

OREGON TRANSPORTATION SAFETY ACTION PLAN

Chapter 6 – Emphasis Areas

prepared for

Oregon Department of Transportation

prepared by

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Emphasis areas (EAs) provide a strategic framework for developing and implementing the Transportation Safety Action Plan (TSAP). Emphasis areas are near-term implementation focus areas directly related to the TSAP's long term goals, policies and strategies. EAs focus near-term safety projects, programs and policies on actions that will maximize safety investment. EAs also provide a framework for the Oregon Department of Transportation to meet federal requirements for project and program prioritization. Emphasis areas are flexible and adaptive to new safety challenges and opportunities that may arise during implementation of the TSAP. The EAs were developed using the results of crash data analysis and input from committees, stakeholders, and the public. From this, four broad emphasis areas were chosen: Infrastructure, Risky Behaviors, Vulnerable Users, and Improved Systems. Each of these includes a number of subcategories to better define the EA. A short description for each EA is described below.

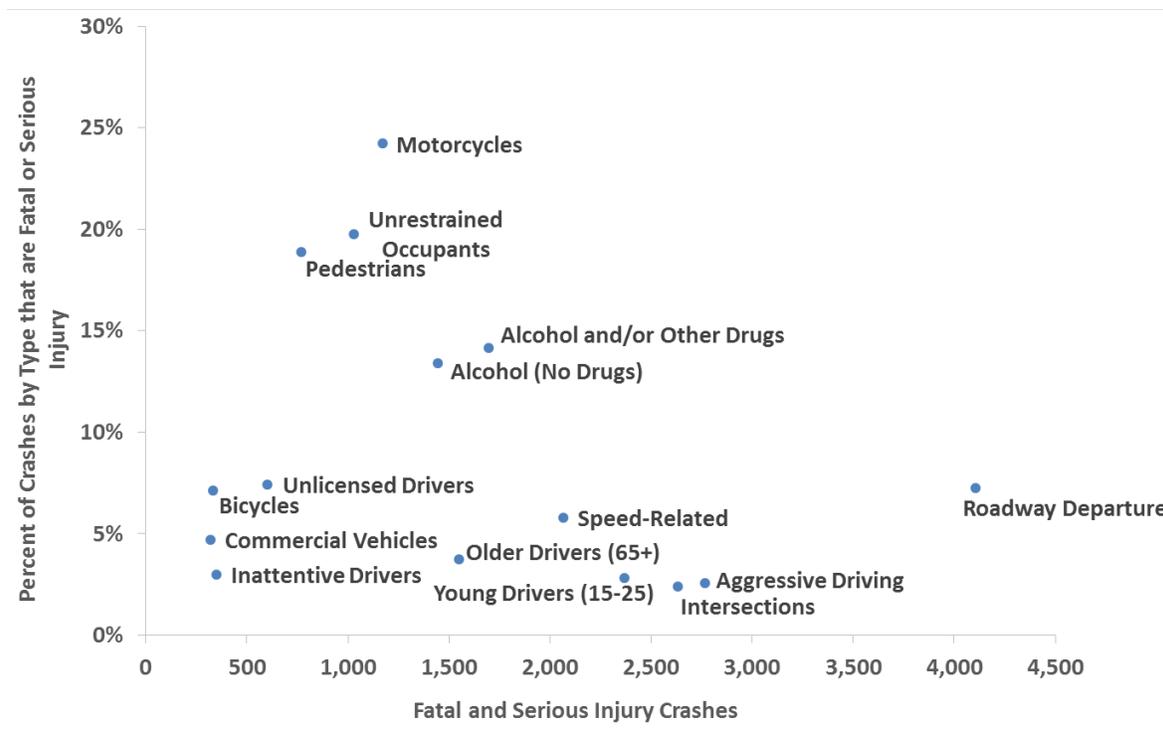
- **Emphasis Area: Infrastructure** - Road assets in Oregon can be constructed or retrofitted to reduce fatal and serious injury crashes. Opportunities to do this include implementing safety treatments at intersections and along and across roadways. For this emphasis area, actions will be identified to minimize intersection and roadway departure crashes.
- **Emphasis Area: Risky Behaviors** - Reductions in fatalities and serious injuries can be accomplished by deterring unsafe or risky behaviors made by drivers and other transportation users. For this emphasis area, actions will be identified to minimize impaired driving, unbelted, speeding, and distracted driving crashes.
- **Emphasis Area: Vulnerable Users** - Vulnerable road users can be characterized by the amount of protection they have when using the transportation system – pedestrians, bicyclists, and motorcyclists are more exposed than vehicles making them more susceptible to injury in the event of an incident. Older drivers can also be vulnerable due to decreasing visual acuity and perception-reaction time to events. . For this emphasis area, actions will be identified to minimize pedestrian, bicycle, motorcycle, and older road user crashes.
- **Emphasis Area: Improved Systems** - Opportunities to address and improve transportation safety come in a number of forms. Crash and other types of safety data can be advanced to better understand the causes and locations of crashes, leading to targeted solutions. Training is used to educate planners, engineers, designers, and construction staff about the importance of safety and how to incorporate it into their every day job responsibilities. Fully staffed and funded law enforcement agencies can direct their efforts towards keeping users safe and when crashes do occur, making sure emergency medical services are available to respond to and transport victims is essential. Commercial vehicle safety relies on licensing, training, and vehicle safety to decrease the frequency and severity of crashes. For this emphasis area, actions will be identified to

continually improve data, train transportation and safety staff, support law enforcement and emergency responders, and minimize commercial vehicle crashes.

CONSIDERATIONS

EAs were selected based on an assessment of recent crash history (2009-2013) and qualitative considerations related to the capabilities to address different crash types. Figure 1 shows the relationship of crash frequency and crash severity. Fatal and serious injury crashes are ranked by frequency along the x-axis and by severity along the y-axis. Crash types toward the upper right part of the figure rank more highly from the perspective of being frequent and severe. For example, intersection crashes have a high crash frequency rank; yet a relatively low severity rank; whereas motorcycle crashes are the most severe; yet are in the middle of the frequency ranking. Appendix XX shows the underlying data for this figure.

Figure 1. Potential Emphasis Areas by Crash Frequency and Severity Rankings (2009-2013)



From a qualitative perspective emphasis areas were also selected considering:

- **Effectiveness Data:** are there proven countermeasures available for use in Oregon? If not, is there an ability and commitment to evaluate effectiveness of programs and projects?
- **Institutional Capacity:** are there agencies or individuals who are able to commit ongoing staff resources to address this safety problem?

- **Emphasis Area Overlap:** does the potential emphasis area significantly overlap with other potential emphasis areas and, if so, can they both be addressed simultaneously?
- **Consistency with Existing Plans and Policies:** Is the potential EA consistent with other state plans and policies and does it address a significant policy goal? If not, does the potential EA push the state in an appropriate policy direction?
- **Public Input:** Are there issues the public perceives as critical to driving down fatalities and serious injuries? Can these issues be addressed within the framework of the TSAP?

Figure 2 shows the resulting evaluation of potential EAs using the frequency severity chart and the above qualitative categories. As shown emphasis areas were evaluated as strong, moderate or weak emphasis area candidates for each criterion. The PAC reviewed this information as well as input from stakeholders to select emphasis areas for the TSAP.

Figure 2. Emphasis Area Evaluation

Potential Emphasis Area	Frequency	Severity	Effectiveness Data	Emphasis Area Overlap	Institutional Capacity	Policy Focus
Aggressive Driving	■	◐	◐	◐	◐	■
Impaired Driving	◐	■	■	◐	■	■
Bicycles	◐	◐	◐	■	■	■
Commercial Vehicles	◐	◐	◐	■	■	◐
Distracted Driving (Inattentive Drivers)	◐	◐	◐	■	◐	◐
Intersections	■	◐	■	■	■	■
Motorcycles	◐	■	◐	◐	◐	■
Older Drivers (65+)	◐	◐	◐	◐	◐	◐
Pedestrians	◐	■	◐	■	■	■
Roadway Departure	■	◐	■	◐	■	■
Speed-Related	■	◐	◐	◐	◐	■
Unlicensed Drivers	◐	■	◐	■	◐	◐
Unrestrained Occupants	◐	■	■	◐	◐	■
Young Drivers (15-25)	■	◐	◐	◐	◐	■
Foundational EAs (EMS, Data, and Training)	N/A				■	■
Legend and Notes						
■ Strong Emphasis Area Candidate						
◐ Moderate Emphasis Area Candidate						
◐ Weak Emphasis Area Candidate						
Frequency = number of fatal and serious injury crashes from 2009 to 2013; Severity = fatal and serious injury crashes per 100 total crashes; Effectiveness Data = proven, effective countermeasures are known, or projects and programs can be evaluated for effectiveness; Emphasis Area Overlap = the potential EA significantly overlaps with one or more other potential emphasis areas; Institutional Capacity = there are existing programs and resources to support implementation of strategies related to this potential EA; Policy Focus = the potential EA represents a significant policy focus for Oregon.						

EMPHASIS AREAS

EAs represent the key factors contributing to crashes, which if addressed, have the greatest potential to reduce fatalities and serious injuries in Oregon. The Oregon TSAP identifies four broad EAs, including Infrastructure, Risky Behaviors, Vulnerable Users, and Improved Systems. Each of these is subcategorized to further define the EA.

This section describes each EA subcategory and the accompanying actions. Actions are specific programs, policies, and projects for implementing the EAs over the next five years. The actions listed are achievable and, where possible, proven effective. For actions that have not been tested for their effectiveness, they will be evaluated during implementation to understand their contribution to crash reductions. The actions are categorized by the primary EA they address, but many have the potential to contribute to fatality and serious injury reductions across multiple EAs.

While this section focuses on the implementation of safety solutions over the next five years, each EA and action will also contribute to the success of the long term goals, policies, and strategies outlined in Chapter 5.

Emphasis Area: Infrastructure

Intersections

Definition

An intersection is a point at which two or more roads intersect. Most intersections are designed to motorized vehicles as well as pedestrians, bicyclists, transit users and freight travel. As such, an inherent concern at intersections is they create conflict points between road users, which can be exacerbated by differences in size and travel speed as well as complexity of the intersection design. Intersection crashes in Oregon are defined as incidents that occur at a signalized or unsignalized intersection in an urban or rural environment.

Problem Overview

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

Figure x. Intersection-Related Fatalities and Serious Injuries by Year, 2009-2013

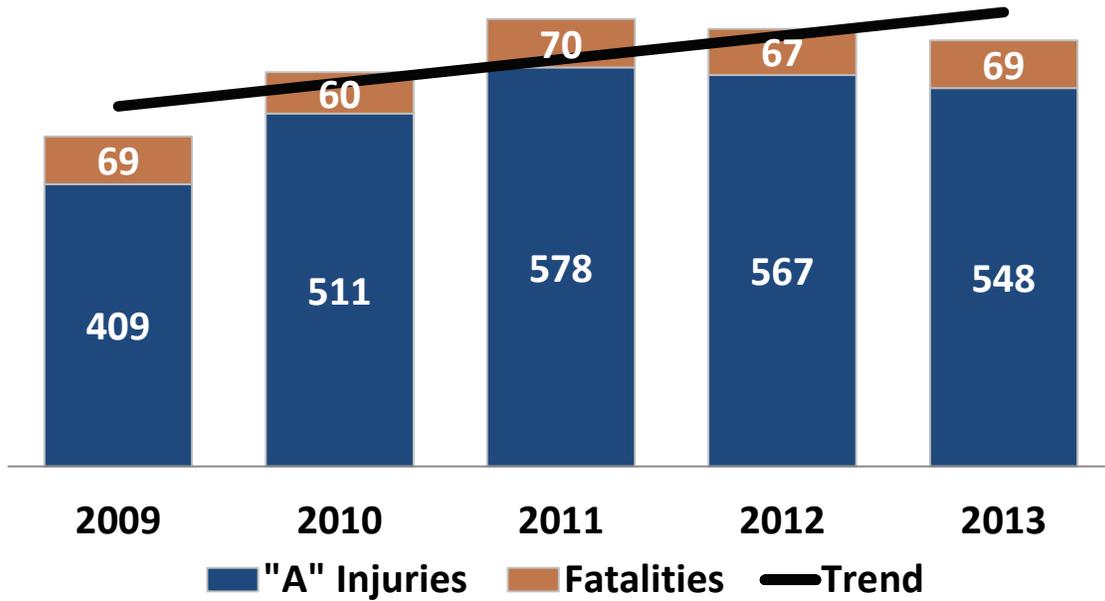
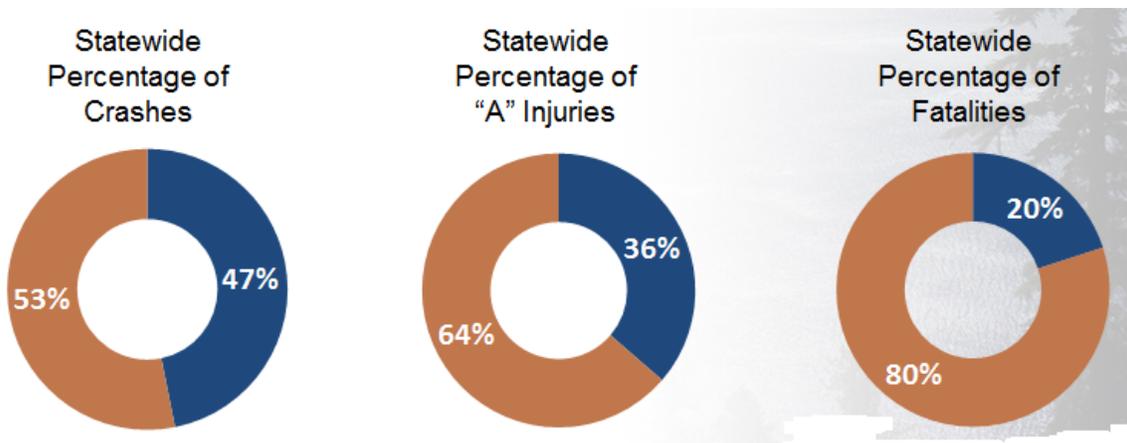


Figure x. Intersection-Related Crashes as a Percentage of All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A" injuries/serious injuries will also be made consistent.

Actions

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Roadway Departure

Definition

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

Problem Overview

Between 2009 and 2013 approximately 53 percent of all fatal and severe injury crashes in Oregon included a roadway departure and contributed to 1,188 fatalities and 3,745 severe injuries. Seventy three percent of these crashes were in a rural environment. Additionally, many behavior-related crashes involve the vehicle leaving the lane or entire roadway. For example, lane departure accounts for 44 percent of aggressive driving fatal and severe injuries, 43 percent of speed-related fatal and severe injuries, and 18 percent of impaired driving fatal and severe injuries.

Figure x. Roadway Departure Fatalities and Serious Injuries by Year, 2009-2013

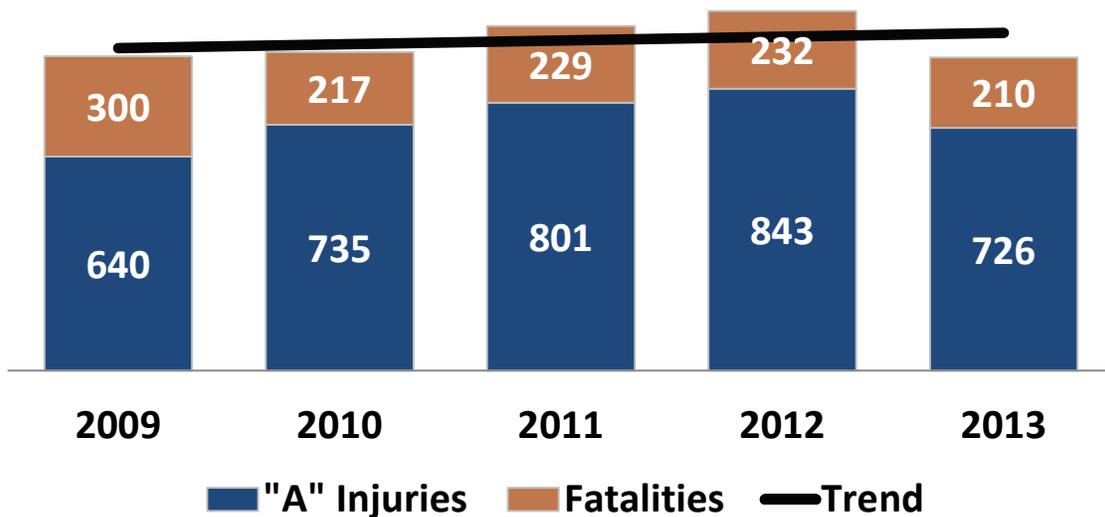
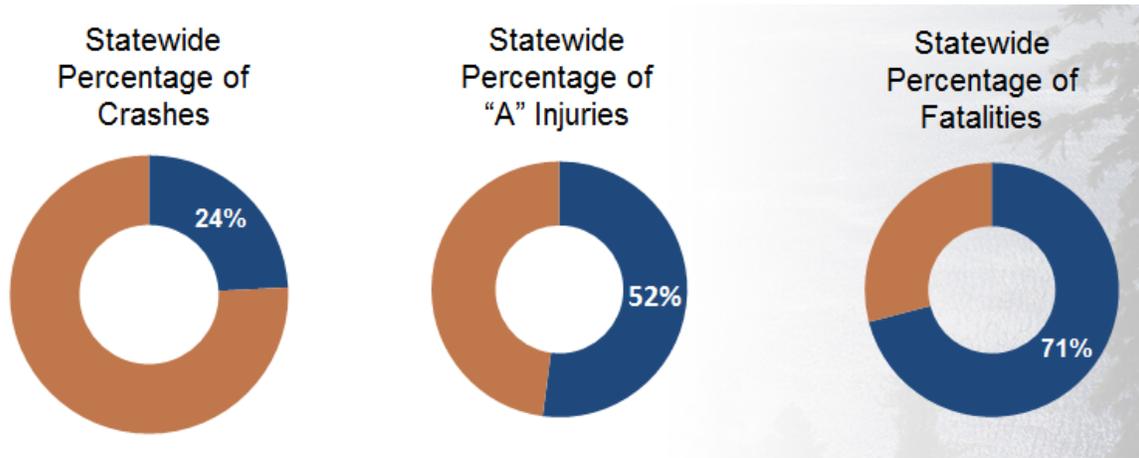


Figure x. Roadway Departure as a Percentage of All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Risky Behaviors

Impaired Driving

Definition

Alcohol impairment is measured through a blood alcohol content (BAC) reading of .08 percent or higher for drivers and .04 percent for commercial motor vehicle drivers. In Oregon, as in most states, the penalties are severe for drinking and driving and could result in jail time, a suspended or revoked license, and/or fines. While the risks of driving under the influence of alcohol are well known, the implications and severity for drugged driving are less so. Drivers may not fully understand the legal limits when driving on prescription or recreational drugs. In addition, law enforcement are still refining detection processes. However, drugged driving is impaired driving and research and improvements are occurring in this area. In Oregon, impaired driving crashes are defined as crashes in which the reporting officer indicates alcohol or other drugs were somehow involved in the crash. These crashes could include alcohol only, or drugs and/or alcohol.

Problem Identification

Between 2009 and 2013, impaired driving crashes (alcohol and/or drugs) accounted for 22 percent of all the fatal and severe injury crashes in Oregon and contributed to 625 fatalities and 1,087 severe injuries. Crashes are occurring almost evenly in rural Oregon (52 percent) and urban parts of Oregon (48 percent). Seventy percent of impaired drivers are running off the road and aggressive driving (44 percent) and speed (42 percent) are also common contributors to impaired driving crashes.

Figure x. Impaired Driving Fatalities and Serious Injuries by Year, 2009-2013

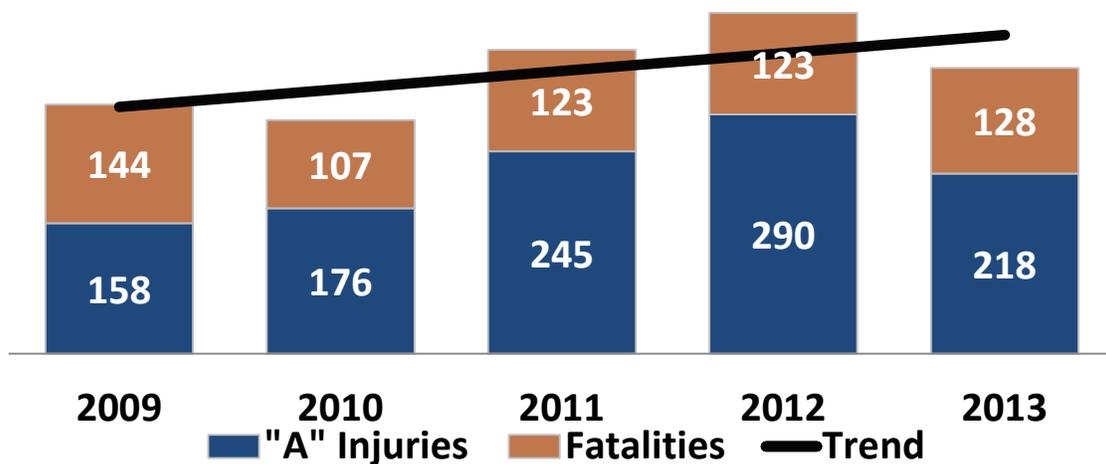
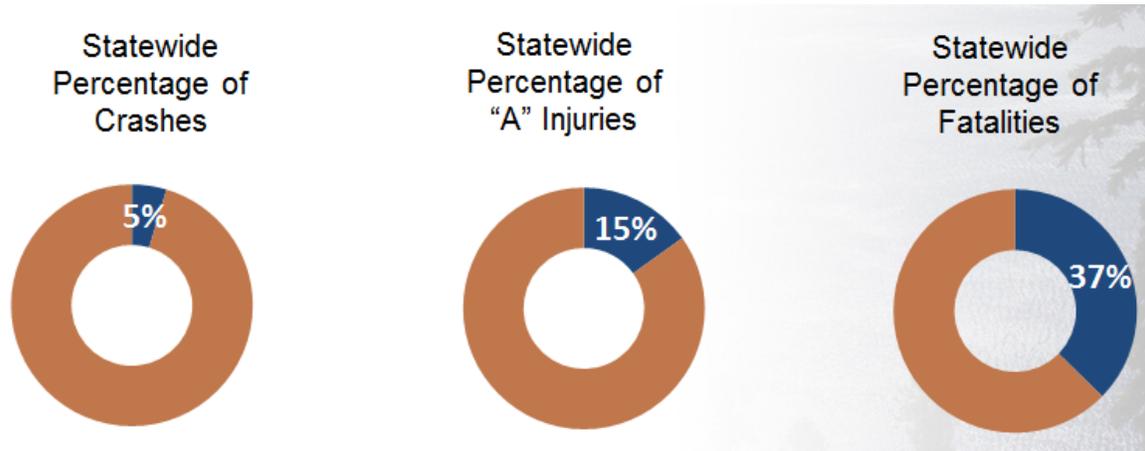


Figure x. Impaired Driving as a Contributing Factor for All Crashes, Serious Injuries, and Fatalities



Note: 1) These data and graphics are for alcohol only, they will be modified to include alcohol and/or drugs for the May draft. 2) Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Occupant Protection

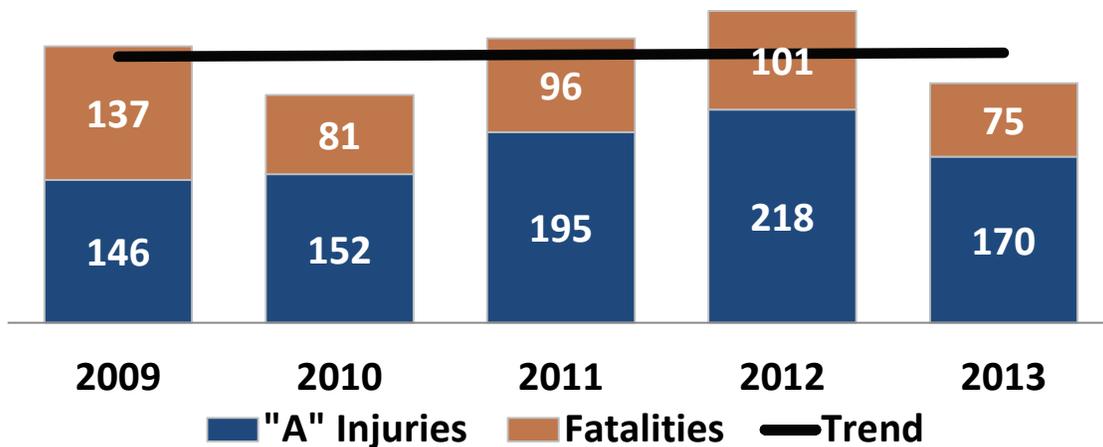
Definition

In Oregon, passenger car drivers, pickup truck drivers, and sports car drivers are often using their seatbelts – the national average for observed seatbelt use in 2014 was 87 percent for passenger cars and in Oregon it was 98 percent¹. While wearing a seatbelt has become a cultural norm in Oregon, the numbers also reflect enforcement efforts – in 2014, 7,429 seat belt citations were issued in Oregon. Residents now recognize that the use of restraints and child car seats reduces the severity of a crash². In Oregon, unbelted crashes are defined as, one or more victims is not using appropriate protection.

Problem Identification

Between 2009 and 2013, crashes involving unbelted drivers and occupants accounted for 13 percent of all the fatal and severe injury crashes in Oregon and contributed to 490 fatalities and 881 severe injuries. Sixty five percent of these crashes occurred in a rural environment. Almost all unrestrained fatal and severe injury crashes (72 percent) result from lane departure crashes. Aggressive driving (44 percent) and speeding (41 percent) are also strongly correlated to unrestrained crashes.

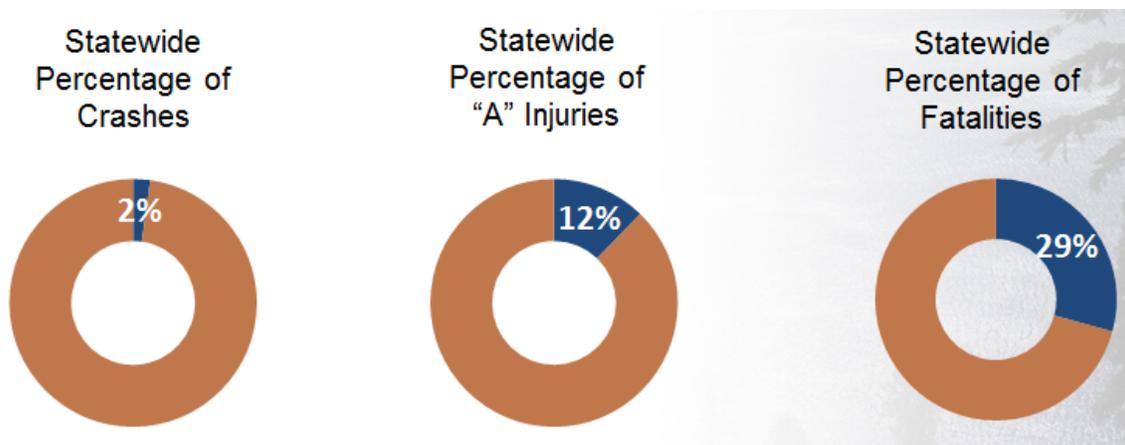
Figure x. Unrestrained Occupant Fatalities and Serious Injuries by Year, 2009-2013



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

² <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>

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



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Speeding

Definition

Speed related fatalities and severe injuries have been trending downward, on average, since 2009. In Federal Fiscal Year 2014, law enforcement issued 21,732 speeding citations during grant funded activities, which is a significant increase over the 12,376 issued in 2013³. An Oregon statewide public opinion survey from March 2013 reported that 76 percent of drivers say they rarely exceed the speed limit on a local road with a posted speed of 30 miles per hour and 77 percent say they rarely exceed it on a road with a speed limit of 65 miles per hour⁴. Enforcement, coupled with a cultural shift on speeding has contributed to a reductions in speed related fatalities and severe injuries. In Oregon, speeding crashes are defined as, the vehicle was traveling too fast for conditions, following too closely, or traveling above the posted or statutory speed limit.

Problem Identification

Between 2009 and 2013, speed related crashes accounted for 27 percent of all the fatal and severe injury crashes in Oregon and contributed to 619 fatalities and 1,897 severe injuries. Seventy percent of these crashes occurred in a rural environment. Almost all speed related fatal and severe injury crashes (85 percent) result from lane departure crashes. Alcohol involvement (30 percent) and unrestrained occupants (20 percent) are also strongly correlated to speeding crashes.

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

⁴ <https://www.oregon.gov/ODOT/TS/docs/+2016%20Federal%20Version%20Final.pdf>

Figure x. Speed-Related Fatalities and Serious Injuries by Year, 2009-2013

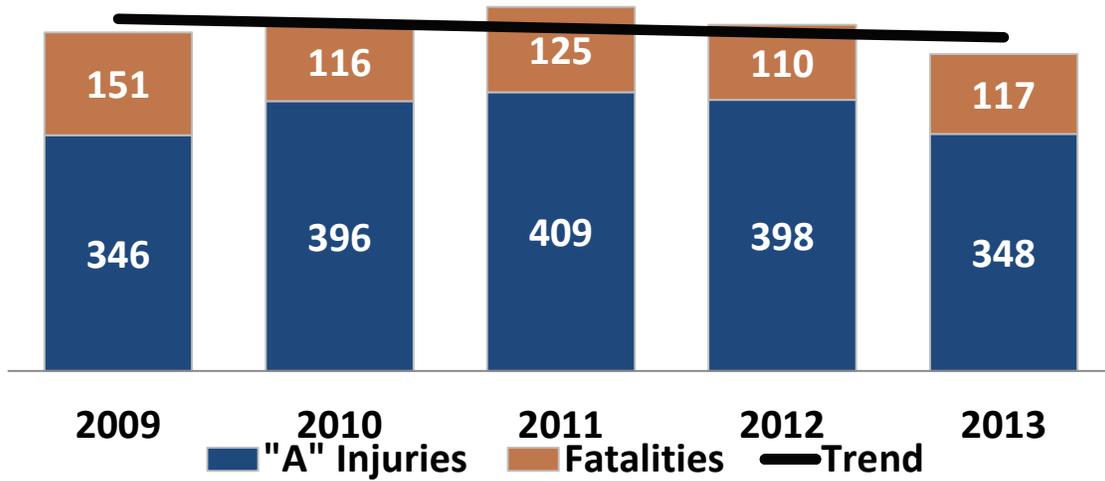
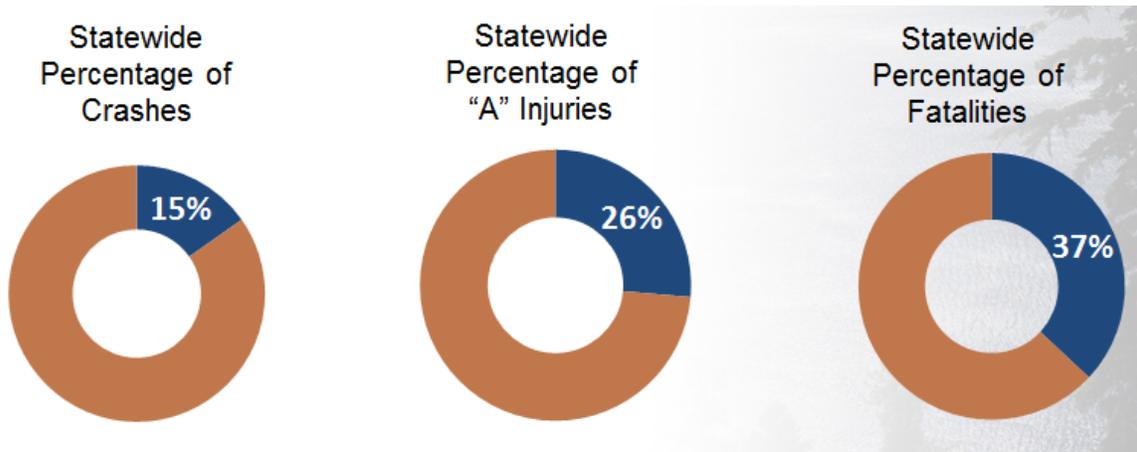


Figure x. Speeding as a Contributing Factor for All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Distracted Driving

Distracted driving is operating a motor vehicle while doing another activity that takes your attention away from driving⁵. Distracted driving has been identified as an issue of concern but because of reporting constraints it is not yet possible to quantify the scale of the problem. One of the first actions recommended in this sub-area is to define and assess the scale of distracted driving in Oregon.

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⁵ https://www.oregon.gov/ODOT/DMV/Pages/road_rules.aspx (accessed 3/16/16)

Vulnerable Users

Pedestrians

Definition

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

Problem Identification

Between 2009 and 2013, crashes involving pedestrians accounted for 10 percent of all the fatal and severe injury crashes in Oregon and contributed to 262 fatalities and 548 severe injuries. Nearly ninety percent of these crashes occurred in an urban environment, where there are more pedestrians and sidewalk infrastructure. A number of pedestrian related fatal and severe injury crashes (17 percent) involved older driver crashes. Crashes at intersections or when alcohol is involved are also strongly correlated to pedestrian crashes.

Figure x. Pedestrian Fatalities and Serious Injuries by Year, 2009-2013

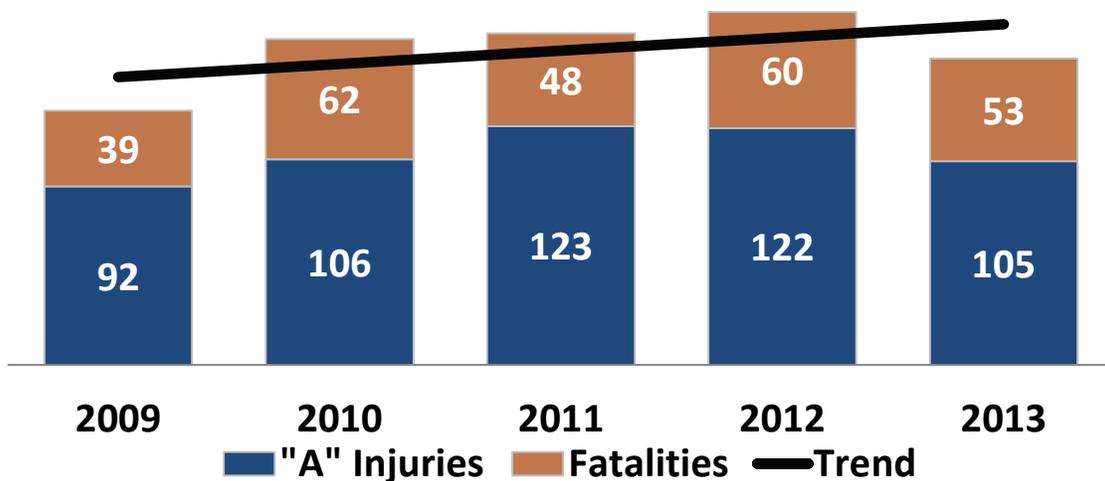
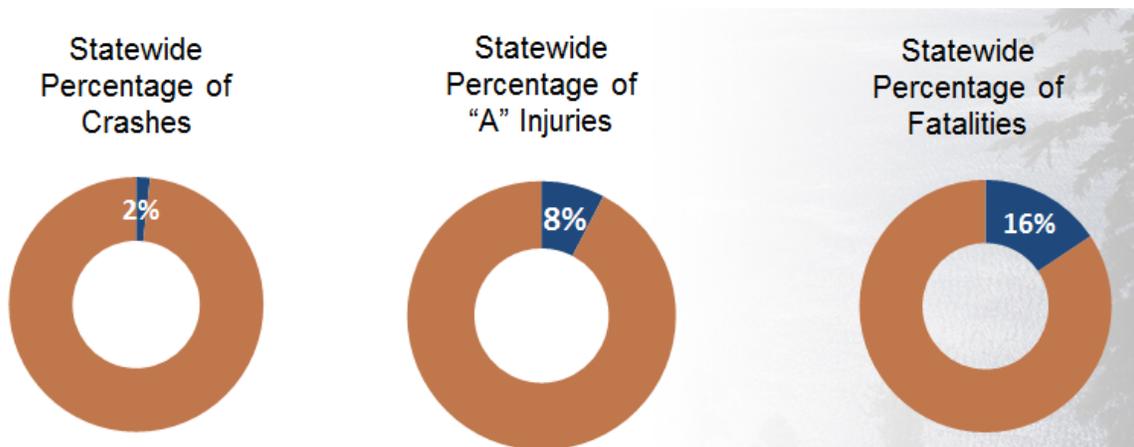


Figure x. Pedestrian Involvement in All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Motorcyclists

Definition

Motorcyclists are vulnerable because of their level of exposure when traveling on Oregon's roads. When a motorcyclist runs off the road or interacts with another vehicle, the lack of protection can increase the severity of the crash. One primary contributing factor of motorcycle fatalities in Oregon is the number of riders who are not properly licensed and do not have a motorcycle endorsement on their driver's license. Unendorsed riders do not have the same level of training as licensed riders which can lead to more run off the road and aggressive driving crashes. Motorcycle crashes are defined as a motorcyclist who is involved in a crash, but is not necessarily the cause of the crash.

Problem Identification

Between 2009 and 2013, motorcycle crashes accounted for 15 percent of all the fatal and severe injury crashes in Oregon and contributed to 211 fatalities and 1,030 severe injuries. Fifty six percent of these crashes occurred in a rural environment. A large number of motorcycle fatal and severe injury crashes (61 percent) result from lane departure crashes. Crashes at intersections (46 percent) and aggressive driving (42 percent) are also strongly correlated to motorcycle crashes.

Figure x. Motorcycle Involved Fatalities and Serious Injuries by Year, 2009-2013

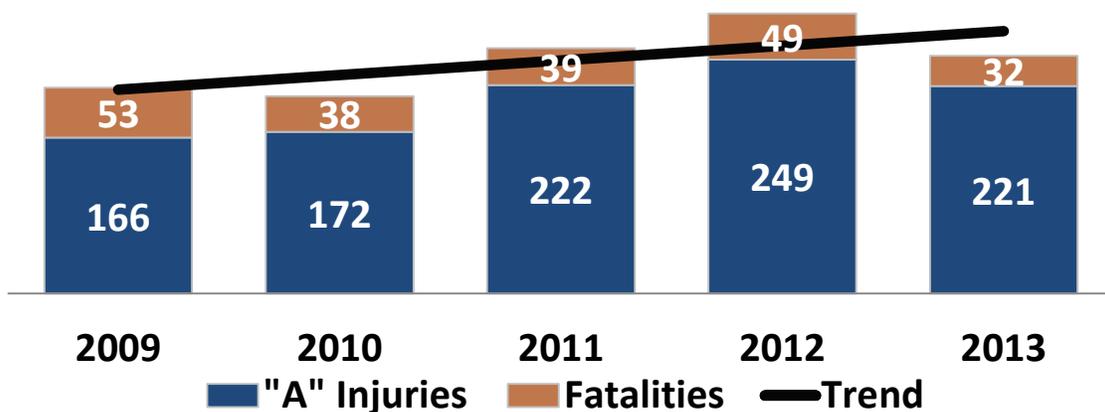
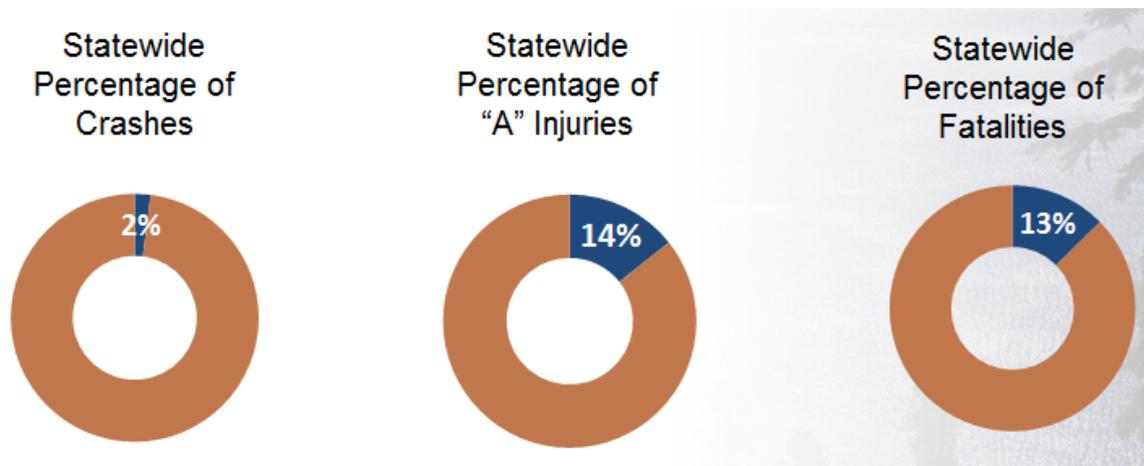


Figure x. Motorcycle Involvement in All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

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Bicyclists

Definition

Bicycle fatalities and serious injuries can be caused by inattentive drivers or inattentive bicyclists. Regardless of who is at fault, crashes involving a bicyclist tend to be more severe because bicyclists are completely exposed when using the transportation system. Nationally, as well as in Oregon, urban areas are developing transportation systems and land use to promote healthy communities and lifestyles. Alternative transportation infrastructure, including bike lanes, bike specific traffic signals, and bike racks are being implemented to encourage residents to bike to work, run errands, or for recreation. In the city of Portland, 7.2 percent of commuters go by bike, which is the highest percentage of commuters for a large American city⁶. As biking environments improve and more people ride bikes, there are more chances for bicycle, vehicle conflicts. In Oregon, bicycle crashes are defined as crashes where one or more bicyclists (or other pedacyclists) was/were involved in the crash.

Problem Identification

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

⁶ <https://www.portlandoregon.gov/transportation/article/407660>

Figure x. Bicyclist Fatalities and Serious Injuries by Year, 2009-2013

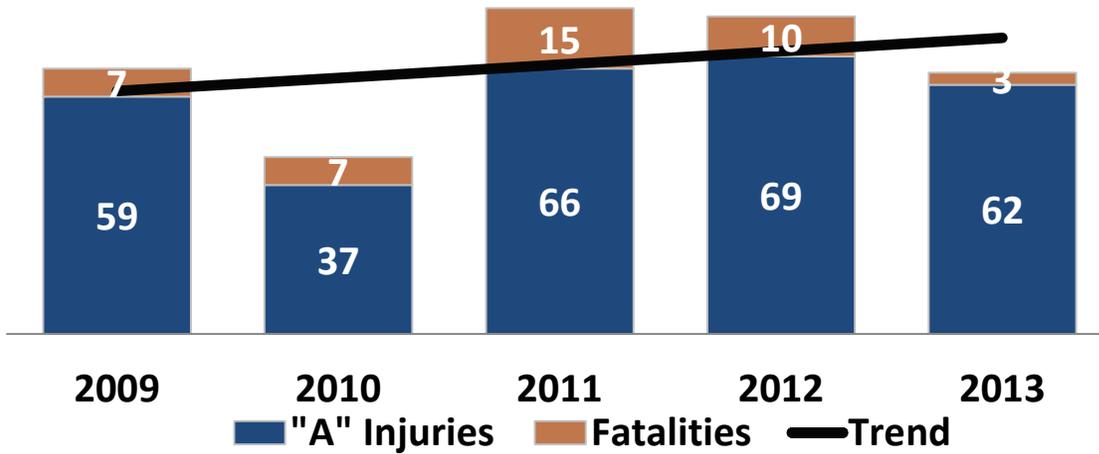
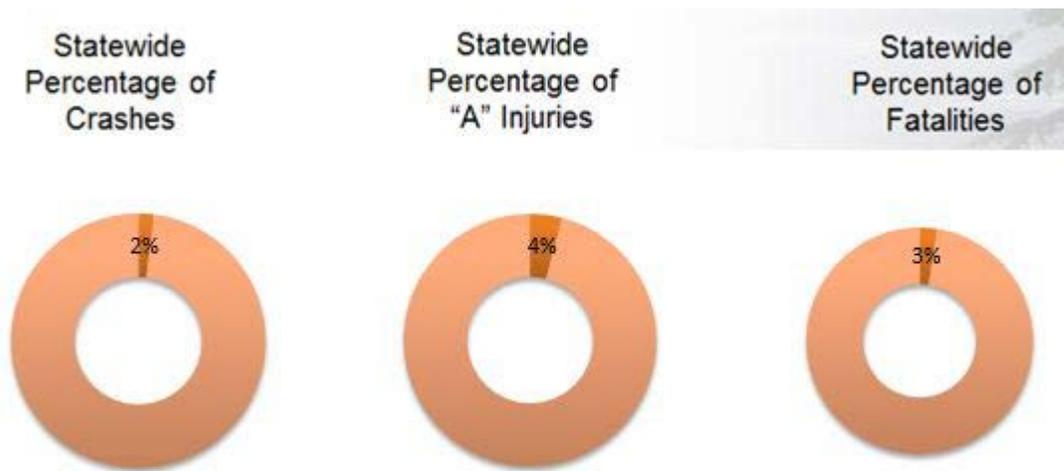


Figure x. Bicyclist Involvement in All Crashes, Serious Injuries, and Fatalities





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Older Road Users

Definition

While older drivers are a concern now in Oregon, crash numbers could increase dramatically over the next decade as the U.S. population ages. Operating a vehicle requires drivers to react quickly, see and hear clearly, judge distances and speeds, and be aware of other drivers and road users. As people age, it can lead to a decline in some of these abilities. When older drivers do crash, it also tends to be more severe as they can get hurt more seriously than younger drivers. In Oregon, older driver crashes are defined as crashes where drivers older than 65 are involved in, but not necessarily the cause of, a crash.

Problem Identification

Between 2009 and 2013, older driver crashes accounted for 13 percent of all the fatal and severe injury crashes in Oregon and contributed to 352 fatalities and 1,396 severe injuries. Forty eight percent of these crashes occurred in a rural environment. A large number of older driver fatal and severe injury crashes (44 percent) result from lane departure crashes. Crashes at intersections (40 percent) and aggressive driving (26 percent) are also strongly correlated to older driver crashes.

While not measured in this study, older pedestrians are also a consideration as older victims can be more frail than younger crash victims.

Figure x. Older Driver Involved Fatalities and Serious Injuries by Year, 2009-2013

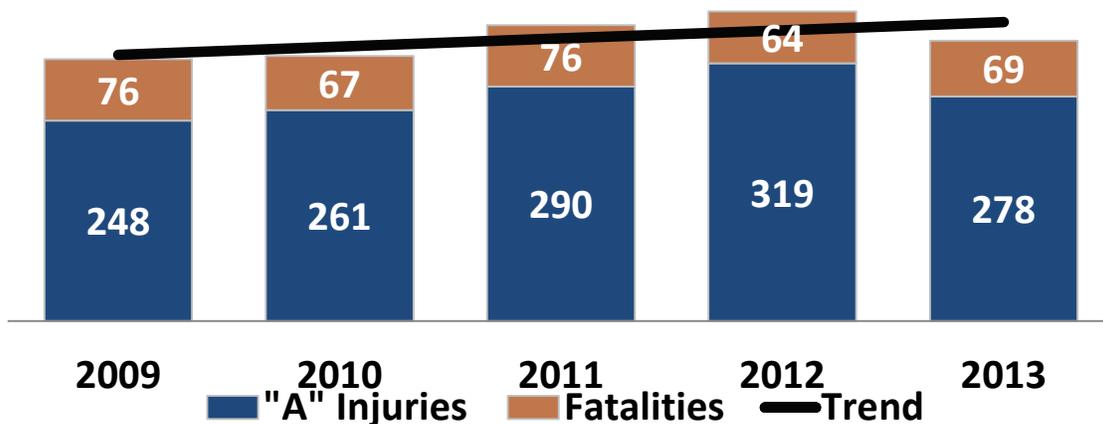
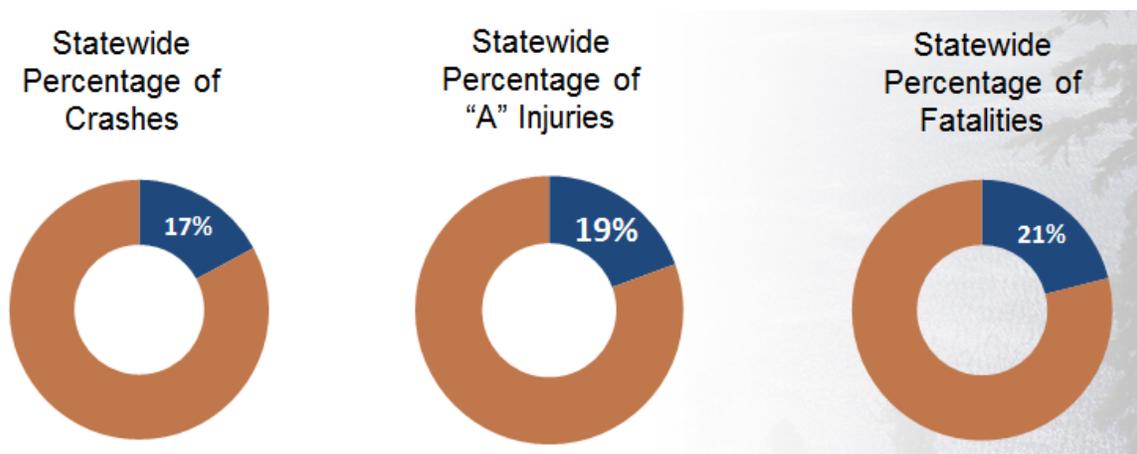


Figure x. Older Driver Involvement in All Crashes, Serious Injuries, and Fatalities



Note: Graphics will be modified and made consistent across chapters prior to the May draft. "A injuries/serious injuries will also be made consistent.

Figure x. Older Pedestrian Fatalities and Serious Injuries by Year, 2009-2013

Note: Forthcoming in next draft

Figure x. Older Pedestrian Involvement in All Crashes, Serious Injuries, and Fatalities

Note: Forthcoming in next draft

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Improved Systems

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

Commercial Vehicles

Commercial vehicle crashes are relatively rare, but have the potential to be severe because of the weight of vehicles involved in a crash.

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Enforcement

Law enforcement officials prevent crashes through traffic details, special mobilization campaigns such as Click It or Ticket, saturation patrols, and checkpoints. They also respond to crashes when they do occur to collect information for a crash report, which details the specifics of the crash, person(s), and vehicle(s), involved in the incident. This information later helps transportation and safety stakeholders make informed decisions about safety solutions.

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Emergency Medical Services

Emergency medical service providers are the people responding to victims at crash scenes. The services they provide can save lives and/or reduce the impact of injuries.

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Data

Crash, roadway, and volume (motor vehicle, pedestrian and bicycle) data is essential to understanding crash trends, identifying critical issues, and evaluating the effectiveness of solutions. Data must be timely, accurate, complete, consistent, integrated and accessible.



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Training

Providing training on best practices for engineers, educators, enforcement and emergency service providers will prevent and/or decrease the frequency and severity of crashes.

Actions

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