Washington County

# Transportation Safety Action Plan

September 2016

*This page is intentionally left blank.*

# CONTRIBUTORS:

## Agency Project Team

Melissa Norman, *Washington County*
Shelley Oylear, *Washington County*
Stacy Shetler, *Washington County*
Richard Crucchiola, *Washington County*
Walter McAllister, *Oregon Department of Transportation*

## Consultant Team

Camille Alexander, *HDR*
Andrew Johnson, *HDR*
Miranda Wells, *HDR*
Beth Wemple, *Cambridge Systematics*

## Advisory Committee

Steve L. Kelley*, Washington County*
Dyami Valentine, *Washington County*
Victoria Saager, *Washington County*
Betty Merritt, *Washington County*
Lt. Tim Tannenbaum, *Washington County Sheriff's Office*
Ray Eck, *Urban Roads Maintenance District Advisory Committee*
Doug Riedweg, *Rural Roads Operations and Maintenance Advisory Committee*
Steve Boughton, *Washington County Bicycle Transportation Coalition*
Lisa Frank, *Bicycle Transportation Alliance*
Kim Haughn, *Tualatin Valley Fire and Rescue*
Steve Forster*, Tualatin Valley Fire and Rescue*
Tegan Enloe, *City of Hillsboro*
Dan Schauer, *Washington County*
Lynne Mutrie, *Beaverton School District*
Kristie Gladhill, *Oregon Department of Transportation*
Tom Mills, *TriMet*
Alice Boggs, *Metro West Ambulance*
Richard Kidd, *Westside Economic Alliance*
Anthony Buczek, *METRO*
Lake McTighe, *METRO*
Daniel Hauser, *Association of Oregon Counties*
Luke Pelz, *City of Beaverton*
Stacy Revay, *City of Beaverton*
Nick Fortey, *Federal Highway Administration*
Ryan Wells, *City of Cornelius*

# Contents



# Tables

## Graphs



## Figures



## Appendices

*This page is intentionally left blank.*

# Executive Summary

The goal of the Washington County Transportation Safety Action Plan (TSAP) is to **strive toward zero transportation-related serious injury and fatality crashes.** The TSAP was developed by evaluating recent crash data and collaborating with a multi-disciplinary County Advisory Committee to develop strategies for reducing fatal and serious injury crashes. The Advisory Committee met three times over the course of the study to discuss the results of the crash data evaluation, the overarching goal of the plan and the near-term, mid-term, and "as-possible" strategies for achieving the goal of the plan. The plan has been developed to be consistent with other safety planning efforts in the state and region and to be tailored to the issues and opportunities in Washington County.

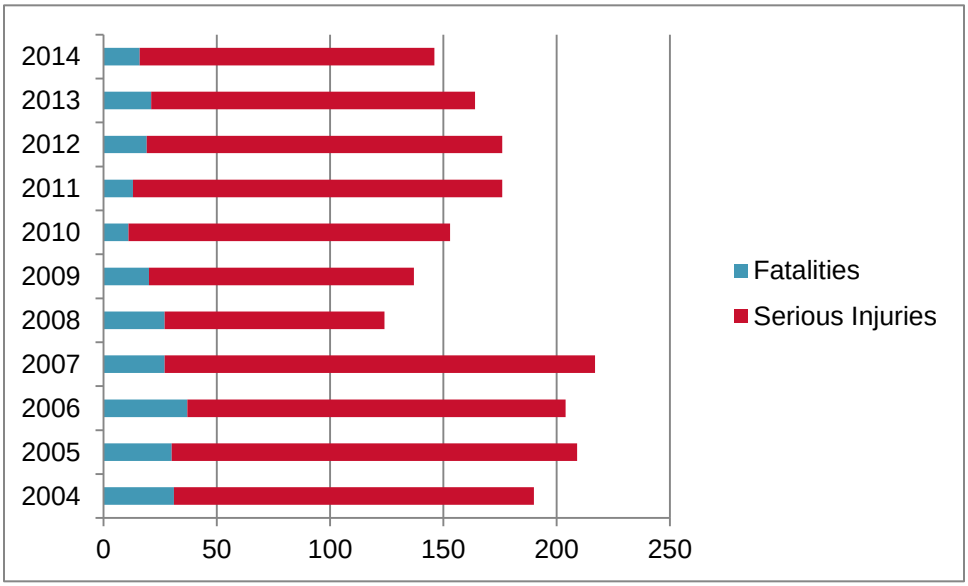
The crash trends were evaluated and the plan was organized under the framework of the four E's of transportation safety:

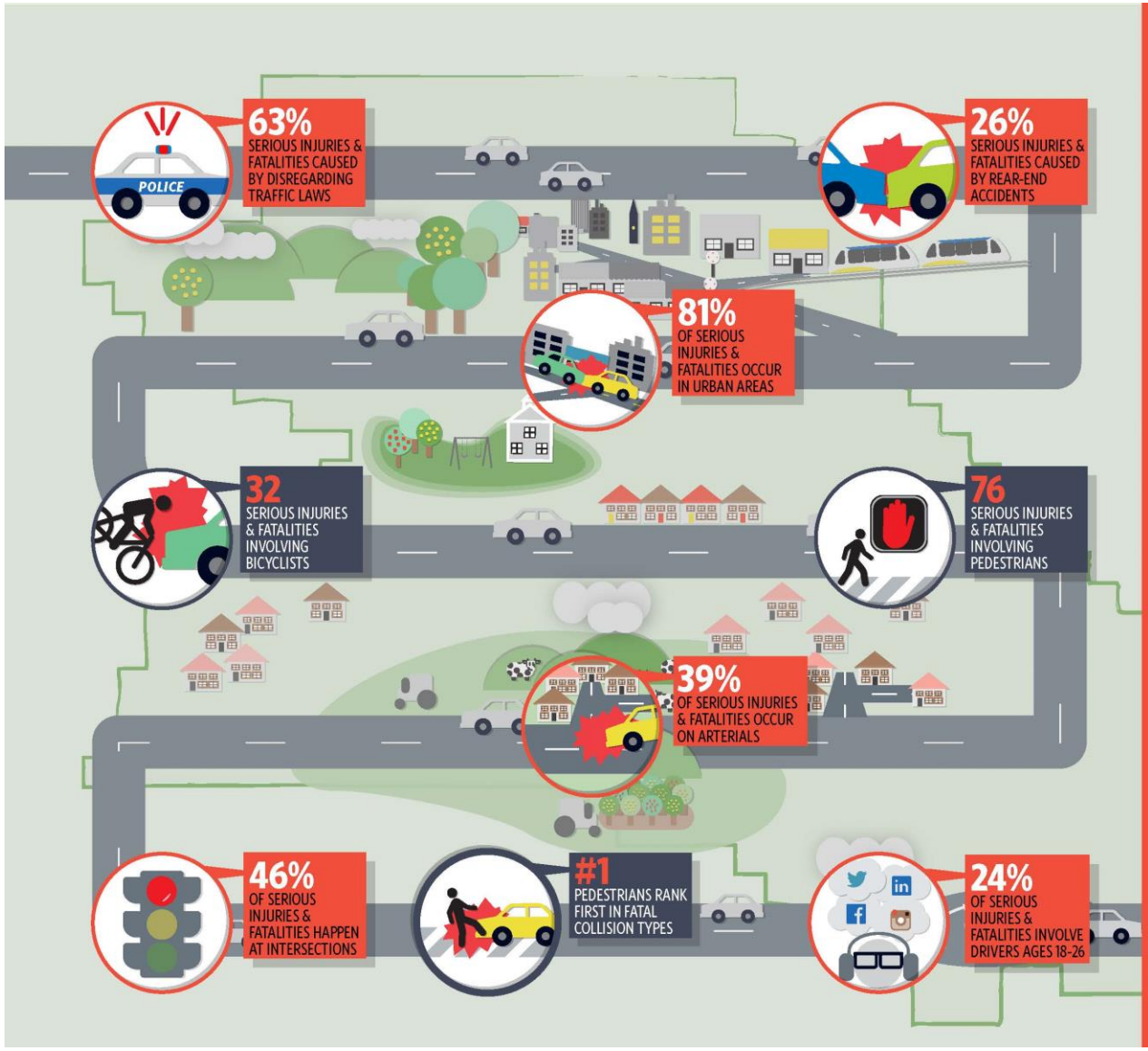
- **Engineering:** Roadway planning, design, traffic, maintenance, and operations;
- **Enforcement:** State and local law enforcement agencies;
- **Education:** Prevention specialists, communication professionals, educators, and community advocacy groups; and
- **Emergency Response:** First responders, paramedics, fire, and rescue.

Recent crash history shows that between 2010 and 2014, 80 people were killed, and 735 people were seriously injured in transportation-related crashes in Washington County. For comparison purposes, between 2009 and 2013, 1,675 people were fatally injured and 7,191 people were seriously injured in transportation crashes in Oregon[1]. Graph 1 shows the annual number of serious injuriy and fatality crashes in the county since 2004 that shows a general downward trend, with a large dip in 2008 due to a drop in volumes resulting from the economic decline. Current, unofficial data shows an upward trend in the number of crashes.

[1] Oregon Transportation Safety Action Plan, Cambridge Systematics, 2016

**Graph 1. Number of Fatalities and Serious Injuries in Washington County from 2004 through 2014**






# WASHINGTON COUNTY EXISTING CRASH SUMMARY

» BASED ON CRASH DATA COLLECTED BETWEEN 2010 AND 2014 THERE WERE **33,107** REPORTED CRASHES. OF THOSE, **735** RESULTED IN SERIOUS INJURY AND **80** RESULTED IN FATALITIES. THIS INFOGRAPHIC ILLUSTRATES THE CONTRIBUTING FACTORS TO SEVERE INJURIES AND FATALITIES CAUSED BY THESE ACCIDENTS ACCORDING TO THE CRASH DATA COLLECTED.

#1 Disregarding traffic laws is the ***number one*** cause of crashes

## HIGH CRASH CORRIDORS

TUALATIN VALLEY HWY
NW 185TH AVE
SW MURRAY BLVD
NW CORNELL RD

The contributing factors and attributes associated with the fatality and serious injury crashes were evaluated. The major trends include:

- Intersections are the primary location where serious injury and fatal crashes occur.
- Pedestrians-involved crashes have the highest number of fatalities (28 of 80 fatalities in the 5-year period). Pedestrian-involved crashes tend to correlate with pedestrians crossing, especially in the dark on arterial roadways often lacking street lighting.
- Rear-end and turning crashes have the highest frequency of serious injury crashes. A majority of these crashes (60%) occur in or near intersections.
- Crashes involving alcohol and drug impairment were often correlated with other contributing factors, such as speeding, pedestrians, and disregarding traffic laws. Half were associated with a driver hitting a fixed-object.
- Serious injury crashes occurred at a disproportionate rate per mile in urban areas.
- Drivers and/or passengers between the ages of 18-26 and 49-51 had the highest frequency of serious injury crashes.
- Disregarding traffic laws accounted for the majority of serious injury crashes.
- Crashes that included speeding often resulted in serious injury crashes.

Recognizing these trends, four focus areas were identified, and near-term and mid-term strategies to drive down crashes in these categories were specified. A third category of strategies called “as-possible” was also identified. As possible strategies are intended to be implemented through integration with other activities or if the opportunity arises but are not intended as a focus of activity for Washington County.

The focus areas are:

**Pedestrians -** In Washington County from 2010 through 2014, 28 of 80 transportation-related fatalities in the county were pedestrians (35%); further, 51 pedestrians were seriously injured in a crash (7% of all serious injuries).

- Nearly all pedestrian fatalities and serious injuries were in an urban part of the county.
- Half of the serious injury and fatalities involving pedestrians were at intersections, and 10 of 28 pedestrian fatalities occurred within 100 feet of a transit stop.
- Approximately two-thirds of the fatalities and serious injuries were in the dark.
- Pedestrians were involved in crashes including alcohol. Eleven of these crashes that involved serious injuries or fatalities listed the pedestrian as intoxicated.


**Speed -** From 2010 through 2014, 101 of the 815 fatalities and serious injuries (12%) in Washington County were speed-related. Speeding was:

- More common in rural crashes than urban;
- Involved in only 5% of serious injury and fatality crashes at intersections;
- The third most common contributing factor to serious injury and fatality crashes after "did not yield right-of-way" and "following too closely"; which in some cases might also be attributed to speeding; and
- Involved in 24 of the 100 alcohol-related serious injury and fatality crashes, and 8 of the 42 drug-involved serious injury and fatality crashes.

**Intersections –** Overall, 46% (375) of all serious injury and fatality crashes occurred at intersections. The most common intersection crash types during the study period were rear-end and turning-related crashes. Further, 51% of all pedestrian serious injury and fatality crashes (40 of 79) occurred at intersections. Intersection serious injury and fatality crashes are more common in urban parts of the county. Strategies to address intersection-related crashes in Washington County should focus on:

- Reducing rear-end and turning crashes; and
- Providing pedestrian (and bicycle) facilities to reduce conflicts; in urban parts of the county.

**Distraction and Impairment -** From 2010 through 2014, 154 people in Washington County were seriously injured or killed because of impaired driving (alcohol, drugs, or both). Fixed-object crashes were the most common impaired driving crash type; however, pedestrians and bicyclists were also involved. More young people (under 25) were seriously injured or killed. Strategies to address distracted and impaired driving in Washington County should include:

- Enforcement and education particularly targeted at younger people; and.
- Address the potential impacts of legalized recreational marijuana.

The strategies addresssing these focus areas are presented in the Strategies section of the document.

*This page is intentionally left blank.*

# Introduction

Transportation-related crashes account for over 30,000 deaths nationwide and are considered a leading cause of death in the U.S.[2] As a result, many agencies are undertaking a process to proactively identify and evaluate trends in their communities and develop strategies to reduce fatalities and serious injuries. These efforts are called Transportation Safety Action Plans (TSAPs). This document constitutes Washington County's first TSAP.

"Motor vehicle crashes are a leading cause of death in the U.S. More than 2.5 million drivers and passengers were treated in emergency departments as the result of being injured in motor vehicle crashes in 2012. The economic impact is also notable: in an one-year period, the cost of medical care and productivity losses associated with injuries from motor vehicle crashes exceeded $80 Billion" – Center for Disease Control and Prevention (CDC)

## Policy Framework

The analysis documented in this TSAP provides a guide for Washington County to reduce crash frequency and/or severity and improve public safety.

### National

In 2012 the Moving Ahead for Progress in the 21st Century (MAP-21) transportation bill was introduced to create a streamlined, performance-based surface transportation program that builds upon many of the already existing programs. In 2015 the Fixing America's Surface Transportation Act (FASTAct) provided ongoing funding for the next 5 years.

### State and Metro

**Goal 1: Safety**

"Provide a safe transportation system for all users."

– Washington County Transportation System Plan (Nov. 2015)

The draft Oregon TSAP 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. The Oregon TSAP establishes a coordinated, multidisciplinary approach to implementing transportation safety improvements that reduce injuries and save lives.

The Metro State of Safety Report was published in 2012 and provides a compilation of information on roadway-related crashes, injuries, and fatalities in the Portland Metro region and beyond. The Regional Transportation Plan calls for a 50% reduction in fatalities plus serious injuries for pedestrians, bicyclists, and motor vehicle occupants by 2035 as compared to 2005. The Metro Safety Report identifies a number of strategies for implementation. An update of the Regional Transportation Plan, currently underway to be adopted in 2018, is seeking to establish a target similar to the Oregon TSAP of eliminating deaths by 2035.

[2] http://www.nhtsa.gov/NCSA

## Washington County

The first goal of the Washington County Transportation System Plan (TSP) is "*to provide a safe transportation system for all users*". The safety section of the TSP includes objectives and strategies related to safety for all users. **Objective 1.2** states: "*Strategically monitor, evaluate, and respond to crash patterns and safety concerns.*" **Strategy 1.2.4** states: "*Consider developing a Transportation Safety Action Plan for Washington County or subsections or corridors of Washington County.*"

## Goals of the Washington County TSAP

The purpose of the Transportation Safety Action Plan (TSAP) is to identify policies, programs, and projects to reduce the number and frequency of the highest severity of crashes in Washington County. While the county aims to reduce the number of crashes overall, the focus of this TSAP is to develop strategies that will reduce the number of serious injuries (where the person's normal life functions are severely impacted) and fatalities. **The goal of this TSAP is to strive toward zero transportation-related serious injury and fatality crashes.**

Due to ongoing changes in the number of people living in the county, travel trends, technology, engineering practices, human behavior and transportation funding, it is expected that this goal will be achieved incrementally. The TSAP will be reviewed every 3 to 5 years as new safety data becomes available and other actions have been implemented.

This TSAP is intended to strengthen partnerships and collaboration between the 4 E's to work toward the goals, objectives, and strategies set forth in the TSP. This may involve a wide variety of actions to better address safety and/or develop new safety strategies and/or programs.

## The Four E's of Safety

When evaluating safety conditions and developing improvement strategies collaboration is crucial. The advisory committee assembled to create the TSAP was comprised of a diverse group of individuals representing many areas: county transportation staff, emergency services, enforcement, schools, interest groups (e.g., neighborhood groups, bicycle advocates, pedestrian advocates, public health groups), and other county residents. The TSAP encompasses a wide variety of strategies that align with the four E's of safety. The four E's of safety are described below:[3]

***Engineering**: Roadway planning, design, traffic, maintenance, and operations;*

***Enforcement**: State and local law enforcement agencies;*

***Education**: Prevention specialists, communication professionals, educators, and community advocacy groups; and*

***Emergency Response**: First responders, paramedics, fire, and rescue.*


[3] FHWA, http://safety.fhwa.dot.gov/hsip/resources/fhwasa1102/flyr3_in.cfm

# Study Area – Washington County

Washington County is approximately 727 square miles located in the northern Willamette Valley (see Figure 1) and has the second largest population of all the counties in the state of Oregon with approximately 529,000 residents.[4] Cities incorporated within Washington County include Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, Lake Oswego, North Plains, Portland, Rivergrove, Sherwood, Tigard, Tualatin, and Wilsonville.

**Figure 1. Washington County TSAP Analysis Area**


[4] Source: 2010 US Census. April 1, 2010
http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

Over 2,800 miles of roadway are within Washington County, of which about 1,300 miles are maintained by the County. These roads are fairly evenly split between urban and rural (657 miles of urban and 629 miles of rural).[5] The majority (374 of 639 miles) of the rural roads are classified as local roads providing connectivity through the county, while the urban roads are comprised of arterials, collectors, and local roads. Table 1 is a breakdown of the roadway types and mileage, per Washington County functional class.

**Table 1. Washington County Roadway Mileage by Functional Classification**

| Unincorporated Washington County Roadway Mileage by Functional Classification | Mileage | Percent of Total Miles |
|---|---|---|
| **Urban Area** | | |
| Arterial | 125 | 9.7 |
| Collector | 74 | 5.8 |
| Neighborhood Route | 83 | 6.5 |
| Local | 362 | 28.2 |
| Urban Total | 644 | 50.2 |
| **Rural Area** | | |
| Arterial | 74 | 5.8 |
| Collector | 191 | 14.9 |
| Local | 374 | 29.2 |
| Rural Total | 639 | 49.8 |
| **County Total** | **1283** | **100** |

The land area of the county is largely rural, with over 85% of the area outside the Urban Growth Boundary. The county is served by a variety of institutional land uses. Among these are 22 high schools, 28 middle schools, and 93 elementary schools. It has over 2,000 public parks (not all county-owned) including the popular Henry Hagg Lake.

Washington County is also a major hub for employment and home to several large performance apparel and technology companies, two of which are ranked in the top five employers in Oregon.

Table 2 provides information on population, employment, and education compared to the other major counties in the Portland Metro area and Oregon as a whole. As shown, Washington County is younger than other counties in the region, providing a large percentage of Oregon's employment and population.

[5] http://www.co.washington.or.us/LUT/TransportationServices/transportation-data.cfm

### Table 2. Summary of Oregon's Largest Counties

| | Washington County | Clackamas County | Multnomah County | Lane County | Oregon |
|---|---|---|---|---|---|
| Population | 529,710 | 375,992 | 735,334 | 351,715 | 3,831,074 |
| Household | 212,450 | 156,945 | 324,832 | 145,627 | 1,675,562 |
| Employment | 236,283 | 132,173 | 390,372 | 120,985 | 1,396,563 |
| Average Age of Resident | 35 | 40 | 36 | 39 | 38 |
| Bachelor's degree or higher[1] (%) | 39.7 | 32 | 40.3 | 28.2 | 30.1 |

*Source: Census Quick Facts*[6]
*[1] = persons older than 25*

[6] http://www.census.gov/quickfacts/table/PST045215/00

# What is Being Evaluated?

Washington County crash data from 2010 through 2014 was compiled from Oregon Department of Transportation's (ODOT) statewide crash database. To avoid data anomalies skewing the results, five years of crash data has been used to study trends and averages. The State of Oregon compiles the crash data from two sources: citizen reports and police reports, both of which are included in the database. In Oregon, motor vehicle crashes must be reported when:

- There is more than $1,500 in damages to a vehicle or other property
- Someone is injured (no matter how minor) or killed
- Any vehicle is towed due to crash

The Oregon Department of Motor Vehicles (DMV) compiles crash data for ODOT into the database. For each crash, the DMV data includes information, such as individuals and vehicles involved, general information regarding the crash type, location, conditions, errors, etc. The data evaluated and reported in this document is mostly related to serious injury and fatality crashes. More details on the data gathered are provided in Appendix A.

## Data Limitations

Even with extensive efforts to accurately collect and compile crash data, not all crashes are recorded and some may be incorrectly reported. Studies have shown that crashes with greater severity are reported with greater reliability than crashes of lower severity. Review of the data compiled in the Oregon crash database confirms this tendency.

Crash data may also contain only partial information, especially if self-reported. For instance, a report may fail to note the crash occurred in a school or work zone or that the driver was on a cell phone when the crash occurred. Self-reported drivers may fail to mention distracted driving behaviors, such as cell phone use, as they don't want a ticket. In addition, the location of the crash recorded is often an approximation. More details on the crash database are provided in ODOT's System Motor Vehicle Traffic Crash Analysis and Code Manual[7].

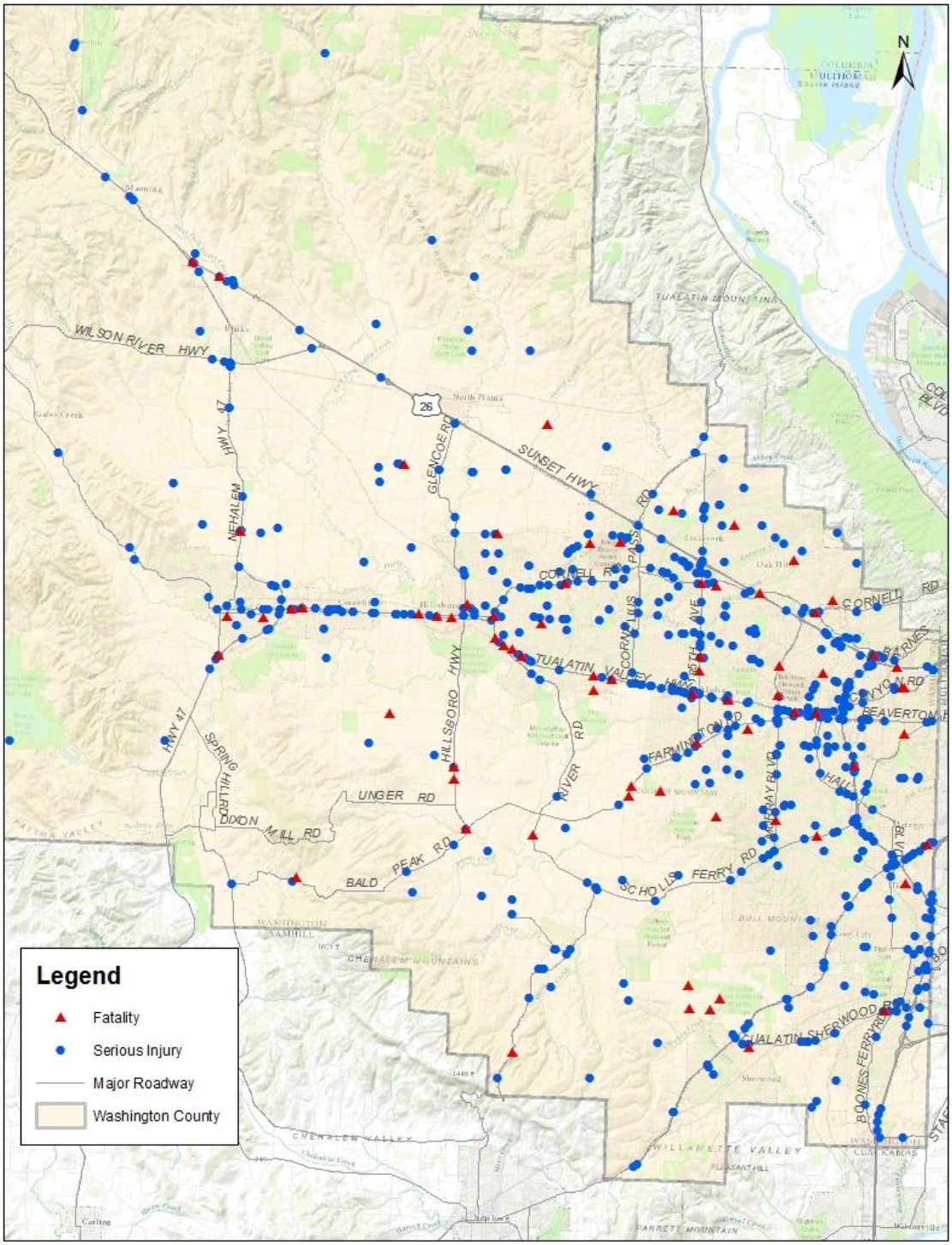
Timeliness of crash data availability is also an issue. Because of the time it takes to verify and compile the crash information, the data is often over a year old before it is release for analysis. For example, 2014 crash data was the most recent crash data available at the time the Washington County TSAP was started. The 2014 ODOT crash data was released June 2016.

[7] http://www.oregon.gov/ODOT/TD/TDATA/car/docs/CDS_CodeManual.pdf.

# Existing Transportation Safety Conditions

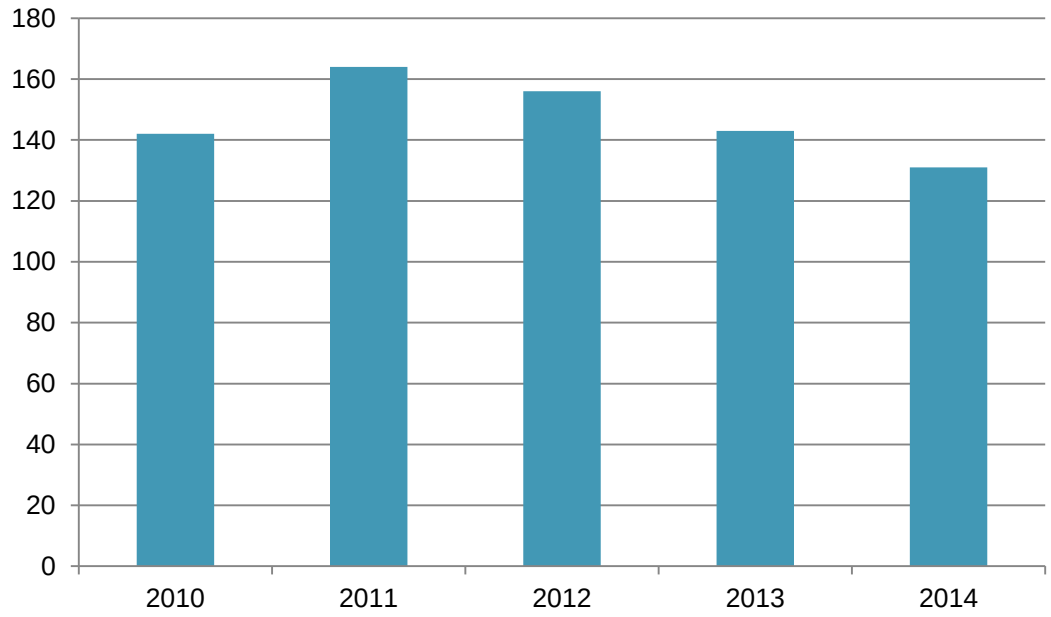
To inform this effort, it is important to understand recent crash trends and causes in Washington County. All serious injury and fatal crashes from 2010 through 2014 are mapped in Figure 2.

**Figure 2. Serious Injury and Fatality Crashes in Washington County (2010-2014)**



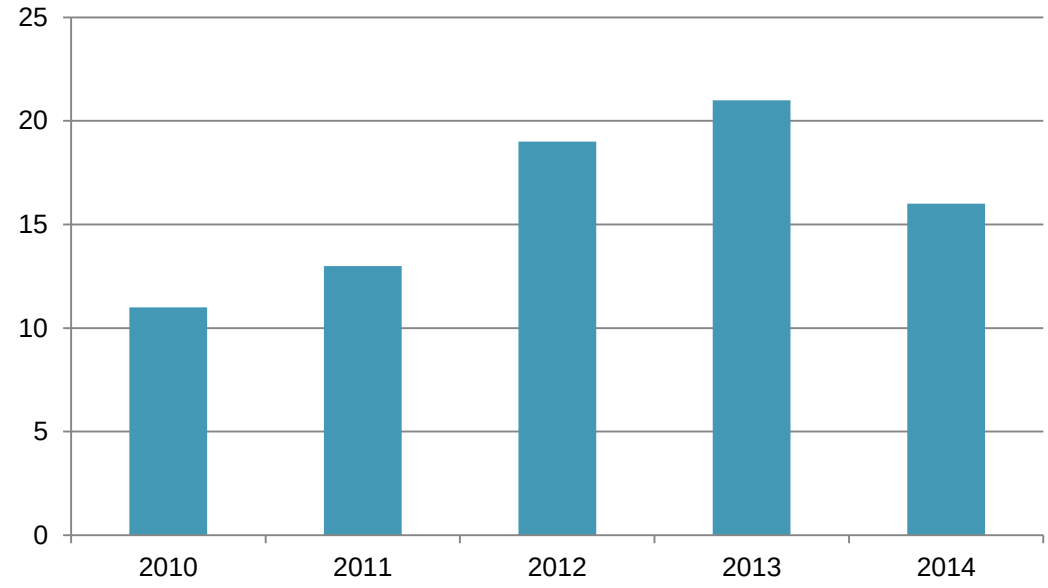
Graph 2 shows the number of serious crash-related injuries in Washington County each year from 2010 through 2014. As shown, serious injuries slightly decreased since 2011. Fatalities increased until 2013, when fatalities dropped in 2014 (see Graph 3).

**Graph 2. Total Serious Injuries in Washington County from 2010 through 2014**




*Source: ODOT's Crash Database 2010 to 2014*

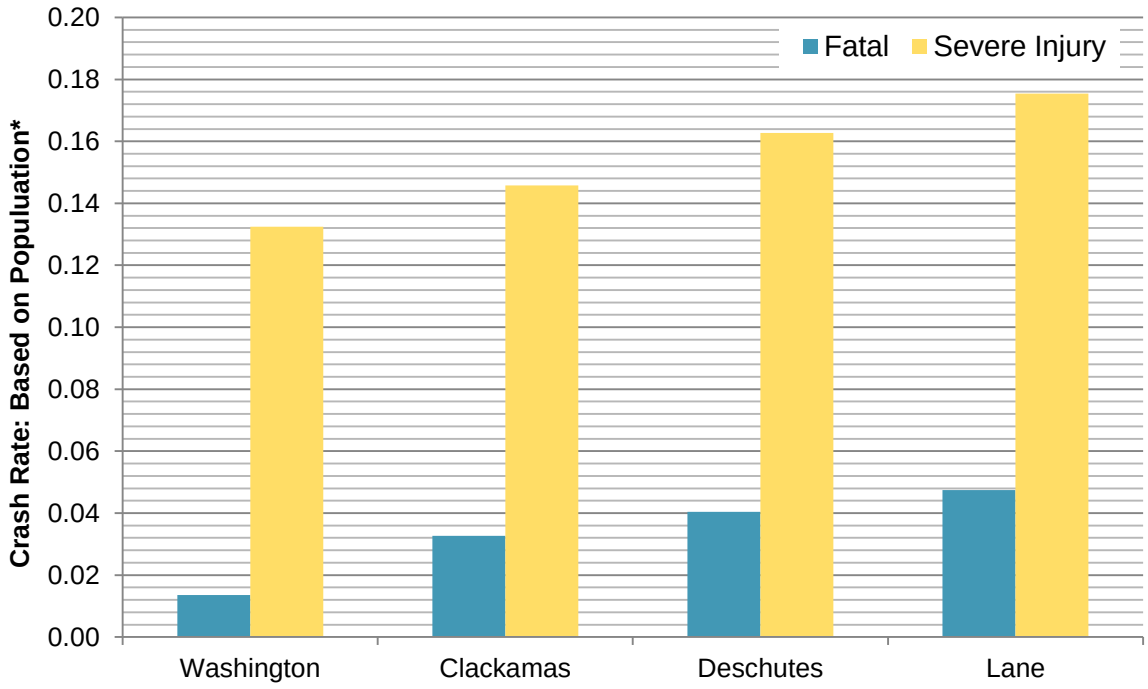
**Graph 3. Total Fatalities in Washington County from 2010 to 2014**




*Source: ODOT's Crash Database 2010 to 2014*

To gain a perspective of whether these values are high or low, the serious injury and fatality rate per capita in Washington County was compared to the same information for Clackamas, Deschutes and Lane Counties. These counties were selected for their comparable percentage of urban/rural split to Washington County. Graph 4 provides a visual comparison of these counties. Washington County and Clackamas County reported lower instances of serious injury and fatality crashes per capita.

**Graph 4. Serious Injury and Fatality Rate per Population (2010-2014)**



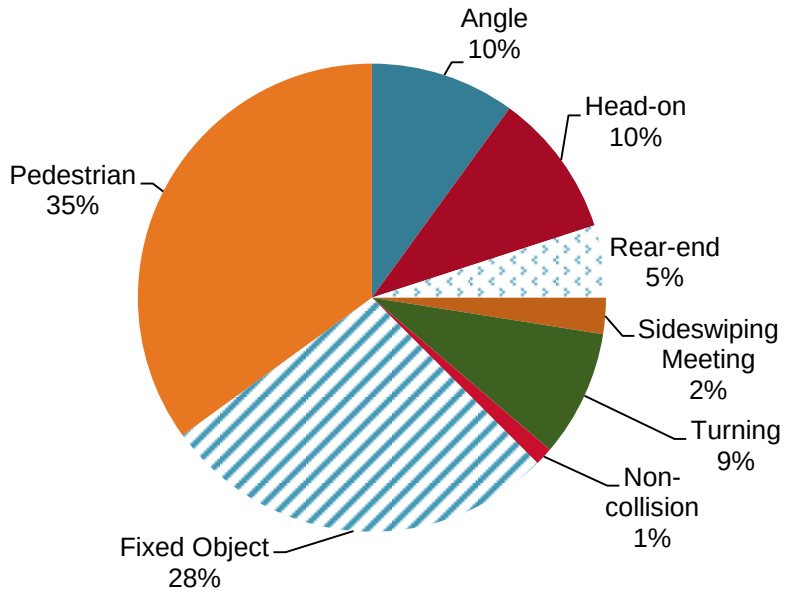

** Rate shown is Serious Injuries/ Population *100 and Fatalities/Population*100*

The following section outlines in more detail the Who, What, When, and Where of serious injury and fatality crashes.

## Crashes by Type

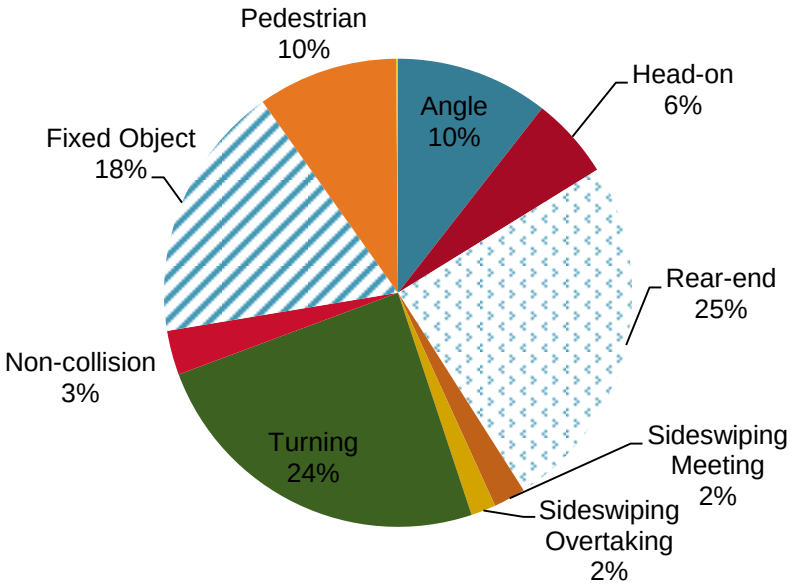
Graph 5 and Graph 6 show the distribution of fatalities by collision type and serious injuries and fatalities by collision type (as defined in the ODOT database, respectively).

### Graph 5. Washington County Fatalities by Collision Type (2010-2014)




** Collision Type is an ODOT category from the ODOT Crash Data*

### Graph 6. Washington County Serious Injuries and Fatalities by Collision Type (2010-2014)




** Collision Type is an ODOT category from the ODOT Crash Data*

## Common Elements

Pedestrian and fixed-object collision types account for the largest number of fatalities (22 of 80) in the county. The most frequent collision type for serious injury and fatality crashes are rear-end, turning, and fixed-object. This section summarizes the common elements associated with the higher frequency collision types resulting in serious injuries and fatalities.

Rear-end collision types accounted for the most frequent number (202 of 815) of serious injuries and fatalities combined but is only slightly more than turning crashes.
Figure 3 shows the location of the serious injuries and fatalities categorized as rear-end collision type; Figure 4 shows those classified as turning collision type, and Figure 5 shows those classified as fixed-object collision type. Rear-end crashes generally occurred close to intersections. There was a large concentration of serious injury crashes on the north end of OR 217. In addition, the roadway characteristics for the most frequent collision types are summarized in Table 3.

**Figure 3. Rear-end Crashes resulting in Serious Injuries or Fatalities (2010-2014)**

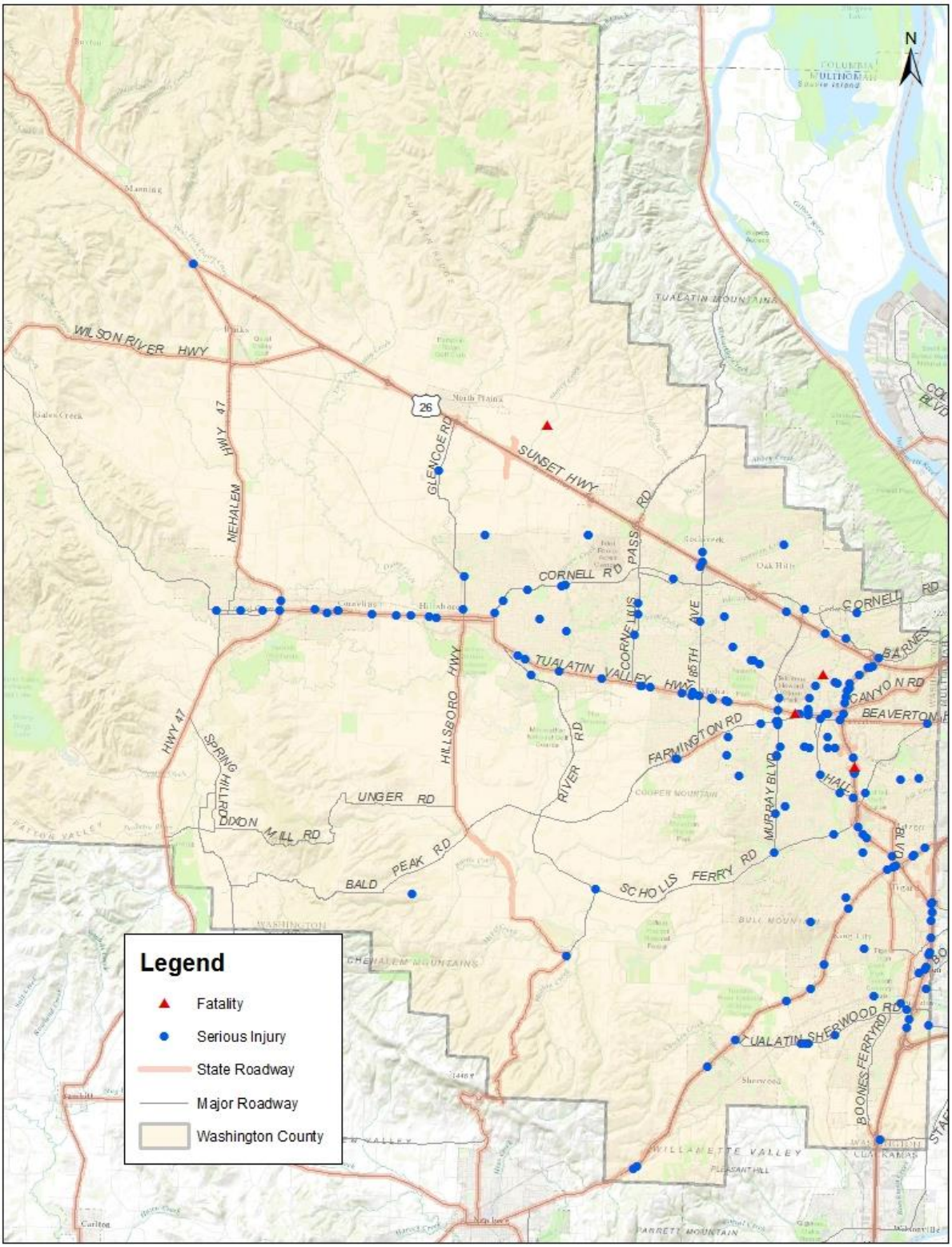


**Figure 4. Turning Crashes resulting in Serious Injuries or Fatalities (2010-2014)**

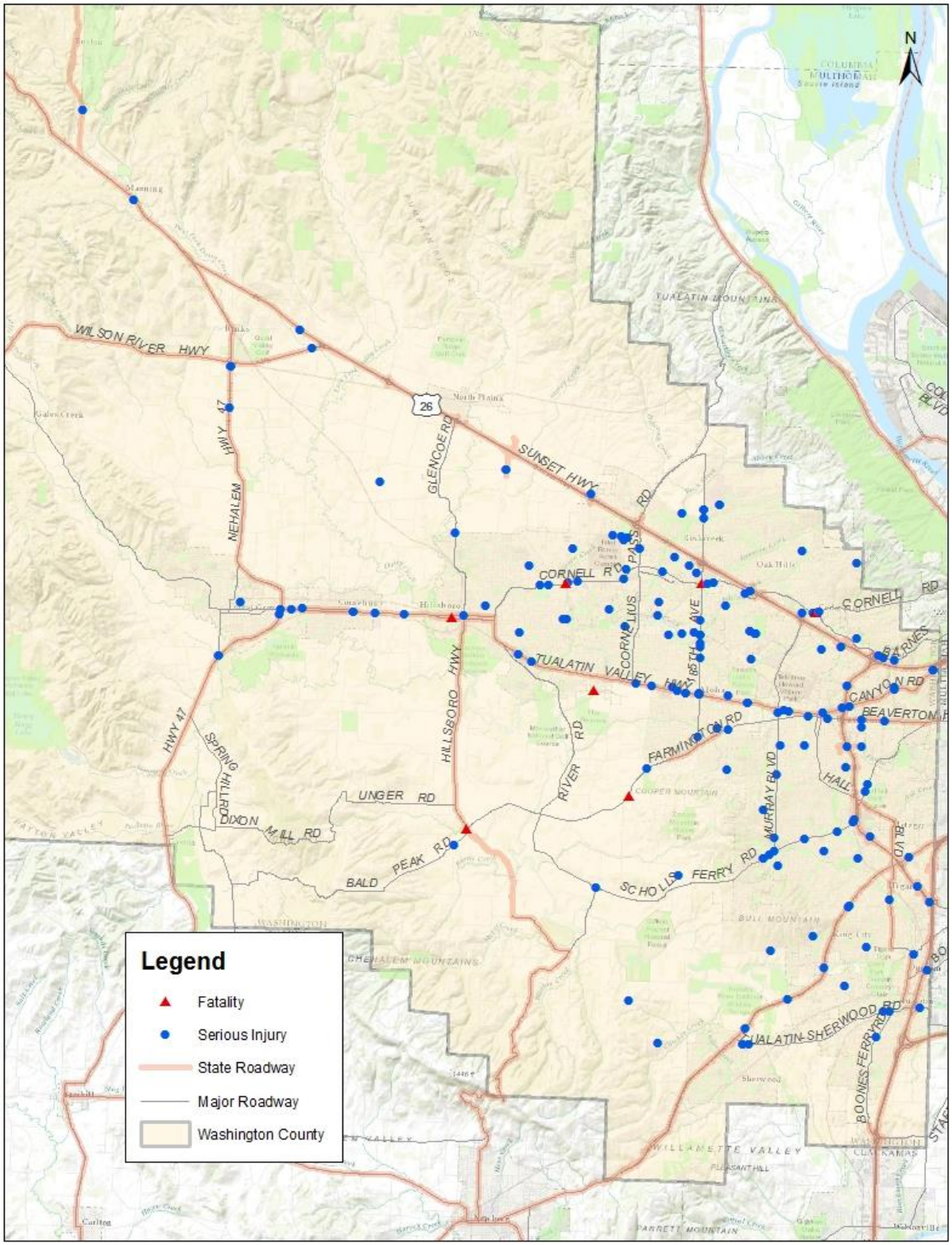


**Figure 5. Fixed-object Crashes resulting in Serious Injuries or Fatalities (2010-2014)**

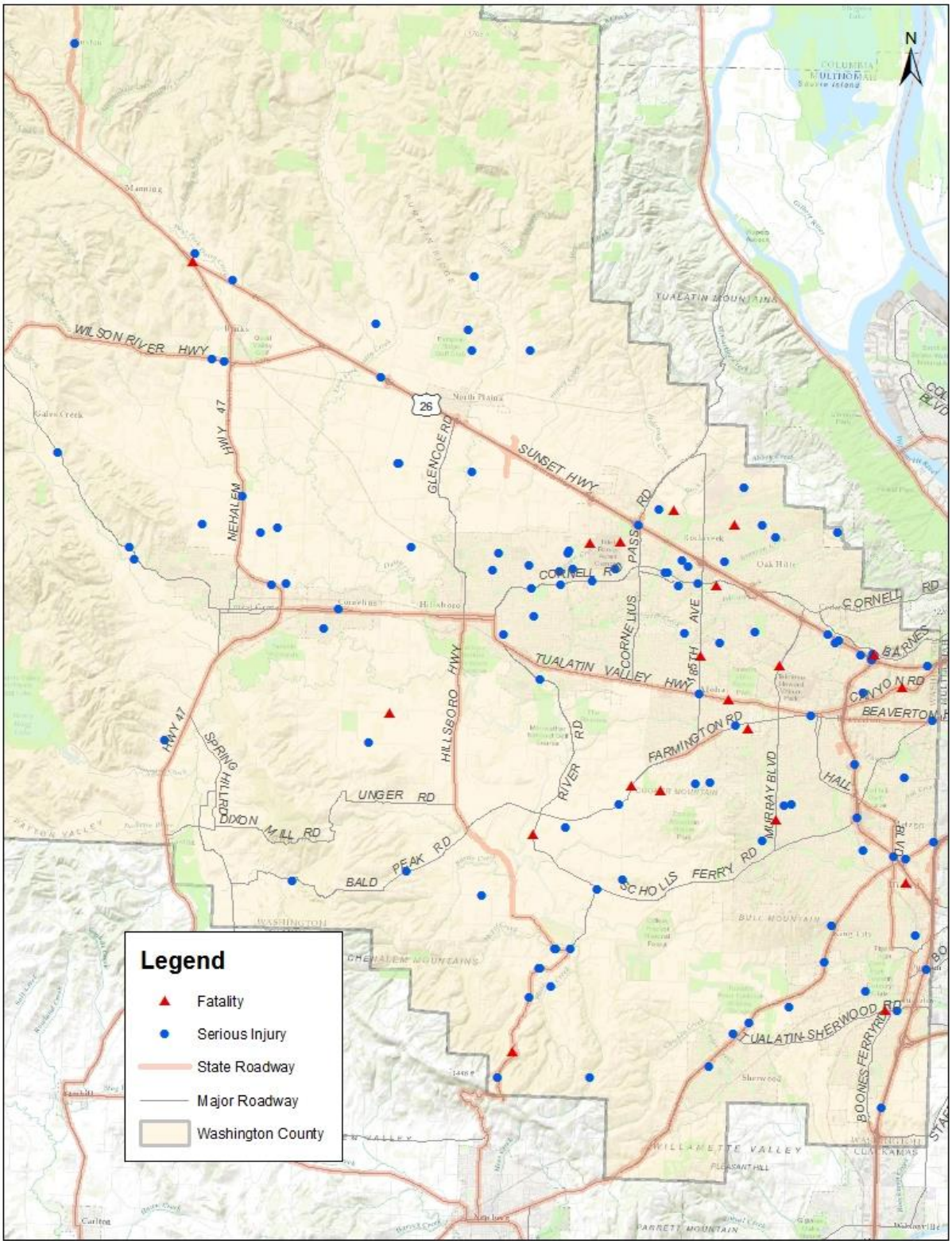


**Table 3. Roadway Character for Serious Injuries and Fatalities by Collision Type**

| Collision Type | Most Frequent | Second Most Frequent |
|---|---|---|
| Fixed-object | 44% Straight Roadways | 43% Roadway Curves |
| Rear-ends | 47% Straight Roadway | 39% Intersections |
| Turning | 82% Intersections | 14% Driveways |
| Pedestrian | 51% Intersections | 37% Driveway or Alley |
| All | 46% Intersections | 30% Straight Roadways |

Collision types were broken down further by weather, lighting, and alcohol/drug use. The following notable trends were observed:

- 52% of fixed-object serious injuries and fatality crashes occurred in dark conditions[8].
- Three collision types had highest frequency of serious injuries and fatalities during bad weather[9]:
  - Sideswiping meeting (67%)
  - Head-on (54%)
  - Sideswiping overtaking (50%)
- Of the alcohol-related crashes that resulted in serious injuries or fatalities, 50% (50) were fixed-object crashes, and 17% (17) involved pedestrians. Collectively, these were the most common alcohol-related crashes.
- Of the 41 serious injuries and fatalities related to drug use, the following were the most frequent collision types:
  - Head-on (22%)
  - Turn (20%)
  - Fixed-object (27%)

[8] This includes the classification of “darkness – w/street lights” and “darkness – no street lights”
[9] This includes the classification of “cloudy”, “rain”, “sleet”, “fog”, and “snow”

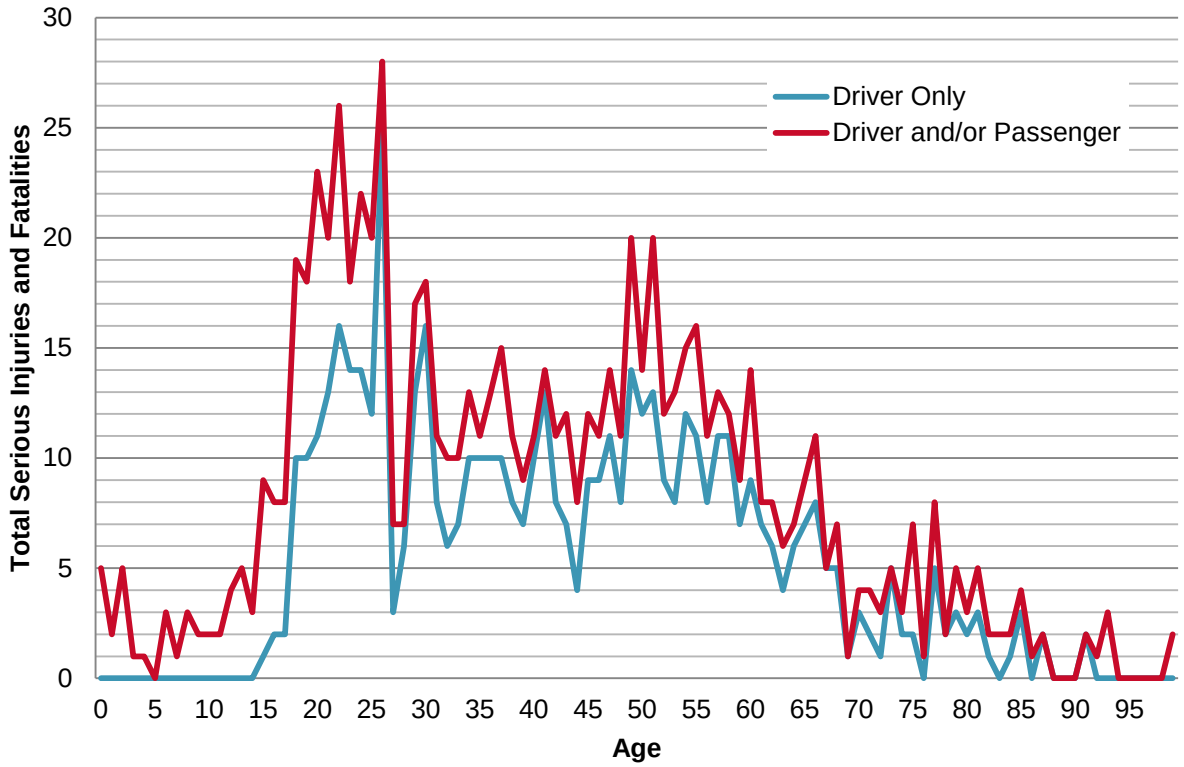
Table 4 shows the distribution of crashes by urban and rural locations. As shown, the majority (663 of 815) of the serious injury and fatality crashes occurred in urban areas.

**Table 4. Serious Injuries and Fatalities by Collision Type in Urban and Rural (2010 - 2014)**

| Collision Type | Urban | | Rural | | Total | |
|---|---|---|---|---|---|---|
| | Fatalities | Serious Injuries | Fatalities | Serious Injuries | Fatalities | Serious Injuries |
| Head-on | 3 | 15 | 5 | 23 | 8 | 38 |
| Rear-end | 3 | 192 | 1 | 6 | 4 | 198 |
| Turn | 5 | 176 | 2 | 16 | 7 | 192 |
| Fixed-object | 16 | 74 | 6 | 49 | 22 | 123 |
| Pedestrian | 26 | 51 | 2 | 0 | 28 | 51 |
| All | 58 | 605 | 22 | 130 | 80 | 735 |

When collision types were broken down by age, two primary trends materialize: people between the ages of 18-26 (24% of total crashes) and between the ages of 49-51 (7% of total crashes) had the highest frequency of serious injury and fatality crashes. When correlated with driver versus driver and passenger, there was a very noticeable peak of serious injury and fatality crashes at age 26 for drivers. As shown in Table 2, the average of Washington County residents is 35, which is younger than other comparable counties. Age-related crash information is represented in Graph 7.

**Graph 7. Serious Injury and Fatality Crashes by Age (2010-2014)[10]**




When collision types were broken down by vehicle classification the following notable trends were observed:

- The majority of crashes (80%+) included passenger vehicles, with the exception of the following collision types:
  - Head-on was 78% passenger vehicles, 16% trucks/motorhomes, and 5% motorcycle
  - Non-collision[11] was 30% passenger vehicles and 70% motorcycle

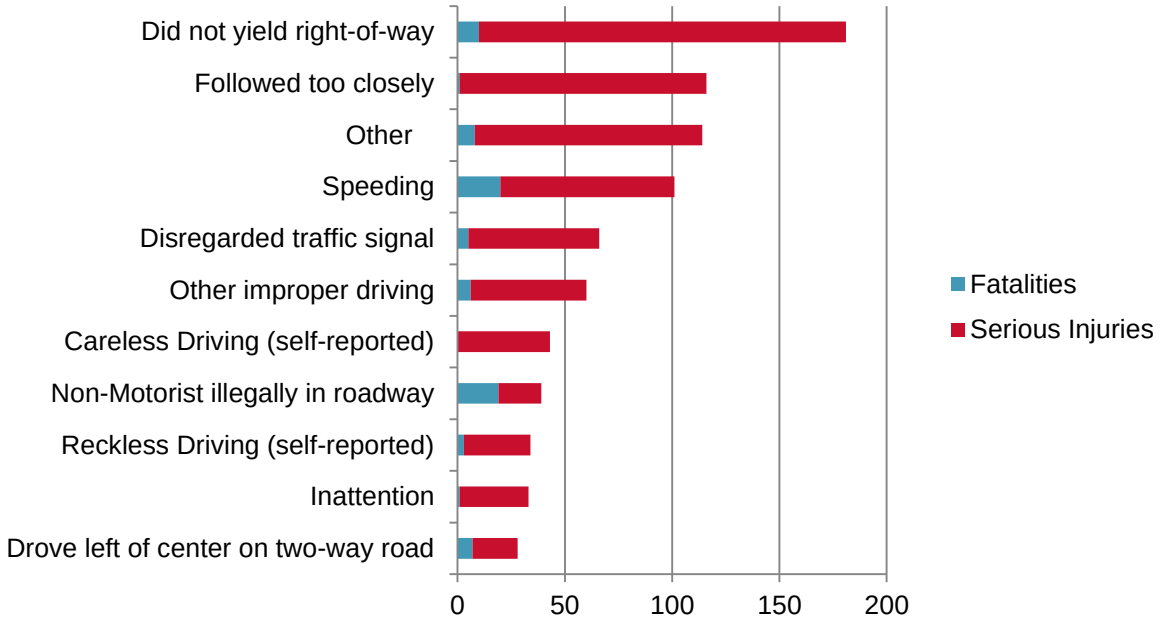
[10] Driver only category includes the participants recorded as Drivers. Driver and/or Passenger category includes passengers, pedestrians, bicyclists and drivers.

[11] Non-collision is a crash in which only one vehicle is involved and is not classifiable in another collision category (i.e. rollover).

## Serious Injuries and Fatalities by Crash Cause

ODOT has 36 categories to classify crash causes. Many of these crash causes have very few reported serious injuries or fatalities. Of the 36 categories, 11 represented approximately 78% of all serious injuries and fatalities (see Graph 8); all others were classified as the “other” category. It is important to note only one crash cause is included per crash, and there are often instances where multiple factors contributed to a crash but only one cause is selected. For example, speeding combined with following too closely could be the cause of a serious injury crash.

**Graph 8. Serious Injuries and Fatalities by Crash Cause[12] (2010-2014)**




[12] Speeding includes two categories: speed too fast for conditions (not in excess of the speed limit) and driving in excess of posted speed.

## Common Elements

The common crash causes include:

- The majority of the serious injury and fatality crashes involve disregarding traffic laws.
- Of the 100 serious injuries and fatalities involving alcohol use, the following three crash causes accounted for the majority (57%):
  - Speeding (24%)
  - Reckless Driving (18%)
  - Non-motorist illegally in the roadway (15%)
- Of the 41 serious injuries and fatalities related to drug use, the following three collision types accounted for the majority (57%):
  - Reckless Driving (22%)
  - Speeding (20%)
  - Drove left of center on two-way road (15%)

When the causes are broken down by the most frequent causes in urban and rural locations, trends varied between locations. Table 5 provides a summary of this comparison.

**Table 5. Serious Injuries and Fatalities by Crash Cause in Urban and Rural (2010 - 2014)**

| Crash Cause | Most Frequent | | Second Most Frequent | |
|---|---|---|---|---|
| | Fatal | Serious Injury | Fatal | Serious Injury |
| Urban | Non-motorist Illegally in roadway (29%) | Did not yield the right-of-way (25%) | Speeding (22%) | Followed too closely (18%) |
| Rural | Speeding (32%) | Speeding (25%) | Driving on the wrong side of the road (23%) | Did not yield the right-of-way (14%) |
| County-Wide | Speeding (25%) | Did not Yield the Right-of-Way (23%) | Non-motorist Illegally in roadway (24%) | Followed too closely (16%) |

## Alcohol and Drug-related Crashes

In Washington County, there were 100 serious injury and fatality crashes in the last 5 years that involved alcohol (see Table 6). This accounts for 12% of the fatal and serious injuries, which is lower than the national average. Drug use was involved in 41 serious injury and fatality crashes (another 5%).

**Table 6. Serious Injury and Fatality Crashes by Alcohol and Drug Use (2010 – 2014)**

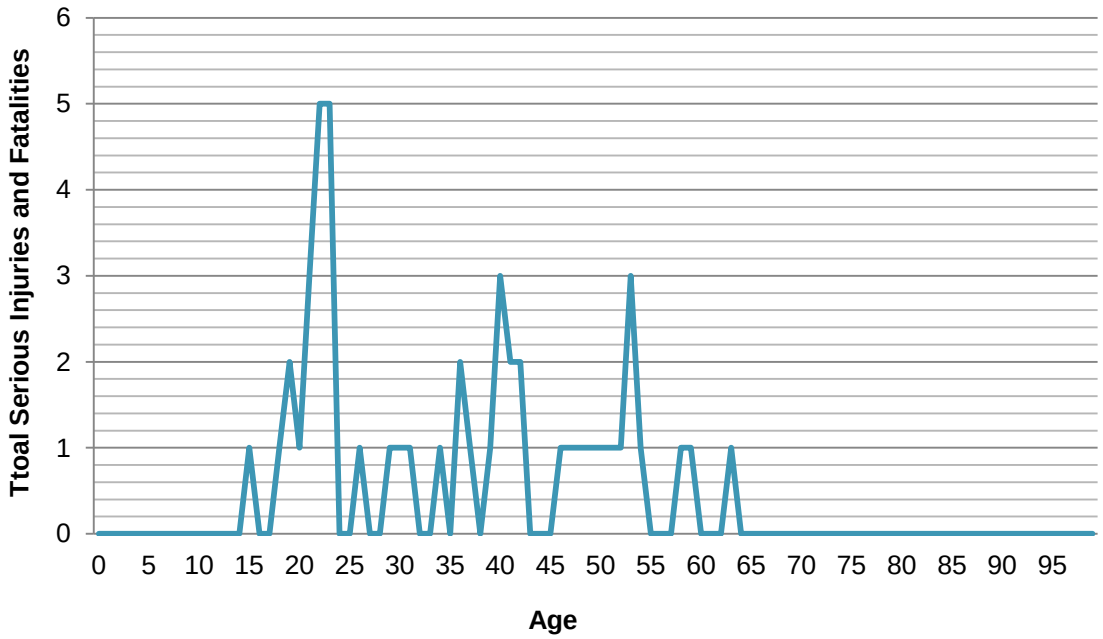
| | Fatalities | Serious Injuries | Total |
|---|---|---|---|
| Alcohol Involved | 23 | 64 | 87 |
| Drugs Involved | 12 | 16 | 28 |
| Both Involved | 6 | 7 | 13 |
| **Total** | **41** | **87** | **128** |

While alcohol and drugs alone was not the only contributing factor in serious injuries crashes county-wide, alcohol and/or drug use combined with another cause (e.g. speeding) was related to 53 of the 80 fatalities (66%). Additional data on crashes related to alcohol and/or drugs are as follows:

- Speeding and reckless driving were the main causes of serious injury and fatality crashes involving alcohol and drug use.
- Fixed-object crashes were the main collision type that resulted in serious injury and fatality crashes associated with alcohol and drug use.

When evaluated by age and by driver, the highest concentration of fatal and serious injuries to the impaired driver occurred around age 22 and 23, as shown in Graph 9. The Washington County resident average age is 35.

**Graph 9. Serious Injury and Fatality Crashes to Driver when Intoxicated (2010-2014)**



## Intersections

This section provides a summary of the crashes categorized at an intersection under roadway characteristics. There were a total of 351 serious injuries and 26 fatalities identified, with the location being at an intersection. Table 7 provides a summary of the intersection-related crashes by multiple factors: urban versus rural, collision type, and severity.

**Table 7. Serious Injuries and Fatalities at Intersections by Collision Type (2010 - 2014)**

| Collision Type | Urban Intersections | | Rural Intersections | | Total | | |
|---|---|---|---|---|---|---|---|
| | Fatalities | Serious Injuries | Fatalities | Serious Injuries | Fatalities | Serious Injuries | Total |
| Head-on | 1 | 3 | 0 | 0 | 1 | 3 | 4 |
| Rear-end | 2 | 73 | 0 | 4 | 2 | 77 | 79 |
| Turning | 5 | 146 | 1 | 11 | 6 | 157 | 163 |
| Fixed-object | 2 | 10 | 0 | 2 | 2 | 12 | 14 |
| Pedestrian | 10 | 27 | 0 | 0 | 10 | 27 | 37 |
| All | 21 | 320 | 5 | 31 | 26 | 351 | 377 |

Intersection-related crashes were evaluated for pedestrian and bicycle involvement, and the following was observed from the data:

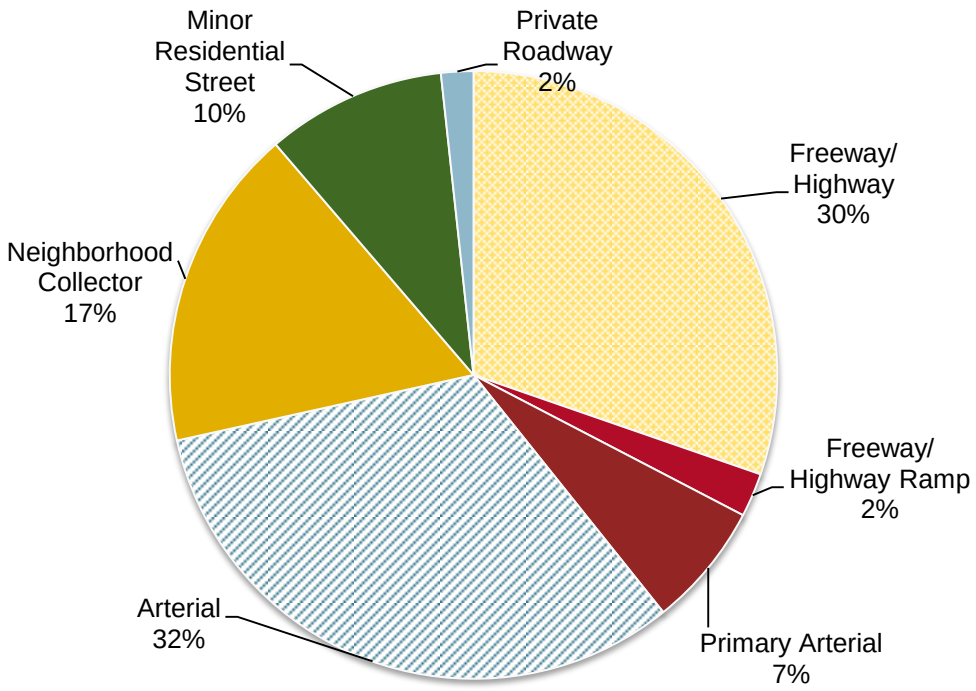
- Of the 32 bicycle-related serious injury and fatality crashes, 12 of them occurred at intersections (38%).
- Of the 76 pedestrian-related serious injury and fatality crashes, 37 occurred at roadway intersections and 27 occurred at driveway or alley access intersections with roadways (combined for 82%).
- 40% of the serious injury and fatality crashes at intersections are categorized as not yielding the right-of-way. 18% are pedestrian or bicycle-related.
- Speeding accounted for less than 5% of the serious injury and fatality crashes at intersections. None are pedestrian or bicycle-related.
- Alcohol and drugs were involved in less than 5% of the serious injury and fatality crashes at intersections. 19% are pedestrian or bicycle-related.

## Crashes by Roadway Mile (High Crash Corridors)

Roadway type (by ODOT functional class) is an easy way to understand the intended function of a roadway (see Graph 10) Freeways and highways generally have higher traffic volumes, more lanes of travel, and higher speeds. In Washington County, these roadways include U.S. 26, OR 6, I-5, I-205, OR 99W and OR 217. Primary arterials generally have the next highest traffic volumes and speeds, and local roads tend to have the lowest traffic volumes and speeds.

The distribution of serious injury and fatality crashes by roadway type for all roadways in Washington County is shown in Graph 10. The results show the higher traffic volume and higher speed roadway types tend to have the highest percentage of crash severity, with freeways, highways, and arterials accounting for over 70% of serious injury and fatality crashes.

**Graph 10 - Serious Injury and Fatality Crashes by ODOT Roadway Type* (2010-2014)**




**Graph includes roadways under state and local jurisdiction.*

As seen in Figure 6, specific roads and segments appear to have high serious injury and fatality crashes. Crash data for these roadways were analyzed to obtain a crash rate per mile for each corridor (see Table 8). For comparison purposes, ODOT's statewide average crash rate per mile for urban non-freeway is 15.2 and urban interstate is 16.5.[13] The crash rates on these roads are higher than ODOT's average rates. Additionally, the frequency of alcohol, pedestrian, and bicycle crashes is noteworthy along these corridors, especially Tualatin Valley Highway (OR 8).

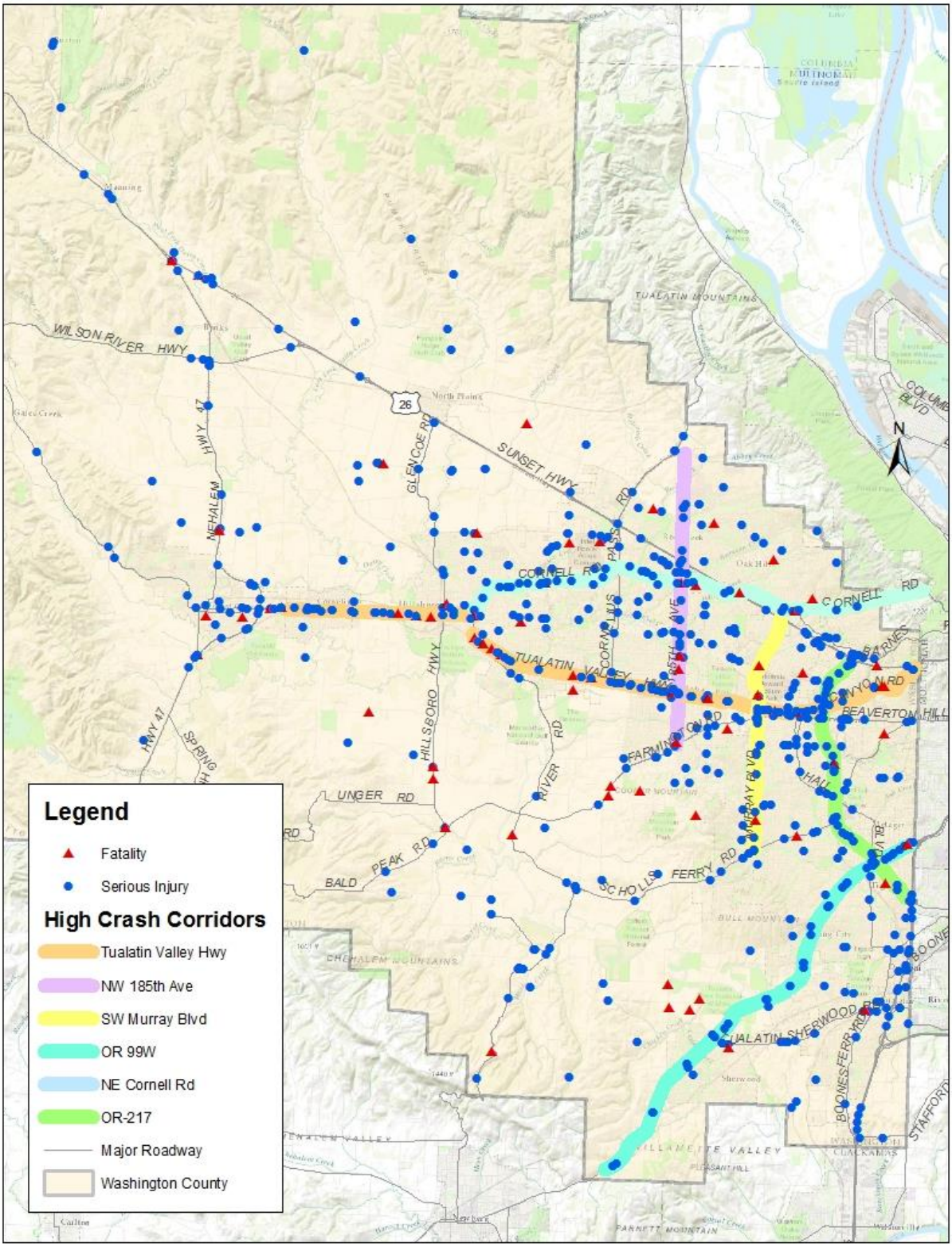
**Table 8. All Crash Summary for High Crash Corridors (2010-2014)**

| | ODOT Roadway Type | Length (mi.) | Total Crashes | Average Annual Crash Rate (per mi.) | Alcohol Crashes | Pedestrian/ Bicycle Crashes | Fatalities |
|---|---|---|---|---|---|---|---|
| Tualatin Valley Highway (OR 8) (Hwy 47 to I-5) | Primary Arterial | 20.9 | 3355 | 32.11 | 86 | 12 | 16 |
| NW 185th Avenue (Germantown Road to Farmington Road) | Primary Arterial | 6.3 | 1010 | 32.06 | 23 | 2 | 4 |
| SW Murray Boulevard (Cornell Road to Scholls Ferry Road) | Primary Arterial | 7.3 | 1331 | 36.47 | 36 | 3 | 4 |
| Highway 99W (I-5 to south Washington County boundary) | Highway/ Freeway | 7.5 | 1063 | 28.35 | 16 | 2 | 2 |
| NW Cornell Road (Main Street to Thompson Road) | Primary Arterial | 21.5 | 1868 | 17.38 | 58 | 7 | 1 |
| OR 217 (Hwy 26 to I-5) | Highway/ Freeway | 3.5 | 283 | 16.17 | 7 | 0 | 0 |

*Note: Total crashes includes all crashes occurred on the roadway not just fatal and serious injury type of crashes. Crashes are calculated by length of roadway. Calculation for Crash Rate=total crashes / (# of years X length of roadway)*

[13] https://www.oregon.gov/ODOT/TD/TDATA/car/docs/2014_Crash_Rate_Table_III.pdf

## Figure 6. Critical High Crash Corridors (2010–2014)



## Pedestrian and Bicycle Crashes[14]

Pedestrians and bicyclists are the most vulnerable users on the roadway. They have higher exposure and potential for injury simply because they do not have the protection of a vehicle surrounding them. Crashes involving pedestrians and bicyclists can result in serious injuries or fatalities and therefore are evaluated more closely. Figure 7 shows all pedestrian and bicycle crashes from 2010 through 2014, regardless of severity. The following shows the number of serious injury and fatality crashes for people walking or biking (from 2010 through 2014):

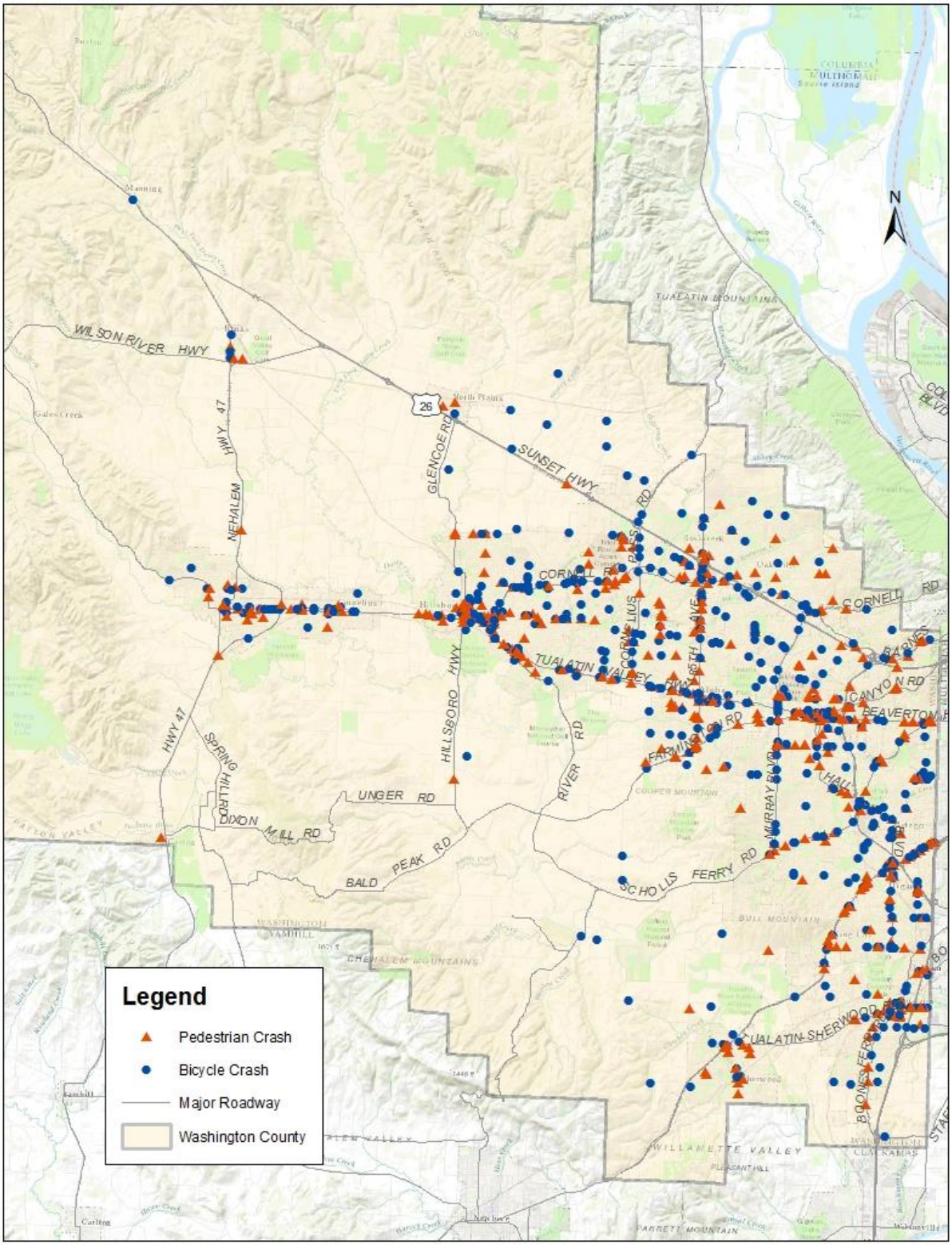
- 4 bicyclists and 28 pedestrians died in crashes
- 28 bicyclists and 48 pedestrians were seriously injured in a crash
- Overall in the county, the percentage of pedestrian-related fatalities (5.4%) and bicycle-related fatalities (less than 1%) are similar to state of Oregon average rates:
- The percentage of bicycle and pedestrian-related crashes (all severities) in Washington County (1.7% and 1.9%) are consistent with the Oregon statewide percentages but lower than other similar-sized counties in Oregon.
- 10 of the 28 pedestrian fatalities occurred within 100 feet of a transit stop.

Pedestrian and bicyclist-related serious injury and fatality crashes were evaluated for age. For pedestrians, those aged between 55 and 75 had the highest frequency of serious injury and fatality crashes. For bicyclists, those in their early 50s had the highest frequency of serious injury and fatality crashes.

As seen from Figure 7, the majority (78%) of pedestrian and bicycle-related crashes occurred on arterial roadways. These are also some of the areas with the highest bicycle and pedestrian use in the county.

[14] Pedestrian and Bicycle Crashes are crashes between a pedestrian and vehicle or a bicycle and vehicle. Bicycle only, bicycle vs. bicycle, and pedestrian vs. bicycle crashes are not included.

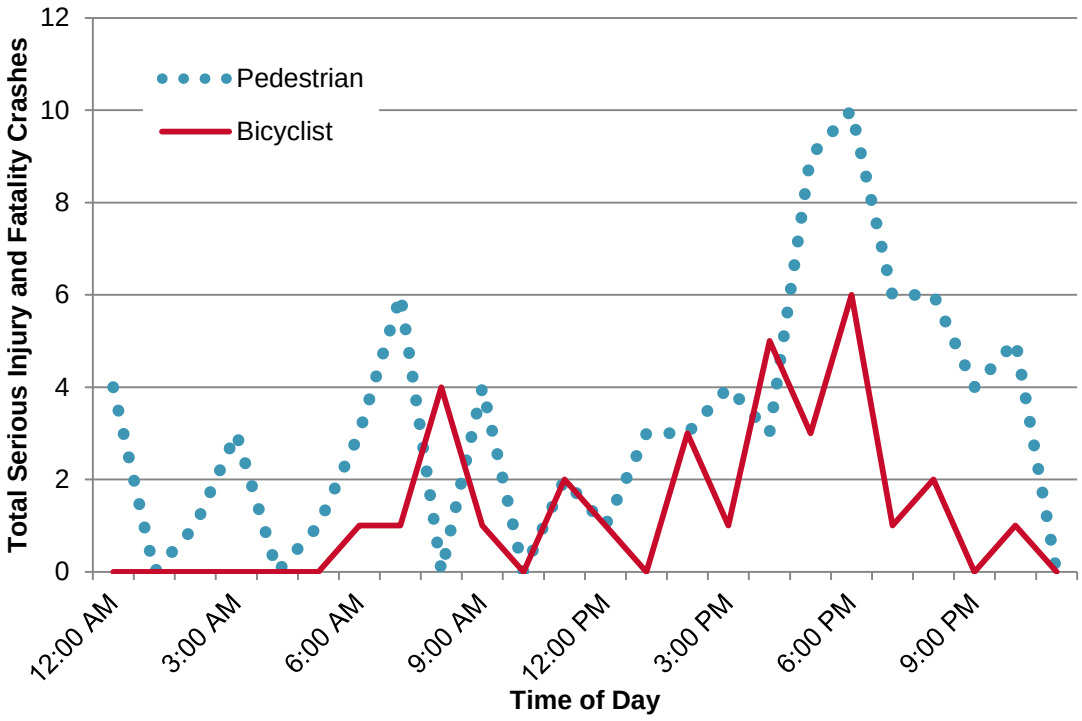
**Figure 7. All Pedestrian and Bicycle Crashes in Washington County (2010-2014)**



When pedestrian and bicycle serious injury and fatality crashes were further evaluated for trends in contributing factors, such as weather, time of day, and alcohol use, the following was observed in the data:

- 46% of pedestrian serious injury and fatality crashes occurred when it was cloudy and/or rainy out.
- 62% of pedestrian serious injury and fatality crashes (49) occurred when it was dark[15] out, and roughly half of those occurred in locations with no street lighting. Pedestrian and bicyclist crashes correlate to commute times to school and work (see Graph 11).
- Over 80% of bicyclist serious injury and fatality crashes (26) occurred during daytime hours[16] (see Graph 11).

**Graph 11. Serious Injury and Fatality Crashes by Time of Day for Pedestrians and Bicyclists (2010-2014)**




- 12 serious injury and fatality crashes involved intoxication of the pedestrian (11) and bicyclist (1).

[15] Dark is a lighting condition category from ODOT crash database.

[16] Daytime hours are between 6 a.m. to 7 p.m.

## Summary of Existing Transportation Safety Conditions

Through further analysis of collision types, crash causes, locations, and other variables, trends in the data can be observed. These trends include:

- Intersections are the primary location where serious injury and fatal crashes occur.
- Pedestrians-involved crashes have the highest number of fatalities (28 of 80 fatalities in the 5-year period). Pedestrian-involved crashes tend to correlate with pedestrians crossing, especially in the dark on arterial roadways often lacking street lighting.
- Rear-end and turning crashes have the highest frequency of serious injury crashes. A majority (60%) of these crashes occur in or near intersections.
- Crashes involving alcohol and drug impairment were often correlated with other contributing factors such as speeding, pedestrians and disregarding traffic laws. Half were associated with a driver hitting a fixed-object.
- Serious injury crashes occurred at a disproportionate rate per mile in urban areas.
- Drivers and/or passengers between the ages of 18-26 and 49-51 had the highest frequency of serious injury crashes.
- Disregarding traffic laws accounted for the majority of serious injury crashes.
- Crashes that included speeding often resulted in serious injury crashes.

Many other components were evaluated when analyzing the crash data in Washington County including school zones, vehicle classification, and time-of-day. No significant trends were identified in the available data. The data details presented in this report is provided in Appendix B.

# Transportation Safety Action Plan Best Practices

The purpose of the Transportation Safety Action Plan (TSAP) is to identify strategies that will help Washington County **strive toward zero transportation-related serious injury and fatality crashes.** While the County aims to reduce the number of crashes overall, strategies and resources will focus on areas that have the greatest potential to reduce the number of serious injuries (where the person's normal life functions are severely impacted) and fatalities.

Based on the trends in the existing conditions data and discussions with partner agencies, the following focus areas have been identified:

- Intersections
- Speeding
- Pedestrians
- Drug and Alcohol Impairment

It is also recommended that state and local agencies invest in focused studies on corridor-wide improvements on road segments that have higher serious injury and fatality crash rates. While there are several locations identified in the High Crash Corridor section, the three corridors with the highest crash rate are identified as priority locations for closer evaluation:

- Tualatin Valley Highway (OR 8)
- NW 185th Avenue
- SW Murray Boulevard

## Strategies

The strategies developed to meet the long-term overall goal of zero serious injury and fatality crashes are framed around the four E's (Engineering, education, enforcement, and emergency vehicle) and outlined below:

- Develop a set of potential engineering solutions that could be implemented to help reduce transportation-related serious injury and fatality crashes.
- Develop community-based solutions to improve education and outreach to help reduce transportation-related serious injury and fatality crashes.
- Develop tools for law enforcement to more effectively and efficiently assist in ways to help reduce transportation-related serious injury and fatality crashes.

- Develop tools for emergency services to ensure adequate response times and to help increase survivability rates.

- Develop policies to support safety strategies.

Strategies, including policies, programs, treatments, and projects, recommended for Washington County are summarized in Table 9. Implementation details of the proposed strategies are outlined in the Strategies and Implementation section of this report.

*This page is intentionally left blank.*

**Table 9. Systemic Engineering, Education, Enforcement, and Emergency Vehicle Best Practices**

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 1. Variable Speed Limit Signs | Variable Speed Limits (VSL) – modify advisory or regulatory speed limits based on road or weather conditions and restricting speeds during adverse conditions. | • Speeding | • A study of VSL applications indicated that variable speed limits could reduce crash potential by 5–17%, by temporarily reducing speed limits during risky traffic conditions when crash potential exceeded the pre-specified threshold [17]<br>• Applied to work zones, can help reduce rear-end crashes near intersections | • Engineering |
| 2. Improved Signal Visibility:<br>• Backplates<br>• Increased size of signal heads<br>• Improved line of sight<br>• Additional signal heads<br>• Next signal ahead | These treatments can improve visibility and advance warning for travelers near traffic signals. | • Intersections<br>• Pedestrians | • Improve signal visibility CMF values range from 0.71 to 1.004 depending on the amount of improvements made[18]<br>• Best applied in urban areas, addresses severity across the board<br>• The more components to improve signal visibility, the bigger impact (i.e., reflective tape and reflective backplates)<br>• Further guidance provided by FHWA[19] | • Engineering |
| 3. Improved Roadway Lighting | Improve roadway illumination, especially near pedestrian crossings. | • Pedestrians | • Improved illumination is especially important for improving nighttime visibility for older drivers [20]<br>• Improved intersection or street lighting can result in a 38% crash reduction at intersections and a 28% crash reduction for roadways[21]<br>• Could help reduce serious injury and fatal pedestrian crashes near crossing locations be providing better visibility | • Engineering |
| 4. Red-Light Improvements:<br>• Extension (Green-Light or Red light<br>• Red-light running cameras<br>• Confirmation Lights (Tattletale lights) | Improve compliance for motorists who disregard red lights at traffic signals. | • Speeding<br>• Intersections<br>• Pedestrians | • FHWA has cited studies that show as high as 50% reduction in crashes with Green-light extension[22]<br>• Recommend at urban and rural signals<br>• More effective when combined with enforcement<br>• Further guidance provided by FHWA[23] | • Engineering<br>• Enforcement |
| 5. Technology Enhancements to Support Connected Vehicles | Improving technology for compatibility with Connected Vehicles may help reduce the human error involved in crashes of all types. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Preliminary research shows significant crash reduction potential<br>• This may continue to grow in importance as Automated or connected vehicle technology improves<br>• Can help reduce the number crashes related to human error | • Engineering |

[17] C. Lee, B. Hellinga, and F. Saccomanno, "Evaluation of variable speed limits to improve traffic safety," *Transp. Res. Part C Emerg. Technol.*, vol. 14, no. 3, pp. 213–228, Jun. 2006.

[18] Sayed, T., El Esawey, M., and Pump, J., "Evaluating the Safety Impacts of Improving Signal Visibility at Urban Signalized Intersections." 2007 TRB 86th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#07-135, Washington, D.C., (2007)

[19] US DOT Federal Highway Administration. "Safety." September 2014. *Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running*. http://safety.fhwa.dot.gov/intersection/conventional/signalized/rlr/rlr_toolbox/chap3.cfm. June 2016.

[20] Easa S, Reed M, Russo F, Dabbour E, Mehmood E, Curtis K. Effect of increasing road light luminance on night driving performance of older adults. International Journal of Applied Science, Engineering and Technology. 2010; 6(1):41–48.

[21] ODOT CRF Appendix, 2015

[22] http://safety.fhwa.dot.gov/intersection/conventional/signalized/rlr/rlr_toolbox/chap3.cfm

[23] US DOT Federal Highway Administration. "Safety." September 2014. *Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running*. http://safety.fhwa.dot.gov/intersection/conventional/signalized/rlr/rlr_toolbox/chap3.cfm. June 2016.

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 6. Geometric Improvements:<br>• Roundabouts<br>• Right-turn channelization islands<br>• Reduced intersection corner radii<br>• Corner truck aprons<br>• Improved skewed/offset intersections<br>• Turn Lanes | Improvements at intersections including channelization, roundabouts, or geometric designs to reduce the number and severity of intersection-related crashes. | • Intersections<br>• Speeding<br>• Pedestrians | • Converting existing signal to a roundabout CMF values range from 0.29 to 1.92 depending on crash type[24]<br>• Provide consistent standards that are used for all intersections<br>• A major synthesis of research on left-turn lanes demonstrated that exclusive turn lanes reduce crashes between 18 to 77% (50 % average) and reduce rear-end collision types between 60 and 88%<br>• A study of roundabouts in several locations found a 51% reduction in crashes, including a 73% reduction in injury crashes and a 32% reduction in property-damage-only crashes for single-lane roundabouts. Multi-lane roundabouts only experienced a 29% reduction in crashes[25]<br>• One study of four intersections that were replaced with roundabouts in Maryland found a drop in crashes between 18 and 29 % and a reduction in injury crashes between 63 and 88%. The cost of crashes at these locations – one measure of severity – was also reduced by 68%[26] | • Engineering |
| 7. Road Reconfiguration (road diet, lane width reductions) | Road reconfigurations can help reduce speed and increase driver awareness of the surroundings which will help address related to speeding or traveling to fast for the conditions. | • Speeding<br>• Pedestrians | • An evaluation of lane reduction "Road Diet" Measures on crashes found that depending on site characteristics a reduction in crashes could vary from 19 to 29%[27]<br>• Road reconfigurations are best applied in urban areas, especially where pedestrian use is higher<br>• Road reconfigurations can also help reinforce slower speeds for automobiles | • Engineering |
| 8. Signal Timing Improvements:<br>• Updated time-of-day plans<br>• Advanced Dilemma Zone Detection/Protection<br>• Traffic Conditional Permissive Movements | Continue to update and monitor signal timing protocols to reduce the likelihood of crashes near intersections. Advanced Dilemma-Zone Detection systems modify signal timing to reduce the number of drivers that may have difficulty deciding whether to stop or proceed during a yellow phase. Traffic Conditional Permissive movements could include terms like Gap Dependent Flashing Yellow Arrows. | • Intersections<br>• Pedestrians | • A 2010 TxDOT study showed a 58% reduction in red-light violations and 39% reduction in serious injury crash frequency after implementing Advanced Dilemma Zone Detection[28]<br>• No studies have been completed, Washington County has just begun to incorporate some of these features<br>• Recommend at urban and rural signals<br>• More effective when combined with enforcement | • Engineering<br>• Enforcement |
| 9. Speed Reduction Options:<br>• Transverse or optical speed bars<br>• Speed limit pavement legends<br>• Traffic Calming | Utilize roadway design, signing and striping options to reinforce slower speeds. | • Speeding | • Optical Speed Bars or Transverse Markings have shown the ability to reduce 85% speeds by 2-7% [29]<br>• A 10% reduction in mean speed has a CMF of .68 for fatal crashes and .85 for serious and minor injury crashes. A 15% reduction in mean speed has a CMF of .56 for fatal crashes and .78 for serious and minor injury crashes [30] | • Engineering |

[24] Gross, F., Lyon, C., Persaud, B., Srinivasan, R., "Safety Effectiveness of Converting Signalized Intersections to Roundabouts." Presented at the 91st Annual Meeting of the Transportation Research Board, Paper No. 12-1658, Washington, D.C., (2012) Results also published in Accident Analysis and Prevention, Volume 50, January 2013, pages 234-241.

[25] Jacquemart, G., 1998, Synthesis of Highway Practice 264: Modern Roundabout Practice in the United States, National Cooperative Highway Research Program, National Academy Press, Washington, D.C

[26] Meyers, E. J., 1999, Accident Reduction with Roundabouts, Paper presented at the 69th Annual ITE Meeting, Las Vegas, Nevada.

[27] Persaud, Bhagwant and Craig Lyon. "FHWA Research and Technology ." June 2010. *Evaluation of Lane Reduction "Road Diet" Measures on Crashes.* http://www.fhwa.dot.gov/publications/research/safety/10053/. June 2016.

[28] Federal Highway Administration (FHWA). "Safety." May 2009. *Advanced Dilemma-Zone Detection System.* http://safety.fhwa.dot.gov/intersection/conventional/signalized/tech_sum/fhwasa09008/. June 2016.

[29] Federal Highway Administration (FHWA). "Safety." May 2009. *Engineering Countermeasures for Reducing Speeds.* http://safety.fhwa.dot.gov/speedmgt/ref_mats/eng_count/. June 2016.

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 10. Pedestrian and Bicycle Crossing Improvements:<br>• Improved crossings<br>• Additional crossings<br>• Fill in gaps in the sidewalk network<br>• Curb extensions<br>• Median refuges<br>• Countdown Signal Indication<br>• Exclusive signal phases<br>• Leading pedestrian interval<br>• High visibility crossings and lanes | Pedestrians and Bicycles are over-represented in the serious injury and fatal crashes. The County should continue to implement projects using the Bicycle Toolkit. Many other potential countermeasures are available and the improvement should be tailored to the issues at a specific location, and in some cases combined with other countermeasures. | • Pedestrian | • Individual focused studies needed to determine the appropriate application based on the exiting geometry and crash causes.<br>• Curb extensions can reduce pedestrian crashes with marked crosswalks by up to 37%.[31]<br>• Leading pedestrian interval has been shown to reduce an average of a 37% reduction in pedestrian vehicle crashes at intersections with CMFs ranging from .55 to .71 pending the site circumstances with higher reductions at intersections with higher pedestrian volumes.[32] | • Engineering |
| 11. Pedestrian and Bicycle Infrastructure Improvements:<br>• Wider sidewalks<br>• Advanced warning signs<br>• Bike facilities (protected or separated)<br>• Colored pavement markings<br>• Bike box<br>• Profiled striping along bike lanes.<br>• Review of transit stop locations and treatments | Pedestrians and Bicycles are over-represented in the serious injury and fatal crashes. The County should continue to implement projects using the Bicycle Toolkit. These infrastructure improvements should be tailored based on the safety issues at the site of the improvement. | • Pedestrian | • Individual focused studies needed to determine the appropriate application based on the exiting geometry and crash causes<br>• Colored bike pavement markings can reduce crashes at conflict points up to 39% in urban areas.[33]<br>• Bicycle lanes (traditional or separated) can provide significant reductions in bike-involved crashes from 36% with a traditional bike lane, 47% when including a buffer, and up to 59% for a cycle track.[34] | • Engineering |
| 12. Speed Enforcement Signs (Mobile and Fixed):<br>• Speed Feedback Sign<br>• Speed Activated Warning Sign<br>• Speed Activated Speed Limit Reminder Sign | Signs provide driver feedback on their speeds relative to posted speeds. | • Speeding | • Speed Feedback Signs has shown the ability to lower 85% speeds by 2-69% pending the location, duration and setting. The areas that have seen the greatest reductions have generally been in School Zones. [35] | • Engineering<br>• Enforcement<br>• Education |

[30] Elvik, R., Christensen, P., and Amundsen, A., "Speed and Road Accidents an Evaluation of the Power Model." Oslo, Norway, Transportokonomisk Institutt, (2004)

[31] ODOT CRF Appendix, 2015

[32] Fayish, A.C. and F. Gross. (2009) "Safety Effectiveness of Leading Pedestrian Intervals Using the Empirical Bayes Method." TRB 88th Annual Meeting Compendium of Papers CD-ROM. Washington, D.C.

[33] ODOT CRF Appendix, 2015.

[34] ODOT CRF Appendix, 2015

[35] Federal Highway Administration (FHWA). "Safety." May 2009. *Engineering Countermeasures for Reducing Speeds.* http://safety.fhwa.dot.gov/speedmgt/ref_mats/eng_count/. June 2016.

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 13. Access Management:<br>• Right-in/right-out<br>• Driveway consolidation<br>• Medians<br>• Increased spacing between access points and intersections<br>• Use of frontage roads and side streets for access.<br>• Driveway spacing, location and design guidelines<br>• Update roadway standards for project development | Access Management can reduce the number and severity of turning-related collision types, especially in the intersection influence areas and on high speed facilities.<br><br>Update or modify driveway standards or policies to reflect importance on protecting safety of the traveling public in addition to serving business needs and improving operations of the adjacent roadways. | • Intersections<br>• Pedestrians<br>• Speeding | • According to an analysis of crash data in seven states, raised medians reduce crashes by over 40% in urban areas and over 60% in rural areas[36]<br>• Raised medians also provide extra protection for pedestrians. A study of median treatments in Georgia found that raised medians reduced pedestrian-involved crashes by 45% and fatalities by 78%, compared to two-way left-turn lanes.[37]<br>• Closure and relocation of driveways away from intersections show CMF values as high as 1.67<br>• Most effective application of access management is near major intersections and in roadway sections with high driveway densities<br>• An overabundance of driveways also increases the rate of car crashes. An examination of crash data in seven states indicated found a strong linear relationship between the number of crashes and the number of driveways[38] | • Engineering |
| 14. Targeted Enforcement:<br>• Impaired driving<br>• Speeding<br>• Following closely<br>• Age groups<br>• Events/venue focused<br>• Traffic cameras/for tracking impaired and aggressive drivers | Enforcement is critical to successful implementation of the safety program. With limited resources it is critical to focus enforcement on those areas that will most reduce serious injury and fatal crashes. | • Alcohol and Drug Impairment<br>• Speeding | • Targeted enforcement requires identifying the specific locations that have high number and severity of crashes due to these characteristics. Limited data is available on the success of crash number and severity reduction as enforcement is usually tracked by tickets not crashes. | • Enforcement<br>• Education |
| 15. Positive Culture Framework | Positive Culture Framework (PCF) is an approach that improves health and safety in communities and organizations by building on shared values, beliefs and attitudes that already exist in a culture to promote health and safety. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Positive Culture Framework is larger change in social norms and has no known CRFs or studies on effectiveness, but will be a critical part to long shifts in funding, policy and priorities to change behavior. | • Education |
| 16. Media Outreach/Campaigns:<br>• Speeding<br>• Following closely<br>• Drunk Driving<br>• Bicycle/Pedestrian Safety<br>• All Intersections are Crosswalks<br>• Designated driving programs (new app)<br>• Diversion education programs (evidence-based) | Utilize campaigns to further awareness of key contributors of serious injury and fatal crashes. Implement evidence-based public awareness campaigns for distracted walking, and pedestrian safety aimed at all age groups. Build traffic safety information for K-12 education curriculum. | • Speeding<br>• Pedestrian<br>• Alcohol and Drug Impairment | • Media campaigns for drunk driving have been found to reduce alcohol-related crashes by 13%[39]<br>• Outreach to locations where "over-serving" violations by OLCC have been served can help target locations more likely than others to have patrons who will attempt to drive impaired.<br>• Media campaigns vary widely in effectiveness pending the tactics used and audience targeted. Campaigns that are targeted to specific age groups have shown higher effectiveness in changing behavior.<br>• Media coverage of automated speed enforcement cameras has a CMF of .9 for fatal, serious injury and minor injury crashes.[40]<br>• According to the Federal Highway Administration, states and cities that conduct strong community education on pedestrian safety report declines in fatality rates. Targeted communication can teach pedestrians, drivers and cyclists of all ages about traffic laws and to understand how their actions contribute to safe communities.[41] | • Education |

[36] Gluck, J., H. S. Levinson, and V. Stover. (1999), Impacts of Access Management Techniques, NCHRP Report 420, Transportation Research Board.

[37] Parsonson, P. S., M. G. Waters III, and J. S. Fincher. (2000), Georgia Study Confirms the Continuing Safety Advantage of Raised Medians Over Two-Way Left-Turn Lanes, presented at the Fourth National Conference on Access Management, Portland, Oregon.

[38] Gluck, J., H. S. Levinson, and V. Stover, 1999, Impacts of Access Management Techniques, NCHRP Report 420, Transportation Research Board.

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 17. Driver Simulation:<br>• Impaired driving<br>• For new drivers | Utilize driver simulators for new driver's education or relicensing of drivers. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • The Texas Association of Counties had goals of using a simulator to reduce auto liability and workers' compensation claims. After training using simulators, participant auto liability claims dropped by 55%. Additionally, they reported an 18% reduction in occurrences for the 21-month period since using simulator-based training.[42] | • Education |
| 18. Community Outreach and Engagement:<br>• Neighborhood watch for traffic violations<br>• System to track community feedback<br>• Community incentive programs<br>• Social media outreach<br>• Neighborhood Traffic Safety Program | Partner with community and neighborhood associations and CPOs to leverage citizen leaders and utilize social media applications like Next Door to help community coordination for safety efforts. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Little quantitative evidence exists, but this can be used to share responsibility outside of governance and better leverage community resources.<br>• Neighborhood Traffic Safety Programs have been implemented with success in Lee's Summit, Missouri[43] and Vancouver, WA[44]<br>• New social media applications like Next Door have improved community communication and can be effective when targeting specific areas for focus. | • Education |
| 19. Additional Staff or Training to Support Safety Focus at Agencies | Target increased funding for a position that is solely focused on transportation safety planning and engineering. Increase training opportunities for officers and crash re-constructionists on causal issues regarding pedestrian safety and pedestrian/motor vehicle crashes. Provide the opportunity for law enforcement to take the Pedestrian Safety Training for Law Enforcement (CD-ROM) online training free through NHTSA. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • The position could help coordinate across agencies, such as Washington County Land Use and Transportation, TVF&R, County Sheriff's office, and Capital Projects to ensure safety priorities are implemented across County Departments to better leverage funding and improve implementation.<br>• Additional dedicated staff can continue to monitor changes in trends and adjust priorities in the TSAP as needed based on current conditions. | • Engineering<br>• Enforcement<br>• Education<br>• Emergency |
| 20. Enhanced Emergency Vehicle Preemption | Provide signal preemption to allow faster response times to reduce the likelihood of fatal crashes. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Emergency vehicle preemption has been shown to reduce emergency vehicle travel times by 16- 23%[45] | • Engineering<br>• Emergency |

---

[39] Elder R., Shults R., Sleet D., Nichols J., Thompson R., Rajab W. (2004) Effectiveness of Mass Media Campaigns for Reducing Drinking and Driving and Alcohol-Involved Crashes: A Systematic Review.

[40] Moon, J.P. and J. E. Hummer. (2010) "Estimating the Longer-Term Safety Effects of Speed Enforcement Cameras in Charlotte, NC." TRB 89th Annual Meeting Compendium of Papers CD-ROM. Washington, D.C.

[41] Oregon Health Authority. (2012). Oregon Pedestrian Safety Policy and Systems Change Strategies.

[42] Hoff, P. (2002) Preliminary Results of Simulator Based Training to Reduce Costs.

[43] Lee's Summit, Missouri. "Public Works." n.d. *Neighborhood Traffic Safety Program.* http://cityofls.net/Public-Works/Traffic-Transit/Neighborhood-Traffic-Safety-Program. June 2016.

[44] City of Vancouver, WA. "Streets, Signals & Lights." *Neighborhood Traffic Safety Alliance*. April 2016. http://www.cityofvancouver.us/publicworks/page/neighborhood-traffic-safety-alliance. June 2016.

[45] US DOT Intelligent Transportation Systems Joint Program Office. "Benefits Database." *An emergency vehicle signal preemption system in Houston, Texas reduced emergency vehicle travel time by 16-23 percent*. April 1991. http://www.benefitcost.its.dot.gov/ITS/benecost.nsf/ID/41CE961C99A1404485256B4900479FA7. June 2016

| Countermeasure | Description | Safety Focus | Effectiveness | Which E's are addressed |
|---|---|---|---|---|
| 21. Enhanced EMS Systems:<br>• Better location system for 911<br>• System to provide recommended routes based on traffic<br>• Field triage scheme development<br>• Telemedicine applications | Improve location technology to improve response routes and time. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Prehospital times for crash occupants were substantially longer for rural crashes, averaging 25 minutes in urban areas and 42 minutes in rural areas. EMS arrive at the scene within 10 minutes of notification in more than 85% of urban fatal crashes but less than 54% of the time in rural crashes. Shorter prehospital times are correlated with lower mortality rates.[46]<br>• Especially important for responding to rural crashes. | • Engineering<br>• Emergency |
| 22. Education on Benefits of Alternate Modes:<br>• Transit<br>• Bicycle<br>• Pedestrians | Encourage multi-modal transportation to reduce overall demand for vehicle travel. | • Pedestrians | • Encouraging mode shifts will both increase awareness of the needs of non-auto modes, but will also reduce the number of drivers on the road. | • Education |
| 23. Strengthen safety legislation and regulations at the State and Federal level | Target policy or funding limitations to better reduce or eliminate contributors to serious injury and fatal crashes, which could include impaired driving and speeding. Require DMV to provide Provisional Driver's License (GDL) information and access to the Parent Guide for parents and caregivers of youth taking driver's permit tests. | • Intersections<br>• Speeding<br>• Pedestrians<br>• Alcohol and Drug Impairment | • Realigning state and federal policy to better address known safety issues is an important part of the long term success of a safer travel environment.<br>• Specifically, changes to policy related to speed, distracted driving and impaired driving should be a focus based on the crash trends found in Washington County for the purpose of this report.<br>• Better communications regarding pedestrian, bicycle and driver rules will be important to changing the long-term safety awareness of all modes. | • Education |
| 24. Policy Changes for Transportation and Land Use priorities. | Include pedestrian and bicycle access and safety as a criterion when siting or redeveloping community services. Include proven pedestrian safety strategies in transportation system plans and roadway design standards. | • Pedestrians | • There is a clear link between the design of a community and its relationship to one's likelihood of walking. Walking behavior is highly influenced by the presence and quality of sidewalks, access to transit, and community land use patterns. Factors that affect the actual or perceived safety for pedestrians in a community may include such elements as safe crossings, crime, and street lighting.[47] | • Education<br>• Engineering |

[46] Minge, Erik. (2013). NCHRP Synthesis 451. Emergency Medical Services Response to Motor Vehicle Crashes in Rural Areas.

[47] Oregon Health Authority. (2012). Oregon Pedestrian Safety Policy and Systems Change Strategies.

# Strategies and Implementation

In order for Washington County to reach its goals, all four E's need to be involved and committed to applying the previously outlined strategies. To aid in implementation, the following tables outline the leading agencies, the supporting agencies, an approximate relative cost and an action priority. Also, notes are provided as to which types of crashes or focus areas are best addressed by the strategy.

The Strategies are organized into three tiers in order to help prepare for and focus implementation of these actions. This does not mean that lower priority strategies will not be implemented before higher priority strategies. For example, roadway design projects should attempt to incorporate elements of strategies onto all projects when practical to improve safety. However, the action category is meant to help direct safety-specific funding into those items that will most efficiently reduce the number of serious injury and fatal crashes.

The Action Priority categories selected are as follows:

- A. Near-Term: High priority and subject to effectiveness review at next update of the TSAP.
- B. Midterm: Medium priority, may be moved to high priority in next update of the TSAP, and fits within typical transportation funding cycles.
- C. As Possible: Moderate priority and strategies that might be addressed later or by implementation with other transportation funding mechanisms.

The following provides a brief description of each focus area, a summary of the issues in the focus area, and proposed strategies to address the issues.

## Pedestrians

Pedestrians can be among the most vulnerable travelers on the transportation system. The potential severity of crashes involving pedestrians is higher than the potential severity of crashes between motorized vehicles simply because pedestrians do not have the protection of a vehicle surrounding them. We are all pedestrians at one time or another. Walking is the travel choice for many people who cannot drive, including children and older adults, and a common way to access transit. As people choose lifestyles that include active modes of transportation, providing pedestrian facilities that reduce the risk of crashes becomes more important.

In Washington County from 2010 through 2014, 28 of 80 transportation-related fatality crashes in the county were pedestrians (35%); further, 51 pedestrians were seriously injured in a crash (7% of all serious injuries). The major trends related to these crashes include:

- Nearly all pedestrian fatalities and serious injuries were in an urban part of the county
- Half of the serious injury and fatalities involving pedestrians were at intersections 10 of 28 pedestrian fatalities occurred within 100 feet of a transit stop.
- Approximately two-thirds of the fatalities and serious injuries were in the dark.
- Pedestrians were involved in crashes including alcohol. Pedestrians were involved in crashes including alcohol. Eleven of these crashes that involved serious injuries or fatalities listed the pedestrian as intoxicated.
- According to the Regional Active Transportation Plan: 53% of the regional serious injury, pedestrian-involved crashes at intersections involve driver error and 30% involve pedestrian error. For serious injury bicycle-involved crashes, 45% involve driver error and 38% involve bicyclist error.[48]

Pedestrian fatalities and serious injuries in Washington County can be reduced by implementing strategies to reduce pedestrian risks at intersections and along major arterials in urban parts of the county. Lighting conditions in the county should be evaluated to ensure adequate lighting for pedestrians or education programs about visibility of pedestrians in dark conditions. Strategies aimed at reducing impairment, (driving and walking) will also provide benefits. Table 10 summarizes proposed strategies.

Resources for additional pedestrian countermeasures are:

- FHWA PedSafe website http://www.pedbikesafe.org/pedsafe/
- FHWA Crash Modification Factor Clearinghouse; http://www.cmfclearinghouse.org

[48] See http://www.oregonmetro.gov/regional-active-transportation-plan, Existing Conditions Report, page 50.

### Table 10. Pedestrian Strategies

| Pedestrian Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Current Strategy in use by the County |
|---|---|---|---|---|---|
| ***A. Near-Term*** | | | | | |
| 1. Expand leading pedestrian intervals at high pedestrian crossings where appropriate | LUT | ODOT | $ | | ✓ |
| 2. Continue deployment of pedestrian countdown signals | LUT | ODOT | $ | | ✓ |
| 3. Continue to deploy signal timing programs to reduce conflicts between modes (e.g., gap dependent flashing yellow arrow, separating permissive vehicle movements from pedestrian movements) | LUT | ODOT | $ | Speed reduction | ✓ |
| 4. Enhance visibility at crosswalks including signing, striping and lighting; prioritize along high pedestrian corridors | LUT | ODOT | $$ | | ✓ |
| 5. Develop education programs for drivers, pedestrians, and cyclists about night-time pedestrian visibility (SRTS – Sheriff does mid-block enforcement) | LUT | DMV | $$ | Speed reduction, Impairment | |

| Pedestrian Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Current Strategy in use by the County |
|---|---|---|---|---|---|
| 6. Accelerate implementation of mid-block crossing facilities including medians, and rectangular rapid flashing beacon in high pedestrian corridors, per Washington County policy | LUT | ODOT | $$ | Speed reduction | ✓ |
| 7. Provide advanced yield/stop lines to improve cross-walk visibility | LUT | ODOT | $ | Speed reduction | ✓ |
| ***B. Mid-Term*** | | | | | |
| 8. Enhance process for bus stop installation. | LUT | Tri-Met | $$$ | Speed reduction, intersection crashes | |
| 9. Complete sidewalk network; prioritize high pedestrian corridors, school areas, transit access | LUT | | $$$ | | |
| 10. Implement access management and driveway improvements to reduce conflicts and maintain level surface along sidewalk. Target existing areas. | LUT | ODOT | $$$ | | |
| 11. Evaluate roadway lighting; upgrade, retrofit, or infill as needed to ensure adequate lighting for all users | LUT | ODOT | $$ | Pedestrians | |
| ***C. As Possible*** | | | | | |

| Pedestrian Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Current Strategy in use by the County |
|---|---|---|---|---|---|
| 12. Monitor and implement as possible connected vehicle and automated vehicle technologies to improve safety conditions | LUT | | $$ | Speed, Intersections | |

## Speed

Roadway design (in both the urban and rural environments), mix of modes, and surrounding land use context influence the speed of motorized travel on a roadway. Driver choices also influence how fast motorists travel on a roadway. Research shows the severity of crashes increases as higher speed is involved; particularly for pedestrians and bicycles. For example pedestrians have "a 90% chance of survival when struck by a car travelling at 18.6 mph or below, but less than 50% chance of surviving an impact at 27.9 mph. Pedestrians have almost no chance of surviving an impact at 49.7 mph.[49] Designing facilities so that drivers travel at the most appropriate speeds given the mix of modes and surrounding context is as important as setting and enforcing appropriate speed limits.

From 2010 through 2014, 101 of the 815 fatalities and serious injuries (12%) in the County were speed related. Speeding was:

- More common in rural crashes then urban;
- Involved in only 5% of serious injury and fatality crashes at intersections;
- The third most common contributing factor to serious injury and fatality crashes after "did not yield right-of-way", and "following too closely"; which in some cases might also be attributed to speeding; and
- Involved in 24 of the 100 alcohol-related serious injury and fatality crashes, and 8 of the 42 drug involved serious injury and fatality crashes.

Strategies to address speed in Washington County should focus on road segments in rural environments and impaired (drugs or alcohol) drivers. These strategies are summarized in Table 11.

Resources for additional speeding countermeasures are:

- NHTSA Countermeasures that Work, current edition
- FHWA Crash Modification Factor Clearinghouse; http://www.cmfclearinghouse.org

[49] World Health Organization, Road Safety Facts: Speed http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/speed_en.pdf

## Table 11. Speed Strategies

| Speed Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Currently Implemented in County |
|---|---|---|---|---|---|
| ***A. Near-Term*** | | | | | |
| 1. Expand speed enforcement on rural roads and high volume high speed corridors | Washington County Sheriffs | LUT | $$$ | Pedestrians, Impairment | ✓ |
| 2. Implement high visibility enforcement to reduce speeding and make travelers aware of sheriff's presence | Washington County Sheriffs | LUT | $$$ | Pedestrians, Impairment | |
| 3. Develop and provide education programs about the impacts and dangers of speed and exceeding the speed limit (ex: Traffic Diversion School, speeds related to survivability for pedestrians/cyclists). | Washington County Sheriffs | LUT, DMV, ODOT | $$ | Pedestrians, Impairment | ✓ |
| 4. Expand sheriff's traffic unit to enhance enforcement and education outreach capabilities | Washington County Sheriffs | LUT | $$ | | |
| 5. Expand use of speed feedback signs | LUT | Washington County Sheriffs | $$ | Pedestrians | ✓ |
| 6. Develop a speed management program to identify context appropriate speeds on different facility types and programs to develop and implement treatments to manage speeds accordingly. | LUT | ODOT | $$$ | Pedestrians, Intersections | |
| 7. Collaborate within the County and across jurisdictions (as appropriate) to develop context appropriate speed limits; design and implement roadway cross-sections to achieve desired speeds | LUT | ODOT | $$ | Pedestrians | |
| 8. Integrate roadway treatments that manage speed into roadway maintenance, design and construction projects (e.g., guard rail, enhanced curve signage, pavement edge, shoulder and clear zone maintenance) | LUT | | $$ | Pedestrians, Intersections | |

| Speed Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Currently Implemented in County |
|---|---|---|---|---|---|
| 9. Develop and provide education programs about the impacts and dangers of speed and exceeding the speed limit (ex: Traffic Diversion School, speeds related to survivability for pedestrians/cyclists) | Washington County Sheriff | LUT, DMV, ODOT | $$ | Pedestrians, Impairment | |
| ***B. Mid-Term*** | | | | | |
| 10. Influence law changes to allow automated enforcement | LUT | ODOT | $$ | Pedestrians, Intersections | |

## Intersections

Intersections can be one of the more complicated elements of a transportation system. This is where the paths of different modes of transportation cross. Congestion and delay can influence driver behavior, and nearby driveways, transit stops or railroad crossings can influence traffic, pedestrian, bicycle and transit flow through an intersection. Further, if the intersection is more complicated than a traditional four legged intersection, challenges of traveling through the intersection can also increase.

During the study period, overall 46% (375) of all serious injury and fatality crashes occurred at intersections. The most common intersection crash types during the study period were rear-end and turning-related crashes. Further, 51% of all pedestrian serious injury and fatality crashes (40 of 79) occurred at intersections. Intersection serious injury and fatality crashes are more common in urban parts of the county. Strategies to address intersection-related crashes in Washington County should focus on:

- Reducing rear-end and turning crashes
- Providing pedestrian (and bicycle) facilities to reduce conflicts in urban parts of the county

These strategies are summarized in Table 12. Resources for additional speeding countermeasures are:

- FHWA Office of Safety website about intersections safety http://safety.fhwa.dot.gov/intersection/
- FHWA Crash Modification Factor Clearinghouse; http://www.cmfclearinghouse.org
- NCHRP Report 613: Guidelines for Selection of Speed Reduction Treatments at High Speed Intersections

## Table 12. Intersection Strategies

| Intersection Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Currently Implemented in County |
|---|---|---|---|---|---|
| ***A. Near-Term*** | | | | | |
| 1. Ensure all signals meet current standards. Look for opportunities to enhance visibility, understanding, and compliance | LUT | | $$ | | ✓ |
| 2. Modify signal phasing to reduce conflicts (e.g., turning movements, right turns on red, or leading pedestrian interval) | LUT | ODOT | $ | Pedestrians, Speed | ✓ |
| 3. Educate travelers to look for all users at intersections and respect intersections control, | LUT | | $$ | | |
| 4. As roadway projects are implemented, provide intersection design treatments to reduce queuing, eliminate conflicts across modes, and encourage pedestrian access and visibility (e.g., signal timing, reduced access near intersections, pedestrian cross-walks, prohibit right turns on red, reduce left turns across walking movements, street lighting, sidewalks) | LUT | ODOT | $$$ | Pedestrians | ✓ |
| ***B. Mid-Term*** | | | | | |
| 5. Implement access management to reduce vehicle queuing and conflicts near intersections. Target existing areas. | LUT | ODOT | $$ | Pedestrians | Currently done with new development |
| 6. Evaluate intersection lighting; upgrade, retrofit, or infill as needed to ensure adequate lighting for all users | LUT | ODOT | $$ | Pedestrians | ✓ |
| ***C. As Possible*** | | | | | |
| 7. Evaluate intersections with for roundabouts, when feasible | LUT | ODOT | $$$ | Speed, Pedestrians | |
| 8. Assist enforcement through technology at intersections (ex: red light cameras, enforcement assistant lights) | | | | | ✓ |

## Distraction and Impairment

In general, drivers understand that impaired driving is unsafe; however, many drivers still undertake risky behavior such as drinking, drug use, texting or talking while driving, etc. Society has not yet embraced the belief that a driver should not under any circumstance drive while using, let along being impaired, by drugs or alcohol. Further, many enforcement agencies are concerned that with the legalization of recreational marijuana in Oregon impaired driving issues will increase. Driving impaired often leads to speeding, reckless driving and disregarding traffic laws. Distracted driving can include talking on a cell phone, eating, or use of a smart phone while driving. Studies have shown that use of a cell phone while driving can have the same effects as driving drunk[50]. Current cell phone use laws are restricted to speaking to another person on the phone. They don't restrict the use of many of the current smart phone functions that may lead to distracted driving. This makes it difficult to enforce the laws as written and does not target the actual danger of distracted driving.

From 2010 through 2014, 154 people in Washington County were seriously injured or killed because of impaired driving (alcohol, drugs or both). Fixed-object crashes were the most common impaired driving crash type; however, pedestrians and bicyclists were also involved. More young people (under 25) were seriously injured or killed.

Education and enforcement strategies to address impaired driving in Washington County can most effectively target younger people due to the disproportionate risk in those age groups. These strategies should also consider the potential impacts of legalized recreational marijuana.

Resources for additional speeding countermeasures are:

- NHTSA Countermeasures that Work, current edition
- Centers for Disease Control and Prevention; www.cdc.gov
- FHWA Crash Modification Factor Clearinghouse; http://www.cmfclearinghouse.org

[50] http://www.distraction.gov/downloads/pdfs/a-comparison-of-the-cell-phone-driver-and-the-drunk-driver.pdf

### Table 13. Distraction and Impairment Strategies

| Distraction and Impairment Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Currently Implemented in County |
|---|---|---|---|---|---|
| ***A. Near-Term*** | | | | | |
| 1. Continue high visibility saturation patrols; particularly targeting younger drivers | ODOT | LUT | $$$ | Speed | |
| 2. Support and conduct education and media campaigns about social norms related to impaired driving; particularly aimed at younger drivers | Washington County Sheriff | LUT | $$$ | Speed | |
| 3. Develop funding for training for law enforcement personnel (ex: ARIDE) | ODOT | LUT | $$$ | Speed | ✓ |
| 4. Develop and/or support designated drive safe way home programs | LUTHHS | LUT | $$ | Speed | |
| 5. Develop and/or support designated driver programs | LUT | LUT | $$ | Speed | |
| 6. Support statewide efforts to understand, quantify and address distracted driving issues. | Washington County Sheriff | LUT | | | |
| ***B. Mid-Term*** | | | | | |
| 7. Targeted enforcement of establishments that have a history of over serving and work with establishments to provide information on other means of transportation such as taxicabs. | OLCC, | Washington County Sheriff, LUT | $ | Speed | ✓ |
| ***C. As Possible*** | | | | | |
| 8. Support statewide efforts to reduce legal BAC | Washington County Sherriff, LUT | ODOT | $ | Speed | |
| 9. Support statewide efforts to modify laws aimed at reducing DUII | Washington County Sherriff, LUT | ODOT | $ | Speed | |

| Distraction and Impairment Strategies | Lead Agency | Supporting Agency | Relative Cost | Co-Benefits | Currently Implemented in County |
|---|---|---|---|---|---|
| 10. Support statewide efforts to understand impacts of recreational marijuana and enforcement needs to address impacts | Washington County Sherriff, LUT | | $ | Speed | |
| 11. Support efforts to modify use of marijuana tax revenue for community and dispensary education and enforcement activities | Washington County Sherriff, LUT | | $ | | |
| 12. Support efforts to understand the law enforcement and policy needs for enforcement of distracted driving (ex: self-reporting). | Washington County Sherriff, LUT | ODOT | $ | | |

*This page is intentionally left blank.*

# Conclusion

The goal of the Washington County Transportation Safety Action Plan (TSAP) is to **strive toward zero transportation-related serious injury and fatality crashes.** The TSAP strategies were aligned with current data and trends and will need to be regularly updated and monitored to achieve the goal. The plan has been developed to be consistent with other safety planning efforts in the state and region and to be tailored to the issues and opportunities in Washington County.

# Acronyms

| | |
|---|---|
| ARRA | American Recovery and Reinvestment Act |
| ARTS | All Roads Transportation Safety |
| CDC | Center for Disease Control |
| DMV | Department of Motor Vehicles |
| FHWA | Federal Highway Administration |
| MAP-21 | Moving Ahead for Progress in the 21st Century |
| ODOT | Oregon Department of Transportation |
| PDO | Property Damage Only |
| SAFETEA-LU | Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users |
| SPIS | Safety Priority Index System |
| TEA-21 | Transportation Equity Act for the 21st Century |
| TSAP | Transportation Safety Action Plan |
| VMT | Vehicle Miles Traveled |

# Glossary (ODOT Crash Code Manual)

### *CRASHES*

The motor vehicle crash data was from ODOT Crash Analysis and Report Unit. Crashes are included if they resulted in any of the following: death; bodily injury; damage to any vehicle is over $1,500 and any vehicle is towed from the scene as a result of damage from the accident; damage to any one person's property other than a vehicle involved in the accident is over $1,500.

### *COLLISION TYPES*

**Angle**: An angle collision results when vehicles collide while traveling on crossing paths. An angle collision involves one vehicle ON a roadway (i.e. north to south) and another vehicle from another roadway, open access or driveway. (i.e. east to west). In other words, a cross-movement on one street must be attempted by a vehicle traveling on the intersecting street in order for the type to be classed as angle.

**Backing Collision**: A backing collision results when a vehicle is backing in a traffic lane and strikes another vehicle also in a traffic lane. This type will not include backing during a parking maneuver.

**Fixed-object or Other Object Collision** – A fixed or other object collision results when one vehicle strikes a fixed or other object on the roadway or off roadway. An event code should be coded describing what was hit.

**Head-On Collision:** The head-on type of collision results when the drivers of two vehicles traveling in opposite directions on parallel paths attempt to occupy the same position at the same time and find their forward movement impeded. It is not necessary for the vehicles to collide head-on; that is, for each to be struck perpendicularly to the front of the car. It is the alteration of the intended path of travel that defines the type of collision. To conform to the definition, any attempted maneuver to avoid the collision is inconsequential to the complete crash.

**Non-Collision:** A non-collision crash is one in which only one vehicle is involved and is not classifiable as another collision; i.e. rollover, etc.

**Parking Collision**: A parking maneuver collision results when a vehicle in the act of entering or leaving a parked position is involved in a collision. A parking maneuver continues until the vehicle has completely cleared the parked position and is moving in the traffic lane. The reverse is true for a vehicle entering a parked position.

**Pedestrian Collision** – A pedestrian collision results when the first harmful event is any impact between a motor vehicle in traffic and a pedestrian. Does not include any crash where a pedestrian is injured after the initial vehicle impact. In this case, the first harmful event would be the collision type (i.e. rear-end collision) with the pedestrian being coded as a supplemental event to the crash.

**Rear-end Collision:** A rear-end collision results when a vehicle traveling in the same direction or parallel on the same path as another vehicle, collides with the rear-end or a second vehicle. In this type, the direction of travel was parallel but continuous.

**Sideswiping-Meeting Collision**: A side swipe meeting collision results when vehicles traveling in opposite directions on parallel paths collide. The side of at least one of the vehicles must be involved.

**Sideswipe-overtaking Collision**: A sideswipe overtaking collision results when vehicles traveling in the same direction on parallel paths collide. The side of at least one of the vehicles must be involved.

**Turning Movement Collision:** A turning movement collision results when one or more vehicles in the act of a turning maneuver is involved in a collision with another vehicle.

### *CRASH SEVERITY*

**Fatal Crash:** Fatal crash is a motor vehicle crash that results in fatal injuries to one or more persons. For purposes of Motor Vehicle Crash Classification, death must occur within 30 days. (See ANSI D16.1- 2007, definition 3.1.3, "Time of Classification".) Crashes that result from deliberate intent, suicide, homicide (not negligent homicide) and non-traffic are not included. Crashes that occur on private property or in parking lots are only coded when they involve entering or exiting the roadway.

**Non-Fatal Injury Crash** is a motor vehicle crash that results in any injury, not resulting in death, to one or more persons.

**Property Damage Only crash (PDO):** A motor vehicle crash in which there is no injury to any person, but damage occurred to a motor vehicle, other road vehicle, or to other property, including injury to domestic animals.

### *CRASH CAUSE*

**ODOT crash database states, "Cause is a two-digit code that represents the circumstance(s) most responsible for the occurrence of the crash."**

- Careless Driving (self-reported)
- Did not yield right-of-way
- Disregarded traffic signal
- Drove left of center on two-way road
- Followed too closely
- Inattention
- Non-motorist illegally in roadway
- Other improper driving
- Reckless driving (self-reported)

**Speeding**: The driver admits she or she was exceeding the posted speed, or the driver's speed was too fast for conditions but not exceeding posted speed

**Other**: this category in this report combines all the other categories that are passed stop sign or red flasher, improper overtaking, made improper turn, improper change of traffic lanes, disregarded other traffic control device, wrong way on one-way roadway, driver drowsy/fatigued/sleepy/ physical illness, non-motorist clothing not visible, non-motorist inattention, failed to avoid vehicle ahead, speed racing, aggressive driving, road rage, improper use of median or shoulder, no cause associated at this level, other (not improper driving), phantom/non-contact vehicle, view obscured, mechanical defect, vehicle improperly parking, defective steering mechanism, inadequate or no brakes, vehicle lost load or load shifted, and tire failure.

### *FUNCTIONAL CLASSIFICATIONS*

**Local streets** focus on land access rather than through trips and include all other public roads.

**Local roads** focus on land access and relatively short trips and include all other public roads.

**Rural minor collectors** collect traffic from local roads and smaller communities.

**Rural major collectors** link county seats and communities not served by arterials but have an intra-county rather than statewide focus.

**Rural minor arterials** also focus on mobility but typically link smaller cities and towns and other statewide traffic generators, such as resorts that are not served by principal arterials.

**Rural principal arterials** (including rural interstates) focus on statewide and interstate mobility, and typically include the Interstate System and other rural freeways that serve longer distance high volume corridors.

**Urban collectors** focus on mobility and land access by serving both intra-urban and local trips that take travelers to arterials.

**Urban minor arterials** focus on mobility but serve shorter trips between traffic generators within urban areas.

**Urban principal arterials** (including interstates and other types of freeways) focus on mobility by serving trips through urban areas and long distance trips between traffic generators within an urban area.

### *MISCELLANEOUS*

**Bicyclist Crash Type**: A bicyclist crash results when a vehicle strikes a bicyclist as the first harmful event.

**CMF Value**: A Crash Modification Factor (CMF) is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site.

**Roadway:** part of a traffic way designed, improved, and ordinarily used for vehicular travel. The crash data technician considers the boundary lines to be the lateral limits of the traffic lanes. Thus, parking lanes and shoulders are NOT part of the roadway. Also, a parking lane ceases to exist and is considered a traffic lane when parking along a street is prohibited continuously, or during hours the parking lane is required to be clear for traffic.

**Pedestrian Crash Type**: A pedestrian crash results when a vehicle strikes a pedestrian as the first harmful event.

## *WASHINGTON COUNTY DEFINITIONS*[51]

**Boulevard** – A roadway design overlay intended to improve the pedestrian environment in specified locations throughout the metropolitan area. A boulevard may have three or more lanes and may include landscaped medians, on-street parking, landscape buffered sidewalks, enhanced pedestrian crossings and special lighting. These roadways also include bicycle lanes and wide sidewalks that can accommodate transit enhancements such as benches or bus shelters.

**Collector** – Collector streets provide both access and circulation between residential, commercial, industrial and agricultural community areas and the Arterial system. Collectors tend to carry fewer motor vehicles than Arterials, with reduced travel speeds and may serve as freight access routes, providing local connections to the Arterial network.

**Local Street** – Local Streets primarily provide direct access to adjacent land. While Local streets are not intended to serve through traffic, the aggregate effect of local street design impacts the effectiveness of the Arterial and Collector system when local travel is restricted by a lack of connecting routes, and local trips are forced onto the Arterial street network. In the urban area, local roadway system designs often discourage "through traffic movement", however, in the rural area local roads are sometimes the only facilities available for access to dispersed rural land uses.

**Major Streets Transportation Improvement Program –** A portion of the Washington County property tax used to construct major transportation improvements countywide. MSTIP projects commonly include road reconstructions to install pedestrian and bicycle facilities and additional travel or turn lanes, as well as new roadways to serve developing areas. MSTIP began as a series of serial levies (1986, 1989 and 1995), and voters rolled it into the county's fixed tax rate in the late 1990s. The current installment of MSTIP funds is known as MSTIP 3d, and will be used to construct transportation improvements through the year 2019. MSTIP also includes an Opportunity Fund that can be used to match grants or other funds for transportation improvements or programs.

**Minor Betterments** – A Washington County transportation improvement program funded by an allocation from the Road Fund (gas taxes) and used to fund small-scale interim improvements which are beyond routine maintenance but not large enough to be programmed as capital improvements. Minor Betterment projects are site-specific enhancements to the county's transportation system. The projects are typically interim and are intended to supplement routine maintenance and capital improvements.

[51] Washington County Transportation System Plan Adopted 2013 (Ordinance 768), amended in 2015 (Ordinance 799)
http://www.co.washington.or.us/LUT/Divisions/LongRangePlanning/Publications/transportation-plan.cfm

**Neighborhood Route** – Neighborhood Routes are in residential neighborhoods and provide connectivity to the Collector and Arterial system. Because traffic needs are greater than a Local Street, certain measures should be considered to retain the neighborhood character and livability of these routes. Neighborhood traffic management measures are allowed (including devices such as speed humps, traffic circles and other devices). New neighborhood routes may be established via the land development process.

**Neighborhood bikeway** – A low speed, low traffic Non-Arterial Street designated as a facility intended to accommodate bicyclists with a wide range of abilities and levels of experience. Neighborhood bikeways are also called neighborhood greenways and bike boulevards in other jurisdictions

**Principal Arterial** – Principal Arterials (Freeways and Highways) form the backbone of the motor vehicle network. These routes connect over the longest distance (often miles) and are spaced less frequently than other Arterials or Collectors. These highways generally span several jurisdictions and often have statewide importance. At a minimum, highways that are classified by ODOT as Interstate or Statewide Highways are considered Principal Arterials

**Special Area Street** – A sub-category of Collector, Neighborhood Route, Commercial Street and Local Street underlying functional classification designations. Special Area street designations are most frequently applied in transit-oriented overlay districts within RTP 2040 center and station community area designations with good transit service. They are identified on the Special Area Street Overlay Map as well as in the Community Plans. Special Area Street design standards are included in the Washington County Uniform Road Improvement Design Standards.

**Urban Roads Maintenance District (URMD)** – A county service district formed to provide road maintenance for Local Streets and Neighborhood Routes in urban unincorporated areas of Washington County. A portion of this fund can be set aside for safety improvements to any roadway within the district boundary. Urban Roads Maintenance District Advisory Committee (URMDAC) – URMDAC works with county staff and advises the Board of Commissioners on issues related to services provided by the Urban Road Maintenance District (URMD)

*This page is intentionally left blank.*

# Appendix A - Crash Data FAQ's

*This page is intentionally left blank.*

# Technical Memorandum

| | |
|---|---|
| Date: | March 2016 |
| Project: | Washington County TSAP |
| To: | Washington County |
| From: | HDR Engineering |
| Subject: | Washington County TSAP – Data FAQs |

**Why do we use 5 year data?**

As explained by FHWA[1]:

*Crashes are relatively rare events, so it is important that a safety analysis includes an adequate time frame of study. Calculating average crashes per year across five years allows the practitioner to normalize crash data over a longer period than one year to account for annual anomalies that can skew analyses. Due to the randomness of traffic crashes, it is likely that any one year could have a much higher or lower number of crashes than the typical year. A rule of thumb is to collect data from the previous 3 to 5 years, with 3 years as a working minimum. A longer period of time increases the statistical value of the data; however, if the period is too long, there is a chance that the situation (e.g., roadway configuration, traffic volume and patterns) may have changed.*

**Why not use 2015 data?**

There are a few reasons that crash data is not useable immediately and tends to have at least a year lag before it can be used:

- Reporting is done by hand and needs to be transferred to the online system
- Data needs to be "cleaned" and this takes a long time since it has to be done for the entire state. Cleaning the data means making sure the crash is assigned to the correct location, that all of the information about the crash is correct and makes sense.

**What data is used?**

ODOT's Statewide Crash Data was utilized. Crash data in Oregon are obtained from two sources, primarily citizen reports and secondarily enforcement, which are then compiled in the database. Not all crashes are reported, as a number of crashes do not qualify to be reported, and some crashes that qualify still go unreported. Law enforcement officials will file a police report for a portion of their crashes. The stipulations required for crashes to be reported are listed below:

Motor vehicle crashes must be reported when:

- There is more than $1,500 in damages to a vehicle or other property.
- Someone is injured (no matter how minor) or killed.
- Any vehicle is towed.

[1] http://safety.fhwa.dot.gov/local_rural/training/fhwasaxx1210/s3.cfm

Crashes go unreported and are not entered into the ODOT database when:

- They do not meet reporting thresholds.
- A hit-and-run crash occurs with a parked vehicle or property.
- There is a serious injury litigation or ongoing criminal investigation that holds up the record.
- The crash does not involve a motor vehicle, i.e., bike and pedestrian or pedestrian and train.
- The injury cause was ruled to be due to illness.
- The crash occurs on private property or not on a traffic way; i.e., on a beach.
- There was an industrial accident, i.e., backing over a worker with equipment.

The Oregon Department of Motor Vehicles (DMV) provides ODOT with crash data after the DMV collates driver and police reports and records any driver violations or suspensions. Crash data are coded into the crash database, with data specific to the individuals; vehicles; and all general data regarding the crash type, location, conditions, errors, etc. All data are validated by data analysts and errors are corrected before the file is finalized at the end of each year. This database can be retroactively corrected if errors are found after finalization and year-end submission.

**Data Limitations:**

Even with the extensive efforts to collect all crash data and to do so accurately, not all crashes are recorded and some may not be accurate. Studies have shown that crashes with greater severity are reported with greater reliability than crashes of lower severity. The data compiled in the Oregon Crash Database exhibits this tendency, especially as it applies to Property Damage Only (PDO) crashes. Additionally, crash data may contain only partial information. A report may fail to note that the crash occurred in a school or work zone or that the driver was on a cell phone when the crash occurred. In addition, the location of the crash recorded is often an approximation.

The coding of these data also has limitations. To gain a complete understanding of crashes it requires research into several categories. Ultimately, this in-depth analysis provides a clearer understanding of the safety needs for the corridor and will help influence smart decisions for future designs. More details on the crash database are provided in ODOT's System Motor Vehicle Traffic Crash Analysis and Code Manual[2].

**Acronyms:**

SPIS – Safety Priority Index System

TSAP - Transportation Safety Action Plan

HSM – Highway Safety Manual

[2] http://www.oregon.gov/ODOT/TD/TDATA/car/docs/CDS_CodeManual.pdf.

# Appendix B - County-wide Crash Data

*This page is intentionally left blank.*

# Contents

## Serious Injuries and Fatalities in Washington County (2010-2014)

| Number of Injuries based on Collision Type | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Angle | 8 | 78 | 86 | 563 | 1239 | 1888 |
| Head-on | 8 | 38 | 46 | 126 | 127 | 299 |
| Rear-end | 4 | 198 | 202 | 1172 | 10525 | 11899 |
| Sideswiping Meeting | 2 | 16 | 18 | 95 | 171 | 284 |
| Sideswiping Overtaking | 0 | 14 | 14 | 105 | 552 | 671 |
| Turn | 7 | 192 | 199 | 1654 | 3835 | 5688 |
| Parking | 0 | 0 | 0 | 6 | 30 | 36 |
| Non-collision | 1 | 24 | 25 | 92 | 51 | 168 |
| Fixed Object | 22 | 123 | 145 | 726 | 819 | 1690 |
| Pedestrian | 28 | 51 | 79 | 246 | 206 | 531 |
| Backing | 0 | 1 | 1 | 8 | 100 | 109 |
| Miscellaneous | 0 | 0 | 0 | 23 | 33 | 56 |
| **Total** | **80** | **735** | **815** | **4816** | **17688** | **23319** |

| Number of Injuries based on Crash Type | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Other Injuries*** | **Total** |
| Entering at angle-One veh Stopped | 1 | 4 | 5 | 92 | 97 |
| Entering at angle-all others | 9 | 130 | 139 | 3676 | 3815 |
| From Same Dir-both going straight | 0 | 24 | 24 | 1799 | 1823 |
| From Same Dir-one turn, one straight | 0 | 8 | 8 | 375 | 383 |
| From Same Dir-one stopped | 2 | 180 | 182 | 10361 | 10543 |
| From Same Dir-all others | 0 | 2 | 2 | 271 | 273 |
| From Opp Dir-both going straight | 10 | 51 | 61 | 466 | 527 |
| From Opp Dir-one left turn, one straight | 2 | 97 | 99 | 2504 | 2603 |
| From Opp Dir-One stopped | 0 | 2 | 2 | 91 | 93 |

| Number of Injuries based on Crash Type | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Other Injuries*** | **Total** |
| Entering at angle-One veh Stopped | 1 | 4 | 5 | 92 | 97 |
| Entering at angle-all others | 9 | 130 | 139 | 3676 | 3815 |
| From Same Dir-both going straight | 0 | 24 | 24 | 1799 | 1823 |
| From Same Dir-one turn, one straight | 0 | 8 | 8 | 375 | 383 |
| From Same Dir-one stopped | 2 | 180 | 182 | 10361 | 10543 |
| From Same Dir-all others | 0 | 2 | 2 | 271 | 273 |
| From Opp Dir-both going straight | 10 | 51 | 61 | 466 | 527 |
| From Opp Dir-one left turn, one straight | 2 | 97 | 99 | 2504 | 2603 |
| From Opp Dir-One stopped | 0 | 2 | 2 | 91 | 93 |
| From Opp Dir-all others | 0 | 1 | 1 | 27 | 28 |
| Motor Veh | 0 | 0 | 0 | 1 | 1 |
| Parked Motor Veh | 0 | 9 | 9 | 143 | 152 |
| Pedestrian | 28 | 51 | 79 | 452 | 531 |
| Railway Train | 1 | 1 | 2 | 8 | 10 |
| Pedalcyclist | 4 | 28 | 32 | 504 | 536 |
| Animal | 0 | 0 | 0 | 30 | 30 |
| Fixed Object | 22 | 121 | 143 | 1505 | 1648 |
| Other Object | 0 | 2 | 2 | 44 | 46 |
| Overturned | 1 | 16 | 17 | 130 | 147 |
| Other Non-Collision | 0 | 8 | 8 | 25 | 33 |
| **Total** | **80** | **735** | **815** | **22504** | **23319** |

### Total Serious Injuries and Fatalities in Washington County from 2010 to 2014

| Number of Injuries based on Severity* (PDO not included) | | | | | |
|---|---|---|---|---|---|
| **FY** | **Fatal** | **INJA** | **INJB** | **INJC** | **Total** |
| 2010 | 11 | 142 | 847 | 3036 | 4036 |
| 2011 | 13 | 163 | 1006 | 3794 | 4976 |
| 2012 | 19 | 157 | 1051 | 3958 | 5185 |
| 2013 | 21 | 143 | 955 | 3258 | 4377 |
| 2014 | 16 | 130 | 957 | 3642 | 4745 |
| **Total** | **80** | **735** | **4816** | **17688** | **23319** |

* Note - The Number of injuries are based on the number of people involved in the crashes.

### Serious Injury and Fatality Rate per Population (2010-2014)

| Population | | | | | |
|---|---|---|---|---|---|
| **County** | **Total Fat** | **Total Severe** | **Population** | **Crash Rate Fat** | **Crash Rate Severe** |
| Washington | 75 | 735 | 554996 | 0.01 | 0.13 |
| Clackamas | 127 | 566 | 388263 | 0.03 | 0.15 |
| Deschutes | 67 | 270 | 165954 | 0.04 | 0.16 |
| Lane | 169 | 625 | 356212 | 0.05 | 0.18 |

### Fatalities and Serious Injuries by Collision Type (2010-2014)

| Number of Injuries based on Collision Type | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Angle | 8 | 78 | 86 | 563 | 1239 | 1888 |
| Head-on | 8 | 38 | 46 | 126 | 127 | 299 |
| Rear-end | 4 | 198 | 202 | 1172 | 10525 | 11899 |
| Sideswiping Meeting | 2 | 16 | 18 | 95 | 171 | 284 |

| Number of Injuries based on Collision Type | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Angle | 8 | 78 | 86 | 563 | 1239 | 1888 |
| Head-on | 8 | 38 | 46 | 126 | 127 | 299 |
| Rear-end | 4 | 198 | 202 | 1172 | 10525 | 11899 |
| Sideswiping Meeting | 2 | 16 | 18 | 95 | 171 | 284 |
| Sideswiping Overtaking | 0 | 14 | 14 | 105 | 552 | 671 |
| Turn | 7 | 192 | 199 | 1654 | 3835 | 5688 |
| Parking | 0 | 0 | 0 | 6 | 30 | 36 |
| Non-collision | 1 | 24 | 25 | 92 | 51 | 168 |
| Fixed Object | 22 | 123 | 145 | 726 | 819 | 1690 |
| Pedestrian | 28 | 51 | 79 | 246 | 206 | 531 |
| Backing | 0 | 1 | 1 | 8 | 100 | 109 |
| Miscellaneous | 0 | 0 | 0 | 23 | 33 | 56 |
| **Total** | **80** | **735** | **815** | **4816** | **17688** | **23319** |

## Roadway Character for Serious Injuries and Fatalities by Collision Type

| Injuries based on Crashes by Location | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Percentage** | **Other Injuries** | **Total** |
| Street/road or highway intersection | 26 | 351 | 377 | 46% | 10831 | 11208 |
| Driveway or alley access | 4 | 40 | 44 | 5% | 1494 | 1538 |
| Straight roadway | 26 | 218 | 244 | 30% | 7520 | 7764 |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0% | 26 | 26 |
| Curve (horizontal curve) | 16 | 72 | 88 | 11% | 1004 | 1092 |
| Open access or turnout | 0 | 0 | 0 | 0% | 2 | 2 |
| Grade (vertical curve) | 7 | 50 | 57 | 7% | 1478 | 1535 |
| Bridge structure (overpass and underpass included) | 1 | 4 | 5 | 1% | 138 | 143 |
| Tunnel | 0 | 0 | 0 | 0% | 4 | 4 |
| Unknown | 0 | 0 | 0 | 0% | 7 | 7 |
| **Total** | **80** | **735** | **815** | **100%** | **22504** | **23319** |

## Injuries Based on Lighting and Weather

| Injuries Based on Weather | | | | |
|---|---|---|---|---|
| **Weather** | **Fatalities** | **InjA** | **Total** | **Percentage** |
| Unknown | 2 | 9 | 11 | 1% |
| Clear | 43 | 442 | 485 | 60% |
| Cloudy | 20 | 142 | 162 | 20% |
| Rain | 10 | 119 | 129 | 16% |
| Sleet | 0 | 5 | 5 | 1% |
| Fog | 5 | 15 | 20 | 2% |
| Snow | 0 | 3 | 3 | 0% |
| Dust | 0 | 0 | 0 | 0% |
| Smoke | 0 | 0 | 0 | 0% |
| Ash | 0 | 0 | 0 | 0% |
| **Total** | **80** | **735** | **815** | 100% |

| Injuries Based on Lighting | | | | |
|---|---|---|---|---|
| **Weather** | **Fatalities** | **InjA** | **Total** | **Percentage** |
| Unkown | 1 | 0 | 1 | 0% |
| Daylight | 37 | 459 | 496 | 61% |
| Darkness - w/Street lights | 17 | 142 | 159 | 20% |
| Darkness - no street lights | 20 | 93 | 113 | 14% |
| Dawn (twilight) | 2 | 12 | 14 | 2% |
| Dusk (twilight) | 3 | 29 | 32 | 4% |
| **Total** | **80** | **735** | **815** | **100%** |

## Injuries Based on Alcohol and Drug Involvement

| Crashes based on Drug/Alcohol Involvement | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **2010** | **2011** | **2012** | **2013** | **2014** | **Total** |
| Drugs Involved | 21 | 26 | 39 | 30 | 19 | 135 |
| Alcohol Involved | 130 | 233 | 258 | 235 | 231 | 1087 |
| Drugs & Alcohol | 8 | 12 | 11 | 16 | 14 | 61 |
| **Total** | **159** | **271** | **308** | **281** | **264** | **1283** |

| Injuries based on Drug/Alcohol Involvement | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Drugs Involved | 12 | 16 | 28 | 34 | 80 | 142 |
| Alcohol Involved | 23 | 64 | 87 | 319 | 417 | 823 |
| Drugs & Alcohol | 6 | 7 | 13 | 11 | 24 | 48 |
| **Total** | **41** | **87** | **128** | **364** | **521** | **1013** |

## Number of Injuries Based on Collision Type with Drug and Alcohol Use

| Number of Injuries based on Collision Type With Alcohol Use Flag | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **%** | **Other Inj** |
| Angle | 0 | 4 | 4 | 4% | 48 |
| Head-on | 5 | 4 | 9 | 9% | 42 |
| Rear-end | 1 | 2 | 3 | 3% | 224 |
| SS-M | 1 | 1 | 2 | 2% | 38 |
| SS-O | 0 | 3 | 3 | 3% | 27 |
| Turn | 0 | 8 | 8 | 8% | 93 |

| | | | | | |
|---|---|---|---|---|---|
| Parking | 0 | 0 | 0 | 0% | 0 |
| Non-collision | 0 | 4 | 4 | 4% | 2 |
| Fixed Object | 13 | 37 | 50 | 50% | 269 |
| Pedestrian | 9 | 8 | 17 | 17% | 25 |
| Backing | 0 | 0 | 0 | 0% | 2 |
| Miscellaneous | 0 | 0 | 0 | 0% | 1 |
| **Total** | **29** | **71** | **100** | **100%** | **771** |

* Note - Other Injuries include Inj B and Inj C

| **Number of Injuries based on Collision Type With Drug Use Flag** | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **%** | **Other Inj** |
| Angle | 3 | 0 | 3 | 7% | 7 |
| Head-on | 5 | 4 | 9 | 22% | 9 |
| Rear-end | 0 | 2 | 2 | 5% | 52 |
| SS-M | 0 | 0 | 0 | 0% | 7 |
| SS-O | 0 | 1 | 1 | 2% | 9 |
| Turn | 2 | 6 | 8 | 20% | 14 |
| Parking | 0 | 0 | 0 | 0% | 2 |
| Non-collision | 0 | 0 | 0 | 0% | 1 |
| Fixed Object | 3 | 8 | 11 | 27% | 42 |
| Pedestrian | 5 | 2 | 7 | 17% | 5 |
| Backing | 0 | 0 | 0 | 0% | 0 |
| Miscellaneous | 0 | 0 | 0 | 0% | 1 |
| **Total** | **18** | **23** | **41** | **100%** | **149** |

* Note - Other Injuries include Inj B and Inj C

| **Number of Injuries based on Collision Type With Alcohol And Drug Use Flag** | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **%** | **Other Inj*** |
| Angle | 3 | 4 | 7 | 5% | 55 |
| Head-on | 7 | 8 | 15 | 12% | 50 |

| | | | | | |
|---|---|---|---|---|---|
| Rear-end | 1 | 4 | 5 | 4% | 270 |
| SS-M | 1 | 1 | 2 | 2% | 41 |
| SS-O | 0 | 4 | 4 | 3% | 35 |
| Turn | 2 | 12 | 14 | 11% | 102 |
| Parking | 0 | 0 | 0 | 0% | 2 |
| Non-collision | 0 | 4 | 4 | 3% | 3 |
| Fixed Object | 14 | 41 | 55 | 43% | 296 |
| Pedestrian | 13 | 9 | 22 | 17% | 28 |
| Backing | 0 | 0 | 0 | 0% | 2 |
| Miscellaneous | 0 | 0 | 0 | 0% | 1 |
| **Total** | **41** | **87** | **128** | **100%** | **885** |

* Note - Other Injuries include Inj B and Inj C

### Rear-end Crashes Resulting in Serious Injuries or Fatalities (2010-2014)

| **Injuries based on Rear-End Crashes by Location of the Crash** | | | | |
|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **%** |
| Street/road or highway intersection | 2 | 77 | 79 | 39% |
| Driveway or alley access | 0 | 4 | 4 | 2% |
| Straight roadway | 1 | 93 | 94 | 47% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 3 | 3 | 1% |
| Open access or turnout | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 1 | 21 | 22 | 11% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 0% |
| Tunnel | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0% |
| **Total** | **4** | **198** | **202** | **100%** |

## Serious Injuries and Fatalities by Collision Type in Urban (2010 - 2014)

| Number of Injuries based on Collision Type | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Angle | 4 | 63 | 67 | 505 | 1167 | 1739 |
| Head-on | 3 | 15 | 18 | 72 | 87 | 177 |
| Rear-end | 3 | 192 | 195 | 1108 | 10238 | 11541 |
| SS-M | 1 | 6 | 7 | 45 | 79 | 131 |
| SS-O | 0 | 10 | 10 | 99 | 527 | 636 |
| Turn | 5 | 176 | 181 | 1531 | 3608 | 5320 |
| Parking | 0 | 0 | 0 | 6 | 26 | 32 |
| Non-collision | 0 | 17 | 17 | 57 | 26 | 100 |
| Fixed Object | 16 | 74 | 90 | 411 | 480 | 981 |
| Pedestrian | 26 | 51 | 77 | 240 | 202 | 519 |
| Backing | 0 | 1 | 1 | 8 | 96 | 105 |
| Miscellaneous | 0 | 0 | 0 | 9 | 24 | 33 |
| **Total** | **58** | **605** | **663** | **4091** | **16560** | **21314** |

## Serious Injuries and Fatalities by Collision Type in Rural (2010 - 2014)

| Number of Injuries based on Collision Type | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Angle | 4 | 15 | 19 | 58 | 72 | 149 |
| Head-on | 5 | 23 | 28 | 54 | 40 | 122 |
| Rear-end | 1 | 6 | 7 | 64 | 287 | 358 |
| SS-M | 1 | 10 | 11 | 50 | 92 | 153 |
| SS-O | 0 | 4 | 4 | 6 | 25 | 35 |
| Turn | 2 | 16 | 18 | 123 | 227 | 368 |
| Parking | 0 | 0 | 0 | 0 | 4 | 4 |
| Non-collision | 1 | 7 | 8 | 35 | 25 | 68 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Fixed Object | 6 | 49 | 55 | 315 | 339 | 709 |
| Pedestrian | 2 | 0 | 2 | 6 | 4 | 12 |
| Backing | 0 | 0 | 0 | 0 | 4 | 4 |
| Miscellaneous | 0 | 0 | 0 | 14 | 9 | 23 |
| **Total** | **22** | **130** | **152** | **725** | **1128** | **2005** |

## Serious Injuries and Fatalities by Age (2010-2014)

| Injuries by Age of the Participant | | | | | | |
|---|---|---|---|---|---|---|
| **Age** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| 0 | 0 | 5 | 5 | 39 | 218 | 262 |
| 1 | 0 | 2 | 2 | 19 | 56 | 77 |
| 2 | 0 | 5 | 5 | 28 | 67 | 100 |
| 3 | 0 | 1 | 1 | 24 | 53 | 78 |
| 4 | 0 | 1 | 1 | 27 | 77 | 105 |
| 5 | 0 | 0 | 0 | 24 | 75 | 99 |
| 6 | 1 | 2 | 3 | 27 | 89 | 119 |
| 7 | 0 | 1 | 1 | 26 | 79 | 106 |
| 8 | 0 | 3 | 3 | 36 | 89 | 128 |
| 9 | 0 | 2 | 2 | 19 | 100 | 121 |
| 10 | 2 | 0 | 2 | 26 | 92 | 120 |
| 11 | 1 | 1 | 2 | 32 | 85 | 119 |
| 12 | 0 | 4 | 4 | 32 | 105 | 141 |
| 13 | 0 | 5 | 5 | 38 | 98 | 141 |
| 14 | 0 | 3 | 3 | 35 | 125 | 163 |
| 15 | 0 | 9 | 9 | 60 | 119 | 188 |
| 16 | 0 | 8 | 8 | 93 | 229 | 330 |
| 17 | 1 | 7 | 8 | 132 | 312 | 452 |
| 18 | 5 | 14 | 19 | 151 | 379 | 549 |
| 19 | 1 | 17 | 18 | 148 | 368 | 534 |
| 20 | 3 | 20 | 23 | 148 | 359 | 530 |
| 21 | 2 | 18 | 20 | 134 | 386 | 540 |
| 22 | 2 | 24 | 26 | 116 | 351 | 493 |
| 23 | 4 | 14 | 18 | 106 | 422 | 546 |
| 24 | 2 | 20 | 22 | 106 | 426 | 554 |
| 25 | 0 | 20 | 20 | 108 | 420 | 548 |
| 26 | 3 | 25 | 28 | 102 | 412 | 542 |
| 27 | 1 | 6 | 7 | 100 | 379 | 486 |
| 28 | 0 | 7 | 7 | 90 | 378 | 475 |
| 29 | 1 | 16 | 17 | 109 | 404 | 530 |
| 30 | 0 | 18 | 18 | 90 | 399 | 507 |
| 31 | 2 | 9 | 11 | 78 | 420 | 509 |
| 32 | 1 | 9 | 10 | 97 | 380 | 487 |
| 33 | 0 | 10 | 10 | 85 | 378 | 473 |
| 34 | 3 | 10 | 13 | 88 | 355 | 456 |
| 35 | 1 | 10 | 11 | 84 | 397 | 492 |
| 36 | 0 | 13 | 13 | 72 | 322 | 407 |
| 37 | 1 | 14 | 15 | 84 | 367 | 466 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 38 | 0 | 11 | 11 | 56 | 319 | 386 |
| 39 | 0 | 9 | 9 | 54 | 331 | 394 |
| 40 | 1 | 10 | 11 | 79 | 360 | 450 |
| 41 | 0 | 14 | 14 | 77 | 344 | 435 |
| 42 | 1 | 10 | 11 | 81 | 348 | 440 |
| 43 | 0 | 12 | 12 | 68 | 326 | 406 |
| 44 | 0 | 8 | 8 | 56 | 324 | 388 |
| 45 | 0 | 12 | 12 | 74 | 268 | 354 |
| 46 | 0 | 11 | 11 | 73 | 320 | 404 |
| 47 | 2 | 12 | 14 | 69 | 264 | 347 |
| 48 | 1 | 10 | 11 | 61 | 281 | 353 |
| 49 | 3 | 17 | 20 | 77 | 247 | 344 |
| 50 | 3 | 11 | 14 | 66 | 308 | 388 |
| 51 | 2 | 18 | 20 | 54 | 255 | 329 |
| 52 | 1 | 11 | 12 | 49 | 237 | 298 |
| 53 | 3 | 10 | 13 | 66 | 268 | 347 |
| 54 | 1 | 14 | 15 | 58 | 231 | 304 |
| 55 | 3 | 13 | 16 | 57 | 221 | 294 |
| 56 | 0 | 11 | 11 | 56 | 215 | 282 |
| 57 | 1 | 12 | 13 | 61 | 221 | 295 |
| 58 | 1 | 11 | 12 | 46 | 204 | 262 |
| 59 | 0 | 9 | 9 | 51 | 196 | 256 |
| 60 | 3 | 11 | 14 | 53 | 180 | 247 |
| 61 | 1 | 7 | 8 | 48 | 147 | 203 |
| 62 | 2 | 6 | 8 | 54 | 158 | 220 |
| 63 | 0 | 6 | 6 | 37 | 140 | 183 |
| 64 | 0 | 7 | 7 | 42 | 154 | 203 |
| 65 | 2 | 7 | 9 | 42 | 121 | 172 |
| 66 | 1 | 10 | 11 | 24 | 108 | 143 |
| 67 | 1 | 4 | 5 | 26 | 85 | 116 |
| 68 | 1 | 6 | 7 | 18 | 79 | 104 |
| 69 | 0 | 1 | 1 | 20 | 94 | 115 |
| 70 | 1 | 3 | 4 | 15 | 64 | 83 |
| 71 | 1 | 3 | 4 | 20 | 69 | 93 |
| 72 | 1 | 2 | 3 | 21 | 53 | 77 |
| 73 | 0 | 5 | 5 | 13 | 53 | 71 |
| 74 | 1 | 2 | 3 | 6 | 43 | 52 |
| 75 | 1 | 6 | 7 | 19 | 34 | 60 |
| 76 | 0 | 1 | 1 | 15 | 33 | 49 |
| 77 | 0 | 8 | 8 | 19 | 26 | 53 |
| 78 | 0 | 2 | 2 | 16 | 25 | 43 |
| 79 | 1 | 4 | 5 | 13 | 19 | 37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 80 | 1 | 2 | 3 | 7 | 22 | 32 |
| 81 | 0 | 5 | 5 | 11 | 12 | 28 |
| 82 | 1 | 1 | 2 | 17 | 22 | 41 |
| 83 | 0 | 2 | 2 | 5 | 15 | 22 |
| 84 | 0 | 2 | 2 | 11 | 18 | 31 |
| 85 | 0 | 4 | 4 | 4 | 15 | 23 |
| 86 | 0 | 1 | 1 | 6 | 15 | 22 |
| 87 | 0 | 2 | 2 | 6 | 17 | 25 |
| 88 | 0 | 0 | 0 | 5 | 8 | 13 |
| 89 | 0 | 0 | 0 | 7 | 4 | 11 |
| 90 | 0 | 0 | 0 | 2 | 8 | 10 |
| 91 | 0 | 2 | 2 | 4 | 7 | 13 |
| 92 | 0 | 1 | 1 | 3 | 2 | 6 |
| 93 | 1 | 2 | 3 | 2 | 4 | 9 |
| 94 | 0 | 0 | 0 | 1 | 2 | 3 |
| 95 | 0 | 0 | 0 | 1 | 1 | 2 |
| 96 | 0 | 0 | 0 | 0 | 2 | 2 |
| 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | 0 | 0 | 0 | 1 | 0 | 1 |
| 99 | 0 | 2 | 2 | 1 | 1 | 4 |
| Total | 80 | 736 | 816 | 4817 | 17718 | 23351 |

| Driver Injured by Age | | | | | | |
|---|---|---|---|---|---|---|
| **Age** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| 0 | 0 | 0 | 0 | 0 | 17 | 17 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 1 | 0 | 1 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 1 | 1 |
| 15 | 0 | 1 | 1 | 2 | 18 | 21 |
| 16 | 0 | 2 | 2 | 45 | 97 | 144 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | 0 | 2 | 2 | 68 | 182 | 252 |
| 18 | 2 | 8 | 10 | 88 | 251 | 349 |
| 19 | 0 | 10 | 10 | 95 | 247 | 352 |
| 20 | 0 | 11 | 11 | 105 | 260 | 376 |
| 21 | 1 | 12 | 13 | 98 | 280 | 391 |
| 22 | 1 | 15 | 16 | 76 | 271 | 363 |
| 23 | 1 | 13 | 14 | 77 | 316 | 407 |
| 24 | 1 | 13 | 14 | 70 | 333 | 417 |
| 25 | 0 | 12 | 12 | 70 | 325 | 407 |
| 26 | 3 | 22 | 25 | 79 | 321 | 425 |
| 27 | 0 | 3 | 3 | 77 | 296 | 376 |
| 28 | 0 | 6 | 6 | 67 | 294 | 367 |
| 29 | 0 | 13 | 13 | 83 | 326 | 422 |
| 30 | 0 | 16 | 16 | 64 | 308 | 388 |
| 31 | 1 | 7 | 8 | 58 | 349 | 415 |
| 32 | 0 | 6 | 6 | 69 | 312 | 387 |
| 33 | 0 | 7 | 7 | 65 | 315 | 387 |
| 34 | 3 | 7 | 10 | 71 | 304 | 385 |
| 35 | 1 | 9 | 10 | 61 | 335 | 406 |
| 36 | 0 | 10 | 10 | 59 | 272 | 341 |
| 37 | 0 | 10 | 10 | 60 | 315 | 385 |
| 38 | 0 | 8 | 8 | 41 | 273 | 322 |
| 39 | 0 | 7 | 7 | 46 | 283 | 336 |
| 40 | 0 | 10 | 10 | 66 | 297 | 373 |
| 41 | 0 | 13 | 13 | 62 | 289 | 364 |
| 42 | 1 | 7 | 8 | 58 | 295 | 361 |
| 43 | 0 | 7 | 7 | 55 | 277 | 339 |
| 44 | 0 | 4 | 4 | 43 | 266 | 313 |
| 45 | 0 | 9 | 9 | 50 | 238 | 297 |
| 46 | 0 | 9 | 9 | 52 | 268 | 329 |
| 47 | 0 | 11 | 11 | 55 | 223 | 289 |
| 48 | 1 | 7 | 8 | 44 | 236 | 288 |
| 49 | 1 | 13 | 14 | 63 | 210 | 287 |
| 50 | 3 | 9 | 12 | 50 | 240 | 302 |
| 51 | 1 | 12 | 13 | 43 | 208 | 264 |
| 52 | 0 | 9 | 9 | 37 | 200 | 246 |
| 53 | 1 | 7 | 8 | 52 | 216 | 276 |
| 54 | 0 | 12 | 12 | 44 | 196 | 252 |
| 55 | 1 | 10 | 11 | 45 | 188 | 244 |
| 56 | 0 | 8 | 8 | 42 | 187 | 237 |
| 57 | 1 | 10 | 11 | 50 | 184 | 245 |
| 58 | 1 | 10 | 11 | 32 | 177 | 220 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 59 | 0 | 7 | 7 | 36 | 169 | 212 |
| 60 | 2 | 7 | 9 | 37 | 140 | 186 |
| 61 | 1 | 6 | 7 | 36 | 118 | 161 |
| 62 | 1 | 5 | 6 | 47 | 126 | 179 |
| 63 | 0 | 4 | 4 | 29 | 121 | 154 |
| 64 | 0 | 6 | 6 | 29 | 121 | 156 |
| 65 | 1 | 6 | 7 | 31 | 99 | 137 |
| 66 | 0 | 8 | 8 | 14 | 93 | 115 |
| 67 | 1 | 4 | 5 | 20 | 65 | 90 |
| 68 | 1 | 4 | 5 | 14 | 66 | 85 |
| 69 | 0 | 1 | 1 | 19 | 65 | 85 |
| 70 | 0 | 3 | 3 | 10 | 48 | 61 |
| 71 | 1 | 1 | 2 | 16 | 55 | 73 |
| 72 | 0 | 1 | 1 | 21 | 43 | 65 |
| 73 | 0 | 5 | 5 | 6 | 37 | 48 |
| 74 | 0 | 2 | 2 | 4 | 32 | 38 |
| 75 | 0 | 2 | 2 | 14 | 23 | 39 |
| 76 | 0 | 0 | 0 | 12 | 26 | 38 |
| 77 | 0 | 5 | 5 | 16 | 17 | 38 |
| 78 | 0 | 2 | 2 | 16 | 22 | 40 |
| 79 | 0 | 3 | 3 | 11 | 13 | 27 |
| 80 | 1 | 1 | 2 | 4 | 16 | 22 |
| 81 | 0 | 3 | 3 | 7 | 11 | 21 |
| 82 | 0 | 1 | 1 | 11 | 12 | 24 |
| 83 | 0 | 0 | 0 | 3 | 9 | 12 |
| 84 | 0 | 1 | 1 | 7 | 11 | 19 |
| 85 | 0 | 3 | 3 | 3 | 8 | 14 |
| 86 | 0 | 0 | 0 | 5 | 8 | 13 |
| 87 | 0 | 2 | 2 | 3 | 12 | 17 |
| 88 | 0 | 0 | 0 | 5 | 5 | 10 |
| 89 | 0 | 0 | 0 | 5 | 1 | 6 |
| 90 | 0 | 0 | 0 | 1 | 5 | 6 |
| 91 | 0 | 2 | 2 | 2 | 4 | 8 |
| 92 | 0 | 0 | 0 | 2 | 1 | 3 |
| 93 | 0 | 0 | 0 | 2 | 3 | 5 |
| 94 | 0 | 0 | 0 | 0 | 0 | 0 |
| 95 | 0 | 0 | 0 | 1 | 1 | 2 |
| 96 | 0 | 0 | 0 | 0 | 1 | 1 |
| 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | 0 | 0 | 0 | 1 | 0 | 1 |
| 99 | 0 | 0 | 0 | 1 | 1 | 2 |
| Total | 34 | 502 | 536 | 3139 | 12904 | 16579 |

| Passenger Injured by Age | | | | | | |
|---|---|---|---|---|---|---|
| **Age** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| 0 | 0 | 4 | 4 | 17 | 183 | 204 |
| 1 | 0 | 2 | 2 | 19 | 56 | 77 |
| 2 | 0 | 4 | 4 | 26 | 67 | 97 |
| 3 | 0 | 1 | 1 | 23 | 52 | 76 |
| 4 | 0 | 1 | 1 | 25 | 73 | 99 |
| 5 | 0 | 0 | 0 | 24 | 73 | 97 |
| 6 | 0 | 1 | 1 | 24 | 89 | 114 |
| 7 | 0 | 1 | 1 | 21 | 78 | 100 |
| 8 | 0 | 3 | 3 | 29 | 89 | 121 |
| 9 | 0 | 2 | 2 | 15 | 96 | 113 |
| 10 | 1 | 0 | 1 | 20 | 90 | 111 |
| 11 | 0 | 0 | 0 | 24 | 83 | 107 |
| 12 | 0 | 3 | 3 | 24 | 100 | 127 |
| 13 | 0 | 2 | 2 | 21 | 94 | 117 |
| 14 | 0 | 2 | 2 | 23 | 112 | 137 |
| 15 | 0 | 7 | 7 | 44 | 96 | 147 |
| 16 | 0 | 5 | 5 | 36 | 122 | 163 |
| 17 | 0 | 2 | 2 | 56 | 119 | 177 |
| 18 | 0 | 4 | 4 | 45 | 112 | 161 |
| 19 | 1 | 5 | 6 | 38 | 114 | 158 |
| 20 | 1 | 8 | 9 | 29 | 87 | 125 |
| 21 | 1 | 5 | 6 | 26 | 98 | 130 |
| 22 | 1 | 6 | 7 | 23 | 72 | 102 |
| 23 | 0 | 1 | 1 | 19 | 95 | 115 |
| 24 | 1 | 5 | 6 | 19 | 82 | 107 |
| 25 | 0 | 5 | 5 | 25 | 87 | 117 |
| 26 | 0 | 2 | 2 | 14 | 80 | 96 |
| 27 | 1 | 2 | 3 | 10 | 71 | 84 |
| 28 | 0 | 1 | 1 | 14 | 76 | 91 |
| 29 | 1 | 0 | 1 | 16 | 73 | 90 |
| 30 | 0 | 2 | 2 | 14 | 82 | 98 |
| 31 | 0 | 2 | 2 | 10 | 65 | 77 |
| 32 | 1 | 3 | 4 | 20 | 59 | 83 |
| 33 | 0 | 1 | 1 | 10 | 59 | 70 |
| 34 | 0 | 1 | 1 | 11 | 49 | 61 |
| 35 | 0 | 0 | 0 | 14 | 56 | 70 |
| 36 | 0 | 3 | 3 | 7 | 45 | 55 |
| 37 | 0 | 3 | 3 | 19 | 45 | 67 |
| 38 | 0 | 2 | 2 | 12 | 38 | 52 |
| 39 | 0 | 1 | 1 | 3 | 44 | 48 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 40 | 0 | 0 | 0 | 8 | 54 | 62 |
| 41 | 0 | 1 | 1 | 5 | 44 | 50 |
| 42 | 0 | 2 | 2 | 14 | 49 | 65 |
| 43 | 0 | 4 | 4 | 8 | 46 | 58 |
| 44 | 0 | 1 | 1 | 5 | 50 | 56 |
| 45 | 0 | 3 | 3 | 15 | 26 | 44 |
| 46 | 0 | 0 | 0 | 9 | 48 | 57 |
| 47 | 0 | 1 | 1 | 6 | 35 | 42 |
| 48 | 0 | 2 | 2 | 6 | 40 | 48 |
| 49 | 1 | 2 | 3 | 9 | 30 | 42 |
| 50 | 0 | 0 | 0 | 7 | 60 | 67 |
| 51 | 0 | 1 | 1 | 5 | 37 | 43 |
| 52 | 0 | 2 | 2 | 7 | 32 | 41 |
| 53 | 0 | 3 | 3 | 4 | 47 | 54 |
| 54 | 1 | 2 | 3 | 7 | 29 | 39 |
| 55 | 0 | 0 | 0 | 5 | 31 | 36 |
| 56 | 0 | 2 | 2 | 7 | 24 | 33 |
| 57 | 0 | 2 | 2 | 7 | 34 | 43 |
| 58 | 0 | 1 | 1 | 9 | 24 | 34 |
| 59 | 0 | 1 | 1 | 9 | 26 | 36 |
| 60 | 0 | 1 | 1 | 9 | 37 | 47 |
| 61 | 0 | 0 | 0 | 6 | 26 | 32 |
| 62 | 0 | 1 | 1 | 4 | 28 | 33 |
| 63 | 0 | 0 | 0 | 4 | 18 | 22 |
| 64 | 0 | 0 | 0 | 9 | 30 | 39 |
| 65 | 0 | 1 | 1 | 5 | 20 | 26 |
| 66 | 0 | 1 | 1 | 6 | 14 | 21 |
| 67 | 0 | 0 | 0 | 4 | 19 | 23 |
| 68 | 0 | 1 | 1 | 2 | 13 | 16 |
| 69 | 0 | 0 | 0 | 1 | 29 | 30 |
| 70 | 0 | 0 | 0 | 3 | 16 | 19 |
| 71 | 0 | 2 | 2 | 4 | 10 | 16 |
| 72 | 0 | 0 | 0 | 0 | 10 | 10 |
| 73 | 0 | 0 | 0 | 3 | 15 | 18 |
| 74 | 0 | 0 | 0 | 1 | 9 | 10 |
| 75 | 0 | 1 | 1 | 5 | 11 | 17 |
| 76 | 0 | 0 | 0 | 1 | 7 | 8 |
| 77 | 0 | 3 | 3 | 2 | 9 | 14 |
| 78 | 0 | 0 | 0 | 0 | 3 | 3 |
| 79 | 1 | 0 | 1 | 1 | 5 | 7 |
| 80 | 0 | 0 | 0 | 1 | 5 | 6 |
| 81 | 0 | 1 | 1 | 3 | 1 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 82 | 1 | 0 | 1 | 5 | 9 | 15 |
| 83 | 0 | 2 | 2 | 1 | 6 | 9 |
| 84 | 0 | 0 | 0 | 1 | 7 | 8 |
| 85 | 0 | 1 | 1 | 1 | 7 | 9 |
| 86 | 0 | 1 | 1 | 1 | 7 | 9 |
| 87 | 0 | 0 | 0 | 1 | 5 | 6 |
| 88 | 0 | 0 | 0 | 0 | 3 | 3 |
| 89 | 0 | 0 | 0 | 1 | 3 | 4 |
| 90 | 0 | 0 | 0 | 1 | 3 | 4 |
| 91 | 0 | 0 | 0 | 2 | 3 | 5 |
| 92 | 0 | 1 | 1 | 0 | 1 | 2 |
| 93 | 0 | 1 | 1 | 0 | 1 | 2 |
| 94 | 0 | 0 | 0 | 0 | 2 | 2 |
| 95 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96 | 0 | 0 | 0 | 0 | 1 | 1 |
| 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | 0 | 0 | 0 | 0 | 0 | 0 |
| 99 | 0 | 1 | 1 | 0 | 0 | 1 |
| Total | 13 | 151 | 164 | 1109 | 4420 | 5693 |

### Serious Injuries and Fatalities by Crash Cause (2010-2014)

| | Fatalities | Inj-A | Total | % Total |
|---|---|---|---|---|
| Did not yield right-of-way | 10 | 171 | 181 | 22% |
| Disregarded traffic signal | 5 | 61 | 66 | 8% |
| Drove left of center on two-way road | 7 | 21 | 28 | 3% |
| Followed too closely | 1 | 115 | 116 | 14% |
| Other improper driving | 6 | 54 | 60 | 7% |
| Non-Motorist illegally in roadway | 19 | 20 | 39 | 5% |
| Inattention | 1 | 32 | 33 | 4% |
| Careless Driving (self-reported) | 0 | 43 | 43 | 5% |
| Reckless Driving (self-reported) | 3 | 31 | 34 | 4% |
| Speeding | 20 | 81 | 101 | 12% |
| Other | 8 | 106 | 114 | 14% |
| Total | 80 | 735 | 815 | 100% |

### Serious Injuries and Fatalities by Crash Cause in Urban and Rural (2010 - 2014)

| Crashes Fatalities and Severe Injuries based on Cause | | | | |
|---|---|---|---|---|
| **Crash Causes** | **Fatalities** | **Inj-A** | **Total** | **% Total** |
| Did not yield right-of-way | 6 | 153 | 159 | 24% |
| Passed stop sign or red flasher | 0 | 3 | 3 | 0% |

| | | | | |
|---|---|---|---|---|
| Disregarded traffic signal | 5 | 60 | 65 | 10% |
| Drove left of center on two-way road | 2 | 8 | 10 | 2% |
| Improper overtaking | 2 | 2 | 4 | 1% |
| Followed too closely | 1 | 109 | 110 | 17% |
| Made improper turn | 0 | 13 | 13 | 2% |
| Other improper driving | 6 | 39 | 45 | 7% |
| Improper change of traffic lanes | 0 | 6 | 6 | 1% |
| Disregarded other traffic control device | 1 | 4 | 5 | 1% |
| Wrong way on one-way roadway | 0 | 0 | 0 | 0% |
| Driver drowsy / fatigued / sleepy | 1 | 7 | 8 | 1% |
| Physical Illness (eff. 2014) | 0 | 3 | 3 | 0% |
| Non-Motorist illegally in roadway | 17 | 20 | 37 | 6% |
| Non-Motorist clothing not visible | 0 | 3 | 3 | 0% |
| Inattention | 1 | 28 | 29 | 4% |
| Non-Motorist Inattention | 0 | 0 | 0 | 0% |
| Failed to avoid vehicle ahead | 0 | 13 | 13 | 2% |
| Speed Racing (self-reported) | 0 | 0 | 0 | 0% |
| Careless Driving (self-reported) | 0 | 35 | 35 | 5% |
| Reckless Driving (self-reported) | 3 | 22 | 25 | 4% |
| Aggressive Driving (self-reported) | 0 | 1 | 1 | 0% |
| Road Rage (self-reported) | 0 | 0 | 0 | 0% |
| Improper use of median or shoulder | 0 | 1 | 1 | 0% |
| No cause associated at this level | 0 | 0 | 0 | 0% |
| Other (not improper driving) | 0 | 18 | 18 | 3% |
| Phantom / non-contact vehicle | 0 | 2 | 2 | 0% |
| View Obscured | 0 | 0 | 0 | 0% |
| Speed too fast for conditions (not exceeding limit) | 6 | 42 | 48 | 7% |
| Driving in excess of posted speed | 7 | 6 | 13 | 2% |
| Mechanical defect | 0 | 0 | 0 | 0% |
| Vehicle improperly parked | 0 | 1 | 1 | 0% |
| Defective steering mechanism | 0 | 2 | 2 | 0% |
| Inadequate or no brakes | 0 | 3 | 3 | 0% |
| Vehicle lost load or load shifted | 0 | 0 | 0 | 0% |
| Tire failure | 0 | 1 | 1 | 0% |
| **Total** | **58** | **605** | **663** | **100%** |

| **Crashes Fatalities and Severe Injuries based on Cause** | | | | |
|---|---|---|---|---|
| **Crash Causes** | **Fatalities** | **Inj-A** | **Total** | **% Total** |
| Did not yield right-of-way | 4 | 18 | 22 | 14% |
| Passed stop sign or red flasher | 2 | 6 | 8 | 5% |
| Disregarded traffic signal | 0 | 1 | 1 | 1% |
| Drove left of center on two-way road | 5 | 13 | 18 | 12% |

| | | | | |
|---|---|---|---|---|
| Improper overtaking | 1 | 4 | 5 | 3% |
| Followed too closely | 0 | 6 | 6 | 4% |
| Made improper turn | 0 | 2 | 2 | 1% |
| Other improper driving | 0 | 15 | 15 | 10% |
| Improper change of traffic lanes | 0 | 0 | 0 | 0% |
| Disregarded other traffic control device | 0 | 0 | 0 | 0% |
| Wrong way on one-way roadway | 0 | 0 | 0 | 0% |
| Driver drowsy / fatigued / sleepy | 0 | 5 | 5 | 3% |
| Physical Illness (eff. 2014) | 0 | 0 | 0 | 0% |
| Non-Motorist illegally in roadway | 2 | 0 | 2 | 1% |
| Non-Motorist clothing not visible | 1 | 0 | 1 | 1% |
| Inattention | 0 | 4 | 4 | 3% |
| Non-Motorist Inattention | 0 | 0 | 0 | 0% |
| Failed to avoid vehicle ahead | 0 | 0 | 0 | 0% |
| Speed Racing (self-reported) | 0 | 0 | 0 | 0% |
| Careless Driving (self-reported) | 0 | 8 | 8 | 5% |
| Reckless Driving (self-reported) | 0 | 9 | 9 | 6% |
| Aggressive Driving (self-reported) | 0 | 0 | 0 | 0% |
| Road Rage (self-reported) | 0 | 0 | 0 | 0% |
| Improper use of median or shoulder | 0 | 0 | 0 | 0% |
| No cause associated at this level | 0 | 0 | 0 | 0% |
| Other (not improper driving) | 0 | 0 | 0 | 0% |
| Phantom / non-contact vehicle | 0 | 5 | 5 | 3% |
| View Obscured | 0 | 0 | 0 | 0% |
| Speed too fast for conditions (not exceeding limit) | 3 | 30 | 33 | 22% |
| Driving in excess of posted speed | 4 | 3 | 7 | 5% |
| Mechanical defect | 0 | 0 | 0 | 0% |
| Vehicle improperly parked | 0 | 1 | 1 | 1% |
| Defective steering mechanism | 0 | 0 | 0 | 0% |
| Inadequate or no brakes | 0 | 0 | 0 | 0% |
| Vehicle lost load or load shifted | 0 | 0 | 0 | 0% |
| Tire failure | 0 | 0 | 0 | 0% |
| **Total** | **22** | **130** | **152** | **100%** |

**Serious Injuries and Fatalities by Alcohol and Drug Use (2010 – 2014)**

| **Injuries based on Drug/Alcohol Involvement** | | | | | | |
|---|---|---|---|---|---|---|
| **Crash Type** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| Drugs Involved | 18 | 23 | 41 | 45 | 104 | 190 |
| Alcohol Involved | 29 | 71 | 100 | 330 | 441 | 871 |
| Drugs & Alcohol | 6 | 7 | 13 | 11 | 24 | 48 |
| **Total** | **53** | **101** | **154** | **386** | **569** | **1109** |

## Serious Injuries and Fatalities to Driver when Intoxicated (2010-2014)

| Intoxicated Driver Injured by Age | | | | | | |
|---|---|---|---|---|---|---|
| **Age** | **Fatalities** | **INJ-A** | **F+Inj A** | **Inj B** | **Inj C** | **Total** |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 1 | 1 | 0 | 0 | 1 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | 0 | 0 | 0 | 1 | 2 | 3 |
| 18 | 0 | 1 | 1 | 0 | 0 | 1 |
| 19 | 0 | 2 | 2 | 4 | 4 | 10 |
| 20 | 0 | 1 | 1 | 5 | 4 | 10 |
| 21 | 1 | 2 | 3 | 11 | 5 | 19 |
| 22 | 0 | 5 | 5 | 6 | 10 | 21 |
| 23 | 0 | 5 | 5 | 7 | 2 | 14 |
| 24 | 0 | 0 | 0 | 5 | 5 | 10 |
| 25 | 0 | 0 | 0 | 6 | 6 | 12 |
| 26 | 0 | 1 | 1 | 9 | 4 | 14 |
| 27 | 0 | 0 | 0 | 8 | 9 | 17 |
| 28 | 0 | 0 | 0 | 5 | 8 | 13 |
| 29 | 0 | 1 | 1 | 7 | 2 | 10 |
| 30 | 0 | 1 | 1 | 5 | 3 | 9 |
| 31 | 0 | 1 | 1 | 5 | 7 | 13 |
| 32 | 0 | 0 | 0 | 4 | 1 | 5 |
| 33 | 0 | 0 | 0 | 7 | 7 | 14 |
| 34 | 1 | 0 | 1 | 2 | 2 | 5 |
| 35 | 0 | 0 | 0 | 2 | 4 | 6 |
| 36 | 0 | 2 | 2 | 3 | 2 | 7 |
| 37 | 0 | 1 | 1 | 2 | 1 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 38 | 0 | 0 | 0 | 2 | 2 | 4 |
| 39 | 0 | 1 | 1 | 2 | 1 | 4 |
| 40 | 0 | 3 | 3 | 1 | 2 | 6 |
| 41 | 0 | 2 | 2 | 3 | 0 | 5 |
| 42 | 0 | 2 | 2 | 4 | 3 | 9 |
| 43 | 0 | 0 | 0 | 5 | 0 | 5 |
| 44 | 0 | 0 | 0 | 2 | 3 | 5 |
| 45 | 0 | 0 | 0 | 4 | 3 | 7 |
| 46 | 0 | 1 | 1 | 2 | 4 | 7 |
| 47 | 0 | 1 | 1 | 2 | 1 | 4 |
| 48 | 1 | 0 | 1 | 2 | 0 | 3 |
| 49 | 0 | 1 | 1 | 2 | 4 | 7 |
| 50 | 0 | 1 | 1 | 7 | 2 | 10 |
| 51 | 0 | 1 | 1 | 4 | 1 | 6 |
| 52 | 0 | 1 | 1 | 3 | 1 | 5 |
| 53 | 1 | 2 | 3 | 4 | 4 | 11 |
| 54 | 0 | 1 | 1 | 1 | 2 | 4 |
| 55 | 0 | 0 | 0 | 0 | 0 | 0 |
| 56 | 0 | 0 | 0 | 1 | 4 | 5 |
| 57 | 0 | 0 | 0 | 1 | 1 | 2 |
| 58 | 0 | 1 | 1 | 1 | 1 | 3 |
| 59 | 0 | 1 | 1 | 1 | 0 | 2 |
| 60 | 0 | 0 | 0 | 1 | 1 | 2 |
| 61 | 0 | 0 | 0 | 0 | 0 | 0 |
| 62 | 0 | 0 | 0 | 1 | 0 | 1 |
| 63 | 0 | 1 | 1 | 1 | 2 | 4 |
| 64 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 | 0 | 0 | 0 | 0 | 0 | 0 |
| 66 | 0 | 0 | 0 | 1 | 0 | 1 |
| 67 | 0 | 0 | 0 | 0 | 0 | 0 |
| 68 | 0 | 0 | 0 | 0 | 1 | 1 |
| 69 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70 | 0 | 0 | 0 | 0 | 0 | 0 |
| 71 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72 | 0 | 0 | 0 | 1 | 0 | 1 |
| 73 | 0 | 0 | 0 | 0 | 0 | 0 |
| 74 | 0 | 0 | 0 | 0 | 1 | 1 |
| 75 | 0 | 0 | 0 | 0 | 0 | 0 |
| 76 | 0 | 0 | 0 | 0 | 0 | 0 |
| 77 | 0 | 0 | 0 | 1 | 2 | 3 |
| 78 | 0 | 0 | 0 | 1 | 0 | 1 |
| 79 | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 80 | 0 | 0 | 0 | 0 | 0 | 0 |
| 81 | 0 | 0 | 0 | 0 | 0 | 0 |
| 82 | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | 0 | 0 | 0 | 0 | 0 | 0 |
| 84 | 0 | 0 | 0 | 0 | 0 | 0 |
| 85 | 0 | 0 | 0 | 0 | 0 | 0 |
| 86 | 0 | 0 | 0 | 0 | 0 | 0 |
| 87 | 0 | 0 | 0 | 0 | 0 | 0 |
| 88 | 0 | 0 | 0 | 0 | 0 | 0 |
| 89 | 0 | 0 | 0 | 0 | 0 | 0 |
| 90 | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | 0 | 0 | 0 | 0 | 0 | 0 |
| 93 | 0 | 0 | 0 | 0 | 0 | 0 |
| 94 | 0 | 0 | 0 | 0 | 0 | 0 |
| 95 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96 | 0 | 0 | 0 | 0 | 0 | 0 |
| 97 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | 0 | 0 | 0 | 0 | 0 | 0 |
| 99 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 4 | 44 | 48 | 165 | 134 | 347 |

## Urban Serious Injuries and Fatalities at Intersections by Collision Type (2010 - 2014)

| Injuries based on Rear-End Crashes by Location of the Crash | | | | |
|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **%** |
| Street/road or highway intersection | 2 | 73 | 75 | 38% |
| Driveway or alley access | 0 | 4 | 4 | 2% |
| Straight roadway | 1 | 91 | 92 | 47% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 3 | 3 | 2% |
| Open access or turnout | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 0 | 21 | 21 | 11% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 0% |
| Tunnel | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0% |
| **Total** | **3** | **192** | **195** | **100%** |

| Injuries based on Head-On Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 1 | 3 | 4 | 23 | 27 | 15% |
| Driveway or alley access | 0 | 1 | 1 | 6 | 7 | 4% |
| Straight roadway | 0 | 5 | 5 | 74 | 79 | 45% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 4 | 4 | 31 | 35 | 20% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 2 | 2 | 4 | 16 | 20 | 11% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 9 | 9 | 5% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **3** | **15** | **18** | **159** | **177** | **100%** |

| Injuries based on Fixed-Objects Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 2 | 10 | 12 | 175 | 187 | 19% |
| Driveway or alley access | 0 | 1 | 1 | 17 | 18 | 2% |
| Straight roadway | 7 | 37 | 44 | 345 | 389 | 40% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 5 | 15 | 20 | 217 | 237 | 24% |
| Open access or turnout | 0 | 0 | 0 | 1 | 1 | 0% |
| Grade (vertical curve) | 2 | 9 | 11 | 122 | 133 | 14% |
| Bridge structure (overpass and underpass included) | 0 | 2 | 2 | 14 | 16 | 2% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **16** | **74** | **90** | **891** | **981** | **100** |

| Injuries based on Turning Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 5 | 146 | 151 | 3957 | 4108 | 77% |
| Driveway or alley access | 0 | 24 | 24 | 1072 | 1096 | 21% |
| Straight roadway | 0 | 6 | 6 | 90 | 96 | 2% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 1 | 1 | 0% |
| Curve (horizontal curve) | 0 | 0 | 0 | 9 | 9 | 0% |
| Open access or turnout | 0 | 0 | 0 | 1 | 1 | 0% |
| Grade (vertical curve) | 0 | 0 | 0 | 8 | 8 | 0% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 1 | 1 | 0% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **5** | **176** | **181** | **5139** | **5320** | **100%** |

| Injuries based on Pedestrian Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 10 | 27 | 37 | 305 | 342 | 66% |
| Driveway or alley access | 1 | 3 | 4 | 46 | 50 | 10% |
| Straight roadway | 12 | 16 | 28 | 81 | 109 | 21% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 2 | 3 | 5 | 4 | 9 | 2% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 1 | 2 | 3 | 5 | 8 | 2% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 1 | 1 | 0% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **26** | **51** | **77** | **442** | **519** | **100%** |

**Rural Serious Injuries and Fatalities at Intersections by Collision Type (2010 - 2014)**

| Injuries based on Rear-End Crashes by Location of the Crash | | | | |
|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **%** |
| Street/road or highway intersection | 0 | 4 | 4 | 57% |
| Driveway or alley access | 0 | 0 | 0 | 0% |
| Straight roadway | 0 | 2 | 2 | 29% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 0 | 0 | 0% |
| Open access or turnout | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 1 | 0 | 1 | 14% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 0% |
| Tunnel | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0% |
| **Total** | **1** | **6** | **7** | **100%** |

| Injuries based on Head-On Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 0 | 0 | 0 | 3 | 3 | 2% |
| Driveway or alley access | 0 | 0 | 0 | 0 | 0 | 0% |
| Straight roadway | 3 | 14 | 17 | 27 | 44 | 36% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 2 | 8 | 10 | 41 | 51 | 42% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 0 | 0 | 0 | 17 | 17 | 14% |
| Bridge structure (overpass and underpass included) | 0 | 1 | 1 | 2 | 3 | 2% |
| Tunnel | 0 | 0 | 0 | 4 | 4 | 3% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **5** | **23** | **28** | **94** | **122** | **100%** |

| Injuries based on Fixed-Objects Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 0 | 2 | 2 | 46 | 48 | 7% |
| Driveway or alley access | 0 | 0 | 0 | 7 | 7 | 1% |
| Straight roadway | 1 | 19 | 20 | 221 | 241 | 34% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 1 | 1 | 0% |
| Curve (horizontal curve) | 4 | 24 | 28 | 313 | 341 | 48% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 0 | 4 | 4 | 58 | 62 | 9% |
| Bridge structure (overpass and underpass included) | 1 | 0 | 1 | 8 | 9 | 1% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **6** | **49** | **55** | **654** | **709** | **100%** |

| Injuries based on Turning Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 1 | 11 | 12 | 248 | 260 | 71% |
| Driveway or alley access | 1 | 2 | 3 | 73 | 76 | 21% |
| Straight roadway | 0 | 2 | 2 | 24 | 26 | 7% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 1 | 1 | 5 | 6 | 2% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 0 | 0 | 0 | 0 | 0 | 0% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 0 | 0 | 0% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **2** | **16** | **18** | **350** | **368** | **100%** |

| Injuries based on Pedestrian Crashes by Location of the Crash | | | | | | |
|---|---|---|---|---|---|---|
| **Location of Crashes** | **Fatalities** | **Inj A** | **Fat+Inj A** | **Other** | **Total** | **%** |
| Street/road or highway intersection | 0 | 0 | 0 | 3 | 3 | 25% |
| Driveway or alley access | 0 | 0 | 0 | 2 | 2 | 17% |
| Straight roadway | 1 | 0 | 1 | 5 | 6 | 50% |
| Transition (change in number of lanes) | 0 | 0 | 0 | 0 | 0 | 0% |
| Curve (horizontal curve) | 0 | 0 | 0 | 0 | 0 | 0% |
| Open access or turnout | 0 | 0 | 0 | 0 | 0 | 0% |
| Grade (vertical curve) | 1 | 0 | 1 | 0 | 1 | 8% |
| Bridge structure (overpass and underpass included) | 0 | 0 | 0 | 0 | 0 | 0% |
| Tunnel | 0 | 0 | 0 | 0 | 0 | 0% |
| Unknown | 0 | 0 | 0 | 0 | 0 | 0% |
| **Total** | **2** | **0** | **2** | **10** | **12** | **100%** |

### Serious Injuries and Fatalities by Roadway Type (2010-2014)

| Functional Classification Name | Fatalities | Injury A | F + Inj A | Other |
|---|---|---|---|---|
| Freeway/ Highway | 13 | 179 | 192 | 5540 |
| Freeway/ Highway Ramp | 2 | 15 | 17 | 789 |
| Primary Arterial | 8 | 46 | 54 | 2147 |
| Arterial | 12 | 213 | 225 | 7052 |
| Neighborhood Collector | 12 | 91 | 103 | 2651 |
| Minor Residential Street | 9 | 50 | 59 | 2152 |
| Private Roadway | 2 | 11 | 13 | 292 |
| Other | 0 | 0 | 0 | 27 |
| **Total** | **58** | **605** | **663** | **20650** |

### Crash Summary for High Crash Corridors (2010-2014)

| Roadway | Roadway Type | Length | Total Crashes | Crash Rate | Alcohol Crashes | Pedestrian Crashes | Bicycle Crashes | Fatalities |
|---|---|---|---|---|---|---|---|---|
| Tualatin Valley Highway | Primary Arterial | 20.9 | 3355 | 32.11 | 86 | 8 | 4 | 16 |
| Murray Boulevard | Primary Arterial | 6.3 | 1010 | 32.06 | 23 | 2 | 0 | 4 |
| 185th Avenue | Primary Arterial | 7.3 | 1331 | 36.47 | 36 | 1 | 2 | 4 |
| Cornell Road | Highway/Freeway | 7.5 | 1063 | 28.35 | 16 | 1 | 1 | 2 |
| HWY 99 | Primary Arterial | 21.5 | 1868 | 17.38 | 58 | 7 | 0 | 1 |
| OR 217 | Highway/Freeway | 3.5 | 283 | 16.17 | 7 | 0 | 0 | 0 |

## Pedestrian and Bicycle Crashes in Washington County (2010-2014)

| Crashes based on Crash Type | | | | | |
|---|---|---|---|---|---|
| **Crash Type** | **2010** | **2011** | **2012** | **2013** | **2014** |
| Entering at angle-One veh Stopped | 58 | 53 | 53 | 20 | 28 |
| Entering at angle-all others | 916 | 978 | 1046 | 1100 | 1205 |
| From Same Dir-both going straight | 561 | 597 | 550 | 921 | 768 |
| From Same Dir-one turn, one straight | 150 | 161 | 160 | 157 | 134 |
| From Same Dir-one stopped | 2340 | 2838 | 2810 | 2688 | 2955 |
| From Same Dir-all others | 117 | 145 | 153 | 96 | 39 |
| From Opp Dir-both going straight | 76 | 74 | 97 | 111 | 84 |
| From Opp Dir-one left turn, one straight | 493 | 592 | 549 | 534 | 657 |
| From Opp Dir-One stopped | 32 | 53 | 57 | 40 | 60 |
| From Opp Dir-all others | 28 | 30 | 18 | 38 | 27 |
| Motor Veh | 0 | 1 | 0 | 0 | 0 |
| Parked Motor Veh | 104 | 120 | 132 | 140 | 165 |
| Pedestrian | 85 | 79 | 128 | 105 | 106 |
| Railway Train | 3 | 2 | 2 | 4 | 4 |
| Pedalcyclist | 93 | 108 | 131 | 97 | 121 |
| Animal | 39 | 31 | 26 | 30 | 36 |
| Fixed Object | 543 | 713 | 699 | 771 | 685 |
| Other Object | 23 | 20 | 26 | 25 | 25 |
| Overturned | 23 | 40 | 48 | 36 | 33 |
| Other Non-Collision | 16 | 12 | 11 | 13 | 6 |
| **Total** | **5700** | **6647** | **6696** | **6926** | **7138** |

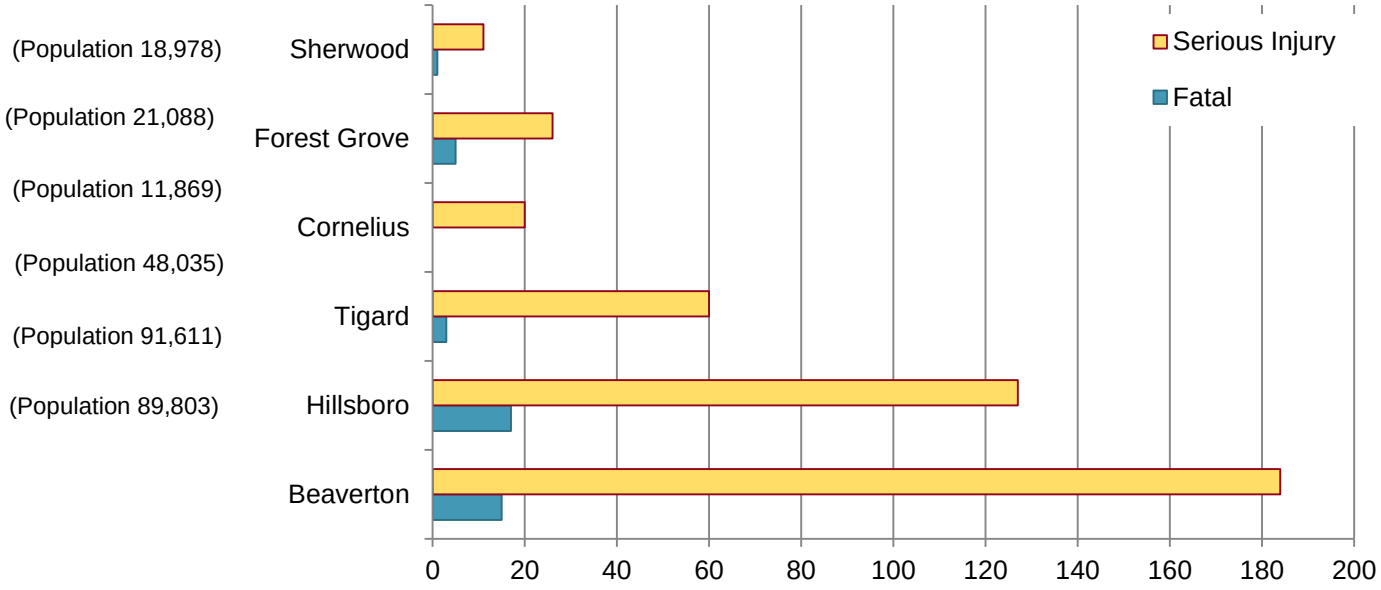
## Serious Injuries and Fatalities by Time of Day for Pedestrian and Bicyclists (2010-2014)

| Pedestrian and Bicycle Injuries Based on Time of the Day | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hour Of the Day | Pedestrian | | | | | Bicycle | | | | |
| | Fatalities | Inj A | Fat+Inj A | Other Injuries | Total | Fatalities | Inj A | Fat+Inj A | Other Injuries | Total |
| 12:00:00 AM | 3 | 1 | 4 | 5 | 9 | 0 | 0 | 0 | 1 | 1 |
| 1:00:00 AM | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 2:00:00 AM | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| 3:00:00 AM | 1 | 2 | 3 | 1 | 4 | 0 | 0 | 0 | 0 | 0 |
| 4:00:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 |
| 5:00:00 AM | 0 | 1 | 1 | 4 | 5 | 0 | 0 | 0 | 10 | 10 |
| 6:00:00 AM | 2 | 1 | 3 | 17 | 20 | 0 | 1 | 1 | 20 | 21 |
| 7:00:00 AM | 2 | 4 | 6 | 34 | 40 | 0 | 1 | 1 | 36 | 37 |
| 8:00:00 AM | 0 | 0 | 0 | 22 | 22 | 0 | 4 | 4 | 25 | 29 |
| 9:00:00 AM | 1 | 3 | 4 | 15 | 19 | 0 | 1 | 1 | 12 | 13 |
| 10:00:00 AM | 0 | 0 | 0 | 20 | 20 | 0 | 0 | 0 | 12 | 12 |
| 11:00:00 AM | 0 | 2 | 2 | 16 | 18 | 1 | 1 | 2 | 21 | 23 |
| 12:00:00 PM | 1 | 0 | 1 | 12 | 13 | 0 | 1 | 1 | 22 | 23 |
| 1:00:00 PM | 1 | 2 | 3 | 16 | 19 | 0 | 0 | 0 | 38 | 38 |
| 2:00:00 PM | 2 | 1 | 3 | 30 | 33 | 0 | 3 | 3 | 24 | 27 |
| 3:00:00 PM | 0 | 4 | 4 | 25 | 29 | 0 | 1 | 1 | 41 | 42 |
| 4:00:00 PM | 0 | 3 | 3 | 31 | 34 | 0 | 5 | 5 | 60 | 65 |
| 5:00:00 PM | 2 | 7 | 9 | 57 | 66 | 1 | 2 | 3 | 67 | 70 |
| 6:00:00 PM | 4 | 6 | 10 | 51 | 61 | 1 | 5 | 6 | 49 | 55 |
| 7:00:00 PM | 1 | 5 | 6 | 35 | 41 | 0 | 1 | 1 | 24 | 25 |
| 8:00:00 PM | 3 | 3 | 6 | 20 | 26 | 1 | 1 | 2 | 17 | 19 |
| 9:00:00 PM | 0 | 4 | 4 | 19 | 23 | 0 | 0 | 0 | 11 | 11 |
| 10:00:00 PM | 3 | 2 | 5 | 12 | 17 | 0 | 1 | 1 | 7 | 8 |
| 11:00:00 PM | 0 | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 3 | 3 |
| Unknown Time | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **28** | **51** | **79** | **452** | **531** | **4** | **28** | **32** | **504** | **536** |

### Serious Injuries and Fatalities by City (2010-2014)

Washington County includes Banks, Beaverton, Cornelius, Durham, Forest Grove, Gaston, Hillsboro, King City, North Plains, Sherwood, Tigard, and Tualatin. Many of these cities have small portions in the county; the six cities primarily in Washington County are presented in the following graph, with the corresponding number of transportation-related serious injury and fatalities related to crashes.

#### Serious Injuries and Fatalities by City (2010-2014)

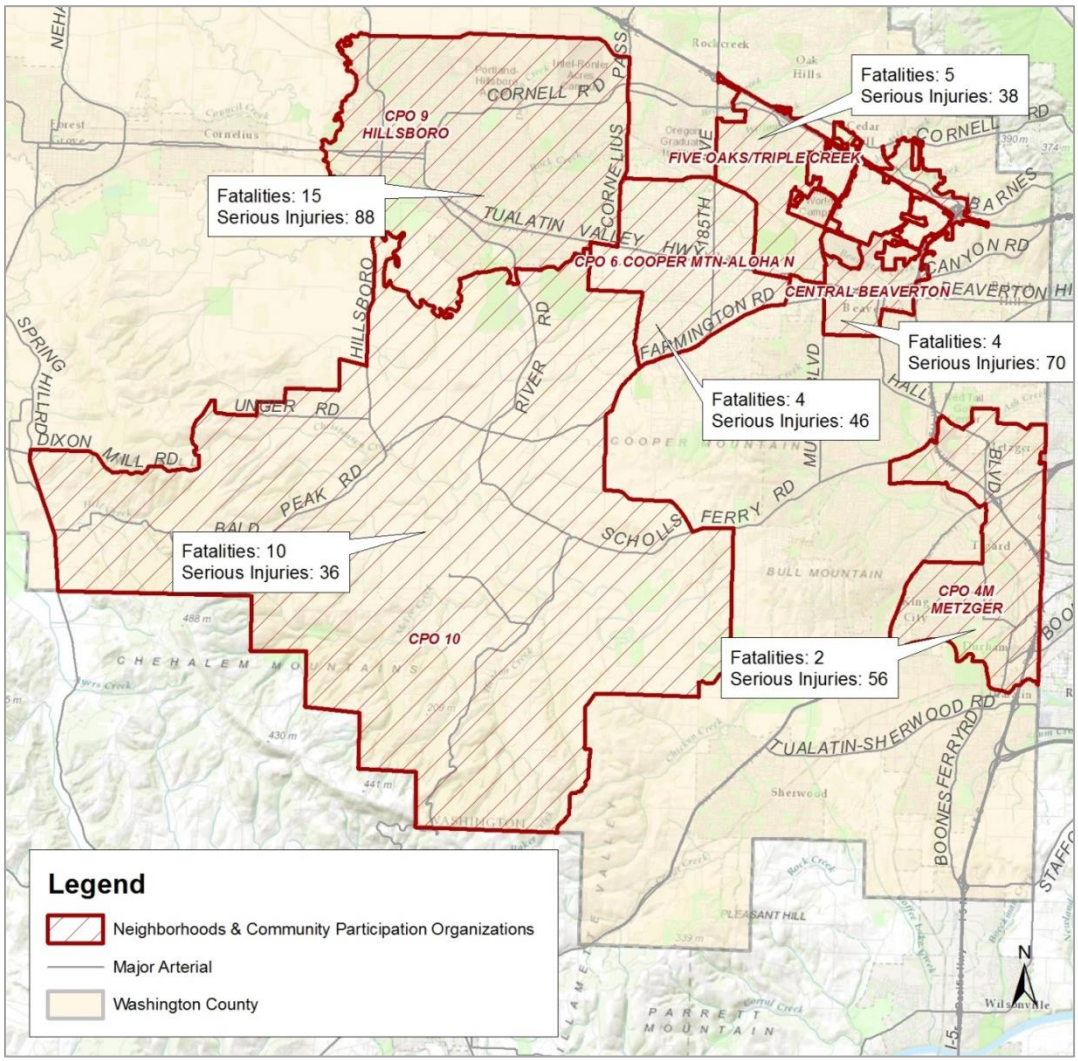



| Number of Injuries based on Severity* in Cities | | | | | | |
|---|---|---|---|---|---|---|
| **FY** | **Fatal** | **INJA** | **INJB** | **INJC** | **Total** | **Population** |
| Beaverton | 15 | 184 | 1120 | 4905 | 6224 | 89,803 |
| Hillsboro | 17 | 127 | 1033 | 3961 | 5138 | 91,611 |
| Tigard | 3 | 60 | 503 | 2304 | 2870 | 48,035 |
| Cornelius | 0 | 20 | 70 | 304 | 394 | 11,869 |
| Forest Grove | 5 | 26 | 114 | 307 | 452 | 21,088 |
| Sherwood | 1 | 11 | 97 | 398 | 507 | 18,978 |
| **Total** | **40** | **417** | **2840** | **11781** | **15078** | **30156** |
| * population based on 2010 Census data http://www.census.gov/quickfacts/table/PST045215/41067,41 | | | | | | |

## CPO Data

To identify potential areas that need specific attention, the crash data were broken down further by Community Participation Organizations (CPOs). CPOs are geographic breakdowns that represent various neighborhoods. By breaking down the data into CPOs, it can help further identify which urban or rural areas see the highest number of crashes. This assists in determining focus areas to develop specific strategies.
CPOs with minimal to no serious injuries and fatalities are provided in the following detailed data breakdown. CPOs with higher crash rates, severity, and frequency of pedestrian and bicycle crashes are consistent with trends seen throughout the crash analysis conducted as part of this project. CPOs that include high crash corridors are also those with a higher number of serious injuries and fatalities related to crashes.

### Community Participation Organizations with the Highest Number of Serious Injuries and Fatalities Related to Crashes (2010-2014)



| CPO Name | Total crashes | Total Miles of Roadway | Crashes Per Mile | Total Fatalities | Total Severe Injury | Total Pedestrian Crashes | Total Bicycle Crashes | Total Alcohol | Total Drug |
|---|---|---|---|---|---|---|---|---|---|
| IBACH | 19 | 11 | 0.3 | 0 | 1 | 0 | 2 | 2 | 0 |
| ASHCREEK | 40 | 2 | 4.3 | 0 | 0 | 1 | 5 | 2 | 0 |
| CPO 1 CEDAR HILLS-CEDAR MILL N | 171 | 61 | 0.6 | 0 | 4 | 4 | 2 | 18 | 4 |
| WEST SLOPE | 283 | 15 | 3.9 | 3 | 6 | 4 | 0 | 15 | 2 |
| MARTINAZZI WOODS | 153 | 12 | 2.6 | 0 | 1 | 0 | 3 | 8 | 1 |
| DENNEY WHITFORD/RALEIGH WEST | 1298 | 32 | 8.0 | 1 | 20 | 17 | 18 | 40 | 8 |
| CIO 6 | 99 | 11 | 1.9 | 0 | 0 | 2 | 2 | 5 | 0 |
| CPO 7 SOMMERSET WEST-ELMONICA S | 1677 | 55 | 6.1 | 2 | 35 | 27 | 31 | 43 | 8 |
| CPO 3 GARDEN HOME-RALEIGH HILLS | 533 | 64 | 1.7 | 0 | 6 | 11 | 6 | 16 | 1 |
| CPO 12 CORNELIUS | 513 | 48 | 2.1 | 1 | 24 | 9 | 14 | 20 | 2 |
| WEST BEAVERTON | 393 | 27 | 3.0 | 0 | 10 | 7 | 7 | 9 | 2 |
| VOSE | 563 | 23 | 5.0 | 1 | 9 | 8 | 10 | 16 | 2 |
| CPO 1 CEDAR HILLS-CEDAR MILL S | 430 | 87 | 1.0 | 3 | 9 | 13 | 11 | 19 | 9 |
| MIDWEST | 73 | 10 | 1.5 | 0 | 0 | 2 | 1 | 3 | 1 |
| FIVE OAKS/TRIPLE CREEK | 2462 | 70 | 7.0 | 5 | 38 | 9 | 35 | 53 | 15 |
| CPO 6 COOPER MTN-ALOHA N | 1791 | 126 | 2.8 | 4 | 46 | 47 | 37 | 62 | 12 |
| HAYHURST | 5 | 0 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| HIGHLAND | 238 | 22 | 2.1 | 0 | 9 | 3 | 6 | 12 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CENTRAL BEAVERTON | 3201 | 62 | 10.3 | 4 | 70 | 39 | 31 | 63 | 13 |
| GREENWAY | 493 | 17 | 5.7 | 0 | 6 | 3 | 3 | 13 | 0 |
| CPO 14 | 393 | 222 | 0.4 | 3 | 32 | 3 | 4 | 21 | 4 |
| CPO 15 | 113 | 40 | 0.6 | 1 | 2 | 0 | 0 | 13 | 4 |
| CPO 12 FOREST GROVE | 651 | 89 | 1.5 | 5 | 30 | 22 | 25 | 25 | 5 |
| CPO 11 | 138 | 217 | 0.1 | 1 | 8 | 2 | 0 | 12 | 1 |
| CPO 4B BULL MTN | 1270 | 126 | 2.0 | 1 | 19 | 18 | 20 | 54 | 6 |
| NEIGHBORS SOUTHWEST | 348 | 29 | 2.4 | 0 | 11 | 5 | 3 | 17 | 4 |
| SOUTH BEAVERTON | 164 | 25 | 1.3 | 0 | 6 | 1 | 3 | 11 | 0 |
| WILSONVILLE | 188 | 8 | 4.8 | 0 | 5 | 0 | 1 | 4 | 1 |
| CPO 10 | 738 | 173 | 0.9 | 10 | 36 | 1 | 6 | 60 | 15 |
| FAR WEST | 1 | 0 | 1.0 | 0 | 0 | 0 | 0 | 0 | 1 |
| CPO 6 COOPER MTN-ALOHA S | 537 | 65 | 1.6 | 4 | 10 | 4 | 4 | 38 | 2 |
| CPO 7 SOMMERSET WEST-ELMONICA N | 1125 | 147 | 1.5 | 2 | 21 | 12 | 18 | 47 | 6 |
| SEXTON MOUNTAIN | 100 | 33 | 0.6 | 1 | 1 | 1 | 0 | 8 | 2 |
| CPO 13 | 455 | 177 | 0.5 | 3 | 26 | 1 | 0 | 29 | 6 |
| CPO 5 SHERWOOD-TUALATIN N | 726 | 56 | 2.6 | 1 | 12 | 13 | 12 | 22 | 3 |
| RIVERPARK | 102 | 12 | 1.7 | 0 | 3 | 2 | 1 | 1 | 0 |
| CPO 5 | 177 | 49 | 0.7 | 3 | 9 | 1 | 2 | 12 | 4 |
| STAFFORD TUALATIN | 7 | 1 | 2.3 | 0 | 0 | 0 | 0 | 3 | 0 |
| EAST TUALATIN | 91 | 5 | 3.6 | 0 | 1 | 1 | 2 | 4 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CPO 4K | 171 | 24 | 1.4 | 0 | 3 | 4 | 3 | 6 | 1 |
| CPO 5 SHERWOOD-TUALATIN S1 | 1687 | 53 | 6.4 | 1 | 29 | 33 | 25 | 46 | 7 |
| BRIDLEMILE | 1 | 0 | 3.8 | 0 | 0 | 0 | 0 | 0 | 0 |
| NORTHWEST HEIGHTS | 3 | 1 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 |
| CPO 4M METZGER | 3945 | 133 | 5.9 | 2 | 56 | 53 | 60 | 85 | 10 |
| CPO 5 SHERWOOD-TUALATIN S2 | 99 | 10 | 1.9 | 0 | 0 | 0 | 0 | 4 | 1 |
| CPO 9 HILLSBORO | 4413 | 264 | 3.3 | 15 | 88 | 116 | 123 | 162 | 24 |
| FOREST PARK | 4 | 2 | 0.4 | 0 | 1 | 0 | 0 | 1 | 0 |
| CPO 8 | 1024 | 256 | 0.8 | 3 | 32 | 4 | 14 | 44 | 7 |
| Total | 33106 | 2975 | 126.7 | 80 | 735 | 503 | 550 | 1148 | 196 |

# Appendix C. Comment Log

*This page is intentionally left blank.*

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 7/25/2016 18:47 | Online Open House | of Washington County's transportation system. I applaud Washington County's visionary goal of zero fatalities and life-changing injuries on our transportation system. To achieve this vision will require actions that are both bold and comprehensive.<br><br>The draft TSAP is correct to highlight the importance of engineering, law enforcement, emergency response, and education. Washington County needs to do more to prevent drunk, reckless, and distracted driving; to improve emergency response; and to invest in safety-enhancing infrastructure. However, it must be recognized that driving is an inherently unsafe activity, and as long as Washington County relies on the personal automobile as the primary mode of transportation, the goal of zero fatalities and life-changing injuries will be unattainable. The draft TSAP is also correct to highlight the potential of connected and automated vehicles to greatly reduce accidents, and Washington County should take all reasonable actions to accelerate the deployment of these technologies. However, the development and deployment of connected and automated vehicles is highly uncertain, and therefore also cannot be relied upon to eliminate accidents.<br>In short, Washington County must recognize that a move away from reliance on personal automobiles and long commutes is an essential component of transportation safety.<br><br>There are three major areas in which the draft TSAP could expand the scope of available actions in ways that would significantly reduce accidents. The first is in transportation planning. From the perspective of transportation safety, the State of Oregon, Washington County, and municipalities overinvest in road system at the expense of rail, public transportation, and active transportation. In making transportation investment decisions, such as new highway construction, all public agencies should estimate the cost or benefit in terms of safety and take those estimates into account. I am grateful that the draft TSAP identifies "Policy Changes for Transportation and Land Use priorities" as a strategy and wish to see this strategy expanded.<br><br>The second area, which is inseparably linked to transportation planning, is land use planning. Land use decisions directly impact the number of vehicle miles travelled, which in turn impacts transportation safety, and land use decisions also open or close possibilities for various transportation options. For example, when a municipality adopts density restrictions, the result is additional sprawl, leading to increased travel and an increase in serious accidents. Conversely, when a municipality invests in transit-oriented development, the result is a shift from personal automobile to public transit travel, which reduces accidents.<br>As with transportation planning, public agencies engaged in land use planning should estimate the transportation safety impact of land use decisions and take them into account.<br><br>Third, the TSAP should recognize the risk of accidents as an external cost of transportation and price it accordingly. The State of Oregon, counties, and municipalities should further explore options for pricing transportation risk, including but not | Acknowledged. Thank you for the planning suggestions. |
| 7/30/2016 17:05 | Online Open House | You may need to simply consider lowering the speed limit on various stretches of the major arterials. With less attention from drivers observing driving conditions and more cyclists and pedestrians sharing the road, if you will, an increase of incidences is likely. Why not post "Speed Limit Enforced By Radar" and monitor accident rates, etc.? | Speed management is a Strategy in the TSAP. Current laws prohibit the County from using automated enforcement, but modifying that law is also a strategy. Studies show that posting signs without the means to enforce doesn't actually have a positive effect. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/5/2016 14:37 | Online Open House | I live just off of SW 175th Ave. and have to use it to go anywhere as it is my only route from home to the outside world. The speed limit is 45mph but many vehicles speed along its blind humps and turns. In fact, a traffic study was done and the 85th percentile speed was nearly 60mph. People have driveways that access directly onto 175th, the road is narrow, there are no street lights or pedestrian infrastructure and residents have to walk across it to get their mail. It is only a matter of time until someone gets killed by a speeder.<br><br>We residents that live here have been told that since it is an arterial the speed limit can't be lowered, and that people feel comfortable driving faster than the limit and that state law forbids lowering the speed limit to 35mph to create a 'speed trap' (and the traffic engineer even said that there is justification for raising it - how safe would THAT be?!!). Just go look at the data for crashes on 175th between Alvord Lane and Kemmer Rd. for the past 2 years for how big a problem this is.<br><br>I would challenge the state and Washington County to do more to lower speeds on this road to make it safer! I look around the county and I see major 4-lane roads like Murray that are as straight as an arrow with no driveways accessing it, strips down the center with trees and shrubs and sidewalks on both sides and the speed limit is 45mph! With the limits on 175th, the limit should be 35mph, and enforced!! There are plenty of other arterials in Washington County that have 35mph speed limits. If 175th is ever improved, then you can raise the limit back to 45mph at that time.<br><br>Please, no more "dialog and promises", let's have some actual results! | Speed management is a Strategy in the TSAP, as is looking at context sensitive speed limits. |
| 8/5/2016 14:53 | Online Open House | I would like to see the County and local municipalities lobby the State to enact a bicycle registration and license statute. Bicyclists use the same roads as automobile drivers, yet have no responsibility to be educated on laws related to bicycle use when sharing the same space as a car. Bicyclists, if using roadways, must be held to the same standard of education and responsibility as motorists.<br><br>I live in a rural area and see bicyclists frequently disobeying roadway laws and common sense when using the roads. Enacting bicycle registration and licensing would encourage shared-roadway education and responsibility.<br><br>The onus for safety cannot be laid on motorists alone, but must be a shared community value for everyone using the raods. | The TSAP has a strategy to look at modifying some policies and laws. There are also pedestrian strategies targeted at pedestrian awareness and education that could be used for cyclists as well. |
| 8/5/2016 15:02 | Online Open House | While I commend the groups effort of zero serious injuries and fatalities, we need to be realistic. Within Washington County, especially in the older, more established areas, the county has only a limited width of road to use. And with companies expanding their campuses (Nike, Intel), how will we get these new employees to and from work? With more employees come more vehicles and more competing interest for the right-of-way.<br><br>All of the suggestions to reduce the numbers (injuries and fatalities) made sense but I didn't see anything on trying to get people out of their vehicles. While improved transit stops will help, we need more transit in areas that make sense | The TSAP has a strategy to collaborate with Tri-Met to review transit stops. It also has a strategy to increase awareness of other modes of transportation. |
| 8/5/2016 15:12 | Online Open House | We need highway 26 widened ASAP. It's far past the point of fixing it. This is the most upsetting thing we have in Washington County. 2 lane highway. Get the police off the highway and get them patrolling the neighborhoods. Crime is next on the list of things to fix. You didn't have to pay me a thing to get this advice. | Acknowledged. |
| 8/5/2016 15:59 | Online Open House | Golf Course Rd. south of Cornelius. We need to have a slower speed limit. This has become a residential community. Cars and motorcycles will drive (race) 70 to 80 MPH through the Blooming area. It has become very dangerous to even cross the road to get the mail or news paper. Cars pulling out of the church and even out of our own driveways, you take your life in your own hands. Also the Crossing at Maple street and Fern hill road, crossing Highway 47 should be a priority most of all. I see near accidents almost every day. People need to slow down and be aware. | Speed management is a Strategy in the TSAP, as is looking at context sensitive speed limits. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/5/2016 16:01 | Online Open House | obviously, the county is liable for all such fatalities and crashes / how much money has it paid out thus far? the roads are inadequate, with treacherous open ditches, unmarked, on all sides of narrow one line in each direction roads / lack of sidewalks / ridiculous bike riders hogging valuable roadways, etc., compound the problem.<br><br>Folks get impatient with clogged highways caused by obstinate refusals to widen roads / and provide reliable and adequate public transportation.l<br><br>fix it. | Acknowledged. |
| 8/5/2016 19:53 | Online Open House | I reviewed the data provided - there is quite a lot. The group of people on the committee seem to be well versed in the causes for accidents. I'd question the engineering input only because there are many "improvements" to roads that have caused traffic problems. I suggest the committee look at the incidents along TV Hwy and Cornell Rd and determine if recent "improvements" have made these roads safer or more hazardous. Both TV Hwy and Cornell are long roads going through several different area types. Cornell Rd in Hillsboro is nothing like Cornell Rd in Cedar Mill. From this analysis you may find things that work better than others.<br><br>Additionally, I have been a strong advocate for Driver Education & Training in high schools. A large portion of accidents are caused by teen drivers. They need more supervision and training before being let loose on our roadways.<br><br>I drive school bus and see that there are a lot of distracted drivers doing all sorts of things instead of paying attention to the driving task. Cell phones are a major problem for many people. And now, with the Pokemon Go craze, I expect to see even more distracted drivers and pedestrians. | the TSAP has a strategy to review design standards. It also has a multiple strategies for driver education, including some specifically targeting distracted driving. |
| 8/5/2016 23:31 | Online Open House | I have 3 concerns in the CPO 15 area:<br>1. Golf Course Road, now that it is freshly paved, is inviting greater speeding, especially from the Golf Course on toward Cornelius<br>2.Blooming Fern Hill Road, from Fern Hill Road up over the hill to Golf Course Road has lots of speeders, who often overtake other drivers.<br>3.Near accidents happen often on Blooming Fern Hill Road from cars pulling out from the south and the north onto the road from Hergert Road. There is not enough room for the many gravel trucks to pull out safely onto Blooming Fern HIll Road from Hergert Road. This is a serious accident waiting to happen.<br>3.Johnson School Road, from the corner by Unger Farm Store to Hwy 219 has speeders who often overtake other cars, even though there are double lines.<br><br>Thank you for the chance to give input! | Acknowledged. Your concerns have been forwarded to the appropriate person. |
| 8/6/2016 8:41 | Online Open House | Pdf files are very blurry when I look at them. Not very readable on my iphone | We can provide hard copies upon request. The open house was tested on a computer, not an Iphone. |
| 8/6/2016 9:29 | Online Open House | I support safety improvements around school zones as a number one priority. Drivers need to slow down and stop for children to safely cross the street.<br>I support more police "sting" operations to enforce pedestrian crossings rules. Make announcements in the news about the plan and then do it on a quarterly basis if not more.<br>Use PSA announcements to remind people to not text and drive - put their phone away until they reach their destination - safely. This pokemon game has people out walking, but<br>not paying attention to their surroundings and wearing dark clothing. It is scary as a driver to have to watch out for these people wondering around. | Acknowledged. We have strategies for driver education and distracted driving, as well as pedestrian safety. |
| 8/6/2016 19:10 | Online Open House | Make exit off hwy 26 EB at Cedar Hills Blvd. into a large traffic circle. No lights. A traffic circle would accommodate the complicated traffic pattern at that intersection: Cedar Hills Blvd,, Buttner Road, hwy 26 EB off-ramp and on-ramp.<br>It would be interesting to hear why this is not being considered/possible. | This intersection is owned by ODOT. Your request was forwarded to them. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/7/2016 7:01 | Online Open House | How about getting the bikes onto their own paths? I am delighted to see separate riding paths on the new construction on Cornelius Pass Rd. I suspect the same may happen on Brookwood. I sure hope so. Kudos to you, planners! Use old rail beds like the Vernonia Trail to promote safe cycling. Bike areas beside roadways are typically full of debris, glass, etc, from the roads and cyclists end up on the roads... When there is no shoulder, cyclists end up on the roads. How many times have I seen cyclists on Corn Pass north of West Union, slowing down traffic, mixed in with semis and cars going too fast? My guess is cyclists only make that mistake once. Cyclists also face the danger of cars passing too close, or turning directly in front of them into a driveway. Let's make it safer for cyclists. (By the way, I do not cycle myself, but observe them.) | The TSAP has a strategy to review design standards. This includes bicycle facilities. |
| 8/7/2016 11:58 | Online Open House | On page 19 of the report, the legend for the highways says bright yellow is SW Murray. Seems like it should be Hwy 99 given where it is. | Acknowledged. This has been corrected in the TSAP. |
| 8/8/2016 11:07 | Online Open House | Please evaluate the safety of 99W and Cipole road. Intersection not adequately lighted and is a dangerous to turn into 99 from residential side due to the poor visibility. Even when the light is green, Speed limit is at 55. We had fatal accident in past. | This intersection is owned by ODOT. Your request was forwarded to them. |
| 8/8/2016 13:05 | Online Open House | Missing Stop Sign on the corner of SW 70 Ave and SW Labor St<br>The sign was on 70<br>It was knocked down and never replaced<br>Please contact me because there are two intersections<br>Thank you | This was forwarded to the correct person for investigation. |
| 8/8/2016 16:34 | Online Open House | I feel that the intersection of Highway 99W and Cipole Road between King City and Sherwood is a dangerous intersection. There is not sufficient time allowed for the traffice on Cipole to clear Highway 99W before the traffic signal turns red - the intersection is wide. Also the north side of 99W has a problem with visibility at this intersection - A tall bank on one side of Cipole Road reduces visibility. | This intersection is owned by ODOT. Your request was forwarded to them. |
| 8/8/2016 16:37 | Online Open House | Your map has some incorrect information - The legend showing the major streets indicates that yellow is Murray Bldv. and turquoise is Highway 99W. Actually the yellow is Highway 99W and the turquoise is probably Murray Blv.d. That changes everything! | Acknowledged. This has been corrected in the TSAP. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/9/2016 9:12 | Online Open House | I've just reviewed/studied Washington County Transportation Safety Action Plan (July 2016), and laud the county's attempt to address several serious concerns involving the driving public. I will accept the invitation to offer input/commentary.<br>Crashes, fatalities and injury involving a vehicle, pedestrian, bicyclist and motorcyclist have presented an ominous challenge to officials within the State. As have been adequately bifurcated, the human condition, roadway design/engineering, transportation policy has coalesced to produce some serious concerns.<br>"The goal of this TSAP is to strive towards zero serious injuries and fatalities due to crashes" – is probably unrealistic, given the human factor. Pursuing the four E's is an obvious strategy; however, we may want/need to prioritize them. Engineering, Enforcement and Emergency Response currently enjoy considerable success in contemporary implementation. Education seems to be a major challenge and one in which addresses the root cause of driving problems - the vehicle operator.<br>Serious injury and fatalities transcend all metropolises and as Graph 3 illustrates, Washington County is not predominate in said tragedies. Graphs 4 & 5 clearly exemplify it is human error that precipitates these concerns.<br>Table 2 validates that: (1) straight roadways facilitate/encourages higher speeds in which there are consequences, (2) intersections require "judgment" and (3) ignoring safe driving while negotiating curves proves costly.<br>Graph 6 speaks to the realization that older vehicle operators are not disproportionately reckless drivers. The County may want to encourage the DMV and/or State to require/mandate driver education after a second violation or accident – for all ages.<br>If the common denominator for some crashes is due to alcohol and drugs, it occurs to me that should militate specialized intervention. I wonder if alcohol and drug use and speeding and reckless driving are one in the same.<br>While it is alarming, accidents involving pedestrians, bicyclists or motorcyclists is cause for concern, a renewed emphasis of the individual's responsibility while sharing the road is suggested. Unless I missed it, has the County analyzed who was more at fault – the driver, the rider or pedestrian?<br>A couple of thoughts – the County may consider larger lights and/or signs at intersections and develop more roundabouts at validated dangerous intersections.<br>In conclusion, as intimated above, education is a critical component in addressing the issue. Can we conclude, 80% of the fatalities and injuries are due to the vehicle operator, not roadway design? I am a volunteer instructor for the AARP Smart Driver Program in Washington County and our organization adheres to scientifically-based research in a majority of topics/issues covered in TSAP. No need to reinvent the wheel; why not join forces with AARP and see how they can assist/compliment stated goals?<br><br>Jerry R. Dusenberry | The TSAP has a strategy for modifying state policies and laws. This includes graduated drivers licenses and driver education requirements.<br><br>There was correlation between drugs/alcohol and speeding/reckless driving. The TSAP has a number of strategies targeting all of these areas.<br><br>The TSAP now has a statistic about who was at fault in bike/ped crashes. It shows a need to have education for both the driver and cylist or pedestrian. There are strategies in the TSAP covering education of all road users.<br><br>The strategy to review the design standards will cover lighting/signing/roundabouts.<br><br>Thank you for the information about AARP. That will be helpful as we head into implementation of the TSAP. |
| 8/10/2016 16:45 | Online Open House | Two thoughts that I have regarding the roads. One, bicycles. While a great mode of transportation, and I rode one for years, there are some roads that are plainly not designed for them. These are mainly rural roads that were built when farmer Brown's model T topped out at 20 MPH. Nowadays coming around a corner at 35-40 MPH and encountering bicycles can be a disaster. You have 3 choices. 1, slam on the brakes and risk getting rear ended. 2, swerve into the on coming lane and risk a head on collision. Or 3, run them off the road. There are some roads that are just not safe for bicycles. Perhaps signs to that effect saying "Not recommended for bicycles" would be of help.<br>Secondly, is the problem of slow drivers in the left lane. Few things are more infuriating than someone who merges, cuts everyone off getting to the left lane and then parks there forcing faster drivers to pass on the right. Yes, I know that there are speed limit laws but the reality is that there is always someone faster than you. If you're not THE fastest car on the road, get out of the way. There was a proposed law that made it illegal to be in the left lane except for passing. It died. Those are the people who should be ticketed for creating a dangerous situation. | Acknowledged. |
| 8/15/2016 8:26 | Online Open House | zero deaths please | Acknowledged. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/15/2016 8:52 | Online Open House | I skimmed through your plan and it's great to see that you've done a lot of research into the root cause of most the problems on the roads in Washington County. I live and work in Washington County and prefer to use a bicycle year round for commuting. I also ride regularly for exercise. There are three simple things that I think Washington County could do to help improve the safety for bicycles on the major arterials:<br><br>1. Increase the frequency of street sweeping on all roads that have bike lanes. I periodically see the sweeping trucks but they are usually in the neighborhoods and not covering the bike lanes. The quantity of debris, rocks and gravel on most of the roads can get pretty bad, especially around the areas with construction such as the Nike campus.<br><br>2. Paint bike boxes in the bike lanes at major intersections. Drivers like to use bike lanes as turn lanes and frequently put cyclists at risk. Having a visual indicator that the bike lane is not a turn lane should really help.<br><br>3. Enforce not blocking the bike lane with garbage cans on garbage pickup days. Jenkins and Walker and great examples where the residents block the bike lane 100% of the time with their cans even though they could put them out of the bike lane. This forces all cyclists to ride in the traffic lane. | CWS is responsible for street sweeping in urban areas. Washington County sweeps rural and uncurbed roads. Your comment was forwarded to them.<br><br>There are more green bike boxes and green paint at conflict points being installed. This will fall under the strategy to review the design standards.<br><br>Acknowledged. We are working on the garbage can issue. |
| 8/15/2016 11:56 | Online Open House | This plan is not strong enough. We need to commit to a goal of reducing all traffic deaths by 2035. The county needs to be a leader in implementing Vision Zero policies. We can do this. We cannot accept death on our streets as normal. | Acknowledged. |
| 8/15/2016 12:15 | Online Open House | Announce a commitment to VisionZero. It's time for people to stop dying on Washington County's roads. | Acknowledged. |
| 8/15/2016 12:36 | Online Open House | Hello,<br><br>I support Vision Zero by 2035.<br><br>I am a bicycle commuter working at Intel in Hillsboro - and commuting to Downtown Portland. Washington county has very good Bicycle Lanes- but there are still issues.<br>1) The Bicycle lanes need more frequent sweeping - especially the bike lanes near Nike.<br>2) The place I always come closest to getting in a wreck is near the Tualatin Hills Recreation Center/Fred Meyer. I am not sure what would work in that area - perhaps blinking signs - like school signs that tell people to watch out for kids/bicycles?<br>3) Many/Many bicycles turn from Walker Road onto SW Park Way.... but that intersection? has a lot of traffic... and it is fairly common for bikes to need to signal and then cross left across traffic - both cars and bikes illegally stop there to turn left - as traffic illegally passes on the right ... I think something could be designed to help with that (a dedicated turn lane for example) - especially as there is a school just on the other side. | CWS is responsible for street sweeping in urban areas. Washington County sweeps rural and uncurbed roads. Your comment was forwarded to them.<br><br>Forwarded to the correct person.<br><br>Forwarded to the correct person. |
| 8/15/2016 12:53 | Online Open House | Please commit to Vision Zero. The current goal in the Transportation Safety Action Plan is to “strive towards zero serious injuries and fatalities due to crashes.” This goal fails to provide the accountability, urgency, and action that is needed to end deaths on our streets. | Acknowledged. |
| 8/15/2016 13:32 | Online Open House | Losing another 320 people to traffic injuries and fatalities by 2035 is unacceptable. Most traffic 'accidents' are avoidable. Washington County and its partners need to take more aggressive action to eliminate traffic injuries and fatalities. | Acknowledged. |
| 8/15/2016 13:37 | Online Open House | Are there concrete plans in place to build out the disparate segments of pedestrian and bicycle facilities through county-owned/maintained roads, city owned/maintained roads, and ODOT-owned/maintained roads? In the city of Tigard, for example, there are several large gaps in the sidewalk network bordering roads owned by ODOT, therefore the city is unable to complete their sidewalk network. Additionally, as ODOT owns and maintains these roads, maintenance of adjacent bike lanes goes lacking for months and months as the city is forbidden from cleaning glass and debris from these ODOT facilities.<br><br>Some ideas: Off-road, paved multi-use paths connecting communities-- the Burke-Gillman trail in the Seattle area, for example, or the paved pathway linking Corvallis and Philomath-- these pathways connect communities and facilitate active transportation while minimizing road user conflicts. Turning over ODOT-owned facilities to the cities they run through for maintenance and upgrades-- Hall Blvd and Upper Boones Ferry Rd, for instance, are both in need of completed sidewalks and greater maintenance (sweeping) than ODOT is prepared or willing to do. | There is a TSAP strategy to complete the sidewalk network. The TSAP does not differentiate jurisdiction, so it will be a goal regardless of who owns the facility.<br><br>Acknowledged. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/15/2016 17:21 | Online Open House | The current goal in the Transportation Safety Action Plan is to “strive towards zero serious injuries and fatalities due to crashes.” This goal fails to provide the accountability, urgency, and action that is needed to end deaths on our streets. Legislation and enforcement can't do it without a revision of driver training and licensing. A pedestrian or cyclist's death due to a vehicle cited for a traffic violation should immediately carry a homicide charge. | Acknowledged. |
| 8/15/2016 20:33 | Online Open House | Please implement Vision Zero on our streets by 2035, and make this an explicit goal in the transporation safety action plan! Thank you! | Acknowledged. |
| 8/16/2016 7:37 | Online Open House | I live 3 miles south of Cornelius on Golf Course Rd. across from St Peter's Lutheran Church. Our neighborhood has become heavily populated in the last 20 years. The traffic is getting heavier and faster. With a church and a school and several houses and pedestrians, is there any way we can have the speed limit lowered to a residential limit of 35 MPH. Pulling in or out of the driveway, we take our life in our hands. Cars drive WAY TOO FAST in my neighborhood. We do have a school traffic light that is turned on during school drop off and pick up hours only. Many times cars pay no attention to the safety of that flashing light. | Your comment has been forwarded to the correct person. The TSAP has a strategy to look at context sensitive speed limits and speed management. |
| 8/17/2016 9:19 | Online Open House | My husband and I moved to SW Portland (West Slope) in January 2016. We moved from inner SE Portland (Creston neighborhood). Though we love the rural neighborhoods of SW Portland, we have been disappointed with the lack of sidewalks and other safe methods to travel by foot or bike. Along Canyon Rd. between 90th and 110th there is no sideway and no shoulder along the road. It's extremely dangerous to travel by bike or on foot.<br><br>My husband and I also commute to work in downtown Portland by bike. We travel up Canyon Lane up to the zoo and down through Washington Park. It's a beautiful ride, but we have two dangerous spots: 1) crossing Canyon is always dangerous as drivers are traveling faster than 35 MPH and 2) Sylvan exit bike lane has way too much debris. There is gravel and litter in the lane making it very dangerous to travel in the bike lane especially when cars are driving fast and aggressively (as they are coming and going from the HWY 26).<br><br>There is also a bike lane as you travel down Skyline onto Scholls Ferry. There is a bike lane and then suddenly it ends. Cars are traveling fast and all of a sudden a biker is thrown into traffic. My husband and I were attempting to ride to McMenamins for dinner one night after work and realized that the bike lane does not continue and the route is extremely dangerous.<br><br>Overall we love living in SW, but wish there were friendly bike routes weaved into the neighborhoods and safer ways to travel besides by automobile. | The TSAP has a strategy to complete the sidewalk network.<br><br>The TSAP has strategies for speed management and enforcement. Sylvan is not in Washington County. Washington County jurisdiction ends where Canyon Road joins Hwy 26. Your comment has been forwarded to ODOT.<br><br>Skyline to Scholls Ferry is not a Washington Conty road. It is within Multnomah County. |
| 8/17/2016 11:28 | Online Open House | As a community, we worked hard to get the connectivity of 113th to McDaniel on the last transportation plan. As the traffic continues to grow, it is only a matter of time before there are more fatalities on the curves on Rainmont when semi trucks, and other large trucks and buses are taking the turn, they typically cross into the oncoming lane. As more people are walking and biking here, due to the increased growth (and more to come) there will be more accidents and destruction to property (trees, fences taken out, etc.). How can you look at the map and justify the two awkward turns onto 111th, rather than go straight through on 113th as is on the current Transportation Plan? What will happen when more traffic that is avoiding the bottleneck on Bethany Blvd. will be coming down from Laidlaw and Thompson? How are you going to fix this one of a few north/south connections? I thought the transportation plan was also about connectivity, like the Metro Plan? Thank you<br><br>go straight | Your comment has been forwarded to the correct person. The TSAP has a strategy to review the design standards. |
| 8/17/2016 16:39 | Online Open House | I commend your intention to "strive" for zero deaths on the roads, but as one who frequently bicycles in Washington County, I'd prefer to see something more specific such as trying to achieve zero deaths by 2035. And even better would be a specific plan such that if deaths are not decreasing as hoped for by a certain date (say every 5 years), the situation gets re-evaluated with more actions taken to achieve that goal. Thank you for your consideration. | Acknowledged. There will be periodic review and reevaluation of the strategies so Washington County can update strategies and implementation. |
| 8/17/2016 19:09 | Online Open House | This study was a waste of time and resources. Considering we are planning to pursue the VRF, which I support, this study seems to be contrived. The roads managed by Washington County are as safe as is reasonable - more so in most cases. The problem is drivers. They are distracted by electronic toys that their short attention spans can't live without, and/or lack basic defensive driving skills. Everyone is in a hurry, and not using appropriate caution. THAT is the problem. Please send me a huge check. | Acknowledged. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/18/2016 7:27 | Online Open House | As a private citizen and resident of Washington County, not as a public employee, I would strongly encourage the Washington County TSAP to increase the action priority of roundabouts. Although they can be costly, they have an outstanding record of reducing fatal and serious injuries and should be used more regularly in Washington County.<br><br>Further, Washington County should have a more clear goal of zero fatalities by a particular year. I would think 2035, to align with the Oregon TSAP, would be prudent. Without this, it is far to easy to "move towards zero" for 50 years and still have people dead or seriously injured on the roads in our community.<br><br>Thank you. | Acknowledged. |
| 8/18/2016 14:04 | Online Open House | Hello,<br>I applaud the goal of having zero serious injury or fatal crashes, but I think we need to set a date when this should be accomplished. Many areas are adopting a Vision Zero for these kinds of crashes and aim to get there by 2035. I think Washington County should work toward that and measure progress regularly. Thank you! | Acknowledged. |
| 8/18/2016 17:25 | Online Open House | I come to Washington County for work, shopping, and recreation. I want to stay safe and not hurt others when I'm traveling there. Please work to reduce traffic deaths to zero! It's a worthy and achievable goal. | Acknowledged. |
| 8/18/2016 22:13 | Online Open House | as folks start driving smaller and smaller cars and alternate energy vehicles, there will be a stronger need to design roadways that separate out the heavy traffic vehicles from the lighter ones. bikes versus cars is an extreme example of this - in effect now. but going forward, there will be more delivery trucks versus smart/electric cars on the road. some long range planning should consider how to segment those categories safely, | Acknowledged. |
| 8/19/2016 8:30 | Online Open House | Lots of nice ideas but they will remain merely ideas without concrete, measurable and actionable goals. Striving is nice in a feel-good fuzzy sort of way, but how does the county know if it has striven enough if it cannot be measure and amount of its striving and what level of striving is acceptable? Given the nature of past efforts, giving lip-service to the goals would be striving enough. So, make the goals measurable and actionable so that the county can adequately determine if it has achieved or fallen short of the goals. | Acknowledged. |
| 8/19/2016 8:40 | Online Open House | Traffic safety relies on driver behavior which in turn is influenced by enforcement. Current staffing for enforcement in the "county" is based on population densities/ enhanced patrol tax districts. Increasingly however, commute traffic and rural tourists take to/are encouraged onto rural roads, outside of enhanced patrol districts. There is even no allowed representation from the rural areas on the enhanced patrol advisory committee. The funding strategies for traffic enforcement needs evolution, perhaps to include one that follows the traffic. Rural Washington County deserves safety and protection from urban traffic impacts. Some of the strategies that the Transportation Futures looks at include building "throughways" through rural areas specifically to accommodate urban commute and corporate freight. Where would enforcement come for this? The Rural Tourism study appears ready to open the commercial gates to rural Washington County. Where will the enforcement come from? 2 FTE per shift for 1/3 the county expanse is not a safe allocation. | Acknowledged. |
| 8/19/2016 8:50 | Online Open House | I am in favor of transportation improvements to increase safety for pedestrians and bicyclists. A prime example would be a sidewalk and crosswalk near the bus stop on NW Barnes and Cedar Hills Blvd. I would support a small tax increase to fund improvements like that. | There are a number of strategies targeted at bicycle and pedestrian safety. |
| 8/19/2016 9:01 | Online Open House | Please commit to Vision Zero for zero deaths on our roads by 2035.<br><br>~a concerned driver and cyclist | Acknowledged. |
| 8/19/2016 9:08 | Online Open House | Nearly every month I learn of a bike accident in Washington County. As one of the most used rural biking areas in Oregon within easy reach of urban bicyclists, this is a problem that will only get worse. There are ways to help and Vision Zero advocated by the BTA is a well thought out and far sighted approach to the problem. I believe this needs to be one of Washington County's highest transportation priorities not only for the benefit of bicyclists but also for the drivers who are also at risk and inconvenienced by poor right of ways and poorly considered traffic areas.<br><br>Sincerely,<br>Dan Brook | Acknowledged. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/19/2016 9:16 | Online Open House | Concerning pedestrian and bicycle safety measures:<br>The benefit of adding sidewalks and connecting pathways should be to promote healthy and less resource intensive lifestyles, not merely to reduce accidents.<br>The studies are aimed at reducing the current incidence of injuries to bicycles and pedestrians. I believe that underestimates the dangers of roadways without sidewalks, bike lanes or alternative paths because people are avoiding places. And these places are being used disproportionately by the more reckless pedestrians and bicyclists.<br>I walk to local stores and use a bicycle to commute for exercise and to reduce the wastage of my and the earth's resources. And I will not ride in traffic at all. I use sidewalks, paths, residential streets and only very rarely a bike lane but never an arterial.<br>The leg muscles I developed as a child walking to school have served me well for a lifetime. I was otherwise not athletic. My own children were bused to school because of concerns about safety and did not get the exercise they should have.<br>So please reduce serious injuries and fatalities by creating alternatives to walking along the shoulder of an arterial but also increase the general welfare of the community.<br>I support the vision of the BTA (Bicycle Transportation Alliance) | Acknowledged. |
| 8/19/2016 17:31 | Online Open House | As someone who walks daily I support safety measures for Washington County. | Acknowledged. |
| 8/19/2016 21:41 | Online Open House | Bald Peak road is unsafe, has no paved shoulders and is one of the most heavily used roads by cyclists. There have been deaths on this road in the recent past because there is no side paving off of the two lane road, it is r ridiculous, dangerous and Washington County Roads should improve Bald Peak road! | Acknowledged. |
| 8/20/2016 10:49 | Online Open House | I really think certain roads in Washington county need significant safety improvement. The 206th and Wilkins intersection is pretty dangerous. Eastbound Wilkins left turn lane (for turning north on 206th) is the only direction that doesn't have a dedicated turn lane. Since Wilkins doesn't have a left turn signal and westbound Wilkins has a left turn lane and the way the road curves, those drivers trying to turn left to go north on 206th does not have a clear view of oncoming traffic making the potential for a head on collision here very possible. My wife refuses to make this turn on her own with the kids and will just go straight and around the block to avoid it. With all the new developments (ie the new Amberglen apartment complex) this intersection will see a lot more traffic over the coming years. Also, the bridge on 206th between Quatama and Baseline is far too narrow for two way traffic, I'm surprised there is not a lot of head on collisions there. | Acknowledged. Your concerns have been forwarded to the appropriate person. |
| 8/21/2016 0:33 | Online Open House | I have a few objections to the draft Transportation Safety Action Plan.<br><br>The profiled bike lane striping you propose on page 29 is a bad idea. Also it is contrary to the recommendations of AASHTO, which says that raised devices are hazardous to cyclists. Studies have shown that about half of all bicycle crashes are single vehicle crashes, and many of them are diversion falls caused by uneven pavement. You claim that profiled striping will reduce motor vehicle encroachment crashes. Will the crashes prevented actually be greater than the crashes caused by the raised striping?<br><br>You claim that cycle tracks can reduce collisions up to 59%. This is wildly contrary to the Jensen and Jensen study of Copenhagen sidepaths. It shows an increase in collisions.<br><br>You claim that colored pavement can reduce crashes at conflict points. Portland's study of colored pavement did not show any significant reduction in crashes. The only important thing their study showed was that cyclists were more likely to ride in the hazardous bike lanes when they were colored. A better solution would be not to build hazardous bike lanes. | Acknowledged. |
| 8/21/2016 21:37 | Online Open House | Nice job on the draft. Will there be more detail coming to identify high crash intersections and links as an implementation plan, matching strategy treatments to crash history? Is there a way to provide a heat map or zoom in on the crash maps to see more detail and distinguish specific problem areas? Should variable speed limits really be the first strategy listed in the County's TSAP? I suspect this would be limited to the freeways within the County and not on arterials. | There will be recommendations written to present to the Board of Commissioners. There was a heat map on the TSAP webpage, http://washingtoncountytsap.com/index.php/crash-map. The listed strategies are in no particular order. If a strategy is listed first it is not necessary the most supported or the first to be implemented. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/22/2016 10:02 | Online Open House | Please pass this information on to the appropriate people to take action.<br>I live on Tile Flat Rd, near Farmington Rd. Each year I observe at least 3 to 4 self inflicted roll over crashes on my road due to people driving too fast around the curve. Just last week I observed another (4th one this year) and was on site to help recuse a woman and her daughter from their vehicle they rolled. It was amazing they walked away from it with only minor injuries. This (west bound) curve near my house is posted at 25mph. However, I have rarely every seen anyone take the curve at this speed. The slope of the road going in the west direction is such that it will cause a driver to go off the road into the ditch if they are going faster than about 40mph. How many people have to wreck on this road before something is to be done about it? Will it take a death? My recommendation to mitigate this is to at least put up flashing yellow 25MPH warning signage and or a radar sign that will state the drivers speed. I don't think people realize just how fast they are taking that curve when they hit it. They are so used to driving at least 50mph on this country road and don't notice the small 25mph signs. Long term improvement would be to re-due this curve to slope the angle so to help vehicles will stay on the payment at a 25mph to 35mph speed, and I would also suggest filling in the ditch so if someone were to drive off the payment, they would only end up in the farmers field and not in a ditch. | Acknowledged. Your concerns have been forwarded to the appropriate person. |
| 8/5/2016 15:30 | Online Open House | Map is incorrect according to the legend. On the legend you have Murray as yellow and it actually is turquiose like Hwy 99 and Hwy 99 is yellow that the legend says is Murray | Updated. |
| 8/16/2016 11:35 | Online Open House | Confused with how pedestrians and bicyclists are dealt with? On the table it does not show the bicyclist. Are the pedestrian's adata the same for the bicyclist on the table? Are they combined? | Phone call returned and questions answered. |
| 8/17/2016 | BTA | Introduction (pg 1): Update this section to say that more than 35,000 people died in traffic crashes in the U.S. in 2015- an increase over previous years.[1] This section should also include the rationale and morals behind the plan. The Bicycle Transportation Alliance and other partners in support of Vision Zero believe that nothing is more important than human life, that all deaths and serious injuries on our streets are preventable, and that it is always unacceptable to prioritize mobility over human life. While the plan should be based on data, we are also talking about large numbers of real people- friends, family, and neighbors- who are no longer with us because of preventable tragedies on our streets. | The focus of this TSAP was crashes from 2010 through 2014. The 2015 data is outside the scope of this project and would be incomplete. |
| 8/17/2016 | BTA | Goal (pg 2): The goal lacks the specificity and accountability needed to drive change. We cannot measure “striving towards zero.” The plan needs a target date and detailed metrics or performance measures in order to be effective. Goals are meaningless without a deadline. We ask that Washington County set a goal to end traffic-related deaths and serious injuries on our streets by the year 2035. ODOT, Metro, and the City of Hillsboro have all proposed target dates of 2035, and if Washington County does the same it will improve the County’s ability to make progress, secure resources, and coordinate with key partners. | The request for Vision Zero with a date of 2035, including all letters of support, will be presented to the Director and Board of Commissioners for their input. The current draft of the TSAP is not ignoring the request, but simply gathering all of the information and letters to present to the Board for their decision. |
| 8/17/2016 | BTA | Four E’s (pg 2): Evalution. We recommend adding Evaluation and Equity to the E’s. Evaluation is necessary to determine how well the strategies are working and catch new, emerging problems. Four E’s (pg 2): Equity. Equity is especially critical because people of different ages, races, incomes, and zip codes have different transportation outcomes. For example, the fatality rate for African-American bicyclists is 30% higher than that of white bicyclists. In Washington County, the Aloha-Reedville area has more families in poverty, more people of color, and more youth than other parts of the County along with some of the most inadequate and dangerous transportation infrastructure. This plan needs to include demographic data and maps, for example overlays with the Regional Equity Atlas, that help us understand who is most impacted by serious crashes. | At the beginning of the project the 4 E’s were selected to align with the 4 E’s of safety. This was chosen because the TSAP is focused on safety. Evaluation is built into the TSAP itself. Equity is considered at the individual project level. |
| 8/17/2016 | BTA | Study Area (pg 4): Washington County is not just rural and suburban. It is increasingly urban as well. This would be a good place to add a map of the town centers and regional centers in Washington County according to the 2040 Growth Plan and related efforts. It would also be useful to say what percent of the population lives within vs. outside the Urban Growth Boundary. | The focus was on Washington County, not on the UGB. That is more of a concern for Metro. There are a number of statistics in the TSAP about the rural/urban split. Demographic profiles are developed with individual projects. |
| 8/17/2016 | BTA | Existing Conditions: Trends (pg 7): It would be helpful to take a broader perspective of the total number of serious injuries and fatalities by showing 10 or more years of totals. It is hard to say with five years whether we are seeing ongoing improvement/worsening or just cyclical ups and downs. | That is outside the scope of the project. The TSAP was specifically targeting 5 years of data. |
| 8/17/2016 | BTA | Existing Conditions: Figure 3 (pg 11): Why are rear-end crashes mapped but not turning, fixed object, etc.? | Additional figures added to the TSAP. |
| 8/17/2016 | BTA | Existing Conditions: Age (pg 12): The percentages are unclear- what is the total to which they are being compared? Also, the percentages are not meaningful without population demographics with which to compare them. Please also specify how people biking and walking are counted, as the legend for Graph 6 only mentions drivers and passengers. | TSAP updated. |
| 8/17/2016 | BTA | Existing Conditions: Crash cause (pg 13): This is useful information. Please include data about the speeds at which fatal/severe crashes occurred if possible, or if not possible, the posted speeds at the locations of fatal/severe crashes (could be in combination with the Roadway Types pie charts). | Outside the scope of this project. Additional speed information will be investigated as part of the Speed Management strategy. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/17/2016 | BTA | Existing Conditions: Non-motorist illegally in roadway (pg 13): We commend the recommendation to consider crossings at these locations. We should be cautious interpreting this data as the term lacks a clear, consistent interpretation. Some officers record “Pedestrian iillegally in roadway” if they were crossing a five-lane road at an unsignalized intersection, even though under Oregon law all intersections are crosswalks. | Acknowledged. |
| 8/17/2016 | BTA | Existing Conditions: Alcohol/Drugs (pg 15): Data about the age of drivers who inflict fatal/severe injuries on others while impaired would be more useful than just the age of drivers who are killed themselves, as often it is the non-impaired party in a crash who is most hurt. | May be investigated as part of impairment strategies. |
| 8/17/2016 | BTA | Existing Conditions: Ped/bike intersection crashes (pg 17): It would be helpful to include the following data from the Regional Active Transportation Plan: 53% of serious pedestrian-involved crashes at intersections involve driver error and 30% involve pedestrian error. For serious bike/vehicle crashes, 45% involve driver error and 38% involve bicyclist error. | Information added. |
| 8/17/2016 | BTA | Existing Conditions: Roadway type (pg 18): Washington County’s current TSP does not designate any Primary Arterials. The only freeways/highways in the TSP are U.S. 26 and O.R. 217; we recommend putting TV Highway, 99W, and other “highways” into the arterial category and combing arterials/primary arterials, as these are all streets with transit, at-grade intersections, non-motorized use, and adjacent businesses. It would also be useful to compare the distribution of crashes to the overall structure of the road network. If 32% of serious crashes are on arterials and arterials are 50% of the overall network, that would mean something very different than if they are 10% of the overall network. | Roadway Type is an ODOT category. Definitions included in Glossary. |
| 8/17/2016 | BTA | Existing Conditions: High Crash Corridors (pg 18): These should be based on fatal/severe crashes to be more comparable with the rest of the plan. | This was meant to highlight corridors that need more in depth investigation. Crash Rate takes into account all crash severities, not just serious injuries and fatalities. |
| 8/17/2016 | BTA | Existing Conditions: Bike/ped crashes (pg 21): Does Figure 5 include all bike/ped crashes or just fatal and severe crashes? Should focus on fatal/severe or at least have legend to distinguish. This section should include data/graphs about location, roadway characteristics, speed, and age. | All crashes are included because these are considered vulnerable roadway users due to their exposure. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - Much of the well-written description applies to all vulnerable road users (people biking, skating, etc.) and that should be stated in the plan. It would be helpful to define “pedestrian” in a glossary. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - How many pedestrian fatalities/serious injuries were on TV Highway or other high crash corridors? How are “high pedestrian corridors” defined? | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - Strategies aimed at speeding, distracted driving, and failure to yield would also provide benefit. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - Please prioritize crosswalk and sidewalk improvements. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - What is the effectiveness data behind pedestrian awareness education? Given that these crashes are more likely to involve driver error, the education should not just be targeted at pedestrians. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - Speed-related strategies, while discussed elsewhere, are critical for pedestrians safety and other vulnerable road users. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Pedestrians - Adopt the NACTO Urban Street Design Guide as a tool to complement the County’s Bikeway Design Toolkit. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Speeding - Thank you for including details on the impact of speed, especially for vulnerable road users. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Speeding - The focus on rural roads and impaired drivers is misguided. Speed is a factor in many urban crashes. A crash at 45 mph on an arterial signed 45 mph may not be “speeding” but to the person crossing the street to a bus stop, that crash will almost certainly be fatal. Reducing speeds in urban areas is the closest thing we have to a silver bullet when it comes to saving lives on our streets. Also, there is a dangerous tendency for officers to only enforce speeding when it is extreme or if the driver is impaired. Going just 5 mph over the limit can mean life or death, and it is much easier to change the behavior of a sober person than an impaired one. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Speeding - We should instead focus speeding strategies on transit corridors, high bicycle/pedestrian environments, around schools, and in rural areas. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Speeding - The strategies listed here are comprehensive and we fully support them. The strategy to “Integrate roadway treatments that reduce speed into roadway maintenance, design and construction projects” should be a priority in MSTIP 3E, as design has not yet begun and there is ample time to incorporate this. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Speeding - Developing a speed management program, automated enforcement, and setting more appropriate speed limits with ODOT should be top priorities for the 2017 legislative session. | Plan updated accordingly. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/17/2016 | BTA | Focus Areas: Speeding - We should aim for 20 mph or less on neighborhood streets, commercial districts, and entertainment districts; 25 mph on collectors and transit corridors; and 30 mph on arterials. No street where people regularly walk or bike should have speeds above 30 mph, at which point crash survival rates drop below 50%. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Intersections - Edit “Resources for additional speeding countermeasures” to “Resources for intersection countermeasures” (in Drug/Alcohol section too) | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Intersections - Add NACTO Urban Street Design Guide, Urban Bikeway Design Guide, and protected intersection guidance as resources. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Intersections - What is the evidence that reducing queuing helps with the County’s most severe types of intersection crashes? | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Intersections - Add bike crossings and visibility such as signal timing, cross-bikes, advanced stop bars, and protected intersections to the list of strategies. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Intersections - Add red light cameras. See supportive data below. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - The societal beliefs discussed here are important to consider and many also apply to speeding. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - Please specify numbers for fixed object, bike, pedestrian, and young people involved in serious DUII crashes. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - When targeting younger drivers, it is important to focus on education and positive social norms rather than just strict enforcement. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - We applaud the strategy to “Develop and/or support school based education programs” as well as the opportunistic policy strategies. The County should make these part of its 2017 legislative agenda. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - Add a policy priority to strengthen Oregon’s graduated driver licensing, which could reduce teen deaths by 32%. | Plan updated accordingly. |
| 8/17/2016 | BTA | Focus Areas: Drug and Alcohol - We need strategies to address addiction and drug/alcohol use overall, not just traffic interventions. | Plan updated accordingly. |
| 8/17/2016 | BTA | High Crash Corridors:  We know more about the problems on our major corridors than the TSAP acknowledges. TV Highway in particular has undergone extensive studies with robust community participation, including the Aloha Reedville and TV Highway Corridor plans. Some of the safety priorities that emerged from those processes include slower speeds, complete sidewalks, frequent crossings, and a separated bikeway (on street or adjacent to the railroad). Community members are ready for these improvements, which are also a top priority for the BTA and more than 1,500 other supporters.  It is time for Washington County to dedicate funding in MSTIP or other programs to make the changes needed. | Recommendations will be provided to the Board of Commissioners. |
| 8/17/2016 | BTA | Strategies: Overall, this is a great list of strategies that are comprehensive and effective. We recommend elevation the following strategies from Action Priority B to Action Priority A: Education on benefits of alternate modes: This is inexpensive and much work is already happening on this strategy | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Recommend elevation the following strategies from Action Priority B to Action Priority A: Education on benefits of alternate modes: This is inexpensive and much work is already happening on this strategy | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Recommend elevation the following strategies from Action Priority B to Action Priority A:  Community outreach and engagement: We should not wait to engage the public. People who are informed and involved early on will support the County’s efforts and can start creating change in their neighborhoods, eg. through “Vision Zero Zones” or teams | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Recommend elevation the following strategies from Action Priority B to Action Priority A: Improved roadway lighting: Pedestrian-scale lighting is effective and can be incorporated into MSTIP 3E projects. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Recommend elevation the following strategies from Action Priority B to Action Priority A: Road reconfiguration: Restriping is cheap, effective, and can be done as part of routine maintenance work. Please prioritize this strategy. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Recommend elevation the following strategies from Action Priority B to Action Priority A: Safety-focused geometric improvements should also be incorporated in MSTIP 3E projects. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: It would be helpful to number the strategies and/or add categories. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Gap-dependent yellow arrows need to be programmed to detect bikes, and even then, they still pose a hazard to pedestrians. Flashing yellow arrows are a cautionary example of prioritizing mobility over safety. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Right-turn channelization islands can increase the speed and carelessness of right turning drivers, while increasing pedestrian crossing distance. We should focus on slowing down turning movement, separating conflicting movements in time and space, and decreasing crossing distances. | Plan updated accordingly. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/17/2016 | BTA | Strategies: Road reconfigurations: In urban areas, narrower lanes (10-10.5 ft) are significantly safer than wider ones (12 ft). Not only that, but wider lanes result in less walking, less biking, and higher-speed crashes, without increasing the carrying capacity or safety for large vehicles. This data (see footnote) should be included in the TSAP. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Add strategies to reduce posted and design speeds, including automated speed enforcement. These are discussed in the focus area section but not the list of strategies. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Strengthen application of the Bicycle Toolkit and adopt it into the Road Design Guidelines; only one separated bikeway is currently being built by Washington County, despite construction on many roadways where they are recommended. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: For enforcement strategies, include policy requiring special attention to racial equity in enforcement. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Positive Culture Framework: There is evidence that fear-based and victim blaming strategies do not work; our public health colleagues may be more familiar with the research. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: We applaud the County's strategy to build traffic safety information for K-12 education curriculum. The County does not need to reinvent the wheel. BTA already provides a 10-hour bicycle safety program to 4th-6th graders, an adapted middle school curriculum, and a two-hour pedestrian safety curriculum for 1st-2nd graders. This program is nationally recognized and has helped elevate rates of walking and biking to school by 40% while improving student safety and teaching life-long skills. Behavior change programs are most effective when focused on youth. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: Additional staff should be explicitly focused on achieving Vision Zero for Washington County. | Plan updated accordingly. |
| 8/17/2016 | BTA | Strategies: The lobbying and policy strategies are important and should be specific. See previous letter from BTA and Families for Safe Streets. | Plan updated accordingly. |
| 8/17/2016 | Metro | Introduction (pg. 1) - The introduction could be more useful if it summarized the specific safety-related challenges in the County, including the number of people killed and injured in crashes, and the need for a set of actions intended to improve safety in the County. It could also expand on the relationship of this plan to other plans, and how it is intended to be used. | Introduction updated. |
| 8/17/2016 | Metro | Goal/vision (pg. 2) – We recommend adding a target date to the "strive towards zero serious injuries and fatalities due to serious crashes" for performance measurement and tracking of progress. ODOT and Metro are both using the year 2035 with interim targets to reach zero by 2035. As you know, targets are more meaningful when they are measureable and time constrained. Additionally, consistency with the federal, state, and regional transportation safety plans is useful for measuring progress. FHWA now requires such performance measurement for all states and MPOs. Similar plans for the State of Oregon, Metro, Clackamas County, and Portland have both targets and target dates. | The request for Vision Zero with a date of 2035, including all letters of support, will be presented to the Director and Board of Commissioners for their input. The current draft of the TSAP is not ignoring the request, but simply gathering all of the information and letters to present to the Board for their decision. |
| 8/17/2016 | Metro | Performance measures – We recommend adding performance measures to the plan to be able to track the expectation that "the goal will be achieved incrementally" (pg. 2); at the very least annual targets and measures for fatal and serious injuries by mode to reach zero by 2035. If possible add graph showing progress towards zero, such as that shown in the ODOT TSAP. | The request for goals will be presented to the Director and Board of Commissioners for their input. It will be reviewed every 3-5 years, per the TSAP itself. After the initial review period, the county will be able to measure progress. |
| 8/17/2016 | Metro | Four E's of safety (pg.2) – the Regional Transportation Safety Plan includes a 5th E – Evaluation to reinforce the approach that the safety plan is a tool that is regularly reviewed to determine what is working, what is not working to achieve the goal zero fatalities and serious injuries. | At the beginning of the project the 4 E's were selected to align with the 4 E's of safety. This was chosen because the TSAP is focused on safety. Evaluation is built into the TSAP itself. |
| 8/17/2016 | Metro | Demographics (pg. 4) – Include the percent of the county's population living inside the UGB. Add race and ethnicity to the demographic profile and touch on the changing demographics of the county. Research has shown that people of color and people with lower incomes, as well as younger and older people, are more vulnerable to serious crashes. | The focus was on Washington County, not on the UGB. There are a number of statistics in the TSAP about the rural/urban split. Demographic profiles are developed with individual projects and focus areas. |
| 8/17/2016 | Metro | What is being evaluated (pg. 5)- "Any vehicle is towed" add – due to crash | Updated. |
| 8/17/2016 | Metro | Data limitations (pg. 5) – Add timeliness of getting crash data as an issue (e.g. most recent crash data is from 2014, and it is now 2016) | Updated. |
| 8/17/2016 | Metro | Existing Safety Conditions (pg. 6) – typo in first paragraph, 2015 should be 2014. Legend in map uses severe, paragraph uses serious | Updated. |
| 8/17/2016 | Metro | Graphs 1-2 (pg. 7) – add trend line, utilizing data back to 2007 to identify trend of 5-year rolling average. A trend cannot be inferred with only 5 years of data. Note that it is expected that the number of serious and fatal crashes will be higher in 2015 and 2016. | Updated. |
| 8/17/2016 | Metro | Graph 3 (pg. 8) should include Multnomah County and the State of Oregon for comparison. | Counties with similar urban/rural percentages were specifically selected. |
| 8/17/2016 | Metro | Figure 3 (pg. 11) maps rear-end crashes, as the largest contributor to serious injuries. A similar map should be provided for pedestrian crashes, as the largest contributor to fatalities. | Updated. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/17/2016 | Metro | Crashes by Age (pg. 12) – Normalize by age groups, or indicate the percentage of the population in the 18-26 and 49-51 age range. This is important because it will impact the types of educational outreach and programs. For example, older people experience crashes at a higher rate than other age groups, even though they account for a smaller number of crashes – so, pedestrian crossing times may need to be longer, certain signage larger, etc. The report should avoid drawing conclusions that are more specific than the sample size supports; for example, identifying age 26 seems overly specific, while identifying the range of concern (18-26) seems more appropriate. Similarly, the age range of 49-51 may be data noise rather than a consistent trend | Updated. |
| 8/17/2016 | Metro | Collision Types and Vehicle Class (pg. 13) –The head-ons, at 78% are not significantly less than the 80% threshold and don't seem worth mentioning, while the non-collisions, at 30% seem significant. Perhaps the threshold should be 75% instead of 80% here to highlight the data that stands out. Footnote 10 – add "the street" after "generally a pedestrian crossing." Define when a person walking is illegally in the roadway in glossary. | Acknowledged. |
| 8/17/2016 | Metro | Alcohol and drug related crashes (pp. 14-15) - The report inadvertently compares nationwide stats for fatal crashes to County numbers for serious crashes, which is apples-to-oranges. The rate of DUII in fatal crashes is much higher than for serious injury crashes, possibly due to the increased likelihood of testing. The comparison should be with Washington County's fatal alcohol-related crashes instead, in which the County appears to be worse than the national average. In the discussion of alcohol and drug related crashes on pages 14-15 and Table 5, the report should clarify whether talking about alcohol or drug involved ONLY versus a combination of drugs and alcohol. It is unclear whether the data for each includes or excludes the combination | Updated. |
| 8/17/2016 | Metro | In the last sentence of page 15, add the word "impaired" before the word "driver". | Updated. |
| 8/17/2016 | Metro | In the discussion of Intersections on page 16, "location" should be "located". | Updated. |
| 8/17/2016 | Metro | Crashes by Roadway Mile (High Crash Corridors) (pg. 17) – Should Crashes by Roadway Mile be Crashes by Roadway Classification? The term roadway type is not specific enough here; roadway classification is the more appropriate term. We recommend expanding this section a bit and discuss the relationship of land use and context defining the role and function of a roadway (not just functional classification). Roadways that are also transit routes and have many destinations including schools, jobs and shopping, will create different levels and types of activities; solutions to address safety that take context into consideration will be more effective. We recommend keeping the focus on serious crashes only (not lower severity) for defining High Crash Corridors (Table 7). | The rate took into account the number of roadway miles, hence the title Roadway Mile. These are recommended corridors for in depth study, which would cover the land use discussion. |
| 8/17/2016 | Metro | Crashes by Roadway Mile (High Crash Corridors) (pg. 17 -18) – Please describe what source was used for the functional classification. Federal functional class is recommended in general as it's the most widely used (although OR 217 and US 26 should be considered freeways rather than arterials). Use consistent terminology for FC (i.e. principal arterial, major arterial, etc.). We're not familiar with the term primary arterial – should this be principal? Major? Another approach would be to group all arterials together, rather than distinguishing by type, while keeping freeway its own classification. OR 99-W is not a freeway/highway; it is a principal arterial. With at-grade intersections, and little to no access restrictions, it does not have the physical or crash characteristics of a freeway. Clarify that OR 47 and OR 8 also function as arterial roadways. The data should be updated to reflect the updated street classification. It would be helpful to include a map of roadway classifications that the data was generated from. Table 7: data needs QC and correction. Please specify from/to for each corridor. Check length measurements, and compare to from/to limits for accuracy. Check crash data. Fatals and ped/bike crashes appear to be clearly low. It's harder to tell for the other crash data. Table header row says "crashes" several places where we think it means "F/A crashes" – please clarify in table. According to Table 7, the HCCs only include 7 fatalities out of about 80 in the County. This may be a data problem; but this appears to be concerningly low proportion (other jurisdictions with HCC programs have networks/corridors comprising 50-70% of fatal/serious crashes). | Function Class is an ODOT category in the crash data. Table 7 data corrected. |
| 8/17/2016 | Metro | Figure 4 – Map pg. 19.- Colors in legend do not match map. | Updated. |

| Submitted On | Forum/Organization | Message | Response |
|---|---|---|---|
| 8/17/2016 | Metro | Pedestrian/bicycle crashes (pp. 19-23) – This section could benefit from more organization, and ensuring adequate data is always present for the discussion. Tables and figures summarizing roadway class, age, alcohol, speeding, location, etc would be expected here. Figure 5 should identify F and A crashes (term Major¬ Arterial is used in the figure…should this just be Arterial?). The last statement on page 20 about high-density areas could use some supporting data. The bullets on page 22 regarding weather are confusing: The statement about cloudy/rainy would be more useful with context to know whether 46% is disproportionate: how does it compare to all modes, duration of cloudy/rainy, etc? The 2nd and 3rd bullets reference Graph 10 when talking about daylight or darkness, but Graph 10 shows time of day rather than daylight (daylight varies over the year). In the summary bullets on page 23, it says that alcohol/drugs are correlated with pedestrians, but what aspect? Pedestrians as victims? Impaired themselves? It's not clear. In the summary bullets on page 23, it says that high severity crashes occurred disproportionately in urban areas, but it's not clear relative to what. Nationally, rural areas tend to have much higher fatality rates per capita, so this seems to be at odds with that measurement. In the summary bullets on page 23, we have concern about the use of age 49-51 range; this seems like data noise. | Acknowledged. |
| 8/17/2016 | Metro | Strategies pg.24 – Recommend a more action oriented approach describing the strategies. Rather than "develop" Implement, Provide, etc. The strategies selected seem like good choices. HCCs should be clearly bulleted as a strategy as well (they are included in the discussion but not bulleted as their own strategy). Please describe why/how the 3 HCCs recommended were selected. One recommended strategy is to develop engineering solutions. This should draw from existing resources like AASHTO HSM, ITE CSS, NACTO, and FHWA Proven Safety Countermeasures. No need to reinvent the wheel here. | Updated. |
| 8/17/2016 | Metro | Strategies: Table 8 - Add numbers to the strategies (here and in Table 9) | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Effectiveness information is valuable | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Add strategy to reduce speed (posted and design) on roadways with many destinations and heavy transit, pedestrian, and/or bike activity | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Recommend removing Right-turn channelization islands treatment unless documentation of safety benefits (i.e. research) is available. Safety for pedestrians is suspect given the additional crossings of higher-speed right turns. Speed combined with user vulnerability may make this a safety disbenefit | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Add arterial calming treatments as a strategy for high crash arterials | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Add speed and red light cameras as a strategy | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Note when strategies are FHWA proven safety countermeasures (e.g. road reconfiguration) | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Improve Roadway Lighting - include pedestrian scale lighting. | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Add Equity to "Targeted Enforcement" strategy to highlight the need for equitable enforcement and discourage racial profiling; refer to HB 2002 | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Benefits of alternate modes – under effectiveness note that transit is safest travel mode; research shows that as more people walk, bike and take transit those modes become safer; making roads safe for people walking and biking increases safety for all modes of travel | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - Automated speed cameras should be included in Tables 8-9 as a strategy for speed management. They are now being implemented on Portland's high-crash corridors, the County should either pursue a similar approach, or monitor the results of Portland's program and consider if theirs is successful. | Acknowledged. |
| 8/17/2016 | Metro | Strategies: Table 8 - For the Ped/bike crossing improvements strategy, the Bicycle Toolkit is mentioned but no Ped resource is. NACTO and ITE CSS should be referenced here. | Acknowledged. |
| 8/17/2016 | Metro | Implementation, Table 9 - Number strategies so that they correspond with Table 8. The action priorities seem arbitrary, it is not clear what process or methodology was used to prioritize. If kept, organize by action priority. In Table 9, Road reconfiguration: relative cost should be single $ (these are typically accomplished as part of resurfacing or by simple restriping, both usually in the $50,000-200,000 range). Action priority should be A (for candidate treatment sites, not everywhere), given the high benefit/cost of these. | Updated. |
| 8/17/2016 | Metro | Equity –Equity, especially around targeted enforcement, is becoming a central issue in transportation safety plans. We recommend addressing equity, | At the beginning of the project the 4 E's were selected to align with the 4 E's of safety. This was chosen because the TSAP is focused on safety. Equity is considered at the individual project level. |
| 8/17/2016 | Metro | Add glossary. Include definitions of collision types, injury types (e.g. Fatal A), roadway functional classifications, non-motorist illegally in roadway, gap dependent flashing yellow arrow, other technical/engineering solutions, positive culture framework, | Updated. |

*This page is intentionally left blank.*

# Appendix D. Letters of Support

*This page is intentionally left blank.*

August 23rd, 2016

Dear Melissa Norman and the Washington County Transportation Safety Action Plan Team:

We commend Washington County for creating a Transportation Safety Action Plan. This is a valuable tool to assess problems throughout the County, devise solutions, track progress, and build broad awareness of traffic safety. **However, this plan needs to set a target date** for the goal of reaching zero deaths and serious injuries on our roads in order to achieve its full effectiveness.

We ask that Washington County adopt a goal of zero deaths and serious injuries due to traffic by **2035** for the following reasons:

1. **Accountability.** Without a target date, the goal lacks meaning, sincerity, and specificity. We will not be able to determine how well strategies are working or whether more resources and effort is needed unless we have benchmarks we are trying to hit. We need a target date and interim targets against which to assess progress.
2. **Coordination.** Partner jurisdictions that have Transportation Safety Action Plans completed or in progress have all identified target dates. This is a best practice for effective goal setting and will allow us to better coordinate efforts. The Oregon Department of Transportation, City of Hillsboro, and Metro Regional Government have all adopted or proposed a goal of zero by 2035 and we recommend Washington County do the same.[1]
3. **Funding.** This plan has numerous strategies that we, the undersigned, fully support. In order to build political support and secure grants for these strategies, it must be clear what we are trying to accomplish and when. Washington County will not compete well with jurisdictions who have a target date and interim goals that lend urgency and focus to their effort.

We all look forward to partnering with Washington County to end deaths and serious injuries on our streets by 2035- or even sooner.

Sincerely,

Kristi Finney-Dunn, Dr. Susan Kubota, and Kim Stone, Representatives of Oregon and SW Washington Families for Safe Streets

Noel Mickelberry, Executive Director, Oregon Walks

Lynne Mutrie, Consultant, Mutrie Consulting

Rob Sadowsky, Executive Director, Bicycle Transportation Alliance

---

[1] Clackamas County has a goal to cut fatalities in half by 2025 and Portland is even more aggressive, aiming to reach Vision Zero by 2025. Washington County would be the only jurisdiction in the region with a plan that lacks a target date.

## Melissa Norman

**From:** Dan Schauer
**Sent:** Tuesday, August 23, 2016 3:50 PM
**To:** Melissa Norman
**Cc:** Katherine.Bair@hdrinc.com; miranda.wells@hdrinc.com; bwemple@camsys.com; Shelley Oylear; Michael Dahlstrom
**Subject:** Statement of support for engagement on TSAP and the stakeholders 2035 zero target

Dear Melissa Norman and Washington County Transportation Safety Action Plan Team,

Our Washington County agencies with leadership from the Department of Land Use & Transportation, Sheriff's Office and partnering jurisdictions all do a tremendous job delivering road safety services for our population. I commend LUT in particular for taking this next step, the Transportation Safety Action Plan (TSAP). I am in agreement with the letter signed by Tegan Enloe, Kristi Finney-Dunn, Lisa Frank, Noel Mickelberry, Lynne Mutrie and Kim Stone requesting the plan set a 2035 target date for zero deaths and serious injuries on our roads.

In our Community Participation Organizations (CPOs) and through the new Washington County Community Engagement Program, we work to promote meaningful participation and act on opportunities to make a positive difference. To me, the zero by 2035 stakeholders request can be reflected on applicable, practical outcomes that TSAP will intend. A target date and compelling, motivational goal pushes the needle with the public. Plans that do not resonate to bring home the problem and need with relevance to people's lives make it much harder to engage in today's world.

Upon adoption the TSAP shifts to the work ahead, so we have to be ready on how the public and communities will be turned to for various levels of engagement. Washington County is accomplished in thinking strategically and cooperating across governments and agencies, and our CPO and Community Engagement programs can help best if invitations to staff and the community to join in the work are made in the initial stages. This plan would benefit in the near future with refined approaches to engagement and education that can be taken to community members with inviting asks to jointly grow in our knowledge and understanding, as governments and the people. Community members can be encouraged to stay in touch, and we can forge ahead as practical, applicable stages develop in ways that keep people up to date on a regular basis rather than relying on notices when decision points are reached. For the TSAP we do not want to go without a plan for involvement and just rely on open houses, a web site and scattershot efforts then hope for the best.

You may want to consider a passage or section on engagement in the TSAP. Sounding a note of acknowledgement and appreciation that URMDAC, RROMAC and CPOs are excellent involvement structures for maintaining and building this type of community understanding would be appreciated. Yet, we also must reach out with different methods. The tools we can start picking up include: digital platforms, explorations with identity- and issue-based communities, employ aging-friendly approaches, and connection with young people in ways that respect their vibrant senses of the world and significance they are bound to inherit tomorrow. The business community's role is crucial. These focus areas are tabbed in several studies on engagement including our own Community Participation Transition Planning Team's report to the Board of Commissioners late last year. Please consider how this plan can make a mention in implementation about our new Community Engagement Program as well as the existing structures like CPOs and advisory committees, and connect with Mike Dahlstrom, Community Engagement Program Manager, to help you with wording.

I can speak for our CPOs by using their example of how we connect with people that crave a lot of information and are interested in engaging on a variety of road safety issues. To name a few:

- raising issues or concerns agencies may not have been aware of,
- two-way communication with enforcement and sharing on messaging including speed/speeding, driving under the influence, distracted driving,

- focusing on specific dangerous segments of facilities and intersections, then standing ready to help work toward problem-solving,
- working on active transportation issues,
- alerting the public and driving more input to specific project-based comment opportunities,
- taking part in policy development when appropriate, such as moving the conversation on funding our transportation system,
- intersecting land use activities like street improvements (completing sidewalks gaps, providing feedback to TriMet on transit stops, etc.)

I'll close by suggesting that engagement and education provides benefits such as improving the pool of qualified community members with specific knowledge to bring into appointed advisory bodies. A steady effort primes the pump so that people can receive appeals and be ready to act in their communities. Washington County and other agencies can count on listening ears and informed opinions in communities during initial conversations or when forwarding funding or related requests. Most importantly, we demonstrate the step-up to our ambitions that *everyone* in the County can get on the path to Zero deaths and serious injuries on our roads.

Thank you for including me at the advisory table, it was a pleasure. As a resident of Washington County and occasional bicyclist, frequent transit rider and regular driver, I pledge my support, both in my work responsibilities and as a community member, to carry this plan forward. I also thank you for all your hard work every day on our roads!

Sincerely,
Dan Schauer

**Dan Schauer | Program Coordinator**
**Washington County | County Administrative Office–Community Engagement**
dan_schauer@co.washington.or.us
*office* 503-846-6287 *mobile* 503-519-9903
155 N. First Ave., Ste. 200 MS-20, Hillsboro OR 97124