CHAMPION THE CAUSE OF SAFETY BY EDUCATING THE PUBLIC ON THE CRITICAL ROLE INDIVIDUALS PLAY IN PREVENTING TRANSPORTATION FATALITIES AND SERIOUS INJURIES**
- ▶ **ADDRESS TRANSPORTATION SAFETY EQUITABLY AND UNBIASED**
- ▶ **COMMIT TO ADOPT AND INSTITUTIONALIZE CONTINUING CHANGE IN OREGON'S SAFETY CULTURE**
- ▶ **ENGAGE IN UPDATING THE TSAP IN THE FUTURE**

Leadership, collaboration, and communication will lead to a transportation safety culture focused on getting everyone in Oregon home safe.

2

Introduction

A Strategic Highway Safety Plan (SHSP) is a statewide, data-driven, coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. It is a federally required document and is the primary planning tool to address transportation safety planning issues and needs in every state.

Introduction

The SHSP identifies safety priorities, also called emphasis areas, and guides safety program and project investments using strategies and actions as a framework. The document identifies both behavioral and infrastructure-related approaches to address safety based on input from multiple disciplines, including, but not limited to, the 4 Es (engineering, emergency response, law enforcement, and education). The SHSP must meet administrative and process requirements to be approved by the Federal Highway Administration. The TSAP is the Oregon SHSP and fulfills all the federal requirements. This chapter provides background on the TSAP, describes the current planning effort to update and utilize the Plan, and the process by which it meets legislative requirements.

What Is the TSAP?

THE TSAP IS A STRATEGIC DOCUMENT THAT:

- ▶ **DEFINES OREGON'S TRAFFIC SAFETY TRENDS AND CHALLENGES**
- ▶ **IDENTIFIES A VISION, GOALS, POLICIES, STRATEGIES, AND ACTIONS TO ELIMINATE FATALITIES AND SERIOUS INJURIES**

The TSAP also serves as Oregon's long-range safety topic plan, an element of the Oregon Transportation Plan (OTP), and parallel to other mode and topic plans like the Oregon Bicycle and Pedestrian Plan and Oregon Freight Plan.

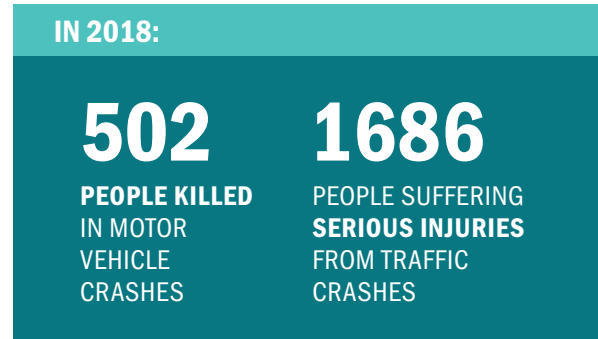
The motivation for developing the TSAP is clear – everyone who uses Oregon's transportation system should arrive safely at their destination. While significant investments in transportation safety have been made in the

last decade, 502 people were killed in motor vehicle crashes in 2018, the highest annual total in the past 15 years. Also in 2018, 1,686 people suffered serious injuries from traffic crashes.

There is a need and intention to eliminate these fatalities and serious injuries for all modes of travel in Oregon. Traffic crashes are a significant problem for Oregon's residents and visitors. There is an opportunity to save lives and reduce injuries through implementation of strategic actions in the areas of engineering, emergency response, law enforcement, and education; and to monitor what's working and what's not through evaluation of projects, programs, and policies. To make significant progress, coordination and collaboration across agencies and the public will be required. This is particularly true

for crashes resulting from behavioral factors, such as speeding and impaired driving. The TSAP establishes the framework for addressing Oregon’s most significant transportation safety challenges. While this plan addresses safety globally across modes, other statewide plans under the OTP may touch upon more specific safety strategies for each mode or topic.

The transportation community recognizes that there are multiple programs and approaches to achieving safety around the world. In the development of the TSAP, Oregon leaders have blended the best ideas in transportation safety from around the country and the world into this statewide plan. Informed by Sweden’s Nulvisionen, Australia’s Safe Systems approach, and the World Health Organization’s Decade of Action for Road Safety, we anticipate Oregon will be informed by these concepts, and others to come in the future. New approaches to safety help inform and refine each version of the TSAP over time.



Brief History of TSAPs in Oregon

Oregon’s first TSAP was adopted in 1995. The original plan was effective in focusing efforts to reduce death and injury and was held up nationally as a model for reducing crash rates and crash severity. Oregon’s safety stakeholders updated the TSAP in 2004, 2006, 2011, and 2016. The 2016 TSAP recognized that Oregon’s population is growing, aging, and changing, and that transportation needs are changing with them. Driver distraction was at an all-time high with heavy smartphone use in vehicles, and the current level of Oregon’s pedestrian and bicyclist facilities do not fully accommodate safe and comfortable travel for the needs of all users.

In preparation of the 2021 TSAP, Oregon safety leaders identified several emerging needs in transportation that must be addressed to save lives on our system. For example, the population of aging

citizens in Oregon continues to grow, and data indicate the number of aging driver-involved crashes is increasing at a similar rate.

The COVID-19 worldwide pandemic and response will have impacts for years to come, many of which are still unknown. 2020 also brought long-overdue discussions of equity to the table, including topics of transportation, unbiased law enforcement, and roadway safety. Government agency stakeholders are incorporating discussions of systemic bias regarding safety investments.

The 2021 TSAP was adopted by the OTC at the recommendation of the OTSC on xxxx and encompasses safety efforts to be undertaken by the Department of Transportation and safety partners throughout the state.

How This TSAP Update Was Developed

The 2021 TSAP update process began in July 2020 with fact finding and scoping. A Project Management Team (PMT) was formed to guide the project, and an Agency Project Manager (APM) and consultant were added to conduct update activities.

The 2021 TSAP update is designed to be a limited and focused revision to the 2016 plan. The overall TSAP vision, goals, policies, and Emphasis Areas stayed the same. Identification of emerging safety needs (via stakeholder feedback and safety data analysis) resulted in edits throughout the TSAP and modifications to the Emphasis Area actions planned for the next 5 years.

TSAP UPDATE: OUTREACH APPROACH

29

ODOT STAFF OUTREACH MEETINGS WITH A VARIETY OF LEADERSHIP TEAMS AND TRANSPORTATION ADVISORY COMMITTEES

1

ONLINE SURVEY TO LEARN ABOUT PUBLIC PERCEPTIONS OF SAFETY ISSUES

10

INTERVIEWS WITH OREGON SAFETY STAKEHOLDERS ACROSS THE 4 ES TO SOLICIT FEEDBACK ON THE 2016 TSAP AND IMPLEMENTATION PROGRESS

2

ONLINE STAKEHOLDER WORKSHOPS EACH WITH APPROXIMATELY 40 PARTICIPANTS

2

FACT SHEETS (ENGLISH/SPANISH) TO INTRODUCE THE 2021 TSAP UPDATE AND PROVIDE MID-PROJECT PROGRESS REPORT

2

ONLINE STAKEHOLDER PERFORMANCE MEASURE MEETINGS, EACH WITH APPROXIMATELY 20 PARTICIPANTS

ODOT and the Consultant team conducted outreach to public and private stakeholders. Several key activities contributed to the development of the Plan. These include:

- **TSAP UPDATE WEBSITE.** Hosted by ODOT at <https://www.oregon.gov/odot/Safety/Pages/TSAP.aspx>, the TSAP website provided all interested parties information about the plan update, including fact sheets introducing the effort and giving a mid-project status report. Fact sheets were produced in English and Spanish to improve availability.
- **PUBLIC SURVEY.** ODOT hosted a public online survey from October 1 to November 20, 2020, to identify key safety issues and opportunities. More than 400 individuals completed the survey; of that group, more than 200 responded that it was their first time providing this type of feedback.
- **DATA ANALYSIS.** Analysis of crash data from 2014 through 2018 to identify trends and problematic crash types and behaviors. The analysis helped the PMT understand the “*who, why, where, and what*” of crashes, fatalities, and serious injuries in Oregon.
- **LEADERSHIP MEETING AND ADVISORY COMMITTEE PRESENTATIONS.** ODOT Planning and Safety staff presented and discussed the TSAP update effort in 27 meetings from October 2020 through May 2021. Discussions identified issues and opportunities to inform the TSAP update.
- **STAKEHOLDER INTERVIEWS.** The consultant conducted 10 interviews with safety stakeholders and subject matter experts, ranging among the disciplines of roadway safety and geographically across the state. The purpose of the interviews was to help identify key issues to address in the update, including elements of the previous plan that need to be reconsidered, and new items that should be added.
- **EMPHASIS AREA ACTION REVIEW.** Oregon safety leaders and the consultant conducted a critical review of Emphasis Area actions from the 2016 TSAP. The team eliminated the previous tiered system, identified the most appropriate recommended actions, and then facilitated a workshop with safety stakeholders to review the new proposed actions. Upon receiving input from safety subject matter experts during this workshop, and following subsequent reviews of the draft TSAP, the team finalized the current list of actions shown in Chapter 6.
- **STAKEHOLDER WORKSHOPS.** Two stakeholder workshops were held to present the results of data analysis and other activities, and gather feedback on the Emphasis Area actions and discuss implementation opportunities and barriers.
- **PERFORMANCE MEASUREMENT MEETINGS.** Oregon safety leaders and stakeholders participated in two online meetings to review Oregon’s Safety Performance Measure Targets methodology, analyze current status of meeting those targets, and evaluate the need for changes to maintain consistency with current federal requirements.
- **DRAFT TSAP PUBLIC REVIEW.** In May 2021, Oregon published the Draft 2021 TSAP for public review and comment, allowing a 45-day public review period.
- **DRAFT TSAP PUBLIC HEARING.** In June 2021, a Public Hearing was conducted to solicit input from stakeholders and the general public on the Draft 2021 TSAP.

How This TSAP Will Be Used

Roles and Responsibilities

Improving and sustaining transportation safety necessitates work from multiple agencies and multiple disciplines. Most transportation safety activities include a mix of federal, state, and local policy and funding and implementation actions. A brief overview of how these responsibilities are coordinated and carried out follows:

DECISION-MAKING

The **Oregon Transportation Commission (OTC)** includes five commissioners, appointed by the Governor, confirmed by the Senate, and representing the different geographic regions of the state. The OTC establishes state transportation policy. The commission holds recurring meetings to oversee Department of Transportation activities relating to highways, public transportation, rail, transportation safety, motor carrier transportation, and driver and motor vehicles. The OTC formally adopts the TSAP as a topic plan that is an element of the Oregon Transportation Plan.

The **Oregon Transportation Safety Committee (OTSC)** is charged as the hub for transportation safety activities in Oregon. The OTSC is a five member, Governor-appointed committee that oversees the administration of federally funded safety programs and advises the Oregon Transportation Commission on the safety implications of transportation policy. The TSAP is approved by OTSC as a plan for the whole state. They also advise the Transportation Safety Division and perform other functions related to transportation safety as delegated by the OTC.

Two other Governor's Advisory Committees focus on specific areas of concern in transportation safety and advise the OTSC: Driving Under the Influence of Intoxicants (DUII) and Motorcycle Safety.

OREGON DEPARTMENT OF TRANSPORTATION

ODOT Values: Of the values that guide ODOT decision-making, safety is number one.

Safety: We protect the safety of the traveling public, our employees, and the workers who build, operate and maintain our transportation system.

TRANSPORTATION SAFETY DIVISION (TSD)

TSD plans, organizes, and conducts the statewide behavioral transportation safety program by coordinating activities and programs with other state agencies, local agencies, nonprofit groups, and the private sector. It serves as a clearinghouse for transportation safety materials and information, and cooperates and encourages research and special studies to support legislative initiatives and new programs.

The Transportation Safety Division provides information, direct services, grants, and contracts to the public and to partner agencies and organizations. More than half the funding comes from federal funds earmarked for safety programs (the National Highway Traffic Safety Administration (NHTSA), Federal Highway Administration (FHWA), and similar federal traffic safety grant programs). The Division administers hundreds of grants and contracts each year to deliver safety programs to Oregon citizens.

DELIVERY AND OPERATIONS DIVISION

The Delivery and Operations Division's **Traffic Roadway Section** addresses the federal safety requirements, including the state Safety Management System (SMS). As defined by the FHWA, an SMS is "a systematic process which increases the likelihood of reaching safety goals by ensuring that all opportunities to improve highway safety are identified, considered, implemented as appropriate, and evaluated in all phases of highway planning, design, construction, maintenance, and operations." The All Roads Transportation Safety (ARTS) Program is the name of Oregon DOT's Highway Safety Improvement Program (HSIP) administration effort. ARTS addresses safety needs on all public roads in Oregon. Traffic Roadway authors the annual HSIP Report submitted to the FHWA. This section also establishes guidelines for speed zones and traffic control devices on state and local roads.

Operations and Maintenance Districts maintain traffic control devices and Intelligent Transportation System (ITS) equipment, including those installed as safety improvements. They respond to weather and other incidents that can cause dangerous conditions, including landslides/rockfall, down trees, and drainage problems. Routine maintenance also reduces hazards such as clearing loose gravel from shoulders and bike lanes. The Travel Information Council manages the state's roadside rest areas, giving tired or stressed drivers a safe place to relax and renew before returning to the highway.

ODOT Traffic Incident Management works with the FHWA to coordinate training and support cooperation among the many emergency service

providers involved in crash response and maintains operations while managing crash scenes.

DRIVER AND MOTOR VEHICLE SERVICES DIVISION (DMV)

The Driver and Motor Vehicle Services Division is charged with licensing drivers and vehicles. DMV safety activities include the At-Risk Driver Program which evaluates drivers when there is a concern about their ability to safely operate a motor vehicle, based on whether a driver has physical, cognitive, or medical limitations that affect their ability to drive a vehicle. DMV also provides driver manuals, new driver testing and licensing, insurance standards, and crash reporting.

COMMERCE AND COMPLIANCE DIVISION

The Commerce and Compliance Division develops and implements a Commercial Vehicle Safety Plan, a Summary of Oregon Truck Safety and Guide, and an annual Safety Action Plan to Reduce Truck-at-Fault Crashes.

The Commerce and Compliance Division has nine Safety Offices statewide and a Truck Safety hotline to take reports of truck safety problems. The division provides information and education to help drivers understand how to drive around trucks safely and farm truck safety. The Division conducts truck and bus safety inspections. Truck Safety Corridors focus enforcement on traffic along Oregon's major freight routes where truck-at-fault crashes happen. The Rail Crossing Safety Section is also part of the Commerce and Compliance Division, this section performs a variety of duties related to the safety and regulation of railroad crossings in Oregon.

POLICY, DATA AND ANALYSIS DIVISION

The Policy, Data and Analysis Division includes the crash data collection and analysis and long-range planning functions for ODOT.

Crash Analysis and Reporting Unit provides motor vehicle crash data through database creation, maintenance and quality assurance, information and reports, and limited database access. Approximately 10 years of crash data are maintained at all times. Vehicle crashes include those coded for city streets, county roads, and state highways.

Planning Section develops and maintains the Oregon Transportation Plan and the mode and topic plans that are parts of the OTP and that add further detail around major transportation issues. The TSAP is one of the topic plans. The Transportation Planning and Analysis Unit, within the Planning Section, implements the Highway Safety Manual that provides tools for considering safety in planning and project development processes.

Freight Section is a stakeholder in the TSAP as it supports safety initiatives relevant to the interaction and the movement of freight throughout the transportation system.

Research Section: Completed and ongoing research projects include safety and technology topics to improve engineering and planning practice and keep up with technological advancements.

PUBLIC TRANSPORTATION DIVISION

The Public Transportation Division is a stakeholder in the TSAP as it supports safety initiatives relevant to rail, multimodal, and active transportation. This division includes the Bicycle and Pedestrian

Program that has established goals that set forth to reduce crashes involving people walking and biking, eliminate crashes that result in injuries and deaths, and promote walking and biking to improve health and safety. The Program works towards these goals by supporting implementation of the Oregon Bicycle and Pedestrian Plan and the TSAP, developing walking and bicycling safety and education materials, funding projects that improve conditions for walking and biking, and providing planning and design guidance for pedestrian and bicycle projects.

OTHER STATE AGENCIES

OREGON HEALTH AUTHORITY

The Oregon Health Authority is at the forefront of improving quality and increasing access to health care in order to improve the lifelong health of Oregonians, including programs for injury prevention and maintaining vital statistics.

Emergency Medical Services and Trauma

Systems Program. Develops and regulates systems for quality emergency medical care in Oregon, ensuring that EMS Providers are fully trained, emergency medical vehicles are properly equipped, and emergency medical systems are functioning efficiently and effectively.

EMS Section. Licenses Emergency Medical Responders (EMR), Emergency Medical Technicians (EMT), Advanced EMT (AEMT), EMT-Intermediate (EMT-I), and Paramedics in the State of Oregon. Oregon Emergency Medical Responder education must meet or exceed the National Emergency Medical Services Education Standards published by the National Highway Traffic Safety Administration, January 2009.

OREGON STATE POLICE

The Oregon State Police maintain transportation safety as part of their agency mission. Department of State Police programs and services that contribute to transportation safety include major crime investigations; state emergency response coordination; statewide Law Enforcement Data System; coordination of federal grants for public safety issues; crime lab; patrol services and medical examiner services.

OREGON LIQUOR CONTROL COMMISSION (OLCC)

Oregon Liquor Control Commission staff members make group presentations to businesses selling alcohol to reduce driving under the influence of alcohol. Topics cover liquor laws, enforcement, false ID, under-age access, marijuana, and server responsibility. Commission has information on server education courses offered by private providers.

LOCAL, REGIONAL, AND TRIBAL ENTITIES

Cities, counties, MPOs, and tribes can take several approaches to improving transportation safety. By adopting a Safe Communities Program, a community can take a big picture approach to injury prevention. Oregon Safe Communities are collaborations of the NHTSA, ODOT, local communities, and many other partners. Many communities appoint Traffic Safety Committees to focus energy on solving local safety problems. A community may choose to implement an Automated Enforcement Program, the locally funded use of Photo Red Light and Photo Radar enforcement equipment to reduce red light running and speeding and provide an executive summary to the legislature.

Several local agencies and Tribal governments have developed Local Road Safety Plans (LRSPs) and Tribal Road Safety Plans (TRSPs). A local or Tribal plan is designed to focus the most relevant aspects of the Oregon TSAP to local safety needs.

Another popular safety program is *Safe Routes to School*, a local initiative that may be supported by grant funding, and that identifies opportunities to encourage walking and biking to schools such as education, coordinating “walking buses” (one or more adults accompany children walking to school), mapping safe routes, bike-to-school events, infrastructure improvements, or other creative solutions to improve safety while encouraging exercise.

THE GENERAL PUBLIC

In the end, every Oregon resident and visitor is a safety stakeholder and will benefit from implementation of the TSAP. Each road user’s behavior affects others on the road, and the design and operation of the transportation system affects everyone directly or indirectly. Even those who rarely travel outside their neighborhood are impacted by their local experience, and also by the safety and operations of deliveries to their home and to businesses they frequent.

How the TSAP Links to Other Plans

The TSAP serves as the unifying framework for transportation safety planning in Oregon. Safety efforts that are led by ODOT, are informed by the Strategic Action Plan (SAP) that establishes priorities and goals to inform ODOT work, guide decision-making, and are objectives against which ODOT will be held accountable. Various other plans, policies, and processes in the state have safety components that may be addressed through other programs and resources. The TSAP

looks at transportation safety for all modes and focuses on a data-driven approach to identify goals, policies, strategies, and actions focused on safety. Other state modal and topic plans and regional and local plans also must be considered. Consistency between plans reinforces the transportation safety message while maximizing resources available to implement solutions. Figure 1 illustrates the relationship of the TSAP to other Oregon and MPO plans.

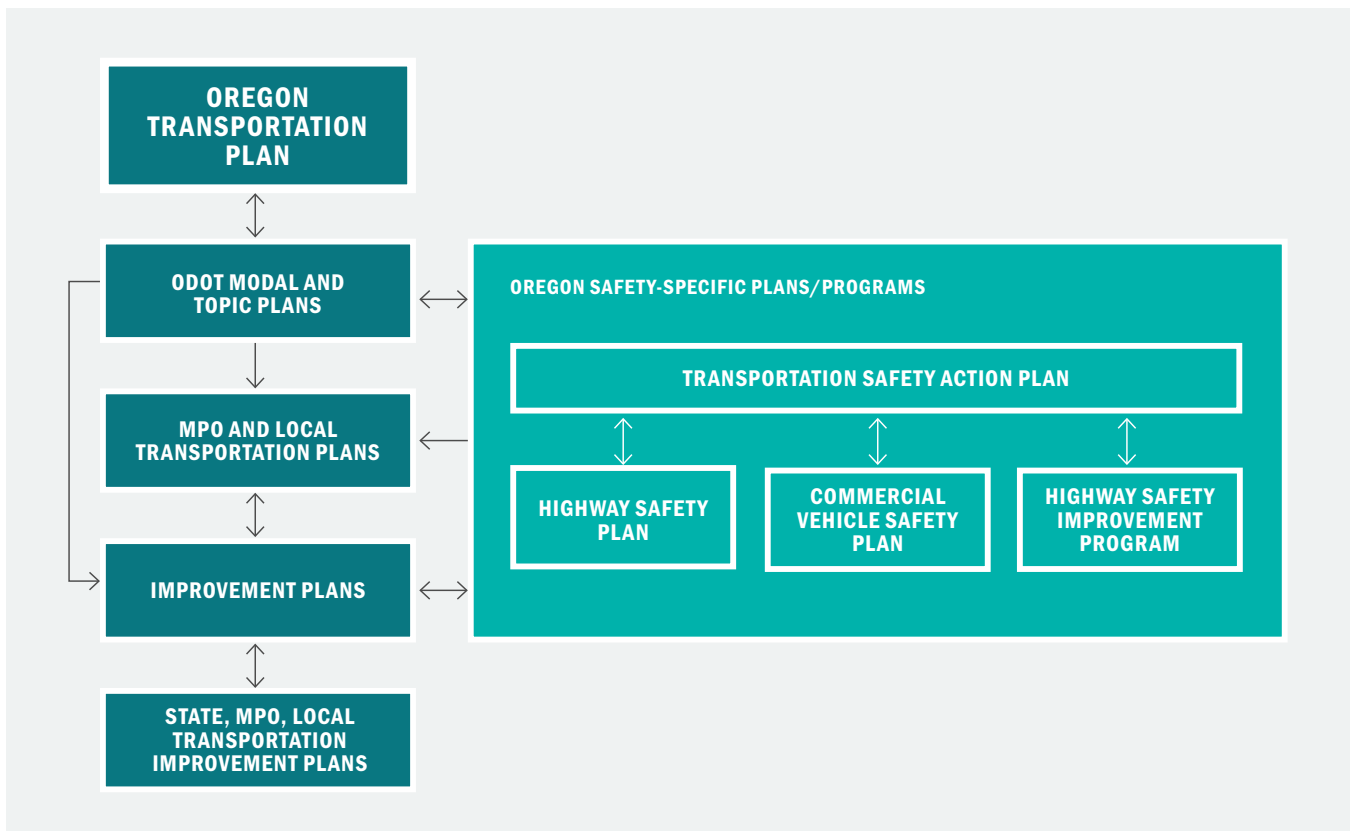


FIGURE 1 RELATIONSHIP OF THE TSAP TO OTHER OREGON AND MPO PLANS

As part of the TSAP update process, a review of existing state plans was conducted, with a specific emphasis on safety. The purpose of this review was to identify policies and strategies that should be considered in the TSAP to ensure consistency across plans.

As a Topic Plan that is part of the Oregon Transportation Plan, the TSAP implements the OTP

safety goals and will inform the development of safety goals for new and updated plans. Also, the TSAP is an important resource for transportation safety direction as state, regional, tribal, county, and city plans are updated or new plans are developed. These plans should be consistent with the TSAP with respect to safety to effectively link to TSD and other resources for safety planning and improvements.

State and Federal Requirements

State Planning Requirements and Relationships to State Laws

OREGON TRANSPORTATION COMMISSION (OTC) ROLE – DUTIES AND RESPONSIBILITIES

ORS 184.618(1) states:

As its primary duty, the Oregon Transportation Commission shall develop and maintain a state transportation policy and a comprehensive, long-range plan for a safe, multimodal transportation system for the State, which encompasses economic efficiency, orderly economic development, and environmental quality. The plan shall include, but not be limited to, aviation, highways, mass transit, pipelines, ports, rails, and waterways. The plan shall be used by all agencies and officers to guide and coordinate transportation activities and to ensure transportation planning utilizes the potential of all existing and developing modes of transportation.

Oregon has designated the Oregon Transportation Plan, the adopted mode and topic plans (Aviation, Bicycle and Pedestrian, Freight, Highway, Public Transportation, Rail, Transportation Options, and Transportation Safety Action), and facility plans as the state transportation policy and comprehensive long-range plan. Thus, the Oregon Transportation Plan (OTP) and each of the mode, topic, and facility plans have legal authority.

The OTP and its modal and topic elements achieve the statutory planning requirement for the Oregon Transportation Commission and ODOT. The OTP is the umbrella document, which may be further detailed in the mode and topic plans. Oregon Revised Statute (ORS) 184.618(1) requires state agencies to use the OTP to “guide and coordinate transportation activities” but it does not authorize the OTC

to impose OTP goals, policies, and performance measures on other state agencies. The OTP operates within the legal context of the State Agency Coordination Program and the Land Conservation and Development Commission's Transportation Planning Rule (TPR) (discussed further below), which impose additional requirements related to the public decision process and consistency among plans in all affected jurisdictions. The OTP, and its elements, must also comply with federal legislation.

TSAP RELATIONSHIP TO STATE LAND USE PLANNING GOALS AND ADMINISTRATIVE RULES

STATE AGENCY COORDINATION PROGRAM (OAR 731-15-0045)

The Oregon Transportation Commission adopted rules to implement ODOT's State Agency Coordination (SAC) Program in September 1990.

The adoption of transportation policy falls under the requirements of those State Agency Coordination Program rules (Oregon Administrative Rule [OAR] 731-15). The rules require ODOT to involve interested parties and affected jurisdictions when developing plans or adopting major amendments to plans. The Department has found that the Plan is in compliance with all applicable statewide planning goals (see Appendix C).

TRANSPORTATION PLANNING RULE (OAR 660-012)

Oregon's statewide planning goals established state policies in 19 different areas. The TPR implements the Land Conservation and Development Commission's Planning Goal 12 (Transportation) which requires ODOT to prepare a Transportation System Plan (TSP) to identify transportation facilities and services to meet state needs. The Oregon Transportation Plan and adopted multimodal, mode, topic, and facility plans serve as the state TSP.

The TPR requires metropolitan planning organizations and certain counties to prepare regional TSPs consistent with the adopted state TSP. Cities and counties must prepare local TSPs that are consistent with the state TSP and applicable regional TSPs. The Oregon Transportation Plan and its mode, topic, and facility plans, comprise the adopted state transportation systems plan, so regional and local TSPs must be consistent with the OTP, including the Transportation Safety Action Plan.

SAFETY-SPECIFIC REGULATION

- **ORS 802.300.** Transportation Safety Committee. Creates the Oregon Transportation Safety Committee to advise the OTC and the Director regarding the safety programs and funds identified in 802.310.
- **ORS 802.310.** Transportation safety programs administrator. The Administrator for Transportation Safety is named as the Governor's Highway Safety Representative for purposes of meeting the Federal Highway Safety Act of 1966. Further, the Director is charged with organizing, planning, and conducting a statewide safety program. The program is to coordinate with partners inside and outside the Department to promote safety, serving as the clearinghouse for safety information. The Director and OTC are charged with making safety recommendations based on the advice of the OTSC. Finally, the Department is charged with working with local governments on plans and activities for safety.
- **ORS 802.315.** Department authority to apply for and receive federal highway safety program grants and other funds. Department authority to apply for and receive federal highway safety program grants and other funds, and to provide funding for local government program participation. The Department, with advice from the OTSC is to plan and conduct highway safety programs carried out under the Federal Highway Safety Act.
- **ORS 802.320.** Motorcycle safety program. The Department, with advice from the OTSC, is to plan for and conduct training for motorcycle safety. The Department does this in consultation with local groups. (The Governor's Advisory Committee on Motorcycle Safety provides a conduit for local consultation).
- **ORS 802.325.** Bicycle safety program. The Department is charged with planning for and delivering bicycle safety programs in consultation with local groups. This program is allowed to raise funds to provide programs.
- **ORS 802.329.** City and county highway safety program participation authorized. Cities and counties are explicitly allowed to participate in highway safety programs.
- **ORS 184.741.** Safe routes to schools program; rules. This law provides for the planning of, and conducting of, local and state safe route to school programming.

Appendix C provides the findings of compliance with Oregon Transportation Safety, Land Use, and Transportation Planning Requirements

Federal Requirements

The 2015 Fixing America’s Surface Transportation (FAST) Act continued a previous requirement for states to have a Strategic Highway Safety Plan (SHSP). Moreover, several specific process-oriented requirements must be met as states develop their SHSPs. The SHSP must incorporate input from a range of partners from diverse disciplines, address all roadway users on all public roads, be data driven, include measurable objectives, and identify how progress will be evaluated. The SHSP must be developed through a cooperative process involving local, state, federal, tribal, and private-sector safety stakeholders. In particular, the following stakeholders must be consulted in the SHSP update process:

- **GOVERNORS HIGHWAY SAFETY REPRESENTATIVE**
- **MOTOR CARRIER SAFETY PROGRAM**
- **METROPOLITAN PLANNING ORGANIZATIONS**
- **MOTOR VEHICLE ADMINISTRATION AGENCIES**
- **REPRESENTATIVES OF MAJOR MODES OF TRANSPORTATION**
- **COUNTY TRANSPORTATION OFFICIALS**
- **STATE AND LOCAL TRAFFIC ENFORCEMENT OFFICIALS**
- **STATE REPRESENTATIVE OF NONMOTORIZED USERS**
- **HIGHWAY-RAIL GRADE-CROSSING SAFETY REPRESENTATIVE**
- **FEDERAL, STATE, TRIBAL, AND LOCAL SAFETY STAKEHOLDERS**

The FAST Act continued the High-Risk Rural Roads (HRRR) special rule under 23 USC 148(g), which requires a state to obligate a certain amount of funds on HRRRs if the fatality rate has increased during the past two years. In particular, it states that: “If the fatality rate on rural roads (collectors and local roads) in a state increases over the most recent two-year period for which data are available, that state shall be required to obligate in the next fiscal year for projects on high-risk rural roads an amount equal to at least 200 percent of the amount of funds the state received for fiscal year 2009 for high-risk rural roads.” As of 2018 available data, Oregon meets the criteria for the HRRR special rule.

The FAST Act also includes a special rule (23 U.S.C. 148(g)(2)) related to drivers and pedestrians over 65: If statewide traffic fatalities and serious injuries per capita for these groups increases during the most recent two-year period for which data are available, the state must include strategies in its SHSP to address those issues. This plan recognizes this requirement and establishes a baseline for monitoring fatalities and serious injuries involving aging drivers and pedestrians. As of 2018 available data, Oregon meets the criteria for this special rule, and the TSAP includes specific actions to address aging road users.

Meeting Federal TSAP Requirements

The TSAP fulfills Oregon’s requirement to have an updated SHSP. A checklist detailing how Oregon has met federal requirements is provided in Appendix B, and a few key highlights are listed here:

- **CONSULTATION.** The TSAP update process included extensive stakeholder and public involvement. Consultation with the required groups occurred throughout the process. Stakeholders and safety experts were provided with several opportunities to review the document and to offer suggestions. Additionally, the draft final plan was distributed for public comment in May 2021.
- **DATA.** A thorough analysis of crash data was conducted to identify trends and areas of concern, and to support the update of near-term emphasis area actions in the TSAP.
- **PERFORMANCE MANAGEMENT.** Oregon has set the five required safety performance measure targets (fatalities, fatality rate, serious injuries, serious injury rate, and nonmotorized fatalities and serious injuries) via the TSAP update process. HSIP and HSP staff were involved in establishing the annual target-setting process.
- **MULTIDISCIPLINARY APPROACH.** Technical staff from ODOT were consulted in the development of the plan, including pedestrian and bicycle, motor carrier, freight, traffic operations, traffic engineering, construction, and maintenance experts. ODOT, local agencies, law enforcement, public health, and regional planning organizations were also consulted to address the 4 Es (engineering, emergency response, law enforcement, and education) and provide input on Emphasis Area actions in two stakeholder workshops.
- **COORDINATION.** A thorough review of existing plans and policies was conducted to inform the development of the TSAP, and relevant elements were incorporated into this update. For example, the TSAP takes into account the new ODOT Blueprint for Urban Design (BUD) related to designing for an urban context with safety as a focus.
- **EVALUATION.** The TSAP includes a chapter on evaluating progress, including monitoring the MAP-21 required performance measures and reviewing Emphasis Area actions conducted to support the 2016 TSAP to determine what should be continued, what could be removed, and what actions need refining. The results of these evaluations informed updates to Chapter 6 and Chapter 7.

The TSAP meets federal requirements for a SHSP, but is unique in its linkage to long-term goals, policies, and strategies that influence transportation policy, planning, programming, and projects.

-
- **HIGH-RISK RURAL ROADS (HRRR) SPECIAL RULE.** Twice since 2018, Oregon has been flagged for an increase in HRRR fatal crash rates. Strategies to address the increase in fatal crashes on rural roadways are included in the TSAP.

- **OLDER DRIVERS AND PEDESTRIANS SPECIAL RULE.** A review of the per capita older drivers and pedestrians fatal and serious injury rate indicates that this rule does apply to the update process. Strategies to address the increase in fatalities and serious injuries among the older population are included in the TSAP.

Conclusion

The TSAP is Oregon’s federally required SHSP. It meets the federal requirements for an updated SHSP and goes well beyond those requirements. The TSAP is integrated into the Oregon transportation policy framework and includes long-term planning goals and policies. As a result, it serves as both a short-term (five-year) and long-term policy document to guide Oregon toward no fatalities and serious injuries on its transportation system. It also creates an opportunity for a wide range of stakeholders to become involved in statewide safety planning and programming.

3

Transportation Safety Trends

Safety professionals study statewide crash data and regional details to understand the history of crashes and use that information to improve roadway safety. Though the locations, types, and attributes¹ of past crashes are not perfect predictors of the future, they provide important clues to help safety professionals identify needs, select appropriate treatments, and evaluate strategy effectiveness.

Transportation Safety Trends

The TSAP was developed using the best available safety data to identify critical transportation safety issues and safety improvement opportunities for all public roads in Oregon. The contents of the TSAP are primarily derived from an analysis of 2014-2018 Oregon crash data, which describes trends related to crash types, crash severity, crash demographics, and contributing factors at the statewide and ODOT regional level. The results of this analysis are described in this chapter.

Understanding Data Limitations

While the results of this crash analysis are important indicators of transportation safety opportunities, it is important to recognize data limitations. For example, Oregon is a self-reporting state, which means that only those crashes where law enforcement conducts an investigation are required to receive a law enforcement officer-completed crash report. Therefore, there are a relatively small number of property damage only (PDO) crashes in the Oregon state crash database. The problem of underreported crashes can skew the results of crash data analysis.

Oregon is a self-reporting state, which can lead to underreported crashes and skew crash data analysis results.

While crash data serves as the primary data source for the development of the TSAP, input from leadership groups, advisory committees, stakeholders, and the public also were considered during the planning process.

1 “Attributes” as used in this Plan means characteristics of a crash that may be useful for analysis. In some cases they may contribute to a crash occurring or its severity, but that is not required for them to be considered.

Crash History and Trends

Figure 2 shows the number of transportation fatalities in Oregon from 2000 through 2018. To account for fluctuations in crashes, the chart also shows the five-year average number of crashes from 2000 through 2018. There was an overall downward trend in fatalities from 2005 to 2013; however there has been an increase since that time.

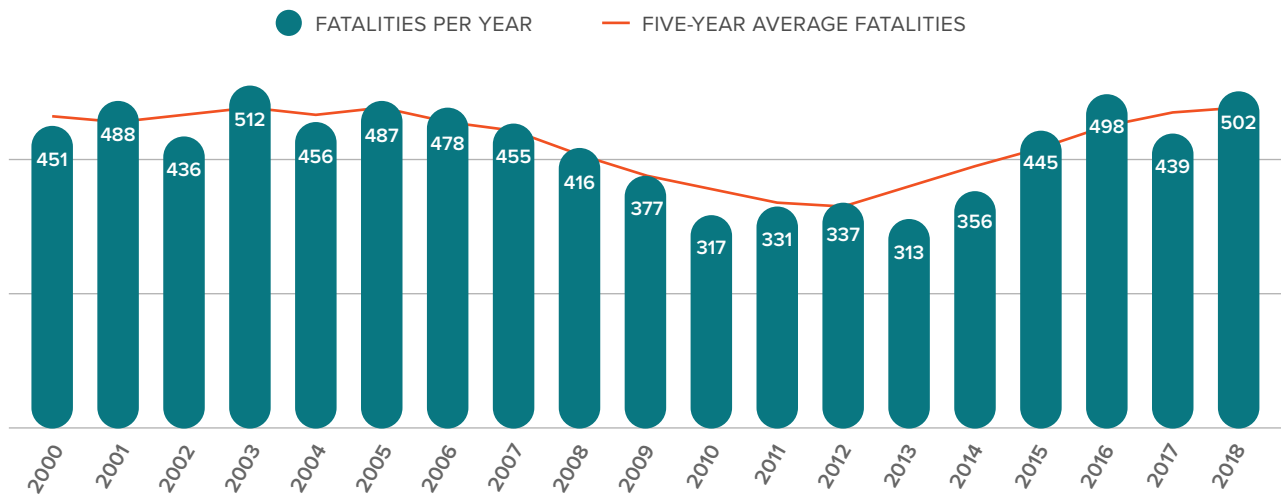


FIGURE 2 OREGON TRANSPORTATION FATALITIES (2000-2018)

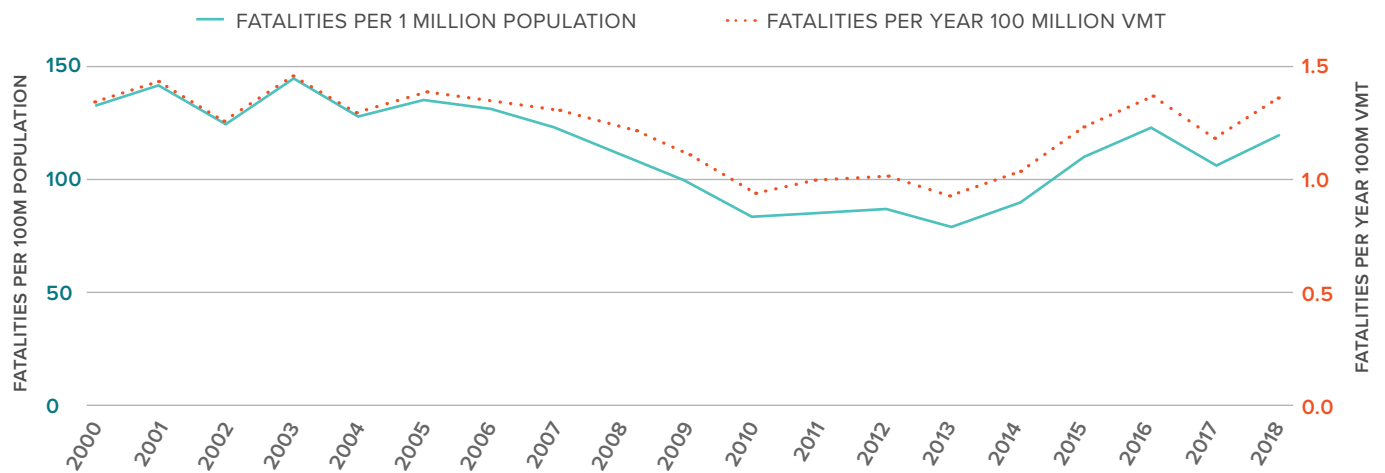


FIGURE 3 OREGON HISTORIC TRANSPORTATION FATALITIES PER CAPITA AND PER 100 MILLION VEHICLE MILES TRAVELED (2000-2018)

Statewide Crash History and Trends

Figure 4 illustrates the recent trend of traffic fatalities and serious injuries in Oregon. In the most recent year of the study period, 2018, there were 502 people killed and 1,686 seriously injured. Serious injuries are considered “life-altering” for the victim and their loved ones; examples include loss of limbs, paralysis, and disfigurement. In many cases these injuries make it difficult to work, care for family members, or pursue other typical daily activities.

Roadway crashes and resulting outcomes are not limited to either urban or rural areas of Oregon. As illustrated in Figure 5, fatalities and serious injuries occur somewhat more often on urban roadways.

Figure 6 on the following page shows the distribution of fatalities and serious injuries on State-owned and non-State-owned roadways in Oregon.

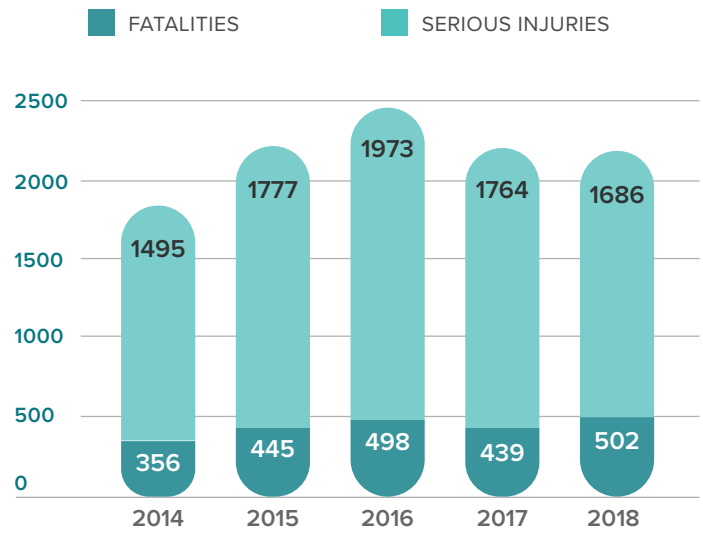


FIGURE 4 FATALITIES AND SERIOUS INJURIES (2014-2018)

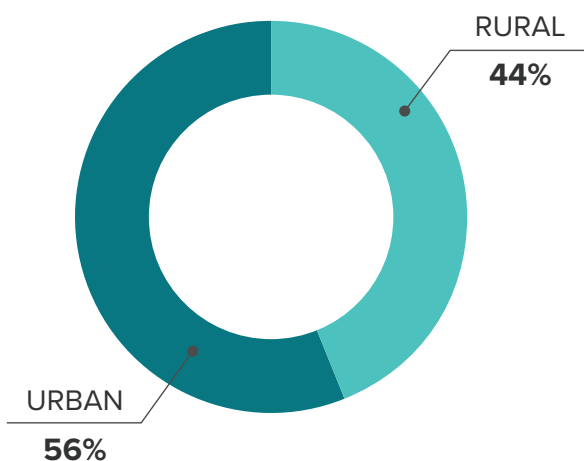


FIGURE 5 PROPORTION OF FATALITIES AND SERIOUS INJURIES BY URBAN AND RURAL AREA (2014-2018)

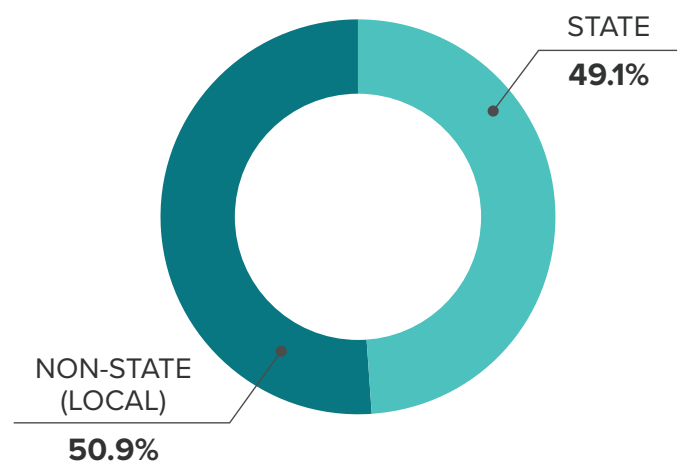
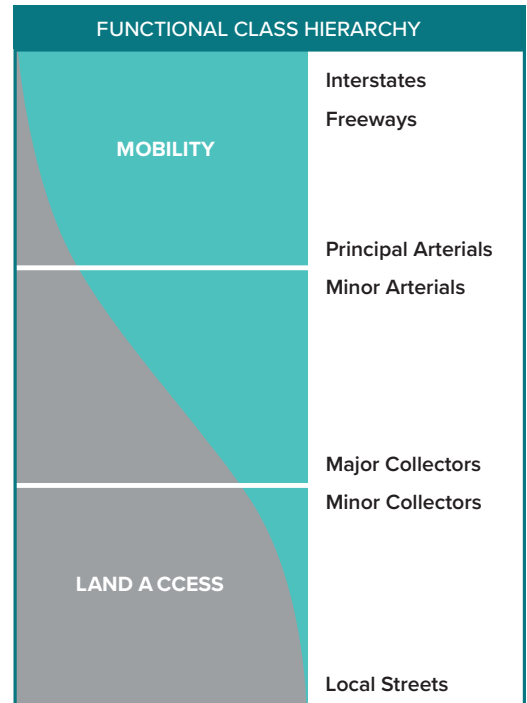


FIGURE 6 PROPORTION OF FATALITIES AND SERIOUS INJURIES BY ROADWAY OWNERSHIP (STATE AND NON-STATE) (2014-2018)

Functional Classification. Fatal and serious injury crashes also occur on all types of roadways. Roads are classified as follows:

- **Interstate.** Highest classification of arterials, designed and constructed with mobility and long-distance travel in mind. Directional lanes, separated by barrier, and ramp-only access.
- **Freeway/Expressway.** Directional travel lanes that are usually separated by a physical barrier, and access and egress points are limited to on- and off-ramp locations or a very limited number of at-grade intersections.
- **Principal Arterial.** Provides a high degree of mobility through urban and rural areas, and abutting land uses can be served directly.
- **Minor Arterial.** Provides moderate-length trips and offers connectivity to the higher arterial system, providing intracommunity continuity.
- **Collector.** Gathers traffic from local roads and connects to the arterial network.
- **Local.** Provides direct access to abutting land and are not intended for long-distance travel. Often designed to discourage through traffic.¹



As shown in Figure 7, the distribution of fatal and serious injury crashes by roadway functional classification is not equal. Crashes that result in fatal or serious injuries are most common on Principal Arterials and Minor Arterials, as well as Rural Collector roads. For example, of all fatal and serious injury crashes in Oregon, 23 percent occur on Urban Principal Arterials, and 61 percent occur on some type of Arterial.

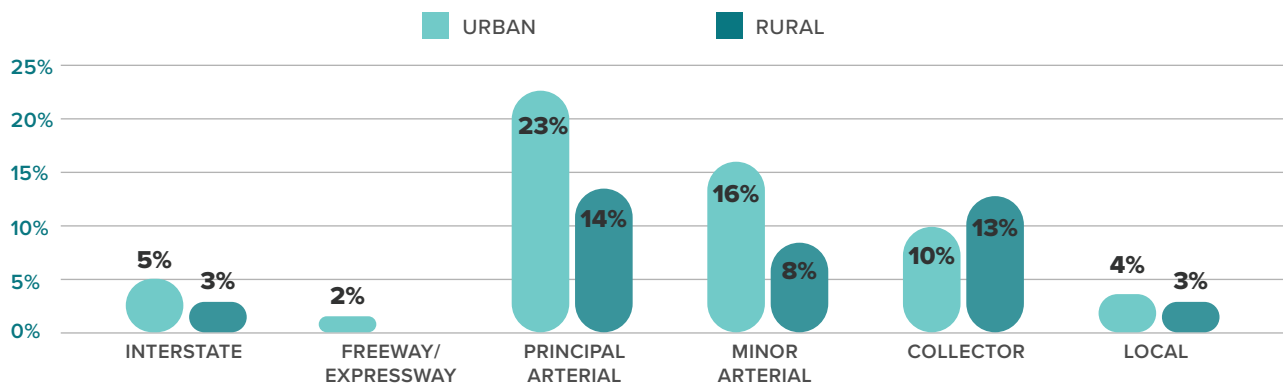


FIGURE 7 PROPORTION OF FATAL & SERIOUS INJURY CRASHES BY ROADWAY FUNCTIONAL CLASSIFICATION (2014-2018)

¹ Highway Functional Classification Concepts, Criteria and Procedures, Federal Highway Administration, Washington, D.C., 2013. https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/section00.cfm.

Statewide Crash Attributes

One way to study fatal and serious injury crashes is to categorize them by attribute (e.g., age of driver, alcohol involvement, roadway departure). With an understanding of these attributes it is possible to develop plans, policies, and programs to reduce crash frequency and severity.

Table 1 shows a number of attributes related to fatal and serious injury crashes in Oregon. In some cases the attribute may contribute directly to the crash occurring or to its severity. However, due to limitations of crash data elements (because in most cases the reporting officer was not at the scene when the crash occurred), this analysis only concludes that the category correlates to the crash, not that it was necessarily the cause. The crash attributes shown in this table can also be organized into three categories: Road Users, Behavioral Issues, and Roadway Locations. Analysis of these categories follows Table 1.

TABLE 1 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014 TO 2018)

ATTRIBUTES	FATAL AND SERIOUS INJURY CRASHES	
	2014-2018 TOTAL	PROPORTION OF TOTAL FATAL AND SERIOUS INJURY CRASHES
Roadway Departure Crashes	3,888	41.0%
Intersection Crashes	3,413	36.0%
Speed-Related Crashes	2,251	23.7%
Alcohol and/or Other Drugs Involved	2,121	22.4%
Alcohol Involved (No Drugs)	1,335	17.4%
Crashes Involving Unrestrained Occupant(s)	900	9.5%
Young Driver(s) (15-20) Involved	1,350	14.2%
Aging Driver(s) (65+) Involved	2,082	21.9%
Crashes Involving Pedestrian(s) Injured or Killed	926	9.8%
Crashes Involving Unlicensed Driver(s)	1,015	10.7%
Crashes Involving Distracted Driver(s)	806	8.5%
Crashes Involving Bicyclists(s) Injured or Killed	333	3.5%
Commercial Motor Vehicle Involved	527	5.6%
Motorcycle Involved	1,364	14.4%
Work Zone Involved	121	1.3%
School Bus or School Zone Involved	68	0.7%

When reviewing the “Proportion of the Total” column, note that the attributes listed in Table 1 are not mutually exclusive, so they cannot be summed to calculate a total number. For example, in many cases roadway departure crashes are also speed related; that crash event will show up in both numbers.

Road Users

Road users are illustrated in Figure 8, and they range from motor vehicle drivers to non-motorized road users and those operating special vehicles (e.g., school buses, commercial motor vehicles). Young drivers (age 15-20) are involved in the highest proportion of fatal and serious injury crashes, followed by aging drivers (age 65+) and motorcyclists.¹ Regarding age groups, young drivers and older drivers are a consideration because they are typically overrepresented in traffic crashes compared to middle-age motorists (age 21 to 64).

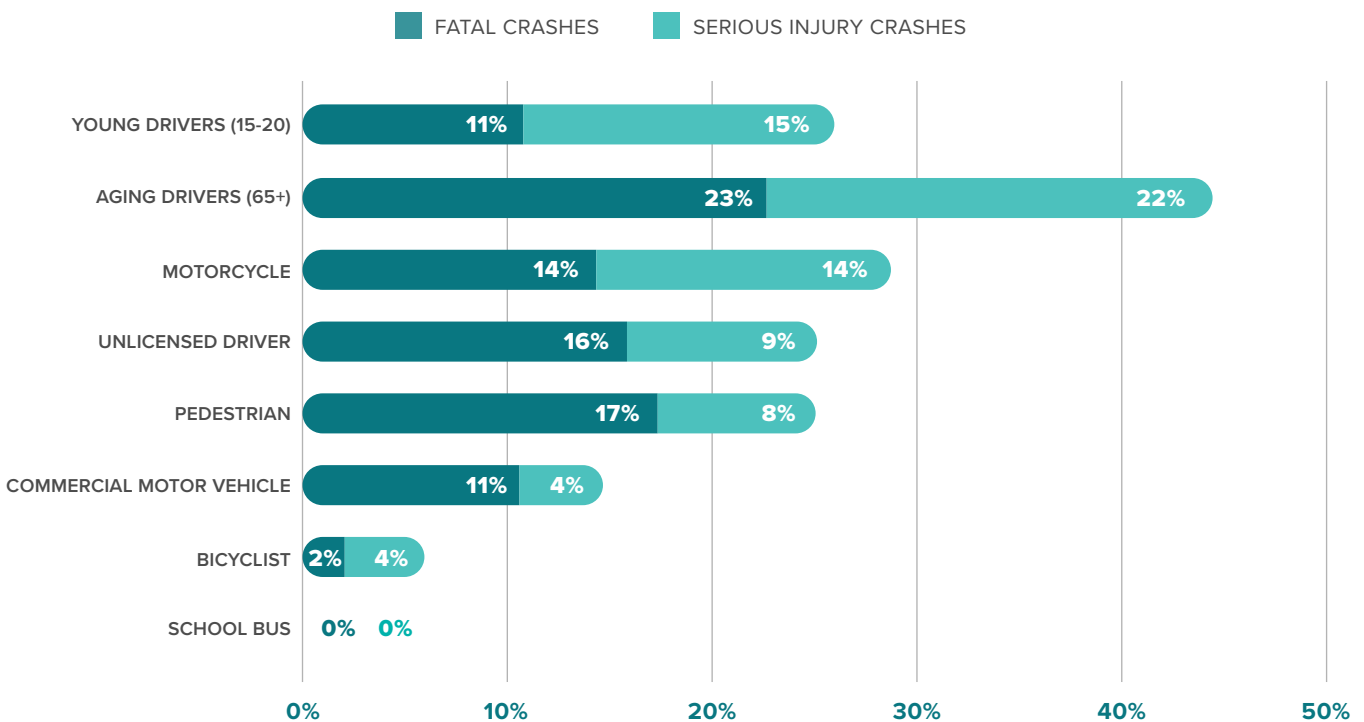


FIGURE 8 PROPORTION OF FATAL AND SERIOUS INJURY CRASHES BY INVOLVED ROAD USER (2014-2018)

¹ Note that some road user attributes are not mutually exclusive. For example, some motorcycle riders are also young drivers.

Behavioral Issues

Behavioral issues (e.g., speeding, impaired driving, and distracted driving) have a significant effect on the frequency and severity of roadway crashes. In fact, more than 90 percent of all crashes involve human error.¹ Some of these crash attributes are choices a motorist makes before getting behind the wheel (e.g., drinking alcohol). Others are actions taken during a trip that affect the road users and others (e.g., speeding, not wearing a safety belt). As shown in Figure 9, speeding is the most common behavioral issue associated with fatal and serious injury crashes in Oregon, followed by alcohol-involved drivers. Note that some attributes not showing up as a higher number in this figure could have a higher actual occurrence. For example, it can be difficult for law enforcement officers to accurately identify inattention or drug involvement.

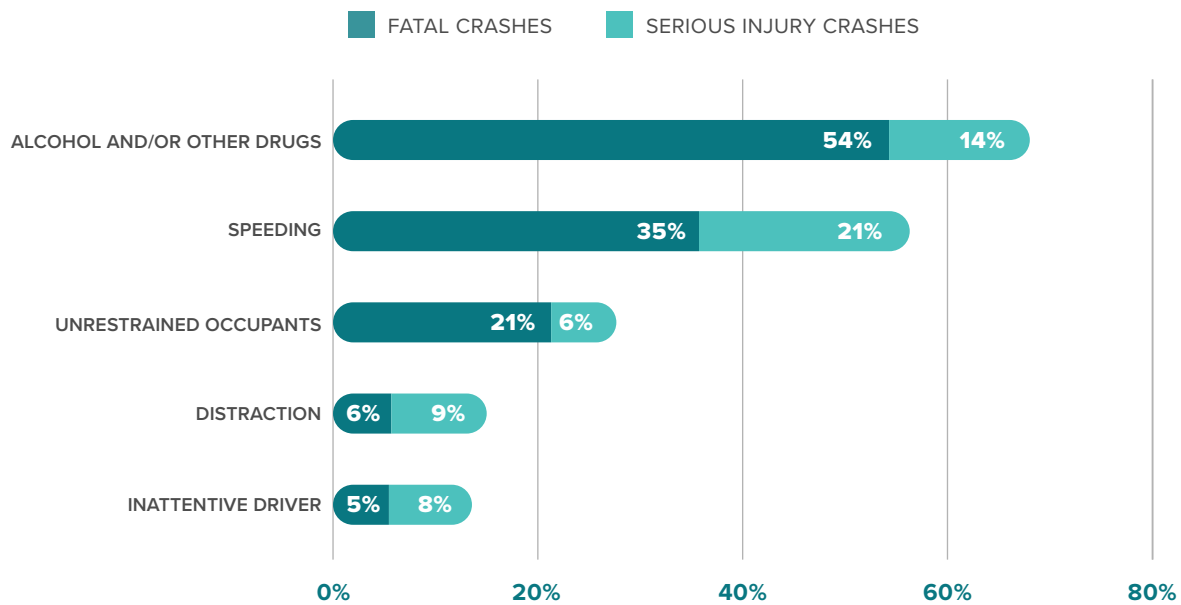


FIGURE 9 PROPORTION OF FATAL AND SERIOUS INJURY CRASHES BY BEHAVIORAL ISSUE (2014-2018)

¹ K. Rumar. "The Role of Perceptual and Cognitive Filters in Observed Behavior," Human Behavior in Traffic Safety, eds. L. Evans and R. Schwing, Plenum Press, 1985.

Roadway Locations

Roadway locations are important because they can point safety engineers to specific locations experiencing crashes and to roadway elements that may contribute to crashes. The roadway (or off-roadway) locations of fatal or serious injury crashes include roadway or lane departure locations, intersections, work zones, and school zones. Figure 10 shows that more than half of fatal and serious injury crashes in Oregon occur as a result of a vehicle departing its proper lane. Crashes at intersections also account for a large number of fatalities and serious injuries. Just over a third of fatal and serious injury crashes from 2014 to 2018 occurred at an intersection.

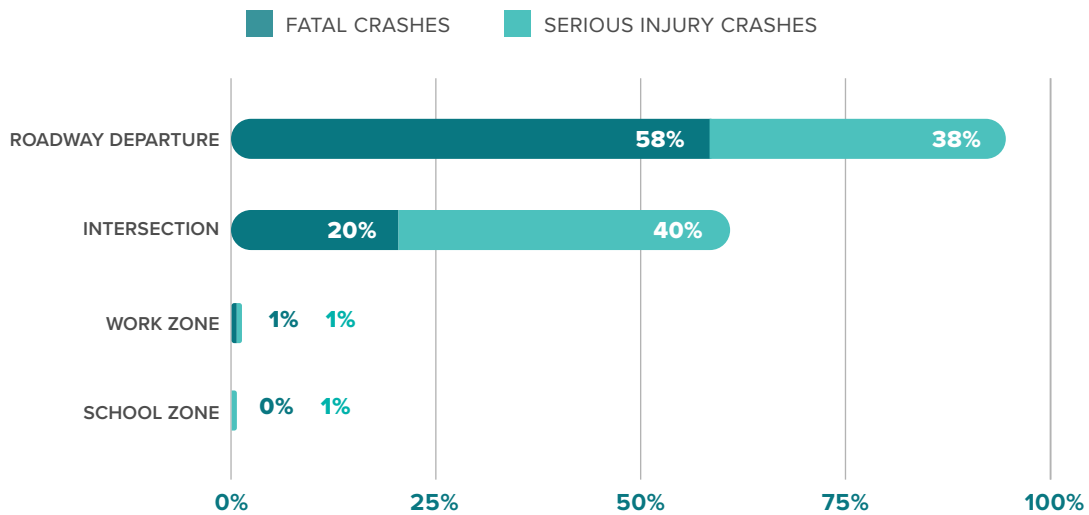


FIGURE 10 PROPORTION OF FATAL AND SERIOUS INJURY CRASHES BY LOCATION TYPE (2014-2018)

Most Common Statewide Crash Attributes

The crash attributes also were considered on a statewide basis. Figure 11 illustrates the number of fatal and serious injury crashes that include each attribute, and also the percentage of all reported Oregon crashes (i.e., all severities) by attribute that resulted in a fatality or serious injury. For example, motorcycles were involved in 1,364 fatal and serious injury crashes during the study period, while 27 percent of all reported motorcycle-involved crashes included at least one fatality or serious injury.

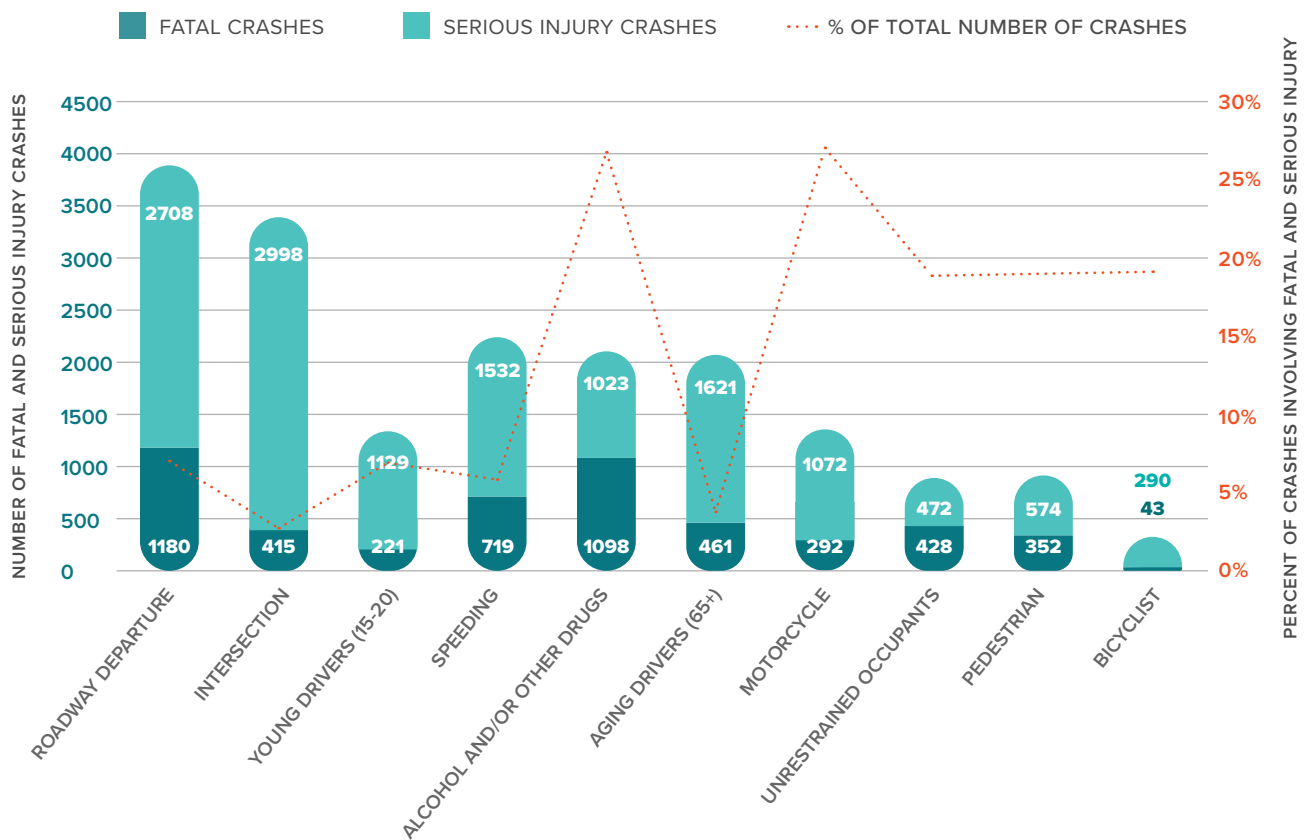


FIGURE 11 FATAL AND SERIOUS INJURY CRASHES BY MOST COMMON ATTRIBUTES (2014-2018)

Note that these categories are not mutually exclusive, as a single crash can include more than one attribute. For example, a number of alcohol-involved crashes also include unrestrained occupants, so a single crash may show up in both bars in Figure 3.9. This also provides an opportunity to reduce crash attributes that present together (e.g., behavioral risk factors, speeding and roadway departure).

Regional Crash Attributes

ODOT DIVIDES THE STATE INTO FIVE REGIONS (FIGURE 12):



FIGURE 12 OREGON DOT REGIONS

REGION

- 1** **PORTLAND METRO**
CLACKAMAS, HOOD RIVER, MULTNOMAH AND WASHINGTON COUNTIES
- 2** **WILLAMETTE VALLEY, NORTH, AND MID-COAST**
CLATSOP, COLUMBIA, TILLAMOOK, YAMHILL, POLK, MARION, LINCOLN, LINN, BENTON, AND LANE COUNTIES
- 3** **SOUTHERN OREGON AND SOUTH COAST**
DOUGLAS, CURRY, COOS, JOSEPHINE, AND JACKSON COUNTIES
- 4** **CENTRAL OREGON**
WASCO, SHERMAN, GILLIAM, JEFFERSON, WHEELER, CROOK, DESCHUTES, LAKE, AND KLAMATH COUNTIES
- 5** **EASTERN OREGON**
MORROW, UMATILLA, UNION, WALLOWA, BAKER, GRANT, HARNEY, AND MALHEUR COUNTIES

Each of ODOT's five regions has a slightly different distribution of its most common crash attributes as compared to the statewide numbers. Figures 13 through Figure 17 show each region's fatal and serious injury crash attributes compared to Oregon overall.

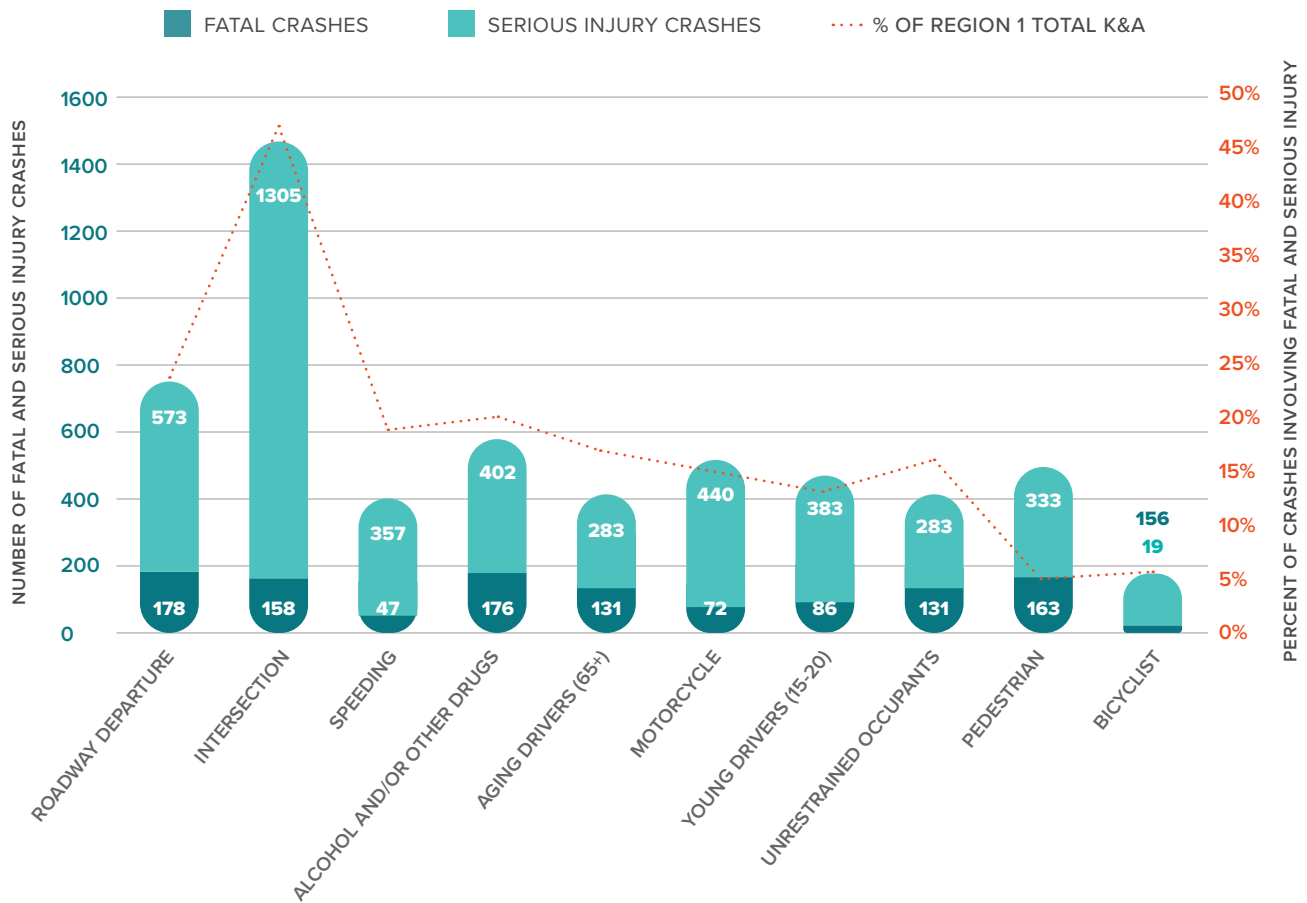


FIGURE 13 REGION 1 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014-2018)

Region 1 (Figure 13) does not match the statewide distribution of serious crash attributes. Differences include additional fatal and serious injury crashes at intersections and a higher proportion involving bicyclists. Region 1 also experienced fewer fatalities and serious injuries related to roadway departure, speed, and aging drivers, than the statewide average.

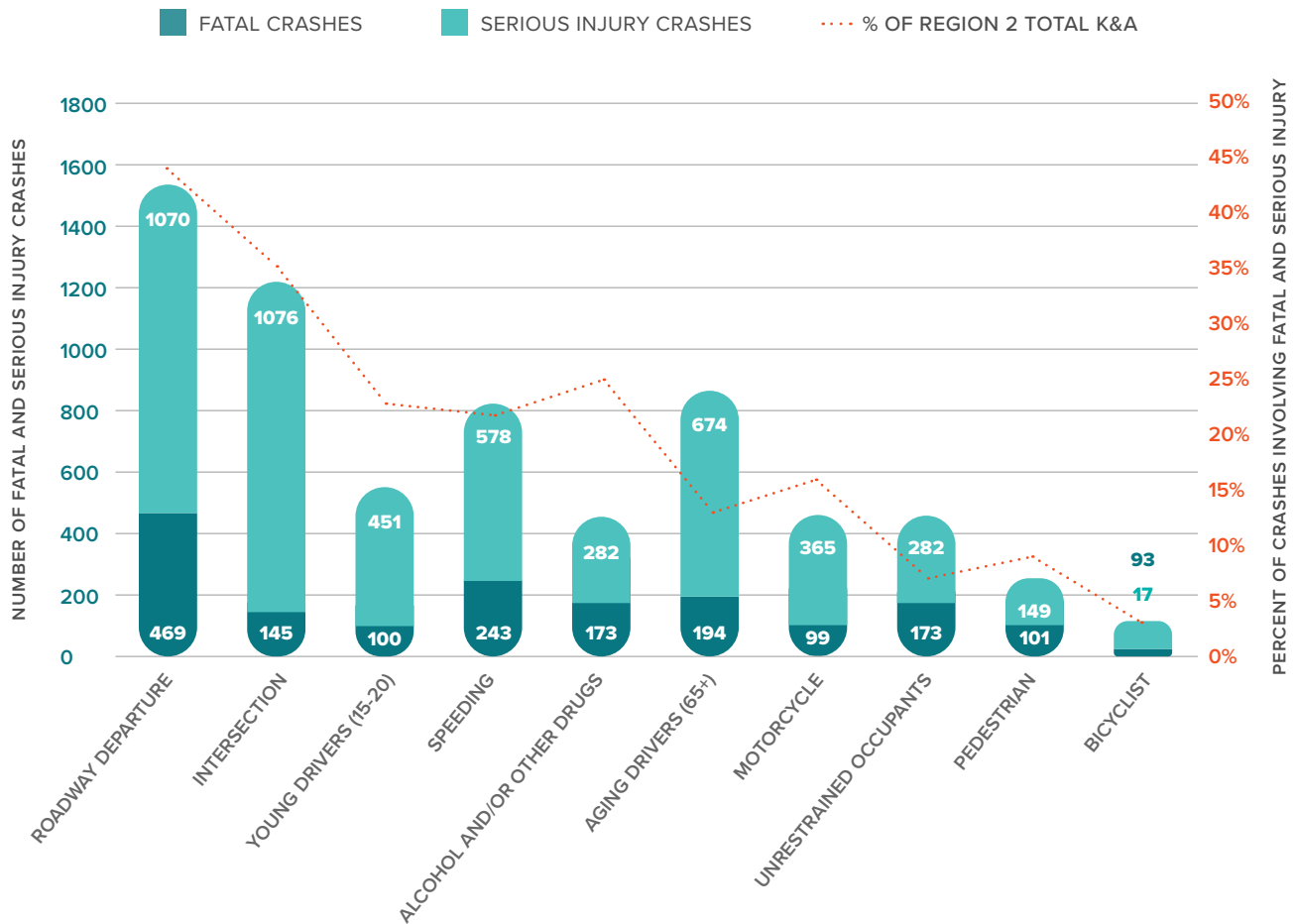


FIGURE 14 REGION 2 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014-2018)

Region 2 (Figure 14) is a close match to the statewide proportions and distribution of the top attribute. The region has a mix of urban and rural transportation needs, similar to the State of Oregon.

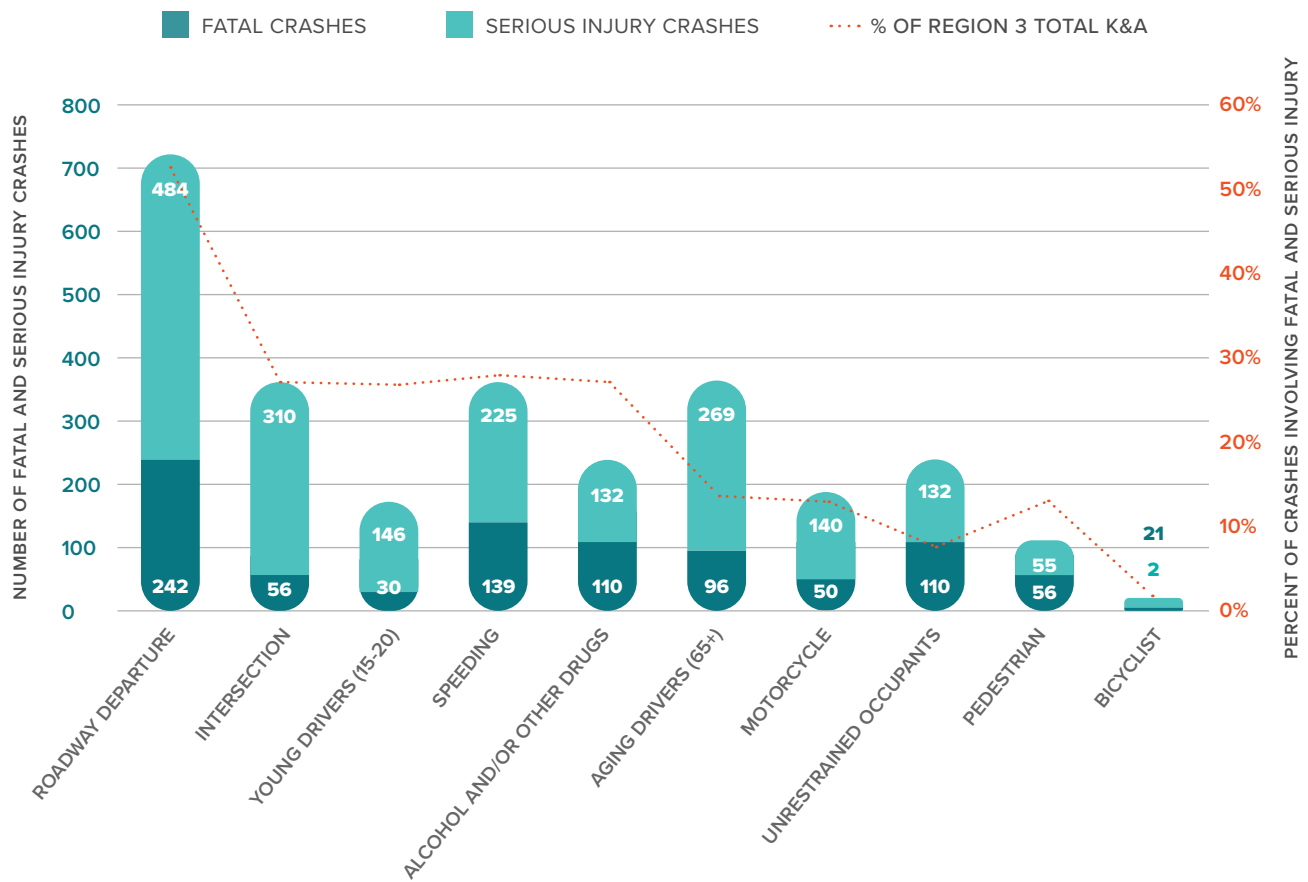


FIGURE 15 REGION 3 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014-2018)

Region 3 (Figure 15) has a higher frequency of roadway or lane departure fatal and serious injury crashes compared to the statewide average. It also experienced a lower proportion of intersection-related fatal and serious injury crashes than the rest of the state.

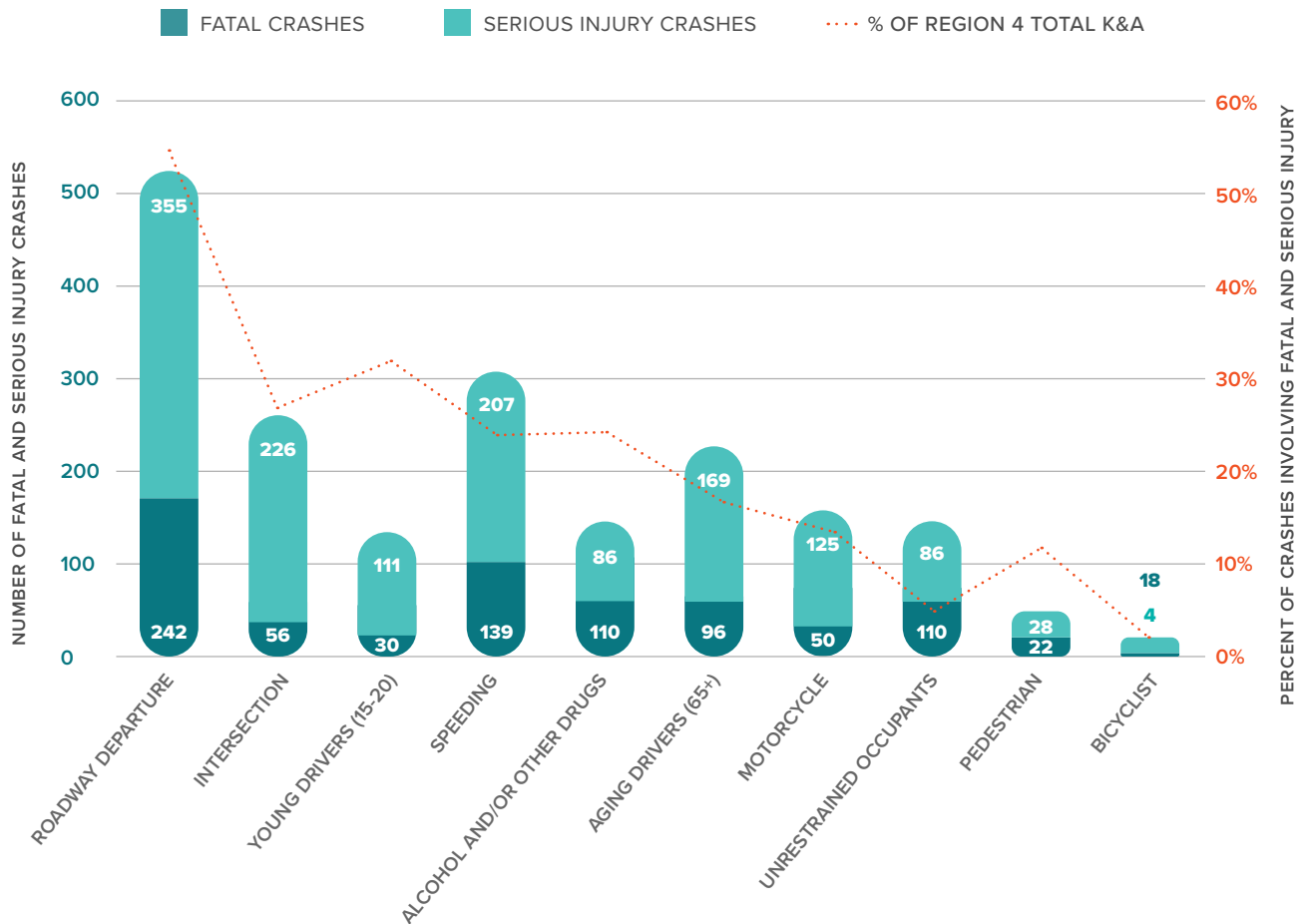


FIGURE 16 REGION 4 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014-2018)

Region 4 (Figure 16) has a higher frequency of roadway or lane departure and speed-related fatal and serious injury crashes compared to the statewide average, partially because of its high number of rural road miles. It also has a higher proportion of unrestrained occupants than the state overall.

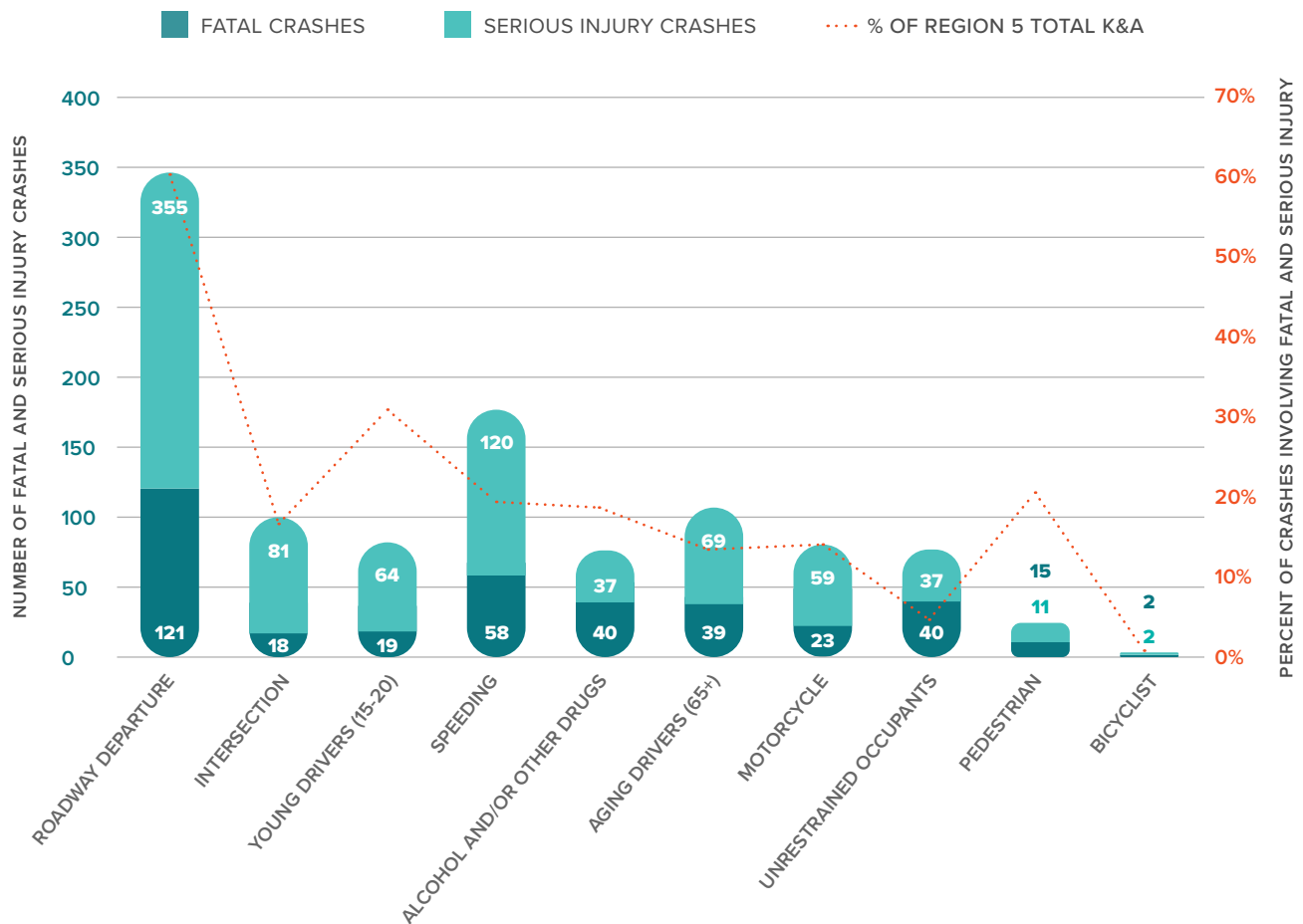


FIGURE 17 REGION 5 FATAL AND SERIOUS INJURY CRASHES BY ATTRIBUTE (2014-2018)

Region 5 (Figure 17) also is quite rural, which contributes to its higher frequency of roadway or lane departure and speed-related fatal and serious injury crashes compared to the statewide average. It also experienced a lower proportion of intersection-related and pedestrian-involved fatal and serious injury crashes than the rest of the state. However, pedestrian-involved fatal and serious injury crashes are higher, by proportion, than the statewide average, which is a recent change.

Conclusion

From a broad perspective, the 2014-2018 Oregon crash trend analysis shows different types, severities, and attributes for crashes in the different ODOT Regions of the state.

It is important to address both infrastructure and human behavior safety issues to meet Oregon's long-term vision. Oregon's crash data provides an important starting point toward deciding the distribution of limited resources by region, attribute, and potential countermeasures to address a diversity of safety programs and projects. The data also is critical to inform the selection of emphasis areas, strategies, and actions which provide the framework for lowering fatalities and serious injuries in Oregon that are presented in later chapters.

4

Safety Challenges and Opportunities

An important aspect of making a case for strategic safety investments in the transportation system is understanding the costs of not making those investments. The case for safety is in some regards intuitive, but when deciding how to make the best use of limited resources, it also is helpful to have a sense of the real costs of transportation-related fatalities and serious injuries.

Safety Challenges and Opportunities

The case for safety is in some regards intuitive – no one wants to lose a loved one to a crash, so investing in safety is easily accepted as a good use of resources, particularly by those directly affected by personal loss from a crash. But when deciding how to make the best use of limited resources, it also is helpful to have a sense of the real costs of transportation-related fatalities and serious injuries. Those costs are at once personal, societal, and economic.

Every crash in Oregon has an impact on families, communities and the economy. This chapter describes those impacts in detail, and also looks broadly at the challenges and opportunities for reducing them.

The Human Impact of Crashes

The loss of a family member or friend to a sudden and unexpected crash is devastating. Over 30,000 motor vehicle crash victims and their families experience this every year in the United States, including over 500 in Oregon in 2018.

The impacts of a motor vehicle fatality are far reaching. Not only is the crash victim's life cut short, but spouses, children, parents, extended families, friends, and coworkers are each impacted in ways that are difficult to measure: the loss of a child is an unimaginable burden for most parents that they will carry for the remainder of their lives; the premature death of a parent leaves a permanent void in a child's life; a spouse or friend lost in a crash can never be replaced. These experiences can fundamentally change the quality of a person's life.

Fortunately, Oregon has made great progress in reducing crash fatalities and associated impacts over the past 10 years; however, too many individuals and families are still being significantly impacted by debilitating injuries. In 2018, more than 1,600 people suffered incapacitating injuries in motor vehicle crashes in Oregon. Outcomes from these crashes can range from a short-term inconvenience (e.g., broken arm, concussion) to a life-altering injury (e.g., paralysis, loss of a limb). Crashes and resulting injuries have historically been considered by many as an inevitable consequence of mobility. However, currently this

Everyone is responsible for ensuring their own safety, and responsible to protect the lives of others through responsible decision-making.

idea is being challenged as countries, states, and cities across the world seek to change culture and eliminate traffic fatalities entirely. The idea may be difficult to grasp initially, but when people are asked how many traffic fatalities are acceptable for their friends and family, the universal response is: ‘zero’.

As long as transportation users engage in risky behaviors such as driving under the influence of alcohol or drugs, speeding, not wearing seat belts, or texting while driving, fatalities and injuries will continue to occur on our transportation network. Furthermore, unless we build our transportation system for all users, including designing roads for the speeds that are appropriate within the land use and geographic contexts, crashes will also continue as before. A multidisciplinary approach is required, with dedicated and sustained effort from government agencies representing the 4 Es of Safety (engineering, emergency response, law enforcement, and education) as well as the general public.

The Economic Cost of Crashes

While it is difficult to quantify the emotional costs of crashes, it is possible to estimate the purely financial impacts of lost lives, injuries, and property damage **attributable to crashes involving motor vehicles.**

Economists often use two approaches to quantify the costs of crashes: economic costs and comprehensive costs. Economic costs can generally be described as those costs which are measurable, while comprehensive costs include the economic costs as well as lost quality of life.

Oregon reports human capital and comprehensive crash costs by crash type and severity are based on two methodologies: Highway Safety Manual (HSM) Appendix 4A and FHWA’s *Crash Cost Estimates by Maximum Policy-Reported Injury Severity Within Selected Crash Geometrics*. Table 2 shows Oregon’s comprehensive economic value for crashes based on highway type, urban/rural location, and severity outcome.

TABLE 2 OREGON COMPREHENSIVE ECONOMIC VALUE PER CRASH (2019 VALUES)

HIGHWAY TYPE	URBAN	RURAL
PROPERTY DAMAGE ONLY CRASH		
All Facilities	\$21,800	\$21,800
MODERATE (B) INJURY AND MINOR (C) INJURY CRASH		
Interstate	\$77,800	\$89,200
Other State Highway	\$80,800	\$91,900
Off System	\$81,300	\$93,200
FATAL AND SERIOUS (A) INJURY CRASH		
Interstate	\$1,530,000	\$2,260,000
Other State Highway	\$1,490,000	\$2,140,000
Off System	\$1,110,000	\$1,940,000

Crash severities are combined (Fatal and Serious (A) Injury; Moderate (B) Injury and Minor (C) Injury) to account for two issues inherent in crash outcomes. First, the difference between a fatality and a serious injury is often related to factors outside the control of safety professionals, including age of the driver or make and model of vehicle. Second, moderate injury and minor injury is a difficult determination for law enforcement officers to make in the field, so combining these severities accounts for that subjectivity.

The economic cost of crashes in Oregon from 2014 to 2018 averaged \$5.81 billion annually or more than \$15 Billion in total. Figure 18 provides a breakdown of economic crash costs by severity level, showing that while fatal and serious injury crashes represent less than four percent of all crashes in the state, they comprise over 50 percent of the comprehensive societal costs.

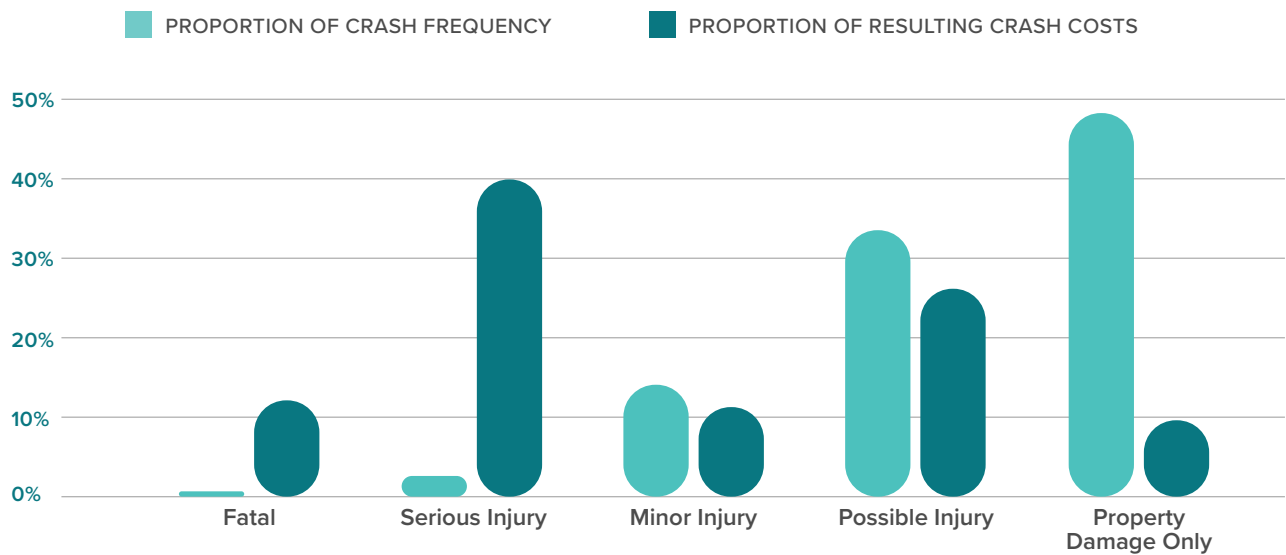


FIGURE 18 PROPORTION OF FATAL & SERIOUS INJURY CRASHES BY ROADWAY FUNCTIONAL CLASSIFICATION (2014-2018)

Beyond the most important aspect of transportation safety – saving lives and preventing serious injuries of real people – reducing the number of fatal and serious injury crashes on Oregon roadways will also bring the state substantial economic benefits.

Transportation Safety Challenges and Opportunities

Given the significant impact of crashes on Oregon’s families, communities, and economy, it is important to look broadly at the challenges and opportunities for reducing these impacts.

Challenges

GEOGRAPHIC AND DEMOGRAPHIC SHIFTS

Changing Travel Demographics

- More people.
- More older drivers.
- More travel and commercial activity – especially in urban areas.

Oregon’s population has grown to over 4.2 million people in 2020, which was faster than the U.S. overall. This growth translates into higher levels of travel and commercial activity, especially in metropolitan areas where most of the growth has occurred.¹

Oregon also is experiencing an increase in the aging driver population as baby boomers move into and through the retirement years. The portion of the Oregon population 65 years or older increased from 13.9 percent in 2010 to 18.2 percent in 2019.² Although aging drivers are safer in many

respects than younger and middle age drivers, they have lower survival rates when involved in crashes, which could contribute to an increase in motor vehicle fatalities.

COMPETING PRIORITIES IN URBAN AREAS

In urban areas there is a high mix of modes of travel, speed of travel and trip purpose. Trucks move freight and vehicles, bicycles and transit move people to work, recreation, and shopping. There is inherent conflict and risk in this mix of modes, trip purposes, and speed of travel. Implementing a range of transportation solutions in urban areas is necessary to meet transportation goals, such as safety, mobility, reliability, or improved air quality. Planners and engineers need to draw on the best available evidence to implement a data-driven approach to funding projects which reduce the frequency and severity of crashes.

Competing Priorities

- High mix of modes in urban areas.
- Balancing safety, mobility, reliability, air quality, access.
- Equity.
- Transit availability.

1 Portland State University Population Research Center. Oregon Population Estimate Reports, 2020. <https://www.pdx.edu/population-research/population-estimate-reports>.

2 U.S. Census Bureau. <https://data.census.gov/cedsci/>

EQUITY

Historically-underserved communities experience inequitable treatment in transportation needs identification and project delivery, exacerbating safety problems in those communities. Research shows that pedestrian crashes are more common in low-income neighborhoods and communities of color. In these areas it is critical to consider transportation safety as a primary criterion for project prioritization.¹

TECHNOLOGY CONCERNS

Technology has made and continues to make significant contributions to transportation safety, but it is not always beneficial. For example, the proliferation of smartphones and other handheld devices has given rise to an increasingly distracted population. Unfortunately, reliable statistics on the use of cell phones while driving and as a contributor to crashes and injuries are difficult to obtain, but available data and anecdotal evidence point to distraction as a significant traffic safety concern. A survey conducted by Southern Oregon University in 2016 found that three out of four drivers surveyed engage in distracted driving. Furthermore, 83 percent of respondents felt that distracted driving is an important safety concern on Oregon's roads.² Research into the impact of various types of distraction on cognitive abilities confirms the risks associated with the use of technology while driving.³

Advantages and Disadvantages of Technology

- Technologies for blindspot detection, lane departure warning, forward collision avoidance, speed management, and rollover control.
- In-vehicle distractions – cell phones, dashboard computers.
- Expense of implementing technology solutions.
- Equity of implementing technology solutions.

Technological innovation can be expensive to implement and the benefits do not always outweigh the costs. For example, rigorous commercial vehicle driver training may in some cases be less expensive than implementing technology requirements that are potentially less effective. Equity is another concern stemming from the cost of technology. Advancements in technology are slower to reach lower income residents and those in rural areas, where a significant portion of fatalities and serious injuries occur.

1 Roll, J., Analysis of Pedestrian Injury, Built Environment, Travel Activity, and Social Equity, Oregon Department of Transportation Research Section, 2020.

2 Angela Durant et al. Distracted Driving: an Epidemic, A Study of Distracted Driving Attitudes, Behaviors, and Barriers Preventing Change. Southern Oregon University, prepared for Oregon Department of Transportation. 2016.

3 AAA Foundation for Traffic Safety. Measuring Cognitive Distraction in the Automobile. 2013. <https://www.aaafoundation.org/sites/default/files/MeasuringCognitiveDistractions.pdf>.

Opportunities

MOBILITY AND SYSTEM EFFICIENCY BENEFITS OF REDUCING CRASHES AND INJURIES

While mobility and safety are often thought of as competing goals, this is not always the case. Crashes are part of a broader category of congestion referred to as ‘nonrecurring congestion,’ which also includes congestion resulting from disabled vehicles, work zones, adverse weather, and special events.¹ Crashes impose costs on society through increased travel time, wasted fuel, and increased emissions. The vast majority of these costs are experienced on urban interstates and expressways. A single crash typically affects travel conditions from around 25 minutes to an hour and a half, depending on pre-crash traffic density, whether travel lanes are closed, and the severity of the crash.² Generally more severe crashes impose higher congestion costs. According to NHTSA, crashes resulted in \$28 billion in congestion-related costs to the U.S. economy in 2010. Reducing crashes therefore is a significant opportunity to improve the economy through not only the reduction of injury costs, but also through reduced congestion costs.

THE ROLE OF TECHNOLOGY

While technology can be a challenge in transportation safety, there is also opportunity in embracing these innovations. A few notable examples of the benefits of technology innovation are shown in Table 3.

TABLE 3 **EXAMPLES OF SIGNIFICANT PAST TECHNOLOGICAL INNOVATIONS FOR IMPROVED SAFETY**

APPLICATION AREA	TECHNOLOGICAL INNOVATION
VEHICLE SAFETY	<ul style="list-style-type: none">• Reduced likelihood of getting in a crash (e.g., anti-lock brakes, traction control, anti-roll bars)• Reduced crash injury outcomes (e.g., seat belts, air bags, child passenger seats, crumple zones)
INFRASTRUCTURE	<ul style="list-style-type: none">• Improved pavement technology to increase traction• More conspicuous signs and pavement markings• Cable median barriers and guardrails• Roundabouts• Pedestrian and bicyclist facilities and crossings
LAW ENFORCEMENT	<ul style="list-style-type: none">• Breathalyzers and other devices to detect impaired drivers• Ignition interlock devices to reduce repeat DUII offenses• Speed and red-light-running automated enforcement systems

1 FHWA. Office of Operations. Reducing Non-Recurring Congestion. 2015. http://ops.fhwa.dot.gov/program_areas/reduce-non-cong.htm.

2 National Highway Traffic Safety Administration. The Economic and Societal Impact of Motor Vehicle Crashes. 2010. <http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf>.

EMERGENCY RESPONSE

- Improved communications to reduce response time
- Advanced equipment to sustain life following a serious crash

PROBLEM IDENTIFICATION AND RESEARCH

- Sophisticated methods and data to identify intersections and corridors with the greatest safety concern
 - Advanced research into crash causes and countermeasures
 - Integration of datasets across agencies and disciplines to better understand and address traffic safety issues
-

CONNECTED AND AUTOMATED VEHICLES

Technology continues to evolve and influence traffic safety. Perhaps the most significant safety-related technological change on the horizon is the introduction of connected vehicles for both private travel and the movement of freight to the road network. Connected and automated vehicles (CAV) have the potential to reduce the likelihood of crashes through the use of communication and automation technologies.

Example applications currently available and upcoming include the following:

- Adaptive cruise control
- Forward collision warning and automatic braking
- Blind spot / lane change warning
- Lane departure warning
- Connectivity to traffic control devices, including traffic signals

SAE International is a leader in connecting and educating mobility professionals to enable safe, clean, and accessible mobility solutions. SAE has defined terms related to driving automation systems for on-road motor vehicles. It describes motor vehicle driving automation systems that perform part or all of the dynamic driving task (DDT) on a sustained basis. It provides a taxonomy with detailed definitions for six levels of driving automation, ranging from no driving automation (level 0) to full driving automation (level 5), as described in the figure on the following page.¹

Connected and Automated Vehicles Are Expected To:

- Reduce likelihood of crashes.
- Take time before all vehicles have the technologies.
- Require public investment, policies, and programs in urban and rural areas.
- Initially benefit higher income residents.

¹ Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, J3016_201806, SAE International. https://www.sae.org/standards/content/j3016_201806/



SAE J3016™ LEVELS OF DRIVING AUTOMATION

	SAE LEVEL 0	SAE LEVEL 1	SAE LEVEL 2	SAE LEVEL 3	SAE LEVEL 4	SAE LEVEL 5
What does the human in the driver's seat have to do?	You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering			You are not driving when these automated driving features are engaged – even if you are seated in “the driver’s seat”		
	You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety			When the feature requests, you must drive	These automated driving features will not require you to take over driving	
What do these features do?	These are driver support features			These are automated driving features		
	These features are limited to providing warnings and momentary assistance	These features provide steering OR brake/acceleration support to the driver	These features provide steering AND brake/acceleration support to the driver	These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met	This feature can drive the vehicle under all conditions	
	<ul style="list-style-type: none"> • automatic emergency braking • blind spot warning • lane departure warning 	<ul style="list-style-type: none"> • lane centering OR • adaptive cruise control 	<ul style="list-style-type: none"> • lane centering AND • adaptive cruise control at the same time 	<ul style="list-style-type: none"> • traffic jam chauffeur 	<ul style="list-style-type: none"> • local driverless taxi • pedals/steering wheel may or may not be installed 	<ul style="list-style-type: none"> • same as level 4, but feature can drive everywhere in all conditions
Example Features						

SAFETY ANALYTICS

The use of analytical tools and processes offers a more immediate application of technology to transportation safety. The increasing quality and quantity of safety-related data (e.g., crash, roadway inventory, and volume) is enabling new insights into the causes of crashes and possible measures to reduce their occurrence or severity. Methods for collecting safety data specific to other modes such as bicycles and pedestrians are emerging and will expand capability to assess opportunities and risks and identify solutions for non-auto modes. Advances in statistical modeling

Safety Analytics

- The timeliness and quality of data can save lives.
- Better data and analytical tools will mean the right solutions at the right time.
- Staff will need training and resources to take full advantage of safety analytics.

have enabled more reliable problem identification and application of safety countermeasures, taking advantage of available data. Some agencies have begun to use prior crash history to forecast the likely occurrence of crashes and to proactively deploy law enforcement and emergency response resources accordingly.¹

ODOT and local agencies have also used innovative technologies and data sets, including video analytics and intersections and connected vehicle data outputs, to identify safety needs. These data sets and proactive approaches will allow communities to better plan for the safety of the transportation system in their long-range work.

URBAN DEMOGRAPHICS

Like most states, Oregon's population has become increasingly focused in urban and suburban areas over the past few decades. The share of the population living in metropolitan areas increased from 77 percent in 2000 to 83 percent in 2014. Since 2014, the demographics have remained relatively constant, with 84 percent of Oregonians living in metropolitan areas in 2019.²

Along with the overall trend toward living in urbanized areas, urban centers also are becoming denser. Increased density is being driven by a number of factors, including the preference among empty nesters and millennials for urban lifestyles, where a variety of amenities are within close proximity.

Shifting Transportation and Lifestyles

- More people are choosing urban lifestyles.
- Urban areas are becoming more dense.
- More people are choosing non-auto travel.
- Transit is one of the safest modes of travel.
- Managed speeds can significantly reduce the severity of crashes.

Transportation and land use patterns in urban areas tend to support the use of transit, bicycling, and walking, as well as relatively newer transportation forms. Car sharing and Transportation Network Companies (TNC) such as Uber and Lyft are changing the relationship between the public and their vehicles. In particular, these innovations make it easier for people to live car-free, potentially resulting in fewer serious crashes on our roadways. TNCs also may have a positive impact on some risky behaviors such as impaired driving.³ However, the increase of TNC use could have negative safety impacts as well, including speeding to meet demand, driver

1 <http://www.timesfreepress.com/news/local/story/2014/aug/01/new-software-predicts-when-and/263323/>

2 2019 Annual Population Report Tables. Portland State University, Population Research Center. 2020. <https://archives.pdx.edu/ds/psu/34271>

3 Greenwood, B., and S. Wattal. Show Me the Way to Go Home: An Empirical Investigation of Ride Sharing and Alcohol Related Motor Vehicle Homicide. Fox School of Business Research Paper No. 15-054. 2015. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2557612&download=yes

distraction using the required smartphone apps, and increased vehicle miles traveled.

All of these trends associated with greater urbanization have an impact on safety outcomes. Crashes in urban areas tend to have less severe outcomes due to lower speeds and access to medical services.

The use of transit in urban areas likely contributes to improved safety, in part due to the extent it reduces traffic volumes and conflicts. And transit is one of the safest modes of transportation.¹ It provides an alternative to driving for many commuters who would otherwise drive or who should not be operating a vehicle for health or other reasons. The role of transit in improving safety outcomes has not been fully explored in the literature, but research has demonstrated that cities with higher per capita transit use also have lower per capita fatality rates.²

Less is known about the relationship of the level of walking and bicycling to safety outcomes for these modes or for the broader public. A ‘safety in numbers’ theory has been proposed, suggesting that higher levels of walking and bicycling result in lower crash rates involving these modes.

While data consistent with this theory has been presented from several countries, a consensus on this question has not been reached. It is possible that one or both of these factors played a role in reducing the crash rate, but it cannot be determined without a more rigorous study. Nonetheless, the evidence suggests that at the very least, higher levels of bicycling and walking do not result in a dramatic increase in crashes.

Conclusion

To take advantage of the opportunities and address the challenges, ODOT Divisions, partner agencies, and stakeholders have collaborated to inform the development of safety goals, policies, and strategies. This information will be used as a guide to incorporate safety into daily job functions and as part of everyone’s personal responsibility to safety. The following chapter describes the policy and strategy outcomes associated with the challenges and opportunities.

1 Bureau of Transportation Statistics. Distribution of Transportation Fatalities by Mode. http://www.rita.dot.gov/bts/sites/rita.dot.gov/bts/files/publications/national_transportation_statistics/html/table_02_04.html.

2 Litman, T. A New Transit Safety Narrative. *Journal of Public Transportation*, Vol. 17, No. 4, 2014. http://www.nctr.usf.edu/wp-content/uploads/2014/12/JPT17.4_Litman.pdf.

5

Vision, Goals, Policies, and Strategies

Every day, people arrive safely at their destinations in Oregon, but tragically, fatalities and serious injuries still occur on the Oregon transportation system. Any fatality or life-changing injury is a significant loss. Our safety leaders must work to implement state-of-the-art programs, policies, and projects to reduce transportation fatalities and life changing injuries.

Vision, Goals, Policies, and Strategies

Oregon's safety leadership understands that policy, program, and process changes are needed to work toward equitably serving the population of Oregon. To develop and maintain a transportation system that works for everyone, programs must involve the people most negatively impacted. Historically-underserved communities experience inequitable treatment in transportation needs identification and project delivery, exacerbating safety problems in those communities. The TSAP lays the foundation to consider and prioritize safety for all modes and users of our transportation system to eliminate all deaths and life-changing injuries on the transportation system.

Oregon's safety leadership understands that policy, program, and process changes are needed to work toward equitably serving the population of Oregon. To develop and maintain a transportation system that works for everyone, programs must involve the people most negatively impacted. Historically-underserved communities experience inequitable treatment in transportation needs identification and project delivery, exacerbating safety problems in those communities. The TSAP lays the foundation to consider and prioritize safety for all modes and users of our transportation system to eliminate all deaths and life-changing injuries on the transportation system.

Achieving this vision by 2035 requires commitment and engagement from a variety of Oregon's agencies and stakeholders. Engineers, planners, emergency medical service providers, law enforcement and educators traditionally play a strong role in advocating for, planning, designing, and implementing transportation safety plans and will continue to do so. However, this plan also

Vision.

Oregon envisions no deaths or life-changing injuries on Oregon's transportation system by 2035.

includes goals, policies, strategies, and actions relevant to public health professionals, the media, private stakeholders, the individual transportation system user, and others. All these organizations and individuals will be tasked with planning and implementing safe travel options, and traveling responsibly, with the safety of all users in mind.

Goals

Decision-makers are always faced with tradeoffs in developing a comprehensive transportation system. There are a large variety of system needs (e.g., mobility, access, reliability, environmental impacts, health impacts, equity, modal options, and safety) that need to be balanced and prioritized for a wide variety of contexts. The goals, policies, and strategies in the TSAP present a “safety-first” perspective.

There are always tradeoffs. The goals, policies, and strategies in this plan are developed and presented from a “safety-first” perspective.

This portion of the TSAP outlines a strategic framework, including a vision, goals, policies, and strategies, to define what Oregonians want to achieve in the future for transportation safety. The vision outlines the aspirational objective of eliminating fatalities and serious injuries by 2035. To make advancements towards the vision, six goal areas provide specificity for ODOT, stakeholder agencies, and the public to focus efforts and resources. Within each goal area, a diverse list of policies and strategies convey the mid- and long-term opportunities, programs, and activities that have the best chance of improving transportation safety for all modal users. Incorporation of the goals, policies, and strategies into all ODOT and stakeholder plans will help Oregon achieve its vision.

GOAL AREAS

- 1 IMPROVING SAFETY CULTURE**
- 2 IMPROVING INFRASTRUCTURE**
- 3 FACILITATING HEALTHY AND LIVABLE COMMUNITIES**
- 4 USING BEST AVAILABLE TECHNOLOGIES**
- 5 COMMUNICATING AND COLLABORATING**
- 6 INVESTING STRATEGICALLY**

1

IMPROVING SAFETY CULTURE

Background

Developing and sustaining a strong safety culture, where transportation safety (defined as reducing the number and severity of crashes) is integrated into everyday decision-making, is key to reducing unnecessary deaths and serious injuries related to transportation. Cultural change is not a simple thing. It involves educating those who design and operate the system along with all road users. Each has a basic responsibility to consider the safety of themselves and others as part of their job functions and daily activities.

For those who address transportation and/or safety in their jobs, including the state legislature, ODOT, metropolitan planning organizations, local jurisdictions, emergency responders, law enforcement, health services providers, rail and transit providers, nonprofit organizations, industries, and other organizations, cultural shifts will be seen when safety is prioritized as a core value. A strong safety culture means that agency leadership and employees, at all levels, are encouraged, and rewarded for prioritizing safety, and identifying safety issues and solutions while carrying out their agency's missions and their individual job responsibilities.

Inspiring a strong safety culture among the public (individual drivers, passengers, bicyclists and pedestrians) can be implemented in a number of ways. Good public information and education on the

rules of the road and changes in regulations; broadly available and up-to-date driver training; clear communication of the benefits of transportation law enforcement in changing social norms to expect slower speeds; respect and responsibility for other users; and community engagement in transportation safety plans and programs; can all contribute to higher awareness of how individual choices influence the safety of all system users.

Opportunities to address safety culture are different based on the types of decisions being made and on who is making those decisions, but Oregon will achieve shifts on all fronts to elevate awareness of safety issues and identify safety solutions.

The plan is prepared to purposely refrain from endorsing a single approach for Oregon in favor of selecting those strategies and actions that Oregonians think will impact our safety challenges. This allows room for new strategies, and also allows existing strategies to shine when a community or agency chooses to implement their version of Oregon's planned safety efforts.

Goal

Transform public attitudes to recognize that all transportation system users have responsibility for other people's safety in addition to their own safety while using the transportation system. Transform organizational transportation safety culture

among employees and agency partners (e.g., state agencies, regional planning entities, local agencies (Tribes, counties, cities), other safety stakeholders, employers, and the general public) to integrate safety considerations into all responsibilities.

Policies and Strategies

Policy 1.1. Communicate proactively with system users about safety culture.

- **Strategy 1.1.1** – Promote safe travel behavior through educational initiatives, focusing on how system user behavior can contribute to a safer transportation system for all.
- **Strategy 1.1.2** – Tailor safety culture marketing and media tools to specific user groups with specific needs (e.g., youth, aging travelers, walkers, motorcyclists, bicyclists, under-invested groups, and different income groups).
- **Strategy 1.1.3** – Evaluate the effectiveness of policies, programs, and projects implemented to improve public understanding of safety culture and changes in positive transportation safety behaviors.

Policy 1.2. Promote safety culture within agencies, stakeholder organizations, and employers.

- **Strategy 1.2.1** – Provide transportation and safety leaders and staff with training, information, and education on proven methods to integrate safety into all aspects

of the planning, programming, project development, construction, operations, and maintenance processes.

- **Strategy 1.2.2** – Implement best practices for ongoing enhancement of safety culture training, information, and tools within ODOT and across agencies and stakeholders.
- **Strategy 1.2.3** – Coordinate and collaborate with public and private employers to implement work-related transportation safety programs.

Policy 1.3. Implement regulatory changes, including legislative concepts and administrative rule changes, to provide incentives or remove impediments to developing a multimodal transportation safety culture.

- **Strategy 1.3.1** – Collaborate with state, regional, tribal, county and city transportation and safety agencies, and other stakeholders, to identify unsafe walking, biking, or driving behaviors that could be addressed through legislation. Identify and pursue legislation to modify these behaviors.

IMPROVING INFRASTRUCTURE

Background

Transportation infrastructure should be planned, designed, built, operated, and maintained to reduce the potential severity of a crash in the event a crash occurs. When safety is considered during all these stages and proven treatments are applied, user mistakes may not result in serious injuries.

Oregon’s transportation infrastructure includes state and local public facilities (streets, freeways, paths, sidewalks, transit, bicycle facilities, signs, lights, traffic signals, interchanges, barrier rail, guard rail, etc.) and other transportation assets, including technology resources that support transportation operations, planning, and decision-making. The design of these facilities influences how people interact with and use the transportation system. People driving, riding, walking, and bicycling navigate the transportation system using visual cues, signage, regulations, and their personal expectations about how other people will use the transportation system. Infrastructure for all travelers needs to be planned, designed, constructed, operated, and maintained to clearly convey travel speed and behavior consistent with the surrounding land uses and anticipated users, and to carefully manage interactions and expectations across modes.

Inevitably, crashes will occur, but the transportation system can be planned and

designed to limit the severity of crashes. This is achieved by creating a transportation system that minimizes potential conflicts within and across modes; planning and designing facilities consistent with the desired context and use of the facilities (e.g., context-sensitive posted speed limits); and implementing countermeasures with known or high potential to minimize crash severity and frequency.

Goal

Develop and improve infrastructure to eliminate fatalities and serious injuries for users of all modes.

Policies and Strategies

Policy 2.1. Continually improve safety data collection, management, and distribution for data-driven decision-making for infrastructure planning, development, and operations activities, across all divisions at ODOT, and with partner agencies and stakeholders.

- **Strategy 2.1.1** – Enhance crash data quality using a coordinated effort with ODOT and partner agencies and stakeholders.¹
- **Strategy 2.1.2** – Identify and implement new methods for crash, roadway, and exposure (e.g., vehicle, pedestrian and bicycle volume) data collection, sharing, and storage.

¹ The 2016 TSAP version of this strategy was completed, resulting in this revision.

- **Strategy 2.1.3** – Support national safety research and lead state and local research to identify opportunities to enhance data analysis techniques and test countermeasures to eliminate fatalities and serious injuries.
- **Strategy 2.1.4** – Review state crash report forms to ensure appropriate data is collected and extraneous data is eliminated. Provide training and education to state and local enforcement agencies on resulting form(s).

Policy 2.2. Continually improve and implement design and analysis techniques for safety-related decision-making in transportation planning, programming, design, construction, operations, and maintenance for all modes.

- **Strategy 2.2.1** – Update ODOT manuals, guides, processes, and procedures, etc., to include quantitative safety analysis in planning, project development and design, programs and maintenance activities and prioritization.
- **Strategy 2.2.2** – Implement reactive, systemic, and predictive safety analysis and tools into all stages of the project development process including maintenance and operations.

- **Strategy 2.2.3** – Incorporate quantitative and/or risk-based safety benefits and disbenefits into project prioritization processes.
- **Strategy 2.2.4** – Develop and monitor planning, program, and project-level performance measures and/or indicators to assess transportation safety outcomes for all modes.

Policy 2.3. Plan, design, construct or improve, operate, and maintain the transportation system to achieve healthy, livable, and equitable communities and eliminate fatalities and serious injuries for all Oregon travelers.

- **Strategy 2.3.1** – Implement Practical Design¹ and/or other proven and innovative approaches to address transportation safety issues for all system users.
- **Strategy 2.3.2** – Plan, design and construct or retrofit facilities for desired operating speed.
- **Strategy 2.3.4** – Support, coordinate, and collaborate with local jurisdictions to identify community safety concerns and establish solutions.
- **Strategy 2.3.5** – Educate transportation planning and design professionals on how to incorporate safer context-sensitive designs into community projects.

¹ Practical Design is “a systematic approach to deliver the broadest benefit to the transportation system, within existing resources, by establishing appropriate project scopes to deliver specific results.” http://www.oregon.gov/odot/hwy/techserv/pages/practical_design.aspx.

- **Strategy 2.3.6** – Implement best practices to eliminate work zone-related fatalities and serious injuries.
- **Strategy 2.3.7** – Continue to identify and implement best practices related to traffic incident management services to reduce secondary crashes and improve system operations and reliability.
- **Strategy 2.3.8** – Implement access management practices that improve system safety for all modes consistent with state statutes and rules.
- **Strategy 2.3.9** – Continue to plan, design, and implement best practices for rail safety program and systems management, particularly rail crossings.
- **Strategy 2.3.10** – Support, encourage, and evaluate safety countermeasures for pilot projects and large-scale implementation as appropriate.
- **Strategy 2.3.11** – Coordinate with freight interests to plan, design, and construct infrastructure that safely accommodates commercial motor vehicles and enhances economic interests.
- **Strategy 2.3.12** – Collaborate with ODOT Public Transportation Division, transit service providers, MPOs, and researchers to evaluate infrastructure techniques to improve safety for transit riders. Update codes and policies to support best practices.

Policy 2.4. Support regulatory changes, including legislative concepts, administrative rule changes, and updates to design standards, as needed, to enable and/or remove impediments to new approaches to safety engineering.

- **Strategy 2.4.1** – Work with state, regional, tribal, county, and city agencies to implement best practices in setting design speeds and speed limits.
- **Strategy 2.4.2** – Work with school districts, state, regional, tribal, county, and city governments and local education interest groups to evaluate and implement best practices for safety in school zones.

FACILITATING HEALTHY AND LIVABLE COMMUNITIES

Background

Cities and counties plan their transportation systems in relation to planned land uses. Increased interest in livability and providing access to transportation options is leading communities to develop walkable neighborhoods and think more about how infrastructure can be safe, equitable, convenient, and contribute to positive health outcomes. The TSAP provides safety strategies and actions to integrate into local planning and programming activities.

Crashes causing deaths or life-changing injuries are a major public health issue in communities. Effective traffic law enforcement is an important tool for reducing risky behavior and reinforcing safety culture. In addition, timely response by law enforcement and emergency medical responders can lead to decreases in transportation-related fatalities and serious injuries. With appropriate resources, more emergency medical responders can be trained and made available to respond to crashes in a timely manner and law enforcement can target dangerous behaviors such as speed and impaired driving and implement proven approaches and programs for protecting public safety.

Goal

Plan, design, and implement safe systems; support equitable enforcement and emergency medical services to improve the safety and livability of communities, including health outcomes.

Policies and Strategies

Policy 3.1. Advance coordination and collaboration between law enforcement and state, regional, and tribal, county and city transportation agencies, public health agencies, mental and physical health care providers, and private stakeholders to make communities safer places.

- **Strategy 3.1.1** – Support a data-driven approach to law enforcement, using data analysis to efficiently deploy enforcement resources to locations or corridors.
- **Strategy 3.1.2** – Support a high-visibility enforcement program increasing traffic, bicycle and pedestrian law enforcement capabilities (priority and funding).
- **Strategy 3.1.3** – Implement Traffic Incident Management best practices on traffic investigations to reduce traffic delays and secondary crashes.
- **Strategy 3.1.4** – Engage law enforcement in community safety activities such as teaching education classes on safer behaviors.
- **Strategy 3.1.5** – Conduct education and outreach to law enforcement to increase understanding and enforcement of traffic, commercial vehicle, pedestrian, and bicycle laws.

Policy 3.2. Support traffic enforcement funding to provide sufficient resources for officers to respond to incidents, increase levels of ongoing traffic enforcement, conduct focused enforcement, and participate in activities such as emphasis patrols.

- **Strategy 3.2.1** – Identify community needs for funding and training to enhance traffic safety programs and enforcement.

Policy 3.3. Support emergency medical service (EMS) funding to provide sufficient resources to train first responders and to respond to transportation-related crashes and other medical emergencies fully equipped and in a timely manner.

- **Strategy 3.3.1** – Identify community needs for funding and training to enhance EMS systems and improve response times and services. Recognize and address the differing needs of paid and volunteer providers.

Policy 3.4. Invest in transportation system enhancements that improve safety and perceptions of security for people while traveling in Oregon.

- **Strategy 3.4.1** – Enhance perceptions of bicycling, walking, and transit safety and security by identifying and implementing appropriate facility design, lighting, and

other changes to the built environment to improve personal security and safety for pedestrians, bicyclists, and transit riders.

- **Strategy 3.4.2** – Identify opportunities to improve transportation system redundancy and otherwise safeguard critical infrastructure against natural and manmade disasters.

Policy 3.5. Provide all regions and localities in Oregon with resources and tools to offer programs and education based on local needs and issues, considering issues of equity.

- **Strategy 3.5.1** – Explore methods to distribute and implement safety programs and funding between urban and rural communities to eliminate fatalities and serious injury crashes.
- **Strategy 3.5.2** – Provide transportation safety educational opportunities for people of all ages, ethnicities, and income levels.
- **Strategy 3.5.3** – Support adequate funding for EMS particularly in rural and remote areas, to the extent that this is the most efficient use of resources to eliminate fatalities and serious injuries.
- **Strategy 3.5.4** – Encourage implementation of Safe Communities statewide.¹

¹ The Safe Communities model is a long-standing approach to reducing injuries and deaths. It works through engaging local partners who care about safety, using data to identify leading causes of injury, making a plan to address the issues using proven methods and measuring success. There is a Safe Communities America® accreditation program through the National Safety Council. (<http://www.nsc.org>, accessed March 18, 2016).

USING BEST AVAILABLE TECHNOLOGIES

Background

As recently as just a few years ago, safety improvements were focused on changes to transportation design and human behavior. Today, those issues remain critical to address, but incremental changes to infrastructure and automobile technology are shifting the conversation about safety. For example, vehicle fleets are now coming with standard safety features, such as automatic lights, forward collision avoidance systems, backup cameras, blind spot monitoring, lane departure warnings, and other custom features.

Transportation infrastructure also is becoming “smarter,” – signalized intersections and corridors can be synchronized to better address roadway incidents, overhead signs can alert drivers of a crash or provide speed guidance as a function of traffic or weather conditions, and signals can let transit users know when a train or bus is approaching.

Successful, low-cost practices in Oregon include the implementation of intelligent transportation solutions (ITS). ODOT and other transportation agencies, such as MPOs have utilized Closed Circuit Television (CCTV) cameras to quickly and efficiently detect, verify, and plan responses for highway incidents, including crashes. Speed Warning Systems are used to provide information to motorists who are traveling at unsafe speeds and Over-Length Warning Systems use detectors to determine whether approaching

vehicles (typically commercial trucks) are too long to safely maneuver a challenging roadway geometry. With the technology in place to implement ITS solutions throughout Oregon, such solutions are increasingly feasible for more regional, tribal, county, and city transportation agencies to expand their use of lower cost technologies. ODOT currently is exploring how and where to deploy ITS solutions more widely in both urban and rural environments.

A number of other technologies, with proven safety benefits, are also being used or explored by ODOT, MPOs, and tribal, county, and city transportation agencies. Some of those initiatives include variable speed signs, traffic operations centers, pedestrian countdown signals, mobile applications that prevent unsafe behaviors such as texting and driving, and others. The intent is to share information and implementation ideas about these technologies to increase their successful deployment throughout urban and rural parts of the state.

Autonomous and connected vehicles would enable on-road communications between vehicles, between vehicles and pedestrians/bicyclists, and between vehicles and infrastructure. This has tremendous safety implications as the technology would allow for automatic control of signal timing, speed management, and the operation of transit and commercial vehicles, among other safety features. ODOT continues to stay at

the forefront of this national dialogue and inform transportation and safety stakeholders of new developments.

Existing and emerging technologies have positive and negative safety effects which need to be considered during the transportation decision-making process. Decision-makers also will have to consider not only the potential for “high-tech” solutions, but also “low-tech” solutions which may have similar safety benefits yet require less investments.

Goal

Plan, prepare for, and implement technologies (existing and new) that improve transportation safety for all users, including pilot testing innovative technologies as appropriate.

Policies and Strategies

Policy 4.1. Actively monitor technological advances and plan, design, maintain, and operate the system in a way that takes full advantage of opportunities to use technology to eliminate fatalities and serious injuries.

- **Strategy 4.1.1** – Explore and integrate technology to eliminate crash frequency and severity, prioritizing implementation of technologies that address the TSAP safety areas.
- **Strategy 4.1.2** – Research and test safety technology for deployment in Oregon.
- **Strategy 4.1.3** – Continue to research

connected and autonomous vehicles to leverage the potential safety benefits associated with these technologies.

- **Strategy 4.1.4** – Bring public- and private-sector stakeholders together to develop opportunities for applying technology solutions and addressing barriers to implement new technologies. Consider potential economic, business, environmental, and privacy impacts of deploying technologies.

Policy 4.2. Apply technological improvements in data management systems to enhance collaboration across agencies and provide tools for data collection and analysis to partner agencies and stakeholders.

- **Strategy 4.2.1** – Provide leadership and staff support to statewide efforts for improving data timeliness, availability, quality, and consistency across agencies.
- **Strategy 4.2.2** – Support data strategic planning efforts through the Traffic Records Coordinating Committee (TRCC) to ensure safety data needs are considered and integrated.
- **Strategy 4.2.3** – Develop tools to facilitate data sharing and analysis across agencies.

Policy 4.3. Leverage technology tools and best practices across divisions and agencies to deploy useful technologies across the state and the transportation system.

- **Strategy 4.3.1** – Develop statewide resources to share best practices, tools, and training for statewide and systemwide deployment of appropriate safety technology.
- **Strategy 4.3.2** – Implement technology advances equitably in urban and rural areas.
- **Strategy 4.3.3** – Identify and implement methods to extend safety technology to underserved system users and the transportation disadvantaged.

Policy 4.4 – Identify legislative concepts enabling the implementation of innovative technologies.

- **Strategy 4.4.1** – Support legislation to enable innovations in enforcement technology (i.e., innovations in field-testing for alcohol and drug impairment in automated enforcement).
- **Strategy 4.4.2** – Review regulations that may impact the adoption of innovative technology and support appropriate new laws and/or amend administrative rules or standards that may constrain implementation of advanced technology.

COMMUNICATING AND COLLABORATING

Background

Safety and transportation go hand in hand, however different roles and job responsibilities between transportation and safety practitioners; funding silos; competing priorities; and other issues are common challenges that could lead to a lack of coordination on transportation and safety issues. Awareness of the co-benefits and the opportunities to work together to develop a safer transportation system will build momentum toward eliminating fatalities and serious injuries. Collaboration and communication within and across agencies presents opportunities to plan, program and prioritize policies or projects to enhance safety of the system. Achieving zero deaths or serious injuries is only possible if overall intentions are coordinated across partners.

This goal area focuses on: 1) facilitating communication between transportation planners and safety specialists; 2) leveraging this communication to share information and collaborate on problem identification, analysis, funding, resources, and tools to advance transportation safety in Oregon; and 3) ensuring this planning effort is coordinated with other transportation and safety planning efforts throughout the state. With coordination and communication focused on transportation safety it is anticipated that state, regional, tribal, county, and city partners will:

- Gain access to and better understand available safety data;

- Form relationships and connect with other transportation safety stakeholders; and
- Understand the safety emphasis areas and proven strategies, which could be subsequently integrated with other stakeholder planning and programming activities.

Increased awareness and buy-in will create opportunities for integrating TSAP goals, policies, and strategies in all planning and project development processes; behavioral programming and emergency services improvements. Further, it will create opportunities for regional and tribal, county, and city governments, and stakeholders to integrate transportation safety policies, projects, and programs into their day-to-day activities.

Goal

Create and support a collaborative environment for transportation system providers and public and private stakeholders, to work together to eliminate fatalities and serious injury crashes.

Policies and Strategies

Policy 5.1. Increase transportation system providers and public and private stakeholder awareness of the TSAP and other safety policies to eliminate fatality and serious injury crashes.

Strategy 5.1.1 – Develop an internal (among partners and agencies) communication protocol

for transportation safety topics including best safety engineering practices.

Strategy 5.1.2 – Engage ODOT Regions and Divisions, MPOs, ACTs, Tribes, cities, counties, the health and medical community, transit providers, transportation services, enforcement and emergency medical service, and traffic incident management providers in safety planning and implementation.

Strategy 5.1.3 – Evaluate agency awareness and implementation of safety activities through periodic statewide surveys.

Policy 5.2. Ensure ongoing communication and coordination among transportation system providers and public and private stakeholders on the implementation of the TSAP’s policies and strategies and throughout program development and project selection.

- **Strategy 5.2.1** – Identify joint legislative safety priorities amongst agencies and provide information to state legislators.
- **Strategy 5.2.2** – Enhance enforcement and emergency medical service communications systems as feasible to improve response time and services for all travelers in Oregon.
- **Strategy 5.2.3** – Facilitate communication and coordination between transportation agencies, EMS, and law enforcement on evacuation planning and emergency preparedness.

- **Strategy 5.2.4** – Promote sharing and leveraging of resources across programs, communities, and agencies.
- **Strategy 5.2.5** – Participate in Federal rulemaking and guidance development programs to maximize opportunities to achieve the TSAP Vision.

Policy 5.3. Enhance public awareness of the importance of transportation safety and the individual’s role in eliminating fatalities and serious injury crashes.

Strategy 5.3.1 – Collaborate with the media and agency public information offices to develop information which improves public awareness of safety programs, laws, roles, responsibilities, and expectations. Ensure campaigns take into account Oregon demographics.

Strategy 5.3.2 – Work with educators in the state’s public school system (including community colleges and other locations where transportation disadvantaged groups such as recent immigrants, newly licensed adult drivers, English as Second Language populations, etc., are likely to receive education) to improve awareness and understanding of transportation laws, roles, and responsibilities through programs such as Safe Routes to School.

INVESTING STRATEGICALLY

Background

Oregon is committed to zero transportation-related fatalities and serious injuries. To make progress and improve traffic safety, stakeholders and partners are tasked with coordinating priorities, leveraging joint resources where possible, and using quantitative data-driven tools (e.g., benefit-cost analysis). Funds are limited, therefore projects, programs, and policies will need to be prioritized to focus on those treatments which will have the greatest benefit toward achieving the vision of zero fatalities and serious injuries.

Two of the most common ways to fund safety projects are through the Highway Safety Improvement Program (HSIP) and Section 402 State and Community Highway Safety Grant Program. These dollars can be used to implement the strategies and actions identified for the emphasis areas. Another opportunity for funding transportation safety improvements is to make safety a consideration for all transportation projects, regardless of funding source or project type. All transportation jurisdictions develop some type of transportation improvement program identifying near-term projects for funding. Agencies use a qualitative and/or quantitative prioritization process to consider and select projects that best meet the goals, outlined in their planning documents. When safety needs are considered as decision criteria in this

prioritization process, the opportunity exists to transform the transportation system into a progressively safer system, reducing loss of life and the impact of serious injuries.

The policies, strategies, and actions in the TSAP can support policy, program and project selection processes, helping decision-makers remain focused on implementing projects that maximize the safety return on investment. Projects, programs, or policies, selected for implementation should be known to be effective, or known to be innovative with an evaluation component included. It also will be necessary to recognize that activities will change with funding levels.

Goal

Target safety funding for effective education, enforcement, engineering, and emergency medical services priorities.

Policies and Strategies

Policy 5.1. Increase transportation system providers and public and private stakeholder awareness of the TSAP and other safety policies to eliminate fatality and serious injury crashes.

- **Strategy 6.1.1** – Implement a quantitative, predictive, benefit-cost analysis or risk-based, data-driven decision framework to identify and prioritize potential projects.

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- **Strategy 6.1.2** – Implement a comprehensive program of systemic and spot safety improvements for all public roads.
 - **Strategy 6.1.3** – Apply proven countermeasures to address the contributing factors and reduce severity.
 - **Strategy 6.1.4** – Use benefit-cost analysis (or similar) to select measures and projects with the greatest potential to reduce fatalities and serious injuries.
 - **Strategy 6.1.5** – Develop and implement programs to monitor safety effectiveness of infrastructure investments.

Policy 6.2. Allocate funding of behavioral, emergency medical services, and health safety efforts strategically across programs to maximize total safety benefits.

- **Strategy 6.2.1** – Collaborate with mental and physical health care providers to leverage funding for behavioral-related safety programs.
- **Strategy 6.2.2** – Develop a data-driven decision framework to integrate quantitative safety performance into behavioral programming prioritization decisions.
- **Strategy 6.2.3** – Identify funding needs to optimize emergency medical services and enforcement to minimize injuries post-crash.
- **Strategy 6.2.4** – Evaluate effectiveness of behavioral safety programs to maximize benefits of safety investments.

Policy 6.3. Identify and pursue opportunities to increase funding for strategic safety-related infrastructure, behavior, and emergency medical service enhancements.

- **Strategy 6.3.1** – Identify new sources of potential funding that can be dedicated to strategic investments that return greatest safety benefits.
- **Strategy 6.3.2** – While complying with Federal safety funding requirements and limitations, promote opportunities to leverage funding sources in order to maximize safety benefits and outcomes.

Conclusion

The six transportation safety goal areas and supporting policies and strategies identify mid- to long-term initiatives to drive down fatalities and serious injuries. The policies and strategies are intended to address a broad range of transportation safety approaches, which can be adopted during any ODOT or stakeholder agency planning process. The subsequent chapter, Emphasis Areas, identifies specific safety priorities and actions to be implemented over the near term.

6

Emphasis Areas

Emphasis Areas (EA) provide a strategic framework for developing and implementing the Transportation Safety Action Plan (TSAP). Emphasis Areas are near-term implementation focus areas directly related to the TSAP's long-term goals, policies, and strategies.

Emphasis Areas

Emphasis Areas provide a framework for the Oregon Department of Transportation to meet Federal requirements for project and program prioritization. Emphasis areas are flexible and adaptive to new safety challenges and opportunities that may arise during implementation of the TSAP.

Emphasis Areas focus near-term safety projects, programs, and policies on actions that will maximize the benefits of safety investment.

Emphasis Area Development

The EAs were developed using the results of crash data analysis and input from committees, stakeholders, and the public. From this, four broad emphasis areas were chosen: **Infrastructure, Risky Behaviors, Vulnerable Users, and Improved Systems**. Each of these includes a number of subcategories to better define the EA.

Risky Behavior Subareas

- Impaired driving.
- Unbelted occupants.
- Speeding.
- Distracted driving.

RISKY BEHAVIORS. Reductions in fatalities and serious injuries can be accomplished by deterring unsafe or risky behaviors made by drivers and other transportation users. For this emphasis area, actions have been identified to minimize impaired, unrestrained, speeding, and distracted driving crashes.

Infrastructure Subareas

- Intersection.
- Roadway departure.

INFRASTRUCTURE. Road assets in Oregon can be constructed or retrofitted to reduce fatal and serious injury crashes. Opportunities to do this include implementing safety treatments at intersections and along and across roadways. For this emphasis area, actions have been identified to minimize intersection and roadway departure crashes.

VULNERABLE USERS. Vulnerable road users can be characterized by the amount of protection they have when using the transportation system – pedestrians, bicyclists, and motorcyclists are more exposed than the drivers operating motor vehicles, making them more susceptible to injury in the event of an incident. Aging drivers and other aging system users can also be vulnerable to injury due to decreasing visual acuity, perception-reaction time to events, and health conditions that may come with aging. Oregon neighborhoods with low-income populations or people of color experience a higher number of pedestrian fatalities and serious injuries.

For this emphasis area, actions have been identified to minimize pedestrian, bicycle, motorcycle, and older road user crashes with a focus on underserved, low-income, and BIPOC communities.¹

IMPROVED SYSTEMS. Opportunities to address and improve transportation safety come in several forms. The quality, timeliness, and integration of crash and other safety-related data (e.g., roadway geometrics, transportation assets inventory, and traffic volumes) can be advanced to better understand the causes and locations of crashes. Training and education are used to educate planners, engineers, designers, and construction staff about the importance of safety and how to incorporate it into their everyday job responsibilities. Fully staffed and funded law enforcement agencies can direct their efforts towards keeping users safe and when crashes do occur, making sure emergency medical services are available to respond to and transport victims is essential. Commercial vehicle safety relies on licensing, training, and vehicle safety to decrease the frequency and severity of crashes. For this emphasis area, actions have been identified to continually improve data, train transportation and safety staff, support law enforcement and emergency responders, and minimize commercial vehicle crashes.

This chapter describes each of the EA subcategories, the data used to support the identification of EA priorities, and near-term actions that can be implemented to lower fatalities and serious injuries for each emphasis area.

¹ BIPOC refers to communities that have been historically excluded based on race and ethnicity as one group that includes, Black, Indigenous, Latino/a/x, Asian, Pacific Islander, Tribal, and People of Color.

Vulnerable Users Subareas

- Pedestrians
- Bicyclists
- Motorcyclists
- Aging road users

Improved System Subareas

- Improved data.
- Training and education.
- Enforcement.
- Emergency medical services.
- Commercial vehicles.

Emphasis Area Considerations

EAs were initially selected based on an assessment of 2009-2013 crash history. For the 2021 TSAP, the team reviewed the most recent available data (2014-2018) and replicated the figure below. Figure 19 shows the relationship of the frequency of fatal and serious injury crashes (X-axis) compared to the likelihood of a single crash of that type resulting in a fatal or serious injury (Y-axis). For example, fatal and serious injury crashes involving pedestrians are not as common as other types, but when a pedestrian is involved, the potential for serious injury or death is relatively high.

- Roadway departure results in the most frequent fatal and serious injury crashes, followed by intersection crashes.
- Motorcyclist-involved crashes are less frequent, but 27% of these result in a fatality or serious injury.

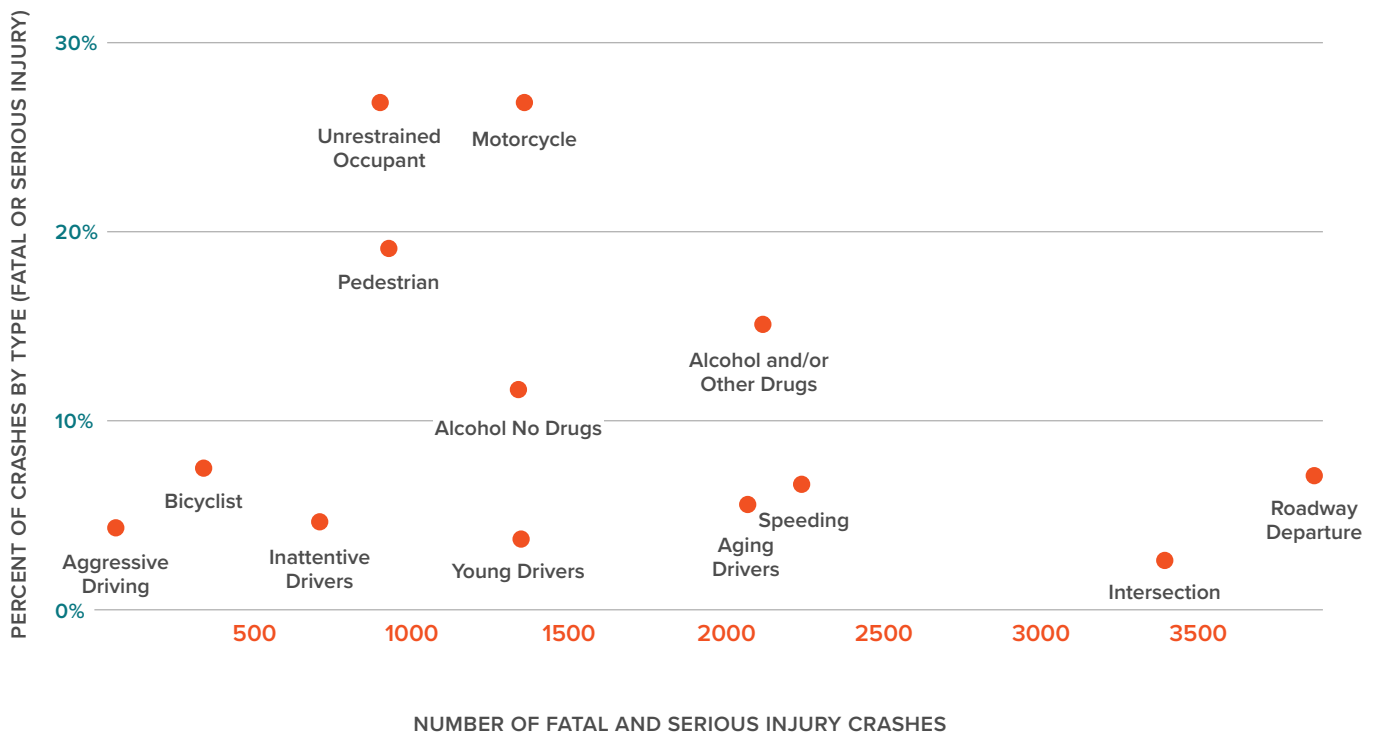


FIGURE 19 CRASH TYPES RANKED BY CRASH FREQUENCY AND SEVERITY (2014-2018)

Equity

Oregon's safety leadership understands that old ways of addressing transportation problems are not serving everyone equitably. To develop and maintain a transportation system that works for everyone, programs must involve the people most impacted. Historically-underserved communities experience inequitable treatment in the identification of transportation needs and project delivery, exacerbating safety problems in those communities. For example, Black, American Indian, and Alaskan Native people are more likely than Whites to be killed in motor vehicle crashes (see Figure 20).¹







Source: Oregon Death Certificate Data, 2012-2016 (average)

FIGURE 20 MOTOR VEHICLE OCCUPANT MORTALITY RATE BY RACE AND ETHNICITY IN OREGON (2012-2016)

1 Oregon's State Health Assessment, Oregon Health Authority, Public Health Division, 2018. <https://www.oregon.gov/oha/PH/ABOUT/Documents/sha/state-health-assessment-full-report.pdf>

Emphasis Areas and Actions

This section describes each EA subcategory and the accompanying actions. Actions are specific programs, policies, projects, and potential future legal policy changes for implementing the EAs over the next five years. The actions listed are achievable and, where possible, proven effective. The actions are categorized by the primary EA they address, but many have the potential to contribute to fatality and serious injury reductions across multiple EAs. While this section focuses on the implementation of safety solutions over the next five years, each EA and action also will contribute to the success of the long-term goals, policies, and strategies outlined in Chapter 5.

<h3>Risky Behaviors</h3>  <ul style="list-style-type: none">IMPAIRED DRIVINGUNBELTED OCCUPANTSSPEEDINGDISTRACTED DRIVING	<h3>Infrastructure</h3>  <ul style="list-style-type: none">INTERSECTIONROADWAY DEPARTURE
<h3>Vulnerable Users</h3>  <ul style="list-style-type: none">PEDESTRIANSBICYCLISTSMOTORCYCLISTSAGING ROAD USERS	<h3>Improved Systems</h3>  <ul style="list-style-type: none">IMPROVED DATATRAINING AND EDUCATIONENFORCEMENTEMERGENCY MEDICAL SERVICESCOMMERCIAL VEHICLES



Risky Behaviors

IMPAIRED DRIVING

SPEEDING

UNBELTED OCCUPANTS

DISTRACTED DRIVING

Impaired Driving

Alcohol impairment is measured as blood alcohol concentration (BAC) reading of 0.08 percent or higher for drivers and 0.04 percent for commercial motor vehicle drivers. In Oregon, as in most states, the penalties are severe for drinking and driving and could result in jail time, a suspended or revoked license, substance abuse treatment requirements, and/or fines. While the risks of driving under the influence of alcohol are well known, thresholds for impairment and testing for drugged driving are less well established. Drivers may not fully understand how DUI standards apply when driving on prescription or recreational drugs. In addition, law enforcement agencies are still refining detection processes. Drugged driving is impaired driving and research in testing methods are ongoing in this area. In Oregon, impaired driving crashes are defined as crashes in which the reporting officer indicates alcohol or other drugs contributed to the crash. These crashes could include alcohol only, marijuana, other drugs (recreational or prescription), or a combination of drugs and alcohol.

Problem Identification

Between 2014 and 2018, impaired driving crashes (alcohol and/or drugs) accounted for 22 percent of all the fatal and serious injury crashes in Oregon and contributed to 1,098 fatalities and 1,023 serious injuries. About 60 percent of impaired driving crashes involved roadway departures and 37 percent were speed related.

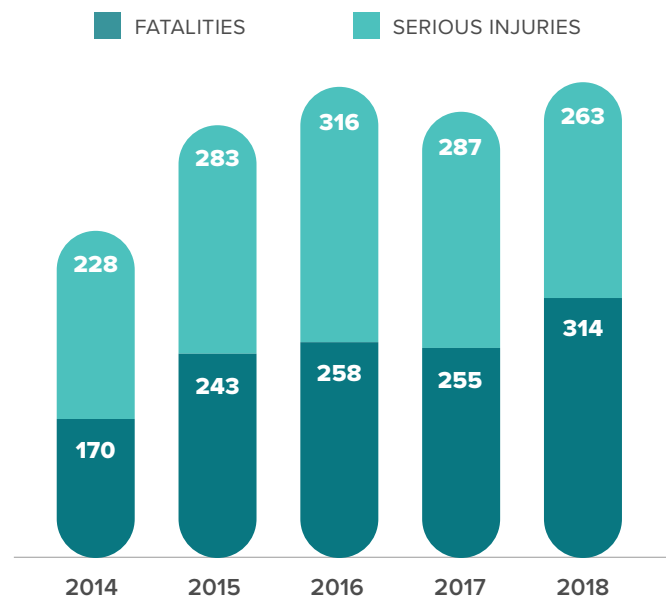


FIGURE 21 IMPAIRED DRIVING FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

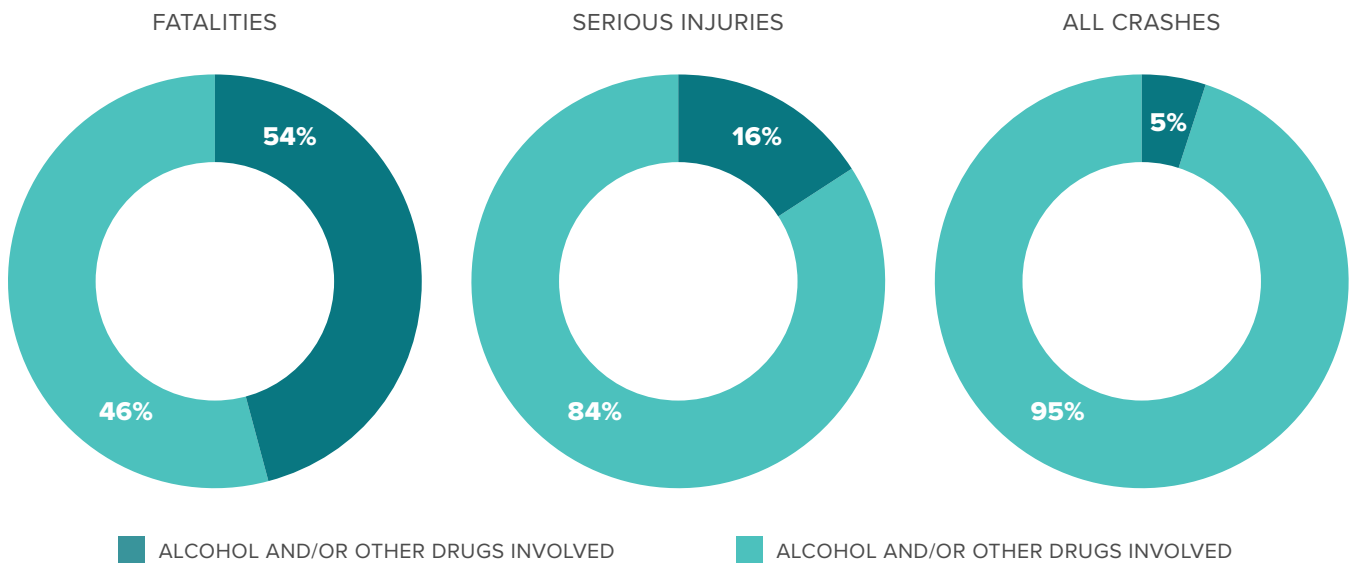


FIGURE 22 IMPAIRED DRIVING AS A CONTRIBUTING FACTOR FOR FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Impaired Driving Actions

1. Provide education and outreach about the effects of and types of impaired driving, including alcohol-involved, other-drug-involved (prescription, legal, and/or illegal), and combinations.
2. Identify data needs related to impaired driving and implement measures to address gaps in coordination with public health.
3. Provide training and education on drug (e.g., marijuana, methamphetamine) impairment detection for law enforcement.
4. Conduct substance-involved driving enforcement.
5. Adopt National Transportation Safety Board recommendation to reduce Blood Alcohol Concentration limit to 0.05.
6. Revise DUII statutes and related statutes for other impairing substances.
7. Strengthen laws aimed at reducing repeat DUII offenders.
8. Streamline the DUII arrest and adjudication processes.

Occupant Protection

In 2019, the national average for observed seatbelt use in passenger cars was 90.7 percent. In Oregon, the average observed seatbelt usage in passenger cars was 95.7 percent.¹ Approximately 5,000 seat belt citations are issued in Oregon each year.² Residents now recognize that the use of restraints and child car seats reduces the severity of a crash.³ Enforcement of occupant protection laws and education about proper use of restraints for adults and children will continue to have a positive impact on reducing crash injuries and fatalities.

Problem Identification

Between 2014 and 2018, 900 fatal and serious injury crashes involved occupants not properly using restraints. In Oregon, 21 percent of fatal crashes involved an unrestrained occupant. Approximately 65 percent of these crashes occurred in a rural environment. The majority of unrestrained fatal and serious injury crashes (71 percent) result from lane departure crashes. Approximately 46 percent of all unrestrained fatal and serious injury crashes were speed related.

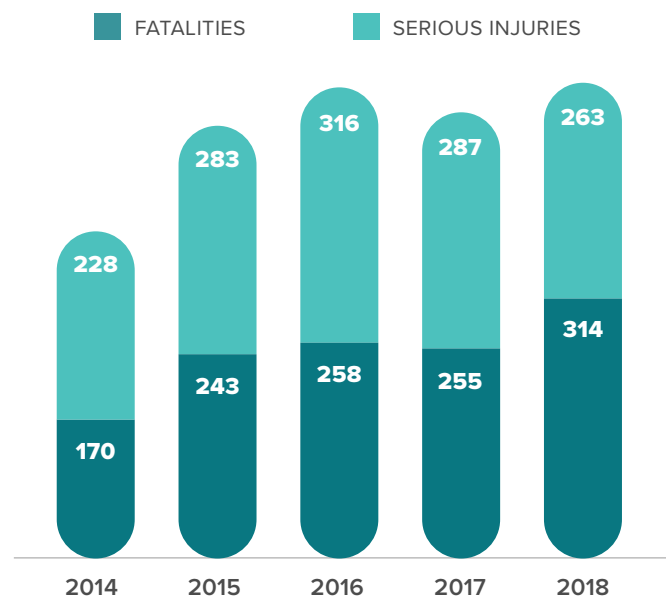


FIGURE 23 UNRESTRAINED OCCUPANT FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

1 <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812947>

2 Oregon 2021 Traffic Safety Performance Plan. <https://www.oregon.gov/odot/Safety/Documents/2021PerformancePlan.pdf>

3 <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.

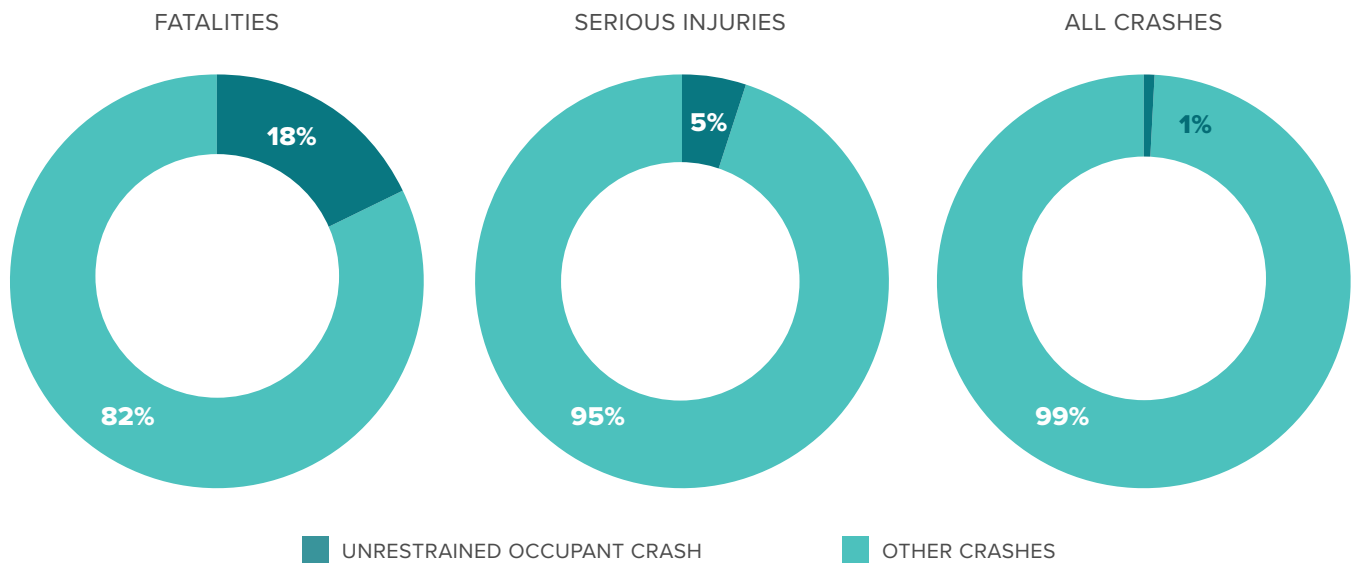


FIGURE 24 UNRESTRAINED OCCUPANTS FOR FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Occupant Protection Actions

1. Conduct enforcement of occupant protection laws.
2. Conduct focused education that encourages increased use of seat belts and child safety seats, particularly in rural areas.
3. Provide youth safety equipment (e.g., child safety seats, bicycle helmets) and education to address identified safety concerns.
4. Recruit and train certified child passenger safety (CPS) technicians as needed.

Speeding

In Oregon, speeding crashes are defined as a vehicle traveling too fast for conditions, or traveling above the posted or statutory speed limit. Speed-related fatalities and serious injuries have been trending downward recently (since 2016). In Federal Fiscal Year 2019, law enforcement issued more than 11,000 speeding citations during grant-funded enforcement efforts to deter this unsafe driving behavior.¹

An Oregon statewide public opinion survey from March 2018 reported that 46 percent of drivers say they rarely exceed the speed limit on a local road with a posted speed of 30 miles per hour and

¹ Oregon 2021 Traffic Safety Performance Plan. <https://www.oregon.gov/odot/Safety/Documents/2021PerformancePlan.pdf>

65 percent say they rarely or never exceed it on a road with a speed limit of 65 miles per hour.¹ A substantial portion of Oregon drivers do sometimes or regularly exceed posted speeds, which is consistent with a Federal estimate that at least 56 to 68 percent of drivers travel above the posted speed limit, depending on type of facility.² The outcome of speeding crashes is often severe. Focused enforcement, including traffic patrols and effective automated enforcement, will continue to be implemented throughout Oregon. In addition, roadway design and speed limits will be considered in tandem to achieve safe operating speeds.

Problem Identification

Between 2014 and 2018, speed-related crashes accounted for 24 percent of all the fatal and serious injury crashes in Oregon and contributed to 805 fatalities and 1,934 serious injuries. Approximately 68 percent of all speed-related fatal and serious injury crashes result from lane departure crashes. Alcohol involvement (31 percent) and unrestrained occupants (18 percent) also are strongly correlated to speeding crashes. It is important for all stakeholders (e.g., residents, business owners, local, regional, and state agencies) are engaged in the process of identifying the appropriate speed for a roadway. The roadway can then be appropriately designed and built or retrofitted to achieve the desired travel speed.

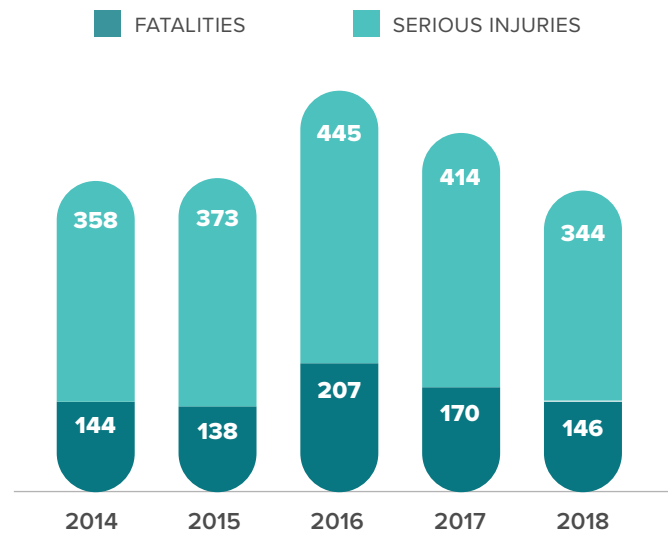


FIGURE 25 SPEED-RELATED FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

1 <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.

2 National Traffic Speeds Survey III: 2015, NHTSA. https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/812485_national-traffic-speeds-survey-iii-2015.pdf

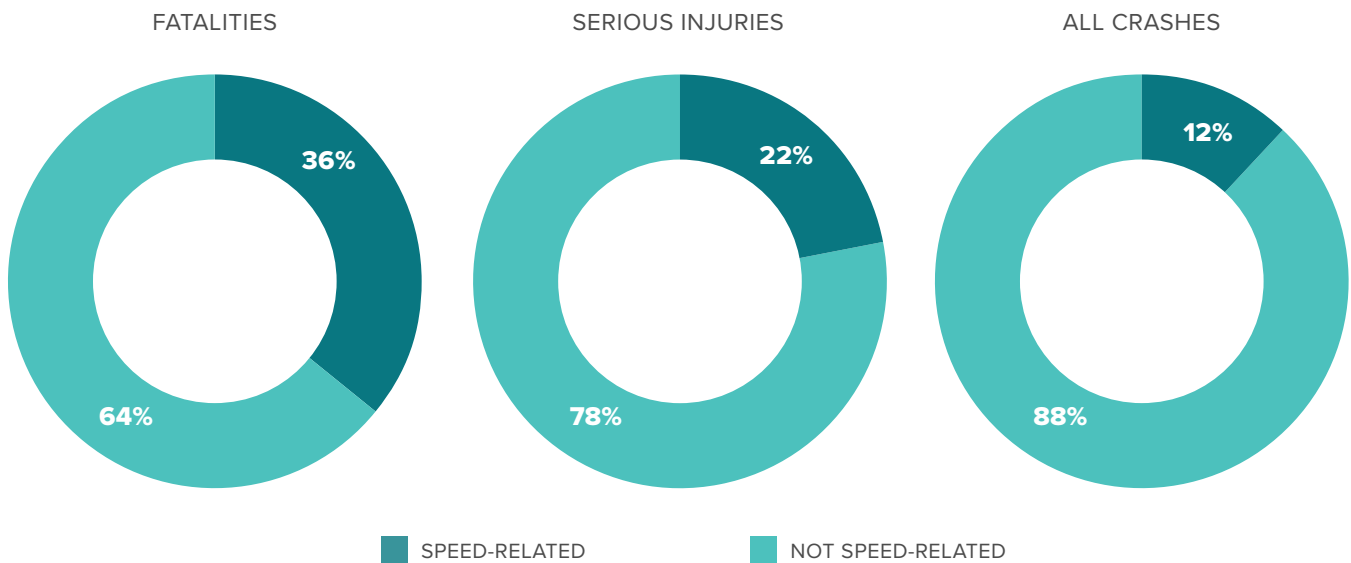


FIGURE 26 SPEEDING AS A CONTRIBUTING FACTOR FOR FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Speeding Actions

1. Educate all transportation system users about the safety risks of speeding.
2. Continue speed management efforts among ODOT, cities, and counties to consider and revise regulations and programs for establishing speed limits to achieve safety goals, improve balance among multimodal interests, and support community objectives.
3. Modify or extend laws to continue automated enforcement of traffic violations, including exceeding the speed limit. Implementation must incorporate equity concerns.
4. Track and assess changes to crash rates, fatalities, and serious injuries on roads approved for higher posted speed limits.
5. Establish target speeds consistent with facility design, safety goals, context, users, and land use. Apply the Blueprint for Urban Design in urban contexts.
6. Conduct unbiased enforcement to reduce speeding-related crashes.

Distracted Driving

Distracted driving is operating a motor vehicle while doing another activity that takes your attention away from safely driving.¹ The proliferation of cell phones and other mobile electronic devices has resulted in increasing distractions while driving. Available data and anecdotal evidence point to distraction as a significant traffic safety concern. A survey conducted by Southern Oregon University found that three out of four drivers surveyed engage in distracted driving.

ORS 811.507 Operating motor vehicle while using a mobile electronic device legislation was updated in 2018 to prohibit the use of handheld mobile electronic devices. Drivers under 18 years old are prohibited from all cell phone use, handheld, or hands free.

Distracted Driving Actions

1. Increase statewide media campaigns, high visibility enforcement, awareness presentations, and court-required courses on distracted driving awareness.
2. Work with other states on research and data development to identify the scope and scale of distracted driving and possible solutions.
3. Conduct enforcement of the mobile electronic device laws.

¹ https://www.oregon.gov/ODOT/DMV/Pages/road_rules.aspx (accessed 3/16/16)



Infrastructure

INTERSECTION ROADWAY DEPARTURE

Intersections

An intersection is a point at which two or more roads intersect. Most intersections are primarily designed for passenger vehicles, freight, and buses, and at a secondary level for pedestrians and bicyclists. An inherent concern at intersections is that they create conflict points among multiple road users, which can be exacerbated by differences in vehicle size and travel speed as well as the complexity of the intersection design. Intersection crashes in Oregon are defined as incidents that occur at a signalized or unsignalized intersection in an urban or rural environment.

Problem Identification

Between 2014 and 2018, intersection-related crashes accounted for 36 percent of all the fatal and serious injury crashes in Oregon and contributed to 440 fatalities and 3,382 serious injuries. About 81 percent of these crashes occurred in an urban environment; and both aging drivers and younger drivers were disproportionately more involved in intersection crashes.

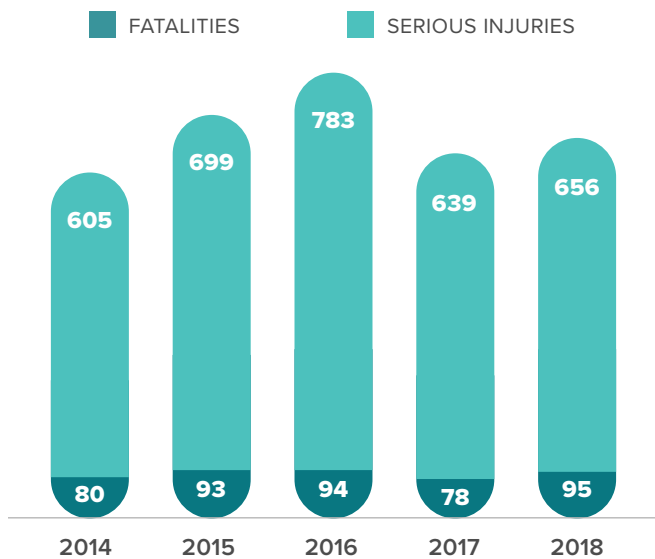


FIGURE 27 INTERSECTION-RELATED FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

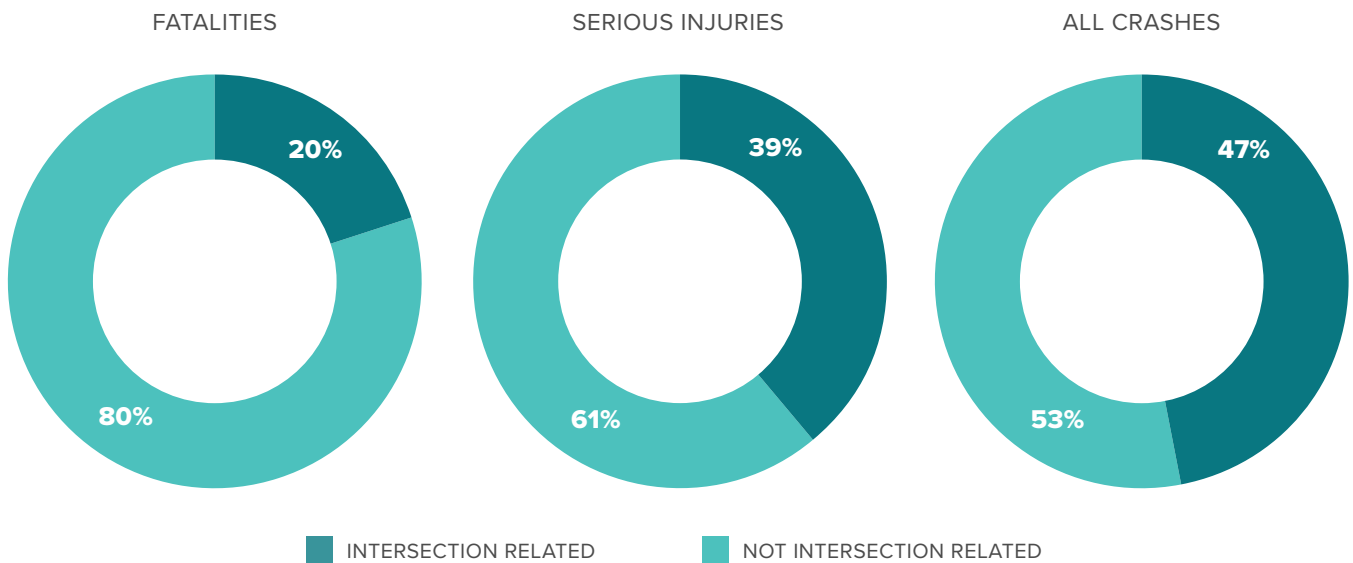


FIGURE 28 INTERSECTION-RELATED CRASHES AS A PERCENTAGE OF FATALITIES, SERIOUS INJURIES, AND ALL CRASHES

Intersection Actions

1. Update the Oregon Intersection Safety Implementation Plan to reassess statewide intersection safety needs on state and local roads.
2. Implement hot spot and systemic intersection safety improvements consistent with the updated Intersection Safety Implementation Plan.
3. Implement intersection design treatments to reduce conflicts between all users, increase awareness, and improve compliance.
4. Implement access management on high-volume roads and/or around intersections to reduce the number and severity of crashes.
5. Improve the visibility of vehicles and pedestrians and bicycles along corridors and at intersections with lighting and unobstructed sightlines.

Roadway Departure

When operating a vehicle, an event may require the driver to swerve suddenly to avoid another car or object, or an unsafe speed could affect control of the car. These situations impact a driver's ability to stay on the road, possibly resulting in a crash. Roadway departure crashes are defined as non-intersection crashes which occur after a vehicle crosses an edge line or a center line, or otherwise leaves the traveled way.

Problem Identification

Between 2014 and 2018 approximately 41 percent of all fatal and serious injury crashes in Oregon included a roadway departure, contributing to 1,330 fatalities and 3,336 serious injuries. About 68 percent of these crashes were in a rural environment. Many risky behavior-related crashes involve the vehicle leaving the lane or entire roadway. For example, road and lane departure accounts for 68 percent of speed-related fatal and serious injury crashes and 60 percent of impaired driving fatal and serious injury crashes.

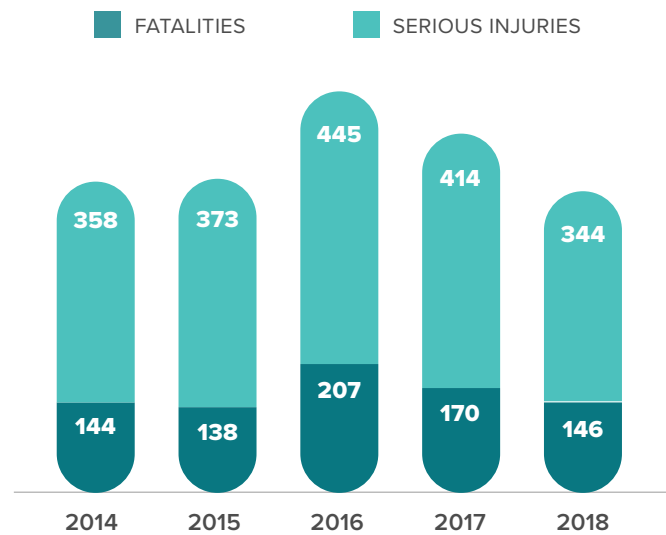


FIGURE 29 ROADWAY DEPARTURE FATALITIES AND SERIOUS INJURIES BY YEAR

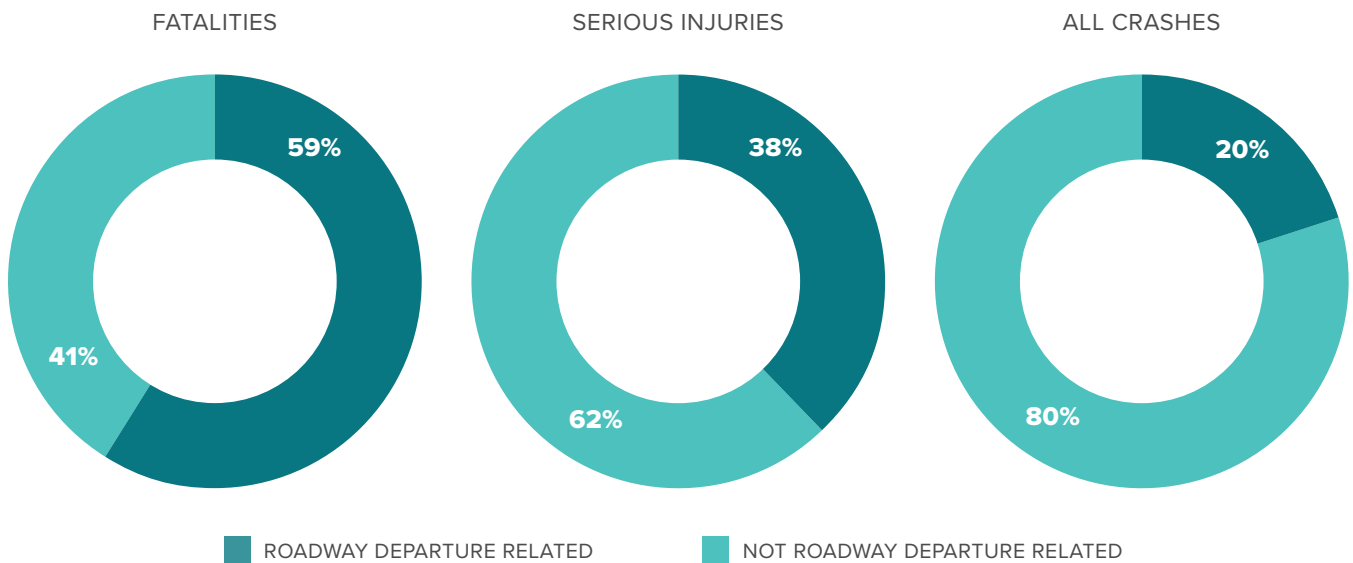


FIGURE 30 ROADWAY DEPARTURE AS A PERCENTAGE OF FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Roadway Departure Actions

1. Design and implement cost-effective hotspot and systemic roadway departure improvements addressing risk factors associated with lane departure (e.g., head-on) and run-off-road crashes on state and local facilities.
2. Improve road delineation to improve the visibility of road edges in rural areas, including at horizontal curves.



Vulnerable Users

PEDESTRIANS
BICYCLISTS

MOTORCYCLISTS
AGING ROAD USERS

Pedestrians

In Oregon, a pedestrian is anyone who walks or rolls using a scooter, skateboard, or other conveyance. Pedestrian crashes are defined as crashes where one or more pedestrians were involved in the crash. Pedestrian fatalities and serious injuries can be influenced by many factors like light conditions, presence of pedestrian facilities, exposure to high-speed vehicle traffic, and road user behaviors such as inattention, failure to yield right of way, speeding, disregarding traffic signals, and roadway departure. Regardless of who is at fault, crashes involving a pedestrian tend to be more serious because pedestrians are completely exposed when using the transportation system. Transportation infrastructure projects focused on pedestrian needs, including sidewalks and mid-block crossings, are being implemented to encourage residents to safely walk to work, run errands, access transit, or walk or run for recreation. However, some communities do not yet have adequate infrastructure in place to accommodate pedestrians to travel safely.

Problem Identification

Between 2014 and 2018, 9.8% of all fatal and serious injury crashes involved a pedestrian seriously injured or killed. These crashes resulted in 353 pedestrian fatalities and 580 pedestrian serious injuries. Nearly 90 percent of these crashes occurred in an urban environment, where there are more pedestrians but also more pedestrian infrastructure such as sidewalks and enhanced crossings.

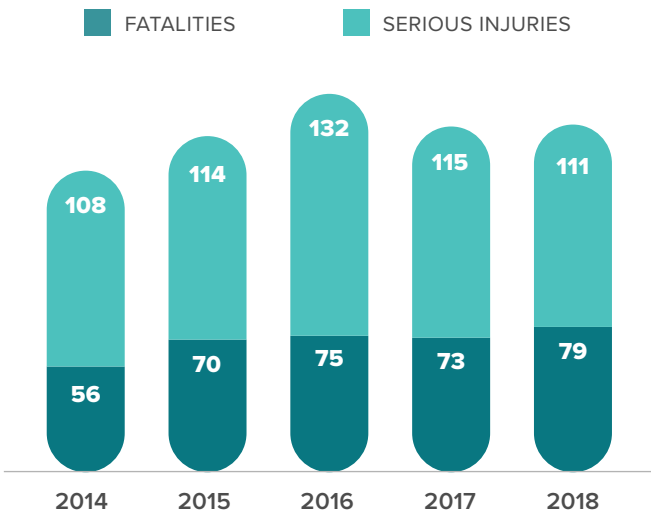


FIGURE 31 PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

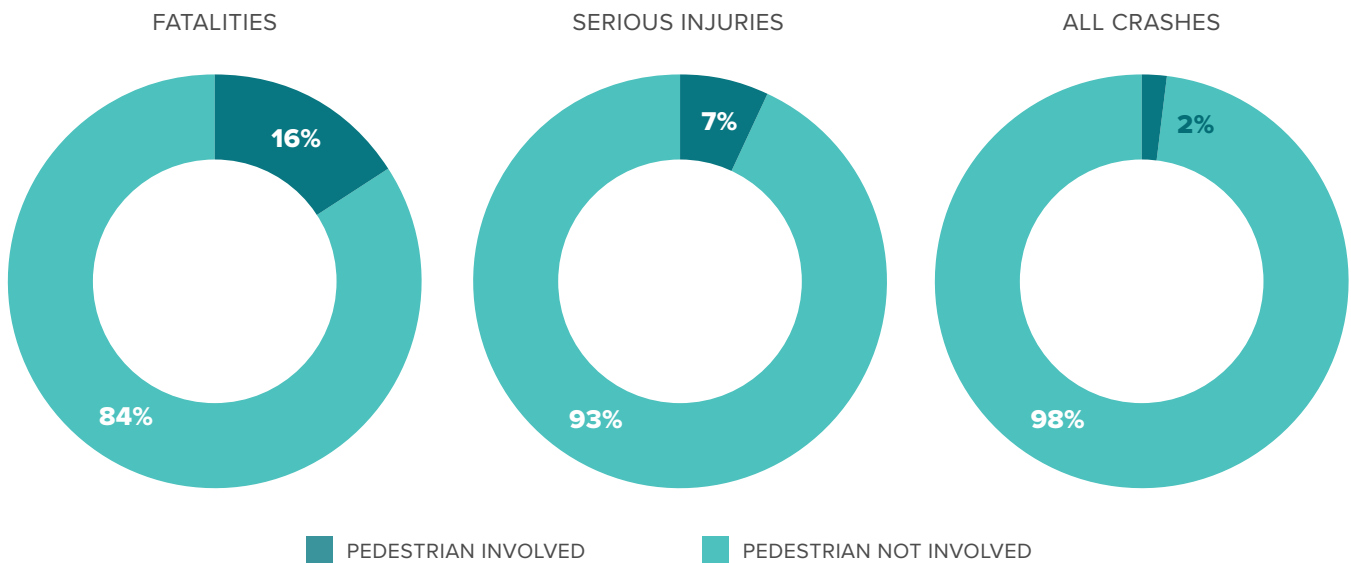


FIGURE 32 PEDESTRIAN INVOLVEMENT IN FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Pedestrian Safety and Social Equity

A growing number of studies have identified a correlation between low-income communities and BIPOC communities and higher pedestrian crash rates. The reasons are numerous and complex, and include the following:

- People who are low income and/or BIPOC are more likely to walk and take transit, increasing their miles traveled as vulnerable road users.
- Research from other states has demonstrated that pedestrian facilities like sidewalks and crossings are more likely to be missing or incomplete in neighborhoods with higher

concentrations of low-income households and BIPOC populations. A lack of sidewalk completeness, safe pedestrian crossings, and street lighting are factors that increase pedestrian safety risk.

Additional Oregon-specific research associated socioeconomic status – measured by proportion of households in poverty – with a higher frequency of pedestrian crashes. Figure 33 shows the combined pedestrian fatality rate and pedestrian serious injury rate by low-income and BIPOC population level in Oregon.

Pedestrian Actions

1. Identify high-risk pedestrian safety locations on state and local networks using a data-driven systemic approach described in the NCHRP 20-44(13) Oregon DOT Statewide Pedestrian and Bicycle Plan (2020).¹
2. Evaluate pedestrian-involved high crash locations and risk factors through analysis of existing data and development of new data sources.
3. Continue to identify effective pedestrian safety countermeasures by testing new treatments, conducting before and after evaluations, and supporting research to refine crash modification factors. Replicate the most effective treatments at additional locations.
4. Apply proven, cost-effective systemic and hotspot pedestrian safety countermeasures in project design (e.g., lighting, striping).
5. Prioritize safety investments on identified high crash and high-risk pedestrian locations per NCHRP 20-44(13) methodology, including transit corridors, school areas, multilane roads, urban state highways and other high-risk areas.
6. Design for appropriate road capacity to reduce crosswalk length and crosswalk conflicts and utilize proven safety countermeasures such as road reconfigurations (4-lane to 3-lane conversions) where appropriate.
7. Design and construct corridors and facilities for pedestrians consistent with the Blueprint for Urban Design, based on land use and provide

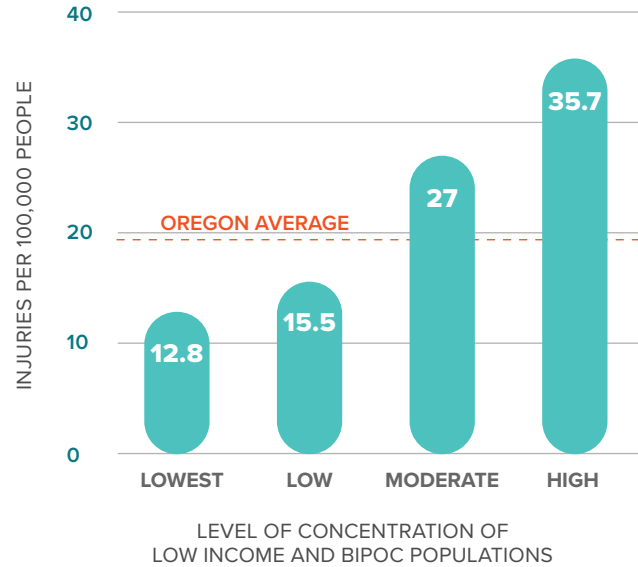


FIGURE 33 PEDESTRIAN FATAL & SEVERE INJURY RATE BY LOW INCOME & BIPOC POPULATIONS CONCENTRATION LEVEL IN OREGON (2014-2018)

appropriate, safe pedestrian crossings along corridors to accommodate pedestrian needs (e.g., crossing type, placement, and lighting).

8. Pursue additional funding, partnerships, and innovative strategies for the maintenance of existing pedestrian facilities, including crossings at signalized intersections.
9. Prioritize multimodal safety investments in areas with a high concentration of historically-underserved communities, such as low income and BIPOC communities.

¹ <http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-44-13FinalReport.pdf>

Bicyclists

In Oregon, bicycle crashes are defined as crashes where one or more bicyclists (or other pedalcyclists) was/were involved in the crash. Similar to pedestrians, people who ride bicycles are vulnerable road users because they face special safety challenges of unprotected exposure when commuting on multi-modal roadways of travel. This includes a higher risk of fatality or serious injury in Motor Vehicle Crashes (MVCs). Bicyclist fatalities and serious injuries can be caused by many factors like time of day, lighting, incomplete bicycle facilities, inadequate infrastructure, exposure to high volume and high speed vehicle traffic, and unsafe behaviors and errors by all road users such as inattention, distraction, failure to yield right of way, blind spots, speeding, disregarding traffic signals and lane departures. Nationally, as well as in Oregon, urban areas are developing transportation systems and land use policies to promote healthy communities and lifestyles. Multimodal transportation infrastructure, including bicycle lanes, bicycle-specific traffic signals, and bicycle racks, are being implemented to encourage residents to bicycle to work, run errands, or for recreation. In the City of Portland, 7.2 percent of commuters travel by bicycle, which is the highest percentage of commuters for any large American city.¹

Problem Identification

Between 2014 and 2018, crashes involving bicyclists (pedalcyclists) accounted for 3.5 percent of all the fatal and serious injury crashes in Oregon. About 88 percent of these crashes occurred in an urban environment, where there are more bicyclists and bicycle infrastructure, more drivers, and cars on the road and in higher concentrated spaces. While some improvements have been made to increase safety for people who ride bicycles, there are many communities where there is a lack of safe bicycle infrastructure.

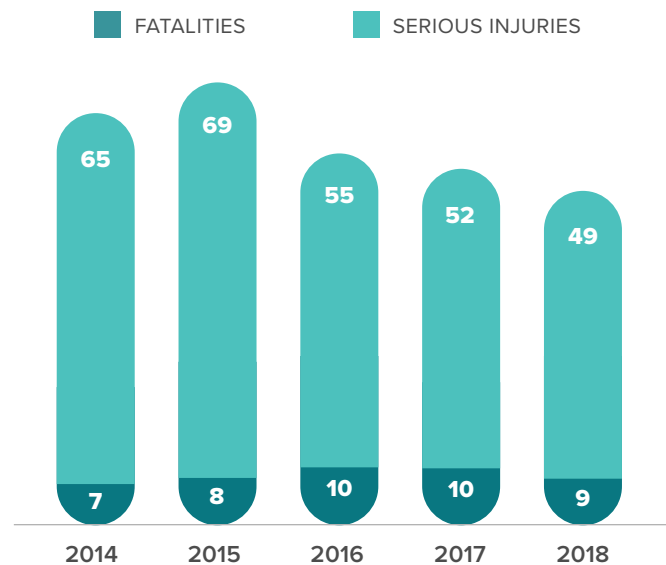


FIGURE 34 BICYCLIST FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

¹ <https://www.portlandoregon.gov/transportation/article/407660>

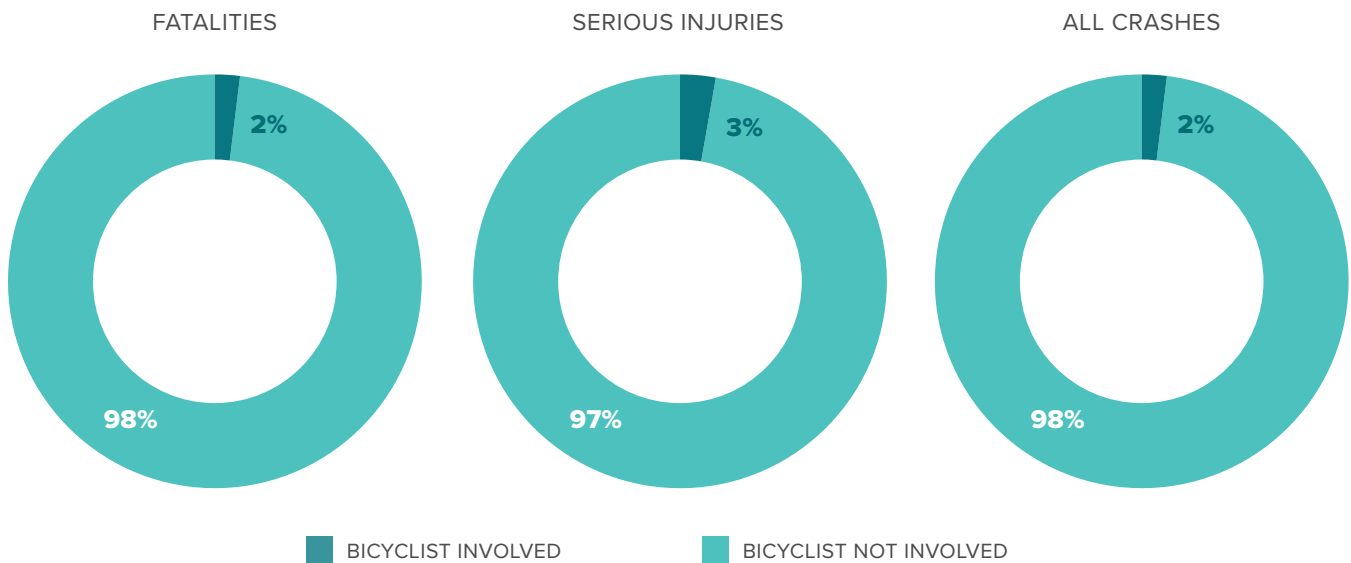


FIGURE 35 BICYCLIST INVOLVEMENT IN FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Bicyclist Actions

1. Identify high-risk bicycle safety locations using a data-driven systemic approach as outlined in the NCHRP 20-44(13) Oregon DOT Statewide Pedestrian and Bicycle Plan (2020).
2. Evaluate bicyclist-involved high crash locations and risk factors through analysis of existing data and development of new data sources.
3. Continue to identify effective bicycle safety countermeasures by testing new treatments, conducting before and after evaluations, and supporting research to refine crash modification factors. Replicate the most effective treatments at additional locations.
4. Apply proven, cost-effective systemic and hotspot bicycle safety countermeasures in project design (e.g., lighting, striping).
5. Prioritize safety investments on identified high crash and high-risk bicycle locations per NCHRP 20-44(13) methodology, including transit corridors, school areas, multilane roads, urban and state highways, and other high-risk areas.
6. Design and construct corridors and facilities for bicyclists consistent with the Blueprint for Urban Design, based on land use along corridors to accommodate bicycle needs (e.g., placement, lighting).
7. Adopt and implement maintenance practices that reduce hazards for people riding bicycles.
8. Implement and fund a youth bicycle safety program aimed to educate youth and promote safe riding practices.

Motorcycles

Motorcycle drivers and passengers are vulnerable because of their level of exposure when traveling on Oregon's roads. When a motorcycle runs off the road or interacts with another vehicle, the lack of protection for the motorcycle driver (and passenger if present) can increase the severity of the crash. A motorcycle crash is defined as a crash that involves a motorcycle but does not necessarily mean the motorcycle driver is the cause of the crash.

Problem Identification

Between 2014 and 2018, motorcycle-involved crashes accounted for 14 percent of all the fatal and serious injury crashes in Oregon and contributed to 300 motorcyclist fatalities and 1,112 serious injuries. A high number of motorcycle fatal and serious injury crashes (61 percent) result from lane departure crashes. Crashes at intersections (46 percent) and aggressive driving (42 percent) also are strongly correlated to motorcycle crashes.

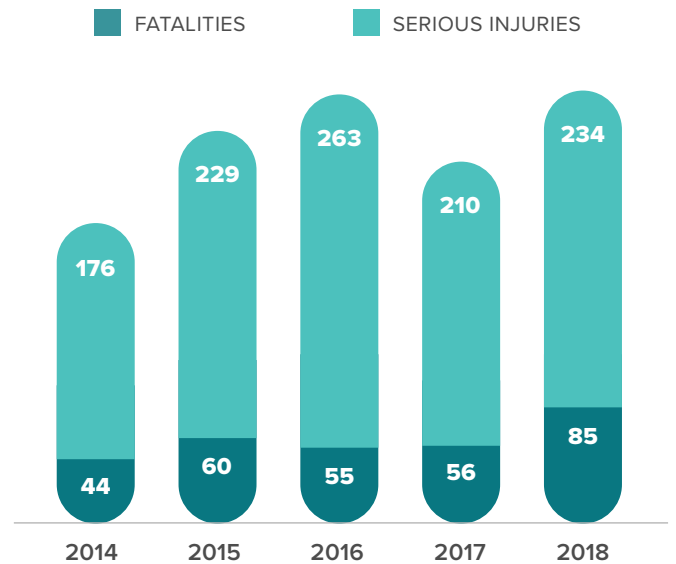


FIGURE 36 MOTORCYCLE DRIVER AND PASSENGER INVOLVED FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

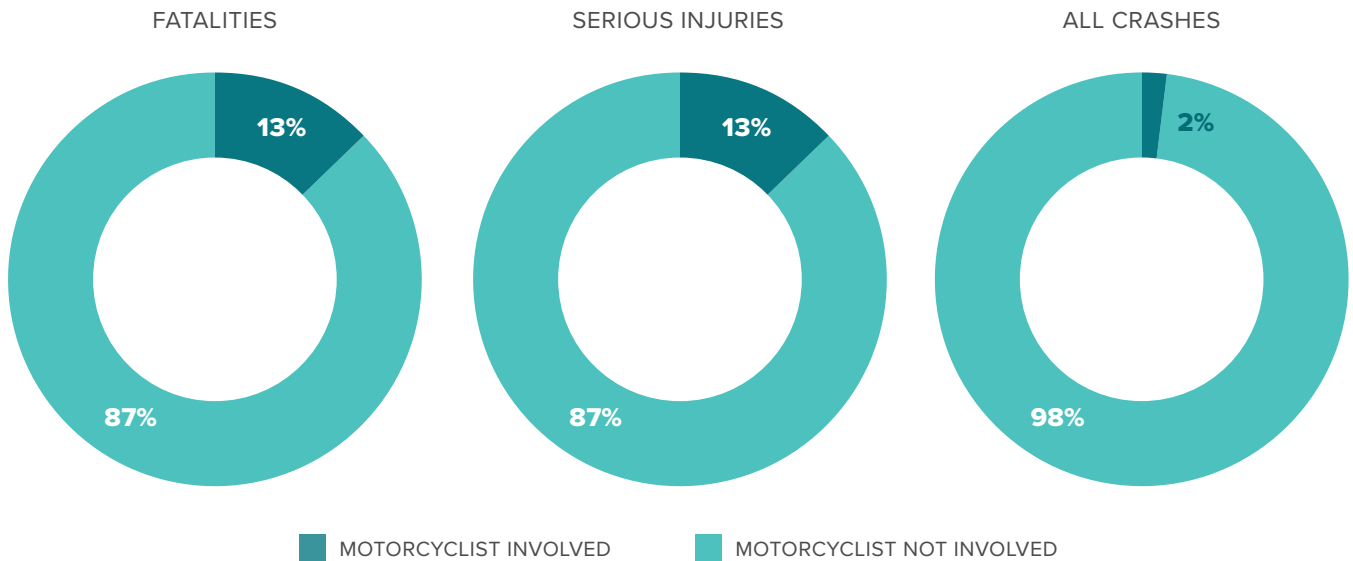


FIGURE 37 MOTORCYCLE INVOLVEMENT IN FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Motorcyclist Actions

1. Provide information to increase awareness among motorcycle drivers that most motorcyclist-involved crashes involve speed, impairment, and roadway departure.
2. Provide education and enforcement focused on impaired motorcycle riding and its impact on all road users.
3. Increase awareness of motorcycles among the general public through education and outreach.
4. Adopt and implement road surface maintenance practices across jurisdictions that reduce hazards for people operating motorcycles.
5. Modify Oregon’s helmet definition to match federal regulations.

Aging Road Users

While aging drivers are a concern now in Oregon, crash numbers could increase dramatically over the next decade as the U.S. population ages. Operating a vehicle requires drivers to react quickly, see and hear clearly, judge distances and speeds, and be aware of other drivers and road users. As people age, it can lead to a decline in some of these abilities. When aging drivers do crash, it also tends to be more severe as they can get hurt more seriously and face longer recovery times than younger drivers. In Oregon, aging driver crashes are defined as crashes with at least one driver 65 or older involved (Figure 38).

Separate from aging driver involved crashes, aging pedestrian fatalities and serious injuries also are a concern for many of the same reasons listed above – reaction time to oncoming vehicles may be slower, they may not be able to see crosswalks or automobiles as well, they may misjudge the amount of time required to cross a street or otherwise be less aware of their surroundings (Figure 40). In addition, when aging pedestrians are struck by a vehicle, their injuries tend to be more severe.

Problem Identification

Between 2014 and 2018, aging driver involved crashes accounted for 21.9 percent of all the fatal and serious injury crashes in Oregon. Both the number and proportion of aging driver crashes continue to rise as the population of Oregon ages.

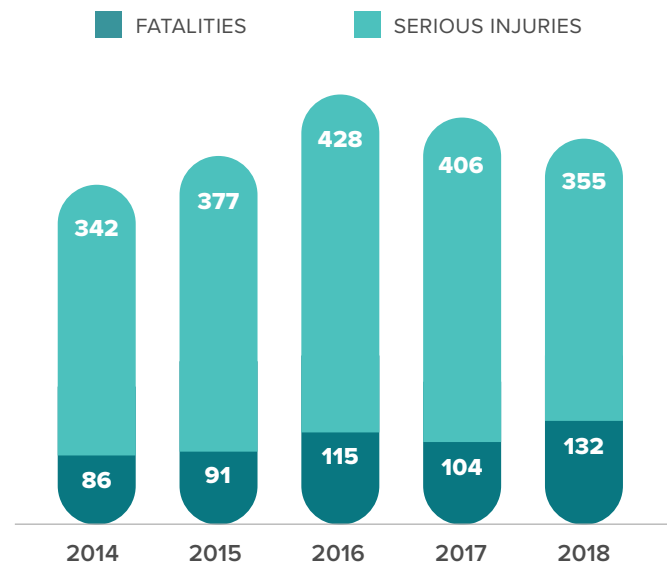


FIGURE 38 AGING DRIVER (65+) INVOLVED FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

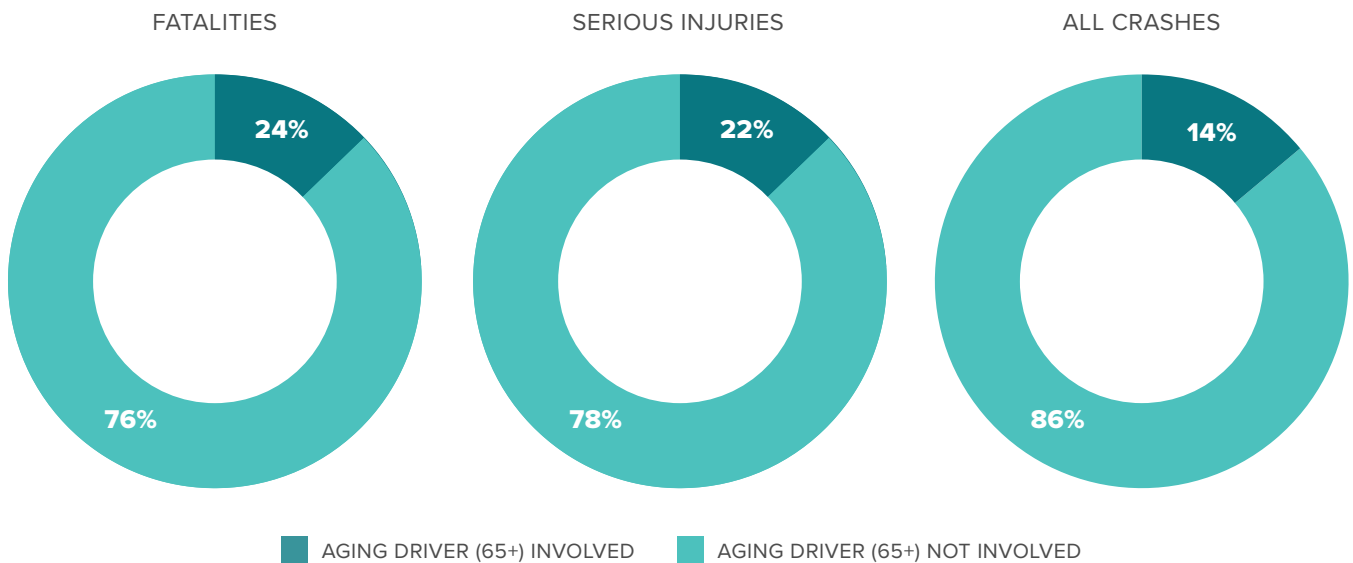


FIGURE 39 AGING DRIVER (65+) INVOLVEMENT IN FATALITIES, SERIOUS INJURIES AND ALL CRASHES

Aging Road Users Actions

1. Identify risk factors for aging road users (all travel modes) and implement near-term treatments.
2. Develop and implement an Oregon Aging Road Users Implementation Plan based on the Addressing Oregon’s Rise in Deaths and Serious Injuries for Senior Drivers and Pedestrians research report.¹

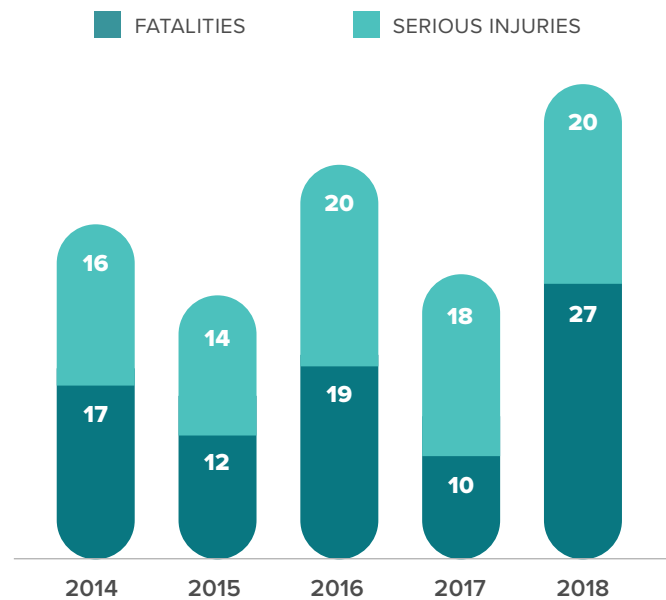


FIGURE 40 AGING PEDESTRIAN FATALITIES AND SERIOUS INJURIES BY YEAR (2014-2018)

¹ <https://www.oregon.gov/odot/Programs/ResearchDocuments/SPR828Final.pdf>



Improved Systems

IMPROVED DATA

TRAINING AND EDUCATION

ENFORCEMENT

EMERGENCY
MEDICAL SERVICES

COMMERCIAL VEHICLES

Five additional subareas were identified as vital components to achieving the zero fatalities and serious injuries vision. To positively influence crash outcomes in Oregon, it is necessary to invest in data improvements to better identify crash locations and understand contributing factors; provide training to transportation and safety stakeholders to expand implementation of safety efforts; coordinate with law enforcement and emergency responders on opportunities to reduce the severity of crash outcomes; and address the consequences of commercial vehicle crashes.

Commercial Vehicles

Between 2014 and 2018, commercial motor vehicle-involved crashes accounted for 5.6 percent of all the fatal and serious injury crashes in Oregon, increasing from 5.2 percent during the 2009-2013 study period.

The Motor Carrier Safety Division at ODOT develops an annual Commercial Vehicle Safety Plan. The mission of the Motor Carrier Transportation Division is to promote a safe, responsible, and efficient commercial transportation industry in Oregon.¹ Similar to the TSAP, the plan outlines critical state commercial vehicle issues, potential solutions and performance measures. There also are federal guidelines documented in the plan.

Commercial Vehicle Actions

1. Coordinate TSAP activities with the annual ODOT Commerce and Compliance Division Safety Action Plan.
2. Increase training and education for passenger vehicle drivers about how to interact with larger commercial vehicles.

¹ Summary of Oregon Truck Safety and Guide to the 2015 Commercial Vehicle Safety Plan. <https://www.oregon.gov/z/MCT/docs/CVSPan2015.pdf>.

Enforcement

Law enforcement officials prevent crashes through traffic details, special mobilization campaigns such as Click It or Ticket, saturation patrols, and checkpoints. These different approaches enable officers to prosecute safety offenses, such as impaired driving and distracted driving, but also keep all road users safe at the same time. They also respond to crashes to collect information for crash reports, which detail the specifics of the crash, person(s), and vehicle(s) involved in the incident. This information later helps transportation and safety stakeholders make informed decisions about safety solutions. Fully staffed and funded law enforcement agencies can direct their efforts towards strategic enforcement and data collection.

The Governors Highway Safety Association (GHSA) states that, “The law enforcement community is not exempt from the bias, prejudice and racism that have a long history in our nation. The persistence of these behaviors negatively impacts all Americans, including the honorable and professional law enforcement officers in our communities.”¹ It is important to support the proven role of traffic enforcement to prevent crashes, and to continuously strive to do so equitably.

Enforcement Actions

1. Increase training on unbiased law enforcement and prosecution of traffic safety offenses.
2. Increase funding for traffic patrols to conduct unbiased enforcement of traffic laws.
3. Evaluate resource deployment including the use of automated enforcement.

1 GHSA Recommends Steps to Fight Racism in Traffic Enforcement, News Release, September 2020. <https://www.ghsa.org/resources/news-releases/Equity-In-Traffic-Enforcement20>

Emergency Medical Services

Emergency medical service providers are the people responding to victims at crash scenes. Having a prompt and effective EMS system can increase the survival rates for crash victims, especially in rural areas where longer travel distances can make the difference between life and death. The primary responsibilities for EMS staff are to triage, treat, and transport crash victims, but they also may coordinate evacuation with other agencies, provide advanced emergency medical care, and determine the cause of injuries for the trauma center. Fully staffed, funded, and trained emergency response teams can provide services that save lives and/or reduce the impact of injuries.

EMS Actions

1. Recruit, train, and retain EMS responders in rural and frontier areas (per current funding availability).
2. Promote Traffic Incident Management (TIM) Responder Training for EMS officials.
3. Address EMS equipment shortfalls through increased funding in rural and frontier areas.

Data

Crash, roadway, vehicle, driver, citation/ adjudication, injury surveillance and traffic volume (motor vehicle, pedestrian, and bicycle) data is essential to understanding crash trends, identifying critical issues, developing emphasis areas and actions, and evaluating the effectiveness of solutions and equity of safety countermeasures. Data should be timely, accurate, complete, uniform, integrated, and accessible. The improvement of data is addressed by the Oregon Traffic Records Coordinating Committee and other interested stakeholders. Moving forward, a priority of this group will be to develop and implement a revised Traffic Records Strategic Plan to ensure that the best available data is used for safety planning and investment decisions.

Data Actions

1. Analyze existing safety-related data and collect and analyze new data sources to evaluate pedestrian and bicycle safety risk factors on all public roads.
2. Improve the timeliness of crash data. For example, implement relevant actions from the CAR Unit 5-year Strategic Business Plan.
3. Develop and implement an electronic reporting system to improve crash report timeliness, uniformity, accuracy, completeness, accessibility, and integration with related data sets (e.g., roadway inventory, traffic, public health, etc.).
4. Revise and implement a new Traffic Records Strategic Plan based on the most recent Traffic Records Assessment recommendations
5. Evaluate type and extent of crash underreporting. Implement necessary actions to address the issue.
6. Collect data that helps safety data analysts and policy makers evaluate transportation safety equity.
7. Develop and implement a Safety Dashboard to improve data sharing, accessibility, and reporting, including annual updates to data-related content in the TSAP.
8. Provide transportation safety data analytical support to local agencies and Tribal governments.

Training and Education

Oregon is committed to educating engineers, educators, enforcement, emergency service providers, and the general public about new safety information and offering training opportunities to maintain and upgrade skills. Continued driver education and training, for young and experienced drivers including motorcycle drivers, will contribute to crash reductions. Specific education and training opportunities would contribute to a better understanding of traffic laws, new transportation infrastructure, work zone awareness, and motorcycle safety.

Training and Education Actions

1. Implement education, training, or examinations to ensure all licensed drivers understand current traffic laws.
2. Conduct training on traffic safety laws for law enforcement officers, attorneys, and judges to improve consistent and unbiased enforcement and adjudication processes.
3. Continuously improve the education system for new drivers, including Driver's Education cost and access barriers. Evaluate requiring driver training for new operators.
4. Provide education and other countermeasures to improve work zone safety for workers and the traveling public.
5. Develop training for local agency and consultant engineers and planners in transportation safety basics (e.g., safety investigations, road safety assessments, speed zoning, data analysis).

Conclusion

EAs represent the key factors contributing to crashes. In Oregon, the results of data analysis and public input identified Infrastructure, Risky Behaviors, Vulnerable Users, and Improved Systems as the priority areas to focus staff time and resources to achieve reductions in transportation-related fatalities and serious injuries. To effectively direct resources over the next five years, project, programmatic, and potential future legal policy changes have been identified to be implemented by a variety of Oregon's agencies and stakeholders.

7

Performance Measures and Targets

To understand the value of TSAP efforts over time, performance must be measured. Establishing performance measures provides the information needed to evaluate safety implementation and identify the need for changes to the TSAP in the future.

Performance Measures and Targets

To better understand whether the policies, strategies, emphasis areas, and actions identified in the previous chapters are contributing to fatality and serious injury reductions, the TSAP establishes performance measures that align with FHWA requirements under the MAP-21 rule, FAST Act, and NHTSA. To evaluate progress towards the TSAP vision, performance targets also have been identified to meet Federal requirements. This chapter outlines the recommended TSAP performance measures and targets.

Defining Performance Measures

In transportation, performance measures are defined as “data about the use, condition, and impact of the transportation system...reported for illustrative purposes to demonstrate progress made toward established targets.”¹

Performance measures are defined as “data about the use, condition, and impact of the transportation system.”

The National Performance Review definition of performance measure is as follows:

“A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives.”²

1 MAP-21, Performance Measures, and Performance-Based Funding, http://www.cmap.illinois.gov/about/updates/-/asset_publisher/UIMfSLnFfMB6/content/map-21-performance-measures-and-performance-based-funding.

2 Performance Measure Fundamentals, FHWA Office of Operations, Washington, D.C., 2015. http://www.ops.fhwa.dot.gov/perf_measurement/fundamentals/.

Types of Performance Measures

Measurements are categorized into two distinct types: **efficiency** and **effectiveness**.

EFFICIENCY PERFORMANCE MEASURES:

- ▶ TRACK THE EFFORT AND OUTPUT OF A PROGRAM.
- ▶ TRACK HOW MANY ACTIVITIES WERE CONDUCTED, OR MILES OF TREATMENT.

Efficiency measures are focused on effort and outputs. They track the goings-on of a program, and in traffic safety examples include the following:

- Miles of rumble strips installed;
- Seat belt violation citations written;
- Labor hours of overtime enforcement conducted; and
- Schools visited last year to promote traffic safety.

The value of efficiency measures is that they are often easy to quantify through real-time tracking or year-end data collection. The limitation, however, is that efficiency measures do not measure the end result directly. For example, installing rumble strips does not guarantee a reduction in crashes, and writing additional seat belt citations does not necessarily improve seat belt use or reduce unbelted crashes. When choosing efficiency measurements, it is important to make a connection from the effort to its ultimate goal.

Effectiveness measures, in contrast, measure the results of a program activity. These measures tie

more directly to the ultimate goals of reducing fatalities and serious injuries. Examples include the following:

- Number of traffic fatalities in a given jurisdiction over the past year
- Seat belt use rate
- Number of unbelted fatalities
- Number of alcohol-involved fatalities and serious injuries
- Number of fatal crashes involving motorcycle riders

EFFECTIVENESS PERFORMANCE MEASURES:

- ▶ TRACK THE RESULTS OF A PROGRAM OR ACTIVITY.
- ▶ TRACK HOW MANY FATALITIES OR INJURIES OCCURRED, OR NUMBER OF UNBELTED FATALITIES.

Effectiveness measures are typically of higher value due to their focus on the desired result. However, it is often difficult to acquire information for effectiveness measures in a timely manner. For example, obtaining the number of unbelted occupant-related traffic crashes can take months or years for collection, quality assurance, and archiving. Additionally, it is not always clear if the change in the effectiveness measure was directly connected to outputs. For example, it is not prudent to assume a crash reduction was caused by traffic safety efforts; other factors, including statistical randomness, play a part.

TSAP Performance Measures

Federal Highway Administration Performance Measures

The recent 2016 FHWA Final Rule on National Performance Management Measures established five safety performance measures for federal aid highway programs¹:

- ▶ NUMBER OF ROADWAY FATALITIES
- ▶ NUMBER OF ROADWAY SERIOUS FATALITIES
- ▶ ROADWAY FATALITIES PER VEHICLE MILES TRAVELED (I.E., FATALITY RATE)
- ▶ ROADWAY SERIOUS INJURIES PER VEHICLE MILES TRAVELED (I.E., SERIOUS INJURY RATE)
- ▶ COMBINED NONMOTORIZED FATALITIES AND NONMOTORIZED SERIOUS INJURIES

Along with these five primary measures, the federal government requires states to track the performance of two categories under these Special Rules:

- **RURAL ROAD SAFETY.** MAP-21 added the High-Risk Rural Roads (HRRR) Special Rule. First, MAP-21 defined an HRRR as “any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a state in accordance with an updated state strategic highway safety plan.” Second, it establishes a special rule that states, “If the

fatality rate on rural roads in a state increases over the most recent two-year period for which data are available, that state shall be required to obligate funds in the next fiscal year for projects on high-risk rural roads in an amount equal to at least 200 percent of the amount of funds the state received for fiscal year 2009 for high-risk rural roads.” For the State of Oregon, this equates to approximately \$2.4 million required to be obligated to HRRR safety efforts. As of the 2014-2018 data analyzed, the Special Rule applies.

- **OLDER DRIVERS AND PEDESTRIANS SAFETY.** The legislation defines Older Drivers and Pedestrians as “drivers and pedestrians 65 year of age and older.” The Older Drivers and Pedestrians Special Rule applies if the rate of traffic fatalities and serious injuries for these road users increases during the most recent two-year period for which data are available. If it does apply, a state “shall be required to include strategies to address the increase in those rates.” Additional details for calculating this combined crash rate and determining applicability are available in FHWA guidance. The Older Drivers and Pedestrians special rule was found to apply because the five-year average number of fatalities and serious injuries for aging drivers and pedestrians increased on a per-capita basis. As a result, the TSAP update includes strategies to reduce fatalities and serious injuries among drivers and pedestrians 65 years or older.

¹ Federal Register, National Performance Management Measures: Highway Safety Improvement Program Final Rule. 2016. <https://www.Federalregister.gov/articles/2016/03/15/2016-05202/national-performance-management-measures-highway-safety-improvement-program>.

Oregon Traffic Safety Performance Plan and NHTSA Performance Measures¹

The Oregon Traffic Safety Performance Plan identifies the following performance measures, which satisfy the NHTSA performance measure requirements.¹

- Traffic Fatalities
- Serious Traffic Injuries
- Fatalities/100M VMT
 - » Rural Road Fatalities/100M VMT
 - » Urban Road Fatalities/100M VMT
- Unrestrained Passenger Vehicle Occupant Fatalities, All Seat Positions
- Alcohol Impaired Driving Fatalities Involving a Driver or Motorcycle Operator with a BAC of 0.08 and Above
- Speeding-related Fatalities
- Motorcyclist Fatalities
- Unhelmeted Motorcyclist Fatalities
- Drivers Age 20 or Younger Involved in Fatal Crashes
- Pedestrian Fatalities
- Bicyclist and Other Cyclist Fatalities
- Statewide Observed Seat Belt Use, Passenger Vehicles, Front Seat Outboard Occupants

TSAP Performance Measures

The Oregon TSAP performance measures (consistent with NHTSA and FHWA requirements) are shown in Table 4.

TABLE 4 TSAP PERFORMANCE MEASURES

PERFORMANCE MEASURES	PERFORMANCE MEASURE REQUIRED BY NHTSA ^A	REQUIRED BY FHWA IN PERFORMANCE MEASURES FINAL RULE
1 FATALITIES	●	●
2 FATALITIES/100M VMT	●	●
3 SERIOUS INJURIES	●	●
4 SERIOUS INJURIES/100M VMT		●
5 NONMOTORIZED FATALITIES + SERIOUS INJURIES		●
SPECIAL RULES		
RURAL ROAD SAFETY		●
OLDER DRIVER + PEDESTRIAN SAFETY		●

^A “Traffic Safety Performance Measures for State and Federal Agencies,” National Highway Traffic Safety Administration, DOT HS 811 025, Washington, D.C., 2008. Available at <http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files/811025.pdf>.

¹ Oregon Traffic Safety Performance Plan, Fiscal Year 2016, Federal Version Report, Page 11.

Performance Targets Requirements

TABLE 5 TSAP PERFORMANCE TARGETS (FIVE-YEAR AVERAGE)

BASE PERIOD	FATALITIES	FATALITY RATE PER 100 MILLION VMT	SERIOUS INJURY	SERIOUS INJURY RATE PER 100 MILLION VMT	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES
2021 BASELINE REPORTED CRASHES (2014-2018)	448	1.48	1,739	5.03	257
2022 FIRST YEAR TARGET REPORTED CRASHES (2015-2019)	444	1.46	1,722	4.98	254

Each of the five FHWA safety performance measures is required to have an annual target. The targets are based on a five-year rolling average and are applicable to all roads regardless of ownership or functional classification.

The number of fatalities, rate of fatalities, and number of serious injuries also are performance measures in the Oregon Traffic Safety Performance Plan (OTSP) meeting NHTSA requirements. The federal rules require that these performance measures (#1, #2, and #3 above) have identical targets in the State SHSP and Highway Safety Plan. Further, it identifies the Strategic Highway Safety Plan (the TSAP in Oregon) as the venue for coordination of these common measures. Reporting of results for these various performance measures is accomplished in the HSIP annual report for FHWA and the OTSP and Annual Report for NHTSA.

Once established, states will have to demonstrate progress toward meeting the targets in the appropriate annual reports. For safety, progress is made when four of five targets are met or performance is better than the prior year.

If targets are not met or progress is not made, states will be required to spend all of the HSIP funds only for highway safety improvement projects and submit an HSIP implementation plan.

The federal rule also requires MPOs to establish performance targets. MPOs can use the state-established targets or establish targets specifically for the planning area. Similar to the state target, the targets are applicable to all public roads in the MPO. States and MPO will coordinate their targets.

Oregon has selected an “S-Curve” forecast that assumes the five-year average number of crashes may be relatively flat in the near future; start to decline in a few years in recognition of different programs of the plan being implemented and potential benefits of connected and/or automated vehicles; and flatten out again in the future as it becomes more difficult to address the remaining fatalities.

Table 5 shows the resulting first-year target (2015-2019 data) as compared to the baseline (2014-2018 data).

Figure 7.2 through Figure 7.6 show recent fatality and injury data and a forecast of how Oregon will achieve the vision of zero fatalities and life-changing injuries by 2035 using the five performance measures. As shown in each figure, it is forecast that initial reductions will be relatively slow as the goals, policies and strategies in this plan begin to be implemented. Over time, as the goals, policies, and strategies gain a foothold in Oregon, fatalities and serious injuries will decline more rapidly. Finally, it is forecast the trend will flatten out in the later years of the plan because it

will be more and more difficult to address the final safety issues in the state.

As described in Chapter 4, in addition to the goals policies and strategies in this plan, there are many factors that will influence the number and severity of crashes. These factors include age of the population, mode of travel, number of miles of travel, how fast people drive, where people live, or connected and automated vehicles. These external factors will be important considerations in future updates to the TSAP.

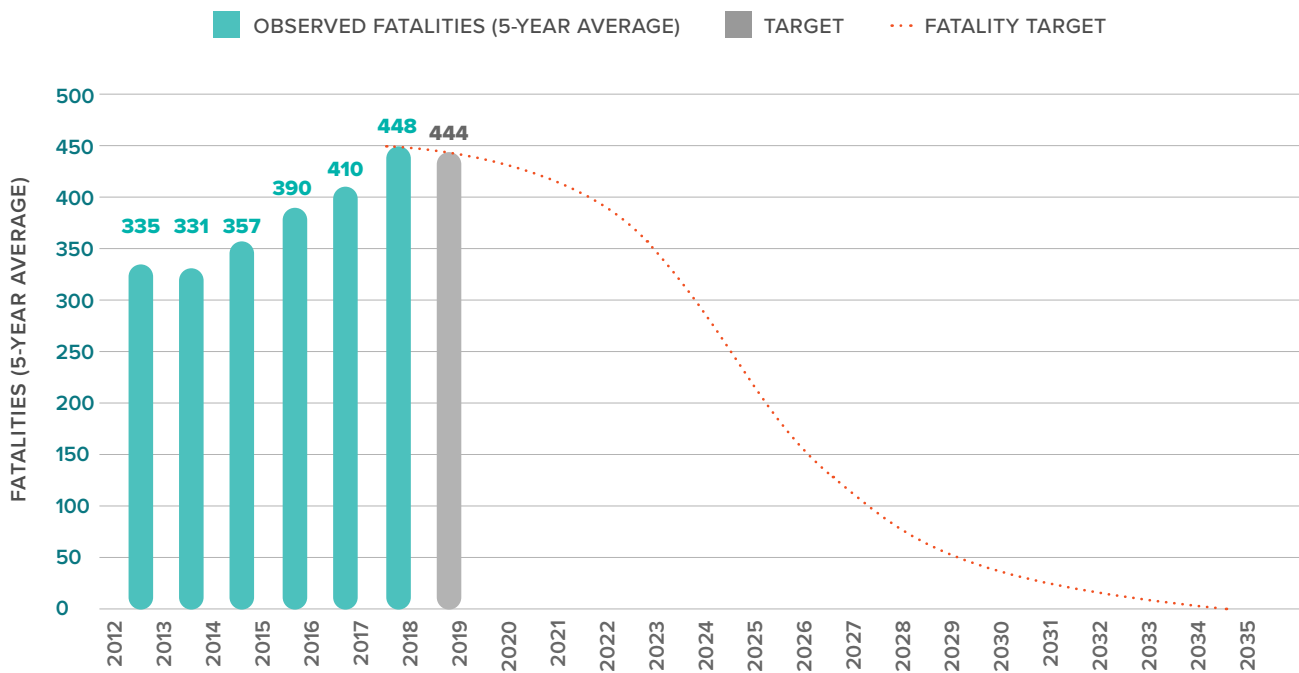


FIGURE 41 5-YEAR AVERAGE FATALITY TARGETS, 2019-2035

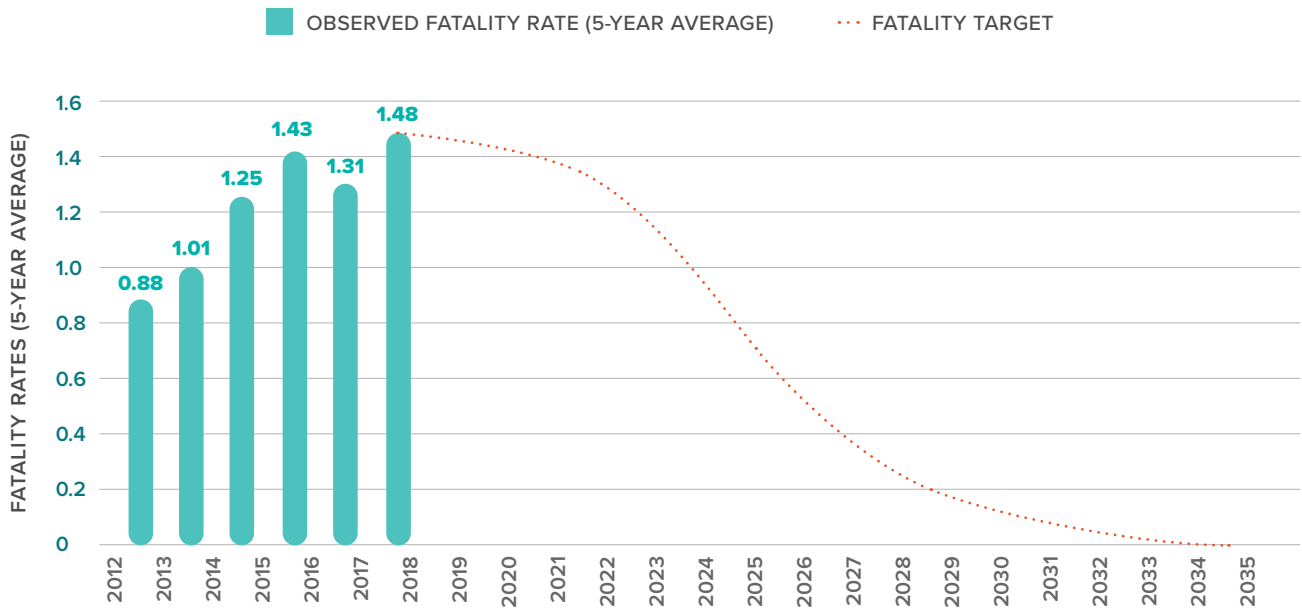


FIGURE 42 FATALITY RATE TARGETS

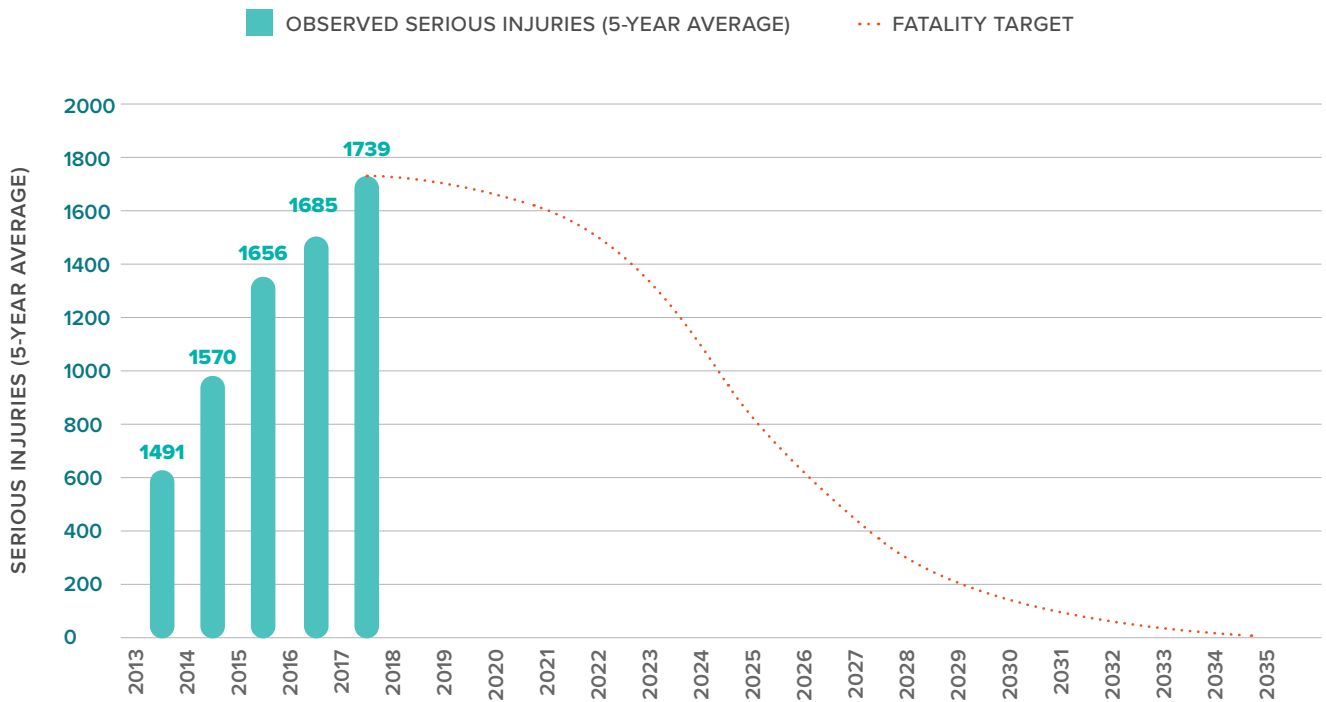


FIGURE 43 SERIOUS INJURY TARGETS

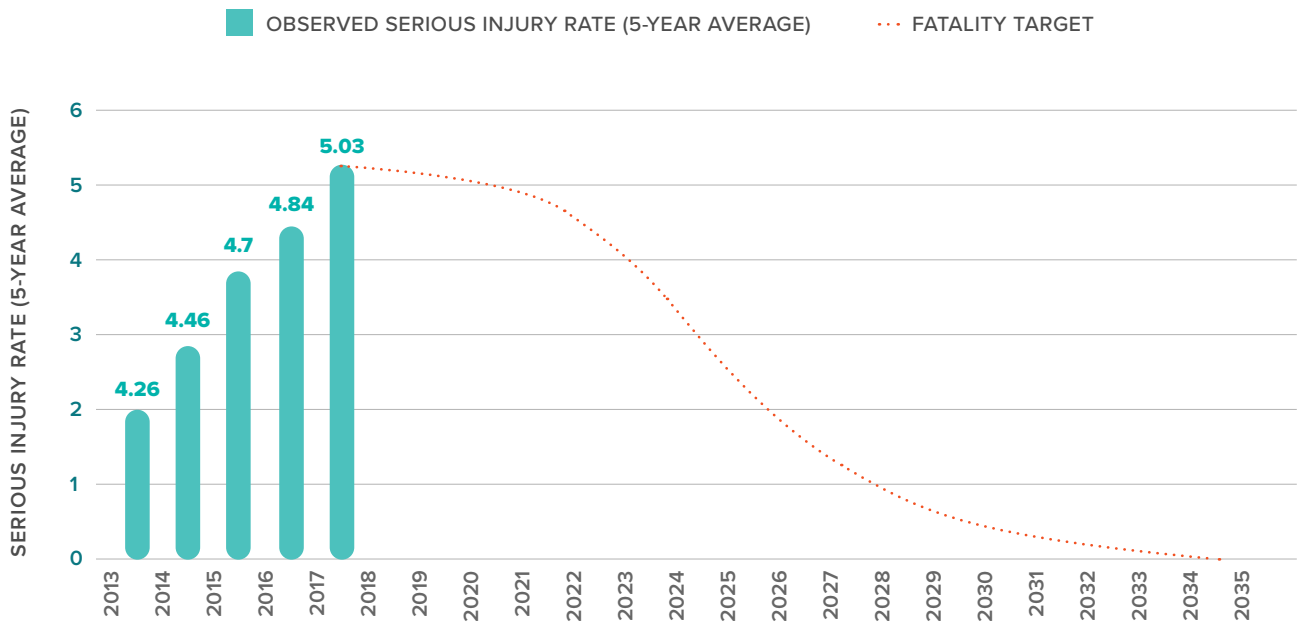


FIGURE 44 SERIOUS INJURY RATE TARGETS

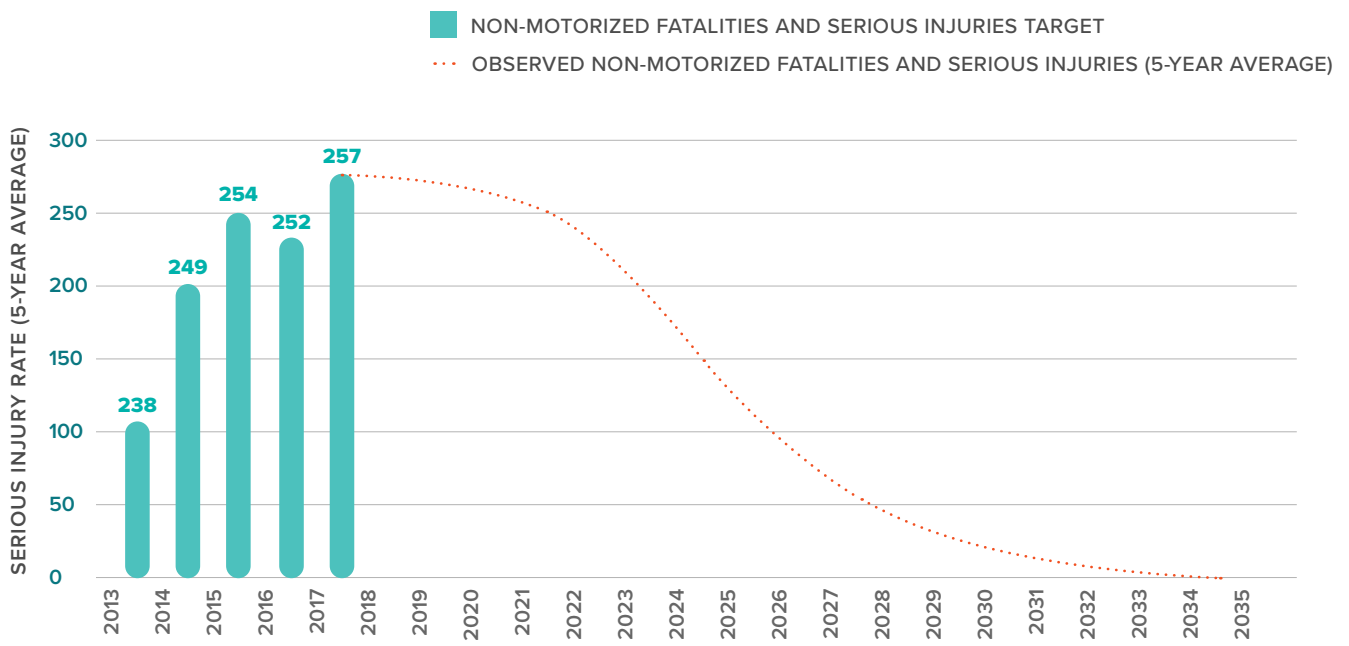


FIGURE 45 NONMOTORIZED FATALITIES AND SERIOUS INJURIES TARGETS

Annual Performance Measure Target Review

ODOT and its safety partners will convene annually to review the most recent crash data, assess progress achieved, and confirm the target setting approach and new targets for the next year. This effort will be integrated with the annual Highway Safety Plan (HSP) revision, which involves ODOT Traffic Safety Division and the

OTSC. The new targets will also be integrated into the annual Highway Safety Improvement Program (HSIP) report.

MPOs will be invited to participate in the annual target setting exercise, per the federal Safety Performance Measure requirements.

Conclusion

The TSAP performance measures and targets will provide ODOT divisions and partner and stakeholder agencies with data-driven information on the successes and challenges associated with the policies, strategies, emphasis areas, and actions identified to eliminate fatalities and

serious injuries. This data can be used to make adjustments to the TSAP over time. The following chapter, Implementation and Evaluation, describes how measures and targets will be established and monitored to continually improve transportation safety in Oregon.

8

Implementation and Evaluation

One of the TSAP goals is to create a document that is applicable to and usable by all ODOT divisions and partner and stakeholder agencies. To achieve this, the policies and strategies in the Vision, Goals, Policies, and Strategies chapter, broadly relate safety to long-term transportation issues, and can be integrated into the development of any transportation plan.

Implementation and Evaluation

The emphasis areas and actions in the Emphasis Areas chapter present short-term safety needs and solutions that can be utilized by any safety or transportation professional. The result is a TSAP that relates to the personal and/or professional responsibilities for all Oregonians, making it easier to implement. Ongoing coordination and collaboration will enhance implementation efforts and also set the stage to evaluate progress on policies, programs, and projects. This chapter discusses TSAP implementation and evaluation opportunities.

How the TSAP Fits into Practice

The TSAP is the framework for engaging residents, stakeholders, employers, planners, engineers, enforcement agencies, and emergency medical service providers across the state in improving transportation safety in Oregon. Over time, and with focus, the vision of zero fatalities and life-changing injuries on Oregon roadways by 2035 can be achieved.

The TSAP serves as the foundation for the integration of behavioral and engineering safety practices into all aspects of planning, programming, and policy activities in the state. While safety-specific plans and programs are critical to achieving the vision for safety in Oregon, it also is important that traditional transportation planning, design, operations and maintenance, and programs and policies proactively integrate safety into their decision-making processes. The TSAP provides long-term, overarching safety vision, goals, policies, and strategies that can be implemented at the state, regional, tribal, county, and city government level.

Using the goals, policies, and strategies in the TSAP, planners, and engineers can track and plan for safety on the transportation system by:

- **Reviewing past, current, and predicted safety trends** – How many fatal and serious injuries are occurring? Where might these crashes occur in the future?
- **Developing safety goals, objectives, measures, and targets** – What are we trying to achieve and are we making progress towards zero fatal and serious injury crashes?
- **Identifying transportation programs and projects to achieve results** – What activities are needed to achieve the vision and goals?
- **Monitoring and evaluating system performance** – What is the performance of the system over time?

This approach to transportation safety fits within the context of the traditional transportation planning process, which agencies already use to

analyze trends, set goals and objectives, identify programs and projects, and evaluate progress towards transportation priorities. The TSAP provides a framework for state, MPO, tribal, county, and city planners, engineers, and stakeholders to create a safer culture and transportation system for Oregonians.

The TSAP also provides near-term actions for reducing fatalities and life-changing injuries in the form of Emphasis Area Actions. These can be used to inform project, program, and policy concepts, evaluation, and decision-making at the

state, regional, tribal, county, and city level. The Emphasis Area Actions in the TSAP will directly influence planning and programming activities for the Oregon Traffic Safety Performance Plan and the ODOT Highway Safety Improvement Program, along with other partners' safety plans.

Example long-term and near-term coordination, implementation or outreach roles, or activities for agencies and stakeholders in Oregon are summarized in Table 8.1. This table is not exhaustive but meant to highlight several of the key agency's activities and roles.

TABLE 6 EXAMPLE ACTIVITIES AND ROLES

AGENCY	EXAMPLE ACTIVITIES AND ROLES
ODOT	<ul style="list-style-type: none"> • Lead state in vision, culture, direction, and best safety practices inside and outside of the agency to advance safety planning, programming, and policies. • Lead and integrate the vision of no fatalities or life-changing injuries in all DOT activities from system and project planning through construction, operations, and maintenance. • Develop and implement policies, processes, and procedures to integrate quantitative safety planning and engineering through all business units. • Serve as a collaborator and communicator with agencies and stakeholders throughout Oregon to improve safety on all roads. • Lead public education to change safety culture for all users of the transportation system. • Monitor performance of Plan. • Conduct and facilitate outreach to support implementation of Plan.
OREGON HEALTH AUTHORITY	<ul style="list-style-type: none"> • Continue collaboration with ODOT to integrate health and transportation. • Include transportation safety education in public health education programs. • Continue collaboration with ODOT to integrate crash data and transportation-related prehospitalization, trauma, and hospitalization data to improve Oregon crash data and analysis.

METROPOLITAN PLANNING ORGANIZATIONS	<ul style="list-style-type: none"> • Elevate multimodal transportation safety planning in long-range planning processes. • Collaborate with partner state and local agencies and stakeholders to identify and prioritize solutions for near-term safety issues (spot-specific and systemic treatments). • Advance safety culture education and programs. • Integrate transportation safety programs into ongoing activities. • Collaborate with enforcement agencies and emergency service providers to improve services for residents. • Develop regional safety action plans to support long-range plans in the region.
TRIBAL, COUNTY, AND CITY AGENCIES	<ul style="list-style-type: none"> • Evaluate local spot-specific and systemic safety needs; develop plans and programs to address needs. • Collaborate with the state, MPO, and stakeholder partners to educate the public about tribal, county and city transportation safety-related behavioral issues. • Integrate safety programming, planning, and policy into local planning. • Develop coalitions with enforcement and EMS providers to target and improve specific community needs. • Use the TSAP as a resource for local goals, policies, strategies, and actions.
PRIVATE ENTITIES AND NONPROFIT ORGANIZATIONS	<ul style="list-style-type: none"> • Refer to TSAP to identify education and marketing topics for employees and stakeholders. • Collaborate with regional, tribal, county and city partners to elevate safety issues and integrate safety into local planning and policy documents. • Collaborate with enforcement and EMS to identify strategic education and marketing campaigns.
ENFORCEMENT AGENCIES	<ul style="list-style-type: none"> • Collaborate with tribal, county, city, MPO, and state partners to advance safety culture within organizations and with the public. • Collaborate with tribal, county, city, MPO, and state partners to develop strategic enforcement or education campaigns to address critical behaviors identified in the TSAP. • Educate the public and tribal, county, city, state, and MPO partners about critical and emerging issues which could be addressed through the planning and programming processes. • Identify and deploy best practices related to impaired and distracted driving education and enforcement. • Identify and deploy best practices related to crash data collection, compilation, and transfer.
EMERGENCY MEDICAL SERVICES	<ul style="list-style-type: none"> • Apply concepts from the TSAP to advocate for best practices in funding, training, and deployment of EMS services.

Monitoring Progress

ODOT continually monitors progress on the performance of transportation programs and measures with annual reporting on both the TSAP and the Highway Safety Improvement Program. The Oregon Traffic Safety Performance Plan identifies performance goals annually and evaluation of progress is reported in the Performance Plan Annual Evaluation, consistent with National Traffic Highway Safety Administration requirements. The Highway Safety Improvement Plan: Annual Evaluation Report is prepared to satisfy Federal reporting requirements and provide documentation for the related Federal grant year for Federal Highway Administration funding programs.

Oregon Traffic Safety Performance Plan

Transportation Safety Division's core monitoring activity is the yearly effort wherein each program manager uses the most up to date data to set their performance goals for the upcoming year. The purpose of the performance plan is to show the impact funds, staff time, and programs will have on the safety of the traveling public. Performance measures incorporate elements of the Oregon Benchmarks, Oregon Transportation Safety Action Plan, the Safety Management System, and nationally recognized measures. Both long-range and short-range measures are utilized and updated annually.

Oregon uses a minimum of 3-, 5-, or 8-year history average, then a change rate of 3 percent, plus

or minus, to establish performance measures. This level of change has proven to be effective in prior Highway Safety Plans. This level of change is generally representative of one standard deviation, meaning that the actions taken had an influence on the result outside of just pure chance. The Oregon highway safety community has also embraced this formula and has supported the use of 3 percent.

Performance Plan Annual Report

The annual report explains what funds were spent and how TSD fared on annual performance measures. It reports on the accomplishments and challenges experienced during the fiscal year, considering all the funds controlled by the Transportation Safety Division. This is TSD's most comprehensive and established procedure for monitoring progress. In addition, program managers do some independent investigations throughout the year when questions come up, when new data is available, or as issues arise.

Highway Safety Improvement Plan (HSIP): Annual Evaluation Report

ODOT is required to submit an annual HSIP report to the FHWA Division Administrator by August 31st of each year, pursuant to 23 CFR 924.15. This report describes the progress being made to implement safety projects, assesses the effectiveness of these projects, and describes the extent to which the improvements have contributed to reducing fatalities and serious

injuries. Traffic-Roadway Section is responsible for generating this report and submitting it to the FHWA.

The annual evaluation reports on the progress of the Highway Safety Improvement Program. For the purposes of this report, HSIP projects are classified into these general categories: Intersection Improvements, Signing and Delineation, Roadway / Structure Improvements, Roadside Improvements,

Safety Appurtenances (guardrail, medians, etc.), and traffic calming projects.

ODOT is responsible to report on project effectiveness by looking at the cost of projects, before and after crash data, and other information, using benefit-cost analysis or other approved methodology to show whether the project achieved its purpose.

Crash Data Reporting

ODOT's Crash Analysis and Reporting program publishes annual reports on crash data that are instrumental in program planning and assessing performance for both TSD and the Highway Division. These include Traffic Crash Summary Reports (all roads), State Highway Crash Rate Tables (state highways), and Motor Carrier Crash Rate Tables.

Conclusion

Four fundamental elements support all SHSP implementation practices: leadership, collaboration, communication, and data collection and analysis.¹ The same is true for successful evaluation.

Implementing and evaluating the TSAP will require a great deal of leadership from ODOT and communication with and amongst regional, county, and local planners and engineers, stakeholder agencies, and advocates as well as employers and private citizens. The partnerships developed in creating this plan provide an understanding of the roles everyone can play to address safety and build ownership of the TSAP. The result will be a coordinated, multidisciplinary approach to implementing and evaluating transportation safety improvements that reduce injuries and save lives.

¹ Federal Highway Administration. Strategic Highway Safety Plan Implementation Process Model. June 2010.

A

Appendix

Appendix A:

Who Developed This Plan

Appendix B:

TSAP Update Process and
Federal Requirements

Appendix C:

Findings of Compliance with Applicable State Law
and Administrative Rules

Appendix D:

Glossary

Appendix A. Who Developed This Plan

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Marian Owens, Member

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Hau Hagedorn, Oregon Bicycle and Pedestrian Advisory Committee
Erik Havig, ODOT
Chuck Hayes, Governor's Advisory Committee on DUII
Jeff Hazen, Sunset Empire Transportation District
Chris Henry, City of Eugene/Governor's Advisory Committee on Motorcycle Safety
Jessica Horning, ODOT
Stephanie Ingraham, Oregon State Police
Mike Jaffe, Salem-Keizer Area Transportation Study MPO
Janis Jarvis, Oregon Trucking Association
Angela Kargel, ODOT
Philip Kase, ODOT
Scott Kocher, Oregon Walks
Kristopher Kyes, ODOT
Heidi Manlove, ODOT
Joe Marek, Clackamas County
Kelly Mason, ODOT
Joel McCarroll, ODOT
Christina McDaniel-Wilson, ODOT
Lake McTighe, Metro
Lucinda Moore, ODOT
Billie-Jo Nickens, ODOT
Colleen O'Hogan, ODOT
Susan Peithman, ODOT
Nikotris Perkins, ODOT

Robin Ness, ODOT
Karen Odenthal, Salem-Keizer Area Transportation Study MPO
Amy Ramsdell, ODOT
Jody Raska, ODOT
Scott Rector, Oregon State Police
Vanessa Robinson, ODOT
Hector Rodriguez-Ruiz, ODOT
Josh Roll, ODOT
Amanda Salyer, ODOT
Peter Schuytema, ODOT
Dana Selover, Oregon Health Authority
Rosalee Senger, ODOT
Craig Sipp, ODOT
Becky Taylor, Lane County
Tiana Tozer, ODOT
Kristin Twenge, ODOT
Bill Warner, ODOT
Jonathan Wilson, Federal Motor Carrier Safety Administration
Catherine Wisniewski, Good Shepherd Health Care System
Brian Worley, Association of Oregon Counties
Chris Wright, ODOT

Appendix B. TSAP Update Process and Federal Requirements

The TSAP is required to provide a detailed description of the SHSP update process to meet Federal requirements outlined in MAP-21. Table B.1 highlights the required elements of the update process and summarizes how they were achieved. The text following describes the update process in greater detail.

Table B.1 Meeting Federal Requirements for the TSAP Update

MAP-21 Requirement	Description of Requirement	Summary of ODOT Activities
Consultative Process	The state has conferred with a required list of stakeholders early in the SHSP update process, considered their input prior to decision-making, and routinely informed them about actions taken regarding SHSP development.	<ul style="list-style-type: none"> Ten interviews with stakeholders representing a diverse set of safety-related needs. Outreach meetings with more than 20 groups (e.g., ODOT staff, leadership groups, advisory committees) – including multiple engagements with some – to receive feedback on 2016 TSAP implementation and comments for the 2021 TSAP. Online survey to solicit public feedback on the previous TSAP and statewide safety efforts. Stakeholder workshops to obtain stakeholder input on the emphasis areas, strategies, and actions; and safety performance measures.
Coordination	The SHSP is aligned with other transportation plans in the state.	<ul style="list-style-type: none"> All relevant transportation and safety plans were reviewed and applicable strategies included in the TSAP. Agencies, responsible for developing other transportation and safety plans in Oregon, were active participants in the TSAP update.
Data-Driven Analysis	The state has used the best available safety data to identify emphasis areas that address safety concerns on all public roads.	<ul style="list-style-type: none"> Using crash data from 2014-2018, an analysis was completed for all public roads in Oregon. Based on these results, the 2016 TSAP emphasis areas were maintained. Crash data analysis informed the revision of some 2016 emphasis area action items and the addition of several new action items.
Performance-Based Planning	The SHSP includes goals and measurable objectives to enable the state to track and monitor the status of SHSP implementation efforts and monitor progress.	<ul style="list-style-type: none"> The TSAP sets goals and measurable objectives for the five MAP-21 required performance measures.
Strategy Selection	Effective emphasis area strategies were selected and the 4 Es of safety were addressed as key factors in strategy selection.	<ul style="list-style-type: none"> Strategies and actions include behavioral and infrastructure solutions developed based on crash data analysis, input from the PMT, public feedback, stakeholder workshops, and assessment of effective countermeasures.
Schedule to Evaluate and Update SHSP	State's plans and schedule to evaluate and update the SHSP.	<ul style="list-style-type: none"> Performance measures and targets have been identified to evaluate progress on an annual basis towards the TSAP vision. The TSAP will be updated within a five-year time period from the adoption of this Plan.

Special Rules	<p>States must include a definition for “high-risk rural roads” if fatality rates have increased.</p> <p>States must include strategies to address pedestrians and older drivers if there have been increases in fatality and serious injury rates.</p>	<ul style="list-style-type: none"> • The special rules for high-risk rural roads older drivers and pedestrians does apply in Oregon. The TSAP includes strategies to address these issue areas.
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Consultative Process

Considerable outreach was conducted with the required stakeholders (23 U.S.C. 148(a)(11)(A)) and others through stakeholder meetings, interviews, surveys, presentations, and the project website.

Committees

Project Management Team. Provided technical input to major milestones, including vision, goals, emphasis areas, strategies, and actions. The Project Management Team met bi-monthly over the course of the project and included staff from ODOT Planning Unit and ODOT Transportation Safety Division.

Project Delivery Team. ODOT and consultant staff met bi-weekly to discuss current project tasks. This teaming arrangement enhanced coordination between the different transportation modal plans and safety plans.

Interviews and Surveys

To understand how the previous TSAP impacted transportation and safety plans, programs, projects, and institutional awareness throughout the state, 10 interviews were conducted with representatives from several ODOT Divisions and other stakeholders. Representatives included stakeholders from Oregon State Police, Bend MPO, Association of Oregon Counties, the Oregon Health Authority, and two Governor's Advisory Committees: Driving Under the Influence of Intoxicants (DUII) and Motorcycle Safety.

Staff-led Outreach Meetings

ODOT staff conducted outreach meetings with more than 20 transportation groups in Oregon to receive feedback on the 2016 TSAP implementation efforts, share the project team's activities regarding the 2021 TSAP update, and solicit their recommendations for TSAP content. Groups consulted included the following.

- Traffic Operations and Standards Team
- Planning and Policy Discipline Team
- Area Managers Meeting
- Commerce and Compliance Division Management Team
- Quarterly ODOT, Metropolitan Planning Organization, and Transit District
- Oregon Bicycle and Pedestrian Advisory Committee
- Oregon Freight Advisory Committee
- Oregon Transportation Safety Committee
- Operations Management Team
- Governor's Advisory Committee on Motorcycle Safety

- Delivery and Operations Leadership Team
- Department of Motor Vehicles - Driver Programs Team
- Public Transportation Advisory Committee
- Governor's Advisory Committee on DUII
- Motor Carrier Transportation Advisory Committee

Public Survey

ODOT conducted an online survey between October 1 and November 20, 2020 to identify key issues and opportunities to address with the 2021 TSAP. A total of 434 people participated in the survey, and of those, over half said that this was their first-time providing feedback on the TSAP update.

Coordination

The TSAP serves as the unifying framework for transportation safety planning in Oregon. As part of the TSAP update process, a review of existing State, local, regional, and Tribal plans was conducted, with a specific emphasis on safety. The purpose of this review was to identify policies and strategies that should be considered in the TSAP to ensure consistency across plans. This alignment of plans reinforces the transportation safety message while maximizing resources available to implement solutions.

As a Topic Plan that is part of the Oregon Transportation Plan (OTP), The TSAP Implements the OTP safety goals and informs safety goals of new and updated plans. Going forward, the TSAP will be an important resource for transportation safety direction as state, regional, Tribal, county, and city plans are updated or new plans are developed. These plans should be consistent with the TSAP with respect to safety.

Lastly, the TSAP was developed in coordination with the stakeholders responsible for reviewing and updating other transportation and safety plans in the state. For example, the ODOT Safety Division, responsible for the Highway Safety Plan, participated on the Project Management Team. This collaboration ensured that safety plans and safety elements in transportation plans had a higher degree of coordination.

Data-Driven Analysis

For the TSAP update, recent and historic Oregon crash data was analyzed to document trends related to crash types, crash severity, crash demographics, and contributing factors. The information was used by ODOT and other safety stakeholders to:

- Inform the existing conditions section of the TSAP;
- Support the data-driven approach to the TSAP required by MAP-21 legislation; and
- Support identification and confirmation of the most appropriate emphasis areas for the TSAP.

The time period covered in the data analysis was from 2014-2018 and included crashes on all public roads in Oregon, regardless of roadway ownership and maintenance.

A key part of the analysis was an assessment of crash categories to identify those contributing to Oregon's fatal and serious injury crashes. More than 20 crash categories were identified for further analysis, and the following categories stood out as the most common:

1. Roadway Departure
2. Intersections
3. Speed-related
4. Alcohol Involved
5. Motorcycle Involved
6. Young Drivers (15-20) Involved
7. Unrestrained Occupants
8. Pedestrian(s) Involved
9. Aging Drivers (65+) Involved

To encapsulate these needs and combined where appropriate, the following emphasis areas were confirmed for the 2021 TSAP: Risky Behaviors, Infrastructure, Vulnerable Users, and Improved Systems.

In addition to the crash data analysis, emphasis areas also were selected based other quantitative and qualitative indicators, including:

- **Effectiveness Data.** Are there proven countermeasures available for use in Oregon? If not, is there an ability and commitment to evaluate effectiveness of programs and projects?
- **Institutional Capacity.** Are there agencies or individuals who are able to commit ongoing staff resources to address this safety problem?
- **Emphasis Area Overlap.** Does the potential emphasis area significantly overlap with other potential emphasis areas and, if so, can they both be addressed simultaneously?
- **Consistency with Existing Plans and Policies.** Is the potential emphasis area consistent with other state plans and policies and does it address a significant policy goal? If not, does the potential emphasis area push the state in an appropriate policy direction?
- **Public Input.** Are there issues the public perceives as critical to driving down fatalities and serious injuries? Can these issues be addressed within the framework of the TSAP?

Performance-Based Planning

The TSAP includes goals and measurable objectives to enable Oregon to track and monitor the status of SHSP implementation efforts and monitor progress for required Safety Performance Measures:

- Number of roadway fatalities
 - Number of roadway serious injuries
 - Roadway fatalities per vehicle miles traveled (i.e., fatality rate)
 - Roadway serious injuries per vehicle miles traveled (i.e., serious injury rate)
 - Combined nonmotorized fatalities and nonmotorized serious injuries
-

Each of the five safety performance measures has an annual target, which are based on a five-year rolling average, and are applicable to all roads regardless of ownership or functional classification. The number of fatalities, rate of fatalities, and number of serious injuries have identical annual targets in the TSAP and Highway Safety Plan and the reporting of these results will occur in the HSIP annual report for FHWA and the Highway Safety Plan Annual Report for NHTSA.

Along with these five primary measures, a performance analysis was completed for high-risk rural roads and older pedestrians and drivers to meet the Special Rules requirements.

Strategy Selection

The TSAP identifies strategies for each of the overarching safety goals and actions within each emphasis area to achieve those strategies to reduce or eliminate safety hazards. The range of emphasis area actions correlates with the magnitude of the problem – crashes occur under a wide variety of conditions and contributing factors, so multiple actions are necessary to fully address the problem. Over time, strategies and actions will be assessed based on achievements in meeting performance measures and targets.

The diversity of stakeholders has contributed to a list of strategies and actions that are representative of engineering, enforcement, emergency response, and engineering solutions. The speed emphasis area provides an example of actions that span across multiple disciplines, describing activities from education of road users on speeding hazards to facility design considerations and operating speeds.

Schedule to Evaluate and Update SHSP

To evaluate whether the policies, strategies, emphasis areas, and actions are contributing to fatality and serious injury reductions, the TSAP establishes performance measures that align with FHWA requirements under the MAP-21 rule and NHTSA. On an annual basis, ODOT will conduct the following activities:

- Analyze crash data to evaluate progress toward the five overarching safety targets.
 - Coordinate with the ODOT Traffic Safety Division to evaluate progress on the FHWA required overlapping safety targets and NHTSA required performance measures and targets.
 - Set annual safety performance targets based on the most recent data and coordination with safety stakeholders
 - Review fatalities on high-risk rural roads and fatalities and serious injuries per capita among aging drivers and pedestrians to assess if action is needed to comply with MAP-21.
 - Publish the annual crash report to monitor and evaluate safety performance.
 - Encourage transportation and safety partners to integrate the TSAP strategies and actions into other transportation and safety planning documents and evaluate the results.
 - Review progress on the actions established for each emphasis area
 - Update TSAP no later than five years from the previous approved version in compliance with MAP-21.
-

Special Rules

Special rules under MAP-21 related to fatality rates on high-risk rural roads and fatality and serious injury rates for pedestrians and older drivers. Based on a review of the analysis, the following was determined:

- **High-Risk Rural Roads (HRRR) Special Rule.** A review of the fatal crash rate on Oregon's rural roads indicates that the HRRR Special Rule currently applies to Oregon. Strategies to address the increase in fatalities and serious injuries on rural roadways are included in the TSAP.
 - **Older Drivers and Pedestrians Special Rule.** A review of the per capita older drivers and pedestrians fatal and serious injury rate indicates that this rule does apply to the update process. Strategies to address the increase in fatalities and serious injuries among the older population are included in the TSAP.
-

Appendix C

Appendix C will be updated for the final TSAP.

Appendix D. Glossary

23USC: Title 23 of the U.S. Code regarding transportation funding

3 Es: Engineering, Education, Enforcement

4 Es: Education, Engineering, Enforcement, and Emergency Medical Services

5-Point Child Restraint (CR) Harness: A child restraint harness with five attachment points, two at the shoulder, two at the hips, one between the legs.

AASHTO: American Association of State Highway and Transportation Officials

ABS: Anti-Lock Brake System

ACT: Area Commission on Transportation

Aggressive Driving: An individual commits a combination of moving traffic offenses so as to endanger other persons or property (FHWA). For purposes of this plan those offenses are driving too fast for conditions, following too closely, and/or driving in excess of posted speed.

Aggressive Driving-Related Crash: One of more of driving too fast for conditions, following too closely, and/or driving in excess of posted speed was an attribute of the crash. As used in this plan, note that duplicate crashes are not counted more than once.

Arterial: A functional classification for surface streets. AASHTO defines arterials from the motor vehicle perspective as providing a high degree of mobility for the longer trip lengths and high volumes of traffic, ideally providing a high operating speed and level of service and avoiding penetrating identifiable neighborhoods.

Attributes: As used in this plan means characteristics of a crash that may be useful for analysis. Note that some road user attributes are not mutually exclusive. For example, some motorcycle riders are also young drivers. In some cases they may contribute to a crash occurring or its severity, but that is not required for them to be considered attributes.

AV: Autonomous vehicle

BAC: Blood Alcohol Concentration

Best Practices: For purposes of this plan, the term “best practices” is used as a general term of preferred practices accepted and supported by experience of the applicable professional discipline. It is not prescriptive to a particular set of standards or a particular discipline.

Booster Seats: Are intended to be used as a transition to lap and shoulder belts by older children who have outgrown convertible seats (over 40 pounds). They are available in high backs, for use in vehicles with low seat backs or no head restraints, and no-back; booster bases only.

BPSST: Board on Public Safety Standards and Training

Car Seat: Common term for a specially designed device that secures a child in a motor vehicle, meets Federal safety standards, and increases child safety in a crash.

CAV: Connected Autonomous Vehicle

Child Safety Seat/Child Restraint: A crash tested device that is specially designed to provide infant/child crash protection. A general term for all sorts of devices including those that are vests or car beds rather than seats.

CFAA: Criminal Fine and Assessment Account

Countermeasure: An activity or initiative to prevent, neutralize, or correct a specific problem.

County/Local Traffic Safety Group: An advisory or decision body recognized by one or more local governments and tasked with addressing traffic safety within the geographic area including one or more cities.

Collector: A functional classification for surface streets. AASHTO defines collectors as providing both land access and traffic circulation within neighborhoods and commercial and industrial areas. The role of the collector system, from the motor vehicle perspective, is to distribute traffic to and from the arterial system.

CTSP: Community Traffic Safety Program

CRF: Crash Reduction Factor

CVIS: Commercial Vehicle Information System **DHR:** Oregon Department of Human Resources **DHS:** Oregon Department of Human Services

Distracted Driving: Engagement in any activity that could divert a person's attention away from the primary task of driving: the practice of driving a motor vehicle while engaged in another activity. Typical distractions include eating, dealing with passengers or pets, changing settings on vehicle devices, and, increasingly, using a cellular phone or other electronic device.

DMV: Driver and Motor Vehicle Services, Oregon Department of Transportation

DPSST: Department of Public Safety Standards and Training

DOE: Oregon Department of Education

DRE: Drug Recognition Expert

DUI: Driving Under the Influence

DUII: Driving Under the Influence of Intoxicants, sometimes DUI is used

Emphasis Areas (EA): Topics identified to provide a strategic framework for developing and implementing a Strategic Highway Safety Plan. Emphasis areas are near-term focus areas to be implemented through agreed upon Actions, as articulated in this plan in Chapter 6.

EMS: Emergency Medical Services

Equity: Equity refers to fair treatment or equal access to transportation services and options. In the context of safety, transportation equity relates to improving the travel choices, the safety of travel and not unfairly impacting one group or mode of transportation. More specifically it means improved safety for all transportation options and lessening the risks or hazards associated with different choices of transportation.

Expressway: In Oregon, a route designated to prioritize through traffic with a long-term management focus on managing direct access to the roadway to minimize conflicts.

F & I: Fatal and injury crashes

FARS: Fatal Analysis Reporting System, U.S. Department of Transportation

FAST Act: The **Fixing America's Surface Transportation (FAST) Act** is a funding and authorization bill to govern United States Federal surface transportation spending, signed by President Obama on December 4, 2015. It is subsequent to MAP-21, but does not replace all of the applicable requirements of that earlier law, so both must be referenced.

Fatality Rate: The number of traffic fatalities per number of vehicle miles traveled in a given year. The rate is usually expressed in terms of fatalities per one hundred million miles traveled. Sometimes also expressed as a rate of fatalities per population or licensed drivers

FHWA: Federal Highway Administration

FMCSA: Federal Motor Carrier Safety Administration

FRA: Federal Rail Administration

Freeway: Directional travel lanes usually separated by a physical barrier, and access and egress points are limited to on- and off-ramp locations or a very limited number of at-grade intersections.

GAC-DUII: Governor's Advisory Committee on DUII

GAC: Motorcycle Governor's Advisory Committee on Motorcycle Safety

GDL: Graduated Driver Licensing

GHSA: Governors Highway Safety Association

GLS: Graduated Licensing System

GR: Governor's Representative

Hazard index formula: Any safety or crash prediction formula used for determining the relative likelihood of hazardous conditions at railway-highway grade crossings, taking into consideration weighted factors, and severity of crashes. (23 CFR § 924.3)

HEP: Hazard Elimination Program (earlier Federal program, replaced by HSIP)

High Crash Location: Highway or road segments that are susceptible to an inordinate number of crashes. Identification of high crash locations is part of the problem identification process.

High Risk Rural Road: The term “high risk rural road” means any roadway functionally classified as a rural major or minor collector or a rural local road with significant safety risks, as defined by a state in accordance with an updated state strategic highway safety plan. (23 USC section 148)

High Visibility Enforcement (HVE): Law enforcement efforts that are highly visible and well publicized through paid and earned media support. (NHTSA)

Highway Safety Improvement Program: The term “highway safety improvement program” means projects, activities, plans, and reports carried out under this section. (23 USC section 148)

Highway Safety Improvement Project: (23 USC section 148) In general, the term “highway safety improvement project” means strategies, activities, and projects on a public road that are consistent with a state strategic highway safety plan and correct or improve a hazardous road location or feature; or address a highway safety problem.

HR3: High Risk Rural Road

HSEC: ODOT Highway Safety Engineering Committee **HSIP:** Federal Highway Safety Improvement Program **HSIS:** Highway Safety Information System

HSM: Highway Safety Manual

HSP: Highway Safety Plan, the grant application submitted for Federal section 402 and similar funds. Funds are provided by the National Highway Traffic Safety Administration and the Federal Highway Administration.

IACP: International Association of Chiefs of Police

ICS: Incident Command System

IHSDM: Interactive Highway Safety Design Model

IID: Ignition Interlock Device

IIHS: Insurance Institute for Highway Safety

Impaired Driving: Driving a vehicle while the driver's reflexes have suffered from alcohol or other drugs to a point that is generally considered unsafe to operate a vehicle. Impairment is usually viewed less severely than intoxication. (NHTSA)

Inattentive Blindness: A term used in driver attention and other cognitive research trying to explain what happens when a driver is apparently not distracted from the task of driving, but fails to notice a fully visible, but unexpected object because attention was engaged on another event or object.

Examples:

1. While turning onto a side road from the main road, the driver, while watching for other cars, failed to notice the (unexpected) motorcycle, which was in full view, and turned in front of the motorcycle.

2. While approaching a light, drivers notice pedestrians in the walkway when the light is red. When the light is green, pedestrians, even in full view, may not be noticed in the walkway because pedestrians in the walkway are unexpected when the light is green.

“**Injury A**” and “**Incapacitating injury**” are used interchangeably. Incapacitating injuries typically are injuries that the victim is not able to walk away from. They are synonymous with the term “**Severe injury**”

“**Injury B**” and “**Moderate injury**” are used interchangeably. “**Injury C**” and “**Minor injury**” are used interchangeably. “**Injury K**” and “**Fatality**” are used interchangeably

IRIS: Integrated Road Information System

ITS: Intelligent Transportation Systems

Lane Departure: See “Roadway Departure”

LCDC: Land Conservation and Development Commission

Local Street: A functional classification for surface streets that includes all public surface streets not defined as arterial or collector. Local streets are typically low-speed streets with low traffic volumes in residential areas, but also include similar streets in commercial and industrial areas.

LTSG: Local Traffic Safety Group: An advisory or decision body recognized by a local government and tasked with addressing traffic safety. Limited to one geographic area, and may not include cities or other governmental areas within the boundaries.

MADD: Mothers against Drunk Driving

MAP-21: Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), reauthorization of Federal highway funding, signed into law by President Obama on July 6, 2012. Subsequent adoption of the FAST Act does not replace MAP-21 in all areas regulation of transportation safety planning and funding, so both must be referenced.

MCTD: Motor Carrier Transportation Division

Minor Arterial: Provides moderate-length trips and offers connectivity to the higher arterial system, providing intracommunity continuity.

MIRE: Model Inventory of Roadway Elements: The listing and standardized coding by the Federal Highway Administration of roadway and traffic data elements critical to safety management, analysis, and decision-making (23 USC section 148)

Monitoring: Management and oversight of the day-to-day operations of grant and sub-grant supported activities to assure compliance with applicable Federal and state requirements and that performance goals are being achieved.

Motorcycle: A motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground. The NHTSA defines “motorcycle” to include mopeds, two or three-wheeled motorcycles, off-road motorcycles, scooters, mini bikes and pocket bikes.

Motorcycle Crash: A crash involving one or more motorcycles

Motorcycle Driver: The operator of a motorcycle

Motorcycle Occupant: Describes either a motorcycle driver or passenger of a motorcycle not in motion.

Motorcycle Occupant, Unknown; Used in crash data to indicate a person involved in a motorcycle related crash when it is unknown whether the person was the driver or a passenger.

Motorcycle Passenger: A person riding on a motorcycle who is not the operator

Motorcyclist: As used in this plan, refers to either an operator or a passenger of a motorcycle.

MPO: Metropolitan Planning Organization. MPOs are designated by the governor to coordinate transportation planning in an urbanized area of the state.

MUTCD: Manual on Uniform Traffic Control Devices **NHTSA:** National Highway Traffic Safety Administration

NTSB: National Transportation Safety Board

OACP: Oregon Association Chiefs of Police

OBM: Oregon Benchmark

Occupant Protection: Any device(s) installed in a vehicle designed to prevent an occupant from crashing into the vehicle’s interior or to reduce the severity of injuries for that occupant. Safety belts, child safety seats, air bags, padded interiors, and side door beams are all occupant protection devices.

ODAA: Oregon District Attorneys Association **ODE:** Oregon Department of Education **ODOT:** Oregon Department of Transportation

ODOT Regions: ODOT’S service territory is divided into five geographic Regions:

Region 1: Portland Metro (Clackamas, Hood River, Multnomah and Washington Counties)

Region 2: Willamette Valley, North, and Mid-Coast (Clatsop, Columbia, Tillamook, Yamhill, Polk, Marion, Lincoln, Linn, Benton, and Lane Counties)

Region 3: Southern Oregon and South Coast (Douglas, Curry, Coos, Josephine, and Jackson Counties)

Region 4: Central Oregon (Wasco, Sherman, Gilliam, Jefferson, Wheeler, Crook, Deschutes, Lake, and Klamath Counties)

Region 5: Eastern Oregon (Morrow, Umatilla, Union, Wallowa, Baker, Grant, Harney, and Malheur Counties)

OHA: Oregon Health Authority

OJD: Oregon Judicial Department

OJIN: Oregon Judicial Information Network

OLCC: Oregon Liquor Control Commission

Older Drivers and Pedestrians: Drivers and pedestrians 65 year of age and older.

OMHAS: Office of Mental Health and Addiction Services

OSP: Oregon State Police

OSSA: Oregon State Sheriffs' Association **OTC:** Oregon Transportation Commission **OTP:** Oregon Transportation Plan

OTSAP: Oregon Transportation Safety Action Plan **OTSC:** Oregon Transportation Safety Committee **PAC:** Policy Advisory Committee

Per capita is used to describe crash rate per population. Except where otherwise noted, crash rates are per million residents.

Per VMT is used to describe crash rate per motorized vehicle miles. Except where otherwise noted, crash rates are per 100 million motorized vehicle miles traveled.

Performance Measure: "A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives." (FHWA)

Performance Plan: The document, accompanied by the HSP that states submit to NHTSA annually for approval. The performance plan contains: 1) a list of annual quantifiable and measurable highway safety performance targets that is data driven, consistent with the Uniform Guidelines for Highway Safety Program, and based on highway safety problems identified by the state during the planning process conducted; and 2) performance measures developed by DOT in collaboration with the Governor's Highway Safety Association and others, beginning with the MAP-21 directed "Traffic Safety Performance Measures for States and Federal Agencies" (DOT HS 811025), which are used as a minimum in developing the performance targets.

PI&E: Public Information and Education

PMT: Project Management Team

Practical Design: "A systematic approach to deliver the broadest benefit to the transportation system, within existing resources, by establishing appropriate project scopes to deliver specific results" as defined by ODOT Technical Services.

Problem Identification: A process of analyzing general data to isolate specific causes or locations of traffic crashes.

Project to Maintain Minimum Levels of Retroreflectivity: A project that is designed to maintain a highway sign or pavement marking retroreflectivity at or above the minimum levels prescribed in Federal or state regulations. (23 USC section 148)

Public Grade Crossing: A railway-highway grade crossing where the roadway (including associated sidewalks, pathways and shared use paths) is under the jurisdiction of and maintained by a public authority and open to public travel, including non-motorized users. All roadway approaches must be under the jurisdiction of a public roadway authority, and no roadway approach may be on private property. (23 CFR § 924.3)

Public Road: Any highway, road, or street under the jurisdiction of and maintained by a public authority and open to public travel, including non-state-owned public roads and roads on tribal land. (23 CFR § 924.3)

PUC: Oregon Public Utility Commission

Road Safety Audit: A formal safety performance examination of an existing or future road or intersection by an independent multidisciplinary audit team. (23 CFR § 924.3)

Road users: A motorist, passenger, public transportation operator or user, truck driver, bicyclist, motorcyclist, or pedestrian, including a person with disabilities. (23 USC section 148)

Roadway Departure: Leaving one's lane unintentionally, typically due to distraction or impairment, including leaving the roadway entirely, moving into an adjacent lane or across a center lane or median into oncoming traffic.

Roadway Departure Crash: Crash where roadway departure is an attribute. As used in this plan, note that the roadway or lane departure definition excludes intersections, pedestrian-related, and bicycle-related crashes.

RTP: Regional Transportation Plan for a Metropolitan Planning Organization

Safe Communities Group: A coalition of private and/or public sector entities who use a data driven approach to community safety issues.

Safe Communities Model: A long-standing approach to reducing injuries and deaths that works through engaging local partners who care about safety, using data to identify leading causes of injury, making a plan to address the issues using proven methods and measuring success.

Safety data includes, but is not limited to, crash, roadway, and traffic data on all public roads. For railway-highway grade crossings, safety data also includes the characteristics of highway and train traffic, licensing, and vehicle data. (23 CFR § 924.3)

Safety stakeholder: (23 CFR § 924.3) includes, but is not limited to,

A highway safety representative of the Governor of the state;

Regional transportation planning organizations and metropolitan planning organizations, if any;

Representatives of major modes of transportation;

State and local traffic enforcement officials;

A highway-rail grade crossing safety representative of the Governor of the State;

Representatives conducting a motor carrier safety program under Section 31102, 31106, or 31309 of Title 49;

Motor vehicle administration agencies;

County transportation officials;

State representatives of non-motorized users; and

Other Federal, state, tribal and local safety stakeholders.

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

Severity: A measurement of the degree of seriousness concerning both vehicle impact (damage) and bodily injuries sustained by vehicle occupant.

SFST: Standard Field Sobriety Testing

SHSP: Strategic Highway Safety Plan, A comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Side Impact Air Bags: Provide additional chest protection to adults in many side crashes. Children who are seated in close proximity to a side air bag may be at risk of serious or fatal injury if the air bag deploys. Check with the vehicle dealer or vehicle owner's manual for information about danger to children.

SIP: Safety Investment Program (used for ranking safety projects prior to 2012; no longer used)

SMS: Safety Management System or Highway Safety Management System

SPIS: Safety Priority Indexing System

Speed, types: A strong statistical relationship exists between operating speed and posted speed. The relationship between design speed and operating or posted is less well known and is the subject of many studies.

Design Speed: Speed for which roadway elements such as curves are designed.

Operating Speed: The measured speed, either average or fixed percentile speed (i.e., 85th percentile).

Posted Speed: The speeds indicated on signs along the roadway.

Statutory speeds are posted as defined in statute (i.e., 25 mph on a neighborhood street) and any road authority may post applicable statutory speeds within their jurisdiction.

Designated speeds which differ from statutory speeds (i.e., 35 mph on city arterial) must be established by a defined speed zoning process and investigation. Designated speeds typically have to be administered by the Oregon Department of Transportation.

Posted Speed Violations: In Oregon, posted speeds set the maximum speed that can be traveled, violations can be either speed limit or basic rule;

Basic Rule Speed – A speed that is reasonable and prudent considering the conditions at the time. Speeds in excess of the posted speed are evidence of the violation. Basic rule violations can apply on any roadway.

Speed Limit – Speed limits are limited to specific roadways such as interstates, roadways within city limits, and school speed zones. In addition, speed limits apply to certain types of vehicles on any roadway – large trucks, school buses and vehicles transporting children or workers.

Oregon Revised Statutes establish and define Speed Limits, and the Basic Rule within the State of Oregon; the definitions presented here paraphrases those laws, and should not be relied upon in lieu of ORS.

Speeding: Driving too fast for conditions and/or driving in excess of posted speed

Speed-Related Crashes: Attributes of crash include driving too fast for conditions and/or driving in excess of posted speed (note that duplicate crashes are not counted more than once).

Spot Safety Improvement: An improvement or set of improvements that is implemented at a specific location on the basis of location-specific crash experience or other data-driven means.

SSHSP: State Strategic Highway Safety Plan; A comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

State Highway Safety Improvement Program: The term “State highway safety improvement program” means a program of highway safety improvement projects, activities, plans and reports carried out as part of the Statewide transportation improvement program under section 135(g). (23 USC section 148)

Strategic Highway Safety Plan (SHSP): A comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

STIP: Statewide Transportation Improvement Program

Systemic Safety Improvement: An improvement or set of improvements that is widely implemented based on high-risk roadway features that are correlated with particular severe crash types.

TAC: Technical Advisory Committee

Toward Zero Deaths: A term of art for transportation safety program analogous to Vision Zero

TRCC: Traffic Records Coordinating Committee

TRS: ODOT Traffic-Roadway Section

TSAP: Oregon's Transportation Safety Action Plan

TSD: Transportation Safety Division, Oregon Department of Transportation

TSRP: Traffic Safety Resource Prosecutor

U.S. DOT: United States Department of Transportation

Vision Zero: A system and approach to public policy developed by the Swedish government which stresses safe interaction between road, vehicle, and users. Highlighted elements include a moral imperative to preserve life, and that the system conditions and vehicle be adapted to match the capabilities of the people that use them.

VMT: Vehicle miles traveled; a measure used as a means of determining exposure in calculating fatality rates.

Work Zone: A segment of road along which road construction or maintenance work is being done.

Young Drivers: As used in this plan, "Young Drivers" includes two age groups: age 15-20 and 21-25. Where appropriate, the groups were considered as one to simplify presentation. However, it is acknowledged that there may be different countermeasures to address the two different age groups.