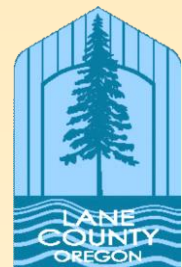


TRANSPORTATION SAFETY ACTION PLAN

2017



Toward Zero Deaths[®]
National Strategy on Highway Safety

Lane County Public Works
Transportation Planning
3040 N Delta Hwy
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Executive Summary

Lane County is pleased to present its first-ever Transportation Safety Action Plan (TSAP) to help reduce traffic fatalities and serious injuries on County roads, bridges and paths. The Plan identifies a wide range of safety challenges and strategies, and places safety as a high priority across Lane County. As a member of Toward Zero Deaths: The National Strategy on Highway Safety, Lane County's vision is a transportation system free of fatalities and serious injuries.

Vision Statement:

Lane County will move toward zero deaths on our transportation system with systemic, equitable, and data-driven decisions in the prevention of serious-injuries and fatal crashes.

Collaboration with partner agencies creates new opportunities to help the County work toward zero deaths. In 2015, the Central Lane Metropolitan Planning Organization (MPO) and Lane County began work on an innovative planning process to address the growing need to prioritize safety throughout our transportation system. That partnership, which involved several months of crash data research and stakeholder engagement, resulted in a deeper understanding of the complex safety problem and also a broader knowledge of multi-disciplinary solutions.

This shared planning process was partially funded by ODOT and aligned with their recent update of the Oregon Transportation Safety Action Plan and ultimately led to ODOT funding a regional safety coordinator position to help with plan implementation. Although the funding of this position is only temporary at this time, regional partners are optimistic about the value of this position and the possibilities of ongoing funding.

There is a proven need to invest more in traffic safety, which has become a costly and vital public health issue. The World Health Organization reports that about 1.25 million people die each year as a result of traffic crashes. Traffic injuries cause considerable economic losses to victims, their families, and to nations as a whole. These losses include the cost of treatment (including rehab), incident investigation, reduced or lost productivity (e.g. wages) of those killed or with debilitating injuries, as well as family members who need to take time off work or school to provide care for the injured.¹The total average cost from crashes in the last five years in Lane County is \$318 million, which includes medical costs, property damage, and lost productivity; this doesn't account for the wider range of social costs, such as pain, suffering and loss of life.

In Lane County, roadway fatalities are the leading cause of death for ages 1 to 24. Lane County led Oregon counties in traffic fatalities in 2014 (with 45 deaths) and 2015 (with 57 deaths). While most traffic is in the cities, most fatalities were in rural areas, outside city limits.

¹ "Road Traffic Injuries" Fact Sheet November 2016, World Health Organization
<http://www.who.int/mediacentre/factsheets/fs358/en/>

Given the enormity of the problem, the tools of any one sector will not solve it alone. The collaborative, data-driven process of developing and implementing this plan brings together and draws upon the strengths and resources of regional safety partners. This plan provides a strategic framework and recommends action items with the most potential to save lives and prevent injuries. **Together we can save lives and reduce suffering.**

Chapter 1: Introduction

The purpose of this plan is to reduce traffic fatalities and serious injuries in Lane County. The plan was built around a data-driven process that encompassed a broader view than only the location of collisions. The crash data was reviewed with stakeholders for factors that influence safety and contribute to crashes. The data findings are detailed in Chapter 2. The solutions are based on a multidisciplinary approach, involving engineering, education, and enforcement, and proven countermeasures known to effectively reduce fatal and severe-injury collisions. The recommended action items are detailed in Chapter 3. This chapter contains the following:

- Federal, State, and Local Traffic Safety Summaries
- Planning Process
- Relationship to the Lane County Transportation System Plan
- Emphasis Areas
- Introduction to the Safety 'E's
- Rural Inequity of Collisions
- Vision and Goals
- Traffic Safety as a Public Health Issue
- Summary of Safety Actions

The following summaries of existing conditions and future plans at the federal, state, and local levels of government is provided for an understanding of the regional context of traffic safety. Aligning our efforts with the National Highway Traffic Safety Administration, the Federal Strategic Highway Safety Plan, the Highway Safety Improvement Program, and the Oregon Transportation Safety Action Plan will help Lane County leverage technical and financial resources.

Federal Traffic Safety Summary

Roadway safety is a growing national concern. Motor vehicle deaths are the leading cause of death for Americans between the ages of 3 and 34. In 2014, 32,675 people died and 2.3 million people were severely injured in motor vehicle crashes across the nation. The National Highway Traffic Safety Administration reported the economic and societal impact of motor vehicle crashes totaled \$277 billion in 2010.

Nationwide, more traffic fatalities are occurring in rural areas than in urban ones. Rural fatalities accounted for 54% of all traffic fatalities in 2013. Rural roadway safety concerns urban dwellers as well because these collisions rates are disproportionate to rural populations. The US Census Bureau indicates that only 19% of the US population lives in rural areas. In 2013, the fatality rate per 100 million vehicles miles traveled was 2.6 times higher in rural areas than in urban areas (1.88 and 0.73, respectively).

The Federal Strategic Highway Safety Plan (SHSP) provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. The SHSP is developed by the State Department of Transportation in a cooperative process with Local, State, Federal, Tribal and other public and private sector safety stakeholders. It is a data-driven, multi-year comprehensive plan that establishes statewide goals, objectives, and key emphasis areas and integrates the four 'E's of highway safety – engineering, education, enforcement and emergency medical services (EMS). The SHSP allows highway safety programs and partners in the State to work together in an effort to align goals, leverage resources and collectively address the State's safety challenges.

The SHSP is a major component and requirement of the Highway Safety Improvement Program (HSIP), which is a core federal-aid program that was originally created in 2005, under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and continued with the 2015 adoption of Fixing America's Surface Transportation (FAST) Act. The HSIP requires all states and MPOs to develop, implement, evaluate and update an SHSP that identifies and analyzes highway safety problems to guide investment decisions toward strategies and countermeasures with the most potential to save lives and prevent injuries.

The FAST Act slightly increased safety funding and created new “jurisdictionally blind” safety program called All Roads Transportation Safety (ARTS) to ensure that HSIP funding would be spent on all public roads using a data-driving approach. (More information about how this program is administered through the Oregon Department of Transportation is provided in the following section regarding state programs.) The FAST Act also changed the HSIP to concentrate funds towards engineering and infrastructure improvements by not allowing these funds to be used for education and enforcement. The National Highway Safety Administration (NHTSA) provides enforcement and education funding to improve traffic safety, however, which is administered through the ODOT Transportation Safety Division.

State Traffic Safety Summary

The 2016 Oregon Transportation Safety Action Plan (TSAP), adopted by the Oregon Transportation Commission on October 14, 2016, serves as the state's SHSP and provides long-term goals, policies and strategies and near-term actions to eliminate deaths or life-changing injuries on Oregon's transportation system by 2035. Historically, transportation-related fatalities in Oregon have trended downwards. Since 2013, however, there has been an annual increase in transportation fatalities in Oregon, with 313 deaths in 2013, 357 deaths in 2014, and 450 deaths in 2015.

Historically ODOT has spent the HSIP funding only on state highways. However, half of the fatalities and serious injuries occur on non-state roadways. In order to address this concern and to comply with the federal requirement that the HSIP funding be spent on all public roads, ODOT has developed a “jurisdictionally blind” safety program, known as the ARTS Program, to address safety problems on all public roads in Oregon. The objective of

the ARTS Program is the same as that of the HSIP – to reduce fatalities and serious injuries on all public roads using a data-driven approach.

While the HSIP identifies funding for infrastructure safety improvements, NHTSA provides funding for education and enforcement programs to improve traffic safety. These funds are administered locally through ODOT’s Transportation Safety Division, which include the following programs: Driver Education; Impaired Driving; Law Enforcement; Motor Cycle Safety and Vehicle Equipment Standards; Occupant Protection; Pedestrian Safety, Safe Routes to School, and Bicycle Safety; Roadway Safety, Safety Corridors, Work-Zone Safety; Safe Communities; and Safe and Courteous Driving.

Lane County Traffic Safety Summary

Traffic crashes are the leading cause of death in Lane County. In 2014, Lane County had more traffic fatalities than any other county in Oregon. The 2015 data analysis remains to be completed, but preliminary findings confirm that Lane County is maintaining this unfortunate title; worse, the number of fatalities increased from 45 in 2014 to 57 in 2015.

There are some key differences between the types of crashes that occur in the urban and rural areas. These findings are detailed in Chapter 2. The most significant finding is that there is a disproportionate impact on rural Lane County with regard to the number of fatalities, particularly when compared to population. In this context, “urban” is defined as the Central Lane Metropolitan Planning Organization (MPO), which encompasses the cities of Coburg, Eugene, and Springfield, as shown in Figure 1, below. In 2015, Lane County was home to 363,000 residents; 255,000 of those resided within the bounds of the MPO.

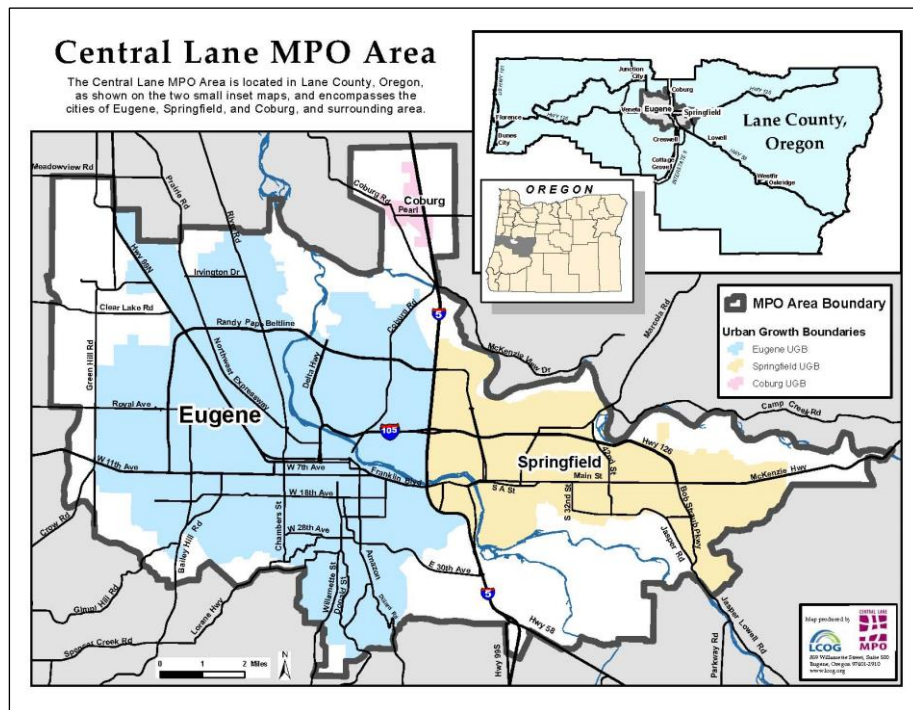


Figure 1. Geographic Boundaries of Lane County and the Central Lane MPO Area

The crash data between 2007 and 2014 showed a total of 24,787 crashes occurred in Lane County (including the MPO area). Of those, 240 involved fatalities (0.01%), 829 involved severe injuries (0.03%), and 23,718 minor injury and/or property damage only (96%). Over this seven-year period, Lane County averaged 34 fatal crashes per year. Disaggregating these crashes resulted in the following findings:

- Most fatalities (54%) are occurring in rural Lane County (2.4 times higher than the fatality rate in the urban/MPO area). Between 2007 and 2014, 168 people died in rural Lane County; during that same time period, 72 people died in the urban/MPO area.
- Most severe-injury collisions (52%) are happening in the urban/MPO area. Between 2007 and 2014, there were 433 severe-injury collisions in the urban/MPO area, compared to 396 in rural Lane County.

This is consistent with national trends, which show that crash rates tend to increase with urban densities due to more frequent interactions between vehicles, but crash severity and therefore casualty rates tend to be higher in rural areas due to higher traffic speeds. Additional risks associated with the rural environment relative to crashes are provided in Chapter 2.

The total average cost from crashes in the last five years in Lane County is \$318 million, which includes medical costs, property damage, and lost productivity; this doesn't account for the wider range of social costs, such as pain, suffering and loss of life. With the understanding that our community deserves and expects safe streets, this Transportation Safety Action Plan elevates the importance of improving safety in our region.

This is Lane County's first Transportation Safety Action Plan (TSAP). It explains safety problems, provides safety solutions, and details implementation actions. The framework of this plan is designed to reduce the number of severe-injury and fatal traffic collisions in Lane County. Other regional transportation safety planning efforts are also underway to reduce severe-injury and fatal collisions in Lane County, including:

- The Central Lane Metropolitan Planning Organization (MPO) Safety and Security Action Plan (shares a framework with this plan)
- The City of Eugene Vision Zero Resolution that sets as official policy that no loss of life or serious injury on Eugene's transportation system is acceptable;
- The Cities of Eugene and Springfield accepted the US Department of Transportation (USDOT) Secretary Foxx's "Mayors' Challenge for Safer People and Safer Streets" to raise the bar for bicyclist and pedestrian safety.
- Lane Transit District's Vision Zero Resolution that adopts a vision of reducing deaths and serious injuries from transportation related crashes to zero.

Planning Process

This plan was a collaborative effort with Lane Council of Governments (LCOG), which developed the MPO Safety and Security Action Plan, and included active participation from all regional transportation safety partners. The planning process shared data collection, analysis, and stakeholder engagement. This work received funding from ODOT and built upon the 2016 update to ODOT's Transportation Safety Action Plan. This plan is based on an integrated performance based planning approach that provides:

- A data-driven determination of priority safety issues (emphasis areas)
- Goals to support a transportation safety culture
- Multidisciplinary safety solutions to reduce fatal and severe-injury collisions (the Safety 'E's)

Over several months, Lane County and LCOG staff evaluated countywide crash data with stakeholders across the region. The planning process had a guiding stakeholder advisory committee that met three times over the course of 11 months. This planning process relies on input from a diverse group of stakeholders from multiple disciplines including law enforcement, engineering, education and marketing, advocacy, emergency medical service, transportation planning, and public health. Agencies represented include:

- City of Eugene Police Department
- City of Springfield Police Department
- Lane County Sheriff
- City of Eugene Engineering and Public Works
- City of Springfield Engineering and Public Works
- Lane County Engineering and Public Works
- Oregon Department of Transportation - Region 2
- Safe Routes to Schools - Eugene School District 4J
- Oregon Department of Transportation Driver Education Program
- Mothers Against Drunk Driving (MADD)
- Lane County Fire Authority
- McKenzie Fire and Rescue
- Eugene and Springfield Fire Department
- Lane County Public Health
- Community advocates

Additionally, there were three focus groups that expanded community outreach to more partner agencies and advocates. The focus groups each addressed one of the emphasis areas –Risky Behaviors, Vulnerable Users, and Infrastructure. While the focus of this plan is to reduce the overall number of severe-injury and fatal collisions in Lane County, the solution set recognizes that safety is a personal concern to family and friends who have lost a loved one.

Lane County Transportation System Plan: Safety Goal and Policies

***Goal 1: Safety –
Eliminate
fatalities and
reduce severe-
injury collisions
on Lane County’s
transportation
system***

*Policy 1-a:
Participate in the
National Strategy
on Highway Safety
--Towards Zero
Deaths (TZD)
program.*

*Policy 1-b: Ensure
safety is a top
priority in making
decisions for the
Capital
Improvement
Program and for
transportation
facility operations,
maintenance, and
repair.*

*Policy 1-c: Align
County
departments,
external safety
groups, and other
public agencies
toward common
transportation
safety goals.*

Relationship to the Lane County Transportation System Plan

This TSAP is a non-mandated, standalone document that complements the Lane County Transportation System Plan (TSP). The TSP is a state-required 20-year transportation plan that establishes transportation policy, needs, funding assumptions, and projects. Key considerations are safety, equity, active transportation, and economic development. Funding from ODOT enabled Lane County to update its 2004 TSP to guide transportation decisions through the year 2036.

In 2014, Lane County produced the existing conditions report for the TSP update, which revealed significant safety concerns in rural Lane County. (Those findings are provided in Chapter 2.) In 2015, ODOT expanded the MPO’s safety planning project scope and provided additional funding to enable Lane County to prepare this TSAP, which focuses on rural Lane County. The overlap in the update of the TSP and the development of the TSAP was fortunate timing to provide a holistic approach to traffic safety.

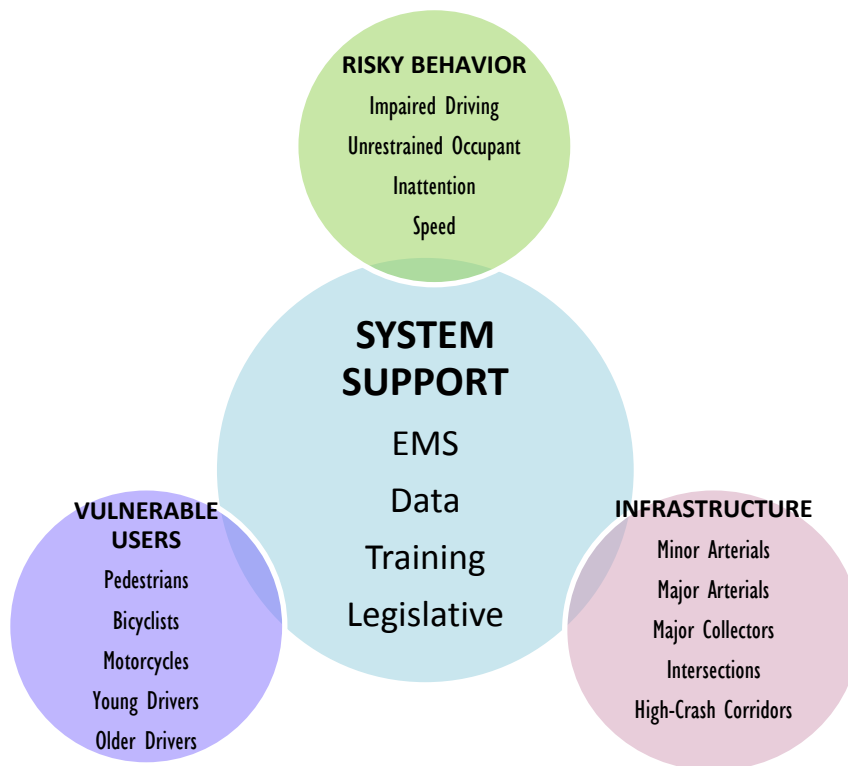
The TSP collected and evaluated traffic collisions with an emphasis on frequency and rating to determine priority issues, whereas the TSAP focused on severity and accounted for the scattered nature of collisions in rural areas. The TSP recommends engineering solutions in specific locations that address the priority safety issues, while the TSAP recommends systemic engineering solutions that can be applied across the entire County, which are complemented by education and enforcement actions.

The TSP is the policy plan with project lists, whereas the TSAP is the action-oriented plan. The safety policies of the TSP (above) are consistent with and help to further the actions recommended in the TSAP. Future investment decisions include a review of the TSP policies and project lists in the development of Lane County’s Capital Improvement Program.

Emphasis Areas

The emphasis areas in this plan reflect those set forth in the 2016 ODOT TSAP: Vulnerable Users, Infrastructure, Risky Behaviors, and Foundational (titled Improved Systems in the ODOT TSAP). The project team and stakeholder group recognized the need to have a consistent framework and language between state and regional planning documents. These emphasis areas were brought to the stakeholder advisory committee to ensure that they met the needs of the region and provided the appropriate framework to understand local issues. Figure 2 shows the types of crashes that are captured in each emphasis area. The figure shows the interrelatedness of these categories, a single crash can include risky behaviors, vulnerable users, and higher risk road categories.

Figure 2. Emphasis Area Overview



- **Vulnerable Users:** This group includes people walking, biking, or on a motorcycle and vulnerable ages such as elderly and young drivers. These groups are the most at-risk users of the transportation system. They travel on our transportation network with less physical protection than those traveling in cars or on transit. Elderly drivers are a relatively small percentage of overall crashes, but are more susceptible to severe injuries and fatalities when involved in a crash. Young drivers

need additional support as they learn to navigate the transportation network. Addressing the needs of vulnerable users is vital to improving overall safety in our region and building a transportation system that serves all ages and abilities.

- **Infrastructure:** Fatal collisions occur most frequently on high-volume, high-speed roadways, such as state highways, arterial and collector roads. The most common causes are speed and roadway departure (on rural roads). There are a number of proven infrastructure improvements that provide opportunities to improve safety on high crash corridors and intersections.
- **Risky Behaviors:** We know that speeding and driving under the influence (DUI) are the behaviors associated with increased risk for fatal and severe crashes on the transportation system. Excessive speed and DUI are leading contributing factors to fatal collisions in Lane County; these behaviors are also often occurring together and contribute to roadway departures. Regional data on districted driving are limited; but recent studies conducted by the American Automobile Association indicate that this behavior is common and is a growing issue on our roads.
- **Foundational:** The foundational emphasis area is a key piece of continued improvement in all aspects of safety. It includes ongoing data collection and reporting, emergency management, the legislative environment, and staff training is important foundational factors that can influence safety on our transportation.

Addressing these issues requires a strong coalition between engineering staff, enforcement officers, emergency medical responders and educators. The planning process revealed the need to coordinate safety efforts across both disciplines and agencies. There is a strong interest from the broad group of stakeholders to create a focused implementation and coordinating effort across disciplines and agencies on a more regular basis.

The goals and actions in this plan are multidisciplinary and broadly follow the six 'E's approach to transportation safety:

1. **Education/Encouragement-** Implemented through governments, transportation options groups, and advocacy groups, this approach uses marketing, outreach, and education to help transportation system users become more aware of transportation safety issues, their behavior, and their responsibility for contributing to a safety culture. Education strategies continually evolve to gain people's attention and change their behavior.

2. **Enforcement-** Implemented through local and state law enforcement agencies, this approach focuses on new and strategic enforcement techniques to reduce severe and fatal crashes. Enforcement of traffic laws and a visible police presence can deter motorists from unsafe driving behaviors. Better collaboration between enforcement and planning can bring more resources and new ways of understanding the problem. Increased enforcement should be implemented equitably across the community, and use limited resources in the most efficient and effective manner possible.
3. **Engineering-** Implemented through local planners and traffic engineers, this approach designs and builds a transportation system that prioritizes safety for all modes. Engineering addresses roadway infrastructure improvements to prevent crashes or reduce the severity of collisions when they occur. Engineers can ensure safety is a primary consideration in project design and development. Incorporating new street design standards that better address the needs of people walking, biking and taking transit such as National Association of Transportation of City Officials (NACTO) street design guide can provide new engineering solutions.
4. **Evaluation-** Implemented throughout all plan actions to measure and review effectiveness and track progress. Evaluate plans, processes, and systems continuously improve the regional strategies focused on safety.
5. **Emergency Medical Services -** Emergency medical services (EMS) staff understands response times are the key to survival for people involved in crashes. The EMS community can work with traffic management and transportation planning staff to improve response time to crash sites despite traffic delays and obstructions.
6. **Equity-** Implemented by local government as a lens in which we view all of the adopted goals, approaches, and actions to ensure that implementation does not disparately impact or ignore any population of our community.

Rural Inequity of Collisions

Whereas most traffic crashes (mostly property damages) occur in urban areas, the rate of fatal crashes (per capita and per vehicle mile) is higher in rural areas. Several aspects of the rural road environment can be characterized as hazardous. Elements of rural roads, such as high speed limits, narrow shoulders with ditches, and the absence of median barriers can increase the risk of fatal crash types, such as head-on and rollover crashes. Low population

density and geographic isolation of rural communities can increase detection, response, and travel time for emergency medical services, thereby increasing mortality rates.

The burden of traffic crashes is not distributed evenly across society, creating an equity issue for rural Lane County. The majority of highway fatalities take place on rural roads (54% of all fatalities and 2.4 times higher than the fatality rate in urban areas), creating a disproportionate impact to rural areas with regard to fatal and severe-injury collisions and associated economic costs.

This inequity is even more staggering when considering that there are more collisions in urban areas and that only 19 percent of the Oregon population lives in rural areas. Approximately 53% of all fatal crashes included roadway departures, 73% of which were in a rural environment. This illustrates that prioritizing transportation investments primarily on the density of crashes and populations will not effectively reduce fatal and severe-injury collisions in Lane County.

Multimodal safety is a challenge in the rural area. People who live in rural communities generally travel more in their automobiles and over further distances, increasing the likelihood of a crash. Transportation options in rural areas are limited, with insufficient bicycle and pedestrian networks and access to public transportation. Physical limitations of rural roadways, some constructed between mountains and waterways, create narrower lanes with more curves, making roads longer and more challenging to navigate. Wildlife and weather conditions, such as rock slides, often affect rural roadways more significantly than urban areas.

Rural roadways typically have higher speed limits, which increase the severity of collisions when they occur. Rural areas often have constrained medical resources, resulting in longer emergency response times. Rural road agencies and small communities often do not have the resources needed to adequately address safety problems on the roads they own and operate.

The Hidden Inequality of Who Dies in Car Crashes— *The Washington Post*

An obscure inequality is that the most disadvantaged are more likely to die in car crashes than people who are well-off. The American Journal of Epidemiology finds that improvements in road safety since the 1990s haven't been shared evenly. The number of trauma centers has declined in poor and rural communities, which affect the health care people have access to after a collision. Poor places suffer from other conditions that can make the roads themselves less safe. Poor communities lack crosswalks over major roads. The residents who live there may have less political power to fight for design improvements like stop signs, sidewalks and speed humps. As a result, pedestrian fatalities are higher in poor communities. As we increasingly fantasize about new technologies that will save us from our own driving errors – cars that will brake for us, or spot cyclists we can't see, or even take over all the navigation – we should anticipate that, at first, those benefits may mostly go to the rich.

Vision and Goals

Lane County's vision is to eliminate fatalities and reduce severe-injury collisions on the transportation system. The vision aspires to develop a strong culture of safety that prioritizes safety for all people regardless of mode and recognizes the importance of every life traveling on our transportation network. The culture change is to move beyond accepting death as part of our transportation system to recognizing the ability and responsibility to prevent fatal crashes. The long term goals for this plan expand on this vision for transportation safety in Lane County. The following six goals provide concrete ways in which Lane County and its partners can begin to realize this vision for safety in our region.

Goal 1: Create a Culture of Safety and shared responsibility. The culture around transportation needs to evolve so that all road users understand the risk and responsibility they have when traveling on our transportation network. This goal begins with our partner agencies creating a safety culture within organizations and among employees of public agencies that prioritizes saving lives; and continues by expanding beyond the public sector to create recognition among all community members that safety is the priority for all modes.

Goal 2: Build infrastructure that provides safety for all people regardless of mode and ability. Recognize the role of engineering in building a safer- to make it harder for human error to impact safety outcomes. Plan, design, construct, operate, and maintain transportation systems to reduce fatalities and serious injuries for users of all modes.

Goal 3: Create a transportation network that supports livable communities. Ensure that we are building walkable and bikeable streets that comply with regional livability standards. Support the planning, design and implementation of safe systems, and provide enforcement and emergency response services.

Goal 4: Prepare for advanced technologies. Research and prepare regional policies for future automation of vehicles. Stay up to date on the role of technology in improving safety through vehicle improvements such as automation and enforcement technologies.

Goal 5: Focus on collaboration and cooperation between and within regional agencies. Create and support a cooperative environment for safety providers and transportation system planners and owners, and public and private stakeholders, including advocacy groups and health providers to work together to reduce crash frequency and severity.

Goal 6: Invest in safety. Invest in our regional transportation dollars in safety projects. Using historic crash data strategically focus on high crash corridors to provide safer intersections, pedestrian and bicycle facilities, and lower speeds where possible.

Traffic Safety as a Public Health Issue

Figure 3 below shows that traffic crashes are a leading cause of death in Lane County. In the context of other preventable causes of death, motor vehicle injuries and fatalities are a significant public health issue. Explaining that the motor vehicle injury problem is a predictable and preventable public health problem helps to prioritize limited resources to correct the problem. A culture of safety means providing safe and accessible transportation for all as a means to improve the overall quality of life for populations.

Figure 3

Leading Causes of Death, by Age Group, Lane County, Oregon 2009-2013						
Rank	< 1 year old	1 to 14	15 to 24	25 to 44	45 to 64	65+
1	Perinatal Conditions (247)	Accidents (unintentional injuries) (3.01*)	Accidents (unintentional injuries) (18.8)	Accidents (unintentional injuries) (38.2)	Malignant neoplasms (202)	Malignant neoplasms (960)
2	Congenital Malformations (68.9)	Malignant Neoplasms (2.63*)	Intentional self-harm (suicide) (9.58)	Intentional self-harm (suicide) (23.5)	Diseases of heart (73.3)	Diseases of heart (895)
3	SIDS (57.4*)	Intentional Self-Harm (suicide) (**)	Malignant neoplasms (2.05*)	Malignant neoplasms (18.2)	Accidents (unintentional injuries) (48.4)	Chronic lower respiratory diseases (335)
4	Accidents (unintentional injuries) (34.4*)	Assault (Homicide) (**)	Assault (Homicide) (**)	Alcohol-induced deaths (10.5)	Alcohol-induced deaths (44.5)	Alzheimer's disease (270)
Leading Causes of Injury Deaths by Age Group, Lane County 2009-2013						
Rank	< 1 year old	1 to 14	15 to 24	25 to 44	45 to 64	65+
1	Unspecified Non-transport accidents (**)	Motor Vehicle Accidents (**)	Motor vehicle Accidents (8.56)	Accidental Poisoning (23.0)	Accidental Poisoning (19.4)	Falls (119)
2	Accidental Poisoning (**)	Unspecified Non-Transport Accidents (**)	Accidental Poisoning (5.82)	Motor vehicle Accidents (8.85)	Motor vehicle Accidents (12.8)	Unspecified Non-Transport Accident (19.9)
3	NA	Accidental Drowning (**)	Accidental Drowning (2.05*)	Unspecified Non-Transport Accidents (2.79)	Falls (5.15)	Motor Vehicle Accidents (14.5)
* Rate may be statistically unreliable; interpret with caution						
** Rate suppressed; statistically unreliable						
Source: Oregon Death Certificates: Center for Health Statistics, Center for Public Health Practice, Public Health Division, Oregon Health Authority. Query Date: 10/07/2015 OPHAT v 2.0						

Public health is the science and practice of protecting and improving the health of communities through education, promotion of healthy lifestyles, research on disease control, health promotion, and injury prevention. Public health prevention measures and programs have increased life expectancy since 1900. For example, there are 900,000 fewer cases of measles from 1941 to 1996; 42 million fewer smokers from 1965 to 1996 (Association of Schools of Public Health 2006); and for saving millions of Americans who might otherwise have died from chronic diseases or injury. The AAA Foundation for Traffic Safety reports²three core functions of public health are consistent with efforts to reduce motor vehicle injury:

1. Monitor and evaluate the health needs of communities
2. Promote healthy practices and behaviors in populations; and
3. Identify and eliminate environmental hazards to assure that populations remain healthy.

The World Health Organization says³road safety should be viewed as a shared responsibility and not the exclusive purview of a single agency. Traffic crashes affect not only transportation systems, but also affect economic systems, health systems, jobs, families, and civil society.

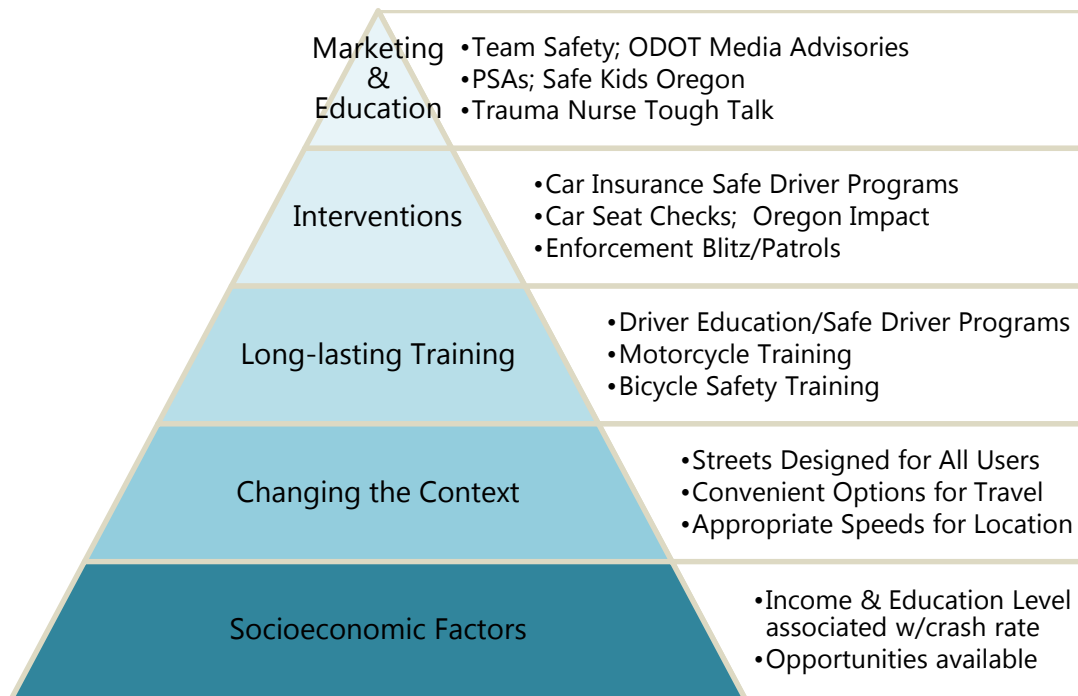
The public health field has adopted a health impact pyramid to understand what types of interventions, countermeasures, and strategies make the greatest impact on community change. This type of model can also be applied to changes in transportation safety culture. The pyramid shown in Figure 4 below applies the health impact model to the types of interventions, strategies, and countermeasures that are implemented to prevent fatal and severe traffic crashes.

The base of the pyramid consists of broader societal changes, such as income and educational attainment and street design. Moving up the pyramid, the interventions become more targeted towards groups or individuals. This includes things such as enforcement, education, and marketing. These have shown to be effective, but can require more effort because the intervention is at an individual rather than community wide level. All levels of the pyramid are important points of change and express the need to have a multi-pronged approach to creating safety strategies.

²"Traffic Safety in the Context of Public Health and Medicine" Sleet, Dinh-Zarr, and Dellinger, 2007 AAA Foundation for Traffic Safety

³"World Report on Road Traffic Injury Prevention" Peden, Scurfield, Sleet, Mohan, Hyder, Jarawan, and Mathers, 2004 World Health Organization

Figure 4. Transportation Safety Pyramid



Summary of Safety Actions

The economic and societal costs of traffic fatalities underscore the need to invest more in prevention. This plan recommends safety actions to respond preventatively to systemic causes with multidisciplinary solutions that include enforcement, education, and engineering. These are complementary efforts because we know enforcement staff cannot be everywhere at all times throughout rural Lane County. We also know that we can address the human error involved in virtually every fatal collision by investing more in engineering countermeasures that reduce the likelihood and the severity of a collision. These engineering solutions come in many forms to alert the driver to change their behavior, such as rumble strips and curve warning signs, and to help the driver recover when an error is made, such as guardrails and providing a recovery area through safety edges, shoulder widening, and fixed-object removal.

The recommended safety actions and implementation schedule are detailed in Chapter 3. Successful implementation depends on a number of factors, including strong safety leadership at all levels, cohesive safety partnerships and funding. Moving the plan forward includes a series of action items focused on short term and long term solutions. The implementation considerations identified by stakeholders and focus groups helped inform the action timeline. Short-term solutions were those that could more readily be implemented through existing programs and services, particularly integrating isolated programs to share resources. This TSAP supports a greater emphasis on systemic engineering solutions and additional and integrated education and enforcement programs – especially over the short-term.

Longer-term solutions include reducing traffic speeds, particularly through rural communities, and improving travel options for rural residents, which provide significant co-benefits of improving the quality of life for vulnerable populations. While transit, cycling and walking improvements are often implemented in urban areas in response to traffic congestion and pollution, rural areas benefit from these improvements by providing transportation options to people who are unable to drive (such as youth, the elderly and disabled) or to reduce the exposure of rural residents who must otherwise drive a significant distance to access employment and services. Reducing traffic speeds is a focal point of this TSAP because speed is the leading cause of fatal and severe-injury collisions in Lane County and is the constant across all emphasis areas.

A summary of the recommended Safety Actions is provided in Figure 5, below. The actions are numbered by activity type, as follows: System Support (SS), Education (Edu), Enforcement (Enf), and Engineering (Eng). Details for each are provided in Chapter 3.

Figure 5

SAFETY ACTIONS SUMMARY	
Short-Term Actions	
SS-1	Create a Safety Coordinator to develop a Safe Communities Program
SS-2	Create county-wide work group to serve as safety technical team for implementing action items
SS-3	Create committee of leaders across Lane County to advocate for safety initiatives
SS-4	Support internal agencies, such as Traffic Operations, Sheriff’s Office, Public Health to develop collaborative ways to improve traffic safety in rural areas
SS-5	Support rural communities to develop partnerships in improving traffic safety
SS-6	Support emergency response in rural areas to understand and advocate for their needs
Edu-1	Raise awareness of roadway rules
Edu-2	Promote Changing-Infrastructure Education
Edu-3	Conduct Targeted Outreach Campaigns
Edu-4	Educate practitioners on latest technology and best practices
Edu-5	Promote Safe Routes to School programs in rural Lane County
Edu-6	Keep elected officials and stakeholders informed of safety issues
Edu-7	Create new curriculum for positive norms
Edu-8	Develop web tool for collecting and sharing safety information
Enf-1	Apply for safety grants available annually for enforcement activities
Enf-2	Deploy speed trailers and variable speeds signs
Enf-3	Increase targeted use of speed radar in high-speed and high-risk locations
Enf-4	Work with state and local partners for increased law enforcement patrols during documented high crash periods
Enf-5	Advocate for additional enforcement staff resources
Enf-6	Support enforcement of Graduated Drivers’ License and Zero Tolerance laws
Enf-7	Focus enforcement and high-risk locations

Enf-8	Target enforcement to protect vulnerable users
Eng-1	Install Rumble Strips and/or Safety Edges
Eng-2	Install Roadside Delineators
Eng-3	Improve Curve Warning Signage
Eng-4	Deploy variable speed technology
Eng-5	Improve data collection and analysis
Eng-6	Install high-visibility pedestrian crossings
Eng-7	Improve pavement markings
Eng-8	Remove roadside fixed objects
Eng-9	Install guardrails or barriers
Eng-10	Perform routine roadway safety audits
Long-Term Actions	
SS-7	Track technology advancements, such as autonomous vehicles and automated enforcement
SS-8	Support expanded transportation options in rural Lane County
SS-9	Pursue legislative changes necessary to implement safety actions
SS-10	Update TSAP to ensure it remains current
Edu-9	Promote Transportation Options in rural Lane County
Edu-10	Support increased driver education programs
Edu-11	Ensure driver's education keeps pace with changing infrastructure technology
Edu-12	Advocate for increased safety funding
Enf-9	Change state level speed camera restrictions
Enf-10	Implement automated enforcement technology
Enf-11	Pursue legislative changes to reduce speeds, increase penalties for speeding, and/or providing more local control for setting speeds.
Enf-12	Support increased prosecution of DUII
Eng-11	Strengthen Access Management Standards
Eng-12	Widen Roadway Shoulders
Eng-13	Redesign roadway geometry
Eng-14	Provide physical amenities that expand transportation options

Chapter 2: Defining the Problem

To understand where the most impact can be made to improve safety conditions, the Central Lane MPO together with Lane County and the stakeholder analyzed historical and current crash data from our region. The benefit of having a data driven process is to explore in detail who was involved in crashes, what factors contributed to the crash, and where on our transportation network the crash occurred. The following chapter gives a broad overview of the data sources, a broader regional data summary and more refined data related to each of the plan emphasis areas. The short and long term plan strategies were designed to directly address the problems as defined in these data.

Data Sources and Limitations

Unless otherwise noted the crash data used in this plan comes from the Oregon Department of Transportation’s Crash Analysis and Reporting Unit through the Crash Data System (CDS). These data are compiled by ODOT through a variety of sources including Department of Motor Vehicles (DMV) and law enforcement reports. As with any large data set, there are limitations to the quality of the data. ODOT takes great care to provide accurate and timely data, but due to reporting processes and other factors ODOT crash data does not necessarily represent all crash incidents. ODOT collects legally reportable motor vehicle traffic crashes which include those that result in death, bodily injury, or damage to personal property. The personal property definition has changed over time and the dataset used for this plan includes all of the following categories:

- Crashes before 9/1/1997 damages in excess of \$500
- Crashes that occurred between 9/1/1997 and 12/31/2003 damages in excess of \$1,000
- Crashes that occurred after 1/1/2004: damage to the driver's vehicle over \$1,500; damage to any vehicle is over \$1,500 and any vehicle towed from the scene as a result of said damage; or damage to any one person’s property, other than a vehicle involved in the accident over \$1,500.

In addition to these variations in the thresholds of property damage, the ODOT crash data could be undercounting fatal injury. When ODOT fatal injury counts are compared to data collected by public health officials at the Oregon Health Authority (OHA) there are more deaths due to traffic injuries for years 2007-2014. Table 1 shows the difference in reported fatal injuries,

Table 1

Fatal Traffic Injury Comparison - Health and Transportation Data			
Year	Vital Statistics*	ODOT Data^	Percent Under Count
2007	47	43	-9%
2008	37	33	-11%
2009	50	40	-20%
2010	29	27	-7%
2011	35	32	-9%
2012	37	32	-14%
2013	36	33	-8%
2014	50	45	-10%

Sources:
 *Oregon Vital Statistics County Data Book Table 21
 ^Oregon Department of Transportation

demonstrating some underreporting by ODOT data. This inconsistency is likely due to differences in reporting standards, for instance ODOT would not account for a fatal injury if the person involved in the incident died 30 days after the crash occurred, but this death would be included in the vital statistics dataset. Crash incidents for people who walk and/or bike are also potentially underreported. In the case of no injury in an incident the DMV property damage threshold for reporting the incident is \$1,500 which makes a non-injury crash involving a person walking or bicycling un-reportable. Therefore it should be noted that the data used in this planning process is likely an underrepresentation of the safety conditions, but is still useful in understanding the issues on our transportation system and the circumstances in which to implement solutions.

Historical Context

The regional understanding of the current state of transportation safety conditions was informed by a review of historical crash information. This planning process also looked at national traffic fatality data because these statewide data contain less detailed information for crashes that occurred before 2002. The long-term trends represented in the national and state data tend to follow similar trends in both the county and MPO crash data; however these smaller geographies represent fewer overall incidents.

Figure 6

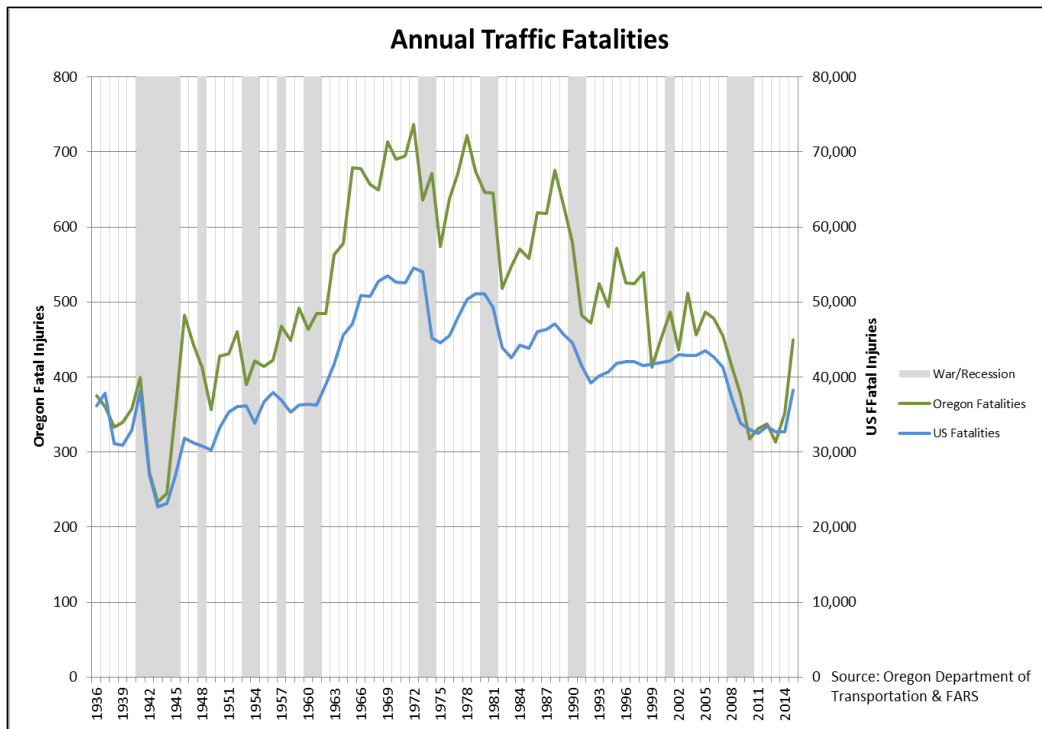


Figure 6 shows annual fatal traffic injuries for the state of Oregon and the United States since reliable record keeping began in the mid-1930s through 2014. This picture of traffic fatalities tells a complicated story of changing road design, vehicle safety standards,

economic fluctuations and driver behavior. Determining whether progress has been made depends on the decade selected for comparison.

For example, total number of fatalities increased over time as vehicle miles traveled (VMT) increased. After the peak in the 70s, vehicle technology and seatbelt use slowly began to improve safety outcomes. There was another decrease during the economic recession in 2008 as VMT decreased, followed by a recent upswing in fatalities nationally.

Figure 7

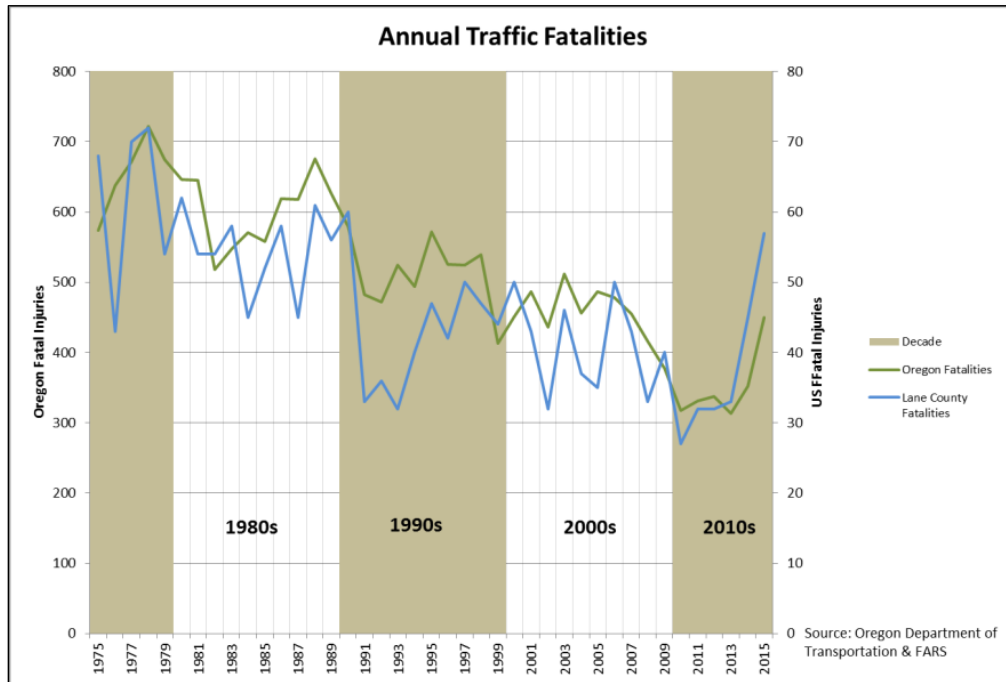


Figure 7 compares the annual traffic deaths from 1975- 2015 for Lane County and Oregon. For Lane County traffic deaths, comparing the last three years (2013-2015) to the 1970s (1975-1979) reveals a reduction of 27% marking some progress overall annual fatalities. However, compared to the 1980s, 1990s or 2000s the last three years show varied progress with changes in fatalities of -17%, +4%, and +10% respectively. Table 2 summarizes these varied changes.

Table 2

Lane County Traffic Death Change Compared to 2013-2015	
Period of Comparison	Percent Change
1975-1979	-27%
1980-1989	-17%
1990-1999	4%
2000-2009	10%

Economic Costs of Crashes

In addition to the tragic loss of life these crashes bring to our communities, there is a significant economic burden that we bear as a society. Methodologies for calculating the economic costs associated with roadway crashes are well established. Using costs per

crash values from the ODOT, crash costs are estimated for Lane County and the MPO. Between 2002 and 2014 the average annual costs associated with traffic crashes total \$289 million for Lane County. For years 2009-2014, the cost of crashes for the MPO are also estimated at \$173 million in 2014, compared to \$155 million in costs associated with congestion.

In May of 2015, the FHWA released a report analyzing the costs of roadway crashes for the United States, determining the total economic impact at \$242 billion per year⁴. These costs include lost productivity, medical costs, legal and court costs, emergency service costs, insurance administration costs, congestion costs, property damage, and workplace losses. A similar study done for the Portland Metro region estimated the costs associated with crashes totaled \$958 million a year.⁵In Lane County, over the last 13 years, 485 people have been killed on the roads, 1,461 severely injured, and 25,755 suffered a moderate or minor injury. These crash data come from the ODOT crash data file and have been summarized below in Table 3.

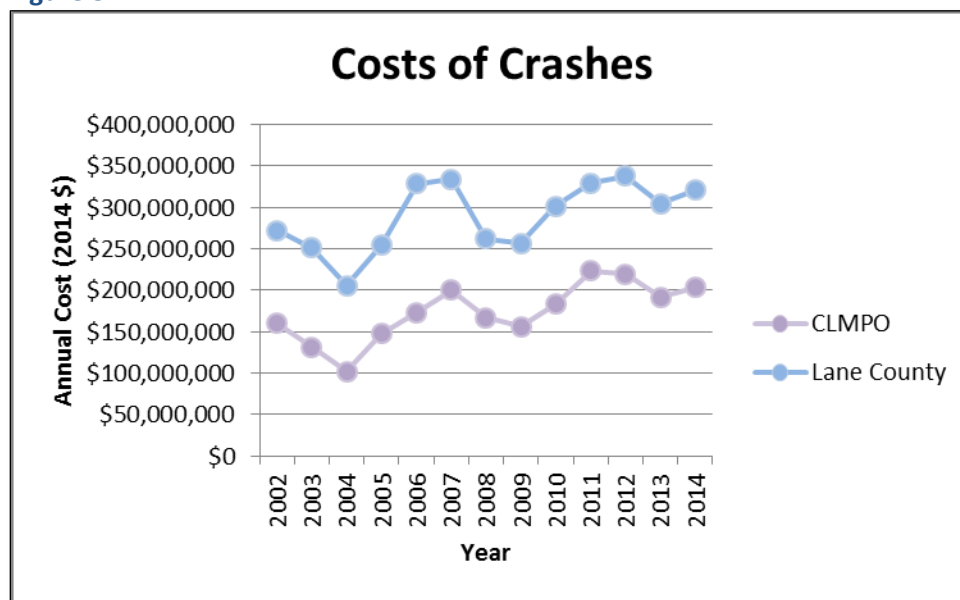
Table 3

Crash Outcomes in Lane County (2002-2014)			
Injury Severity	CLMPO	Non-CLMPO	Lane County
Fatal	157	328	485
Severity A Injury	733	728	1,461
Severity B Injury	5,120	3,167	8,287
Severity C Injury	13,841	3,627	17,468
Property Damage	21,678	6,892	28,570

Using the costs per crash information described for the crashes in Lane County, there was an average annual cost of \$289 million for crashes in Lane County over the last 13 years. For the MPO the average annual cost of crashes totals \$173

million per year. These costs for both areas are detailed for all years in Figure 8.

Figure 8



⁴The Economic and Societal Impact Of Motor Vehicle Crashes 2010(Revised) - <http://www-nrd.nhtsa.dot.gov/pubs/812013.pdf>

⁵<http://www.oregonmetro.gov/news/crashes-cost-more-than-congestion>

Cost Comparison of Crashes and Congestion within Central Lane MPO

Safety related improvements that reduce crashes on the regional transportation system could have a significant economic impact. Strategies that combine transportation options and safety outreach, such as promoting walking, biking, and transit would have a multi-pronged impact to both safety and congestion. Additionally, reducing overall healthcare spending is a policy goal for both state and national policy makers and decreasing fatal and injuries resulting from traffic collisions could be a significant contribution to meeting this goal. Lost productivity associated with these costs affects the entire economy as well by taking people out of the workforce either permanently in the case of a fatal injury (in certain case this includes severe injuries) or temporarily when workers suffer an injury. Reducing traffic collisions can save households money and improve the overall productivity of the local economy.

Table 4- Economic Costs per Capita of Crashes

Year	Lane County Population	Annual Costs	Average Cost for Household of Four People*
2009	347,690	\$256,955,316	\$2,956
2010	351,715	\$301,642,860	\$3,431
2011	353,155	\$329,270,304	\$3,729
2012	354,200	\$338,069,736	\$3,818
2013	356,125	\$304,549,746	\$3,421
2014	358,805	\$321,041,784	\$3,579
Average	353,615	\$308,588,291	\$3,489

*Calculated by multiplying per capita costs by four

Emphasis Area Overview

Emphasis areas (EA) provide focus for understanding current conditions and establishing countermeasure strategies for mitigating these conditions. For instance impaired driving involved injuries represent about a third of all fatal and severe injuries in Lane County and strategies to address that issue focus more on law enforcement and education. Whereas pedestrian and bicycle involved crashes represent 24% of injuries in the urban area will require more engineering strategies such as infrastructure investment like sidewalks and improved crossing technology. Splitting the larger issue of traffic safety into these categories highlights the diversity of the traffic safety problem and helps to refine the range of likely solutions for each issue.

The process used to select EAs was directed by data and evidence to the extent possible. MAP-21 requirements also dictate that data-driven processes are used to establish EAs. Therefore EAs were selected using quantitative criteria with support from the ODOT TSAP framework and the Stakeholder Advisory Team (SAT). EAs are not mutually exclusive and injuries represented in one category can also be present in another. For instance speed involved injuries can be included in the Speed EA and the also in the Impaired Driving Category if alcohol or drugs were also involved in the collision. Table 5 shows the frequency of fatal and severe injuries in each plan emphasis area.

Table 5

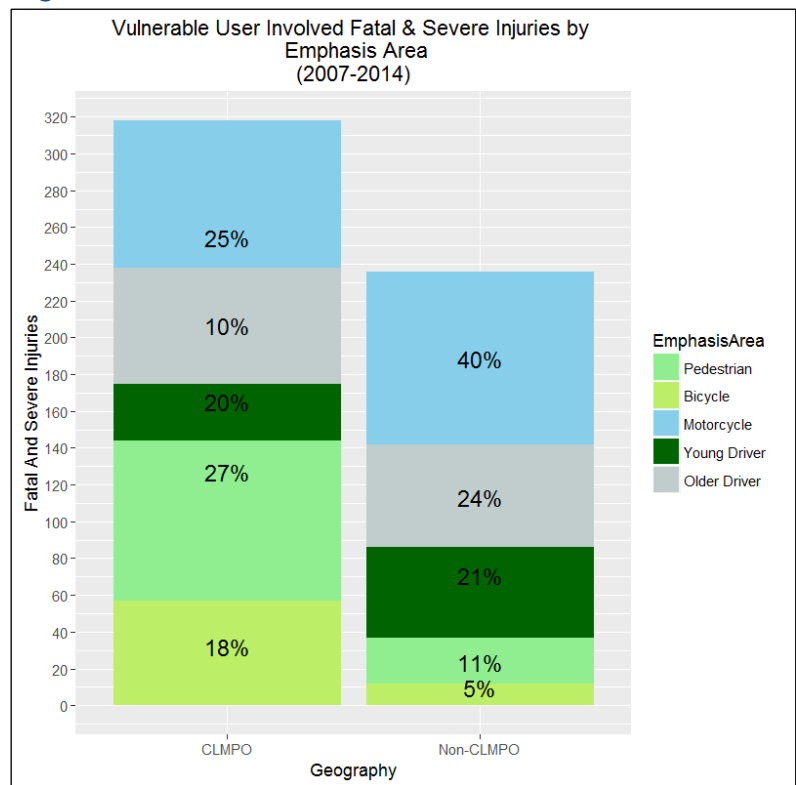
FREQUENCY OF INJURIES IN EMPHASIS AREAS (2007-2014)					
CLMPO			Non-CLMPO		
Emphasis Area	Fatal & Severe Injuries	Percentage of Total (610)	Emphasis Area	Fatal & Severe Injuries	Percentage of Total (587)
Risky Behaviors			Risky Behaviors		
Impaired Driving	118	19%	Impaired Driving	187	30%
Speed Involved	79	13%	Speed Involved	242	39%
Unrestrained Occupants	30	5%	Unrestrained Occupants	80	13%
Inattention	27	4%	Inattention	23	4%
Vulnerable Users			Vulnerable Users		
Pedestrian	87	14%	Pedestrian	25	4%
Bicycle	57	9%	Bicycle	12	2%
Motorcycle	81	13%	Motorcycle	94	15%
Young Drivers (15-21)	31	5%	Young Drivers (15-21)	49	8%
Infrastructure			Infrastructure		
Minor Arterials	227	37%	Major Collectors	217	35%
Principle Arterials - Other	169	28%	Principle Arterials - Other	214	35%
Intersections	288	47%	Intersections	113	18%
Foundational			Foundational		
EMS, Data, Training, Leg.	NA		EMS, Data, Training	NA	

Each emphasis area is described below with key facts about the greatest risks for fatal and severe-injury collisions.

Vulnerable Users- Who Is the Most at Risk?

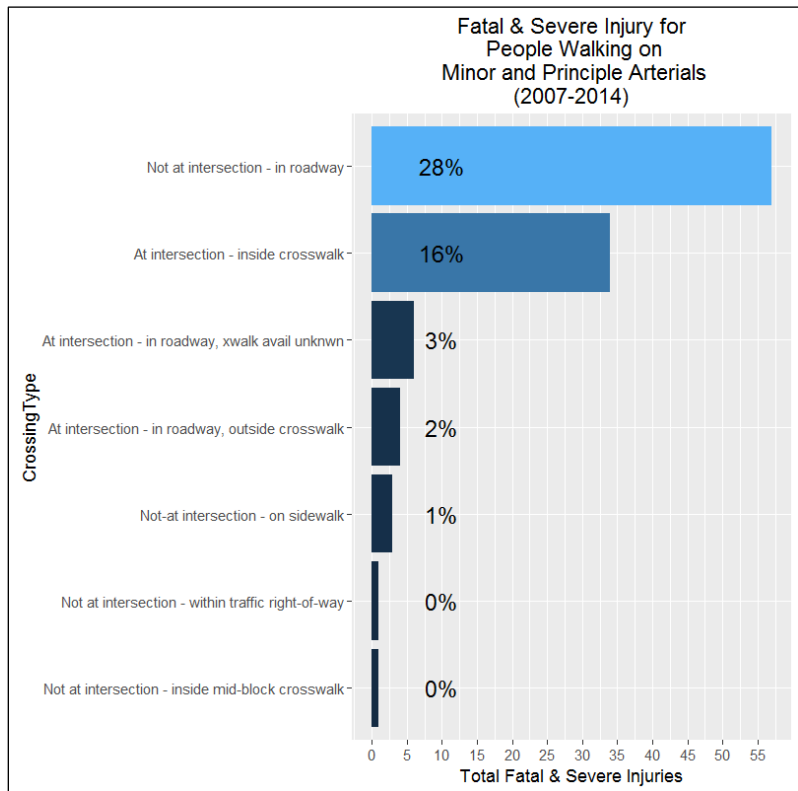
Airbags, seatbelt technology and other automobile improvements have increased the safety of vehicles for passengers and drivers. However, unprotected users (those operating outside vehicles like people walking or riding bicycles or motorcycles) are more likely to suffer death or serious injury. Older drivers and younger drivers are also at greater risks in collisions; both because they are experiencing diminishing or underdeveloped driving skills, and because of their more fragile frames. Figure 9 shows the percentage of fatal and severe-injury collisions involving each of these roadway users. In Lane County as a whole, 45% of all fatal and severe injuries involve vulnerable users. In the non-urban streets in Lane county 38% of crashes involved motorcyclists, placing them at the greatest risk. Older drivers are the second most-at-risk vulnerable user in the rural area. This may be related to the availability and response rates of emergency medical services in rural areas. In the MPO area, the most vulnerable users are people walking.

Figure 9



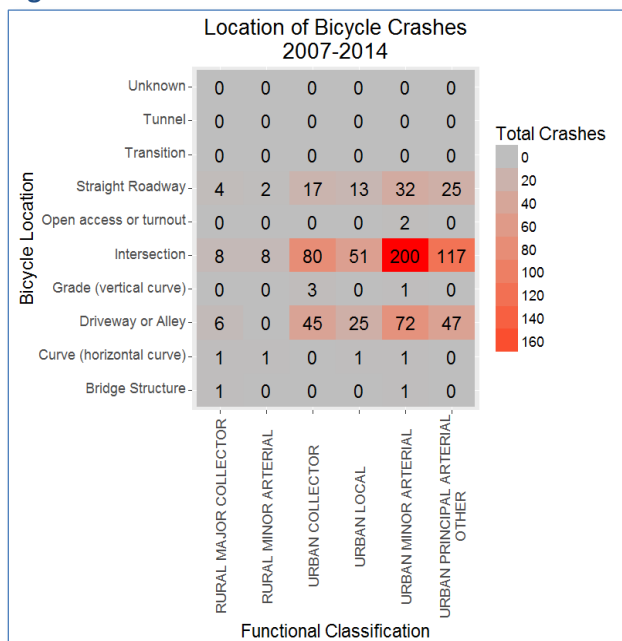
Over 50% of pedestrian fatalities occur on minor and principal arterials. The location of the crash can help determine if design issues are appropriate to prevent future pedestrian deaths and severe injuries. Figure 10 shows the pedestrian involved crashes on minor and principal arterials and where on the facility the crash occurred. The majority of these incidents did not take place at an intersection. Most frequently, the vehicle failed to yield the right-of-way to the pedestrian, which accounted for 30% of the crashes. Most (28%) of the pedestrian fatalities and severe-injuries resulted from collisions within the roadway, but outside of an intersection.

Figure 10



These data do not readily indicate whether separate travel space (sidewalk or roadway shoulder) was available to the pedestrian or whether the pedestrian was trying to cross the street. Better data would help determine the appropriate solutions. Based on the type of facility these roads are, these data could indicate that there are large distances between crossings and people are choosing to cross midblock in unmarked crosswalks.

Figure 11

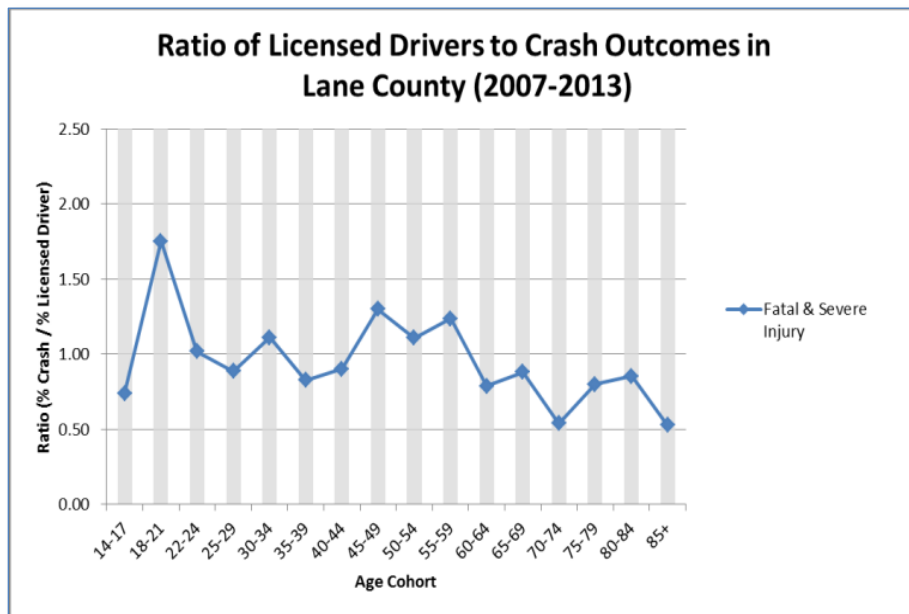


For people choosing to bike, 65% of crashes occur on minor and principal arterials. Intersections and driveways are common conflict points between people bicycling and driving. While bicycling crashes do occur in rural areas, it is a larger issue in the urban area, where more people are cycling for commuting purposes. Figure 11 shows the location of bicycle crashes based on facility type and location along that facility.

Fatalities and serious injuries for people riding motorcycles are most common on rural high speed facilities. In rural Lane County, between 2007 and 2013, there were 223 collisions involving motorcycles; of those, 82 resulted in a fatality or severe-injury of the person riding the motorcycle. Past research confirms riding a motorcycle is 58 times more dangerous compared to driving. Helmets were worn in 91% of the fatal and severe injuries.

Figure 12

Young drivers are defined as ages 15-24 in this plan. The Lane County population within this age group with a current driver's license: was 62% in 2010; and 58% in 2014. There is some indication that young people are delaying obtaining licenses due to the costs of vehicles ownership and operation. Although a majority of young drivers obey the law



and drive carefully, individual young drivers can make errors that can have serious consequences. For example, the majority of speeding fatalities in rural Lane County involved 18- to 20-year-olds. The ratio of licensed drivers to crash outcomes can be found in Figure 12. Older drivers (age 65 and older) are underrepresented in these data, but are still considered a vulnerable user to due to risk of more serious outcomes when they are involved in crashes.

Infrastructure- Where Are the Greatest Risks Located?

When examining where fatal and severe-injury collisions occur on our roadways, it is clear that most happen on high-volume and high-speed roadways (arterials and collectors, rather than local streets) where local access to properties is allowed (versus interstates and freeways). Classifications are meant to characterize the function of that facility. There are slight differences between the ways in which each jurisdiction classifies their network. For the purposes of this plan federal functional classes were used.

- **Interstate** -- Highest classification designed and constructed with mobility and long-distance travel in mind. Direction lanes, separated by barrier, and ramp-only access.

- **Other 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. Like Interstates, these roadways are designed and constructed to maximize their mobility function, and abutting land uses are not directly served by them.
- **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 community 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.

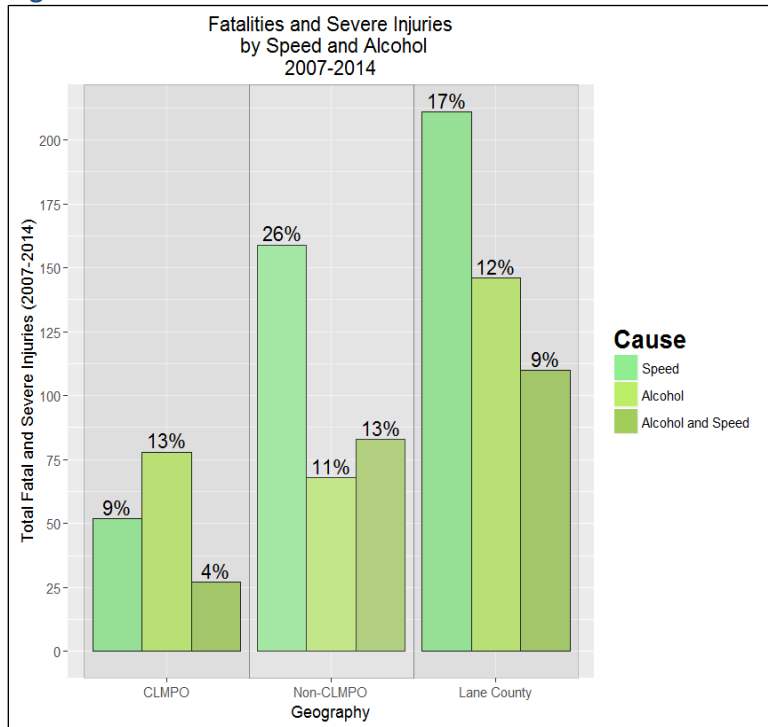
In the MPO area, 65% of all fatal and severe injuries occur on Principal and Minor Arterial facilities. In the non-MPO rural area, 65% of fatal and severe injuries occur on Principal Arterials and Major Collectors. Major and Minor arterials typically have a higher crash rate than the urban average and these facilities are more dangerous for people walking and riding bicycles.

What Creates the Most Risk?

As noted previously, most fatal and severe-injury collisions are due to driver error. There is a difference between driver performance (what the driver can do) and driver behavior (what the driver does). Driver performance relates to the driver's knowledge, skill, perceptual and cognitive abilities. Errors of this nature are mostly attributable to inexperienced young drivers or older drivers with diminishing abilities. The infrastructure emphasis area focuses on what the driver does in error perhaps even in spite of what they know is wrong. The majority of road users exhibit behavior where they make errors without intention and occasionally break the rules, possibly because they do not know the law or interpret it in their own way. These may include road users who are inattentive because they are distracted, who do not look around them or do not react adequately to the situation. There may also be road users who drive over the speed limit or a little too fast for the conditions.

Another group is the dangerous drivers who expose themselves and others to unnecessary risk, such as distracted driving, driving under the influence and speeding. Risky Behaviors are involved in 35% of the fatal and severe-injury collisions in CLMPO and 65% in Lane County. The most risky behaviors that result in fatal and severe-injury collisions are speeding and DUII. Figure 13 shows the breakdown of speed and alcohol involved crashes by jurisdiction. These behaviors typically go hand and hand and create a dangerous combination.

Figure 13



Speeding was the leading cause of fatal and severe-injury collisions in rural Lane County. While impaired driving is the leading cause of fatal and severe-injury collisions in the urban MPO area, the number of fatal and severe-injury collisions involving DUII was higher in rural Lane County. Based on the available data, inattention appears to be an insignificant contributing factor; however, other information suggests this is a growing concern and that this behavior is under-represented in the data. These concerns are detailed below.

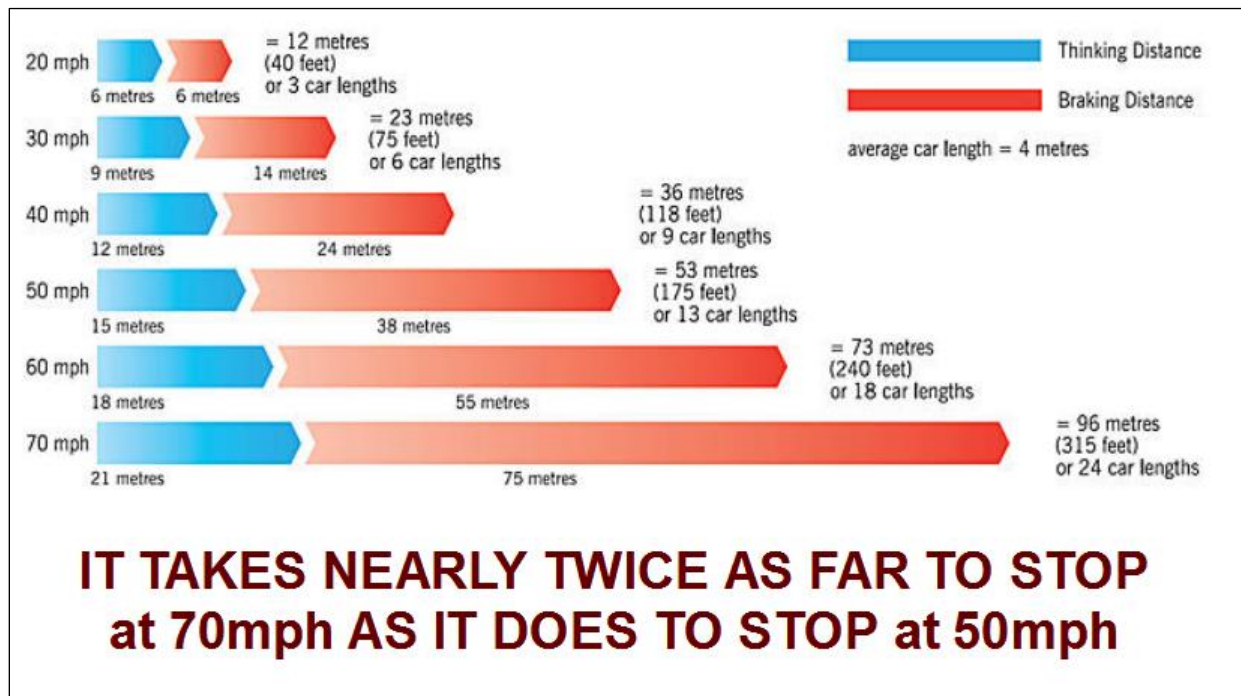
Driving Too Fast

Between 2007 and 2014, there were a total of 1,887 speed related crashes in CLMPO; of those, 79 resulted in fatalities and severe injuries. Speed involved fatal and severe crashes are more prominent in rural areas, 242 fatal and severe crashes occurred in rural Lane County during the same time frame. “Speeding too fast for conditions” is the leading cause attributed to fatal and severe-injury collisions, not only in rural Lane County, but statewide and nationwide. In 2014, there were 9,262 traffic fatalities from speeding-related crashes across the country.

The National Highway Traffic Safety Administration considers a crash to be speeding-related if the driver was charged with a speeding-related offense or if an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash. Posted speed limits apply under ideal driving conditions. Drivers may need to slow down in conditions such as heavy rain, a construction zone, or a congested roadway. Law enforcement refers to this as “sped too fast for conditions.”

Speed is a factor in many crashes because of the physical forces at work. Driving even a few miles over the speed limit increases the chances of losing control of the vehicle. It increases braking distance (Figure 14), reduces the effectiveness of safety devices, and dramatically increases the severity of injuries if there is a crash. Braking (or stopping) distance is dependent on human perception and reaction time, in addition to vehicle reaction time and braking capability.

Figure 14. Breaking and Stopping Distances (Kinetic Energy = $\frac{1}{2} \times \text{mass} \times \text{speed}$)



<http://www.riodrivingschool.co.uk/stopping-distances-and-kinetic-energy-driving>

The Insurance Institute for Highway Safety reports that crash severity is directly related to speed. If speed increases by 50%, the energy release in a crash more than doubles. This increased force is what causes severe injuries and fatalities. Despite opposition from safety advocates, the Oregon Legislature approved House Bill 3402 and 4047 to increase speeds from 65 to 70 mph (and from 60 to 65 mph for trucks) on several interstates and state highways (but excluded the Portland metro area and the I-5 corridor), effective March 1, 2016. With this speed increase, rural highways will generally have the highest legal speed limits in Oregon. In response to subsequent traffic fatalities, the speed increases were delayed on some rural highways.

The above Oregon law designates speeds in the absence of posted speed limits. Designated and posted speed limits are not the final word in Oregon, for all travel on public streets and highways is subject to the “Basic Rule” (Oregon Revised Statutes Chapter 811.100). The Rule states that a motorist must drive at a speed that is reasonable and prudent at all times by considering other traffic, road and weather conditions, dangers at intersections and any other conditions that affect safety and speed. The Basic Rule does not allow motorists to drive faster than the posted speed or designated speed. Instead, the Rule expects drivers to be responsible for their own actions.

The State Speed Board has authority over all posted speeds. This means cities and counties wishing to lower the posted speed limit on roads in their communities and even under their jurisdiction must first obtain approval from ODOT. This lack of local authority is a source of frustration for many communities; on the other hand, most engineers favor

consistency in traffic laws and standards across the state, for the benefit of drivers traveling through political boundaries.

The principal factor used in establishing speed zones is the “85th percentile speed,” which is the speed at or below which 85% of the vehicles are traveling. The process involves collecting speed data on a given roadway and assigning a speed limit. This methodology can be problematic because facility design can generate high speed drivers and it does not take into account other users of the roadway such as people walking or biking. Proponents of the methodology say “most motorists drive in a reasonable and prudent manner, selecting their driving speeds so as to arrive at their designation safely” (ODOT Speed Zone Manual). Both sides agree that enforcement is needed to implement the posted speed and that roadway design influences speeds more than a sign.

Portland Bureau of Transportation and ODOT have recently implemented an alternate methodology that would take into account other users of non-arterial streets that are not designated freight routes and that have posted speeds greater than 25 mph. The established speed would be based on the degree of separation between people driving, biking and walking. The following are three designated speed categories:

- 40 mph maximum unless streets have a center median barrier and clear zone, and people walking and biking are physically protected;
- 30 mph maximum on streets with busy intersections experiencing high crashes, on streets with sidewalks or shoulders next to travel lanes, and on streets with bike lanes next to motor vehicle lanes;
- 20 mph maximum on shared space roads (driving, biking and walking) that do not meet school, business or neighborhood greenways statute for 20 mph.

Citizen attitudes often tend to reflect an acceptance of speeding as a social norm, despite its inherent dangers and the fact that it is the cause of thousands of crashes each year. According to AAA’s 2014 Traffic Safety Culture Index, 46.1 percent of drivers say they have driven 15 mph over the speed limit on a freeway in the past month, and more than 20 percent say it is acceptable to do so. Slightly fewer drivers (43.5 percent) have gone 10 mph over the limit on a residential street in the past month, but 90.2 percent of drivers surveyed say they disapprove of speeding on a residential street. The irony is studies show speeding does not save much time. Driving 65 miles per hour instead of 55 miles per hour for 25 miles saves only 4 minutes and 20 seconds.

Intoxicated Driving (DUI/DUII)

Instead of “DUI” (driving under the influence), Oregon uses the term “DUII” (driving under the influence of intoxicants.) DUII offenses include “physical or mental faculties are adversely affected to a noticeable or perceptible degree” as the result of ingesting alcohol, drugs, or a combination of the two. Drivers are considered to be alcohol-impaired when their blood alcohol concentrations (BACs) are .08 grams per deciliter or higher. Fatalities

involving a driver with a BAC of .08 or higher is considered to be an alcohol-impaired-driving fatality.

In CLMPO area, there were a total of 1066 crashes between 2007 and 2014 that involved impaired driving; 102 of those resulted in fatality or severe-injury. The data shows that impaired driving crashes occur throughout the week, with Saturday and Sunday early mornings being the most common days and times. Enforcement staff indicates that major holidays and Super Bowl Sunday have the highest DUII ratings. ODOT data indicates that the highest percentages of alcohol-impaired drivers involved in fatal crashes among all age groups in 2013 were drivers 21 to 24 years old (33%), followed by drivers 25 to 34 years old (29%) and 35 to 44 years old (24%).

Inattention

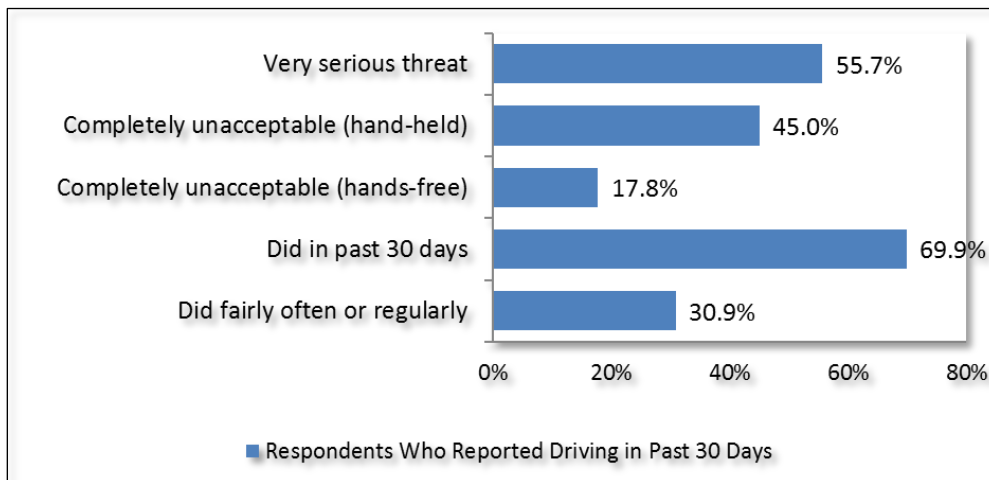
Inattention is the act of driving while engaged in other activities—such as looking after children, texting, talking on the phone or to a passenger, watching videos, eating, or reading. These activities take the driver's attention away from the road. While many people anecdotally report that inattention and distracted driving is on the rise, it's difficult to assess due to incomplete or unreliable data sources. Crash data used for other emphasis areas is less useful for inattention because cell phone use is included in these data primarily on a self-reported basis and are therefore likely underrepresented in these data. The ODOT crash data shows cell phone use in only 0.63% of all crashes. Regionally, 4% of crashes are attributed to inattention.

Unless the officer can observe the person was using a cell phone, it is typically self-reported whether cell phone use was a cause. Although cell phone use is often the root cause of other violations, such as failure to signal or maintain lane, those violations are easier to prove and become the focus of the citation. This would explain why this problem is not represented in the crash data.

Based on other research, it does appear that inattention is a significant problem and is likely growing as mobile devices become widespread. Research published in the American Journal of Public Health (2010) demonstrated that the percentage of traffic related fatalities associated with distracted driving is growing as cell phone subscriptions increase.

In a 2015 AAA Teenage Distracted Driving Study, cell phone use was reported as being involved in 35% of roadway departure crashes and 18% of rear-end crashes. In these crashes, drivers had their eyes off the road for only 4.1 seconds on average. The study notes that passengers are often a more significant distraction to teens than anything else. In a similar report, American Driving Survey, AAA reported that 55.7% of respondents thought cell phone use while driving was a serious threat, yet 69.9% participated in this activity in the last 30 days and 30.9% fairly often or regularly used a cell phone while driving (Figure 15).

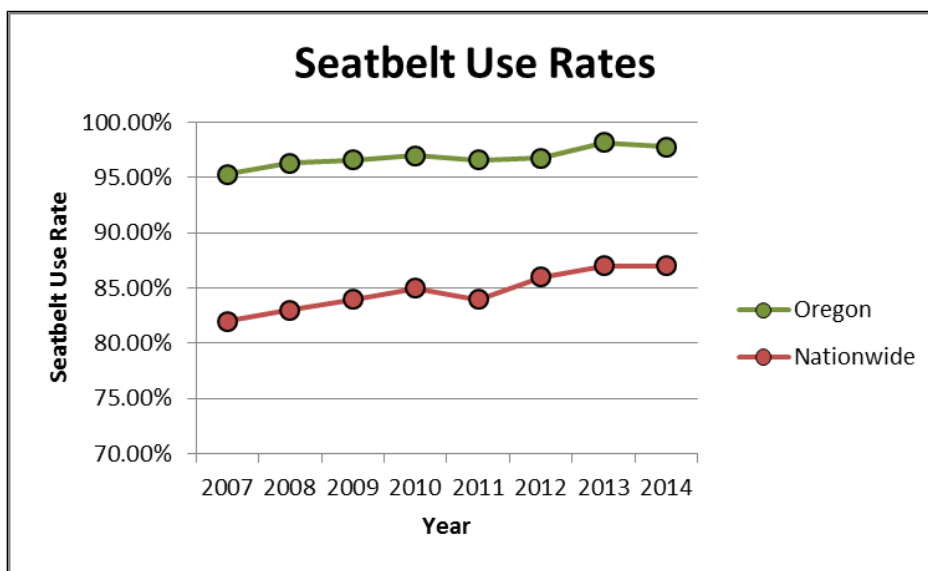
Figure 15. American Driving Survey Responses on Cell Phone Usage while Driving



Unrestrained occupants

Unrestrained Occupants are vehicle occupants that are not wearing a seat belt or proper child restraint. Without proper occupant restraint the likelihood that crashes end in fatal or serious injuries increases dramatically. In general, seatbelt use in Oregon is higher than the national average (Figure 16) and is now near 100%. This is partly due to increases in vehicle technology and seatbelt use and proper child restraints represent 9% of the fatal and severe injuries in Lane County. In fact there was only one serious injury involving a child not properly wearing a child restraint system correctly between 2007-2014. All instances of occupants not wearing seatbelts also involve impaired driving or speed.

Figure 16



Chapter 3: Implementation and Action

Successful implementation depends on a number of factors, including strong safety leadership at all levels, cohesive safety partnerships and funding. The partnership created through this planning process between Lane County and Central Lane MPO has created the foundation for future collaboration and implementation, which will be carried out through the creation of a Safe Communities Program. The program will initially be funded through ODOT's "Safe Communities" program that provides funding and technical support from NHTSA. In Oregon, Baker, Clackamas, Grant, Harvey, Jackson, Malheur, Umatilla and Union Counties have Safe Communities programs supported by ODOT with grants, technical assistance, training, and data support. ODOT's 2013 report of funding allocation shows counties with these programs receiving the bulk of resources (e.g. 26% of the safety funding was used on statewide assistance compared to 20% directly to Clackamas County). Many of these communities have been able to hire safety coordinators with initial funding from NHTSA to develop and implement safety programs and plans.

Moving the plan forward includes a series of action items focused on short term and long term solutions. The implementation considerations identified by stakeholders and focus groups helped inform the action timeline. Short-term solutions were those that could more readily be implemented through existing programs and services, particularly integrating isolated programs to share resources. This TSAP supports a greater emphasis on systemic engineering solutions and additional and integrated education and enforcement programs – especially over the short-term.

Longer-term solutions include reducing traffic speeds, particularly through rural communities, and improving travel options for rural residents, which provide significant co-benefits of improving the quality of life for vulnerable populations. While transit, cycling and walking improvements are often implemented in urban areas in response to traffic congestion and pollution, rural areas benefit from these improvements by providing transportation options to people who are unable to drive (such as youth and the elderly and disabled) or to reduce the exposure of rural residents who must otherwise drive a significant distance to access employment and services. Reducing traffic speeds is a focal point of this TSAP because is the leading cause of fatal and severe-injury collisions in Lane County and is the constant across all emphasis areas:

- Vulnerable Users are at the greatest risk with increased speeds;
- Infrastructure involved high-speed roadways, and
- Speeding was the leading Risky Behavior resulting in fatal and severe-injury collisions.

As such, prioritizing speed reduction will improve safety across all emphasis areas. Reducing speeds can be accomplished through various Engineering, Enforcement, and Education actions over the short and long term, as described below.

The action items below are organized by E (Education, Enforcement, Engineering) into Short-Term and Long-Term. These follow a broader set of foundational action items aimed at improving coordination across the 'E's – and to include Emergency Response, Evaluation and Equity. This plan strives to address an equity issue by directing actions toward rural areas.

System Support Action Items

The following are broad, organizational activities and legislative changes meant to enable specific actions identified for the 'E's. In addition to Education, Enforcement, Engineering, these actions include Emergency Response, Evaluation, and Equity. These actions will help reduce severe-injury and fatal collisions in rural Lane County. The implementation schedules are based on considerations such as available resource.

Currently, Lane County has prioritized pavement preservation over other transportation-related activities. While pavement preservation is part of providing a safe transportation system, it falls short of reducing severe-injury and fatal collisions. Under current conditions, Lane County barely has the resources to keep up with pavement preservation. Maintaining pavement markings has been reduced from an annual cycle to once every three years. The 2017-2021 Capital Improvement Program has only \$50K year for safety projects.

The overarching need is additional funding and resources to implement the following actions. This will necessitate partnerships and advocacy across disciplines and agencies. The following actions align the individual E actions within the same implementation schedule.

Table 6

SYSTEM SUPPORT ACTIONS	
Short-Term Actions	
SS-1	Create a Safety Coordinator to develop a Safe Communities Program
SS-2	Create county-wide work group to serve as safety technical team for implementing action items
SS-3	Create committee of leaders across Lane County to advocate for safety initiatives
SS-4	Support internal agencies, such as Traffic Operations, Sheriff’s Office, Public Health to develop collaborative ways to improve traffic safety in rural areas
SS-5	Support rural communities to develop partnerships in improving traffic safety
SS-6	Support emergency response in rural areas to understand and advocate for their needs
Long-Term Actions	
SS-7	Track technology advancements, such as autonomous vehicles and automated enforcement
SS-8	Support expanded transportation options in rural Lane County
SS-9	Pursue legislative changes necessary to implement safety actions
SS-10	Update TSAP to ensure it remains current

SS-1 - Create a Safety Coordinator and develop a Safe Communities Program

ODOT has safety coordinators for each region and administers a “Safe Communities” program that provides funding and technical support from the National Safety Transportation Safety Administration (NHTSA). In Oregon, Baker, Clackamas, Grant, Harvey, Jackson, Malheur, Umatilla and Union Counties have Safe Communities programs supported by ODOT with grants, technical assistance, training, and data support. ODOT’s 2013 report of funding allocation shows counties with these programs receiving the bulk of resources (e.g. 26% of the safety funding was used on statewide assistance compared to 20% directly to Clackamas County). Many of these communities have been able to hire safety coordinators with start-up funding from NHTSA to develop and implement safety programs and plans.

Lane County wants to take advantage of these resources as well. As part of the collaborative safety planning process with the MPO, a regional safety coordinator position will be hired by LCOG using ODOT safety funds, and be housed part-time at Lane County public works. Approximately half of the Coordinator’s time will be focused on rural county safety issues. The following objectives and tasks are proposed for the safety coordinator position:

- Establish effective communication and collaboration methods for planning, enforcement, education, public health, and emergency response staff throughout the region
 - ✓ Create a Safety Advisory Committee to serve as an advisory committee to the Safe Community program. (likely subcommittee of the Lane Act)
 - ✓ Provide annual updates to both Lane Act and the Metropolitan Policy Committee on the state of safety in Lane County
 - ✓ Create regional website for Safe Communities Program outreach and education materials
- To facilitate priority action item implementation for all regional safety plans including, Central Lane MPO’s Safety Plan, Lane County’s Safety Action Plan, Eugene’s Vision Zero Action Plan, Lane Transit District’s Vision Zero Resolution, and Springfield’s Mayors Challenge, Regional Safe Routes to School Strategic Plan.
 - ✓ Work closely with all partner agencies to fully understand each jurisdiction’s implementation goals and opportunities. Attend staff meetings and participate in advisory committees when possible.
 - ✓ Work with local enforcement agencies to increase education and outreach opportunities.
- To develop sustainable funding sources for the Safe Community Program by Oct. 2018
 - ✓ Research and pursue grant opportunities to create a sustainable funding source for the program.

- ✓ Provide grant writing support to partner jurisdictions to pursue funds
- To establish regional safety reporting standards and complete an annual “State of Safety Report” for Lane County
 - ✓ Collect and post online the annual data for regional performance measures (Central Lane MPO Safety Plan and Lane County Plan) and report to policy makers yearly.
 - ✓ Focus regional Education and Enforcement efforts on preventing drug and alcohol involved crashes, distracted driving, and speed.
- Work with district attorney's office and Enforcement Agencies to increase capacity for more intensive investigation into DUII and crash cases that are referred to that office to increase the positive disposition of DUII cases and crash cases to 90% within one year

SS-2 - Create county-wide work group to serve as safety technical team for implementing action items

There are isolated programs using different strategies to do what they can to improve transportation safety. Their impact is limited for the most part to their own program boundaries. As such, they lack the systems to share and learn together about how to improve the overall health and safety of Lane County, particularly in the most vulnerable and isolated communities. One of the advantages of the safety planning process was bringing stakeholders together from across the region and across disciplines. Stakeholders were interested in meeting more regularly to understand each other’s issues, exchange information, share resources, and leverage partnerships. This team should include technical safety practitioners from the education, enforcement, engineering, and emergency response fields with broad representation across rural Lane County, such as from each of the 12 cities. This team would help implement the TSAP action items by providing technical assistance on funding requirements and other logistical requirements.

SS-3 - Create Committee of Leaders across Lane County to Advocate for Safety Initiatives

Funding is a significant limitation in implementing safety actions across rural Lane County. There needs to be stronger and united advocacy for funding safety improvement in rural areas. This committee could also serve as a public venue for expressing safety concerns and to regularly address safety concerns across Lane County. Existing bodies that may be able to fulfill this function are the Lane Area Commission on Transportation and the Lane County Transportation Advisory Committee. This leadership group would benefit from networking with related coordinating agencies, such as the Public Safety Coordinating Council (PSCC). The PSCC is a regional advisory council for the Board of County Commissioners charged with ensuring every effort is taken to effectively use resources to prevent crime, reduce crime, and increase the sense of safety within our communities. Each county in Oregon is mandated through Senate Bill 1145 to have a local PSCC. Creation of a new leadership group could be challenging to fund and support; in the past, Lane County had a Public Safety Task Force that disbanded due to lack of funding. For a list of existing leadership groups within Lane County, refer to Appendix A - Institutional Capacity.

SS-4 - Support internal agencies, such as Traffic Operations, Sheriff's Office, Public Health to develop collaborative ways to improve traffic safety in rural areas

This is about breaking down silos across Lane County departments. Individual departments collect information, create programs, and provide services that affect traffic safety. Intentional information exchange could result in efficiencies that potentially reduce redundant efforts or help fill gaps. For example, Public Health includes traffic safety in their health data and health impact assessments. Traffic Operations collects crash data that would benefit the Sheriff's Office. There is the potential to align departments with the Economic Development rural initiative, as traffic safety issues affect quality of life and they provide the network for economic activities.

SS-5 - Support rural communities to develop partnership in improving traffic safety

The burden of traffic crashes is not distributed evenly across society, creating an equity issue for rural Lane County. The majority of highway fatalities take place on rural roads (54% of all fatalities and 2.4 times higher than the fatality rate in urban areas). Rural road agencies and small communities often do not have the resources needed to adequately address safety problems on the roads they own and operate.

Further, the backbones of most rural communities are not roads they own and operate; most are state highways (e.g. Hwy 101 through Florence, Hwy 58 through Oakridge, Hwy 99 through Junction City and Creswell). As state highways, rural regions and small towns depend on ODOT, which in turn receives larger sums of federal support, to maintain their existing roads, bridges, and other assets. These communities find that state resources are more limited than they might be because developing areas siphon off resources. A longstanding concern of rural communities has been the lack of attention and resources from federal and state agencies, compared to urban areas.

A great deal of the challenges outlined above arise from the difficulty that small communities have in raising the resources needed to be effective participants in planning for transportation projects. Counties often provide political continuity for smaller communities. A regional forum for coordinating interests and actions with other governments is provided by the LaneACT, but advance coordination – at the staffing and technical levels -- is needed at the transportation planning stage.

There is an opportunity to develop more collaborative projects and to build templates and other resources that could be used by all. For example, nearly every small city has safety concerns regarding state highways that run through their communities. The most effective way to bring about physical improvements is to build local support, demonstrate the need, and present a solution. The design solution is often what smaller communities do not have the resources to determine. There is an interest in developing a road diet template that could be used as a foundation for local application at specific locations (particularly from Junction City and Creswell regarding Hwy 99).

SS-6 - Support emergency response in rural areas to understand and advocate for their needs

Supporting a well-functioning EMS system is essential to reducing fatalities and serious injuries on public roads, especially in rural areas. Emergency medical services (EMS) staff understands response times are the key to survival for people involved in crashes. Response times are longer and medical services are limited in rural areas, which contribute to the higher percentage of fatalities in rural areas. There are over 34 fire districts in Lane County, although several rely exclusively on volunteers and lack stations.

There is an opportunity to divert some of the demand from emergency services to other services provided by Lane County Public Health. The Department of Human Services, Public Health EMS and Trauma Program and the Oregon Office of Rural Health seek greater collaboration to establish coordination with hospitals. ODOT's Transportation Safety Division is involved in the implementation of the Oregon EMS recommendations. Application of this state model to the local level may benefit Lane County.

Traffic management and transportation planning staff could work more closely and deliberately with the EMS community to improve response times. At a basic level, this includes consulting EMS with roadway design standards and improvement projects. Broader foundational support includes developing strategies to: recruit and retain EMS and fire volunteers; improve emergency access routes – both physical improvements and mapping; raise awareness of the life-saving importance of EMS personnel and equipment.

EMS representatives also said that they could make traffic safety a higher priority in their data collection and investigations. For example, the investigations about the potential causes of a fire receive a lot more attention than traffic collisions. There could be an opportunity to share and/or exchange reporting information between EMS staff and Traffic Operations staff.

SS-7 - Track Technology Advancements

Development of the TSAP involved researching best practices, available tools, and what other communities are doing to improve safety. There is no shortage of information, but it is not readily applied or disseminated locally. Ideally, regional practitioners develop a communal tool box, educate each other about how to use the tools, and continually upgrade the tools as newer technology evolves.

For example, Lane County had ruled out rumble strip installation because the roads lacked sufficient shoulder width; following additional outreach and research with other jurisdictions and technical experts, a newer technology "Safety Edges" was discovered as a promising remedy for the prevalent roadway departures on rural Lane County roads. The National Highway Traffic Safety Administration regularly publishes a Technology Transfer Series; one of the recent products is "Countermeasures That Work, 8th Edition," which contains over 400 pages of safety solutions. Tracking technology advancements also includes autonomous vehicles to prepare for changes in roadway user expectations.

SS-8 - Support Expanded Transportation Options in Rural Lane County

The need for expanded transportation options was a predominant theme in the update to Lane County's Transportation System Plan. Many rural residents feel like they cannot get anywhere in rural Lane County without a car. Youth, seniors, and people with disabilities are especially isolated in rural areas. In addition to needing better walking and bicycling facilities, there is a demand for expanded and more frequent transit service in rural areas.

Transportation options is typically focused on reducing commuter populations in urban areas and programs are geared toward promoting carpooling and using existing amenities, such as bike lanes and transit service. In rural areas, there are few services to promote to users. The foundational work needed is adding services and facilities, which require additional funding and collaboration with external agencies. Lane County has facilitated a conversation with key stakeholders and has been coordinating with ODOT Transit and LTD to build support with regional leaders.

Improving public health is linked directly to encouraging active transportation with safe and attractive pedestrian and bicycle facilities. Lower levels of physical activity and active transportation in rural areas create a poorer public health outcome, with higher levels of obesity than their urban counterparts. Lane County Public Health's priority initiative for reducing childhood obesity is promoting active transportation. Thus, providing amenities is more than meeting the current demand (e.g. widening shoulders of heavily-bicycled roadways), but creating a place for future system users (i.e. a place where someone would feel safe walking and biking).

SS-9 - Pursue legislative changes necessary to implement safety actions

Legislative changes may be necessary to implement safety actions, such as enabling automated enforcement and amending speed regulations. In response to the impact of speed limits and speeding on road safety, states consistently debate legislation on this topic. In 2015, 43 states considered 114 bills related to speed limits, of which 19 were enacted. Some states have raised speed limits in recent years, while others have lowered them. A number of states have taken action related to local control over setting speed limits, penalties associated with speeding, and automated enforcement. (See Appendix B: Legislative Summary on Speeds). The Safe Communities Program, which is intended to be the implementation vehicle of this TSAP, would be charged with developing long-term strategies to overcome safety implementation barriers, including legislative changes.

SS-10 - Update TSAP to Ensure it Remains Current

The TSAP was developed to be a plan that did more than sit on a shelf. To keep it a living document, it needs to be updated periodically to capture the latest trends and refine the actions accordingly. Ideally, it would be updated prior to the six-year implementation to identify another range of short-, mid-, and long-term actions. Compared to the TSP, which is more of a long-term policy plan, the TSAP is a near-term action oriented plan that needs to remain current.

Education Action Items

Education conveys information to drivers about making good choices, such as not texting while driving, avoiding alcohol or medications affecting level of consciousness, wearing a seatbelt, or informing people about the rules of the road. Education strategies continually evolve to gain people’s attention and change their behavior. Educational efforts seek to create drivers who are informed about safe driving and promote an overall safety culture. For example, building greater awareness about the impacts of speed, not just the laws regarding speed, helps to build community support for engineering improvements that slow speeds and increased enforcement efforts.

Currently, neither Lane County nor the small cities have resources to regularly promote traffic safety campaigns. There are opportunities to leverage Eugene and Springfield resources for educational materials and to tap ODOT for assistance. The education actions that will help reduce severe-injury fatalities in rural Lane County are described below.

Table 7

EDUCATION ACTIONS	
Short-Term Actions	
Edu-1	Raise awareness of roadway rules
Edu-2	Promote Changing-Infrastructure Education
Edu-3	Conduct Targeted Outreach Campaigns
Edu-4	Educate practitioners on latest technology and best practices
Edu-5	Promote Safe Routes to School programs in rural Lane County
Edu-6	Keep elected officials and stakeholders informed of safety issues
Edu-7	Create new curriculum for positive norms
Edu-8	Develop Web tool for collecting and sharing safety information
Long-Term Actions	
Edu-9	Promote Transportation Options in rural Lane County
Edu-10	Support increased driver education programs
Edu-11	Ensure driver’s education keeps pace with changing infrastructure technology
Edu-12	Advocate for increased safety funding

More Information: Education Action Items

Edu-1 - Raise Awareness of Roadway Rules

There is a lot of existing safety literature that could be retooled for rural application and distributed more broadly. Eugene and Springfield provide educational campaigns that could be made available to rural areas, which lack the resources to prepare or disseminate information. Similarly, ODOT has safety resources that have not been exploited by rural communities because they don’t have the resources to chase information. Ideally, there would be a regional commitment to share information and push it out to rural areas.

Roadway safety is a shared responsibility. An example of outreach materials available at the Federal Motor Carrier Safety Administration is below. The average rural roadway user is not going to search out this information. ODOT safety grants include educational material publication, which could then be distributed to target audiences. The key is identifying the audience. In rural areas, community and resource centers are good places to distribute information.

Edu-2 - Promote Changing-Infrastructure Education

The public needs to be educated on both new infrastructure technology, like the latest pedestrian-activated illuminated-crosswalk, and older technology applied newly to a geographic location, like a roundabout. The independent educational efforts by ODOT, City of Eugene, and City of Springfield create regional inconsistencies. A regional focus could make more efficient use of resources by developing curriculum that can be applied more broadly, rather than a one-time event. A broader perspective could also help individual agencies make more informed decisions about the best technological solution.

Edu-3 - Conduct Targeted Outreach Campaigns

There are few educational outreach campaigns targeted toward rural areas in Lane County. An exception is the “Every 15 Minutes” education provided by the Lane County Sheriff’s Office to one or two rural high schools per year. This is a two-day program focusing on high school juniors and seniors, which challenges them to think about drinking, driving, personal safety, and the responsibility of making mature decisions. Along with alcohol-related crashes, it focuses on the impact that their decisions would have on family and friends. The program originated in Canada and is now widely employed throughout the United States.

The program starts months in advance of the actual presentation to prepare the involved agencies, such as hospitals, court, lawyers, judge, funeral home, students, parents, and school administrators. As part of the simulation, cars are crashed, students bloodied and handcuffed, and parents are told their children have been killed. Some protest to this, saying it is traumatizing. Studies that have tracked students before and after the Every 15 Minutes program have shown that the program may have a favorable short-term effect on students' stated attitudes but no effect on actual behavior. This has led to charges that the Every 15 Minutes program is similar to the controversial DARE anti-drug program in that it produces the appearance of addressing the problem but does not produce the desired change in behavior. Questions have also been raised about the basic premise of the program, that one person dies every 15 minutes in an alcohol-related crash. The National Highway Traffic Safety Administration reports that in 1995, the first year the program was presented, the rate was actually one death every 30.4 minutes in the United States.

The program is generally supported in rural Lane County. The event hosted by the Lane County Sheriff’s Office is possible due to state funding for the program, community contributions, and a host of volunteers. Additional logistical support is desired. A different approach is the problem drinking prevention program administered through Lane County Public Health. Their staff recommended more positive norms education regarding

responsible drinking. There are many examples nationwide about social norm campaign strategies. (See Edu-7 for related actions.)

Edu-4 - Educate Practitioners on Latest Technology and Best Practices

Educating practitioners could be a more collaborative endeavor, like the webinars hosted by the City of Eugene that they make available to regional partners. Education is often up to individual interests or to maintain credits for licenses. There could be more focused attention on seeking education specific to the latest safety best practices, which could be shared and discussed with regional partners – especially isolated rural ones.

There are many resources available, such as the 437-page “Countermeasures That Work: A Highway Safety Countermeasures Guide for State Highway Safety Offices, 8th Edition, 2015” by the US DOT. The FHWA Crash Modification Factor (CMF) Clearinghouse is one of the most current tools available for identifying, selecting, and prioritizing countermeasures. ODOT also provides funding and technical support for traffic safety that is underutilized in rural Lane County.

Edu-5 - Promote Safe Routes to Schools programs in rural Lane County

In over 17,000 schools around the country, these programs are making it easier and safety for students to be healthy by walking or bicycling to school. Although there are important considerations for how to make SRTS programs succeed in rural environments, rural communities can benefit greatly from SRTS. Federal or state funding is often available to support SRTS programs and to make safety improvements to street crossings, sidewalks, and bicycle lanes on the route to school.

Some programs simply focus on getting students to walk or bicycle on National Walk to School Day and may provide brief education on safe walking and bicycling. Other programs establish regular walking school buses and bicycle trains, with parents or volunteers who accompany groups of children on a daily, weekly, or monthly basis as they walk to and from school. Programs can be volunteer run or can be coordinated by paid staff from the school district, public health department, or a local nonprofit. In the Eugene-Springfield area, the MPO provides funding and SRTS coordinators are paid through the local school districts. Lane County is investigating opportunities through the Public Health Department.

Foundational and engineering actions need to address the physical limitations of the rural transportation system. Many rural roads are not safe places for children to walk or bicycle. Long distances, high speed highways cutting through towns, and a lack of sidewalks and bicycle lanes make it challenging – and sometimes deadly. At the same time, rural communities have a special need for the benefits of Safe Routes to School and safer streets, because they see very high obesity rates for children and adults, high injury and fatality rates from collisions, millions of low income residents without access to cars, and poorer infrastructure for safe and convenient walking and bicycling.

Education is crucial to support the safety, comfort, and convenience for people on foot or bicycle by changing the perceptions so that people see these activities as normal and

desirable in the rural environment. Inter-jurisdictional cooperation is needed among cities, school districts, the County, and regional planning and transportation bodies to support rural active transportation. Rural areas need to prioritize their transportation investments very strategically.

Edu-6 - Keep Elected Officials and Stakeholders Informed of Safety Issues

Local elected officials play a major role in local road safety. They set goals, adopt policies, build coalitions, and approve the budgets for the roads you operate. These officials face many demands for their time and many requests for funding. The US DOT recommends the following communication techniques in Table 8 below to help local elected officials lead the way in local road safety.

Table 8

TECHNIQUES FOR LOCAL AGENCY PRACTITIONERS	
Keep it simple	Provide the facts in clear, concise language. Use terms that lay people will understand. Avoid acronyms and engineering jargon—for example, use "federal sign regulations," not "MUTCD."
Tell a story	Supplement facts and figures with stories of actual crashes. Explain how your plans may reduce these crashes.
Highlight successful examples	Share success stories from similar communities to show what has been proven to work. Use statistics about effective countermeasures.
Use creative presentation tools	Photos of a problem site or feature; plans, graphics, or other images of your proposed solutions. Washington County created a roundabout "rug" that people can walk on to understand roundabout navigation.

<http://safety.fhwa.dot.gov>

Edu-7 - Create New Curriculum for Positive Norms

Addressing the Risky Behaviors emphasis area includes educational efforts on both ends of the spectrum: scare tactics (like the Every 15 Minute program discussed in Edu-3); and positive norms. Lane County Public Health, in partnership with the City of Eugene, the Oregon Liquor Control Commission, the Whiteaker Community Council, and for local breweries, obtained a public health grant for a targeted campaign in the Whiteaker area, “Respect Yourself, Respect the Neighborhood,” regarding responsible drinking. The event included bars providing free non-alcoholic drinks to designated drivers and promoting bus routes and taxi numbers through visible signage.

This type of campaign could be replicated in smaller communities throughout rural Lane County. There are many other examples to replicate. For example, Montana developed a 44-page report on “A Social Norms Strategy to Reducing Impaired Driving Among 21-to-34-Year-Olds.” The report presents results of a demonstration project, showing the efficacy of a high-intensity social norms media intervention.

Edu-8 - Develop Web Tool for Collecting and Sharing Safety Information

There are multiple (hence potentially redundant and inconsistent) databases on safety

issues – from different jurisdictions (ODOT, Lane County, MPO, cities) to different departments within the same agency (Public Works and Public Health). A common interface could help align resources. There is also an interest in providing a place for the public to submit safety concerns.

Edu-9 - Promote Transportation Options

Promoting transportation options first require options are available. In rural areas, transportation options are limited. Rural roadways typically lack safe and convenient places for people to walk or bike. Transit in rural areas is infrequent and incomplete. Educational promotion would include supporting service providers and advocates to expand services. At a basic level, it could include educational material that encourages people to call a taxi instead of driving drunk. Educational activities could include partnerships with Lane County Public Health and the Sheriff's Office.

Edu-10 - Support Increased Driver Education Programs

The driver education programs are mainly designed for 16- to 17-year olds because these inexperienced drivers are significantly over represented in fatal crashes. In order to be eligible for federal grant programs, all states have some form of graduated driver license (GDL) laws that restrict young drivers. GDL systems are designed to provide new drivers with experience and skills gradually over time in low-risk environments. There are typically three stages: a learner's permit, a provisional license, followed by a full driver's license. In Oregon, the provisional restricts the age and number of passengers and the hours of driving to generally exclude midnight through 5:00 AM.

There are various locations throughout Lane County that provide driver education courses approved by ODOT: Bethel School District, Junction City School District, Lane County Driving School, and Oregon Driver Training Institute. The Driver Education Program helps teens between the ages of 15-17 learn life-long habits and skills that have been proven to reduce driver risk. Schools that meet approved program requirements can receive reimbursement. The program coordinates efforts to improve driver education thereby reducing fatal and injury crashes in first time drivers through: coordination of driver education course content; certification of public and private driver education providers; public information, education programs and resources; oversight of student driver training fund for public school reimbursement; and coordination of train-the-trainer curriculum development.

Edu-11 - Ensure Driver's Education Keeps Pace with Changing Infrastructure Technology

As discussed in Edu-12, most of the educational programs are geared toward young drivers. One of the most important pieces to continue in driver education is keeping up-to-date on often-changing traffic laws and infrastructure. In addition to incorporating the latest changes into the existing educational programs, other educational efforts may be needed to reach established drivers. Since existing programs are geared toward youth, education includes encouraging children to teach their parents.

Edu-12 - Advocate for Increased Safety Funding

CNBC reported that if federal funding for state traffic safety programs was boosted by just 10 percent, an estimated 1,320 traffic deaths could be prevented (“Traffic Safety: Raising Spending Could Save Lives and Money” Dan Manga, December 14, 2015). Securing funding will require on-going advocacy to garner support from elected officials and the general public about safety problems and solutions. A central theme in the development of this TSAP was that we can accomplish so much more if we work together. The multidisciplinary approach of this TSAP is intended to solicit broader support and leverage existing advocacy groups that sponsor public health and safety initiatives.

Enforcement Action Items

Enforcement of traffic laws and a visible police presence deter motorists from unsafe driving behaviors. Law enforcement officers can ensure traffic safety is a major part of their job because attention to safety can help reduce crime overall. Law enforcement professionals should make sure their colleagues understand why complete and accurate data in crash reports are critical for understanding and correcting transportation safety problems. Law enforcement can also be more involved in infrastructure planning to ensure sufficient areas are provided for traffic surveillance purposes. Officers can provide invaluable information about how people are behaving on roadways and their understanding of traffic laws.

Table 9

ENFORCEMENT ACTIONS	
Short-Term Actions	
Enf-1	Apply for safety grants available annually for enforcement activities
Enf-2	Deploy speed trailers and variable speeds signs
Enf-3	Increase targeted use of speed radar in high-speed and high-risk locations
Enf-4	Work with state and local partners for increased law enforcement patrols during documented high crash periods
Enf-5	Advocate for additional enforcement staff resources
Enf-6	Support enforcement of Graduated Drivers’ License and Zero Tolerance laws
Enf-7	Focus enforcement at high-risk locations
Enf-8	Target enforcement to protect vulnerable users
Long-Term Actions	
Enf-9	Change state level speed camera restrictions
Enf-10	Implement automated enforcement technology
Enf-11	Pursue legislative changes to reduce speeds, increase penalties for speeding, and/or providing more local control for setting speeds
Enf-12	Support increased prosecution of DUII.

Enf-1 - Apply for safety grants available annually for enforcement activities

The Oregon State Sheriffs' Association (OSSA) administers two ODOT traffic safety grants, which are federally-funded and provide overtime funding to participating Sheriff's Offices. The Lane County Sheriff applies for these grants regularly, although the complexity of some of the grant programs administered directly through ODOT are a barrier to applying. The Sheriff's Office could use administrative assistance in applying for tracking the various grants to make better use of the available resources. Some successful grants include the following:

- In 2016, the Lane County Sheriff's Office received \$20,000 for traffic enforcement during heavy traffic events.
- In 2015, the Lane County Sheriff's Office received \$5,000 to conduct overtime for speed enforcement.
- In 2012, the Lane County Sheriff's Office received \$78,250 for "enhancing its traffic safety abilities as one of a number of countermeasures to reduce the significant number of traffic deaths on Lane County roadways."

These types of high-visibility enforcement grants require the Lane County Sheriff's Office to identify the events to be covered through the year with an associated budget estimate. Local events are difficult to predict and take some time to research. The Sheriff's Office would benefit from logistical assistance. Ideally, there would be improved coordination across the region for applying for these grants. There is an opportunity for additional advertising, expanded media coverage and educational outreach at these events.

Enf-2 - Deploy speed trailers and variable speed signs throughout rural Lane County

The Lane County Sheriff's Office has one speed trailer. The Weigh Master program used to deploy the trailer in various locations throughout rural Lane County, typically in response to public concerns of speeding in a particular area. Area residents noted an improvement in reduced speeds while the trailers were present. Due to budget cuts in the County's Weigh Master program, the trailer primarily sits in storage. There is an opportunity for regional collaboration to deploy this trailer more frequently and to also borrow additional trailers from ODOT. Further, there is new technology that enables data collection so that actual speeds can be evaluated. This information could help target enforcement activities.



Enf-3 - Increase targeted use of speed radar in high-speed and high-risk locations

The Sheriff's Office would benefit from current, local data on high-risk locations to target enforcement activities. In addition to the speed enforcement grants and speed equipment described above (Enf-1 and Enf-2), ODOT provides speed management technical assistance. There is an opportunity to better align resources through improved coordination.

Enf-4 - Work with state and local partners for increased law enforcement patrols during documented high crash periods

Multi-agency traffic teams consist of City, County, and State Police agencies within the same county; they work together and assist one another with high crash locations and targeting the worst driving behaviors that cause these crashes, within each agency's jurisdiction on a rotating basis. There is an opportunity to better align resources through improved coordination. There is a need for better data collection, analysis and distribution to effectively target enforcement efforts.

Enf-5 - Advocate for additional enforcement staff resources

Lane County Sheriff's Office policing staff is 0.16-deputy per 1,000 citizens, as compared to the state's average of 0.61. The Patrol Section has 18 deputies covering a geographic area of 4,620 square miles with an unincorporated population of 98,751. In addition to providing law enforcement on County roads, deputies respond to emergencies, crimes and arrests. Traffic safety functions are limited, with most resources dedicated to in-progress emergencies. Lane County also provides enforcement services to Creswell and Veneta.

Enf-6 - Support enforcement of Graduated Drivers' License and Zero Tolerance laws

A zero tolerance policy is one which imposes strict punishment for infractions. According to the National Highway Traffic Safety Administration, Oregon has had a long standing policy against underage drunk driving. While the legal limit for most drivers is 0.08 percent, under Oregon's zero tolerance policy, the legal limit for drivers under the age of 21 is significantly lower (0.00%).

An issue that is sometimes raised about zero tolerance laws is that special provisions must be made for minors held in custody and that this is a disincentive for officers to enforce the law. Though a few officers raised this issue as a problem, the vast majority of those contacted said that notifying a parent or guardian is just a routine part of enforcement actions with youth and, from a law enforcement point of view, seldom present actual difficulties.

In general, officers were supportive of having an administrative track for zero tolerance violations rather than a criminal track. This approach seemed to work more smoothly overall, and resulted in fewer appeals of license suspensions and fewer requests for hardship licenses than by adult offenders. Officers also said that a .00 BAC limit is preferable to .02 because it sends a clearer message to youth that no consumption of alcohol is legally compatible with driving.

Enf-7 - Focus enforcement at high risk locations

In partnership with U.S. federal, state, and local law enforcement and private entities, the International Association of Chiefs of Police (IACP) is leading a multi-year highway safety initiative known as the Drive to Save Lives/Drive to Zero Campaign to reduce traffic fatalities. To achieve this goal, the IACP and its partners will focus on implementing data-driven approaches to traffic safety and traffic incident management, which include targeted enforcement at high-risk locations. This national strategy is known as an aggressive approach to safety.

Enforcement programs that target speeding in conjunction with other violations would use a public information campaign supported by a wave of enforcement activities, possibly coordinating with multiple neighboring jurisdictions, to bring attention to the safety problem to reduce these behaviors. The visibility of the program in the media and the visibility of the enforcement activities, along with communication of data on the results of the program (number of citations, for example), demonstrate to the public that the program is active and successful. In other words, there is a good chance that drivers will be cited if they speed. When the program is periodically repeated, the message and safe behaviors are reinforced.

There are several success cases of this aggressive approach to safety. For example, San Mateo County attributes their large drop in motorcyclist fatalities (from eight to one between 2013 and 2014) to a sting operation on a roadway that had a history of fatal collisions. (California uses Lidar remote sensing devices and speed cameras, which enabled the saturated patrol; however, state law does not allow speed cameras in Lane County.) Another example, this time using 21 officers dedicated to traffic patrol, which was made possible through cooperation between five local agencies, in February, 2016, Sonoma County law enforcement issued 116 traffic citations in one morning, between 7:30 and 11:30 a.m.

Enf-8 - Target enforcement to protect vulnerable users

Targeted enforcement is considered an educational campaign. In addition to informing pedestrians and bicyclists how to use roads safely, it is necessary to educate drivers on traffic laws and proper behaviors around pedestrian and bicycle traffic. One specific issue is speeding. Speeding presents significant challenges to unprotected road users as higher speeds increase the distance needed for a vehicle to stop and escalate the severity of crashes. Strategies for reducing fatalities related to speeding, such as automated enforcement (not currently allowed in rural Lane County), would also improve pedestrian and bicyclist safety, especially in the transition areas between rural Lane County and smaller communities where there tend to be more pedestrians and cyclists.

Montgomery County Police had success with pedestrian stings as a means of educating drivers about the laws governing pedestrians crossing in marked crosswalks. Drivers were not only given written citations or warning, but were also given brochures about the laws. The number of pedestrian fatalities dropped from 18 in 2006 to six in 2012, during targeted enforcement.

Enf-9 - Change state level speed camera restrictions

Oregon Governor Kate Brown signed Oregon House Bill 2621 into law, which allows the city of Portland to use traffic cameras for speed enforcement on streets with high rates of crashes resulting in serious injuries or fatalities. Nearly a dozen Oregon cities use photo radar for speed limit enforcement. Previously, the speed cameras could only operate four hours per day in one location and a police officer had to be present; the new law in Portland allows cameras to run 24 hours a day in fixed locations without police presence. Last year, Portland sent out 33,486 speeding tickets to drivers traveling at least 11 mph over the speed limit. Beginning in January 2016, the new law will enable cameras along Portland's high crash corridors, noting that vehicle speed is one of the biggest indicators of the likelihood of injury or death in a crash. This case sets an example of how similar changes to state law could be made to enable speed cameras in rural Lane County. Speed cameras are a highly cost-effective means of reducing road crashes.

Enf-10 - Implement automated enforcement technology

Automated enforcement refers to the use of cameras to enforce traffic safety laws. A common type of automated enforcement program is for red light violations. The use of cameras to enforce speed limits are less common, but increasing. The technology is also used to catch drivers who block intersections or fail to stop at a stop sign, pay a toll, drive past a stopped school bus or disobey a railroad crossing signal.

In states that have automated enforcement laws, some authorize enforcement statewide, while others permit use only in specified communities. Many jurisdictions treat automated enforcement citations just like parking tickets in that the registered owner is liable. Similarly, just as parking tickets do not result in points or are not recorded on a driver's record, many jurisdictions do not assess points or make a record of automated enforcement citations.

The 2015 Oregon Traffic Safety Performance Plan reports that Oregon police agencies have continued to use technology and speed measuring equipment to increase the number of citations and warnings issued as the number of speed related fatalities and serious injury crashes continue. With declining enforcement resources, these advances in technology provide valuable, near real time, actionable information to Oregon law enforcement and the transportation safety office for analysis. This allows additional counter-measures to be deployed to help reduce fatal and injury crashes on Oregon roads.

Enf-11 - Pursue legislative changes to reduce speeds, increase penalties for speeding, and/or providing more local control for setting speeds

Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of a road crash as well as the severity of the injuries that result from crashes. States are acknowledging the needs of local communities that want to emphasize safe roadway environments for pedestrians, bicyclists, school children, people with disabilities and others. In the past few years, several states have given localities the ability to reduce their minimum speeds in order to create a safer travel environment for vulnerable users (see Appendix B for legislative summary).

Enf-12 - Support increased prosecution of DUII

The Lane County District Attorney's Office will be seeking state grant funding for a dedicated Investigator to handle the intensive follow-up investigation on the approximately 800 DUII and crash related cases referred to the District Attorney's office each year. This will not only increase the number of successful prosecutions but provide a better outcome with a higher conviction rate, more favorable sentencing and more favorable plea agreements.

Currently, 97% of DUII cases referred by law enforcement are filed. 83% of our DUII cases resolve with a diversion or a conviction. 93% of crash cases are filed with a 76% conviction rate. Proper follow up investigation will help the prosecutors determine whether the case should be filed at the outset and increase the conviction rate of those cases filed. Their goal is to increase the positive disposition of DUII cases and crash cases to 90% within one year by conducting an intensive follow-up investigation that a patrol officer does not have the time to conduct.

Engineering Action Items

Engineering addresses roadway infrastructure improvements to prevent crashes or reduce the severity of collisions when they occur. Regular maintenance, such as filling potholes, applying protective coatings, and snowplowing is essential for a longer lifespan of the roads and for the safety of roadway users. Lane County has prioritized its engineering activities to pavement preservation for cost-effective management of the existing infrastructure, given limited funding. Many of the following actions for improving safety could be incorporated into maintenance and preservation activities. Many of these actions are countermeasures for driver error, rather than roadway deficiencies.

Table 10

ENGINEERING ACTIONS	
Short-Term Actions (1-2 Years)	
Eng-1	Install Rumble Strips and/or Safety Edges
Eng-2	Roadside Delineators
Eng-3	Improve signage – i.e. curve warning
Eng-4	Variable speed limit signs and/or speed feedback
Eng-5	Data & Analysis: current traffic counts; use of SPIS; collect speed data (new portable/mountable equipment from ODOT safety funding)
Mid-Term (3-5 Years)	
Eng-6	High-Visibility Pedestrian Crossings (intersections and mid-block) Install flashing beacons and other crossing treatments that improve the safety of pedestrians
Eng-7	High-Visibility Pavement Markings
Eng-8	Roadside fixed object removal / clear zone
Eng-9	Install guardrails or barriers
Eng-10	Regular roadway safety audits

Long-Term (6+ Years)	
Eng-11	Access Management
Eng-12	Widen shoulders – including strategic locations for enforcement needs
Eng-13	Redesign facilities to achieve operating speeds consistent with safety goals, context, users and land use (e.g. change intersections to roundabouts, roadway diets through small communities)
Eng-14	Provide physical amenities that expand transportation options (i.e. separated or buffered bike lanes and sidewalks)

More Information: [Engineering Action Items](#)

Eng-1- Install Rumble Strips and/or Safety Edges

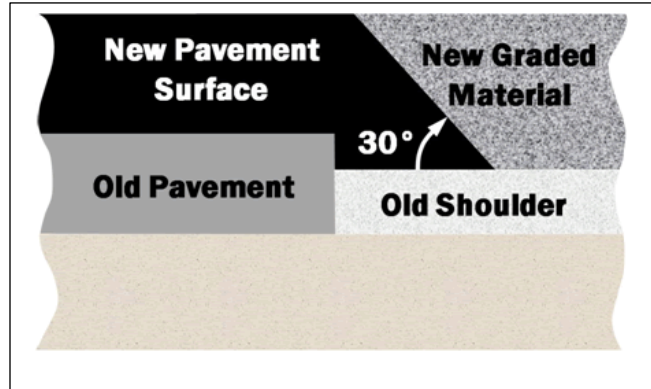
These treatments remedy failure to maintain the travel lane, resulting in head-on collisions and roadway departures – the leading crash type in fatal and severe-injury collisions in rural Lane County. ODOT installs safety edges on roadways with less than six feet of shoulder; on roadways with six feet or more of shoulder width, ODOT prefers to install rumble strips as a countermeasure to roadway departures. FHWA recommends at least four feet of shoulder width for rumble strips to accommodate bicycles. These treatments can be used together; Lane County is considering the installation of centerline rumble strips along with safety edges on each end of the pavement width.

Rumble Strips are a cost-effective strategy (provided sufficient shoulder width exists for shoulder rumble strips) for reducing roadway departures, Lane County’s top safety concern. Centerline rumble strips reduce head-on fatal collisions by 45 percent; shoulder rumble strips



reduce roadway departure fatalities by 36 percent. The cost of rumble strips generally ranges between \$0.10 and \$1.20 per linear foot, or \$500 to \$6,000 per mile. Most Lane County roadways lack sufficient shoulder width to install these treatments along the shoulder, but centerline rumble strips should be possible in most cases. Other installation considerations include accommodating bicycles and motorcycles and the need to mitigate noise to adjacent residences.

Safety Edges address potential problems with tire rubbing along the edge of the pavement. When a vehicle's tires drop off the edge of the paved surface, the driver tends to over-steer in an attempt to return the vehicle onto the paved surface. Safety Edge provides a sloped edge surface to assist the vehicle in returning to the paved surface without over-steering. Where shoulder width cannot be provided, integrate Safety Edge installation as part of routine pavement preservation work. ODOT installs safety edges on pavement projects with shoulder widths of 6 feet or less and new pavement thickness of two inches or more. This technology has been incorporated into the Oregon Standard Drawing as RD610.



Eng-2 - Install Roadside Delineators



Roadside delineators save lives by clarifying the direction of travel. Delineators are particularly beneficial at locations where the alignment might be confusing or unexpected, such as curves and near intersections. They are also effective guidance devices at night

and during adverse weather. An important advantage of delineators is that they remain visible when the road is wet or snow covered. Roadside delineators can reduce fatal collisions by 15%. The cost is relatively low at \$300 for a box of 20. Historically, Lane County has not installed roadside delineators because they interfere with roadside vegetation mowing, with the delineators getting mowed down. Given the effectiveness of saving lives and the low-cost installation, there may be a net benefit in replacing mowed delineators. Overall, maintenance practices need to be reviewed for balancing safety objectives.

Eng-3 - Improve Curve Warning Signage

ODOT identifies curve warning signs as an effective systemic safety measure, as follows: "Increased curve warning signage has been shown to aid in a driver's ability to perceive a change in the horizontal alignment. This awareness allows drivers to respond to these changes appropriately. The ability to correctly respond to these differences greatly improves safety. This countermeasure not only includes the placement of the signs but it

also includes the field work of determining the proper advisory speeds for the curves."⁶

ODOT recently updated its curve warning signage methodology, which Lane County is in the process of implementing. Lane County roads with over 2,000 ADT are being evaluated based on this new MUTCD guide for advisory speeds and warning chevrons. Although the advisory speeds may result in an increased speed recommendation, the addition of chevrons will improve the driver's visibility of the curve.

Eng-4 - Deploy Variable Speed Technology

This technology visually displays the driver's real-time speeds compared to the speed limit. These devices are effective in reducing speeds and increasing awareness of local speed limits. Portable speed trailers are most effective when the trailer flashes "SLOW DOWN" or flashes a bright white light that mimics a photo speed camera or a blue and red light that mimics a police car when drivers are moving too fast.

This technology would be most beneficial in transitions zones, such as from rural areas into small communities, school zones, and at curves. Rural drivers become accustomed to traveling 55 mph over long distances and would benefit from additional visual cues about the need to reduce their speed. This equipment provides immediate feedback and does not require an officer to be present.

Some speed trailers have the capability to collect traffic count data and speed data throughout the day, which can be used to identify the most dangerous traffic times when more enforcement is needed. Additional data collection on vehicle speeds and volumes could help to fill gaps in Lane County's data; due to budget cuts, Lane County has not measured ADT in five years. The additional data of recorded speeds could help determine areas to focus resources and support funding requests.

Under current regulations, these are not eligible road fund expenses. The Lane County Sheriff's Office has one speed trailer, but lacks staff to deploy and monitor the equipment. ODOT has a trailer that can be borrowed a week at a time; further, ODOT will install and take down. ODOT's safe communities program also provides funding for portable equipment (which can be mounted if removable).

Eng-5 - Improve Data and Analysis

There is a need to improve data collection and analysis. Lane County currently uploads ODOT crash data into Lane County's Road Management Inventory System (RMIS), which interfaces with Lane County's Geographic Information System (GIS). Lane County staff is pursuing ways to improve the GIS data display for improved analysis and mapping.

⁶ <https://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/Pages/countermeasures.aspx>

The data itself is lacking and often years out-of-date. Due to budget cuts, Lane County has not collected traffic counts since 2011; traffic volumes are needed to provide meaning to the crash data. Even with data improvements, Lane County lacks sufficient staff resources to analyze the data.

Eng-6 - Install High-Visibility Pedestrian Crossings

A pedestrian crossing or crosswalk is a place designated for pedestrians to cross a road. Crosswalks are designed to keep pedestrians together where they can be seen by motorists, and where they can cross most safely across the flow of vehicular traffic. Marked pedestrian crossings are often found at intersections, but may also be at other points on busy roads that would otherwise be too unsafe to cross without assistance due to vehicle numbers, speed or road widths. They are also commonly installed where large numbers of pedestrians are attempting to cross (such as in shopping areas) or where vulnerable road users (such as school children) regularly cross.

These "mid-block" crossings may include additional regulatory signage, flashing yellow beacons, stop or yield signs, or by actuated or automatic signals. Some more innovative crossing treatments include in-pavement flashers, yellow flashing warning lights installed in the roadway, or HAWK beacon, an overhead signal with two pair of red beacons above an amber beacon, when a pedestrian is detected or actuates the device it begins a sequence of amber flashing followed by a solid red [when vehicles may not cross], followed by a flashing red phase that allows motorists to proceed, only if the pedestrians are clear of the travel way.

A five-year U.S. study of 1000 marked crosswalks and 1000 unmarked comparison sites found that on most roads, the difference in safety performance of marked and unmarked crossings is not statistically significant, unless additional safety features are used. On multilane roads carrying over 12,000 vehicles per day, a marked crosswalk is likely to have worse safety performance than an otherwise similar unmarked location, unless safety features such as raised median refuges or pedestrian beacons are also installed. On multilane roads carrying over 15,000 vehicles per day, a marked crosswalk is likely to have worse safety performance than an unmarked location, even if raised median refuges are provided. The marking pattern had no significant effect on safety. This study only included locations where vehicle traffic was not controlled by a signal or stop sign. (2002 FHWA: *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations*)

Pedestrian and bicyclist fatalities account for roughly 16 percent of all traffic fatalities. Nationwide, approximately 25 percent of pedestrian and bicycle fatal and injury crashes occur on rural roadways. In contrast to urban roadways, rural roads have certain characteristics that can increase the severity of crashes for pedestrians and bicyclists, such as higher average vehicle speeds and uncontrolled pedestrian and bicycle crossings.

Pedestrians and bicyclists use local and rural roads for commuting, recreation, and necessity. Bicyclists in local and rural areas may vary in their levels of ability and expertise

in riding with motor vehicle traffic; for example, more experienced or competitive bicyclists tend to prefer using the roadway rather than separate facilities, while inexperienced bicyclists may lack the confidence, and perhaps the skills necessary, and are sometimes hesitant to use the roadway. Pedestrian facilities vary in local and rural areas and needs vary by age and ability. This is especially true in areas where young children or an aging population use the pedestrian facilities, such as areas near schools or elderly care facilities.

Rural roads need to provide safe facilities and crossings in areas where pedestrians are present or access is needed; prioritize transit corridors, school zones, multi-lane roads and other high-risk areas. Power source and related maintenance costs can be a limiting factor. Lane County uses solar power when electric power sources are not available, but this increases maintenance costs (e.g., cleaning PV panel, replacing batteries). ODOT prefers solar power, but only applies to signs (vs. overheads) to reduce maintenance costs.

Eng-7 - Install High-Visibility Pavement Markings

At a minimum, improve pavement markings with high-visibility pavement markers. Lane County road maintenance has cut resources such that pavement striping occurs every three years instead of once a year. One of the most important aspects of a safe and efficient roadway is the uniform application of pavement markings to delineate the roadway path and specific traffic lanes. Pavement markings can communicate information to road users like no other traffic control device. They provide continuous information to road users related to the roadway alignment, vehicle positioning, and other important driving-related tasks.

Eng-8 - Remove Roadside Fixed Objects

One of the most common causes of fatal and severe injury crashes on rural roads involves vehicles leaving the road and striking a fixed object, such as a tree, rock outcropping, or steep embankment. Providing an unobstructed, relatively flat area beyond the edge of the roadway for recovery of errant vehicles is an important part of any safety program. The American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide establishes clear zone widths for various rural roadways based on vehicle speeds.

Although AASHTO recommends no features in the clear zone, the priority is removing hazards within that zone. An isolated tree is considered a hazard; however, rows of trees along the roadway may actually improve safety because of their dramatic impact on motorists' behavior. There is a growing body of evidence showing that drivers drop their speed because of the reduced peripheral vision. Fixed object removal should be done in context with the surroundings and safety concerns.

Eng-9 - Install Guardrails or Barriers

A guardrail is a safety barrier intended to shield a motorist who has left the roadway. The best case scenario, if a car is careening off the road, would be for that car to come to rest unhindered. In some cases and places, however, that is not possible. The roadway may be

abutted by steep embankments or side slopes, or it may be lined with trees, bridge piers, retaining walls, or utility poles. Sometimes it is not feasible to remove those things. In those cases – when the consequences of striking a guardrail would be less severe than striking the other objects next to the roadway – guardrails should be installed. They can make roads safer and lessen the severity of crashes. The guardrail can operate to deflect a vehicle back to the roadway, slow the vehicle down to a complete stop, or, in certain circumstances, slow the vehicle down and then let it proceed past the guardrail.

Eng-10 - Perform Routine Roadway Safety Audits

A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. The FHWA works with State and local jurisdictions to integrate RSAs into the project development process for new roads and intersections, and also encourages RSAs on existing roads and intersections. The aim of an RSA is to answer the following questions:

- What elements of the road may present a safety concern: to what extent, to which road users, and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?

Well-documented experience in Europe, Australia, and elsewhere shows that RSAs are both effective and cost beneficial as a proactive safety improvement tool. For example, a Surrey County, United Kingdom, study found that, after implementation, the average number of fatal and injury crashes at project sites that were audited fell by 1.25 crashes per year (from 2.08 to 0.83 crashes per year) while the post-implementation reduction in crashes at comparable, non-audited sites was only 0.26 crashes per year (from 2.6 to 2.34 crashes per year).

Experience with RSAs in the United States indicates that RSA teams often identify safety concerns that would not otherwise have been discovered by a traditional safety review. For example, New York DOT reports a 20% to 40% reduction in crashes at more than 300 high-crash locations treated with low-cost improvements recommended as a result of RSAs. Conducting RSAs and implementing their recommended safety improvements in design is estimated to typically cost 5% of overall engineering design fees. ODOT has conducted numerous RSAs throughout Oregon. For example, in 2015, ODOT conducted a RSA on Southwest Barbur Boulevard to consider additional short-term and long-term transportation safety improvements for all users. Lane County currently has no funding to regularly inspect roadways for safety.

RSAs have positioned New York for federal funding. During his visit to New York in February 2016, U.S. Senator Charles Schumer explained that the 5-year federal transportation bill, the *FAST (Fixing Americas Surface Transportation) Act*, was passed by Congress in December 2015 and included an additional \$40 million in Highway Safety Improvement Program funding for New York State. As a result, the NYSDOT and MPOs

across the state will have access to these new federal funds which they could allocate to safety projects. Schumer therefore said a portion of this new funding could be allocated toward making the critical improvements that were developed and suggested following the Road Safety Audit (RSA) in Ithaca. In February 2015 Schumer pushed to make this audit a reality in the wake of the deadly crash at the intersection of Route 96 B and Route 79, including adjacent streets at the east end of the Ithaca Commons, in June 2014. During this accident, a tractor-trailer tragically lost control and slammed into Simeon's on the Commons restaurant, killing a young woman inside and injuring seven others.

Eng-11 - Strengthen Access Management Standards

Access management is a set of techniques that state and local governments can use to control access to highways and other roadways. The benefits of access management include improved movement of traffic, reduced crashes, and fewer vehicle conflicts. Lane County currently has access management standards that apply to new and re-development. It is more challenging to change access under existing conditions. ODOT staff indicates that a programmatic approach to managing access on corridors does not appear to be a cost-effective solution. Most accesses in rural areas are to large properties with sufficient spacing. As part the update to, and implementation of, Lane County's Transportation System Plan, intersection and access connection spacing standards will be evaluated and Traffic Impact Analysis criteria will be refined to better address safety issues. Implementation of access management is a long-term strategy to improving safety.

Eng-12 - Widen Roadway Shoulders

Lane County engineering staff considered this to be the best safety benefit for all modes. Roadway shoulders provides: refuge for distressed vehicles, recovery area for the driver to self-correct a potential roadway departure, pull-over area for law enforcement, a place for people to walk and bike. In addition to improving safety, paved shoulders have been found to extend road life.

Many rural roadways lack sufficient shoulder width. As part of Lane County's TSP update, changes to the County's design standards are recommended to provide shoulders between four and six feet wide. Design standards apply to new roadway construction, which rarely happens as the priority for the limited funding is to preserve the existing infrastructure.

Pavement preservation work rarely includes shoulder widening because it significant increases the project cost and triggers stormwater management for the additional impervious surface area. Shoulder widening is also limited by physical constraints in the rural environment, such as wetlands, waterways, steep slopes, and limited right-of-way. The lack of shoulders prevents the installation of rumble strips, which are proven to reduce roadway departures – the leading type of fatal and severe-injury collision in rural Lane County.

As an interim measure, until funding is available for projects that include shoulder widening, installation of Safety Edges as part of pavement preservation would help (see Eng-1). Another interim measure would be to widen shoulders at strategic locations, for

pull-over and passing, especially at corners or where sight distance is poor.

Eng 13 - Redesign Roadway Geometry

There is a body of literature (design standards and manuals) about geometric road design elements that reduce crash occurrence and severity on rural roads. Many rural roads were built prior to current design standards, with narrow travel lanes, steep grades and sharp curves. Bringing rural roadways up to current standard is primarily a financial consideration, as these types of improvements can be costly.

The appropriate roadway geometry depends on the surrounding land use context, particularly as rural roads transition from the rural landscape to an urban environment. Corridor traffic that brings customers and goods can be the economic lifeblood of a town; however too many vehicles moving too fast can overrun the heart of a community, making it unappealing to visitors and unsafe for people trying to walk or ride bicycles. There are many models to apply transportation improvements to a specific location to accommodate all users, such as “Complete Streets” and “Road Diets.”

The Complete Streets model suggests that the street network should be planned, designed, maintained, and operated in a way that accommodates all road users and those who use the surrounding environment; not doing so will result in “incomplete” streets. Complete Streets will look different in rural communities than they do in more urban counterparts. For example, roads surrounded by agricultural use may be “complete” by simply providing wide shoulders to allow safe bicycling and walking and providing connections to regional trail and public transportation networks. Low-speed roads with on-street parking, well-marked crossings, and sidewalks with accessible curb cuts lining one side of the street may best meet the needs of a residential street.

In small communities, Complete Streets are important in helping town centers and Main Streets thrive, too, by improving street connectivity and allowing everyone, whether on foot, bike, or public transportation, to reach community focal points. Many smaller communities do not control their Main Streets; often, the state Department of Transportation does. Construction or widening of Main Streets that function as state highways takes its toll on pedestrian safety and can have a negative impact on small-town economies. In these cases, Complete Streets policies at the local level help communicate the community’s vision, and policies at the state level ensure safe, accessible, and attractive streets. Creating Complete Streets can facilitate reinvestment and economic development in the heart of a small town.

Another model is the “Road Diet,” which reduces the number and/or width of travel lanes in order to repurpose the overall roadway for systemic improvements, such as bike lanes, on-street parking, and transit stops. Road Diets are typically applied to four-lane undivided highways that experience relatively high crash frequency, especially as traffic volumes and turning movements increase over time. The FHAW has deemed Road Diets as a proven safety countermeasure and promotes them as a safety-focused design alternative. Road

Diets should be considered on the portions of roadways that cross through smaller rural communities. These are reported as having positive impacts to the communities from both a safety and economic perspective.

Eng-14 - Provide physical amenities that expand transportation options

Residents of small towns are more likely to be hurt or killed on the transportation system than urban areas. In 2006, 23 percent of the U.S. population lived in rural areas, yet 56 percent of all traffic fatalities occurred in rural areas. Higher driving speeds on rural roads and arterials are more likely to cause fatalities: 68 percent of fatal crashes on rural roads occurred when the posted speed limit was 55 mph or higher.

Rural communities and small towns tend to have higher concentrations of older adults and low-income citizens, two populations that are less likely to own cars or drive. Without safer roads, those with limited transportation options have little choice: travel along high-speed roadways with few pedestrian accommodations or stay home. In limiting mobility to automobiles alone, these citizens risk isolation from community and the economy.

In the most basic sense, this could be sidewalk infill and shoulder widening, which are significant costs alone. Ideally, this would include new, separated bike lanes and sidewalks. Priority areas could be connecting rural populations to transit facilities, particularly to serve youth, the elderly and disabled. Wider shoulders alone will not meet the needs of these vulnerable populations, particularly with the excessive travel speeds on rural roads.

Safe and well-maintained physical environments are important to making walking available as a mode of transportation and as a form of physical activity. Walking provides an easily accessible and free transportation alternative that allows community residents to access work, school, recreation and other goods and services. When it is not made safe or convenient, residents are not afforded equitable access to these things as other communities. There are many components that need to be considered in making sure that community residents are encouraged and comfortable walking. Well-maintained sidewalks, safely marked crosswalks and smart street design all play a part in creating an environment that promotes walking as a mode of transportation.

Performance Measures

In transportation, performance measures are data about the use, condition, and impact of the transportation system, reported for illustrative purposes to demonstrate progress made toward established targets. This TSAP aims to reduce severe-injury and fatal collisions in Lane County. Collecting crash data is needed to evaluate safety implementation and the effectiveness of the TSAP actions.

The National Highway Traffic Safety Administration establishes a minimum set of performance measures to be used by state and federal agencies in the development and implementation of mandated safety plans. Under this mandate, the MPO safety plan

includes performance measures to monitor the safety in the MPO area. Although Lane County's plan is not subject to these mandates, this TSAP includes the following performance measures in order to evaluate the effectiveness of the implementation actions in reducing fatal and severe crashes.

- 1) Number of traffic fatalities
- 2) Number of serious injuries in traffic crashes
- 3) Number of roadway-departure involved severe and fatal crashes
- 4) Number of speed involved severe and fatal crashes
- 5) Number of people walking involved severe and fatal crashes
- 6) Number of people bicycling involved severe and fatal crashes

This data is available from ODOT Crash Analysis and Reporting Unit. The data is provided annually; however, the data provided is typically two years behind. Although Lane County would like to improve upon the data collection (details and timeliness), current resource limitations preclude making a related performance measure commitment. Similarly, due to current budget conditions, Lane County is unable to commit to a correlation of this data to vehicle miles traveled because there are insufficient resources to collect traffic counts. (As of 2016, traffic counts have not been collected since 2011.)

Currently, Lane County staff physically investigates every fatal collision on a County road. Lane County seeks to improve this investigative effort to include more analysis than documentation, with an eye toward doing everything possible to prevent fatal collisions. As explained throughout this TSAP, most of the fatal collisions are a result of driver error rather than roadway geometry; however, roadway features can influence driver behavior and mitigate poor decisions.

Lane County currently integrates ODOT crash data into its geographic information system. Staff will evaluate ways to improve the spatial relationship to improve crash data reporting and analysis. For example, Lane County staff is interested in identifying corridors to concentrate implementation efforts and evaluating differences between urban and rural areas for context-sensitive approaches to improving safety. These location-specific characteristics are not to compare localities, but to better understand the many factors that affect traffic safety.

These performance measures, as their name implies, are to assess Lane County's progress in reducing severe-injury and fatal collisions. Comparing annual data over a three- to five-year period is necessary to understand trends versus anomalies. Overall, the goal is to produce a downward trend in the number of severe-injury and fatal collisions in Lane County. These measurements are indicators to enable decision-makers and other stakeholders to monitor changes in system conditions and adjust efforts as needed to produce better outcomes.

Glossary

All Roads Transportation Safety (ARTS) Program: Historically the Oregon Department of Transportation (ODOT) has spent the Highway Safety Improvement Program (HSIP) funding only on state highways. However, half of the fatalities and serious injuries occur on non-state roadways. In order to address this concern and to comply with the federal requirement that the HSIP funding be spent on all public roads, ODOT has developed a “jurisdictionally blind” safety program, known as the All Roads Transportation Safety (ARTS) Program, to address safety problems on all public roads in Oregon. The objective of the ARTS Program is the same as that of the HSIP – to reduce fatalities and serious injuries on all public roads using a data-driven approach.

Blood Alcohol Content (BAC): Commonly used as a metric of alcohol intoxication for legal or medical purposes.

Driving Under the Influence of Intoxicants (DUII): Oregon uses this term instead of DUI (driving under the influence), which generally involves a BAC of 0.08% or more. Individuals convicted of a DUII are required to obtain a treatment completion certificate issued by the Oregon Health Authority. Penalties range between jail time (48 hours to 5 years), fines (\$1,000 to \$10,000), and license suspension (1 year to permanently).

Emphasis Areas: A strategic framework for developing and implementing the Transportation Safety Action Plan (TSAP). The emphasis areas were developed using the results of crash analysis and input from stakeholders. The three emphasis areas identified for the Lane County TSAP are comparable to Oregon’s TSAP and shared with the Central Lane Metropolitan Planning Organization’s (MPO) Transportation Safety and Security Plan, as follows: Vulnerable Users, Infrastructure, and Risky Behaviors. All three plans address broader issues in a similar manner: the Lane County TSAP identifies Foundational Actions; the MPO identifies a Foundational Emphasis Area; and ODOT identifies an Improved Systems Emphasis Area.

Fatal Analysis Reporting System (FARS): A nationwide census of annual data regarding fatal injuries suffered in motor vehicle traffic crashes.

Federal Highway Administration (FHWA): An agency within the U.S. Department of Transportation that specializes in highway transportation.

Fixing America’s Surface Transportation (FAST) Act: Replaced the Moving Ahead for Progress in the 21st Century Act (Map-21).

Highway Safety Improvement Program (HSIP): A core federal-aid program under the Fixing America’s Surface Transportation (FAST) Act that went into effect in December, 2015. The primary goal of the HSIP is to achieve a significant reduction in traffic fatalities

and serious injuries on all public roads, including non-state owned roads and tribal roads. The HSIP requires a data-driven and strategic approach to improving highways safety on all public roads that focuses on performance. The HSIP funds are primarily intended for infrastructure improvement projects. The FAST Act slightly increased the HSIP funding and disallowed use of the funds for educational and enforcement activities. (Non-infrastructure safety, such as education and enforcement programs, is administered by the ODOT Transportation Safety Division, funded by the National Highway Safety Administration and Federal Highway Administration.)

Intelligent Transportation System (ITS): Applications relating to different modes of transport and traffic management to enable users to be better informed and make safer, more coordinated, and ‘smarter’ use of transport networks.

Metropolitan Planning Organization (MPO): Designated by the governor to coordinate transportation planning in an urbanized area of the state. MPOs exist in the Portland, Salem, Eugene-Springfield, and Medford areas.

Oregon Department of Transportation (ODOT): A department of the state government of the U.S. state of Oregon responsible for transportation. It was first established in 1969.

Severe Injury: Synonymous with Code 2 and Incapacitating; a non-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. Examples include broken bones, severe bleeding, and unconsciousness.

Statewide Transportation Improvement Program (STIP): Oregon’s four-year transportation capital improvement program. It is the document that identifies the funding for, and scheduling of, transportation projects and programs. It includes projects on the federal, state, city, and county transportation systems, multimodal projects (highway, passenger rail, freight, public transit, bicycle and pedestrian), and projects in the National Parks, National Forests, and Indian tribal lands.

Vehicle Miles Traveled (VMT): Defined by the U.S. government as a measurement of miles traveled by vehicles within a specified region for a specified time period.