

OREGON Transportation Safety Action Plan 2016

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THANK YOU TO SAFETY PARTNERS

Developing the Oregon Transportation Safety Action Plan (TSAP) would not have been possible without the significant efforts of committed safety practitioners throughout the state. Primarily, the many years of leadership provided by the Oregon Transportation Safety Committee (OTSC) make it possible for this plan to continue to become a stronger multidisciplinary plan focused on saving lives and eliminating serious injuries for all travelers on Oregon's transportation system. In addition, the TSAP Policy Advisory Committee (PAC) gave many hours of hard work and consideration to the development of the plan; the ODOT Transportation Safety Action Plan Project Coordination Team (PCT) carefully reviewed all aspects of the plan striving to achieve a plan that is meaningful and implementable; and partner agencies in Oregon, and public and private stakeholders from many different organizations and interests provided input at public meetings and via on-line interactive tools.

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- A web-based version of the plan can be opened from <http://www.oregon.gov/ODOT/TS/Pages/tsap.aspx> that can be zoomed to a larger format; or
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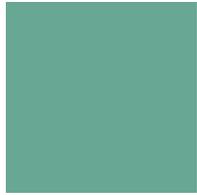
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Executive Summary



EXECUTIVE SUMMARY

The Oregon Transportation Safety Action Plan (TSAP) provides long-term goals, policies and strategies and near-term actions to eliminate deaths and life-changing injuries on Oregon’s transportation system by 2035. 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’.

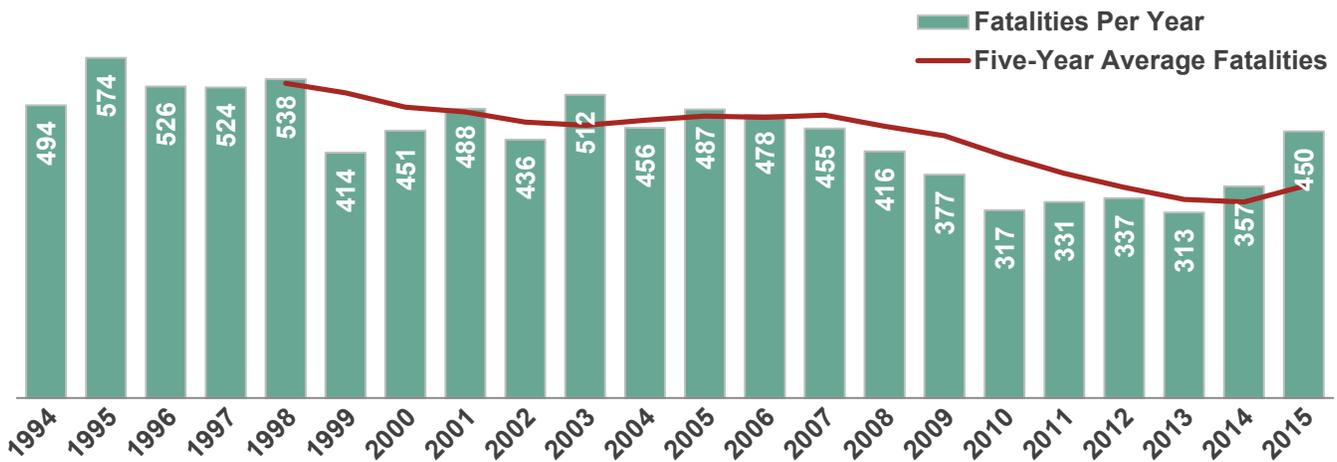
VISION

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

WHAT IS THE TSAP?

Historically, transportation-related fatalities in Oregon have trended downwards. Since 2013, however, there has been an annual increase in transportation fatalities in Oregon. This increase is common across the country and fatalities do fluctuate in relationship to a variety of economic, demographic, and system factors. The increase does reinforce the importance of continuing to focus on and invest in multidisciplinary transportation safety programs.

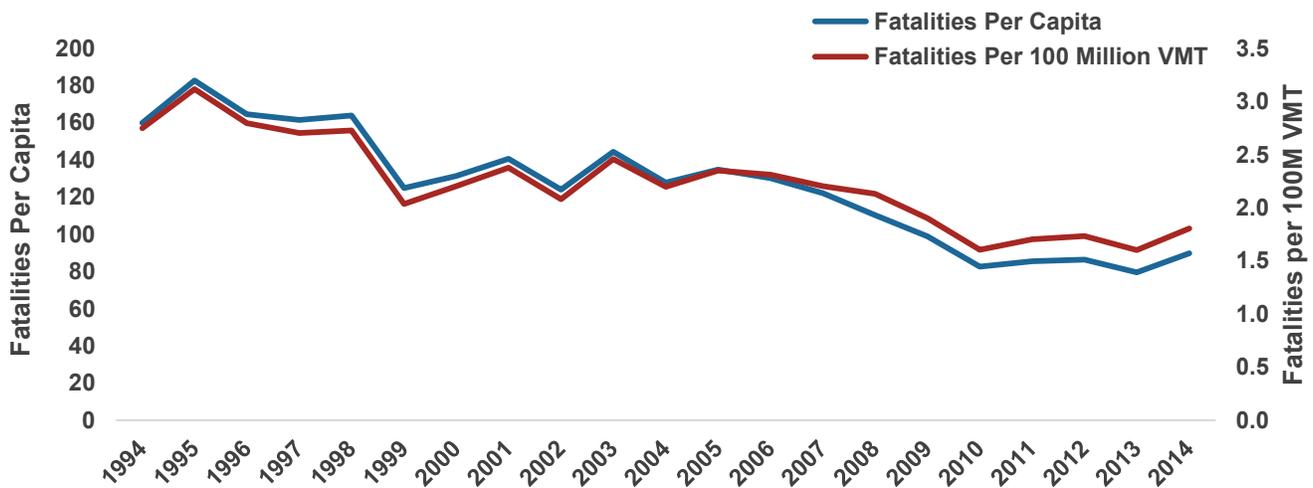
Figure ES.1 Oregon Transportation Fatalities
1994 to 2015



The number of transportation fatalities normalized against population and 100 Million Vehicle Miles Traveled (VMT) shows similar trends. While fatality rates have decreased since the mid-1990s, in recent years, the number of fatalities per capita and fatalities per 100 Million VMT has remained relatively constant (Figure ES.2).



Figure ES.2 Oregon Historic Transportation Fatalities per Capita and per 100 Million Vehicle Miles Traveled



The Federal Highway Administration requires every state to have a Strategic Highway Safety Plan (SHSP). The SHSP is a statewide coordinated safety plan providing 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 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, tribal governments, and affected state agencies in Oregon.

WHO PARTICIPATED IN DEVELOPING THIS PLAN?

Transportation safety policy, planning, programming, and projects are multidisciplinary and involve what are known as “the 4 Es” of safety:

- Engineering;
- Emergency Medical Services;
- Enforcement; and
- Education.



The TSAP brought the 4 Es of safety together in several different ways and at several different times throughout the project.

- Policy Advisory Committee (PAC) directed the development of the vision, goals, policies, strategies, emphasis areas, and near-term actions. The PAC met almost monthly throughout the course of the project.
- Project Coordination Team (PCT) provided technical input on major milestones, including the vision, goals, strategies, and actions. The PCT met four times over the course of the project and was made up of staff from all divisions of ODOT.
- The public was engaged several times and in several ways on the project. There were public meetings at the beginning and end of the project to provide input on desires for the TSAP and to provide input to specific strategies and actions. There also were an on-line survey and region open houses for the public to provide input on the Plan.

Appendix A lists members of the Oregon Transportation Safety Committee (OTSC), the PAC, and PCT. The 2016 TSAP was adopted by the Oregon Transportation Commission at the recommendation of the Oregon Transportation Safety Committee on October 14, 2016.

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 which eliminates fatalities and serious injuries. Everyone is responsible for ensuring their own safety and responsible to protect the lives of others traveling on the transportation system. Only when residents and visitors adopt safe traveling behaviors and decision-makers invest in safety programs, policies, and projects will we meaningfully reduce the number of fatalities and serious injury crashes in Oregon. Recognizing that decision-makers and stakeholders always have to balance competing demands for insufficient resources, the Plan was developed with a safety first perspective to envision and work towards the safest transportation system possible.

Sustainable changes in behavior across the road network can be achieved by creating a social environment that intrinsically supports safe driving behaviors.

Primer for Traffic Safety Culture,
ITE Journal, November 2013

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

- **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.
- **Infrastructure** – Develop and improve infrastructure to eliminate fatalities and serious injuries for users of all modes.
- **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.
- **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.
- **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.



- **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:

- **Emphasis Area: 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.
- **Emphasis Area: 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.
- **Emphasis Area: 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 an incident. Older drivers and pedestrians can also be more vulnerable to severe injuries in the event of a crash because of longer healing periods. For this emphasis area, actions are identified to minimize pedestrian, bicycle, motorcycle, and older road user crashes.
- **Emphasis Area: Improved Systems.** Opportunities to address and improve transportation safety come in a number of forms. Crash and other types of safety data can be advanced to better understand the causes and locations of crashes, leading to targeted solutions. 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. Adequate emergency response is essential for a safe transportation system. 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.

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 nonmotorized fatalities and serious injuries. FHWA requires annual targets be established, monitored, and reported – and there are penalties for not achieving the targets. The safety performance targets for upcoming five years of this plan are:



Table ES.1 TSAP Performance Targets
Five-Year Rolling Averages

Base Period	Fatalities (2011-2015)	Fatality Rate (2011-2015)	Serious Injury (2010-2014)	Serious Injury Rate (2010-2014)	Nonmotorized Fatalities and Serious Injuries (2010-2014)
Baseline	357	1.04	1,491	4.42	234
2013-2017	357	0.94	1,491	4.42	234
2014-2018 ^a	350	0.89	1,461	4.33	229
2015-2019	343	0.83	1,432	4.24	225
2016-2020	328	0.78	1,368	4.06	215
2017-2021	306	0.73	1,274	3.78	200

^a 2014-2018 is the first period that targets must be established for the HSIP Program.

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.



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EXIT 2A

EXIT 2A



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CALL TO ACTION



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 400 people died on Oregon's transportation system in 2015, which averages more than one person every day.

The Oregon Transportation Safety Action Plan (TSAP) aims to eliminate this tragedy. 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 sector, including, but not limited to:

- Transportation planning and engineering organizations;
- Enforcement agencies;
- Emergency medical service providers;
- Education providers;
- Public health agencies;
- Safety advocacy groups;
- Private employers; and
- 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, and 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, and operations and maintenance activities;
- Communicate and implement the TSAP vision, goals, policies, and emphasis areas to agency staff and partners;
- Integrate safety planning, programming and policies into current work responsibilities and authorities;

VISION

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



- Champion the cause of safety by educating the public on the critical role individuals play in preventing transportation fatalities and serious injuries;
- Commit to adopt and institutionalize continuing change in Oregon’s safety culture; and
- Engage in implementing the TSAP and updating the TSAP in the future.

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



2 INTRODUCTION



2. INTRODUCTION

A Strategic Highway Safety Plan (SHSP) is a statewide 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. 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 and 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 at their destination safely. Traffic crashes are one of the leading causes of preventable deaths and injuries in Oregon. While significant progress has been made in the last decade, preliminary data suggest that 450 people were killed in motor vehicle crashes in 2015, the highest annual total since 2007. In 2014, there were 357 traffic fatalities and another 1,496 people suffered life-altering injuries.

There is a need and intention to eliminate these fatalities for all modes in Oregon. Traffic crashes are a significant problem for Oregon's residents. 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. To take advantage of this opportunity, a change in culture is needed within government agencies, other public entities, private-sector businesses and the traveling public.

The development of the TSAP is an important step toward continuously changing the traffic safety culture in Oregon. It comes at a pivotal time as it is imperative to counteract the recent fatality increase. To make significant progress, a high degree of 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.

BRIEF HISTORY OF TSAPs IN OREGON

Oregon's first Transportation Safety Action Plan 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. In less than 10 years, a substantial portion of the original plan had been accomplished, or was in progress. In recognition of this, the 2004 update of the TSAP was developed by the Oregon Transportation Safety Committee and adopted by the Oregon Transportation Commission. The 2004 plan was created through a series of public input sessions and hearings to establish



priorities and included Federal best practices. This plan was amended in 2006 for consistency with new Federal legislation adopted at that time.

In 2011, a third plan was developed and adopted. The 2011 plan identified new partnerships, better practices, and more aggressive methods.

The 2016 TSAP recognizes that Oregon's population is growing, aging, and changing, and that transportation needs are changing with them. For example, in 1995 cell phones were an expensive tool and antilock brakes and airbags were barely a part of the driving picture. Today, automobile safety technology features are standard and cell phones are common. Further, connected and autonomous vehicles are on the horizon. As transportation systems become more complex and integrated, the need to develop and expand strong partnerships among state and local agencies, community groups, businesses, and the media to achieve the envisioned safe transportation system grows. Only with a shared commitment can the actions in this new plan be fully and effectively implemented.

The 2016 TSAP was adopted by the OTC at the recommendation of the Oregon Transportation Safety Committee on October 14, 2016 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 TSAP update process began in May 2014 with fact finding and scoping. In October 2014 a Policy Advisory Committee (PAC) was convened with representation from ODOT, Oregon Health Authority, Oregon State Police, Metropolitan Planning Organizations, Emergency Medical Services, tribal government, city and county planning and engineering departments, the Judiciary, the freight industry, and advocacy groups to provide direction for the project. The PAC met 12 times throughout the course of the project. The PAC identified strengths, weaknesses, opportunities, and threats; shaped the plan vision, goals, policies, and strategies; selected emphasis areas for the plan after reviewing crash data trends and other factors; reviewed and synthesized public input to develop near-term actions; and guided the development of the Plan itself.

Along with the PAC, a Project Coordination Team (PCT) was established to ensure other ODOT plans and programs were considered in the TSAP update process. The PCT reviewed all major aspects of the Plan, with a particular focus on identifying content needed to ensure the Plan could be implemented once adopted. The PCT met four times throughout the course of the update.

TSAP UPDATE – OUTREACH APPROACH

- Twenty-two ODOT staff interviews soliciting feedback on the 2011 TSAP.
- Eleven community conversations across Oregon before the Plan started to learn about safety goals and concerns.
- One online survey before the Plan started to learn about public perceptions of safety issues.
- Five listening meetings across Oregon to collect feedback on Emphasis Areas and actions for the TSAP.
- Online survey to collect feedback about Emphasis Areas and actions for the TSAP.

There also was extensive outreach to public and private stakeholders. In addition to the public input, there were several key activities that contributed to the development of the Plan. These include:

- A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis synthesized and built on the public input that occurred early in the project. Additional interviews were conducted with key safety stakeholders from ODOT, an MPO (Lane Council of Governments), and a County government (Clackamas County) to identify important considerations and themes for the development of the TSAP. The SWOT analysis also identified gaps in the 2011 TSAP in respect to Moving Ahead for Progress in the 21st Century (MAP-21) requirements,¹ and to subsequent changes put in place by the Fixing America's Surface Transportation (FAST) Act,² to ensure that the updated plan meets Federal regulations.
- Crash data from 2009 through 2013 were reviewed to identify trends and problematic crash types and behaviors. The analysis helped the PAC and PCT understand the “*who, why, where, and what*” of crashes, fatalities, and serious injuries in Oregon.
- The PAC developed a Vision for the TSAP along with supporting Goals, Policies, and Strategies. The Goals, Policies, and Strategies define Oregon's long-term approach to eliminating fatalities and serious injuries on its transportation system. The PCT provided feedback to the PAC throughout this process.

¹ MAP-21 Final Safety Performance Rules, <https://www.fhwa.dot.gov/tpm/rule.cfm>.

² FAST Act Federal Legislation, <https://www.fhwa.dot.gov/fastact/>.





- The PAC reviewed a variety of factors to select emphasis areas and identify actions for the plan. The emphasis area selection process was based on a review of fatal and serious injury crash frequency and severity trends, implementation considerations, and policy significance. The PCT also was actively engaged in reviewing and discussing these items.
- Performance Measures were developed to assist ODOT in tracking progress implementing the TSAP. The performance measures are consistent with MAP-21 requirements.

More detail on the TSAP update process is included in Appendix B.

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** 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 meets monthly 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** 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 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.

Highway Division

The Highway Division's **Traffic Roadway Section** addresses the Federal safety requirements, including the state Safety Management System (SMS). As defined by the Federal Highway Administration (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 addresses safety needs on all public roads in Oregon. **Traffic Roadway** also establishes guidelines for speed zones and traffic control devices on state and local roads.

Operations and Maintenance Districts respond to weather and other incidents that can cause dangerous conditions, including landslides/rockfall, down trees, drainage problems and others. 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 FHWA to coordinate training and support cooperation among the many emergency services providers involved in crash response and maintaining operations while managing crash scenes.

Driver and Motor Vehicles 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.

Motor Carrier Transportation Division (MCTD)

MCTD develops and implements a Commercial Vehicle Safety Plan, a Summary of Oregon Truck Safety and Guide, and a biennial Safety Action Plan to Reduce Truck-at-Fault Crashes.

Motor Carrier 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.

Transportation Development Division (TDD)

TDD includes the crash data collection and analysis and long-range planning functions for ODOT.

Data through the **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 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.

Freight and Active Transportation Sections are stakeholders in the TSAP as it supports safety initiatives relevant to each of the modes.

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

Rail and Public Transit Division

Rail and Public Transit Division is a stakeholder in the TSAP as it supports safety initiatives relevant to each of the **modes**. The Rail Crossing Safety Section performs a variety of duties related to the safety and regulation of railroad crossings in Oregon.

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. Their first two Key Performance Measures:

Transportation Safety – Enhance transportation safety by reducing fatalities on state and interstate highways, where the Oregon State Police have primary responsibility; and

Traffic Incident Management – Percent of lane-blocking crashes cleared within 90 minutes.

OSP 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)

Local Liquor 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.



Cities and Counties

Cities and counties can take a number of approaches to increasing transportation safety. The League of Oregon Cities and Association of Oregon Counties participated in the TSAP update and are partners in supporting local safety initiatives. By adopting a Safe Communities Program a community can take a big picture approach to injury prevention. Oregon Safe Communities are collaborations of the National Highway Traffic Safety Administration (NHTSA), the Oregon Department of Transportation, 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.

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.

How the TSAP Links to Other Plans

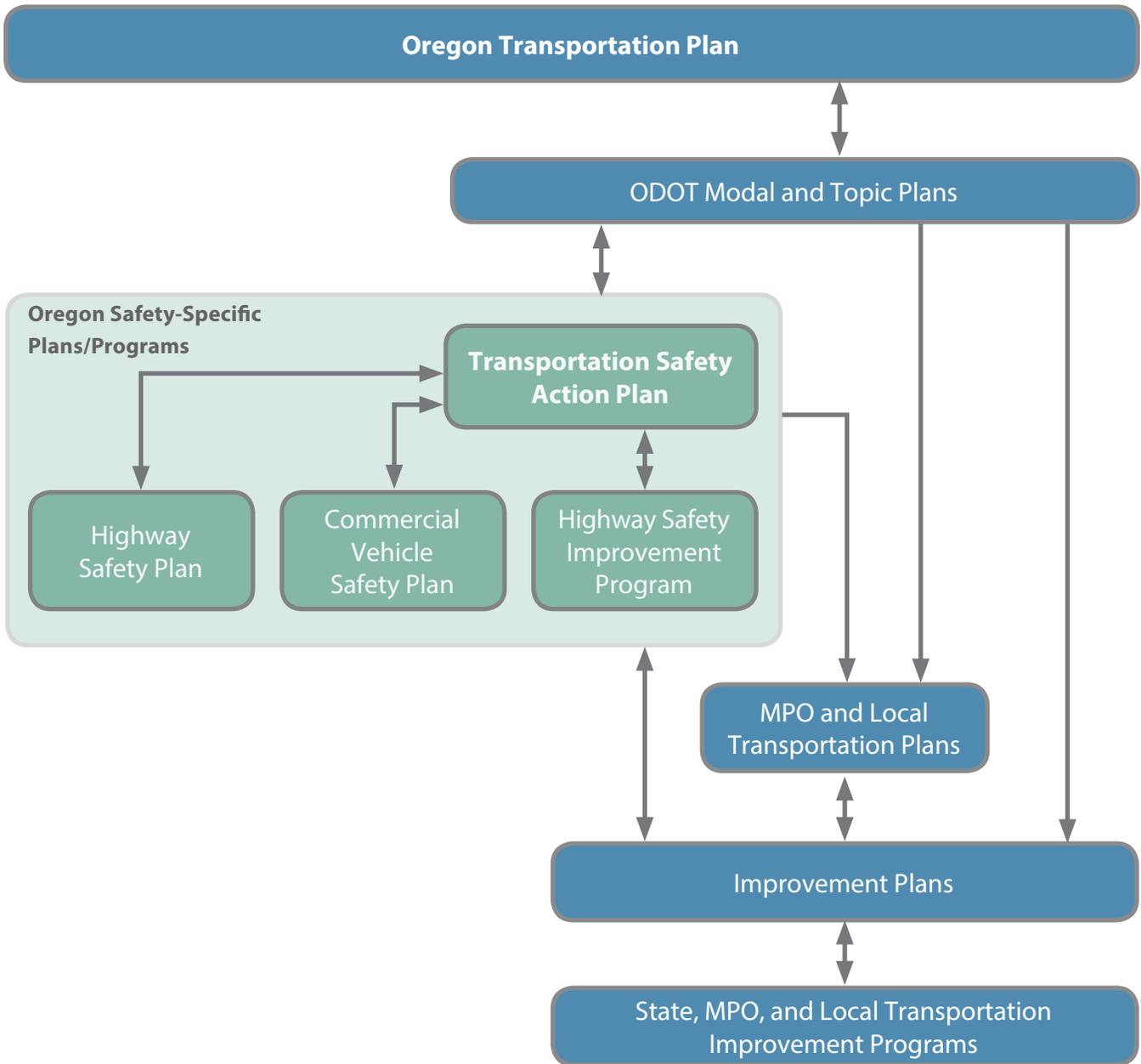
The TSAP serves as the unifying framework for transportation safety planning in Oregon. Various other plans, policies, and processes in the state have safety components that may be addressed through other programs and resources. The TSAP looks at transportation safety for all modes and focuses on a data- 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 2.1 illustrates the 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. 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 to effectively link to TSD and other resources for safety planning and improvements.



Figure 2.1 Relationship of TSAP to Other State and MPO Plans



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 insure 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 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 the Oregon Department of Transportation (ODOT). The OTP is the umbrella document, which may be further detailed in the mode and topic plans. 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 (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, 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

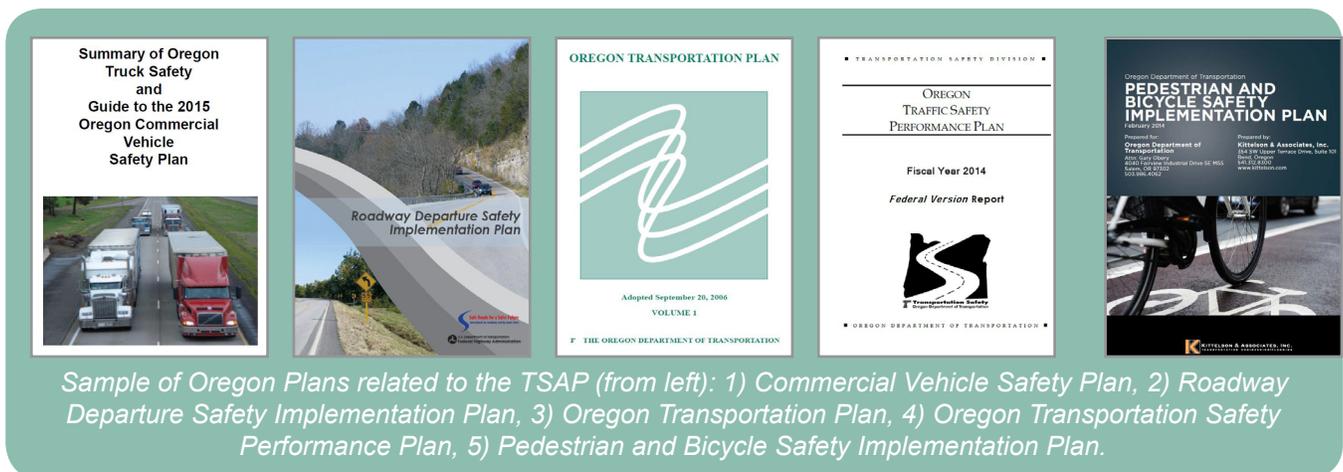
Oregon’s first TSAP was developed in 1995, prior to any Federal mandate to do so. It was not until 10 years later, in 2005, that the Federal government passed the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), which required all states to develop a Strategic Highway Safety Plan (SHSP). Whereas the TSAP was an element of the Oregon Transportation Plan (OTP) with a 20-year planning horizon, SHSPs were considered to establish safety priorities for the next five years. After the TSAP was updated in 2004, it was subsequently amended in 2006 to better align with the SHSP requirements established in SAFETEA-LU. The TSAP is designed to serve as both the shorter term SHSP and the longer term OTP safety element.

More recent Federal legislation – the 2012 Moving Ahead for Progress in the 21st Century (MAP-21) and the 2015 Fixing America's Surface Transportation (FAST) Act – continued the requirement for states to have a 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;
- Metropolitan Planning Organizations;
- Representatives of major modes of transportation;
- State and local traffic enforcement officials;
- Highway-rail grade-crossing safety representative;
- Motor carrier safety program;
- Motor vehicle administration agencies;
- County transportation officials;
- State representative of nonmotorized users; and
- Federal, state, tribal, and local safety stakeholders.

MAP-21 established a new 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 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." This plan recognizes this requirement and establishes a baseline for monitoring high-risk rural roads.

MAP-21 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 increased 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 older drivers and pedestrians.





Meeting Federal TSAP Requirements

The TSAP fulfills Oregon's requirement to have an updated SHSP. A checklist detailing how Oregon has met MAP-21 requirements is provided in Appendix B, and a few key highlights are listed here:

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.

- **Consultation.** The TSAP update process included extensive stakeholder and public involvement. Consultation with the required groups occurred throughout the process. The PAC was provided with several opportunities to review the document and to offer suggestions. Additionally, the draft final plan was distributed for public comment in June and July 2016.
- **Data.** A thorough analysis of crash data was conducted to identify trends and areas of concern, and to support selection of emphasis areas for 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 the target-setting process.
- **Multidisciplinary Approach.** The PAC was established to oversee all aspects of the update. The PAC included representatives from the 4 Es (engineering, emergency response, law enforcement, and education), various transportation modes (bicycles, pedestrians, trucking), and from public and private organizations. Technical staff from ODOT also were included in the development of the plan. ODOT staff from many disciplines on the PCT, including pedestrian and bicycle experts, motor carriers, freight, traffic operations, traffic engineering, construction, and maintenance.
- **Coordination.** A thorough review of existing plans was conducted to inform the development of the TSAP.
- **Evaluation.** The TSAP includes a chapter on evaluating progress, including, but not limited to, monitoring the MAP-21 required performance measures.
- **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 does not apply to Oregon. The five-year average fatality rate on rural roads has decreased each year since 2007.
- **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. The five-year average number of older driver and pedestrian fatalities and serious injuries per 1,000 residents 65 years of age or older increased from 0.34 in 2012 to 0.35 in 2013 and 0.36 in 2014. 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.



ROAD
WORK
AHEAD
STOP
AHEAD



3

TRANSPORTATION SAFETY TRENDS



3. 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 2009-2013 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.

While the results of this crash analysis are important indicators of transportation safety opportunities, it is important to recognize data limitations. Specific challenges in Oregon include:

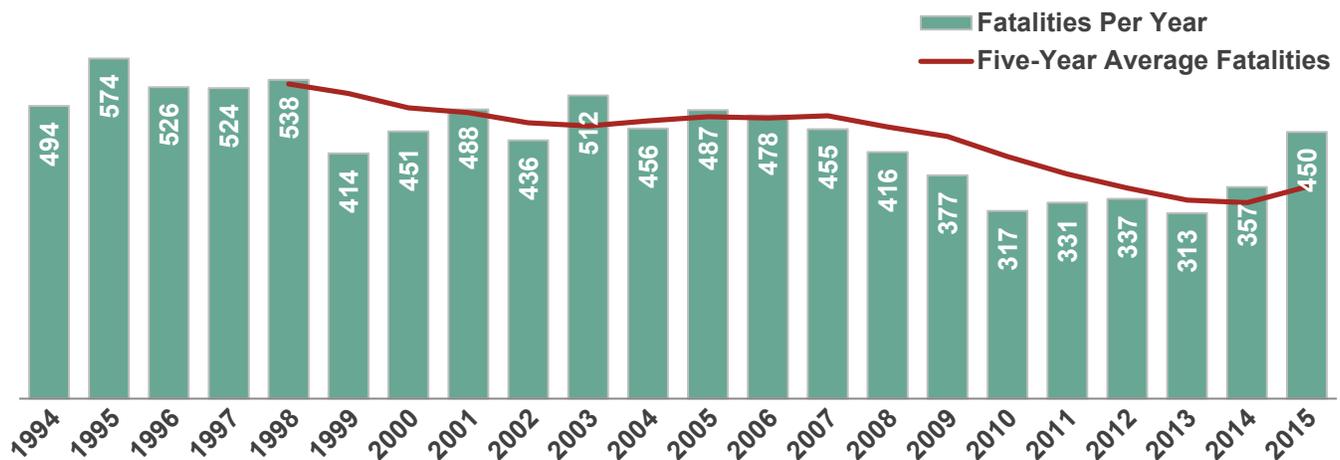
- Oregon is a self-reporting state, which means that only those crashes where law enforcement conducts an investigation are required to receive a law enforcement officer-completed crash report. Therefore, there are a relatively small number of Property Damage Only (PDO) crashes in the Oregon state crash database. The problem of underreported crashes can skew the results of crash data analysis.
- In 2011, the State of Oregon made a change to reporting in the Crash Analysis and Reporting (CAR) system that affected the overall crash database, resulting in a higher number of reported crashes. The higher numbers result from a change to an internal departmental process that added previously unavailable, nonfatal crash reports to the annual data file. The result of this change is a false perception that the number of Property Damage Only and Injury crashes increased by 15 percent in Oregon, when in fact that did not occur.

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

CRASH HISTORY AND TRENDS

Figure 3.1 shows the number of transportation fatalities in Oregon from 1994 through 2015. In 1994 approximately 500 people died on Oregon’s transportation system. Fatalities peaked in 1995 at 574 and were the lowest in 2013 at 313 people. There was an overall downward trend in fatalities through 2013; however there has been a recent increasing trend that needs to be a focus of this plan. To account for fluctuations in crashes, the chart also shows the rolling five-year average number of crashes from 1998 through 2015. Between 1994 and 1998, on average there were 531 fatalities per year on the transportation system, and between 2011 and 2015 there were on average 358 fatalities per year.

Figure 3.1 Oregon Transportation Fatalities
1994 to 2015





Recent fatalities and serious injuries were studied in this plan using crash data from 2009 through 2013, which was the most recent data at the time the project analyses were conducted. In addition, 2014 or 2015 data were used in a few cases, as this data became available during the course of the Plan’s development. Statewide 2014 and 2015 fatality data and VMT estimates were used to develop fatality performance measures, and 2014 data was used to develop the serious injury and nonmotorized fatalities and serious injuries performance measures. See Chapter 7 for more information regarding the development of performance measures.

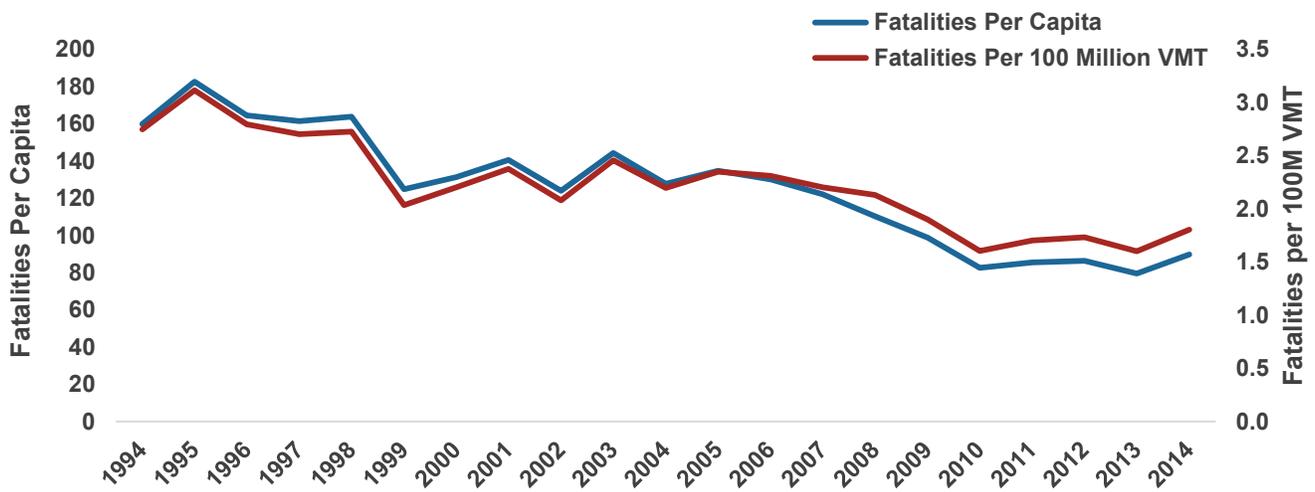
In the five-year period from 2009 to 2013, 1,675 people were killed and 7,191 were seriously injured in Oregon in more than 230,000 reported roadway crashes.³ Transportation fatalities and serious injuries occur in every region of Oregon, for all system users, and on all types of streets and highways.

The number of transportation fatalities normalized against population and 100 Million VMT shows similar trends. While fatality rates have decreased since the mid-1990s, in recent years the number of fatalities per capita and fatalities per 100 Million VMT has remained relatively constant (Figure 3.2).

FROM 2009 TO 2013

- 1,675 people were killed traveling in Oregon.
- 7,191 people were seriously injured while traveling in Oregon.
- More than 230,000 crashes occurred.

Figure 3.2 Oregon Historic Transportation Fatalities per Capita and per 100 Million Vehicle Miles Traveled



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 attributes⁴ of past crashes are not perfect predictors of the future, they provide important clues to help engineers and other professionals identify safety needs, select targeted treatments, and evaluate the effectiveness of strategies. Answering the question, “what does the crash data tell us?” is an important first step toward developing and implementing an effective TSAP.

³ Crash injury severity is determined by the “KABCO” scale, where K=Killed; A=Serious Injury; B=Minor Injury; C=Possible Injury; and O=Property Damage Only.

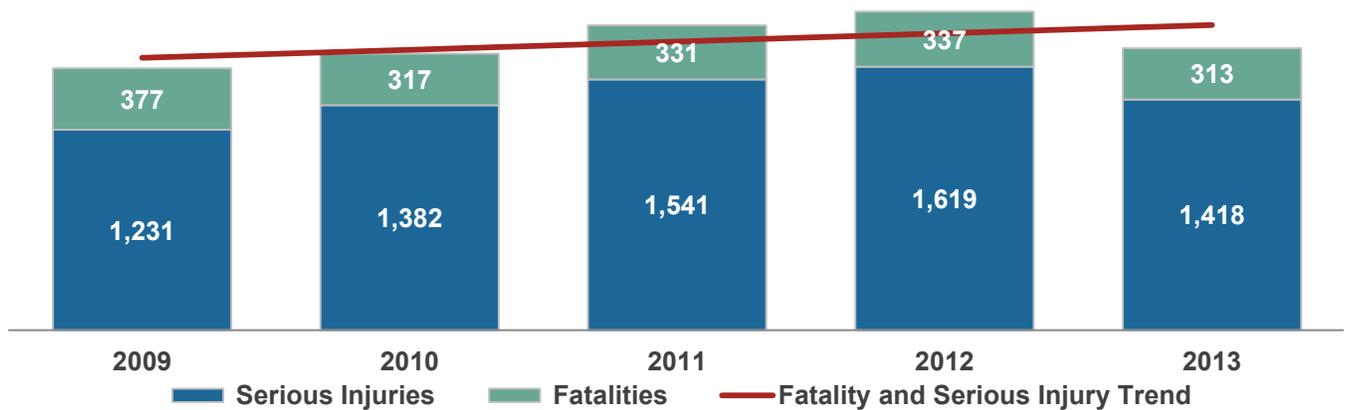
⁴ “Attributes” as used in this Plan means characteristics of a crash that may be useful for analysis. In some cases they may contribute to a crash occurring or its severity, but that is not required for them to be considered.



STATEWIDE CRASH HISTORY AND TRENDS

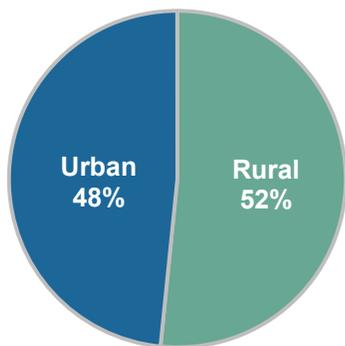
Figure 3.3 illustrates the recent trend of traffic fatalities and serious injuries in Oregon.⁵ In the most recent year of the study period, 2013, there were 313 people killed and 1,418 seriously injured. Serious injuries are considered “life-altering” for the victim, their loved ones, or both; examples 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.

Figure 3.3 Fatalities and Serious Injuries
2009 to 2013



Roadway crashes and resulting outcomes are not limited to either urban or rural areas of Oregon. As illustrated in Figure 3.4, fatalities and serious injuries have a nearly equal distribution by location.

Figure 3.4 Proportion of Fatalities and Serious Injuries by Urban and Rural Area
2009 to 2013



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.

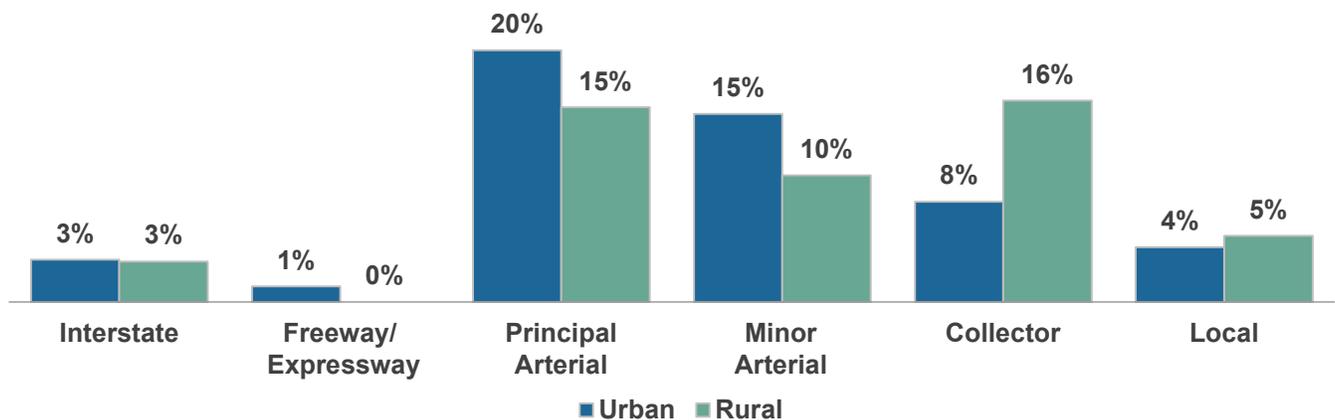
⁵ In 2011 the State of Oregon made a change to reporting in the Crash Analysis & Reporting (CAR) system that resulted in a higher number of crashes reported for the 2011 data file compared to previous years, resulting from the addition of previously unavailable, non-fatal crash reports. The result of this change is a false perception that the number of non-fatal crashes increased by 15 percent from 2010 to 2011.



- **Freeway/Expressway.** 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.
- **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 road 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.⁶

As shown in Figure 3.5, the distribution of fatal and serious injury crashes by roadway functional classification is not equal. Crashes with serious outcomes are most common on Principal Arterials and Minor Arterials, as well as Rural Collector roads.

Figure 3.5 Proportion of Fatal and Serious Injury Crashes by Roadway Functional Classification 2009 to 2013



Note 2015 Oregon urban and rural roadway lane miles by functional classification is provided in Appendix D.

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 3.1 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 3.1.

⁶ 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.



Table 3.1 Fatal and Serious Injury Crashes by Attribute
2009 to 2013

Attribute	Fatal and Serious Injury Crashes						Percent Total
	2009	2010	2011	2012	2013	Total	
Roadway or Lane Departure Crashes ^a	747	793	882	879	802	4,103	53.5%
Aggressive Driving Involved ^b	501	548	603	567	548	2,767	36.1%
Intersection Crashes	419	499	575	581	559	2,633	34.4%
Speed-Related Crashes ^c	379	421	453	415	399	2,067	27.0%
Alcohol and/or Other Drugs Involved	288	280	362	403	362	1,695	22.1%
Alcohol Involved (No Drugs)	246	239	316	344	300	1,445	18.9%
Young Drivers - 21-25 Involved	192	250	269	280	257	1,248	16.3%
Young Drivers - 15-20 Involved	209	234	244	235	196	1,118	14.6%
Unrestrained Occupants	203	170	231	225	200	1,029	13.4%
Older Drivers - 65-75 Involved	158	192	199	221	211	981	12.8%
Pedestrian(s) Injured or Killed	128	155	164	174	149	770	10.0%
Unlicensed Drivers Involved	89	85	136	156	137	603	7.9%
Older Drivers - 76 or Older Involved	113	95	128	131	100	567	7.4%
Inattentive Drivers Involved	55	71	79	80	65	350	4.6%
Bicyclists(s) Injured or Killed	66	44	80	79	65	334	4.4%
Commercial Motor Vehicle Involved	49	73	82	53	65	322	4.2%
Work Zone Involved	34	24	25	22	14	119	1.6%
School Bus or School Zone Involved	4	16	6	8	10	44	0.6%

^a The Roadway or Lane Departure definition excludes intersections, pedestrian-related, and bicycle-related crashes.

^b Aggressive Driving Involved consists of Too Fast for Conditions, Following Too Closely, and/or Driving in Excess of Posted Speed (note that duplicate crashes are not counted more than once).

^c Speed-related Crashes consists of Too Fast for Conditions and/or Driving in Excess of Posted Speed (note that duplicate crashes are not counted more than once).

The attributes listed in Table 3.1 are not mutually exclusive, so they cannot be summed to calculate a total number. For example, in many cases roadway or lane departure crashes also are speed related, so those two attributes can be correlated to a single crash, but they will show up twice in the table. The data analysis for this plan was conducted using 2009-2013. As the project was nearing completions, the 2014 data became available. Appendix E contains the 2014 data summarized according to Table 3.1.

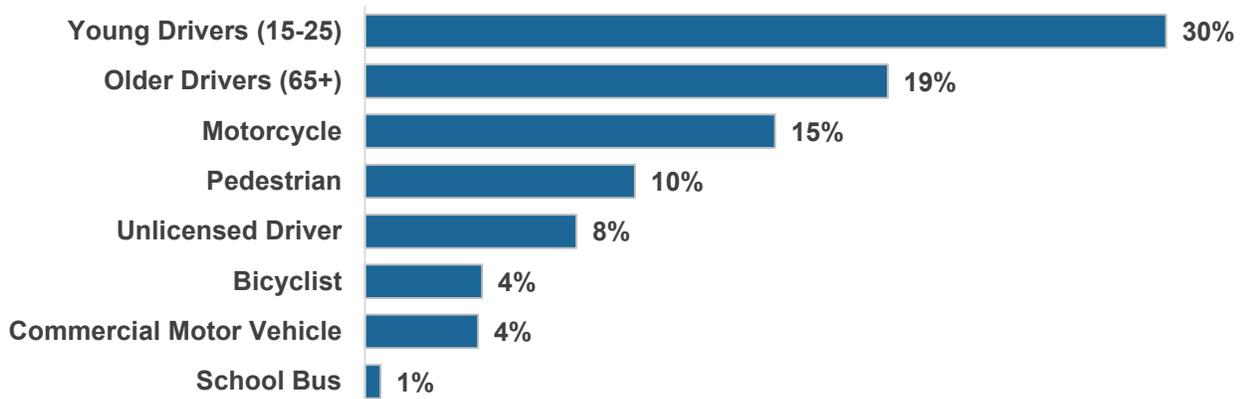
Road Users

Road users are illustrated in Figure 3.6, and they range from typical motor vehicle drivers to nonmotorized road users and those operating special vehicles (e.g., school buses, commercial motor vehicles). Young drivers (age 15-25) are involved in



the highest proportion of fatal and serious injury crashes, followed by older drivers (age 65+) and motorcyclists.⁷ 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 26 to 64).

Figure 3.6 Proportion of Fatal and Serious Injury Crashes by Involved Road User
2009 to 2013

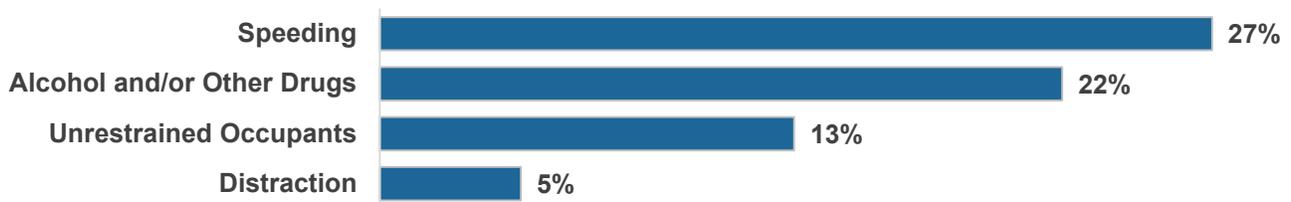


Note: Young drivers age 15 to 20 account for 15 percent of fatal and serious injury crashes, while those 21 to 25 account for 16 percent.

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.⁸ 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 3.7, speeding is the most common behavioral issue associated with fatal and serious injury crashes in Oregon, followed by alcohol-involved drivers. Note that although distraction shows up as a lower percentage in this figure, the actual occurrence of this attribute could be higher. It can be difficult for law enforcement officers to accurately identify inattention, as it often must be self-reported.

Figure 3.7 Proportion of Fatal and Serious Injury Crashes by Behavioral Issue
2009 to 2013



⁷ Note that some road user attributes are not mutually exclusive. For example, some motorcycle riders are also young drivers.

⁸ 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 spots experiencing crashes and to roadway elements that may contribute to increased risk for 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 3.8 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. Approximately one out of three fatal and serious injury crashes from 2009 to 2013 occurred at an intersection.

Figure 3.8 Proportion of Fatal and Serious Injury Crashes by Location Type 2009 to 2013



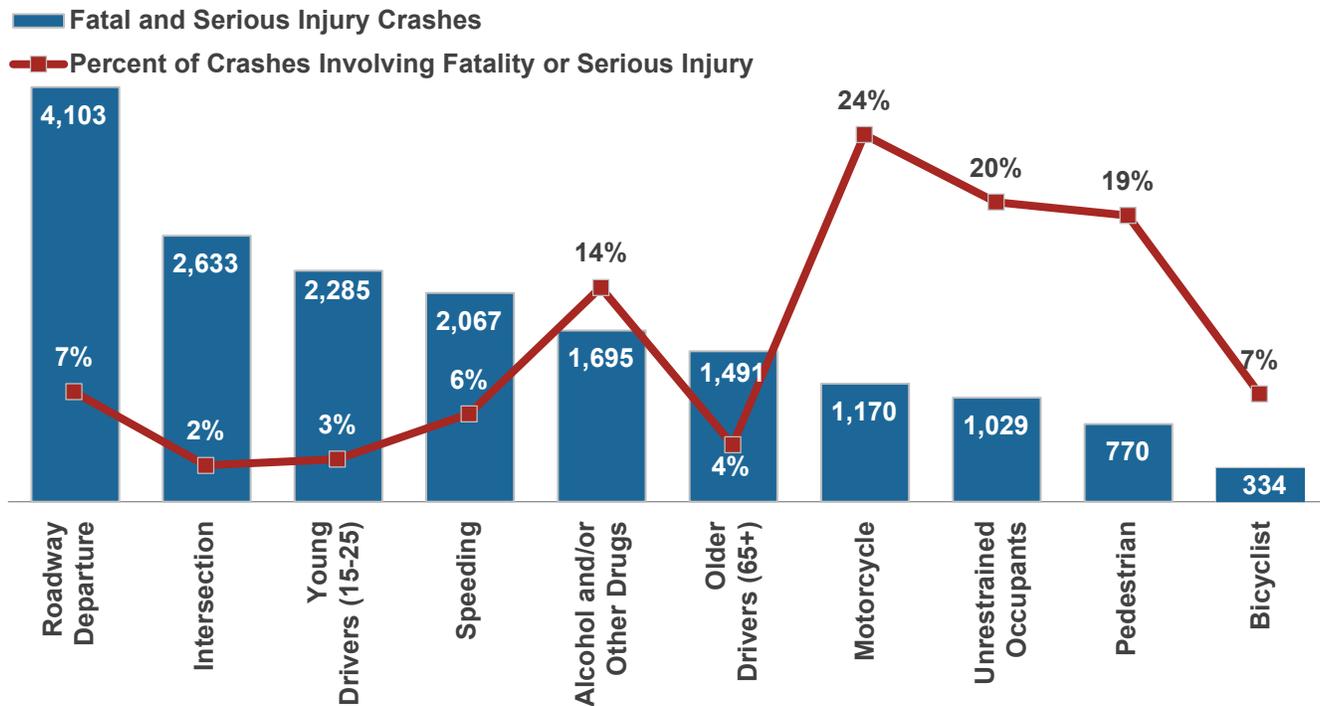
Most Common Statewide Crash Attributes

The crash attributes also were considered on a statewide basis. Figure 3.9 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 1,170 fatal and serious injury crashes during the study period, while 24 percent of all reported motorcycle-involved crashes included at least one fatality or serious injury.





Figure 3.9 Fatal and Serious Injury Crashes by Most Common Attributes
2009 to 2013



Note: Young drivers age 15 to 20 account for 1,118 fatal and serious injury crashes, while those 21 to 25 account for 1,248.

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.

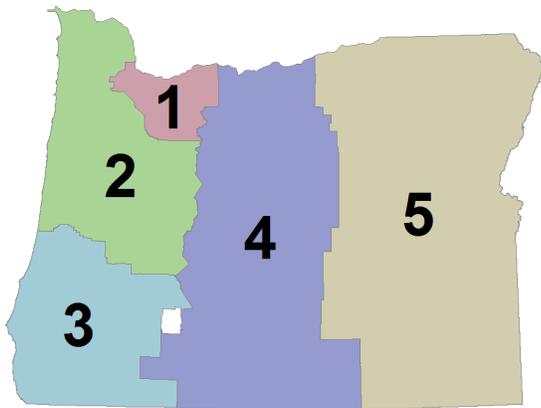
REGIONAL CRASH ATTRIBUTES

ODOT divides the state into five regions (Figure 3.10):

- **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).



Figure 3.10 Oregon DOT Regions

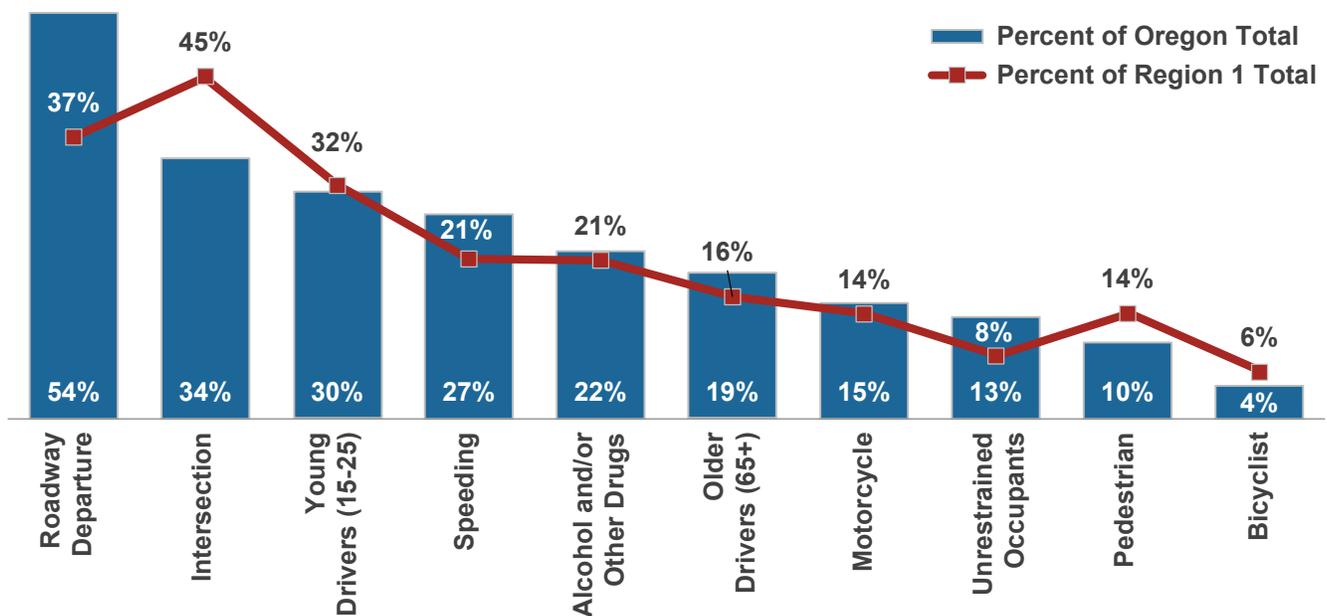


Source: Oregon DOT, <http://www.oregon.gov/ODOT/PublishingImages/regions.gif>.

Each of ODOT’s five regions has a slightly different distribution of its most common crash attributes as compared to the statewide numbers. Figure 3.11 through Figure 3.15 show each region’s fatal and serious injury crash attributes compared to Oregon overall.

Region 1 (Figure 3.11) does not match the statewide distribution of serious crash attributes. Major differences include additional fatal and serious injury crashes at intersections and a higher proportion involving pedestrians and bicyclists. Region 1 also experienced fewer fatalities and serious injuries related to roadway or lane departure, speed, older drivers, and unrestrained occupants than the statewide average.

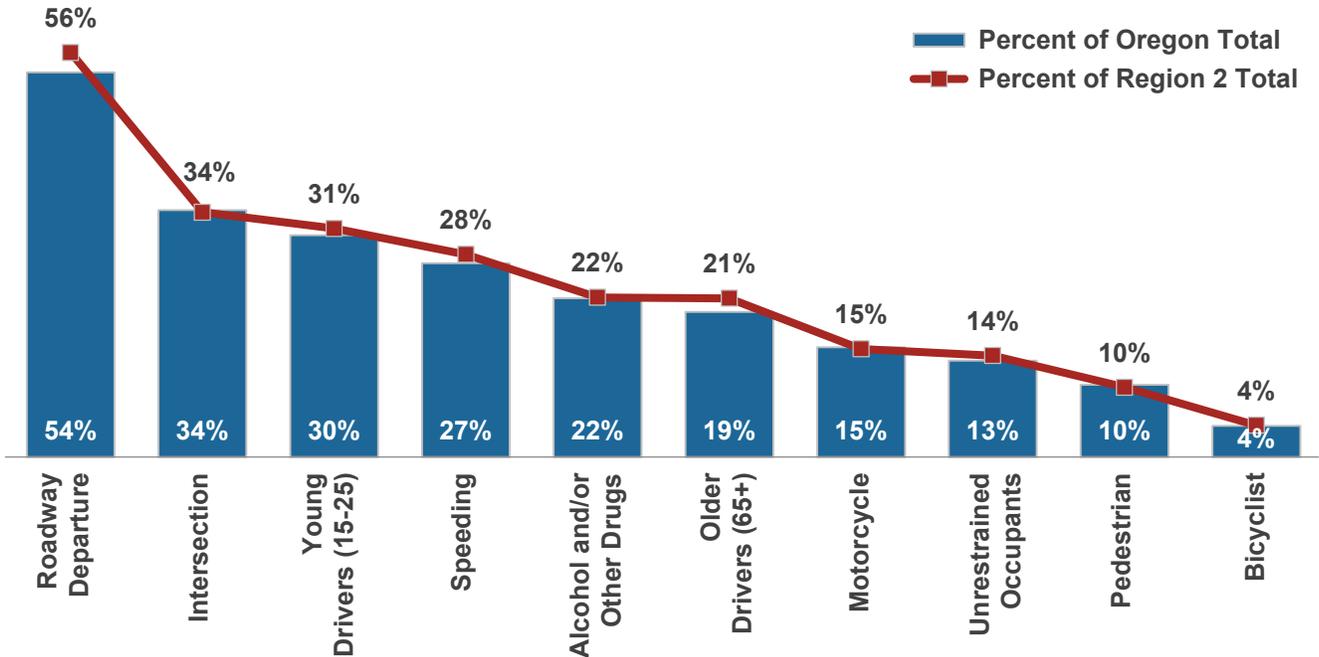
Figure 3.11 Region 1 Fatal and Serious Injury Crashes by Attribute
Compared to Statewide, 2009 to 2013



Region 2 (Figure 3.12) is a near-perfect 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.

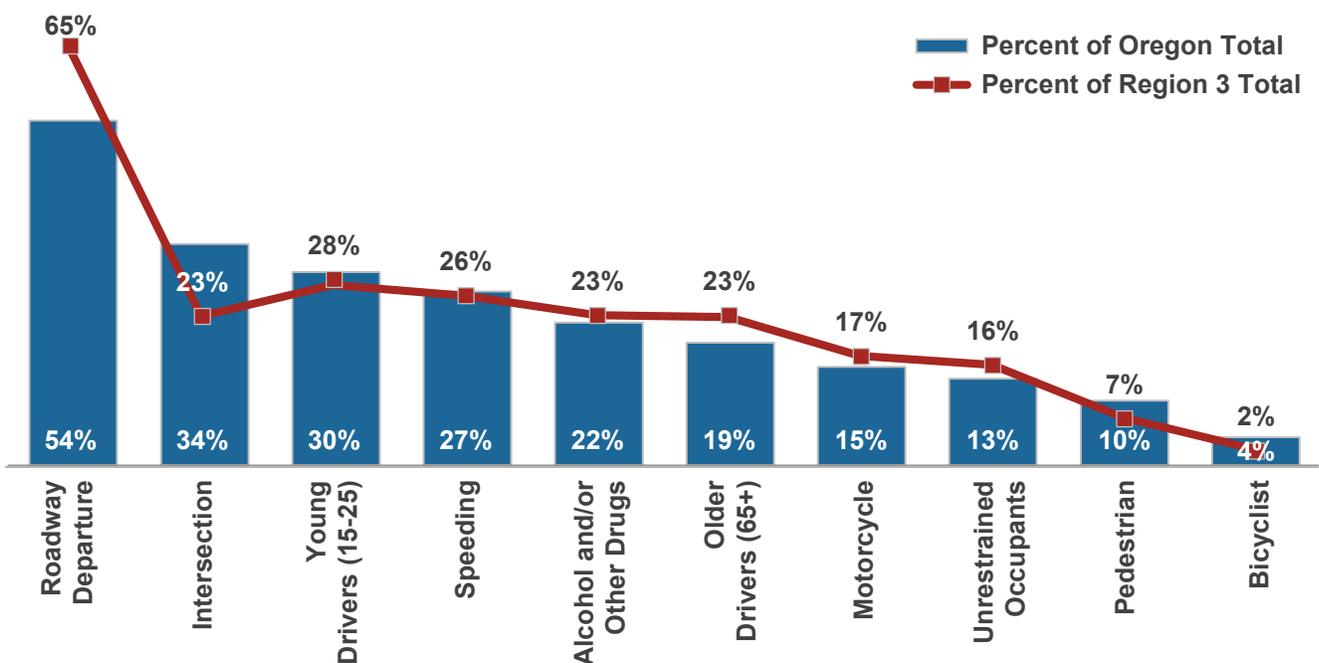


Figure 3.12 Region 2 Fatal and Serious Injury Crashes by Attribute
Compared to Statewide, 2009 to 2013



Region 3 (Figure 3.13) 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.

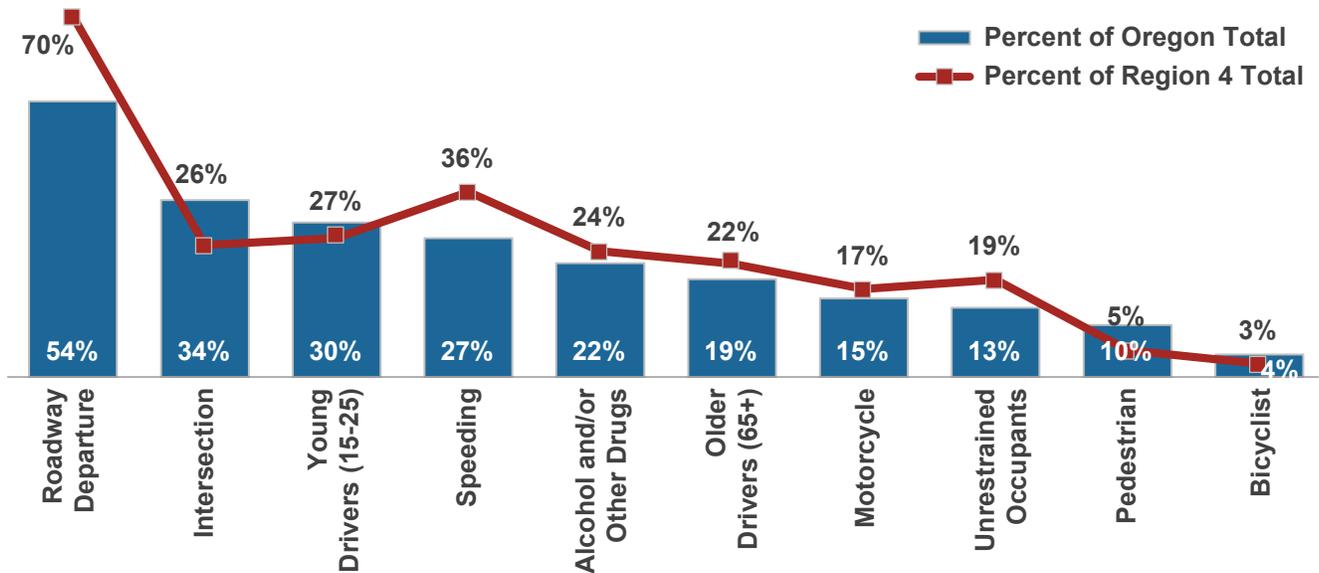
Figure 3.13 Region 3 Fatal and Serious Injury Crashes by Attribute
Compared to Statewide, 2009 to 2013





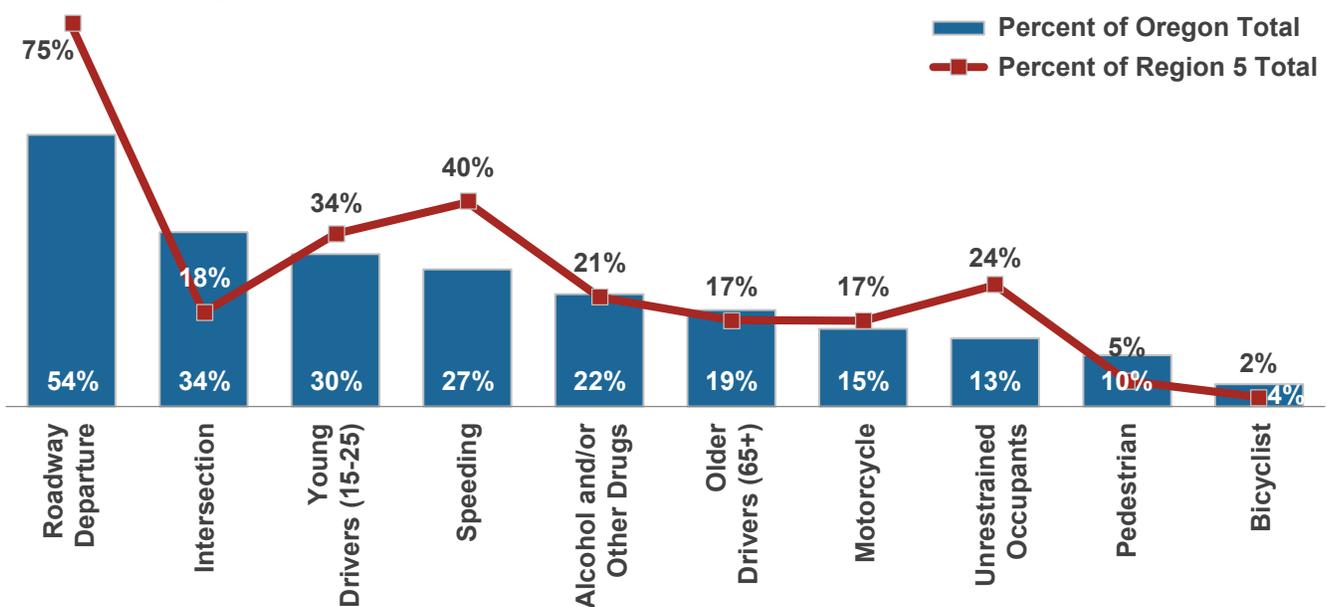
Region 4 (Figure 3.14) has a higher frequency of roadway or lane departure and speed-related fatal and serious injury crashes compared to the statewide average, partially because of its high number of rural road miles. It also has a higher proportion of unrestrained occupants than the state overall.

Figure 3.14 Region 4 Fatal and Serious Injury Crashes by Attribute
Compared to Statewide, 2009 to 2013



Region 5 (Figure 3.15) 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.

Figure 3.15 Region 5 Fatal and Serious Injury Crashes by Attribute
Compared to Statewide, 2009 to 2013





CONCLUSION

From a broad perspective, the 2009-2013 Oregon crash trend analysis shows:

- The number of fatalities and serious injuries are approximately equally distributed in urban (48 percent) and rural areas (52 percent).
- Crashes with fatal or serious injury outcomes are most common on Principal Arterials and Minor Arterials, as well as Rural Collector roads.
- Statewide, from 2009-2013:
 - » Roadway or lane departure crashes (54 percent of crashes) were the most common;
 - » Young drivers (15-25) were most frequently (31 percent of crashes) involved; and
 - » Speeding (27 percent of crashes) was the most common behavioral factor.
- While motorcycle crashes are not the most frequent, of all the motorcycle crashes that do occur 24 percent result in a fatality or serious injury. This is the highest severity proportion.
- There are different types, severities and attributes for crashes in the different ODOT Regions of the state:
 - » **Region 1: Portland Metro** (Clackamas, Hood River, Multnomah and Washington Counties) has more intersection crashes, a higher proportion of fatal and serious injury crashes involving pedestrians and bicyclists, and fewer fatalities and serious injuries related to roadway or lane departure, speed, older drivers, and unrestrained occupants than the statewide average.
 - » **Region 2: Willamette Valley, North, and Mid-Coast** (Clatsop, Columbia, Tillamook, Yamhill, Polk, Marion, Lincoln, Linn, Benton, and Lane Counties) essentially matches the statewide average distribution of crashes, due to the urban and rural nature of the region. The most frequent crash type is roadway departure crashes and crashes involving young drivers.
 - » **Region 3: Southwest Oregon and South Coast** (Douglas, Curry, Coos, Josephine, and Jackson Counties) experiences more roadway or lane departure and speed-related fatal and serious injury crashes compared to the statewide average, and a lower proportion of intersection-related fatal and serious injury crashes than the rest of the state.
 - » **Region 4: Central Oregon** (Wasco, Sherman, Gilliam, Jefferson, Wheeler, Crook, Deschutes, Lake, and Klamath Counties) also has a higher frequency of roadway or lane departure and speed-related fatal and serious injury crashes, and a higher proportion of unrestrained occupants than the state overall.
 - » **Region 5: Eastern Oregon** (Morrow, Umatilla, Union, Wallowa, Baker, Grant, Harney and Malheur Counties), also has a higher frequency of roadway or lane departure and speed-related fatal and serious injury crashes and a lower proportion of intersection-related and pedestrian-involved fatal and serious injury crashes, and a higher proportion of unrestrained occupants than the rest 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



4. SAFETY CHALLENGES AND OPPORTUNITIES

An important aspect of making a case for strategic investments in the transportation system is understanding the costs of not making those investments. 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 400 in Oregon in 2015.

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

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 2013, more than 1,400 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). Life-altering injuries can further lead to depression and other health problems which again impact not only the victim, but friends, families, and coworkers as well.

Crashes and resulting injuries have historically been considered by many as an inevitable consequence of mobility. However, currently this 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, texting while driving or walking and biking, wearing dark clothing at night, and not using reflectors or lights, fatalities and injuries will continue to occur on our transportation network. Furthermore, unless we design our roads for the speeds that are appropriate within the land use and geographic contexts and the types of users expected, 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.

Consistent with the 2011 Transportation Safety Action Plan (TSAP), crash costs developed by the National Safety Council (NSC) are used in this chapter to estimate the statewide economic cost of crashes.

Understanding the economic cost of crashes will help Oregon’s policy-makers and the public compare the scale of the traffic safety problem to other societal concerns.

The NSC defines the economic cost of crashes as “a measure of the dollars spent and income not received due to accidents, injuries, and fatalities.” This includes costs associated with lost wages and productivity, travel delay, medical expenses and emergency response, administrative costs, damage to motor vehicles and property, and additional costs borne by employers as a result of fatalities or injuries. Table 4.1 shows NSC economic crash costs.

Comprehensive crash costs attempt to account for lost quality of life in addition to the economic costs described in this chapter.

The total comprehensive crash cost for Oregon over the 2009-2013 timeframe was \$15.6 billion – approximately \$785 per year for each Oregon resident, compared to roughly \$300 per year in economic costs.

Table 4.1 National Safety Council Economic Crash Costs
U.S. Average

Injury Severity	Cost (2013 Dollars)
K – Killed	\$1,500,000 per Person
A – Disabling Injury	\$74,900 per Person
B – Evident Injury	\$24,000 per Person
C – Possible Injury	\$13,600 per Person
O – No Injury	\$2,600 per Crash

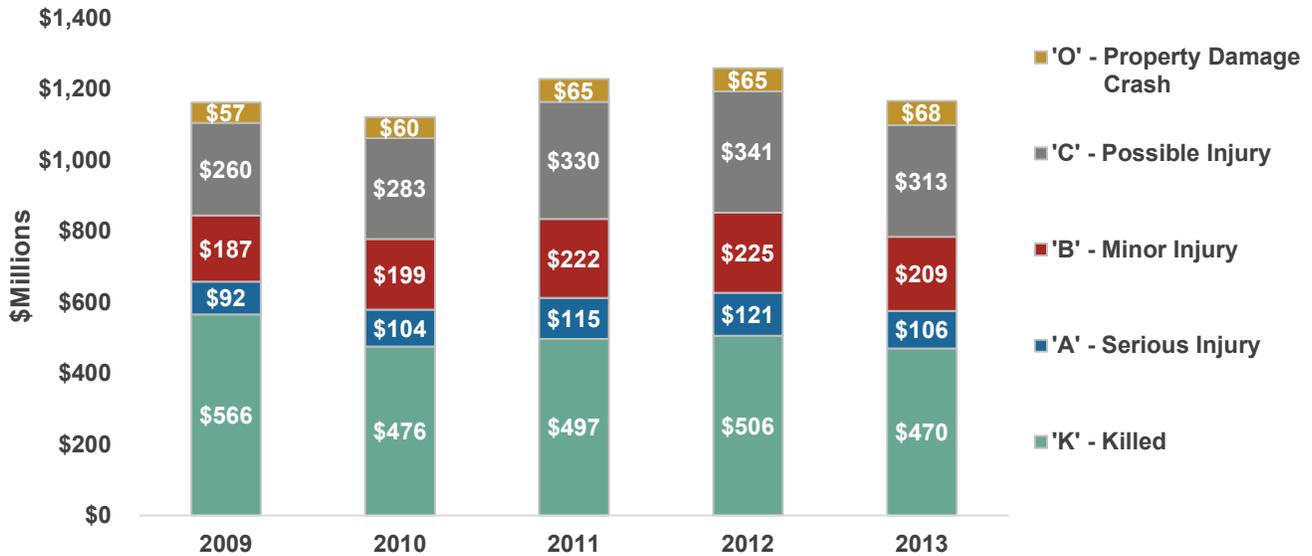
Source: National Safety Council. Estimating the Costs of Unintentional Injuries, 2013.

Note: ‘K’ crashes as used by the NSC are equivalent to fatal crashes in the TSAP document. Similarly, ‘A’ crashes are equivalent to ‘serious injury’ or ‘incapacitating injury’ crashes in the TSAP document or elsewhere.

The economic cost of crashes in Oregon in 2013 was close to \$1.2 billion. Figure 4.1 provides a breakdown of economic crash costs by year and severity level from 2009 to 2013. The total economic crash cost to Oregon over the five-year period was close to \$6 billion (\$5.9 billion), or roughly \$300 per Oregon resident per year.

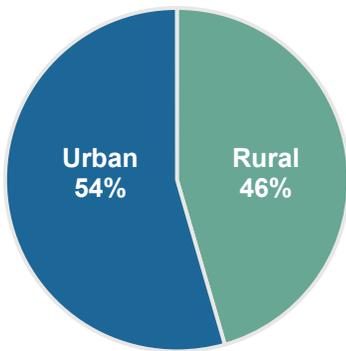


Figure 4.1 Oregon Economic Crash Costs by Year 2009 to 2013 (Millions)



Crashes in rural areas tend to be more severe than those in urban areas. As a result, despite having significantly fewer crashes, rural areas account for 46 percent of the total economic crash cost burden in Oregon (\$2.7 billion from 2009 to 2013 compared to \$3.2 billion in urban areas (Figure 4.2)).

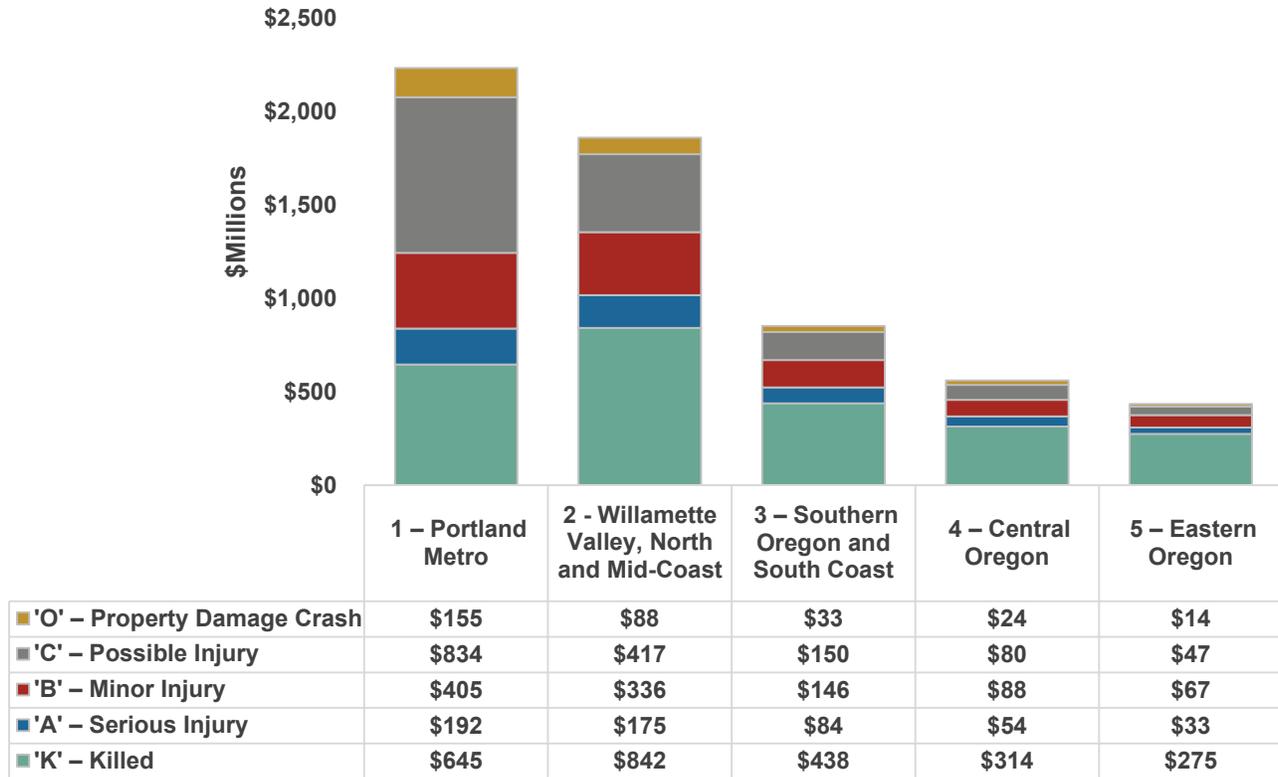
Figure 4.2 Oregon Economic Crash Costs by Rural/Urban Geography 2009 to 2013 (Millions)



Another way to evaluate the geographic distribution of crash costs is by ODOT region. Figure 4.3 shows the distribution of crash costs by injury severity across the five ODOT regions. The Portland Metro region (ODOT Region 1) experiences the highest overall burden, followed by the Willamette Valley region (ODOT Region 2). Region 1 has the greatest number of crashes by a significant margin, but Region 2 actually has a higher number of fatalities (561 in Region 2 from 2009 to 2013 compared to 430 in Region 1), which drives up the economic cost.



Figure 4.3 Economic Crash Costs by ODOT Region
2009 to 2013 (Millions)



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

Significance of Motor Vehicle Crashes Compared to Other Causes of Death and Injury Traffic

The Oregon Health Authority (OHA) defines injuries as intentional or not intentional. Unintentional injuries are due to unplanned events such as falls, motor vehicle crashes, house fire, or consuming an overdose of medications. In Oregon in 2013 there were 2,595 deaths from injuries making the category the third leading cause of death behind cancer (7,771 deaths) and heart disease (6,464 deaths). Within the injury category, motor vehicle crashes are the fourth leading cause of death (approximately 16%), behind suicide, unintentional falls, and unintentional poisoning (e.g., alcohol poisoning or drug overdose). Motor vehicle crashes are a significant cause of death in Oregon.

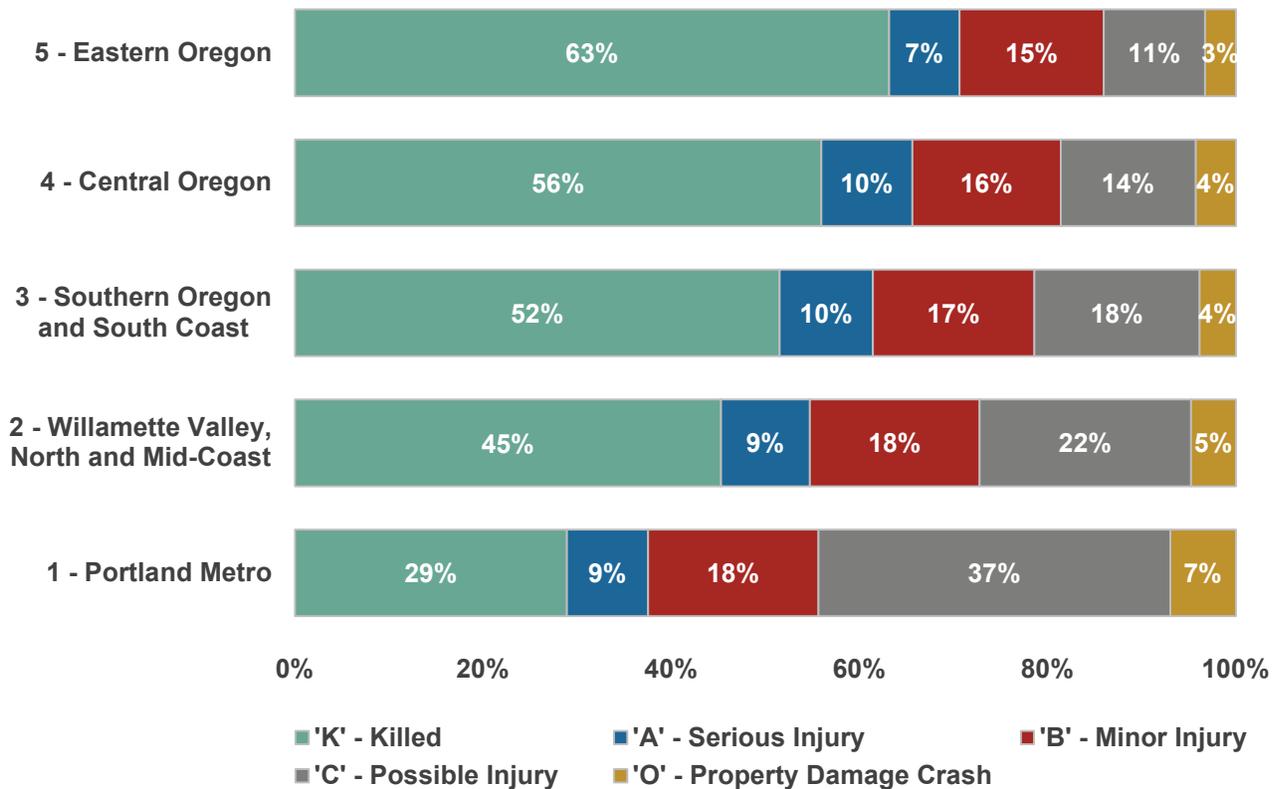
The Oregon Health Authority estimates that the number of motor vehicle fatalities per 100,000 Oregon residents fell from 13.4 per year in 2000 to 8.2 in 2013, a 39-percent decline. Hospitalization rates for motor vehicle-related injuries also fell by around 30 percent during the same period. These trends are encouraging, especially relative to trends for other injury types. For example, mortality rates from both unintentional falls and poisoning more than doubled during that timeframe.



Geographic Equity

The burden of traffic crashes is not distributed evenly across society. As discussed above, rural areas experience a disproportionate share of fatalities and serious injuries, and associated costs. Figure 4.4 shows the distribution of crash costs by severity for each of ODOT's five regions. Fatalities make up a greater share of costs in regions that are more rural in character. For example, in Region 5 (Eastern Oregon), fatalities account for more than 60 percent of crash costs, while in Region 1 (Portland Metro), they are responsible for only 30 percent of costs.

Figure 4.4 Percentage of Regional Crash Costs by Severity



While only 19 percent of the Oregon population lives in rural areas, 67 percent of fatalities occur in these areas, along with almost half of serious injuries (48 percent).⁹ Longer emergency response times and constrained medical resources are likely to explain much of the difference in severity between urban and rural areas, but other factors also are at play. For example, a higher percentage of fatalities in rural areas involved occupants failing to use seat belts (32 percent in rural areas compared to 22 percent in urban areas). Similarly, 71 percent of speed-related fatalities and serious injuries were on rural roadways.

⁹ U.S. Census Bureau. Oregon: 2010, Population and Housing Units. 2010 Census of Population and Housing. August 2012. <https://www.census.gov/prod/cen2010/cph-2-39.pdf>.



Shifting Demographics

Oregon's population grew by over 5 percent from 2010 to over 4 million people in 2015, which was slightly 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.¹⁰

Oregon also is experiencing an increase in the older driver population as baby boomers move into and through the retirement years. The portion of the population 65 years or older increased from 12.8 percent in 2000 to 13.9 percent in 2010 and 16 percent in 2014.¹¹ Although older 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.

CHANGING TRAVEL DEMOGRAPHICS

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

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 safer systems.

COMPETING PRIORITIES

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

There also are equity considerations in planning for safer transportation systems in urban areas. Research shows that pedestrian crash incidents are more common in areas with higher crime rates, lower transit availability, and population demographics such as lower income levels or number of children. In these areas it may be critical to consider safety specifically.¹²

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 cell phones 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 recent survey conducted by Southern Oregon University 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.¹³ Research into the impact of various types of distraction on

¹⁰ Portland State University Population Research Center. Oregon Annual Population Report. 2014. http://www.pdx.edu/prc/sites/www.pdx.edu/prc/files/Oregon_Annual_Pop_Report_Tables_2014_v3.pdf.

¹¹ U.S. Census Bureau. American Fact Finder.

¹² Cottrill, C. Evaluating Pedestrian Crashes in Areas with High Low-income or Minority Populations. Accident Analysis and Prevention, October 2010.

¹³ 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. <https://www.oregon.gov/ODOT/Documents/Distracted%20Driving%20An%20Epidemic.pdf>.



cognitive abilities confirms the risks associated with the use of technology while driving.¹⁴

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.

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.¹⁵ 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.¹⁶ 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

Throughout history, technology has played a pivotal role in transportation safety. A few notable past examples are shown in Table 4.2.

ADVANTAGES AND DISADVANTAGES OF TECHNOLOGY

- Technologies for blind-spot 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.

BENEFITS OF SAVING LIVES

- Over and above the obvious – There will be reduced congestion and more reliability if crashes are eliminated.

¹⁴ AAA Foundation for Traffic Safety. Measuring Cognitive Distraction in the Automobile. 2013. <https://www.aaafoundation.org/sites/default/files/MeasuringCognitiveDistractions.pdf>.

¹⁵ FHWA. Office of Operations. Reducing Non-Recurring Congestion. 2015. http://ops.fhwa.dot.gov/program_areas/reduce-non-cong.htm.

¹⁶ National Highway Traffic Safety Administration. The Economic and Societal Impact of Motor Vehicle Crashes. 2010. <http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf>.



Table 4.2 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., antilock brakes, traction control, antiroll bars) • Improved 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 markings • Cable median barriers and guardrails
Law Enforcement	<ul style="list-style-type: none"> • Breathalyzers and other devices to detect impaired drivers • Ignition interlock devices to reduce repeat DUI offenses • Speed and red-light-running cameras
Emergency Response	<ul style="list-style-type: none"> • Improved communications to reduce response time • Advanced equipment to sustain life following a serious crash
Problem Identification and Research	<ul style="list-style-type: none"> • 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 vehicles have the potential to reduce the likelihood of crashes through the use of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) applications.

Examples of V2V and V2I applications include:

- **V2V.** Forward collision warning, emergency electronic brake light, blind spot/lane change warning, do not pass warning, intersection movement assist, and left turn assist.
- **V2I.** Curve speed warning, red light violation warning, spot weather information warning, reduced speed zone warning, stop sign gap assist, smart roadside, and transit pedestrian warning.

**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.

Automated vehicles are an extension of the connected vehicles concept where some or all of the driving function is handled by the vehicle itself. In the case of fully automated vehicles, human input would be limited to providing destination information only. In theory, such vehicles hold the potential to eliminate crashes altogether, and also would bring about other beneficial outcomes, such as reduced congestion. While technology for these vehicles has come a long way, there are numerous technical, legal, policy, and implementation challenges that must be resolved before connected and automated



vehicles will significantly impact safety outcomes. Furthermore, the widespread implementation of these vehicles and associated infrastructure will not happen overnight. Rather, the technology will be gradually integrated into the fleet as new vehicles are purchased. Regulation may help to promote or require V2V and V2I in new car purchases, but even so the turnover in the fleet is such that it may be several decades before fully autonomous vehicles are widely implemented.¹⁷

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 risks and identify solutions for non-auto modes. Advances in statistical modeling 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.¹⁸ This data and proactive approach also allows communities to better plan for the safety of the transportation system in their long-range work.

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.

Shifting 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. This trend is likely to continue as the Portland region in particular attracts new residents from across the country.

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.

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 such as car sharing and transportation network company services (e.g., Uber). Widespread use of smart phones and other mobile devices are playing a pivotal role in advancing new ways for people to travel in the city.

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.

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.

¹⁷ <http://www.vtpi.org/avip.pdf>.

¹⁸ <http://www.timesfreepress.com/news/local/story/2014/aug/01/new-software-predicts-when-and/263323/>.



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.¹⁹ 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.²⁰

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. For instance, data from Portland indicates that while bicycle traffic on Portland's bridges increased from 2,850 in 1991 to 18,794 in 2011 (a more than six-fold increase) the number of bicycle crashes approximately only doubled, increasing from 155 to 297. However, during the same period, bikeway facility miles increased by a factor of four (from 70 to 307 miles). 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.

Another significant trend in urban areas is the emergence of the sharing economy. 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 risky behaviors such as impaired driving.²¹

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.

¹⁹ 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.

²⁰ 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.

²¹ Greenwood, B. & 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.



5

VISION, GOALS, POLICIES, AND STRATEGIES



5. VISION, GOALS, POLICIES, AND STRATEGIES

VISION

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 that can be avoided by implementing state-of-the-art programs, policies, and projects related to safety engineering, emergency response, law enforcement, and education. The TSAP lays the foundation to consider and prioritize safety for all modes and all users of our transportation system in order to eliminate all deaths and life-changing injuries on the transportation system.

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

Achieving this vision by 2035 requires commitment and engagement from a variety of Oregon’s agencies and stakeholders. Engineers, 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 includes goals, policies, strategies, and actions relevant to public health professionals, the media, private stakeholders, the individual transportation system user, and others. All of 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, yet achievable, 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**
- Improving Safety Culture.
 - Improving Infrastructure.
 - Facilitating Healthy and Livable Communities.
 - Best Available Technologies.
 - Communicating and Collaborating.
 - Strategic Investments.



Goal 1: Safety Culture

Background

Developing and sustaining a strong safety culture, where safety 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 all those who participate in developing (planners, designers, engineers, operations, and maintenance and staff) and using the transportation system that they have 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.

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, MPOs, local agencies (Tribes, counties, cities), Oregon Health Authority, stakeholders, and public and private employers) to integrate safety considerations into all responsibilities.

Policies

- **Policy 1.1.** Communicate proactively with system users about safety culture.
- **Policy 1.2.** Promote safety culture within agencies, stakeholder organizations, and employers.
- **Policy 1.3.** Implement regulatory changes, including legislative concepts and administrative rule changes, as needed, to provide incentives or remove impediments to developing a multimodal transportation safety culture.



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, older travelers, walkers, motorcyclists, bicyclists, minority groups, and different income groups).*
- **Strategy 1.1.3** – *Continuously evaluate the effectiveness of policies, programs or 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, as needed, 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 which could be addressed through legislation. Identify and pursue legislation to modify these behaviors.*

Goal 2: Infrastructure

Background

Transportation infrastructure should be planned, designed, built, operated, and maintained to provide the safest feasible environment for all transportation users. When safety is considered during all of these stages and proven treatments are applied, small 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 environments that minimize potential conflicts within and across modes; planning and designing facilities consistent with the desired context and use of the facilities; 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

- **Policy 2.1.** Continually improve and implement safety data collection, management, and distribution for data-driven decision-making for infrastructure planning and development and operations activities, across all divisions at ODOT, and with partner agencies and stakeholders.
- **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.
- **Policy 2.3.** Plan, design, construct, operate, and maintain the transportation system to achieve healthy and livable communities and eliminate fatalities and serious injuries for all modes.
- **Policy 2.4.** Implement 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.

Policies and Strategies

- **Policy 2.1.** Continually improve safety data collection, management, and distribution for data-driven decision-making for infrastructure planning and, development and operations activities, across all divisions at ODOT, and with partner agencies and stakeholders.
 - **Strategy 2.1.1** – *Develop a strategic plan for safety data enhancement using a coordinated effort with ODOT and partner agencies and stakeholders. Integrate the findings with other strategic data planning efforts at ODOT.*
 - **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.*
 - **Strategy 2.1.3** – *Support national safety research and lead state 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.*
 - **Strategy 2.2.2** – *Implement reactive, risk-based, and predictive safety analysis and tools into all stages of the project development process.*
 - **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 and livable communities and eliminate fatalities and serious injuries for all modes.
 - **Strategy 2.3.1** – *Implement Practical Design^a 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 2.3.3** – *Coordinate and collaborate with local jurisdictions to identify community safety concerns and establish solutions.*
 - **Strategy 2.3.4** – *Educate transportation planning and design professionals on how to incorporate safer context-sensitive designs into community projects.*
 - **Strategy 2.3.5** – *Implement best practices to eliminate work zone-related fatalities and serious injuries.*
 - **Strategy 2.3.6** – *Continue to identify and implement best practices related to traffic incident management services to reduce secondary crashes and improve system operations and reliability.*
 - **Strategy 2.3.7** – *Implement access management practices that improve system safety for all modes consistent with state statutes and rules.*
 - **Strategy 2.3.8** – *Continue to plan, design and implement best practices for rail safety program and systems management, particularly rail crossings.*
 - **Strategy 2.3.9** – *Evaluate safety countermeasures for pilot projects and large-scale implementation as appropriate.*
 - **Strategy 2.3.10** – *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 Rail and Public Transit Division, transit service providers 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.*

^a 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.

Goal 3: Healthy, 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; and support enforcement and emergency medical services to improve the safety and livability of communities, including health outcomes.

Policies

- **Policy 3.1.** Advance coordination and collaboration between law enforcement and state, regional, tribal, county and city transportation agencies, including freight and rail, public health agencies, mental and physical health care providers, and private stakeholders, to make communities safer places.
- **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.
- **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.
- **Policy 3.4.** Invest in transportation system enhancements that improve safety and perceptions of security for people while traveling in Oregon.
- **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.

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** – Conduct best practice traffic investigations to reduce traffic delays and to improve quality and timeliness of crash data.
 - **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 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.^a*

^a 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).

Goal 4: Technology

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,” – traffic lights 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 transportation and safety agencies and stakeholders 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 utilized 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.

An emerging technology garnering national attention and testing is autonomous and connected vehicles. If deployed in Oregon, it 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

- **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.
- **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.
- **Policy 4.3.** Leverage technology tools and best practices across divisions and agencies to deploy useful technologies across the state and the transportation system.
- **Policy 4.4.** Identify legislative concepts as needed to enable the implementation of innovative technologies.

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 emphasis 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 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.*
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Goal 5: Collaborate and Communicate

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 focusses 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

- **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.
- **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.
- **Policy 5.3.** Enhance public awareness of the importance of transportation safety and the individual's role in eliminating 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.*
 - **Strategy 5.1.2** – *Engage ODOT Regions and Divisions, MPOs, ACTs, Tribes, cities, counties, the health and medical community, 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.*



Goal 6: Strategic Investments

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 utilizing 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 a 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

- **Policy 6.1.** Allocate infrastructure safety funds strategically, considering all modes, to maximize total safety benefits.
- **Policy 6.2.** Allocate funding of behavioral, emergency medical services, and health safety efforts strategically across programs to maximize total safety benefits.
- **Policy 6.3.** Identify and pursue opportunities to increase funding for strategic safety-related infrastructure, behavior, and emergency medical service enhancements.



Policies and Strategies

- **Policy 6.1.** Allocate infrastructure safety funds strategically considering all modes, to maximize total safety benefits.
 - **Strategy 6.1.1** – *Develop a quantitative, predictive, benefit-cost analysis or risk-based, data-driven decision framework to identify and prioritize potential projects.*
 - **Strategy 6.1.2** – *Develop 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 and targeted 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

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.

EAs also 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. 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.

- **Emphasis Area: 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.
- **Emphasis Area: 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.
- **Emphasis Area: 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 vehicles, making them more susceptible to injury in the event of an incident. Older drivers and other older system users can also be vulnerable due to decreasing visual acuity and perception-reaction time to events, and injuries are more likely to be fatal or severe due to conditions of aging such as physical frailty and slower recovery times. For this emphasis area, actions have been identified to minimize pedestrian, bicycle, motorcycle, and older road user crashes.
- **Emphasis Area: Improved Systems.** Opportunities to address and improve transportation safety come in a number of forms. Crash and other types of safety data can be advanced to better understand the causes and locations of crashes, leading to targeted solutions. Training and education are used to educate planners, engineers, designers,

Emphasis Areas provide a strategic framework for developing action items for near-term implementation.

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

RISKY BEHAVIOR SUBAREAS

- Impaired Driving.
- Unbelted Occupants.
- Speeding.
- Distracted Driving.

INFRASTRUCTURE SUBAREAS

- Intersection.
- Roadway Departure.

VULNERABLE USER SUBAREAS

- Pedestrians.
- Bicyclists.
- Motorcyclists.
- Older Road Users.



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.

IMPROVED SYSTEM SUBAREAS

- Improved Data.
- Training and Education.
- Enforcement.
- Emergency Medical Services.
- Commercial Vehicles.

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.

EMPHASIS AREA CONSIDERATIONS

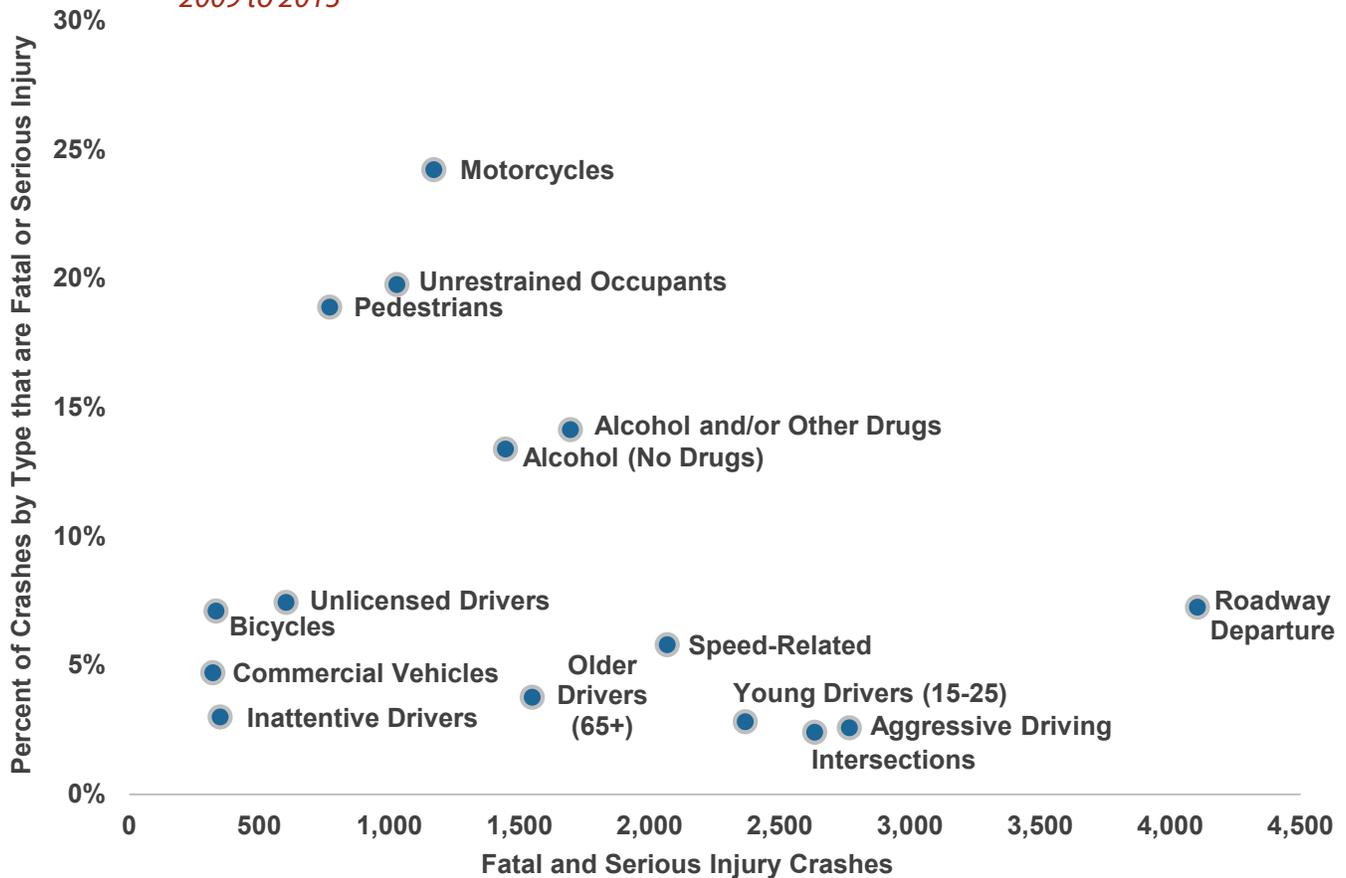
EAs were selected based on an assessment of recent crash history (2009 to 2013) and qualitative considerations related to the capabilities to address different crash types. Figure 6.1 shows the relationship of crash frequency and crash severity. Fatal and serious injury crashes are ranked by frequency along the x-axis and by severity along the y-axis. Crash types toward the upper right part of the figure rank more highly from the perspective of being frequent and severe. Appendix F shows the underlying data for this figure.

FREQUENCY AND SEVERITY RANKING OF CRASHES

- Roadway departure crashes are most frequent; approximately percent of these include fatal or serious injuries.
- Motorcycle crashes are less frequent; approximately 25 percent of these include fatal or serious injuries.
- Motorcyclists, unrestrained occupants, and pedestrians have the highest severity ranking.
- Roadway departure, aggressive driving, and intersections have the highest frequency ranking.



Figure 6.1 Crash Types Ranked by Crash Frequency and Severity
2009 to 2013



From a qualitative perspective emphasis areas also were selected considering these questions:

- **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 EA consistent with other state plans and policies and does it address a significant policy goal?
- **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?

Figure 6.2 shows the resulting evaluation of potential EAs using the frequency severity chart and the above qualitative categories. As shown emphasis areas were evaluated as strong, moderate, or weak emphasis area candidates for each criterion. The PAC reviewed this information as well as input from stakeholders to select emphasis areas for the TSAP.²²

²² Distracted driving was identified as an emphasis subcategory because available data and anecdotal evidence point to distraction as a significant traffic safety concern. A recent survey conducted by Southern Oregon University 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.



Figure 6.2 Emphasis Area Evaluation

Potential Emphasis Area	Frequency	Severity	Effectiveness Data	Emphasis Area Overlap	Institutional Capacity	Policy Focus
Aggressive Driving	●	○	◐	○	◐	●
Impaired Driving	◐	●	●	○	●	●
Bicycles	○	◐	◐	●	●	●
Commercial Vehicles	○	◐	○	●	●	◐
Distracted Driving (Inattentive Drivers)	○	○	○	●	○	○
Intersections	●	○	●	●	●	●
Motorcycles	◐	●	◐	○	◐	●
Older Drivers (65+)	◐	○	○	◐	◐	◐
Pedestrians	○	●	◐	●	●	●
Roadway Departure	●	◐	●	◐	●	●
Speed-Related	●	◐	◐	○	◐	●
Unlicensed Drivers	○	●	○	●	○	○
Unrestrained Occupants	◐	●	●	○	◐	●
Young Drivers (15-25)	●	○	◐	◐	◐	●
Foundational EAs (EMS, Data, and Training)					●	●
●	Strong Emphasis Area Candidate					
◐	Moderate Emphasis Area Candidate					
○	Weak Emphasis Area Candidate					

Frequency = number of fatal and serious injury crashes from 2009 to 2013; Severity = fatal and serious injury crashes per 100 total crashes; Effectiveness Data = proven, effective countermeasures are known, or projects and programs can be evaluated for effectiveness; Emphasis Area Overlap = the potential EA significantly overlaps with one or more other potential emphasis areas; Institutional Capacity = there are existing programs and resources to support implementation of strategies related to this potential EA; Policy Focus = the potential EA represents a significant policy focus for Oregon.



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. For actions that have not been tested for their effectiveness, they will be evaluated during implementation to understand their contribution to crash reductions. 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.

Emphasis Area: Risky Behaviors

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 and improvements in test 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 were somehow involved in the crash. These crashes could include alcohol only, marijuana and illegal prescription drugs, or a combination of drugs and alcohol.

Problem Identification

Between 2009 and 2013, impaired driving crashes (alcohol and/or drugs) accounted for 22 percent of all the fatal and serious injury crashes in Oregon and contributed to 625 fatalities and 1,087 serious injuries.

Crashes occur more or less equally in rural Oregon (52 percent) and urban parts of the state (48 percent). About 70 percent of impaired driving crashes involved roadway departures. Aggressive driving (44 percent) and speed (42 percent) related crashes are also common in conjunction with impaired driving crashes.



Figure 6.3 Impaired Driving Fatalities and Serious Injuries by Year
2009 to 2013

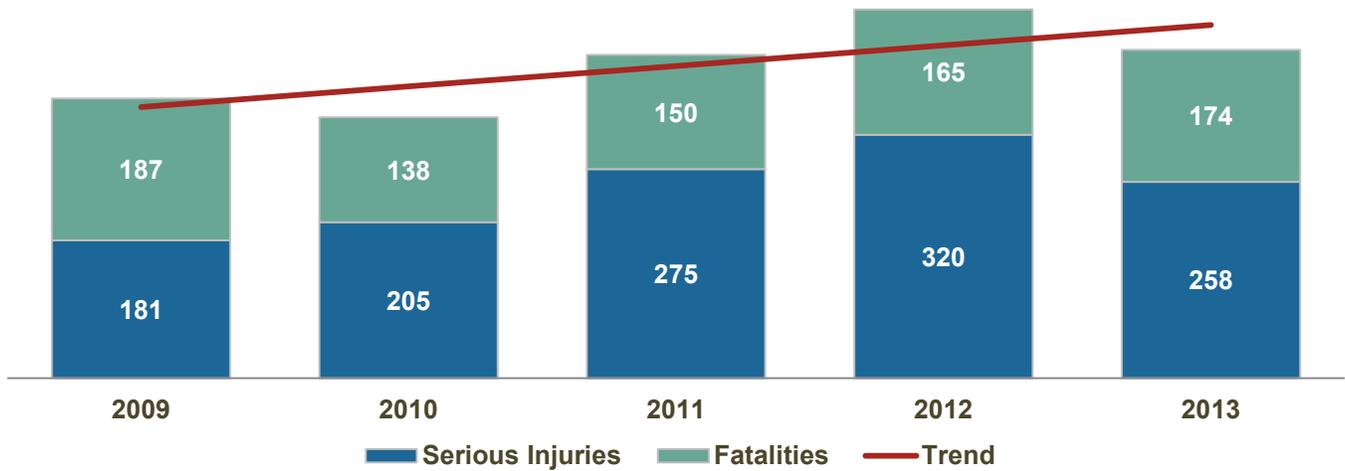
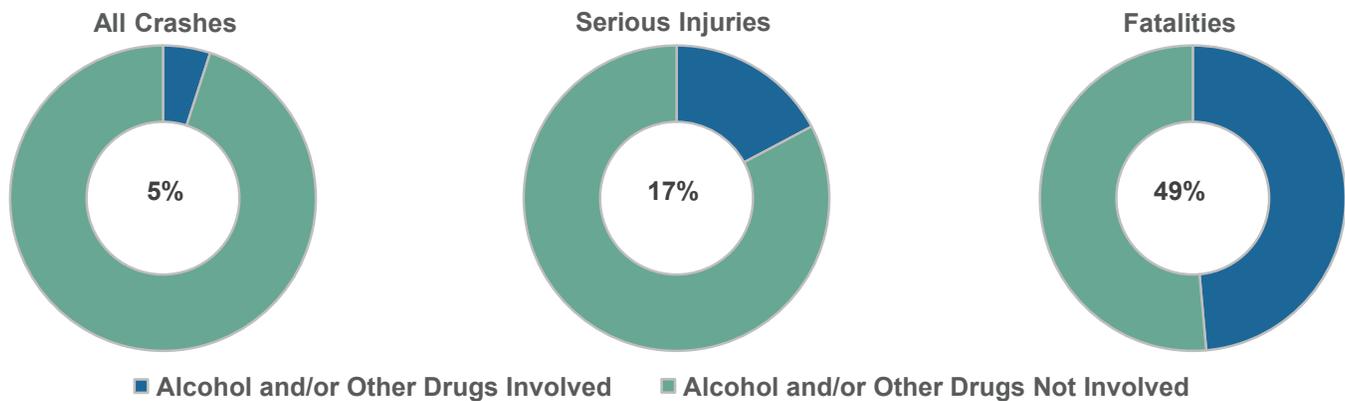


Figure 6.4 Impaired Driving as a Contributing Factor for All Crashes, Serious Injuries, and Fatalities



Impaired Driving Actions

Table 6.1 Impaired Driving Actions

Tier 1	
Action 6.1.1:	Change social norms by increasing awareness of the types of impaired driving (e.g., drunk driving, drugged driving, and driving under the influence of prescription drugs). Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users
Action 6.1.2:	Provide training and education on marijuana impairment detection for law enforcement. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Training, Enforcement
Action 6.1.3:	Conduct targeted impaired driving enforcement. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Data, Enforcement
Action 6.1.4:	Adopt National Transportation Safety Board recommendation to reduce Blood Alcohol Concentration limit to 0.05. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Action 6.1.5:	Revise DUII statutes with the objective of eliminating impaired driving as a crash cause. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Tier 2	
Action 6.1.6:	Strengthen laws aimed at reducing repeat DUII offenders Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Action 6.1.7:	Improve DUII arrest and adjudication processes Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement

Occupant Protection

In Oregon, passenger car drivers, pickup truck drivers, and sports car drivers are often using their seatbelts – the national average for observed seatbelt use in 2014 was 87 percent for passenger cars and in Oregon it was 98 percent.²³ While wearing a seatbelt has become a cultural norm in Oregon, the numbers also reflect targeted enforcement efforts – in 2014, 7,429 seat belt citations were issued in Oregon through a grant funded program. Residents now recognize that the use of restraints and child car seats reduces the severity of a crash.²⁴ In Oregon, unbelted crashes are defined as one or more victims are not using appropriate protection. 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 severity.

Problem Identification

Between 2009 and 2013, crashes involving occupants not properly using restraints accounted for 13 percent of all the fatal and serious injury crashes in Oregon and contributed to 490 fatalities and 881 serious injuries. Approximately 65 percent of these crashes occurred in a rural environment. Almost all unrestrained fatal and serious injury crashes (72 percent) result from lane departure crashes. Aggressive driving (44 percent) and speeding (41 percent) also are strongly correlated to unrestrained crashes.

²³ <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.

²⁴ <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.



Figure 6.5 Unrestrained Occupant Fatalities and Serious Injuries by Year
2009 to 2013

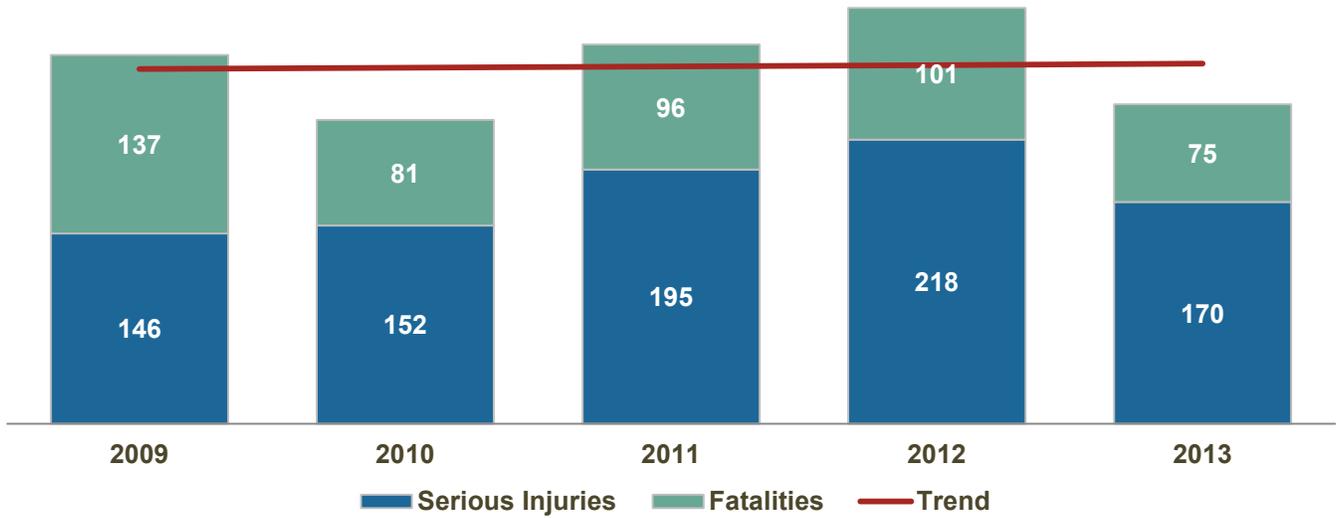
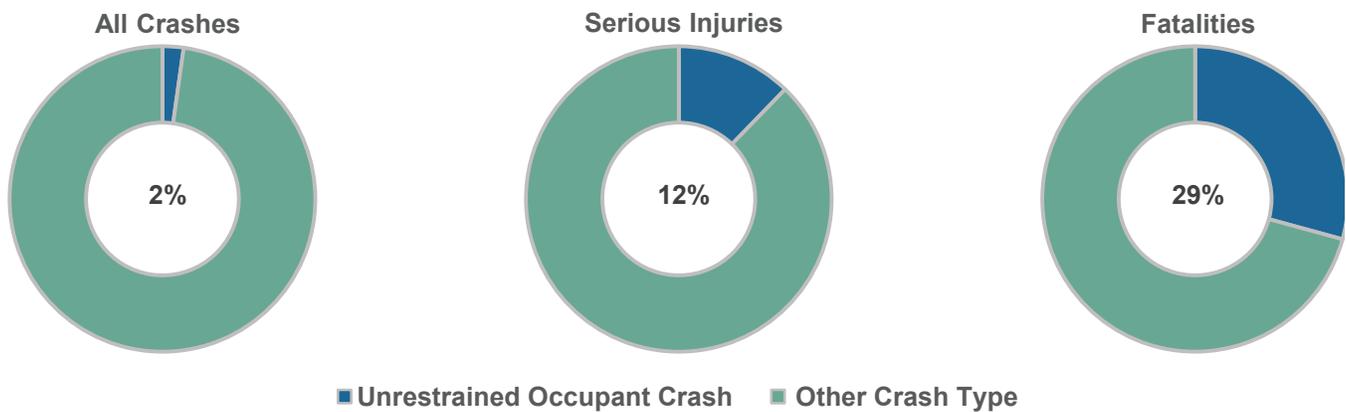


Figure 6.6 Failure to use Restraints for All Crashes, Serious Injuries, and Fatalities





Occupant Protection Actions

Table 6.2 Occupant Protection Actions

Tier 1	
Action 6.2.1:	Conduct targeted enforcement of occupant protection laws.
Co-Benefits:	Enforcement, Young Drivers, Older Drivers
Tier 2	
Action 6.2.2:	Conduct targeted education to increase the use of seat belts and child safety seats.
Co-Benefits:	Older Road Users, Training
Action 6.2.3:	Provide youth safety items (e.g., child safety seats, bicycle helmets) to satisfy public demand.
Co-Benefits:	Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users
Action 6.2.4:	Recruit and train certified child passenger safety (CPS) technicians as needed.
Co-Benefits:	Training

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, on average, since 2009. In Federal Fiscal Year 2014, law enforcement issued 21,732 speeding citations, during grant-funded, targeted enforcement efforts, to deter this unsafe driving behavior.²⁵

An Oregon statewide public opinion survey from March 2013 reported that 76 percent of drivers say they rarely exceed the speed limit on a local road with a posted speed of 30 miles per hour and 77 percent say they rarely exceed it on a road with a speed limit of 65 miles per hour.²⁶ To the extent that this self-reported information is accurate, an estimated 24% of Oregon drivers do sometimes or regularly exceed posted speeds, which is consistent with a Federal estimate that at least 30 percent of drivers speed (NHTSA, *National Traffic Speeds Survey II*, August 2012). Speed is implicated in 27 percent of crashes in Oregon. The outcome of speeding crashes is often severe. Targeted 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 2009 and 2013, speed-related crashes accounted for 27 percent of all the fatal and serious injury crashes in Oregon and contributed to 619 fatalities and 1,897 serious injuries. About 70 percent of these crashes occurred in a rural environment. Almost all speed-related fatal and serious injury crashes (85 percent) result from lane departure crashes. Alcohol involvement (30 percent) and unrestrained occupants (20 percent) also are strongly correlated to speeding crashes. It is important for all stakeholders (e.g., residents, business owners, local, regional and state agencies) be 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.

²⁵ <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.

²⁶ <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>.



Figure 6.7 Speed-Related Fatalities and Serious Injuries by Year
2009 to 2013

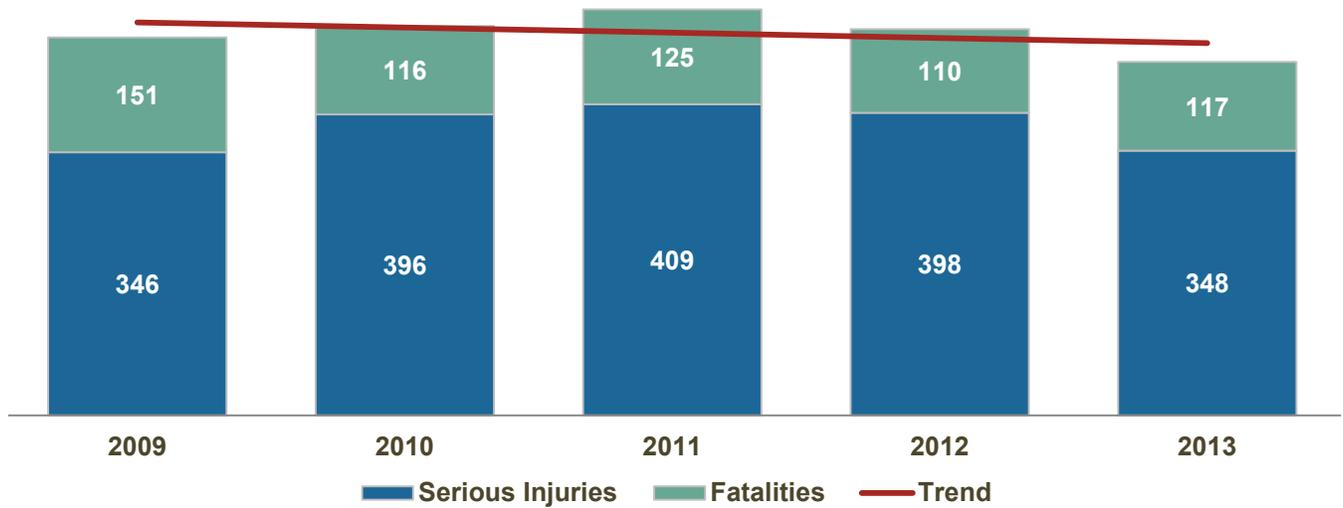
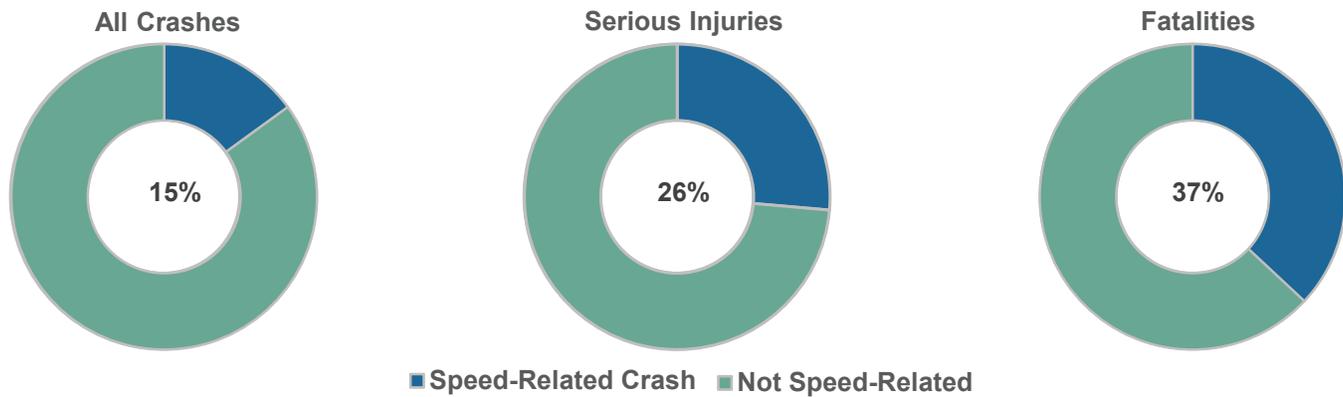


Figure 6.8 Speeding as a Contributing Factor for All Crashes, Serious Injuries, and Fatalities





Speeding Actions

Table 6.3 Speeding Actions

Tier 1	
Action 6.3.1:	Educate all transportation system users about the dangers of speeding. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Young Drivers
Action 6.3.2:	Continue work between ODOT, cities, and counties to consider and revise, as appropriate, regulations and programs for establishing speed limits to achieve safety goals, improve balance among multimodal interests, and support community objectives Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Action 6.3.3:	Establish the same statutory speed limits in residential and business districts. Co-Benefits: Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Action 6.3.4:	Modify laws to allow more effective automated enforcement of traffic laws. Co-Benefits: Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Action 6.3.5:	Track and assess changes to crash rates, fatalities, and serious injuries on highways recently approved for higher speed limits. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Data
Action 6.3.6:	Focus facility design and redesign to achieve operating speeds consistent with safety goals, context, users and land use. Co-Benefits: Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users
Action 6.3.7:	Conduct targeted enforcement to reduce speeding. Co-Benefits: Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Data, Enforcement

Distracted Driving

Distracted driving is operating a motor vehicle while doing another activity that takes your attention away from safely driving.²⁷ The proliferation of cell phones and other mobile electronic devices has resulted in an increased distracted population. Available data and anecdotal evidence point to distraction as a significant traffic safety concern. A recent survey conducted by Southern Oregon University found that three out of four drivers surveyed engage in distracted driving.

Previous exceptions in Oregon’s distracted driving law allowed drivers to use handheld cell phones if the call was related to their jobs. Some of those exceptions were removed effective 2013, but most exceptions still need to be removed. Legislation must change the law to make this law clear, enforceable and convictable by removing all exceptions but emergency vehicles/employees while responding to an emergency and a driver calling 911 for an emergency when no one else is available to make the call. Also, the law needs to be very specific in definition to include current and future technologies, changing it to “mobile electronic devices” for example. Drivers under 18 years old are prohibited from all cell phone use, hand held or hands free.

One of the first actions recommended in this subarea is to define and assess the scale of distracted driving in Oregon.

²⁷ https://www.oregon.gov/ODOT/DMV/Pages/road_rules.aspx (accessed 3/16/16).



Distracted Driving Actions

Table 6.4 Distracted Driving Actions

Tier 1	
Action 6.4.1:	Support the task force on distracted driving and implement countermeasures. Co-Benefits: –
Action 6.4.2:	Decrease distracted driving through education and changing social norms. Co-Benefits: Pedestrians, Bicyclists, Older Road Users
Action 6.4.3:	Work with other states on research and data development to identify the scope and scale of distracted driving and possible solutions. Co-Benefits: Distracted Driving, Data
Action 6.4.4:	Adopt and revise current distracted driving law to remove loopholes and be consistent with Federal guidance. Co-Benefits: Motorcycles, Pedestrians, Bicyclists, Older Road Users, Enforcement
Tier 2	
Action 6.4.5:	Conduct targeted enforcement to enforce distracted driving laws. Co-Benefits: Enforcement

Emphasis Area: Infrastructure

Intersections

An intersection is a point at which two or more roads intersect. Most intersections are designed for motorized vehicles as well as pedestrians, bicyclists, transit users and freight travel. 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 Overview

Between 2009 and 2013, intersection-related crashes accounted for 34 percent of all the fatal and serious injury crashes in Oregon and contributed to 335 fatalities and 2,613 serious injuries. About 76 percent of these crashes occurred in an urban environment; and older drivers, aggressive drivers, and younger drivers were disproportionately more involved in intersection crashes.



Figure 6.9 Intersection-Related Fatalities and Serious Injuries by Year
2009 to 2013

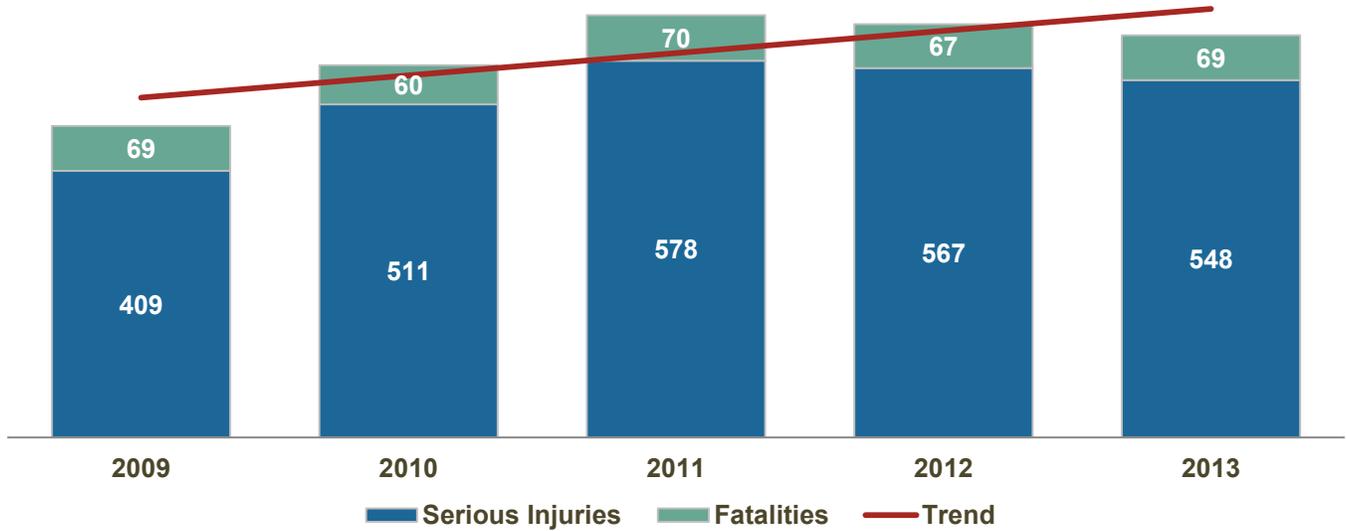
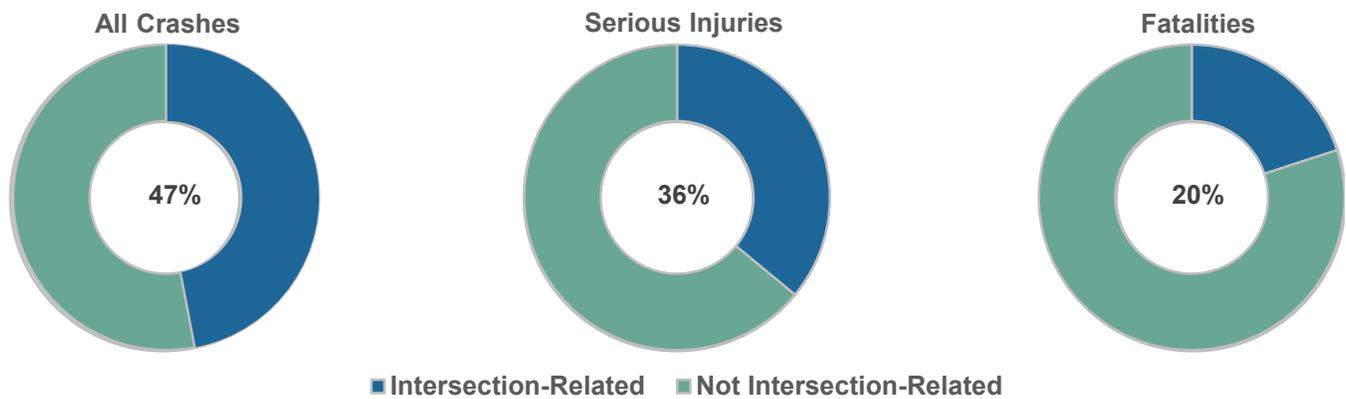


Figure 6.10 Intersection-Related Crashes as a Percentage of All Crashes, Serious Injuries, and Fatalities



Intersection Actions

General infrastructure actions were developed and are shown in Table 6.5. These actions may relate to intersection and roadway departure crash types. Intersection-specific actions also were developed and are shown Table 6.6.



Table 6.5 Infrastructure Actions (General)

Tier 1	
Action 6.5.1:	Implement design treatments to achieve appropriate speeds and manage sight distance consistent with context, users, and community goals.
Co-Benefits	Speeding, Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles
Tier 2	
Action 6.5.2:	Implement targeted infrastructure and striping maintenance programs to address safety issues closely associated with weather, maintenance, or roadway debris that affects travelers.
Co-Benefits	Intersections, Roadway Departure, Bicyclists
Action 6.5.3:	Support multimodal safety considerations during local Transportation System Plan development, and other planning efforts (e.g., local Transportation Safety Action Plans) to guide project planning, operations and maintenance for safer transportation facilities
Co-Benefits:	Intersections, Roadway Departure, Pedestrians, Bicyclists, Data

Table 6.6 Intersection Actions

Tier 1	
Action 6.6.1:	Implement low-cost systemic safety improvements at intersections.
Co-Benefits	Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles, Young Drivers
Tier 2	
Action 6.6.2:	Implement intersection design treatments to reduce conflicts between users and improve driver awareness of the next intersection and compliance with traffic controls.
Co-Benefits	Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles
Action 6.6.3:	Implement access management on high-volume roads and/or around complex intersections to reduce crashes.
Co-Benefits:	Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles

Roadway Departure

When operating a vehicle, an event may arise requiring the driver to swerve suddenly to avoid another car or object; or an unsafe speed could affect control of the car. All of these impact a driver’s ability to stay on the road, possibly resulting in a crash. Roadway departure crashes are defined as non-intersection crashes involving a vehicle departing its lane and running off the road, into a median or into an opposing lane of traffic.

Problem Overview

Between 2009 and 2013 approximately 53 percent of all fatal and serious injury crashes in Oregon included a roadway departure, contributing to 1,188 fatalities and 3,745 serious injuries. About 73 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, lane departure accounts for 44 percent of aggressive driving fatal and serious injuries, 43 percent of speed-related fatal and serious injuries, and 18 percent of impaired driving fatal and serious injuries.



Figure 6.11 Roadway Departure Fatalities and Serious Injuries by Year
2009 to 2013

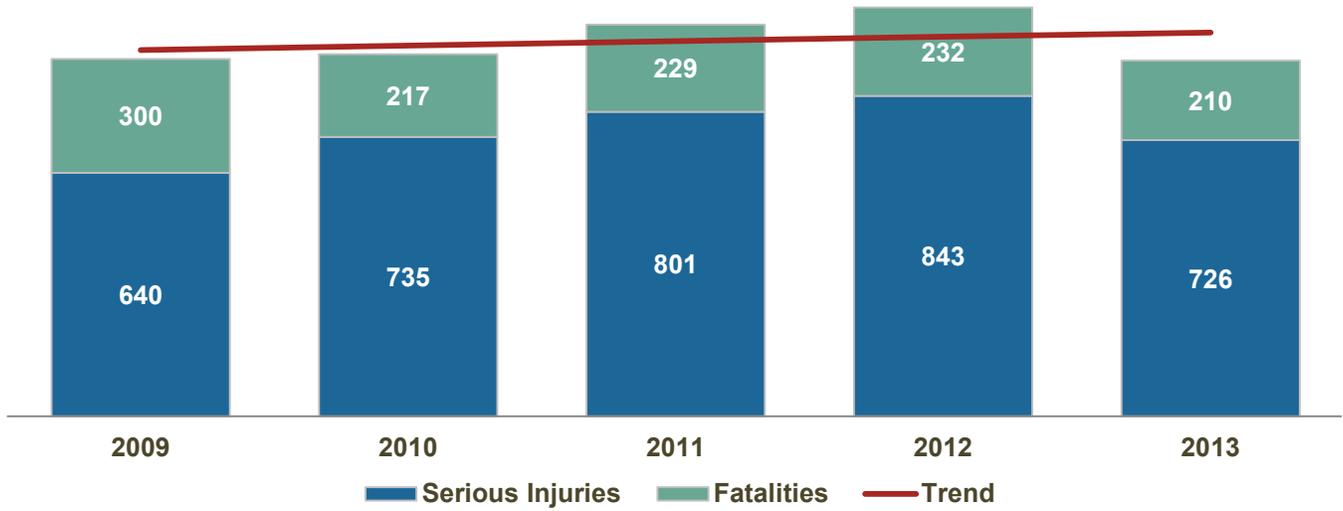
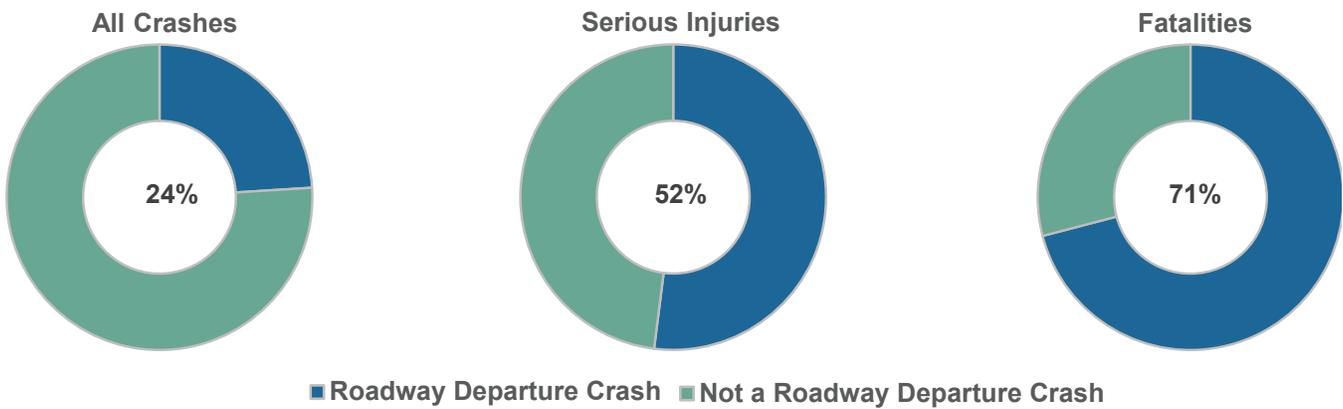


Figure 6.12 Roadway Departure as a Percentage of All Crashes, Serious Injuries, and Fatalities





Roadway Departure Actions

Table 6.7 Roadway Departure Actions

Tier 1	
Action 6.7.1:	Design and implement treatments addressing risk factors associated with roadway departure crashes.
Co-Benefits	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Motorcycles, Older Road Users, Commercial Vehicles, Data
Tier 2	
Action 6.7.2:	Implement low-cost systemic safety roadway improvements.
Co-Benefits	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Motorcycles, Older Road Users, Commercial Vehicles
Action 6.7.3:	Improve road delineation to improve the visibility of road edges in rural areas.
Co-Benefits:	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles

Emphasis Area: Vulnerable Users

Pedestrians

Pedestrian fatalities and serious injuries can be caused by inattentive drivers or inattentive pedestrians. 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. Nationally, as well as in Oregon, urban areas are working to create healthy communities and lifestyles. Alternative transportation infrastructure, including sidewalks, is being implemented to encourage residents to walk to work, to run errands, or for recreation. An increase in these environments has encouraged more people to walk, but it also has increased the chances for pedestrian/vehicle conflicts. In addition, some communities do not yet have adequate infrastructure in place to accommodate pedestrians, which can also be a risk factor for crashes. In Oregon, pedestrian crashes are defined as crashes where one or more pedestrian was involved in the crash.

Problem Identification

Between 2009 and 2013, crashes involving pedestrians accounted for 10 percent of all the fatal and serious injury crashes in Oregon and contributed to 262 fatalities and 548 serious injuries. Nearly 90 percent of these crashes occurred in an urban environment, where there are more pedestrians and sidewalk infrastructure. In 2015 in Portland, approximately 27 percent of transportation related fatalities were pedestrians (10 of 37 fatalities). Nationally, pedestrians make up 14 percent of all traffic fatalities.²⁸

Crashes at intersections or when alcohol and/or other drugs are involved also are strongly correlated to pedestrian crashes.

²⁸ 2015 Portland Traffic Safety Report, Portland Bureau of Transportation, Active Transportation and Safety Division, pages 3 and 4, February 8, 2016.



Figure 6.13 Pedestrian Fatalities and Serious Injuries by Year
2009 to 2013

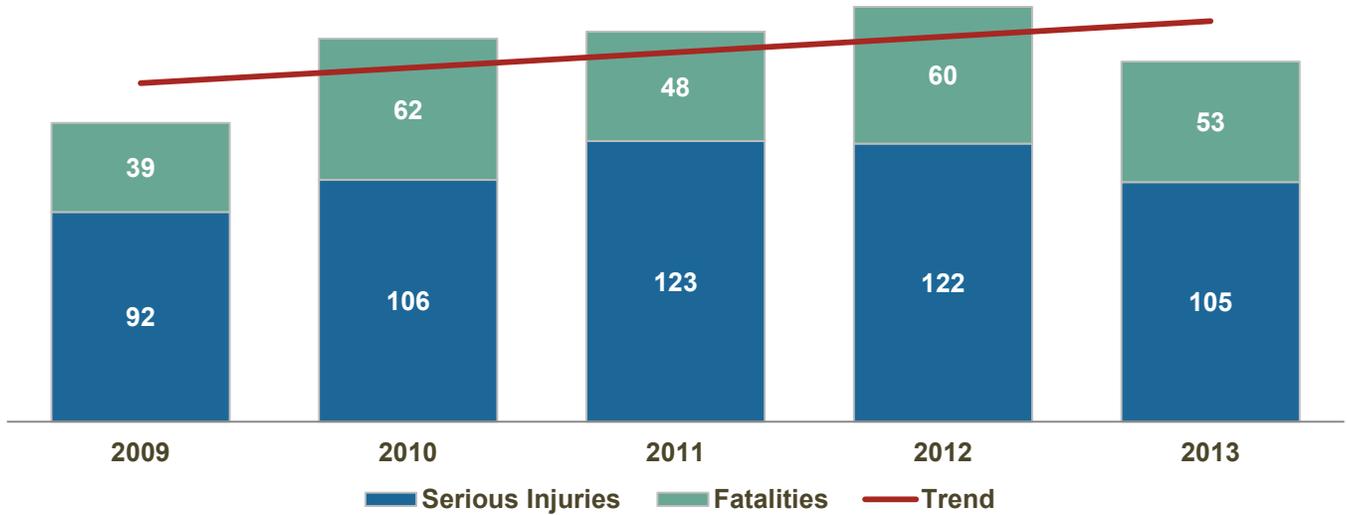
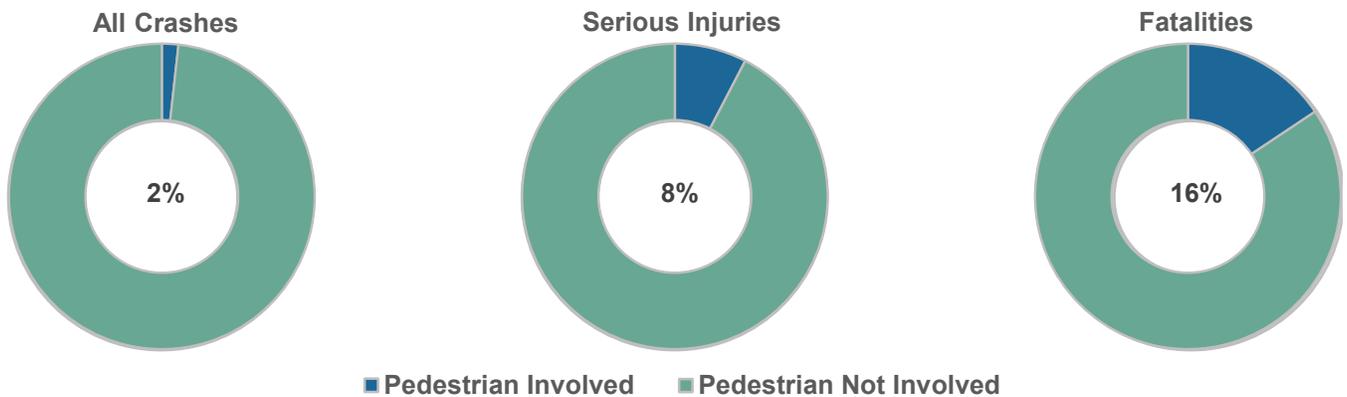


Figure 6.14 Pedestrian Involvement in All Crashes, Serious Injuries, and Fatalities



Pedestrian Actions

Table 6.8 Pedestrian Actions

Tier 1	
Action 6.8.1:	Evaluate the safety performance of innovative pedestrian facilities. Continue implementing the most effective. Co-Benefits: Intersections, Data
Action 6.8.2:	Provide safe facilities and crossings in areas where pedestrians are present or access is needed. Prioritize transit corridors, school areas, multilane streets and highways and other high risk areas and facilities. Co-Benefits: Intersections, Bicyclists, Data
Action 6.8.3:	Improve maintenance of existing pedestrian facilities. Co-Benefits: Intersections



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 2009 and 2013, motorcycle crashes accounted for 15 percent of all the fatal and serious injury crashes in Oregon and contributed to 211 fatalities and 1,030 serious injuries. About 56 percent of these crashes occurred in a rural environment. A large 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 6.15 Motorcycle Driver and Passenger Involved Fatalities and Serious Injuries by Year 2009 to 2013

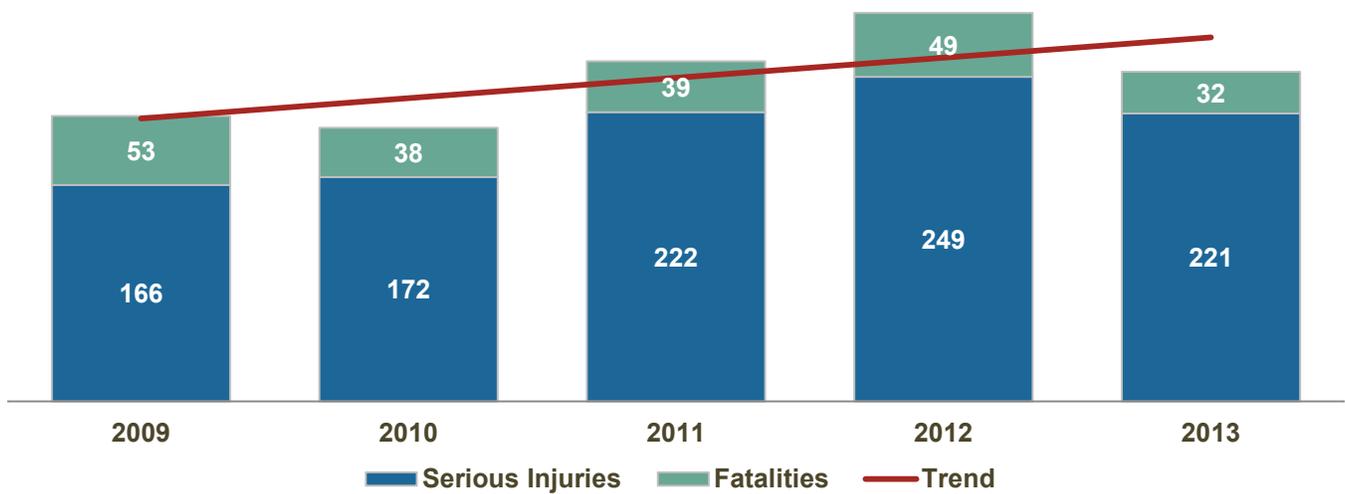
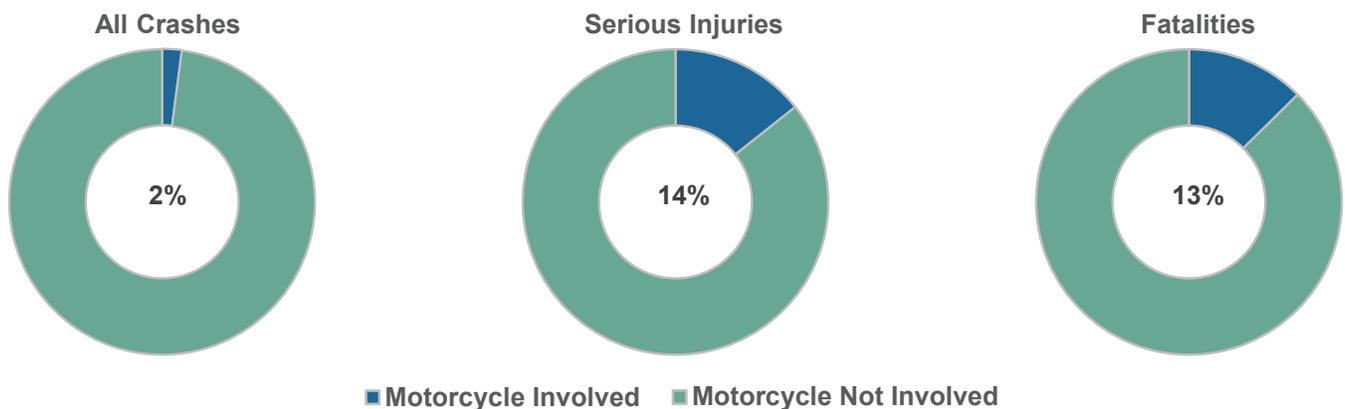


Figure 6.16 Motorcycle Involvement in All Crashes, Serious Injuries, and Fatalities





Motorcyclist Actions

Table 6.9 Motorcycle Actions

Tier 1	
Action 6.9.1:	Increase awareness among motorcycle drivers that the majority of crashes involve speed, impairment, and roadway departure. Co-Benefits: Speed, Impaired Driving
Action 6.9.2:	Provide education and enforcement to decrease impaired motorcycle riding. Co-Benefits: Impaired Driving, Training, Enforcement
Tier 2	
Action 6.9.3:	Increase awareness of motorcycles among the general public through education and outreach. Co-Benefits: Impaired Driving, Speeding, Roadway Departure
Action 6.9.4:	Adopt and implement road surface maintenance practices across jurisdictions that reduce hazards for people operating motorcycles. Co-Benefits: Road departure
Action 6.9.5:	Modify Oregon’s helmet definition to match Federal regulations. Co-Benefits: –

Bicyclists

Bicycle fatalities and serious injuries can be caused by inattentive drivers or inattentive bicyclists.

Regardless of who is at fault, crashes involving a bicyclist tend to be more serious because bicyclists are completely exposed when using the transportation system. Nationally, as well as in Oregon, urban areas are developing transportation systems and land use policies to promote healthy communities and lifestyles. Alternative transportation infrastructure, including bike lanes, bike-specific traffic signals, and bike racks, are being implemented to encourage residents to bike to work, run errands, or for recreation. In the City of Portland, 7.2 percent of commuters go by bike, which is the highest percentage of commuters for a large American city.²⁹ As bicycling environments improve and more people ride bikes, there are more chances for bicycle-vehicle conflicts. In Oregon, bicycle crashes are defined as crashes where one or more bicyclists (or other pedalcyclists) was/were involved in the crash.

Problem Identification

Between 2009 and 2013, crashes involving bicyclists (pedalcyclists) accounted for 4 percent of all the fatal and serious injury crashes in Oregon and contributed to 42 fatalities and 293 serious injuries. About 86 percent of these crashes occurred in an urban environment, where there are more bicyclists and bicycle infrastructure. A number of bicycle-related fatal and serious injury crashes result from young driver crashes. Older driver crashes and crashes when aggressive driving is involved are also strongly correlated to bicycle crashes.

²⁹ <https://www.portlandoregon.gov/transportation/article/407660>.



Figure 6.17 Bicyclist Fatalities and Serious Injuries by Year
2009 to 2013

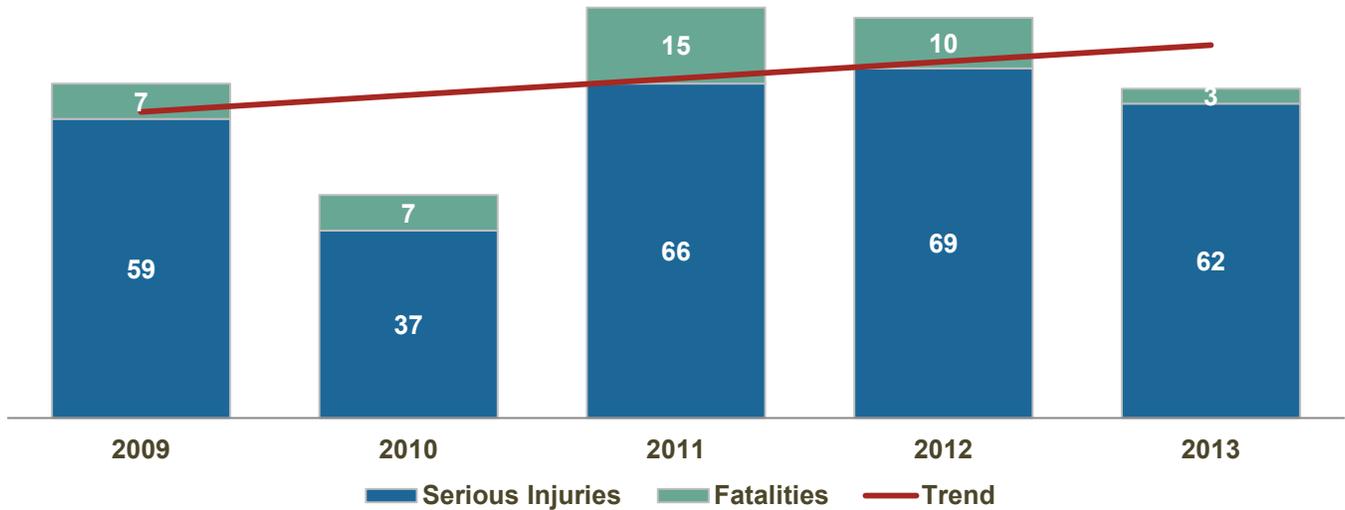


Figure 6.18 Bicyclist Involvement in All Crashes, Serious Injuries, and Fatalities



Bicyclist Actions

Table 6.10 Bicyclist Actions

Tier 1	
Action 6.10.1:	Evaluate the safety impacts of innovative bicycle facilities. Continue implementing the most effective.
Co-Benefits	Intersections, Data
Tier 2	
Action 6.10.2:	Adopt and implement road surface maintenance practices across jurisdictions that reduce hazards for people riding bicycles.
Co-Benefits	Motorcycles
Action 6.10.3:	Provide youth safety items (e.g., bicycle helmets) to satisfy public demand.
Co-Benefits:	Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users



Older Drivers and Pedestrians

While older 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 older 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, older driver crashes are defined as crashes where drivers older than 65 are involved in, but not necessarily the cause of, a crash (Figure 6.19). As a subset of older driver involved crashes, older 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 6.21). In addition, when older pedestrians are struck by a vehicle, their injuries tend to be more severe.

Problem Identification

Between 2009 and 2013, older driver involved crashes accounted for 13 percent of all the fatal and serious injury crashes in Oregon and contributed to 352 fatalities and 1,396 serious injuries (Figure 6.19). Approximately 50 percent of these crashes occurred in an urban environment. A large number of older driver fatal and serious injury crashes (44 percent) result from lane departure crashes. Crashes at intersections (40 percent) and aggressive driving (26 percent) also are strongly correlated to older driver crashes.

Figure 6.19 Older Driver Involved Fatalities and Serious Injuries by Year
2009 to 2013

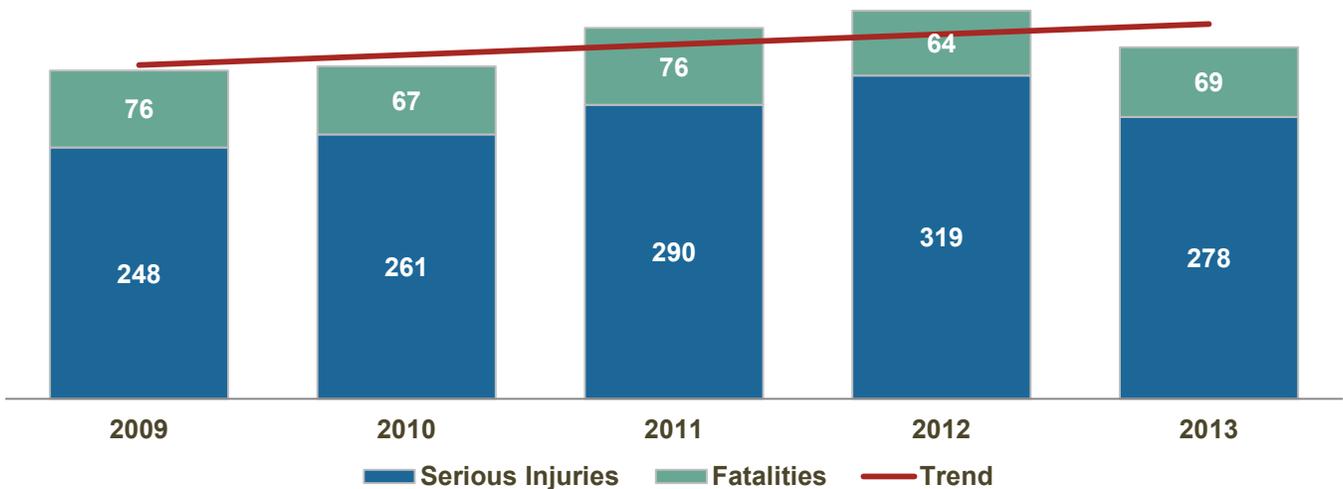




Figure 6.20 Older Driver Involvement in All Crashes, Serious Injuries, and Fatalities

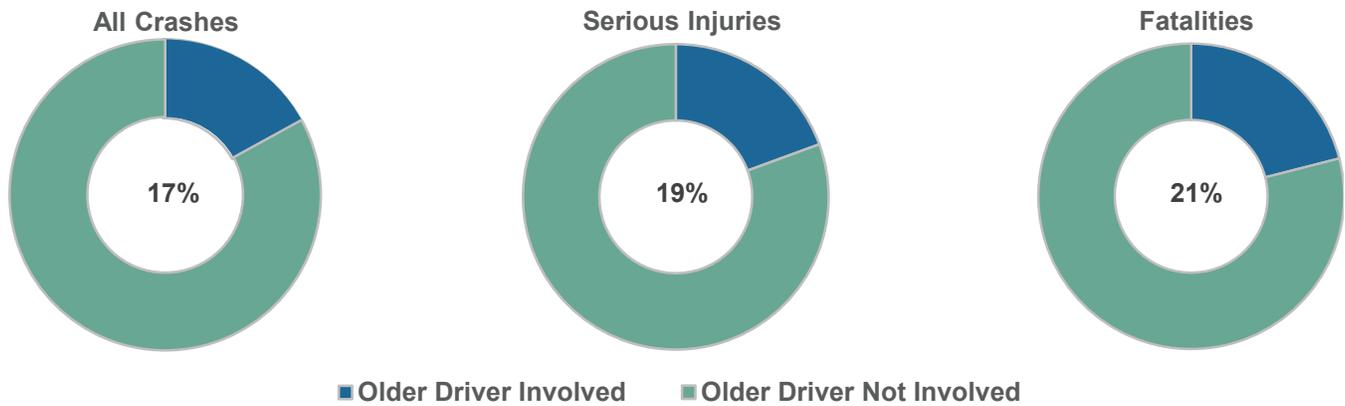
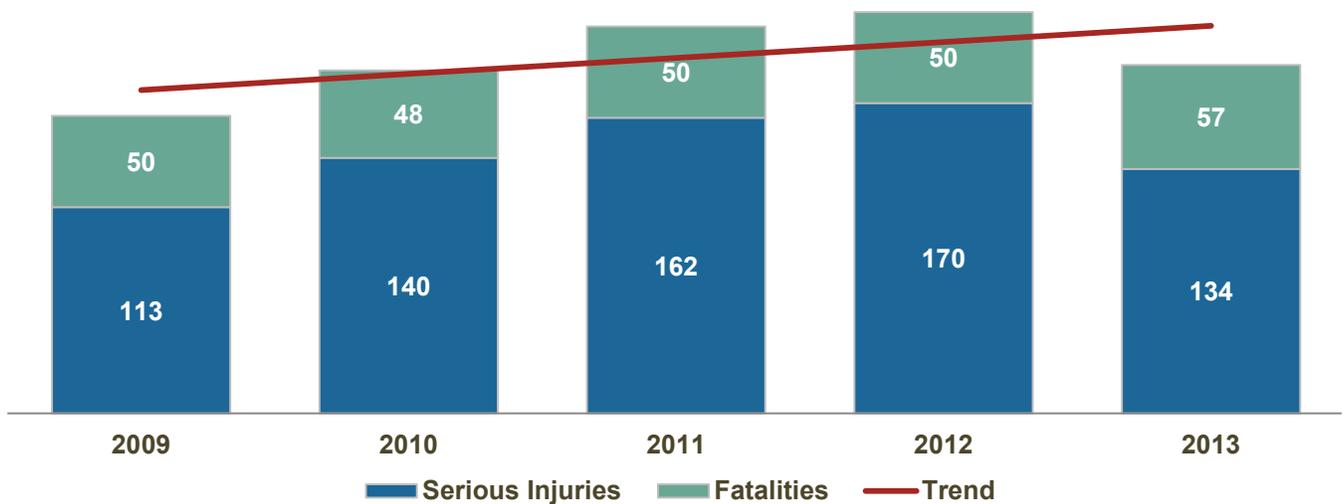


Figure 6.21 Older Driver and Pedestrian Fatalities and Serious Injuries by Year 2009 to 2013



General vulnerable user actions were developed and are shown in Table 6.11. These actions relate to all vulnerable road users, not just older drivers and pedestrians. Older road user-specific actions also were developed and are shown Table 6.12.

Table 6.11 Vulnerable User Actions (General)

Tier 2	
Action 6.11.1:	Conduct education campaigns to encourage all system users to recognize responsibility for the safety of all travelers (e.g., share the road, slow down for kids).
Co-Benefits	Speeding, Intersections, Motorcycles, Pedestrians, Bicyclists
Action 6.11.2:	Evaluate the need for actions which address the issues associated with children and adolescents, and young vehicle operators.
Co-Benefits:	Intersections, Roadway Departures, Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving



Table 6.12 Older Road Users Actions

Tier 1		
Action 6.12.1:	Identify risk factors for older drivers and implement treatments, within current law.	
	Co-Benefits	Data

Tier 2		
Action 6.12.2:	Identify risk factors for older walkers and implement treatments, within current law.	
	Co-Benefits	Pedestrians, Data

Emphasis Area: Improved Systems

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

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.³⁰ Similar to the TSAP, the plan outline critical state commercial vehicle issues, potential solutions and performance measures. There also are Federal guidelines documented in the plan.

Actions

Table 6.13 Commercial Vehicle Actions

Tier 1		
Action 6.13.1:	Implement the annual Commercial Motor Vehicle Safety Plan.	
	Co-Benefits	N/A

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 when they do occur to collect information for a crash report, which details 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 targeted enforcement and data collection.

³⁰ Summary of Oregon Truck Safety and Guide to the 2015 Commercial Vehicle Safety Plan. <https://www.oregon.gov/ODOT/MCT/docs/CVSPan2015.pdf>.



Actions

Table 6.14 Enforcement Actions

Tier 1	
Action 6.14.1:	Equitably enforce and prosecute traffic safety offenses for all modes.
Co-Benefits	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Motorcycles, Pedestrians, Bicyclists and Older Road Users
Action 6.14.2:	Increase funding for traffic patrols to enforce traffic laws.
Co-Benefits:	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving

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 responsibility 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.

Actions

Table 6.15 EMS Actions

Tier 1	
Action 6.15.1:	Recruit, train, and retain EMS responders in urban, rural, and sparsely populated areas.
Co-Benefits	Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Intersections, Roadway Departure, Motorcycles, Pedestrians, Bicyclists, Older Road Users, Training
Tier 2	
Action 6.15.2:	Promote Traffic Incident Management (TIM) Responder Training for EMS officials in rural and sparsely populated areas.
Co-Benefits	Training
Action 6.15.3:	Conduct annual trauma symposium for EMS providers.
Co-Benefits:	Training
Action 6.15.4:	Address EMS equipment shortfalls through increased funding.
Co-Benefits:	All users

Data

Crash, roadway, and 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. Data should be timely, accurate, complete, consistent, 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 Traffic Records Strategic Plan to ensure that the best available data is used for safety planning and investment decisions.



Actions

Table 6.16 Data Actions

Tier 1	
Action 6.16.1:	Evaluate pedestrian and bicycle high crash locations and risk factors through analysis of existing data and development of new data sources. Co-Benefits: Pedestrians, Bicyclists
Action 6.16.2:	Improve timeliness of crash data. Co-Benefits: N/A
Action 6.16.3:	Improve reliability of crash reports. Co-Benefits: Distracted Driving
Action 6.16.4:	Identify data needs related to impaired driving and implement measures to address gaps. Coordinate with public health. Co-Benefits: Impaired Driving
Action 6.16.5:	Develop and implement a new Traffic Records Strategic Plan based on the 2016, and subsequent future assessments of the traffic records system. Co-Benefits: N/A
Tier 2	
Action 6.16.6:	Evaluate type and extent of crash underreporting. Implement necessary actions to address issue. Co-Benefits: N/A

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.

Actions

Table 6.17 Training and Education Actions

Tier 1	
Action 6.17.1:	Implement education and training related to new types of infrastructure (e.g., signal heads, safety edge, crosswalks, bike lanes, or roundabouts) and related traffic laws. Co-Benefits: Intersections
Action 6.17.2:	Encourage and support local planning for safety efforts, the formation of local government commissions and committees, and other affiliated groups that address transportation safety. Co-Benefits: All modes
Action 6.17.3:	Implement education, training or examinations to ensure licensed drivers understand current traffic laws. Co-Benefits: Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles



Tier 2	
Action 6.17.4:	Conduct training and education to reduce the number of unendorsed travelers (all modes). Co-Benefits: Motorcycles, Pedestrians, Bicyclists, Older Road Users, Commercial Vehicles
Action 6.17.5:	Conduct training on traffic safety laws for law enforcement officers, attorneys and judges to improve consistent enforcement and adjudication processes. Co-Benefits: Enforcement
Action 6.17.6:	Provide continued improvement of the education system for new drivers, including issues dealing with access to, and cost associated with passenger vehicle operator training. Evaluate requiring driver training for youthful operators. Co-Benefits: Intersections, Roadway Departures, Impaired Driving, Speeding, Unrestrained Occupants, Distracted Driving, Motorcycles, Pedestrians, Bicyclists
Action 6.17.7:	Provide education and other countermeasures to ensure safe work zones around roadway construction and improvement projects for workers and the traveling public. Co-Benefits: Intersections, Roadway Departures, Impaired Driving, Speeding, Distracted Driving, Older Road Users
Action 6.17.8:	Provide support for use of comprehensive, integrated approaches such as 4 Es to those who design, operate, maintain, and use the system. Extend efforts to all agencies and partners through education and other measures. Co-Benefits: Enforcement, Emergency Response, Intersections, Roadway Departures

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 and programmatic measures, and potential future legal or policy changes have been identified to be implemented by a variety of Oregon’s agencies and stakeholders.



7

PERFORMANCE MEASURES AND TARGETS



7. PERFORMANCE MEASURES AND TARGETS

In order 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. 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.

TYPES OF 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.”³¹

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.”³²

Measurements are categorized into two distinct types: efficiency and effectiveness. Efficiency measures are focused on effort and outputs. They track the goings-on of a program, and in traffic safety examples include the following:

- Number of miles of rumble strips installed;
- Number of seat belt violation citations written;
- Number of labor hours of overtime enforcement conducted; and
- Number of 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.

Efficiency performance measures track effort and output of a program.

Efficiency performance measures track how many activities were conducted, or miles of treatment were installed.

Effectiveness performance measures track the results of a program or activity.

Effectiveness performance measures track how many fatalities or injuries occurred, or number of unbelted fatalities.

³¹ 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.

³² Performance Measure Fundamentals, FHWA Office of Operations, Washington, D.C., 2015. http://www.ops.fhwa.dot.gov/perf_measurement/fundamentals/.



Effectiveness measures, in contrast, are defined above as “the results of a program activity.” These measures tie more directly to the ultimate goals of reducing fatalities and serious injuries. Examples include:

Number of traffic fatalities in a given jurisdiction over the past year;

- Seat belt use rate;
- Number of unbelted fatalities;
- Number of marijuana-related fatalities and serious injuries; and
- Number of fatal crashes involving unendorsed motorcycle drivers.

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.

Predictive Measures

In addition to the example measures and attributes discussed above, transportation safety has recently expanded its analysis methods to include predictions of safety based on a variety of data. This method can be used for decision-making throughout the project development process, including planning, design, construction, operations, and maintenance. Examples include screening potential locations for improvement and choosing alternative roadway designs using data such as traffic volume, roadway geometry, and roadside conditions.

ODOT’s Transportation Planning Analysis Unit has been actively testing and applying safety analysis methods to see which predictive methods from AASHTO’s 2010 *Highway Safety Manual* work best for different analysis cases, and incorporating lessons learned into the Transportation Planning Analysis Unit’s *Analysis Procedures Manual*. Oregon should continue to work with national researchers and safety advocates to promote development of long-term, predictable safety performance measures and incorporate such measures in future TSAPs as appropriate.

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 programs.³³ The performance measures are:³⁴

³³ 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>.

³⁴ 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>.



1. Number of roadway fatalities;
2. Number of roadway serious injuries;
3. Roadway fatalities per vehicle miles traveled (i.e., fatality rate);
4. Roadway serious injuries per vehicle miles traveled (i.e., serious injury rate); and
5. 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 if the *Special Rule* applies.³⁵

The Rural Road Safety rule does not apply at this time because the five-year average fatality rate has declined in each successive year leading up to the development of the plan.

- **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.³⁶

The Older Drivers and Pedestrians special rule was found to apply because the five-year average number of fatalities and serious injuries for older drivers and pedestrians increased on a per-capita basis in 2014. As a result the TSAP update includes strategies to reduce fatalities and serious injuries among drivers and pedestrians 65 years or older.

Oregon Traffic Safety Performance Plan and NHTSA Performance Measures

The Oregon Traffic Safety Performance Plan identifies the following performance measures, which satisfy the NHTSA performance measure requirements.³⁷

- Fatalities;
- Serious Traffic Injuries;

³⁵ Highway Safety Improvement Program MAP-21 High Risk Rural Roads Guidance, Federal Highway Administration Office of Safety, Washington, DC, December 27, 2012. <http://www.fhwa.dot.gov/map21/guidance/guidehrrr.cfm>.

³⁶ MAP-21 Section 148: Older Drivers and Pedestrians Special Rule Interim Guidance, Federal Highway Administration Office of Safety, Washington, DC, October 1, 2012. <http://www.fhwa.dot.gov/map21/guidance/guideolder.cfm>.

³⁷ Oregon Traffic Safety Performance Plan, Fiscal Year 2016, Federal Version Report, Page 11.



- 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;
- Speed-related Fatalities;
- Motorcyclist Fatalities;
- Unhelmeted Motorcyclist Fatalities;
- Drivers Age 20 or Younger in Fatal Crashes;
- Pedestrian Fatalities;
- Bicyclist Fatalities; and
- 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 7.1.

Table 7.1 TSAP Performance Measures

Potential Emphasis Area	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 and 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>.



PERFORMANCE TARGETS

Requirements

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 (OTSPP) 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 OTSPP 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.

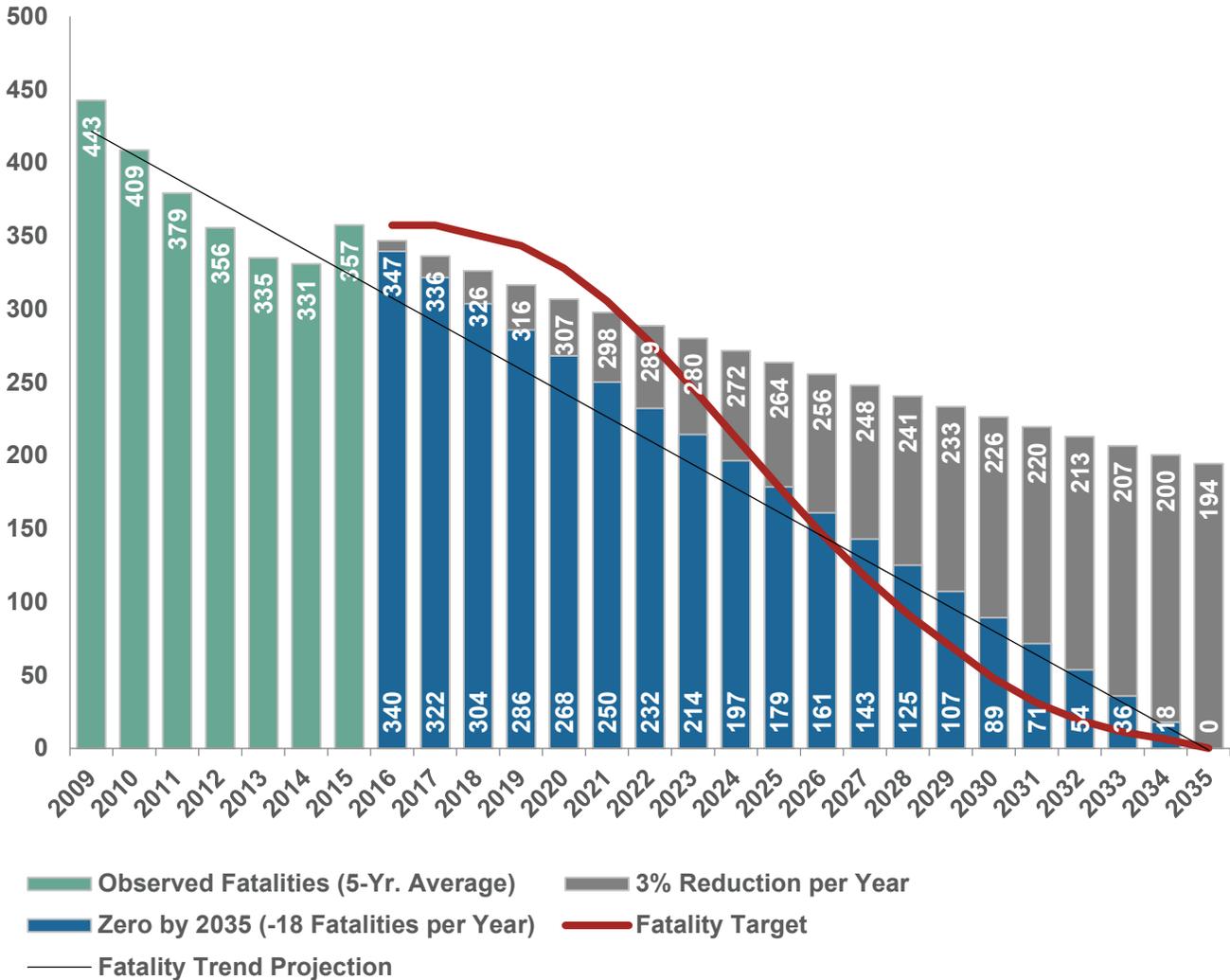
The Federal rule also requires MPOs to establish performance targets. MPOs can use the state-established targets or establish targets specifically for the planning area. Similar to the state target, the targets are applicable to all public roads in the MPO. States and MPO will coordinate their targets.

Several optional trend forecasts were considered in the process of selecting the targets. The optional trends were considered for each of the five performance measures. Figure 7.1 shows these optional trend forecasts for fatalities; the trend forecasts for all five performance measures are shown in Appendix G. The trend forecasting options were:

- **Straight line to zero by 2035.** In this forecast a straight line reduction in fatalities was assumed between the most recent five-year average and an average of zero fatalities in the five-year period between 2031 and 2035. This is shown in blue bars in the figure.
- **3-percent reduction per year.** Historically, the Transportation Safety Division has set a target of a 3-percent reduction in fatalities per year in its annual Transportation Safety Performance Plan. In the figure, the 3 percent reduction per year is forecast for the 20-year duration of the plan. This trend is forecast in the grey bars in the figure.
- **Trend-line.** The black line is a straight-line trend forecast from historic crash trends for the 20-year duration of the plan. It is based on the data shown in the green bars (2009 to 2015 for fatalities and 2009 to 2014 for the other performance measures).
- **S-Curve.** The S-Curve forecast (shown in red) was developed assuming 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 the future as it becomes more difficult to address the remaining fatalities.



Figure 7.1 Historic and Optional Forecast Fatality Trends
2009 to 2035, Five-Year Average



The PAC found strengths and weaknesses in each of these trend forecasts. For example, the trend-line forecast and the straight-line to zero forecast show that, with focus and effort, zero can be achieved.

However, recognizing the recent increase in fatalities (Figure 3.1), the PAC believes it is possible in the near future the five-year average number of fatalities may remain flat until programs and projects in this TSAP are well underway. The PAC also agreed in future years of the plan, the reductions will be more difficult to achieve because of smaller numbers; therefore, the rate of reduction would flatten out. Finally, the 3-percent per year forecast has put Oregon on a path to success; however, in order to reach zero fatalities, the PAC agreed it was necessary to have more aggressive targets.

Based on these considerations, the PAC recommended setting targets based on the S-Curve forecast trend. The resulting TSAP targets shown in Table 7.2 are for each five-year period of the five-year plan. For example, the TSAP establishes a target that for the five-year period between 2015 and 2019, there will be on average: 343 fatalities per year, 0.83 fatalities per 100 million vehicle miles of travel; 1,432 people seriously injured, 4.24 people seriously injured per 100 million vehicle miles of travel; and 225 nonmotorized fatalities and serious injuries.



Table 7.2 TSAP Performance Targets
Five-Year Average

Base Period	Fatalities (People) (2011-2015)	Fatality Rate (People per 100 Million VMT) (2011-2015)	Serious Injury (People) (2010-2014)	Serious Injury Rate (People per 100 Million VMT) (2010-2014)	Nonmotorized Fatalities and Serious Injuries (People) (2010-2014)
Baseline	357	1.04	1,491	4.42	234
2013-2017	357	0.94	1,491	4.42	234
2014-2018 ^a	350	0.89	1,461	4.33	229
2015-2019	343	0.83	1,432	4.24	225
2016-2020	328	0.78	1,368	4.06	215
2017-2021	306	0.73	1,274	3.78	200

^a 2014-2018 is the first period that targets must be established for the HSIP Program.

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 7.2 Fatality Target

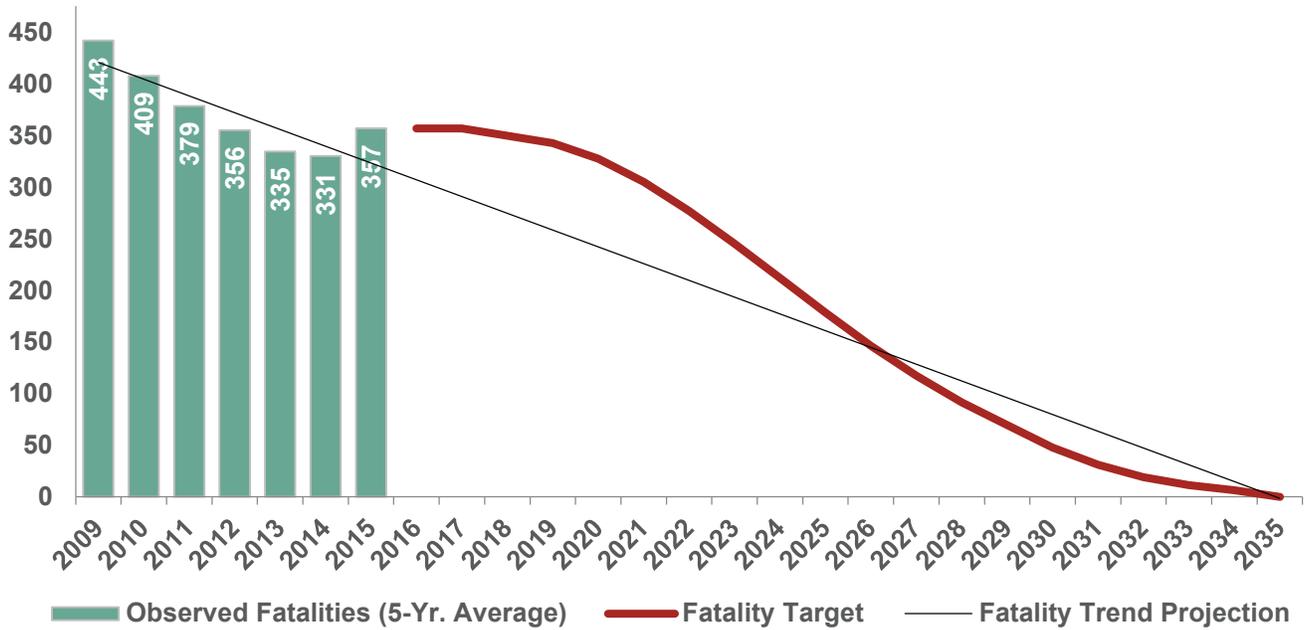


Figure 7.3 Fatality Rate per 100 Million Vehicle Miles Traveled Target

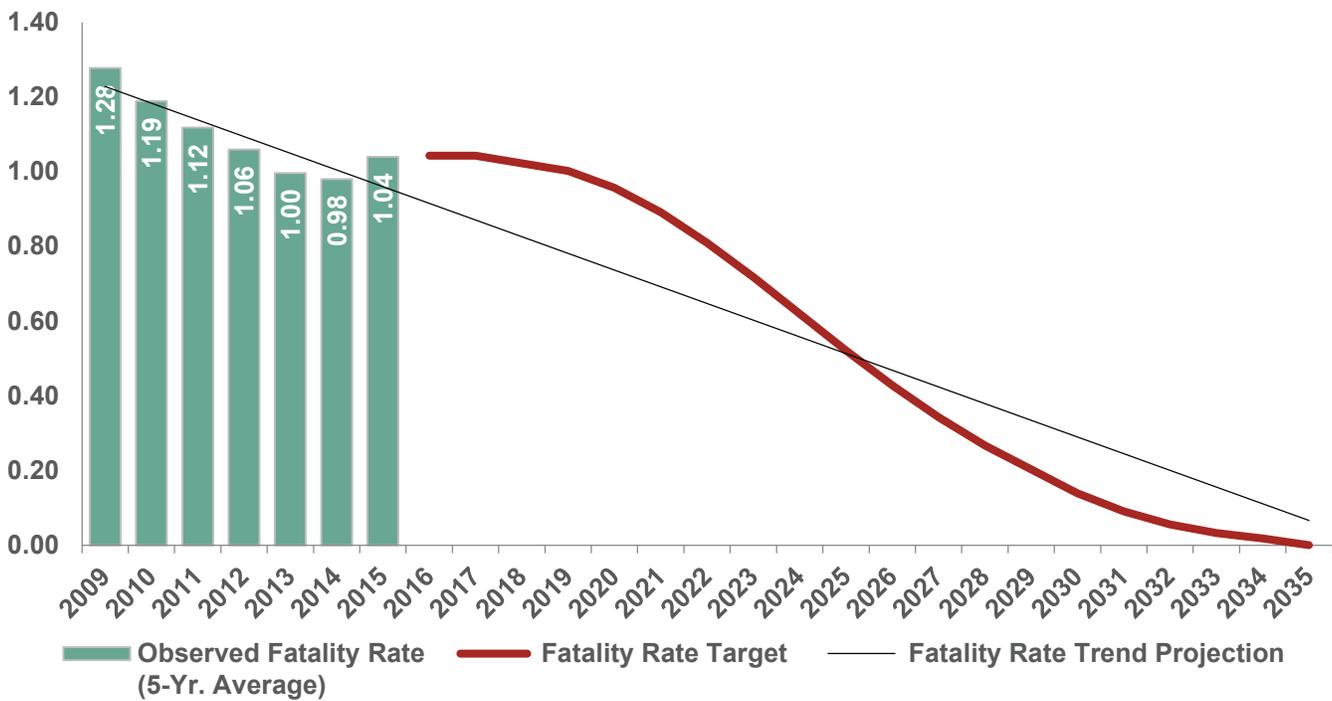




Figure 7.4 Serious Injury Target

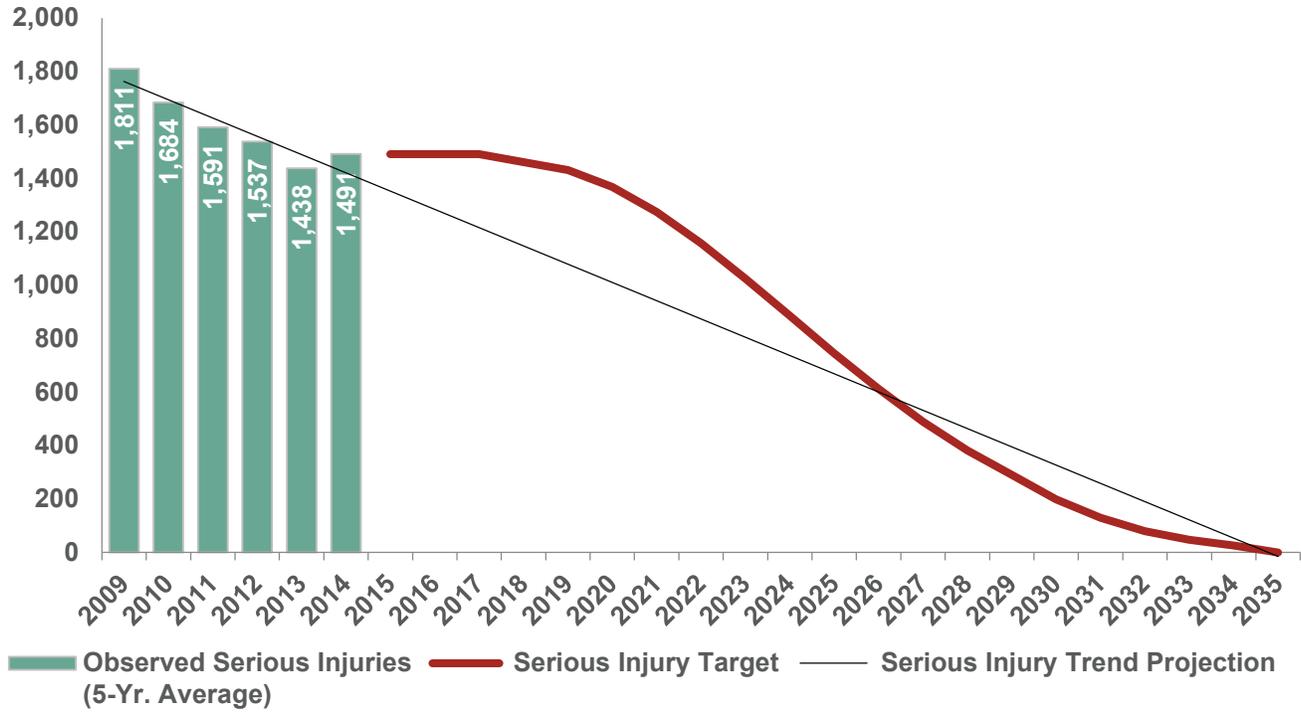


Figure 7.5 Serious Injury Rate per 100 Million Vehicle Miles Traveled Target

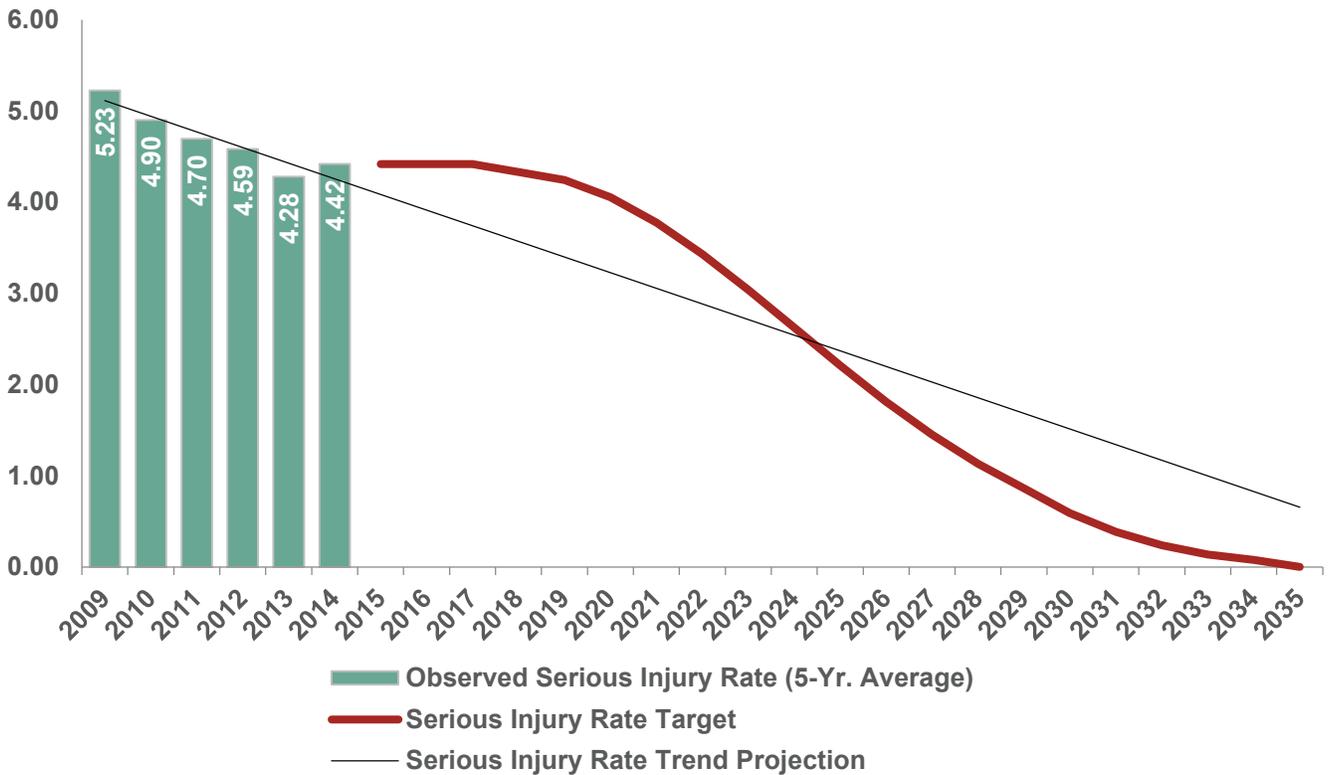
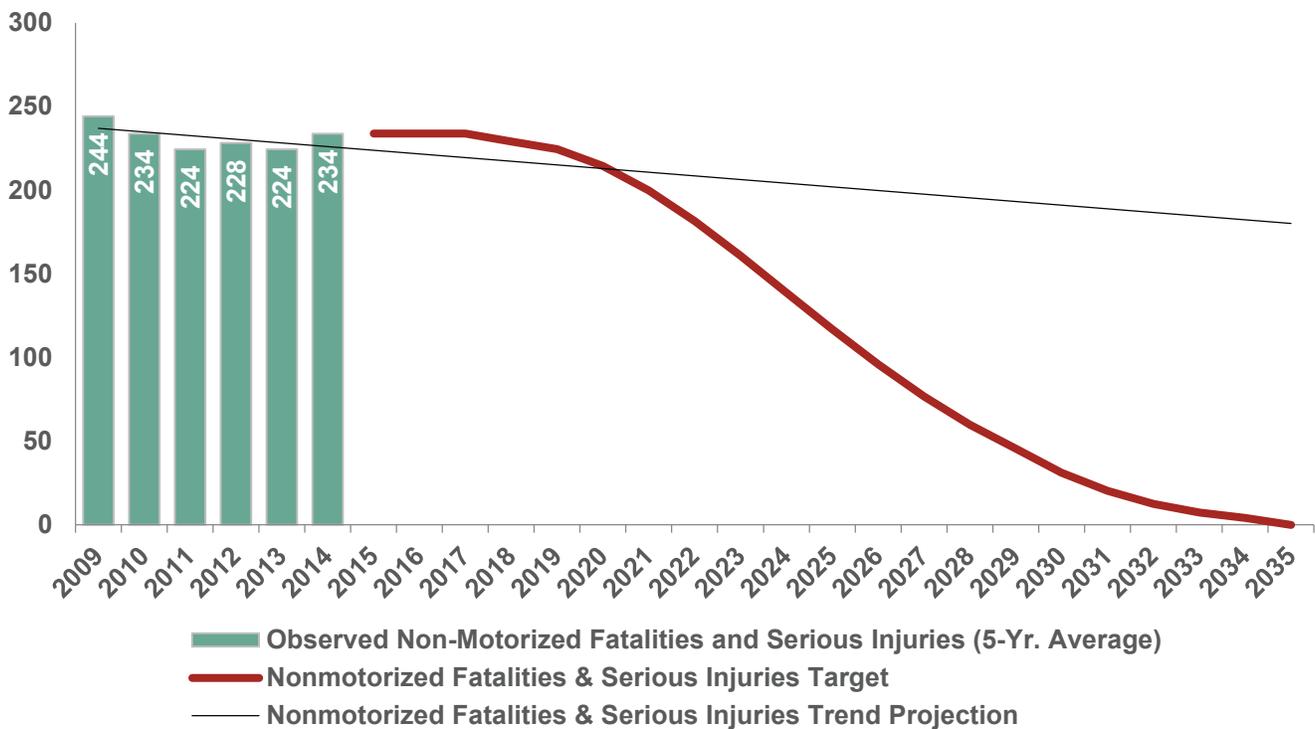




Figure 7.6 Nonmotorized Fatalities and Serious Injuries Target



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



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. 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 (Figure 8.1).

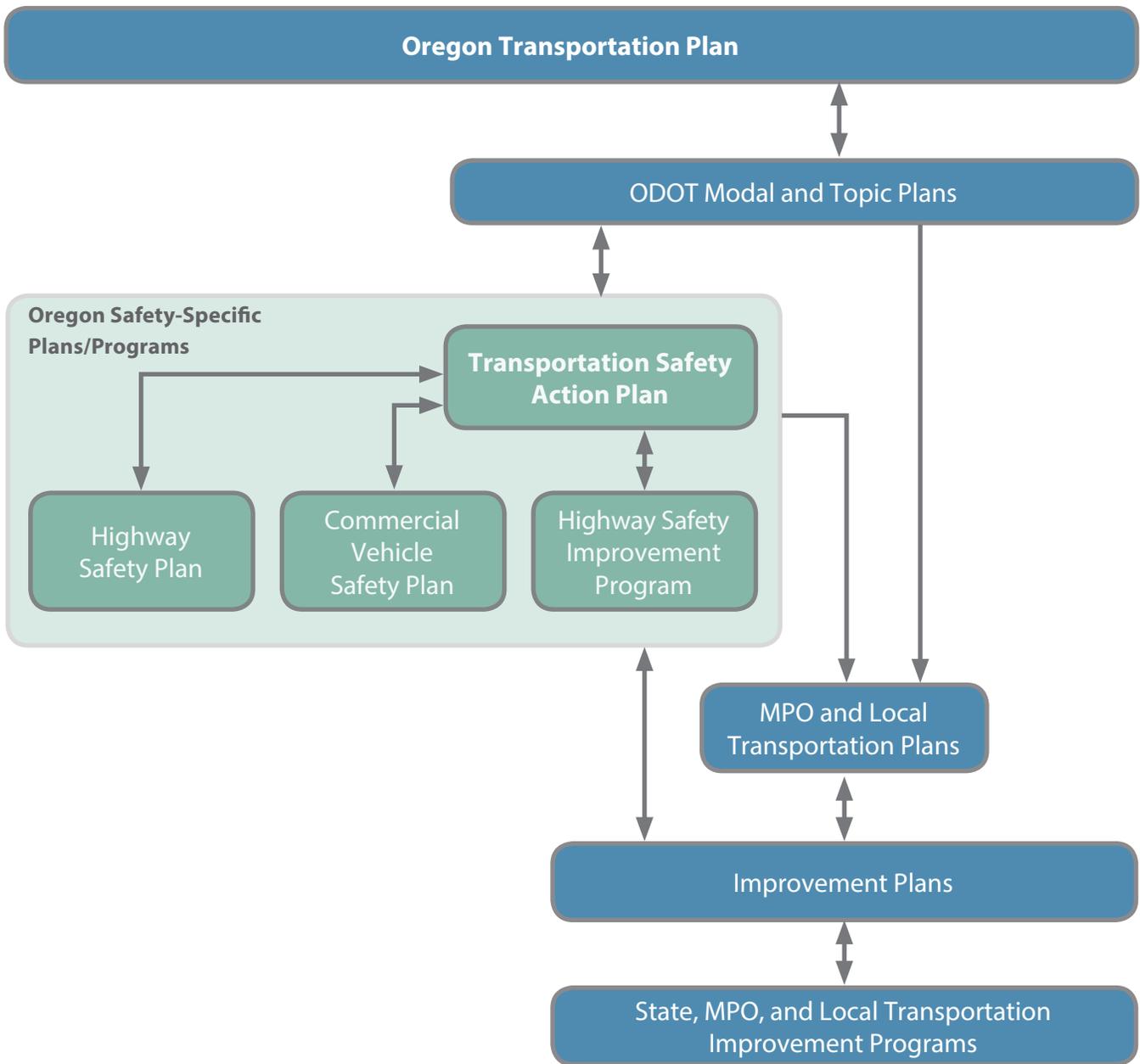
Using the goals, policies, and strategies in the TSAP, planners and engineers can track and plan for safety on the transportation system by:

- **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.



Figure 8.1 Plan Linkages



The TSAP also provides near-term actions for reducing fatalities and life-changing injuries. 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 strategies and 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.

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 8.1 Example Activities and Roles

Agency	Example Activities and Roles
ODOT	<ul style="list-style-type: none"> • Lead state in vision, culture, direction, and best 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 targeted education and marketing campaigns.



Agency	Example Activities and Roles
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 targeted 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 (by the year 2020) and short-range (current year) 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 of 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: 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 (guard rail, 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

At least four fundamental elements support all SHSP implementation practices: leadership, collaboration, communication, and data collection and analysis.³⁸ The same also 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 trust in and 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.

³⁸ Federal Highway Administration. Strategic Highway Safety Plan Implementation Process Model. June 2010.





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APPENDICES



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WHO DEVELOPED THIS PLAN

A. WHO DEVELOPED THIS PLAN

OREGON TRANSPORTATION SAFETY COMMITTEE

VICTOR HOFFER, Chair

LOUIS A. ORNELAS, Vice Chair

JEROME S. COOPER, Member

MIKE LAVERTY, Member

MARIAN OWENS, Member

POLICY ADVISORY COMMITTEE

MICHAEL LAVERTY, Oregon Transportation Safety Committee

VICTOR HOFFER, Oregon Transportation Safety Committee

LUIS ORNELAS, Oregon Transportation Safety Committee

MARIAN OWENS, Oregon Transportation Safety Committee

JEROME S. COOPER, Oregon Transportation Safety Committee

EMILY ACKLAND, Association of Oregon Counties

PAMELA BARLOW LIND, Cascades West ACT and Confederated Tribes of Siletz Indians

KIMBERLY DAILEY, Oregon Judicial Department

TYLER DEKE, Bend Metropolitan Planning Organization

CHUCK HAYES, Governor's Advisory Committee on DUI

CHRIS HENRY, City of Eugene/Governor's Advisory Committee on Motorcycle Safety

CRAIG HONEYMAN, League of Oregon Cities

DAVE JOSTAD, May Trucking Company

SCOTT KOTCHER, Oregon Walks

BRIAN RAY, Kittelson & Associates

JEFF LEWIS, Oregon State Police

MICHAEL TYNAN, Oregon Health Authority

TROY COSTALES, ODOT Transportation Safety Division

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DOUGLAS W. BISH, Technical Services, Traffic Engineering

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JOHN CYRUS, Rail Transit Compliance Specialist 3

DENNIS A. HACKNEY, Region 5, Assistant District 13 Manager

LYNDA HORST, Rail Transit Specialist

JOEL R. MCCARROLL, Region 4, Traffic Manager

CHRISTINA MCDANIEL-WILSON, Senior Transportation Analyst, TPAU

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LARRY OLSON, Region 1, District 2C Manager

AMY J. RAMSDELL, Salem Motor Carrier Services Manager

HOWARD H. RUSSELL, Safety Compliance Field Unit Manager

OSEALEE A. SENGER, Region 3, Traffic Safety Coordinator

SHELLEY M. SNOW, Strategic Communication Coordinator

LANA R. TRIBBEY, Driver and Motor Vehicle Services, Customer Services Group Manager

PROJECT MANAGEMENT TEAM

ODOT Members

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ERIK HAVIG, Planning Section Manager

NANCY E. MURPHY, Agency Project Manager, Principal Planner 4

WALT MCALLISTER, Safe Communities and Public Information Program Manager

MICHAEL ROCK, Interim Planning Programs Unit Manager

Consultant Team

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Initial Outreach and Reporting

DOUG ZENN, HDR



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TSAP UPDATE PROCESS AND MAP-21 REQUIREMENTS

B. TSAP UPDATE PROCESS AND MAP-21 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"> • Formation of three committees with diverse stakeholder representation to provide input into TSAP. • About 25 interviews and 10 regional meetings with ODOT staff, stakeholder agencies, and the public to understand the strengths, opportunities, weaknesses, and threats from previous TSAP. • Five listening sessions in each ODOT region to obtain public and stakeholder input on the emphasis areas, strategies, and actions.
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 2009-2013, an analysis was completed for all public roads in Oregon. Based on these results, eight emphasis areas were selected. • An additional seven emphasis areas were selected based on PAC suggestions, effectiveness data, institutional capacity, emphasis area overlap, consistency with existing plans, and public input.
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 five-year 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 input from the PAC, the PMT, listening sessions, and effective countermeasures.

MAP-21 Requirement	Description of Requirement	Summary of ODOT Activities
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 high-risk rural road special rule does not apply in Oregon. The special rule for older drivers and pedestrians does apply in Oregon. The TSAP includes strategies to address this issue area.

CONSULTATIVE PROCESS

Considerable outreach was conducted with the required stakeholders (23 U.S.C. 148(a)(11)(A)) and others through committee meetings, interviews, surveys, and listening sessions.

Committees

Policy Advisory Committee (PAC). This diverse group of stakeholders informed and guided development of Oregon's safety priorities and ensured policy decisions resulted in workable strategies. More specifically, they were responsible for:

- Discussing and deliberating Oregon's priorities for transportation safety;
- Reviewing and responding to work products;
- Working toward consensus on policy issues and plan products; and
- Making an adoption recommendation to the Oregon Transportation Commission.

The PAC met monthly over the course of the TSAP Update and included representatives from: Oregon Transportation Safety Committee, Confederated Tribes of Siletz, ODOT Safety Division, ODOT Planning Division, Bend Metropolitan Planning Organization, City of Eugene, Governor's Advisory Committee on Motorcycles, Oregon State Police, Oregon Walks, Oregon Health Authority, Oregon Judicial Department, Association of Oregon Counties, Governor's Advisory Committee on DUII, League of Oregon Cities, and May Trucking.

Project Coordination Team (PCT). Provided technical input to major milestones, including vision, goals, emphasis areas, strategies, and actions. The PCT met four times over the course of the project and included staff from all modal divisions of ODOT.

Project Management Team (PMT). Provided overall direction for the project and managed all TSAP activities and administration. The PMT was a collaborative effort between ODOT's Transportation Development and Safety Divisions, who met biweekly 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, 22 interviews were conducted with representatives from several ODOT Divisions. Offices interviewed included Maintenance, Driver and Motor Vehicle Services, Project Delivery, Motor Carrier, Transportation Development, Crash Data, and Bike and Pedestrian programs.

In addition, 10 regional meetings were held with community members and transportation and safety stakeholders from late October 2014 through December 2014. Events were held across the state in Lincoln City, John Day, Redmond, Klamath Falls, Phoenix, Coos Bay, Hood River, Eugene, Portland, and Astoria; and in total, more than 90 individuals participated. About 450 comments were received from participants, providing insights into the strengths and weaknesses of current safety planning efforts and opportunities and potential threats moving forward.

To dig deeper into some of the institutional, planning, and programmatic elements of safety, three individuals, representing perspectives from Oregon DOT (Planning Division), an MPO (Lane Council of Governments), and a local jurisdiction (Clackamas County) also were interviewed.

Listening Sessions and Survey

Listening meetings were held in the five ODOT regions. Participants included ODOT staff; stakeholder agencies; community groups; MPO, local, and tribal representatives; and members of the public. The purpose of the meetings was to review and provide input on the preliminary emphasis areas, including suggestions for strategies and actions. For those who could not attend, an on-line survey was created.

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 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.

The text box shows all of the plans reviewed.

As a Topic Plan that is part of the Oregon Transportation Plan, 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 PAC committee. This collaboration ensured that safety plans and safety elements in transportation plans had a higher degree of coordination.

OREGON PLANS REVIEWED

Oregon Transportation Plan, Oregon Freight Plan, Oregon Rail Plan, Oregon Highway Plan, Oregon Transportation Options Plan, Oregon Public Transportation Plan, and the Oregon Bicycle and Pedestrian Plan

Additionally, strategies from the Oregon Traffic Safety Performance Plan, Oregon Commercial Vehicle Safety Plan, Roadway Departure Implementation Plan, Intersection Safety Implementation Plan, and Bicycle and Pedestrian Safety Implementation Plan.



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 selection of the most appropriate emphasis areas for the TSAP.

The time period covered in the data analysis was from 2009-2013 and included crashes on all public roads in Oregon, regardless of roadway ownership or 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, but 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; and
9. Older Drivers (65+) Involved.

Of these nine, roadway departures, intersections, speed-related, impaired driving, motorcycles, unrestrained occupants, pedestrians, and older drivers were identified as emphasis areas for the TSAP.

Young drivers was not selected as an emphasis area because these crashes are less severe, fatalities and serious injuries are trending downwards, and young drivers can be addressed in combination with other emphasis areas, including roadway departures and speeding.

Bicyclists/Pedalcyclists and Distracted Drivers were identified as emphasis areas by ODOT and other safety stakeholders. Although the frequency of bicyclist-related crashes is lower, it was concluded that bicycle users are increasingly vulnerable as mode shift occurs across the state; bicycle ridership continues to increase; and bicycle crashes are severe when they do occur.

Distracted driving also was identified as an issue of concern but because of reporting constraints it is not yet possible to quantify the scale of the problem. One of the first actions recommended in this subarea is to define and assess the scale of distracted driving in Oregon.

Five overarching emphasis areas, including Improved Data, Training, Enforcement, Emergency Medical Services, and Commercial Vehicles also were identified and will benefit all safety activities.



In addition to the crash data analysis, emphasis areas also were selected based on 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 EA consistent with other state plans and policies and does it address a significant policy goal? If not, does the potential EA 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:

- 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); and
- Combined nonmotorized fatalities and nonmotorized serious injuries.

Each of the five safety performance measures have 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 OTSPP and 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 strategies and actions were developed based on input from the PAC, the results of the five listening sessions, expertise of PMT members, strategies identified in other Oregon transportation and safety planning documents, and resources on effective countermeasures. The range of emphasis area actions correlates with the magnitude of the problem – for example, roadway departure fatalities and serious injuries occur most frequently, so a number of targeted 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 on the PAC and participants at the listening sessions 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:

- Analyze crash data to evaluate progress toward the five overarching safety targets;
- Coordinate with the ODOT Safety Division to evaluate progress on the FHWA required overlapping safety targets and NHTSA required performance measures and targets;
- Review fatalities on high-risk rural roads and fatalities and serious injuries per capita among older 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; and
- 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 does not apply to Oregon. The five-year average fatality rate on rural roads has decreased each year since 2007.
- **High-Risk Rural Roads (HRRR) Methodology.** Oregon uses a systemic approach to set crash thresholds and identify potential sites for HRRR investments. The crash data system is analyzed to identify highway sections that have targeted crashes at or above a crash threshold to ensure cost-effective deployment of HRRR countermeasures. HRRR are incorporated within projects delivered as part of Oregon All Roads Transportation Safety (ARTS) program.
- **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. The five-year average number of older driver and pedestrian fatalities and serious injuries per 1,000 residents 65 years of age or older increased from 0.34 in 2012 to 0.35 in 2013 and 0.36 in 2014. Strategies to address the increase in fatalities and serious injuries among the older population are included in the TSAP.



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C

**FINDINGS OF
COMPLIANCE
WITH APPLICABLE
STATE LAW AND
ADMINISTRATIVE
RULES**

C. FINDINGS OF COMPLIANCE WITH APPLICABLE STATE LAW AND ADMINISTRATIVE RULES

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- A. Transportation Safety Planning and Programs
- B. Requirements of the State Agency Coordination Agreement
- C. OTC Policy 11: Public Involvement Policy
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- F. Consistency with Oregon Modal and Topic Plans
- G. Compatibility with Local Land Use Plans

A. TRANSPORTATION SAFETY PLANNING AND PROGRAMS

ORS 802.310: Transportation Safety Programs; Administrator

(1) The administrator for transportation safety shall serve as the Governor's representative for highway safety in conformity with the Federal Highway Safety Act of 1966. The Director of Transportation and the Oregon Transportation Commission shall be responsible to the Governor for the administration of the state transportation safety programs. All reports and recommendations relating to program evaluations, assignment of responsibilities and approval of plans and activities shall be provided to the Governor by the commission.

(2) The Department of Transportation, in consultation with the Transportation Safety Committee, shall do the following:

- (a) Organize, plan and conduct a statewide transportation safety program.
- (b) Coordinate general activities and programs of the several departments, divisions or agencies of the state engaged in promoting transportation safety.
- (c) Provide transportation safety information and develop other measures of public information.
- (d) Cooperate fully with all national, local, public and private agencies and organizations interested in the promotion of transportation safety.
- (e) Serve as a clearinghouse for all transportation safety materials and information used throughout the state.
- (f) Cooperate in promoting research, special studies and analysis of problems concerning transportation safety.
- (g) Make studies and suitable recommendations to the legislature concerning safety regulations and laws.

FINDING: The Transportation Safety Action Plan (TSAP) implements the provisions of ORS 802-310(2) by meeting the "plan" requirement in subsection (a) and providing a framework for implementing subsections (a)-(g). The plan development process and outcomes are consistent with this statute.

B. REQUIREMENTS OF THE STATE AGENCY COORDINATION AGREEMENT

Findings meeting the SAC requirements fall under three different categories of agreement:

Compliance with ODOT's State Agency Coordination Agreement, Oregon Transportation Commission Policy 11: Public Involvement, and the Statewide Planning Goals which specifically apply and other Goals that may affect or be affected by the plan;

Consistency with applicable state plans and policies, in this case the Oregon Transportation Plan and Oregon Highway Plan; and

Compatibility with local land use plans.

Findings of Compliance with State Agency Coordination Agreement

The Oregon Department of Transportation's (ODOT) State Agency Coordination Agreement (SAC) requires that the Oregon Transportation Commission (OTC) adopt findings of fact when adopting final modal system plans (OAR 731-015-0055). Pursuant to these requirements, the following findings and supporting information supplement the OTC adoption of the updated TSAP.

Coordination Procedures for Adopting Final Topic Plans³⁹ (OAR 731-015-0055)

(1) Except in the case of minor amendments, the Department shall involve DLCD, metropolitan planning organizations, and interested cities, counties, state and federal agencies, special districts and other parties in the development or amendment of a modal systems plan. This involvement may take the form of mailings, meeting, or other means that the Department determines are appropriate for the circumstances. The Department shall hold at least one public meeting on the plan prior to adoption.

(2) The Department shall evaluate and write draft findings of compliance with all applicable statewide planning goals.

(3) If the draft plan identifies new facilities which would affect identifiable geographic areas, the Department shall meet with the planning representatives of affected cities, counties and metropolitan planning organization to identify compatibility issues and the means of resolving them. These may include:

(a) Changing the draft plan to eliminate the conflicts;

(b) Working with the affected local governments to amend their comprehensive plans to eliminate the conflicts; or

(c) Identifying the new facilities as proposals which are contingent on the resolution of the conflicts prior to the completion of the transportation planning program for the proposed new facilities.

(4) The Department shall present to the Transportation Commission the draft plan, findings of compatibility for new facilities affecting identifiable geographic areas, and findings of compliance with all applicable statewide planning goals.

(5) The Transportation Commission, when it adopts a final modal systems plan, shall adopt findings of compatibility for new facilities affecting identifiable geographic areas and findings of compliance with all statewide planning goals.

³⁹ "Modal systems plans" as used in the OAR, includes "topic plans" for purposes of land use law and for these findings. The term topic plans was not in use at the time the SAC was adopted; the two types of plans are equivalent in terms of their weight and relationship to the OTP; the terminology is simply descriptive.

(6) The Department shall provide copies of the adopted final modal systems plan and findings to DLCD, the metropolitan planning organizations, and others who request to receive a copy.

FINDINGS: The TSAP amendments are being made to a topic plan that is part of the Oregon Transportation Plan and do not propose specific new transportation facilities.

The development of the proposed updated TSAP was subject to an open and ongoing public and agency involvement process which included metropolitan planning organizations (MPOs), Area Commissions on Transportation (ACTs), cities, counties, state and federal agencies, tribes, numerous topic and stakeholder interest groups, and input from interested citizens.

The plan does not directly affect land use; Department of Land Conservation and Development was notified of the release of the plan for public review and of adoption of the plan.

At the June 16, 2016 OTC meeting, the Commission reviewed the draft TSAP revisions and released the document for public review and input. Broad notification of the availability of the draft amendments was distributed as described in the Record of Outreach in Appendices A and B. Written notification was sent to DLCD staff on June 17, 2016. Agency and stakeholder notification included the updated TSAP, and methods to provide comments.

A public hearing was held at the July 21, 2016 OTC meeting to provide an additional opportunity for submitting public comments and the opportunity to testify directly to the OTC. Public comments were accepted through August 1, 2016.

Adoption

The TSAP adoption phase is unique because there are two groups of decision makers who have to agree to its adoption. The Oregon Transportation Safety Committee is appointed by the Governor to oversee transportation safety programs for the whole state including all state agencies that participate in transportation safety activities. OTSC approval of the plan and referral of the plan to the Oregon Transportation Commission for adoption is an important step in the adoption process.

OTSC considered comments received during public review at their August 9, 2016 meeting. The Policy Advisory Committee convened to discuss public comments that raised substantive or other new issues requiring additional discretionary decision making. The PAC meeting closed and the OTSC public meeting was opened at which time the members voted to approve the plan as amended in the August 9th meeting, subject to the project management team making all revisions agreed upon before referral to OTC.

The OTC adopted the proposed updated TSAP at their October 13-14, 2016 meeting. The October 13-14, 2016 OTC Meeting packet included the following attachments and information for OTC action:

- Revised TSAP based on response to comments received during public review
- Draft Findings of Compliance with Oregon's Statewide Planning Goals
- TSAP Revisions (Track Changes from Public Review Draft)
- Summary of Comments on TSAP Public Review Draft and Proposed Actions
- Record of Outreach conducted for the Public Review process
- Public Review Period Comments summary and copies of comments received

Per the SAC, and customary ODOT practice, the final TSAP amendments and final Findings of Compliance with Statewide Planning Goals will be distributed as an electronic document to DLCD, MPOs, interested parties from throughout the policy revision process, and others who request a copy following adoption. The final documents will be available on the project webpage: <http://www.oregon.gov/ODOT/TD/TP/Pages/tsap.aspx>.

C. OTC POLICY 11: PUBLIC INVOLVEMENT POLICY

The Oregon Transportation Commission and the Oregon Department of Transportation will meaningfully involve the public in important decisions by providing for early, open, continuous, and effective public participation in and access to key planning and project decision-making processes.

FINDINGS: Outreach for the Draft TSAP was conducted in compliance with OTC Policy 11 – Public Involvement, which establishes public involvement objectives for the development and update of statewide plans, including topic plans, such as the Oregon Transportation Safety Action Plan. The measures taken to meaningfully involve the public are discussed in additional detail below.

D. STATE LAND USE PLANNING GOALS

The State of Oregon has established 19 statewide planning goals to guide state, regional, and local land use planning. The goals express the state’s policies on land use and related topics. The findings below are based on applicability and content of the Plan.

Goal 1. Citizen Involvement – The purpose of Goal 1 (660-015-0000(1)) is “To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.”

FINDINGS: The Oregon Transportation Safety Action Plan was built upon continuous engagement with a broad spectrum of stakeholder groups and individuals across Oregon.

The voices and perspectives captured in the Plan include those of representatives from Area Commissions on Transportation (ACTs), Metropolitan Planning Organizations (MPOs), city, county, regional and tribal governments, and public interest groups representing mode-specific interests (bicyclists and pedestrians, transit providers and users, commercial trucking, motorcyclists), ODOT and other State agencies. State advisory bodies with direct charges related to transportation safety were engaged such as the Oregon Bicycle and Pedestrian Advisory Committee (OBPAC), the Oregon Public Transit Advisory Committee (PTAC), the Governor’s Advisory Committee on Motorcycle Safety, the GAC on Driving Under the Influence of Intoxicants, Oregon Freight Advisory Committee and others.

Outreach activities were also conducted in compliance with relevant policies in the Oregon Transportation Plan including OTP Goal 7, Coordination, Communication and Cooperation.

Throughout the planning process there were several methods of outreach. Highlights include:

- In September and October, 2014 a consultant hired to support project scoping and public involvement planning conducted 22 interviews among ODOT Divisions to assess perceptions about the current 2011 Transportation Safety Action Plan (TSAP) and to seek suggestions for the development of the next iteration of the plan. The interviews included Maintenance and Operations Branch, Driver and Motor Vehicle Services, Project Delivery, Motor Carrier, Transportation Development, Crash Data, and Bike and Pedestrian programs, as well as representatives from ODOT’s Region offices.
- In November 2014 public meetings were held in eleven locations (with a twelfth meeting cancelled due to ice hazards, replaced by an ad hoc meeting with freight haulers iced in at the same hotel). Participant numbers were modest (ranging from 6 to 25 participants), but the representation by stakeholder groups was rich, with local, regional and tribal governments; private business people; bicycle, walking and motorcycle interests; the freight industry; ODOT Region safety, engineering and planning staff; and the Federal Highway Administration all represented.

- A stakeholder email list was generated through these meetings. All participants who entered their email addresses on sign-in sheets were signed up for periodic updates on the developing plan through the project website. At the end of this meeting cycle in early December over 300 people had signed up.
- Listening meetings targeting city and county staff, other practitioners, and the general public were held in January 2016 in the headquarters cities of ODOT's five Regions, and a virtual open house was made available to include people not participating in the in-person meetings. All of these points of contact provided an update on the plan development process and an opportunity to submit comments.
- Email alerts provided regular updates through the project website with interim draft reports, information on opportunities to attend PAC and other public meetings, and opportunities to provide input including on-line surveys and the formal public comment period.
- Presentations on the plan were provided to numerous groups throughout the course of the project, including ODOT leadership teams that have a direct interest in safety midway through plan development, and a concentrated effort to engage Area Commissions on Transportation statewide during the public review period.
- A tabling event was held at the statewide Transportation Safety Conference in October 2015.
- Notification of public review was sent to groups and individuals engaged in transportation safety businesses or non-profits, interested state agencies who participated in the plan development process and others with an interest in decisions affecting land use, Metropolitan Planning Organizations, tribal governments, Oregon counties and cities, interested advisory committees, Department of Land Conservation and Development, groups required to be notified by FHWA for Strategic Highway Safety Plans, and groups required to be notified by the state for plans affecting land use.
- A public comment period of 45 days started on June 16th and notification of public review was completed June 20th. The public review period ended August 1, 2016.
- The Oregon Transportation Commission held a public hearing at their July 21, 2016 regularly scheduled meeting.

Development of the Oregon Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 1, Citizen Involvement.

Goal 2. Land Use Planning – The purpose of Goal 2 (OAR 660-015-0000(2)) is “To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.”

FINDINGS: The Oregon Transportation Safety Action Plan does not include policy that directly affects land use. It is understood that implementation of TSAP Goal 2: Infrastructure and some other implementation measures will require individual project decisions that may affect land use. But the plan itself is permissive rather than prescriptive in its long-range Policies and Strategies and short-term Actions, which allows for wide variation in specific measures for implementation based on variations in geographic, demographic and geometric conditions, etc. The plan supports a focus on transportation safety when individual location- or jurisdiction- specific decisions are made.

Development of the Oregon Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 2, Land Use Planning.

Goal 3. Agricultural Lands – The purpose of Goal 3 (OAR 660-015-0000(3)) is “To preserve and maintain agricultural lands.”

FINDINGS: The Transportation Safety Action Plan does not directly propose or approve changes to facilities or infrastructure that would encroach on or impact agricultural lands. The plan contains Policies, Strategies and Actions that recognize



differences between urban and rural crash statistics and the federal government requires the plan to address crash risks on rural roads. Improved transportation safety on rural roads is a benefit to rural residents and enterprises, including agriculture.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 3, Agricultural Lands.

Goal 4. Forest Lands – The purpose of Goal 4 (OAR 660-015-0000(4)) is “To conserve forest lands by maintaining the forest land base and to protect the state’s forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.”

FINDINGS: The Transportation Safety Action Plan does not directly propose facilities or infrastructure that would encroach or impact forest lands. The plan contains Policies, Strategies and Actions that recognize differences between urban and rural crash statistics and the federal government requires the plan to address crash risks on rural roads. Improved transportation safety on rural roads is a benefit to rural residents and enterprises, including forests and forestry.

The Transportation Safety Action Plan is in general compliance with and supports Statewide Planning Goal 4, Forest Lands.

Goal 5. Natural Resources, Scenic and Historic Areas, and Open Spaces – The purpose of Goal 5 (OAR 660-015-0000(5)) is “To protect natural resources and conserve scenic and historic areas and open spaces.”

FINDINGS: The Transportation Safety Action Plan does not directly propose facilities or infrastructure that would encroach upon or impact historic areas, scenic areas, or open spaces. It is understood that implementation of TSAP Goal 2: Infrastructure and some other implementation measures will require individual project decisions that may affect resource lands. But the plan itself is permissive rather than prescriptive in its long-range Policies and Strategies and short-term Actions, which allows for wide variation in specific measures for implementation based on, among other things, minimizing impacts on resource, environmental and cultural resources.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 5, Natural Resources, Scenic and Historic Areas, and Open Spaces.

Goal 6. Air, Water and Land Resources Quality – The purpose of Goal 6 (OAR 660-015- 0000(6)) is “To maintain and improve the quality of the air, water and land resources of the state.”

FINDINGS: The Transportation Safety Action Plan does not directly propose facilities or infrastructure that would affect the quality of air, water or land resources. One aspect of transportation safety is managing traffic around crash sites. The plan includes supporting efforts to continue to improve incident management, which in turn would reduce emissions related to slowdowns and idling of vehicles in the vicinity of crash sites. The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 6, Air, Water and Land Resources Quality.

Goal 7. Areas Subject to Natural Hazards – The purpose of Goal 7 (OAR 660-015- 0000(7)) is “To protect people and property from natural hazards.”

FINDINGS: The Transportation Safety Action Plan does not directly affect efforts to plan for, mitigate or recover from natural disasters. The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 7, Areas Subject to Natural Hazards.

Goal 8. Recreational Needs – The purpose of Goal 8 (OAR 660-015-0000(8)) is “To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.”



FINDINGS: The Transportation Safety Action Plan does not directly address transportation safety in the context of recreational lands, but effective safety programs help create conditions for an area to be more likely to appeal to and attract return visits from recreational users. Recreation issues that were discussed during the plan development process included concerns that bike touring maps did not appear to consider bicycle safety on some of their remote routes, and that poor delineation of roadways after sanding and plowing reduced safety for winter visitors as well as locals in snowy regions. Tourists and recreationists also benefit from effective enforcement, education about seasonal safety conditions, road maintenance and emergency services.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 8, Recreational Needs.

Goal 9. Economic Development – The purpose of Goal 9 (OAR 660-015-0000(9)) is “To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon’s citizens.”

FINDINGS: The Transportation Safety Action Plan supports economic development by promoting a safe, reliable transportation system. A safe transportation system can provide employees safe and reliable access to jobs, and help attract and retain skilled workers. Safe transportation also supports tourism.

The Transportation Safety Action Plan is in general compliance with and supports Statewide Planning Goal 9, Economic Development.

Goal 10. Housing – The purpose of Goal 10 (OAR 660-015-0000(10)) is “To provide for the housing needs of citizens of the state.”

FINDINGS: The Transportation Safety Action Plan does not have direct application to the provision of housing and no issues directly related to meeting housing needs were raised in the plan development process.

The Transportation Safety Action Plan does not affect housing needs or supplies, and so is in general compliance with Statewide Planning Goal 10, Housing.

Goal 11. Public Facilities and Services – The purpose of Goal 11 (OAR 660-015-0000(11)) is “To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.”

FINDINGS: The Goal does not address transportation safety, but improving safety improves the efficiency of the transportation system by reducing incident-related congestion and by supporting the notion that everyone using the transportation system should arrive safely at their destination.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 11, Public Facilities and Services.

Goal 12. Transportation – The purpose of Goal 12 (OAR 660-015-0000(12)) is “To provide and encourage a safe, convenient and economic transportation system.”

FINDINGS: The purpose of the TSAP is to further encourage safety for all transportation system users.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 12, Transportation.

Goal 13. Energy Conservation – The purpose of Goal 13 (OAR 660-015-0000(13)) is “To conserve energy.”

Goal 13 states that “land and uses developed on the land shall be managed and controlled so as to maximize the conservation of all forms of energy, based upon sound economic principles.”



FINDINGS: The Transportation Safety Action Plan does not create land uses or affect energy conservation in any direct way. In theory, improving the safety of non-auto transportation facilities encourages the use of modes other than private vehicles, and so can reduce transportation energy consumption. More directly, when crashes occur, reducing the time it takes to manage, investigate and clear crashes on busy roadways can reduce idling and stop-and-start speeds for traffic that backs up around crash sites and so results in a relative reduction of energy use and carbon and other emissions.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 13, Energy Conservation.

Goal 14. Urbanization – The purpose of Goal 14 (OAR 660-015-0000(14)) is “To provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.”

FINDINGS: Goal 3 of the TSAP is “Healthy, Livable Communities” which is focused on using transportation safety tools to support safety and thus reinforce health options and livability in communities. The plan does not directly assume a role in creating healthy, livable communities, but recognizes that engaging a variety of safety stakeholders in improving safety in urban and other developed communities contributes to improving a sense of security, availability of healthy transportation options and a reduction of the long term impacts of crashes that do occur.

The Transportation Safety Action Plan is in compliance with and supports Statewide Planning Goal 14, Urbanization.

Goal 15. Willamette River Greenway – The purpose of Goal 15 (OAR 660-015-0005) is “To protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.”

FINDINGS: The Transportation Safety Action Plan does not plan for specific uses on lands protected in the Willamette River Greenway, so does not contribute to risks to the Greenway.

The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 15, Willamette River Greenway.

Goal 16. Estuarine Resources – The purpose of Goal 16 (OAR 660-015-0010(1)) is “To recognize and protect the unique environmental, economic, and social values of each estuary and associated wetlands; and to protect, maintain, where appropriate develop, and where appropriate restore the long-term environmental, economic, and social values, diversity and benefits of Oregon’s estuaries.”

FINDINGS: The Transportation Safety Action Plan does not plan for specific land uses that would affect estuarine resources so does not contribute to risks to protected estuarine resources.

The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 16, Estuarine Resources.

Goal 17. Coastal Shorelands – The purpose of Goal 17 (OAR 660-015-0010(2)) is “To conserve, protect, where appropriate, develop and where appropriate restore the resources and benefits of all coastal shorelands, recognizing their value for protection and maintenance of water quality, fish and wildlife habitat, water-dependent uses, economic resources and recreation and aesthetics. The management of these shoreland areas shall be compatible with the characteristics of the adjacent coastal waters; and to reduce the hazard to human life and property, and the adverse effects upon water quality and fish and wildlife habitat, resulting from the use and enjoyment of Oregon’s coastal shorelands.”

FINDINGS: The Transportation Safety Action Plan does not plan for specific land uses that would affect coastal shorelands so does not contribute to risks to coastal shorelines.

The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 17, Coastal Shorelands.

Goal 18. Beaches and Dunes – The purpose of Goal 18 (OAR 660-015-0010(3)) is “To conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beach and dune areas; and to reduce the hazard to human life and property from natural or man-induced actions associated with these areas.”

FINDINGS: The Transportation Safety Action Plan does not plan for specific land uses or infrastructure that would impact beach and dune resources.

The Transportation Safety Action Plan is in general compliance with Statewide Planning Goal 18, Beaches and Dunes.

Goal 19. Ocean Resources – The purpose of Goal 19 (OAR 660-015-0010(4)) is “To conserve marine resources and ecological functions for the purpose of providing long-term ecological, economic, and social value and benefits to future generations.”

FINDINGS: The Transportation Safety Action Plan does not plan for specific land uses or infrastructure that would impact ocean resources.

The Transportation Safety Action Plan is in general compliance with and supports Statewide Planning Goal 19, Ocean Resources.

E. TRANSPORTATION PLANNING RULE⁴⁰

OAR 660-012-0000, Transportation Planning Rule Purpose

(1) This division implements Statewide Planning Goal 12 (Transportation) to provide and encourage a safe, convenient, and economic transportation system. This division also implements provisions of other statewide planning goals related to transportation planning in order to plan and develop transportation facilities and services in close coordination with urban and rural development. The purpose of this division is to direct transportation planning in coordination with land use planning to:

- (a) Promote the development of transportation systems adequate to serve statewide, regional and local transportation needs and the mobility needs of the transportation disadvantaged;
- (b) Encourage and support the availability of a variety of transportation choices for moving people that balance vehicular use with other transportation modes, including walking, bicycling and transit in order to avoid principal reliance upon any one mode of transportation;
- (c) Provide for safe and convenient vehicular, transit, pedestrian, and bicycle access and circulation;
- (d) Facilitate the safe, efficient and economic flow of freight and other goods and services within regions and throughout the state through a variety of modes including road, air, rail and marine transportation;
- (e) Protect existing and planned transportation facilities, corridors and sites for their identified functions;
- (f) Provide for the construction and implementation of transportation facilities, improvements and services necessary to support acknowledged comprehensive plans;
- (g) Identify how transportation facilities are provided on rural lands consistent with the goals;

⁴⁰ Sections of OAR 660-012 that are not referenced in these findings do not apply to long-range planning and/or do not apply to transportation planning by the state.

(h) Ensure coordination among affected local governments and transportation service providers and consistency between state, regional and local transportation plans; and

(i) Ensure that changes to comprehensive plans are supported by adequate planned transportation facilities.

FINDINGS: The Oregon Transportation Safety Action Plan supports the purposes stated in OAR 60-012-0000 in the following ways:

(a) The TSAP promotes the safety of all modes of transportation and all system users.

(b) Improving safety for all modes improves system user choices and perceptions of safety.

(c) The TSAP addresses safety aspects of vehicular, transit, pedestrian, and bicycle access and circulation; “convenience” is improved where system users have safer access to their chosen mode.

(d) Freight dependent interests and haulers are recognized as parties to safe and healthy communities. Their interests must be considered in making safety focused changes to intersections. Freight interests were represented on the Policy Advisory Committee and the ODOT Plan Coordination Team.

(e) The classification, location and related purpose of roadways are all considerations in identifying appropriate safety measures for implementation.

(f) The TSAP encourages identifying opportunities for construction of appropriate safety measures on either a systemic or site specific basis, but does not itself identify specific projects for construction.

(g) About 50% of fatal and serious injury crashes occur on rural roads. Factors that apply to crashes in all areas include impaired, distracted, and aggressive driving: lane departure crashes occur at higher rates in rural areas. The TSAP recognizes the importance of addressing safety risks that impact rural areas.

(h) Transportation safety is a complex area of transportation planning that includes all Oregonians and visitors to the state as stakeholders. TSAP Goal 5: Collaborate and Communicate, makes it clear that coordination among all jurisdictions and other stakeholders is key to a successful transportation safety program.

(i) The TSAP is part of the state’s transportation systems plan, and is a topic plan that builds on the safety goals of the Oregon Transportation Plan.

The Transportation Safety Action Plan is in compliance with and supports safety for the whole transportation system, consistent with the Transportation Planning Rule Purpose section.

OAR 660-012-0015: Preparation and Coordination of Transportation System Plans

Preparation and Coordination of Transportation System Plans.

(1) ODOT shall prepare, adopt and amend a state TSP in accordance with ORS 184.618, its program for state agency coordination certified under ORS 197.180, and OAR 660-012-0030, 660-012-0035, 660-012-0050, 660-012-0065 and 660-012-0070. The state TSP shall identify a system of transportation facilities and services adequate to meet identified state transportation needs:

(a) The state TSP shall include the state transportation policy plan, modal systems plans and transportation facility plans as set forth in OAR chapter 731, division 15;

(b) State transportation project plans shall be compatible with acknowledged comprehensive plans as provided for in OAR chapter 731, division 15. Disagreements between ODOT and affected local governments shall be resolved in the manner established in that division.

FINDINGS: The Transportation Safety Action Plan is a topic plan (for purposes of this rule that is analogous to a “modal” plan) that is an element of the OTP. As noted above, the state policy plan (OTP) and modal/topic plans, collectively make up the state TSP. The TSAP is, in this regard, consistent with this section of the TPR.

OAR 660-012-0025: Complying with the Goals in Preparing Transportation System Plans; Refinement Plans

(1) Except as provided in section (3) of this rule, adoption of a TSP shall constitute the land use decision regarding the need for transportation facilities, services and major improvements and their function, mode and general location.

(2) Findings of compliance with applicable statewide planning goals and acknowledged and comprehensive plan policies and land use regulations shall be developed in conjunction with the adoption of the TSP.

FINDINGS: As a topic plan that is part of the state TSP, many of the requirements of section 0025 do not apply to the Transportation Safety Action Plan. However, TPR Section 0025, Subsection 2 states “Findings of compliance with applicable statewide planning goals and acknowledged comprehensive plan policies and land use regulations shall be developed in conjunction with the adoption of the TSP.”

This requirement is addressed through development of this “Findings” document, so the plan complies with this section of the TPR.

OAR 660-012-0030: Determination of Transportation Needs

Section 30 of the TPR requires that TSPs identify transportation needs relevant to the planning area and the scale of the transportation network being planned including state, regional and local transportation needs.

FINDINGS: Statewide transportation safety needs were identified through data analysis using state system crash data and extensive public engagement including surveys, an online open house, and two rounds of outreach / listening meetings around the state. These processes helped to identify issues and challenges related to transportation both statewide and locally. By federal law, transportation safety needs must be based on relevant data with the opportunity to also consider existing policies and plans, and recognizing priorities and trends identifiable in public discourse. Both policies and actions identified in the plan are directly related to the most recent available crash data at the time of analysis and the input of the roughly 500 individuals who participated in the various public outreach opportunities.

The process used to identify system safety needs complies with this section of the TPR.

OAR 660-012-0040: Transportation Financing Program

(1) For areas within an urban growth boundary containing a population greater than 2,500 persons, the TSP shall include a transportation financing program.

FINDINGS: The TSAP does not include a financing program, but is closely associated with and drives two safety finance plans: the annual safety Performance Plan and the Highway Safety Improvement Plan. The state TSP, the Oregon Transportation Plan, is implemented through the State Transportation Improvement Plan: safety projects involving construction projects are also funded through the STIP.



As part of the state TSP, and as supported by both the STIP and TSAP periodic funding plans, the TSAP further supports statewide TSP compliance with this section of the TPR.

F. CONSISTENCY WITH OREGON MODAL AND TOPIC PLANS

The Oregon Transportation Plan includes Modal Plans for Highways, Rail, Public Transportation, Bicycles and Pedestrians, and Aviation. It also includes Topic Plans for Freight, Transportation Options and Safety. Each of these plans addresses safety in general terms, and, increasingly, modal and topic plans include specific strategies or actions for improving safety conditions.

The TSAP is the “big tent” for transportation safety activities and needs to be broad enough to acknowledge the full range of safety concerns and planned actions that arise in the other plans. All of the plans are required to be consistent with the others. The best case is that the TSAP supports the safety agendas of the other plans but, at a minimum, it should not create conflicts with any safety provisions of those adopted plans. In future amendments to the other plans, any new or changed safety provisions will be required to be consistent with the TSAP.

FINDINGS: The other modal and topic plans currently in effect were reviewed for their content related to transportation safety. In addition, the drafts of the 2016 Bicycle and Pedestrian Plan were reviewed and monitored in the same way to ensure no conflicts emerged. This was done during the long-range planning phase of the plan update when the framework for the Goals and Policies was substantially complete. The review was summarized in a table by the types of strategies and actions found in all of the other plans and noting the relationships of those entries with the draft long-range element of the TSAP. The ‘crosswalk’ table was reviewed by the Policy Advisory Committee. No inconsistencies or direct conflicts were identified, and no discreet issues in the other plans were identified that had not been raised in some form in the TSAP process.

In the staff review of the Public Review Draft before it was submitted to OTC for release for public review, a second scan of the document for consistency with the other plans was completed. That review found that the 2016 Transportation Safety Action Plan is consistent with the Oregon Transportation Plan and other related transportation plans that are currently in effect, including the Bicycle and Pedestrian Plan which has subsequently been adopted.

Conclusion: The 2016 TSAP Public Review Draft is consistent with the Oregon Transportation Plan and the related modal and topic plans.

G. COMPATIBILITY WITH LOCAL LAND USE PLANS

Because the TSAP does not identify individual projects, and in particular does not include decisions for projects on a geographically specific basis, there is no basis for a comparison with local TSPs currently in effect. However, the plan recognizes that implementation of the TSAP should include support for local efforts to incorporate safety into TSPs and local project development.

Local land use plans have not historically included data-driven safety project identification in either comprehensive plan transportation elements or transportation system plans. Safety is a value in the TPR and in local plans, but is not specifically called out in requirements for plan development or implementation. However, over the years more fully developed approaches to including safety risk assessment have emerged and safety is growing in importance in local transportation planning. TSAP implementation will include supporting that emerging emphasis on transportation safety planning in local plans.

Oregon has been doing transportation safety planning for about twenty years and the state plan has been influential in demonstrating approaches and options that have been adapted for local planning. During the late stages of development



of this current TSAP, several jurisdictions, including counties, cities and Metro, have developed their first transportation safety plan or updated an existing one, with several of them using the drafts of this plan to guide their planning process.

Consistency between state, regional, county and city transportation safety plans is occurring due to Transportation Safety Division's support of local safety planning, and also, currently, due to the comprehensive and carefully articulated approach taken with this version of the TSAP.





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**OREGON
ROADWAY
MILEAGE 2015
BY FUNCTIONAL
CLASSIFICATION**

D. OREGON ROADWAY MILEAGE 2015 BY FUNCTIONAL CLASSIFICATION

Table D.1 Oregon Roadway Mileage 2015

	Urban		Rural		Totals	
	Roadway Miles	Lane Miles	Roadway Miles	Lane Miles	Roadway Miles	Lane Miles
Interstate	234.38	1108.43	495.18	2,020.86	729.56	3,129.29
Freeways and Expressways	57.22	250.35	0.00	0.00	57.22	250.35
Principal Arterial	856.0	2744.79	2,657.71	5,906.71	3,513.71	8,651.50
Minor Arterial	1285.68	2995.11	2,225.49	4,544.78	3,511.17	7,539.89
Collectors	2616.34	5284.05	16,206.23	32,424.44	18,822.57	37,708.49
Local	9852.78	19705.56	37,056.71	74,113.42	46,909.49	93,818.98
TOTALS	14902.4	32088.3	58,641.3	119,010.2	73,543.7	151,098.5







2014 CRASH DATA SUMMARY

E. 2014 CRASH DATA SUMMARY

Table E.1 2014 Fatal and Serious Injury Crashes by Attribute

Attribute	Fatal and Serious Injury Crashes 2014	Percent Total
Roadway or Lane Departure Crashes ^a	801	50.5%
Intersection Crashes	605	38.1%
Aggressive Driving Involved ^b	551	34.7%
Speed-Related Crashes ^c	399	25.1%
Alcohol and/or Other Drugs Involved	325	20.5%
Young Drivers – 21-25 Involved	277	17.5%
Alcohol Involved (No Drugs)	265	16.7%
Older Drivers – 65-75 Involved	227	14.3%
Young Drivers – 15-20 Involved	219	13.8%
Unrestrained Occupants	189	11.9%
Pedestrian(s) Injured or Killed	164	10.3%
Unlicensed Drivers Involved	149	9.4%
Older Drivers – 76 or Older Involved	143	9.0%
Commercial Motor Vehicle Involved	78	4.9%
Inattentive Drivers Involved	71	4.5%
Bicyclists(s) Injured or Killed	72	4.5%
Work Zone Involved	14	0.9%
School Bus or School Zone Involved	11	0.7%

^a The Roadway or Lane Departure definition excludes intersections, pedestrian-related, and bicycle-related crashes.

^b Aggressive Driving Involved consists of Too Fast for Conditions, Following Too Closely, and/or Driving in Excess of Posted Speed (note that duplicate crashes are not counted more than once).

^c Speed-related Crashes consists of Too Fast for Conditions and/or Driving in Excess of Posted Speed (note that duplicate crashes are not counted more than once).





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CRASH TYPE AND SEVERITY RANKING SUPPORTING DATA

F. CRASH TYPE AND SEVERITY RANKING SUPPORTING DATA

Table F.1 Potential Emphasis Areas Ranked by Fatal and Serious Injury Crash Frequency 2009 to 2013

Rank	Potential Emphasis Area	Fatal and Serious Injury Crashes
1	Roadway Departure Crashes	4,103
2	Aggressive Driving Involved	2,767
3	Intersections Crashes	2,633
4	Young Drivers - 15-25 Involved	2,366
5	Speed-Related Crashes	2,067
6	Alcohol and/or Other Drugs Involved	1,695
7	Older Drivers - 65+ Involved	1,548
8	Alcohol Involved (No Drugs)	1,445
9	Motorcycle Involvement	1,170
10	Unrestrained Occupants	1,029
11	Pedestrian(s) Involved	770
12	Unlicensed Drivers Involved	603
13	Inattentive Drivers Involved	350
14	Pedalcycle(s) Involved	334
15	Commercial Motor Vehicle Involved	322

Table F.2 Potential Emphasis Areas Ranked by Fatal and Serious Injury (FSI) Crashes per 100 Total Crashes
2009 to 2013

Rank	Potential Emphasis Area	FSI Crashes	Total Crashes	FSI Crashes per 100 Crashes
1	Motorcycle Involvement	1,170	4,831	24.2
2	Unrestrained Occupants	1,029	5,205	19.8
3	Pedestrian(s) Involved	770	4,077	18.9
4	Alcohol and/or Other Drugs Involved	1,695	11,990	14.1
5	Alcohol Involved (No Drugs)	1,445	10,798	13.4
6	Unlicensed Drivers Involved	603	8,102	7.4
7	Roadway Departure Crashes	4,103	56,488	7.3
8	Pedalcycle(s) Involved	334	4,694	7.1
9	Speed-Related Crashes	2,067	35,627	5.8
10	Commercial Motor Vehicle Involved	322	6,829	4.7
11	Older Drivers – 65+ Involved	1,548	41,139	3.8
12	Inattentive Drivers Involved	350	11,668	3.0
13	Young Drivers – 15-25 Involved	2,366	84,024	2.8
14	Aggressive Driving Involved	2,767	107,301	2.6
15	Intersection Crashes	2,633	109,460	2.4



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**TSAP
PERFORMANCE
MEASURE
OPTIONAL TREND
FORECASTS**

G. TSAP PERFORMANCE MEASURE OPTIONAL TREND FORECASTS

Several optional trend forecasts were considered for each of the five 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); and
- Combined nonmotorized fatalities and nonmotorized serious injuries.

The forecasts are shown in Figures G.1 to G.5. The trend forecasting options were:

- **Straight line to zero by 2035.** In this forecast a straight line reduction in fatalities was assumed between the most recent five year average and an average of zero fatalities in the five year period between 2031 and 2035. This is shown in blue bars in the figure.
- **3-percent reduction per year.** Historically, the Highway Safety Office has set a target of a 3-percent reduction in fatalities per year in its annual Transportation Safety Performance Plan. In the figure, the 3- percent reduction per year is forecast for the 20-year duration of the plan. This trend is forecast in the grey bars in the figure.
- **Trend-line.** The black line is a straight-line trend forecast from historic crash trends for the 20 year duration of the plan. It is based on the data shown in the green bars (2009 to 2015 for fatalities and 2009 to 2014 for the other performance measures).
- **S-Curve.** The S-Curve forecast (shown in Orange) was developed assuming 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 in the future as it becomes more difficult to address the remaining fatalities.

The PAC found strengths and weaknesses in each of these trend forecasts. For example, the trend-line forecast and the straight-line to zero forecast show that, with focus and effort, zero can be achieved.

However, recognizing the recent increase in fatalities, the PAC believes it is possible in the near future the five-year average number of fatalities may remain flat until programs and projects in this TSAP are well underway. The PAC also agreed in future years of the plan, the reductions will be more difficult to achieve because of smaller numbers; therefore, the rate of reduction would flatten out. Finally, the 3-percent per year forecast has put Oregon on a path to success; however, in order to reach zero fatalities, the PAC agreed it was necessary to have more aggressive targets.

Figure G.1 Fatality Target

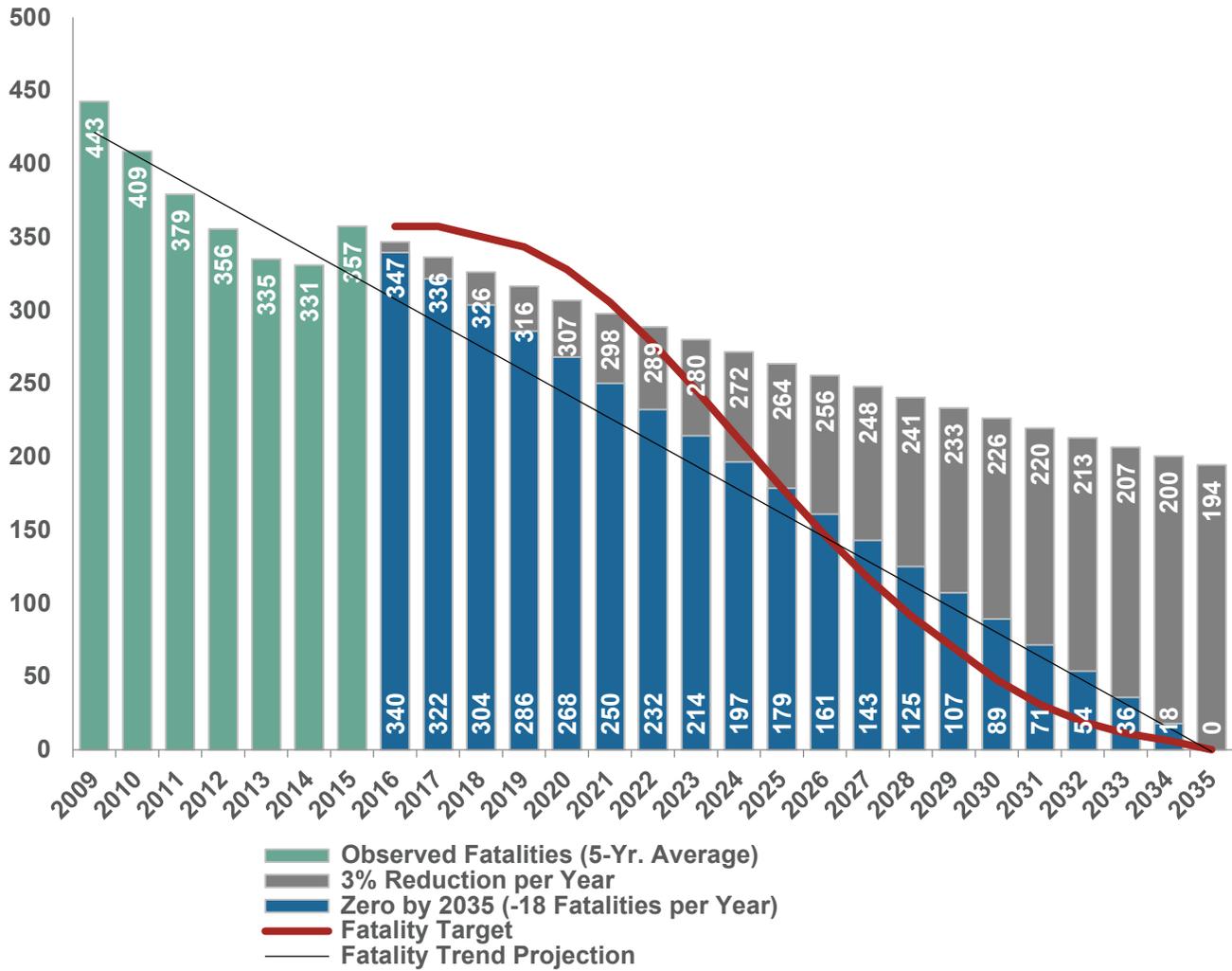


Figure G.2 Fatality Rate Target

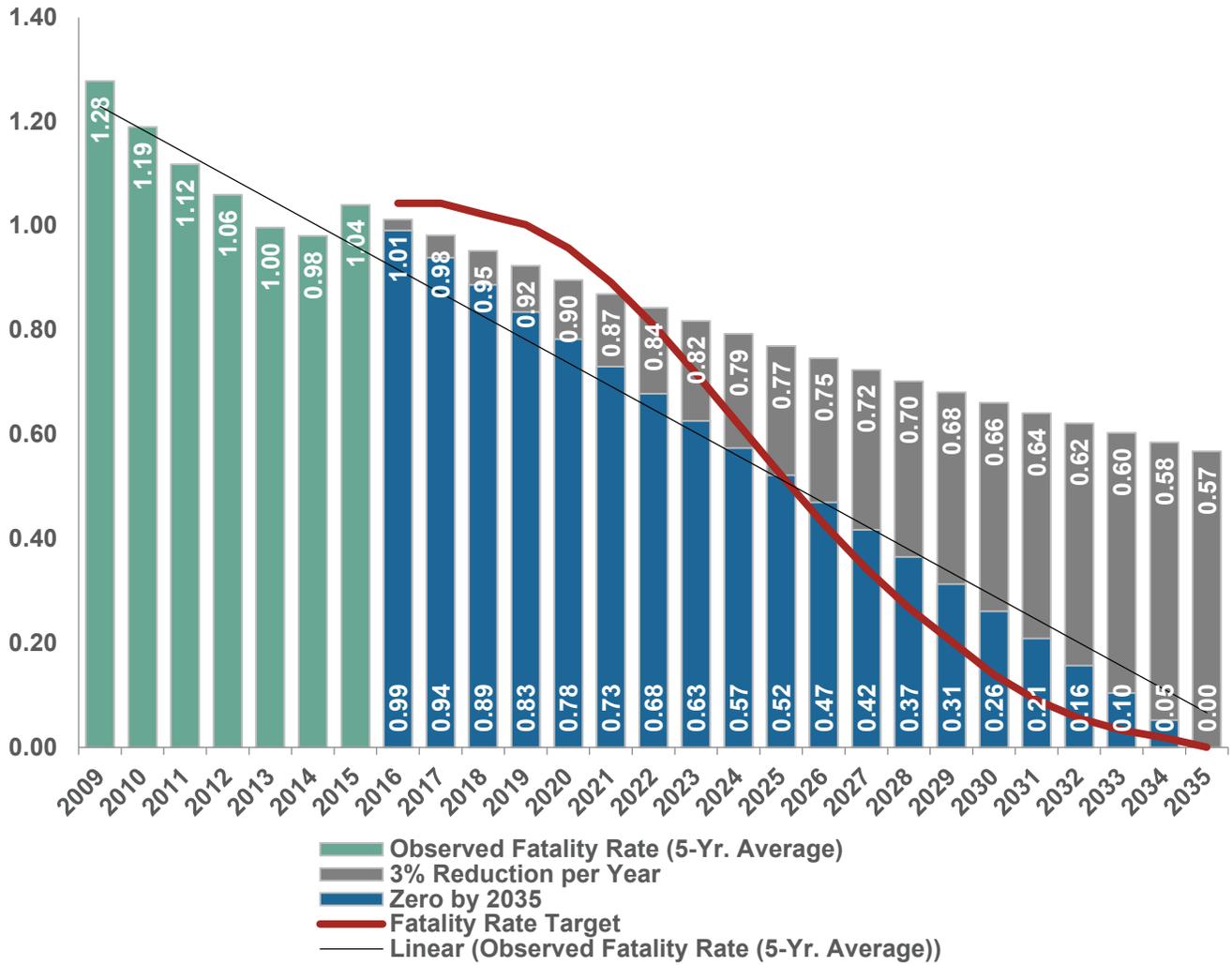


Figure G.3 Serious Injury Target

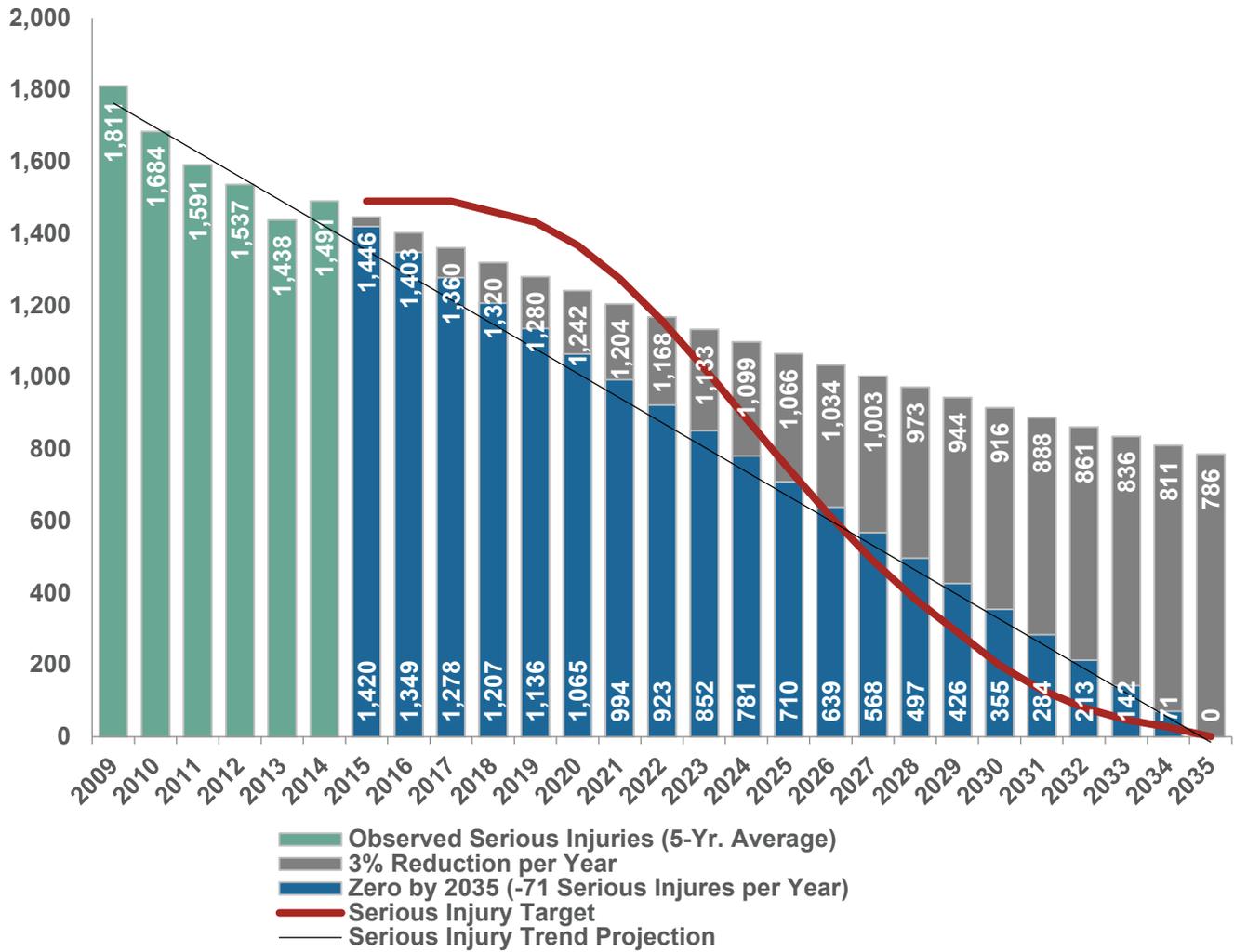


Figure G.4 Serious Injury Rate Target

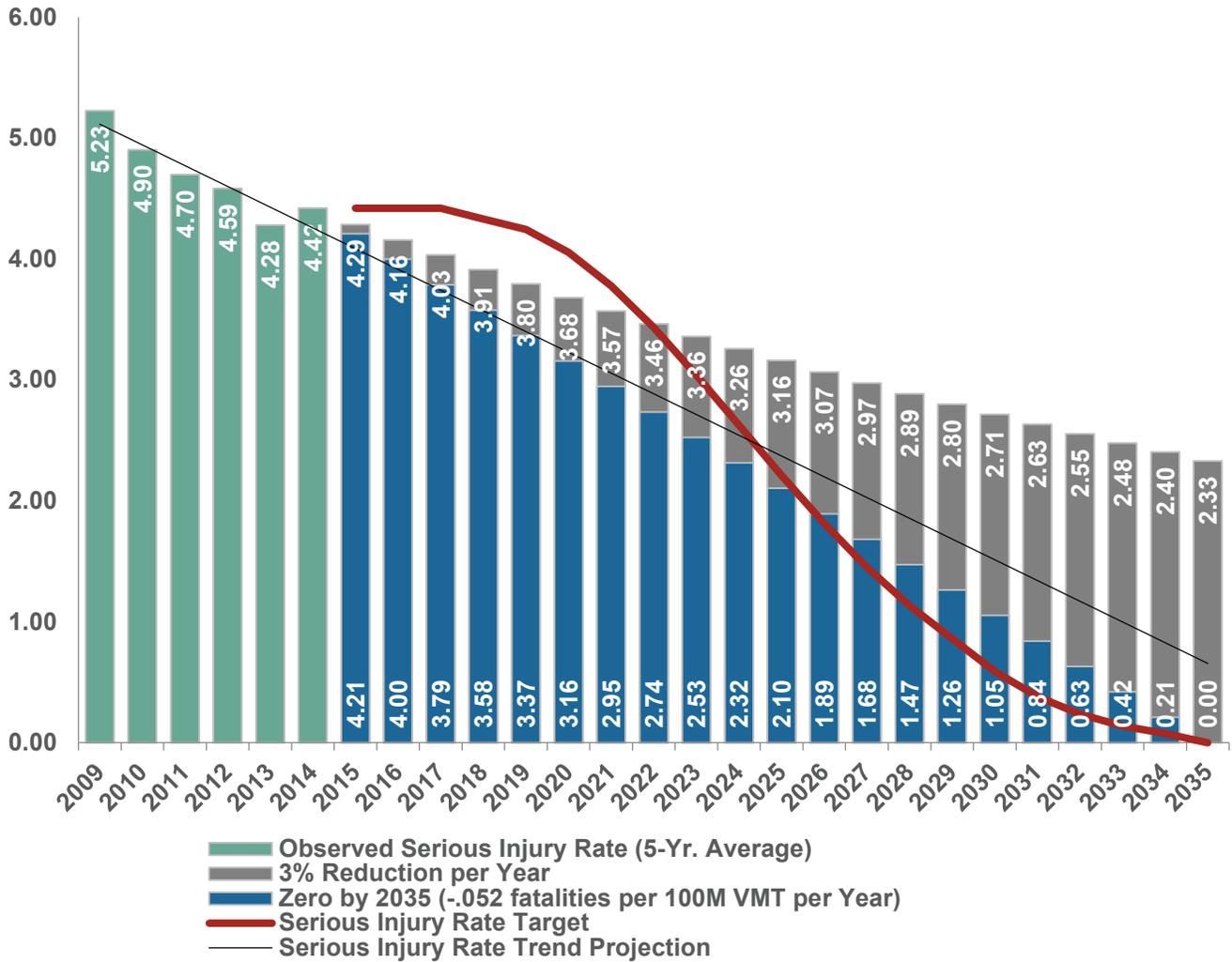
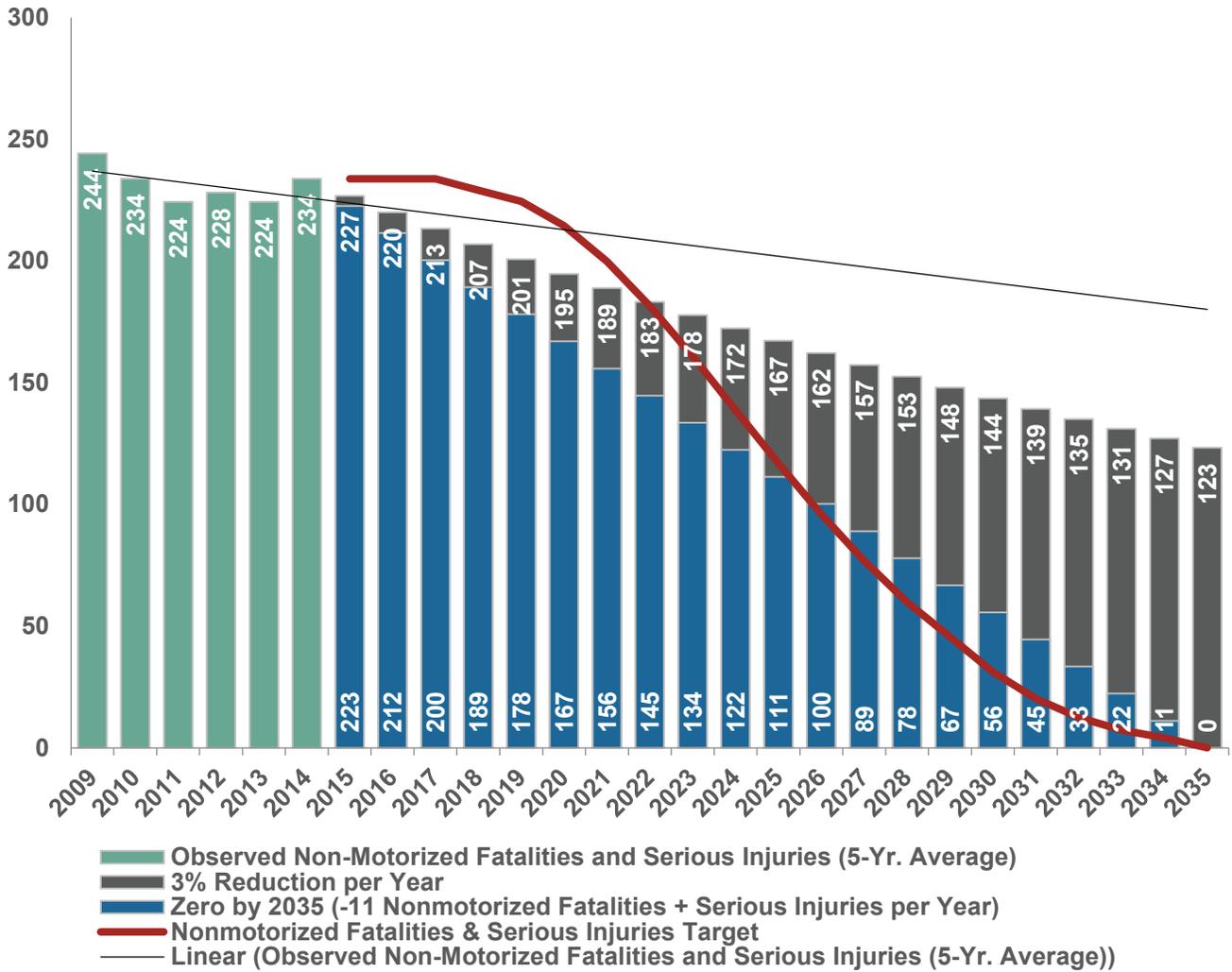


Figure G.5 Combined Non-Motorized Fatalities and Serious Injury Target





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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, Oregon: 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, that meets the threshold for investment of Highway Safety Improvement Plan funds pursuant to the All Roads Transportation Safety (ARTS) program.

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 walk way 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 years 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 traveled. 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.

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.

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

Oregon Revised Statutes establish and define Speed Limits, and the Basic Rule within the State of Oregon; the definitions presented here paraphrase 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.

