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2026 OREGON TSAP UPDATE

DATE: October 7, 2025

TO: Mary McGowan and PMT | ODOT

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SUBJECT FINAL Crash Trends Analysis Summary Memo Project #25008-000

INTRODUCTION

This memo summarizes the statewide crash patterns and trends observed in the 2019-2023 crash dataset with the primary purpose of selecting emphasis areas and actions for the 2026 TSAP update. Where possible and relevant, comparisons are made to the 2014-2018 crash dataset (included in the 2021 TSAP). All 2019-2023 data queries were conducted by the ODOT Statewide Traffic Engineering Section and provided to DKS.

This memo is divided into two main sections:

- Statewide Fatality and Serious Injury Crash Trends
  - Focused on identifying the key patterns that are contributing to people being killed and seriously injured, which also informs the selection of emphasis areas
- Statewide Vulnerable Road User Safety Assessment
  - Focused specifically on crash trends and safety risks contributing to people being killed and seriously injured when walking and biking

STATEWIDE FATALITY AND SERIOUS INJURY CRASH TRENDS

STATEWIDE FATALITIES AND SERIOUS INJURIES OVER TIME

The number of people killed and seriously injured in traffic crashes in Oregon has continued to rise over the last decade (Figure 1). The increase in serious injuries post-pandemic (2021 and later) is particularly notable. Before 2020, an average of 448 deaths and 1,739 serious injuries occurred on Oregon roadways each year. Comparatively, post-pandemic fatalities and serious injuries have increased by 33% and 82%, respectively, with an average of 596 deaths and 3,172 serious injuries each year between 2021 and 2023.

The fact that fatalities and serious injuries are increasing at vastly different rates is a complex issue that we cannot pinpoint as part of the TSAP. There are likely a variety of confounding factors, which may include lesser injury outcomes due to safety interventions (i.e., a crash that had the

potential to be fatal resulted in a lesser injury because of better vehicle design), or the reverse scenario where injury outcomes became more severe due to increased crash forces (i.e., a crash type that had the potential to be a minor injury resulted in more severe injuries because the vehicle speeds were higher, which increased crash forces).

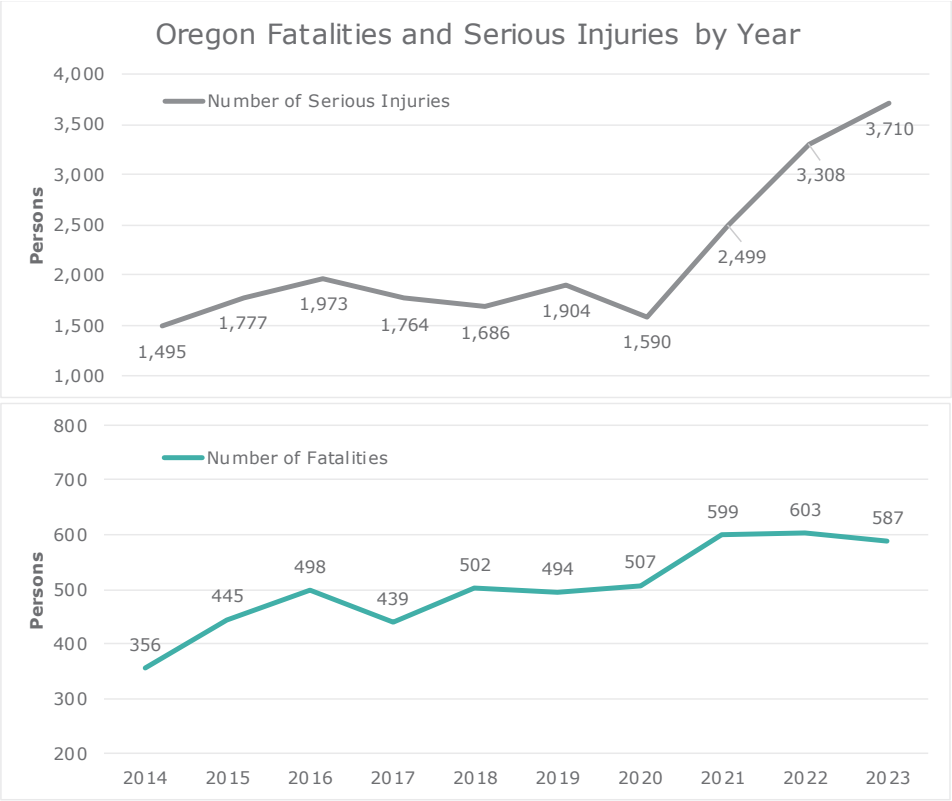


FIGURE 1. FATALITIES AND SERIOUS INJURIES, 2014-2023

Figure 2 shows the fatality rate per capita (1 million population) and per vehicle miles traveled (100 million VMT). The temporal trends for both rates are similar and show decreasing rates in recent years.

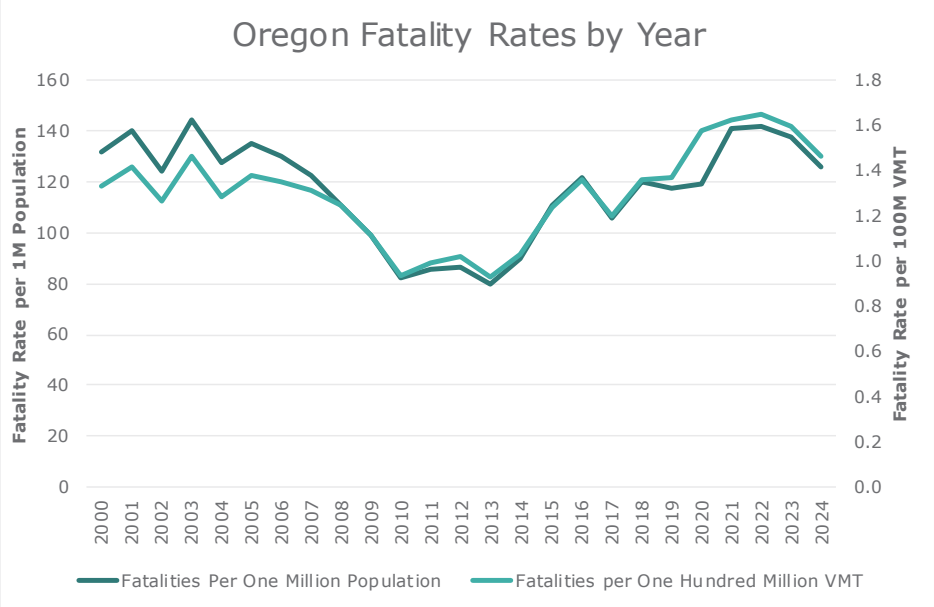


FIGURE 2. OREGON FATALITY RATES BY VEHICLE MILES TRAVELED AND POPULATION, 2000-2024

FACTORS REPORTED IN FATAL AND SERIOUS INJURY CRASHES

Table 1 on the following page provides the key crash attributes table from the most recent (2021) TSAP, updated to compare the 2014-2018 dataset to the 2019-2023 dataset. For each selected attribute, the number of crashes with that attribute in each time period, and the percent increase in those crashes, is shown on the left side. On the right side of the table, the proportion of all fatal and serious injury crashes with that attribute is summarized for each time period, and the corresponding change over time. It is important to consider all the information in Table 1—frequency (number of crashes), proportion, and how each metric changes over time—to fully understand the prevalence of each attribute.

*For comparison purposes, the total number of fatal and serious injury crashes increased by **44%** from 2014-2018 to 2019-2023.*

TABLE 1. 2014-2018 AND 2019-2023 FATAL AND SERIOUS CRASH ATTRIBUTE COMPARISON

ATTRIBUTE	NUMBER OF FATAL AND SERIOUS INJURY CRASHES		('14-'18) TO ('19-'23) INCREASE	PROPORTION OF FATAL AND SERIOUS INJURY CRASHES		('14-'18) TO ('19-'23) PROPORTION CHANGE
	`14-`18	`19-`23		`14-`18	`19-`23	
ROADWAY DEPARTURE CRASHES	3,888	5,299	36%	41.0%	38.9%	-2.1%
INTERSECTION CRASHES	3,413	5,201	**52%**	36.0%	38.2%	2.2%
SPEED-RELATED CRASHES	2,251	3,360	**49%**	23.7%	24.7%	1.0%
ALCOHOL AND/OR OTHER DRUGS INVOLVED	2,121	3,179	**50%**	22.4%	23.3%	0.9%
ALCOHOL INVOLVED (NO DRUGS)	1,335	1,680	26%	17.4%	12.3%	-5.1%
CRASHES INVOLVING UNRESTRAINED OCCUPANTS	900	1,513	**68%**	9.5%	11.1%	1.6%
YOUNG DRIVERS (15-20) INVOLVED	1,350	1,962	45%	14.2%	14.4%	0.2%
AGING DRIVERS (65+) INVOLVED	2,082	3,196	**54%**	21.9%	23.5%	1.6%
CRASHES INVOLVING PEDESTRIAN(S) INJURED OR KILLED	926	1,171	26%	9.8%	8.6%	-1.2%
CRASHES INVOLVING DISTRACTED DRIVERS	806	1,737	**116%**	8.5%	12.7%	4.2%
CRASHES INVOLVING BICYCLIST(S) INJURED OR KILLED	333	381	14%	3.5%	2.8%	-0.7%
COMMERCIAL MOTOR VEHICLE INVOLVED	527	805	**53%**	5.6%	5.9%	0.3%
MOTORCYCLE INVOLVED	1,364	1,903	40%	14.4%	14.0%	-0.4%
WORK ZONE INVOLVED	121	173	43%	1.3%	1.3%	0.0%
SCHOOL BUS OR SCHOOL ZONE INVOLVED	68	74	9%	0.7%	0.5%	-0.2%

Bold: Attribute increased more than the overall increase in crashes (44%) between 2014-2018 and 2019-2023 study periods

Highlight: Attribute associated with 20% or more of fatal and serious injury crashes from 2019-2023

NOTABLE CHANGES IN CRASH FREQUENCY AND PROPORTION

While the number of fatal and serious injury crashes associated with all attributes has increased since the last TSAP, the number of crashes at intersections and the number of distracted driving crashes more than doubled (both increased by 116%). The number of crashes involving several other factors also increased significantly, including speeding (49%), alcohol and/or drug impairment (50%), commercial vehicles (53%), aging drivers (54%), and unrestrained occupants (68%).

However, because the total number of fatal and serious injury crashes has increased overall, the increase for individual attributes is not unexpected and should be considered in context with the rest of the table. For example, while the number of intersection crashes more than doubled, the proportion of all fatal and serious injury crashes occurring at intersections increased by 2.2%, from 36.0% to 38.2%. While a 2.2% increase may not be alarming, it is the second-highest increase among all attributes studied.

The proportion of crashes involving distracted driving increased by 4.2% (from 8.5% to 12.7%), which is the highest increase of any attribute.

Some attributes make up a smaller proportion of fatal and serious injury crashes now than they did in the last TSAP, including alcohol-only impairment (down by 5.1%) and road departure crashes (down by 2.1%). The proportion of crashes involving vulnerable road users of all types (pedestrians, bicyclists, and motorcyclists) also decreased slightly.

Commented [MM1]: Intersections increased by 52% according to the table above

Commented [MM2]: This isnt accurate based on comment above, increased by 52%

OVERLAPPING ATTRIBUTES

The data presented in Table 1 is not mutually exclusive. For example, a single crash might be attributed to roadway departure, motorcycles, and aging drivers. Risky behaviors, in particular, are often observed in combination. The following Venn diagram (Figure 3) shows the overlap between crashes that were reported to involve speeding, impairment, and/or unrestrained occupants.

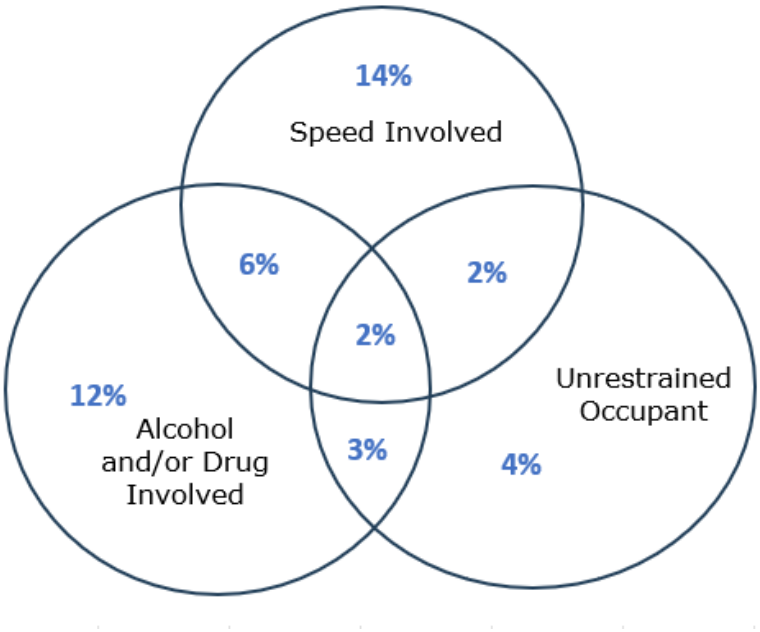


FIGURE 3. OVERLAP IN REPORTED RISKY BEHAVIORS IN FATAL AND SERIOUS INJURY CRASHES, 2019-2023

EMPHASIS AREAS

An essential component of the TSAP is the set of Emphasis Areas (EAs) which reflect the crash patterns and attributes that are most contributing to fatal and serious injury crashes in Oregon. These EAs provide the focus for establishing strategies and actions that will move us towards zero deaths and serious injuries.

Table 2 summarizes the attributes that were flagged in Table 1 above. These attributes are the starting point for determining EAs.

TABLE 2. FOCUS ATTRIBUTES FOR EMPHASIS AREAS

CONTRIBUTES TO MORE THAN 20% OF FATAL AND SERIOUS INJURY CRASHES	NUMBER OF FATAL AND SERIOUS INJURY CRASHES INCREASED BY 50% OR MORE	PROPORTION OF FATAL AND SERIOUS INJURY CRASHES INCREASED	PROPORTION OF FATAL AND SERIOUS INJURY CRASHES DECREASED
• Road/Lane Departure • Intersections • Speeding • Alcohol/Drug Impairment • Aging Drivers	• Intersections • Distracted Drivers • Unrestrained Occupants • Aging Drivers • Commercial Vehicles • Alcohol/Drug Impairment • Speeding	• Distracted Drivers • Intersections • Unrestrained Occupants • Aging Drivers • Speeding	• Alcohol Only Impairment • Road/Lane Departure • Pedestrian-Involved

Along with creating the list of these EAs, some safety plans prioritize or "tier" them based on how impactful addressing these areas can be to helping a jurisdiction achieve their main goals. In Oregon, we are reassessing EAs to ensure that limited resources are distributed to those strategies and actions that can make the most difference.

This crash data analysis revealed that five attributes were present most often in FSI crashes in both the 2014-18 and the 2019-23 data set.

- Roadway Departure
- Intersections
- Speed-related
- Alcohol and/or Other Drugs
- Aging Drivers (65+)

While all fatal and serious injury crashes increased significantly (44%) between the two 5-year periods, the following attributes increased even more than the total number of fatal and serious injury crashes. The four EAs in **bold** are on both lists (high proportion and increases greater than the average for all fatal and serious injury crashes).

- Distracted Drivers (+116%)
- Unrestrained Occupants (+62%)
- **Aging Drivers (+54%)**
- Commercial Motor Vehicles (+53%)
- **Intersections (+52%)**
- **Alcohol and/or Other Drugs (+50%)**
- **Speed-related (+49%)**
- Young Drivers (+45%)

While Oregon has typically not tiered its EAs, this update presents an opportunity to focus more on some areas than others and align with the Oregon Transportation Plan.

Oregon Transportation Plan. The OTP states: "With limited resources, Oregon must strategically invest in the transportation system. The OTP identifies the need to focus dollars on eliminating fatalities and serious injuries, maintaining lifeline routes and key corridors, sustaining transit service, and adding critical connections for biking, walking, and rolling. As additional funds become available, focus can expand to broader maintenance and heightened transportation system resilience, increasing active transportation connections, and improving overall safety." The OTP includes three tiers for strategic investments, two of which are most relevant and applicable to the TSAP.

Top Tier

- Address fatalities and serious injuries.
- Maintain and preserve critical assets, key corridors, and critical lifeline routes.
- Add critical bikeway and walkway connections in "high need locations" (e.g., transportation-disadvantaged areas and surrounding schools, shopping, employment centers, medical services, connections to transit, and downtowns).
- Preserve current public transportation service levels and maintain a state of good repair for vehicles and facilities.

Second Tier

- Address contributing factors and reduce the severity of crashes and safety incidents.
- Maintain the broader transportation system and assets.
- Complete the active transportation network.
- Improve the efficiency, frequency, and reliability of public transportation services.
- Improve the efficiency and capacity of existing transportation infrastructure and facilities through operational improvements, exclusive of adding new through lanes, for the movement of people and goods.

For the 2026 TSAP, the two EA tiers are as follows:

Top Tier. These Emphasis Areas reflect:

- Crash attributes with the highest proportion of FSI crashes (Table 1): present in greater than 20%.
- Alignment with OTP Top Tier criteria to "address fatalities and serious injuries" and "add critical bikeway and walkway connections."
- Fulfillment of USDOT requirement to develop a Vulnerable Road Users Safety Assessment as part of the TSAP.

These Top Tier EAs will be the priority for funding.

- **Roadway Departure**
- **Intersections**
- **Speed-related**
- **Alcohol and/or Other Drugs**
- **Aging Drivers (65+)**
- **Pedestrians and Bicyclists**

Second Tier. These Emphasis Areas reflect one or more of the following:

- Additional crash attributes that have a contributing role in reducing FSI crashes (present in less than 20% of FSI crashes)
- Alignment with OTP Second Tier criterion
- USDOT requirements (e.g., Highway Safety Improvement Program requires items to be in TSAP to be eligible for funding)
- Attributes that are less common in crashes, due in part to safety partners' successful efforts over time.

Second Tier Emphasis Areas include the following:

- **Young Drivers (15-20)**
- **Unrestrained Occupants**
- **Distracted Drivers**
- **Commercial Motor Vehicles**

NOTABLE CRASH TRENDS BY REGION, CONTEXT, AND FUNCTIONAL CLASSIFICATION

ODOT REGION AND CONTEXT

Fatal and serious injury crashes do not occur evenly throughout the state. The distribution of fatalities and serious injuries in urban and rural areas reflects the geographic differences, with Region 1 being primarily urban, Regions 4 and 5 being primarily rural, and Regions 2 and 3 having a mix of urban and rural areas (Figure 4). Statewide, 58% of fatalities and serious injuries occurred in urban areas, and 42% occurred in rural areas.

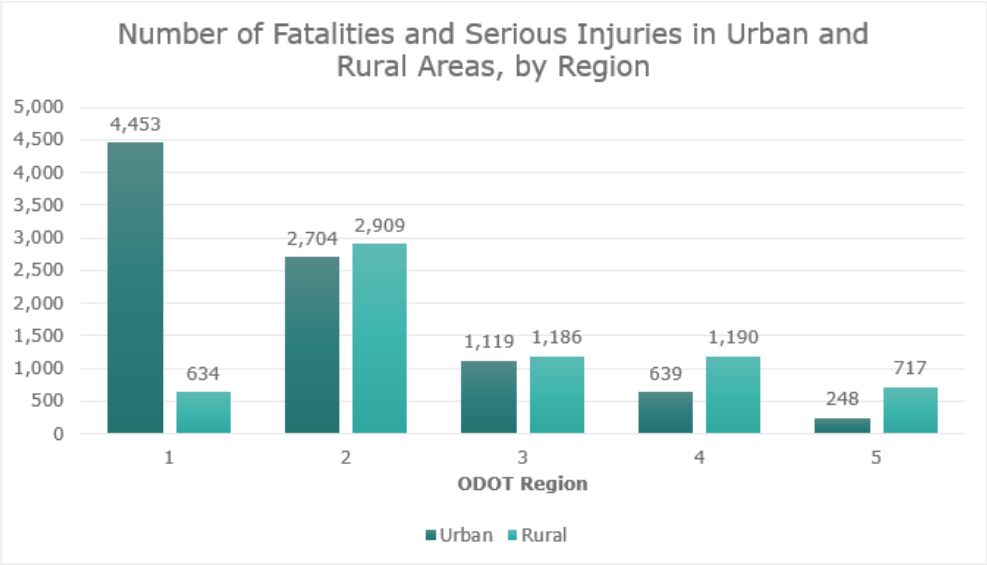


FIGURE 4. FATALITIES AND SERIOUS INJURIES BY REGION AND CONTEXT, 2019-2023

The 2021 TSAP did not provide urban versus rural breakdowns of the attributes in Table 1, so a comprehensive comparison of key attributes in different regions or contexts cannot be completed. However, when looking at the attributes reflected in the highest proportions of fatal and serious injury crashes, the urban and rural results are only slightly different (Table 3). Additionally, the underlying challenges associated with the Emphasis Area tend to be similar in urban and rural areas, while the strategies (treatments) may be different. This suggests that there should be a consistent set of Emphasis Area for the state, and that the associated strategies and actions should reflect both urban and rural needs.

TABLE 3. COMMON CRASH ATTRIBUTES BY CONTEXT

	URBAN	RURAL
ATTRIBUTES CONTRIBUTING TO MORE THAN 20% OF CRASHES	• Road/Lane Departure • Intersections • Alcohol/Drug Impairment • Aging Drivers	• Road/Lane Departure • Speeding • Alcohol/Drug Impairment • Aging Drivers

ROAD OWNER

As shown in Table 4, approximately half of all fatal and serious injury crashes occur on state highways, while half occur on local roads (including county roads and city streets). These roadway ownerships can also be normalized by road mileage.

When comparing to the overall mileage across the state, the data indicates an overrepresentation of fatal and serious injury crashes on the statewide system, since 49% of fatal and serious injury crashes occur on just 15% of the statewide centerline mileage.

- City streets also have an overrepresentation of these crashes, with 29% of fatal and serious injury crashes occurring on 22% of road miles.
- Basing this on statewide centerline miles, not lane miles, can skew the results. At least part of this overrepresentation of state highways can be attributed to the prevalence of multi-lane facilities on state highways and city streets.
- Similarly, Table 4 does not factor in vehicle miles traveled, which tend to be higher on state highways and local roads.

TABLE 4. FATAL AND SERIOUS INJURY CRASH AND MILEAGE PROPORTION BY ROAD OWNER

	FATAL AND SERIOUS INJURY CRASH PROPORTION	STATEWIDE CENTERLINE MILEAGE PROPORTION
STATE HIGHWAYS	49%	15%
COUNTY ROADS	22%	63%
CITY STREETS	29%	22%

FUNCTIONAL CLASSIFICATION

Roadway functional classification describes the intended function of a roadway, and is an indicator of the roadway design, posted speed, traffic volume, and adjacent land use – all of which influence the potential for a fatal or serious injury crash to occur. Table 5 shows the proportion of fatal and serious injury crashes that occurred on each functional classification of roadway across the state, as well as the breakdown of statewide mileage. The majority of fatal and serious injury crashes in

Oregon occur on arterial roadways (major and minor) and major collector roadways. Approximately 62% of fatal and serious injury crashes occur on arterial roadways, which make up just 45% of the statewide roads by mileage. Major collectors are also overrepresented, with 19% of fatal and serious injury crashes compared to 14% of statewide mileage.

The TSAP should include targeted strategies and actions to address the complex road environments and safety needs on arterials and collectors, with an understanding that rural arterials/collectors and urban arterials/collectors require different analysis and treatments.

TABLE 5. FATAL AND SERIOUS INJURY CRASH AND VMT PROPORTIONS BY ROADWAY FUNCTIONAL CLASSIFICATION, 2019-2023

FUNCTIONAL CLASS	FATAL CRASH PRORPORTION	SERIOUS INJURY CRASH PROPORTION	FATAL AND SERIOUS INJURY CRASH PROPORTION	STATEWIDE VMT PROPORTION
INTERSTATE	8.1%	7.9%	8%	26%
OTHER FREEWAYS AND EXPRESSWAYS	0.8%	2.0%	2%	4%
OTHER PRINCIPAL ARTERIAL	39.9%	36.3%	37%	28%
MINOR ARTERIAL	22.3%	25.1%	25%	17%
MAJOR COLLECTOR	18.9%	18.8%	19%	14%
MINOR COLLECTOR	3.6%	3.5%	4%	3%
LOCAL	6.4%	6.4%	6%	7%

Highlight: Fatal and serious injury crashes are overrepresented by 5% or more

Expanding upon the finding that most fatal and serious injury crashes occur on arterials and collectors, Table 6 shows the distribution of crashes on these roadways based on context and owner (state highway versus non-state highway). As shown, most principal arterial crashes happen on state highways, with a relatively even split between urban and rural areas. In contrast, minor arterial crashes are most common on non-state roads in urban areas. Major collector crashes mainly occur on non-state highways in both urban and rural areas.

TABLE 6. FATAL AND SERIOUS INJURY CRASH PROPORTION BY FUNCTIONAL CLASS, CONTEXT, AND ROAD OWNER

	URBAN	RURAL

FUNCTIONAL CLASS.	FATAL AND SERIOUS INJURY CRASH PROPORTION	STATE HIGHWAY	NON-STATE HIGHWAY	STATE HIGHWAY	NON-STATE HIGHWAY
PRINCIPAL ARTERIAL	37%	15%	9%	13%	0%
MINOR ARTERIAL	25%	3%	14%	6%	2%
MAJOR COLLECTOR	19%	1%	8%	2%	8%

STATEWIDE VULNERABLE ROAD USER SAFETY ASSESSMENT

The Vulnerable Road User Safety Assessment (VRU SA) evaluates safety performance for people walking, biking, and rolling in Oregon. ODOT performed quantitative analyses of vulnerable road user fatalities and serious injuries, considering relevant crash event data and demographics at the locations of those crash events.

ODOT analyzed human behavior and contributing factors, social equity disparity, factors such as lighting condition and posted speed limit, and a series of other risk factors as described below. Further details regarding the analysis methodology are available in the technical memos developed in support of this assessment.

VRU FATAL AND SERIOUS INJURY CRASH TRENDS

After a gradual 30-year decline, traffic fatalities involving people walking are at a 40-year high nationally. Oregon mirrors these national trends. In the 5-year period between 2005 and 2009, an average of 47 people walking were killed in traffic crashes each year in Oregon. In comparison, between 2019 and 2023, an average of 97 people walking were killed in traffic crashes each year, a 106% increase.

In the five-year period between 2019 and 2023, a total of 484 people walking and 72 people bicycling were killed in vehicle crashes on Oregon roadways (see Figure 5). Another 707 people walking and 312 people bicycling sustained serious injuries during that period. This section describes some of the most notable VRU safety trends.

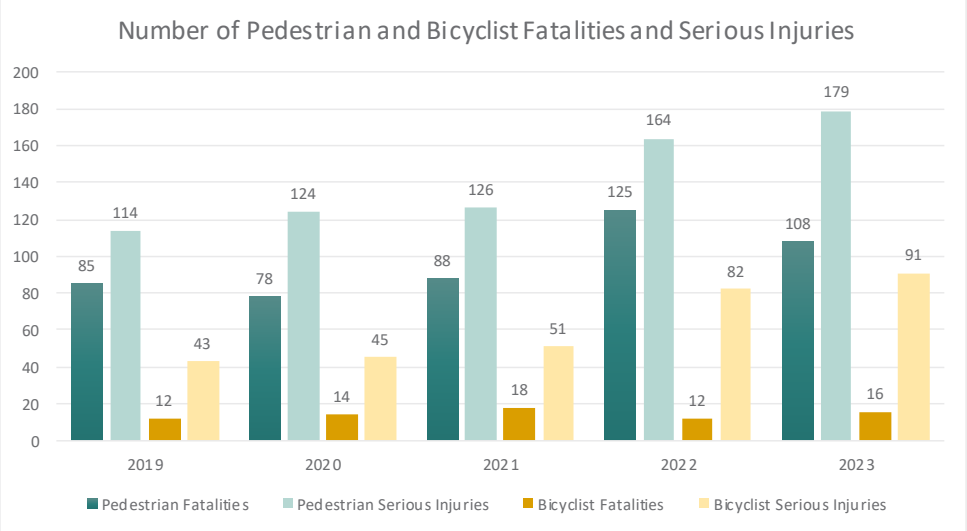


FIGURE 5. PEDESTRIAN AND BICYCLIST FATALITIES AND SERIOUS INJURIES, OREGON, 2019-2023

CONTRIBUTING FACTORS

Table 7 below shows the primary contributing factors reported in Oregon crashes between 2019 and 2023 that involved a vulnerable road user fatality or serious injury. The percentages show the proportion of all assigned contributing factors for fatal or serious injury VRU crashes. These factors come from cause, error, and/or event codes derived from police reports which include accounts from the person driving and any witnesses. It is important to note that these reports may not include the account of the vulnerable user who was seriously injured or killed.

As shown, road users failing to yield contributes to approximately 54% of fatal and serious injury crashes involving people bicycling and to approximately 41% of fatal and serious injury crashes involving people walking. Other common contributing factors include non-motorists illegally in the roadway[1] (48% of fatal and serious injury crashes involving people walking and 16% of fatal and serious injury crashes involving people bicycling) and non-motorists identified by the reporting officer/witness as not visible or wearing non-reflective clothing[2] (36% of fatal and serious injury

[1] Non-motorists illegally in roadway include VRUs who violated Oregon State laws. Some examples include crossing a freeway (except from a disabled vehicle), suddenly stepping into the roadway causing a hazard, etc.

[17] Although there is no legal requirement for people walking or biking to wear high-visibility or reflective clothing, this has been included as an option on police crash reporting forms in Oregon because it is helpful for law enforcement to determine whether a driver had a reasonable amount of time (based on speed, lighting, geometrics, etc.) to identify a person in the roadway and avoid a crash.

crashes involving people walking and 16% of fatal and serious injury crashes involving people bicycling).

TABLE 7: PRIMARY CONTRIBUTING FACTORS IN VULNERABLE USER FATAL & SERIOUS INJURY CRASHES

CONTRIBUTING FACTOR	% OF PEDESTRIAN F&SI	% OF BICYCLIST F&SI
DID NOT YIELD RIGHT-OF-WAY	40.6%	54.4%
NON-MOTORIST ILLEGALLY IN ROADWAY	47.7%	15.8%
NON-MOTORIST NOT VISIBLE; NON-REFLECTIVE CLOTHING	35.6%	16.1%
DISREGARDED TRAFFIC SIGNAL	9.4%	11.7%

Although there are additional factors involved (not included in this table), none of these were identified as contributing significantly to fatal and serious injury crashes involving vulnerable road users in Oregon. It's important to note that the low occurrence of speeding, inattention, or other behaviors being cited as contributing factors to crashes may be because people involved in a crash are unlikely to self-report such behavior. Underreporting can make it challenging to gather accurate data and statistics on the prevalence of these factors which are needed to diagnose and implement effective safety treatments.

Road User Distraction. Distraction includes driving, walking, or biking while engaging in another activity that diverts the road user's attention away from safely navigating the transportation system. The proliferation of cell phones and other mobile electronic devices has resulted in increasing distractions. Available data and anecdotal evidence point to distraction as a significant traffic safety concern. For example, a survey conducted by Southern Oregon University found that three out of four drivers surveyed engage in distracted driving. Distraction can be a difficult element to include in the crash report, because it relies on a witness testimony or a road user's self-reporting. Table 8 below shows the average yearly proportion of fatal and serious injury crashes that involve a vulnerable user and report distraction between years 2019 and 2023.

TABLE 8. PROPORTION OF FATAL AND SERIOUS INJURY CRASHES THAT INVOLVE A VULNERABLE ROAD USER AND REPORT DISTRACTION, 2019-2023

FATAL AND SERIOUS INJURY CRASHES	AT LEAST ONE DISTRACTED ROAD USER
INVOLVING A PERSON WALKING	10.0%
INVOLVING A PERSON BIKING	10.6%

Road User Impairment. Fatal and serious injury crashes involving people walking or biking are affected by impairment, both for motor vehicle drivers and people walking or biking.

As shown in Table 9, crash reports indicate that more than 34% of fatal and serious injury crashes that involve a person walking also include at least one road user impaired by alcohol or other drugs; for fatal and serious injury crashes involving a person biking, 15% included impairment.

TABLE 9: PROPORTION OF FATAL AND SERIOUS INJURY CRASHES THAT INVOLVE A VULNERABLE ROAD USER AND REPORT IMPAIRMENT

FATAL AND SERIOUS INJURY CRASHES	AT LEAST ONE IMPAIRED ROAD USER (ALCOHOL AND/OR OTHER DRUGS)
INVOLVING A PERSON WALKING	34.0%
INVOLVING A PERSON BIKING	14.5%

EQUITY CONSIDERATIONS

The Social Equity Index (SEI) is a measure of disparity focusing on economically and socially vulnerable populations in Oregon. It serves as a decision support tool, assisting agency staff in identifying communities of concern, thereby aiding in the allocation of transportation resources to reduce social disparities. The SEI is informed by socio-demographic data from the U.S. Census Bureau's American Community Survey (ACS). More information about the SEI can be accessed through the ODOT website.[3]

SEI Values are categorized as:

- Low Disparity
- Low/Medium Disparity
- Medium/High Disparity
- High Disparity

Figure 6 and **Error! Reference source not found.**Figure 7 show the pedestrian and bicyclist fatalities and severe injuries per 100k population for each SEI disparity level. Based on the analysis, medium/high and high disparity areas have a higher number of fatalities and severe injuries per population compared to low and low/medium disparity areas.

[3] Social Equity, Oregon Department of Transportation. https://www.oregon.gov/odot/equity/pages/about.aspx

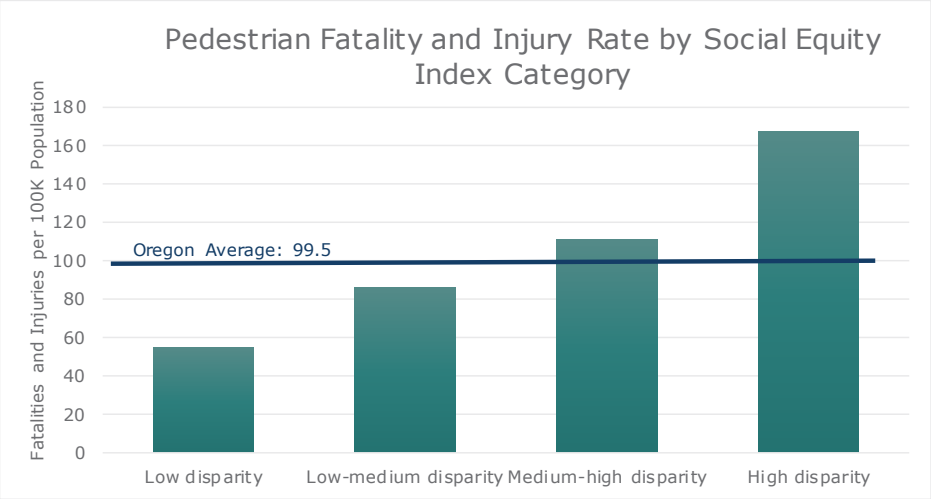


FIGURE 6. PEDESTRIAN OVERREPRESENTATION ANALYSIS BY SOCIAL EQUITY INDEX

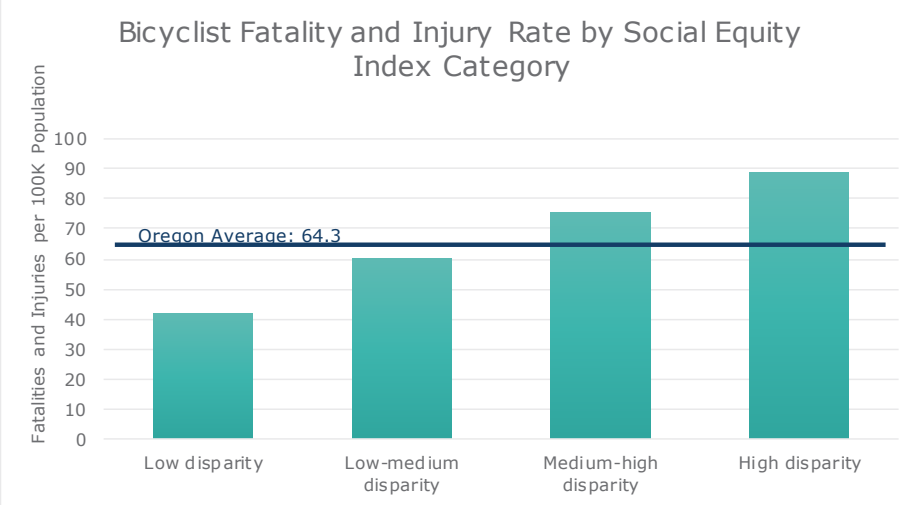


FIGURE 7. BICYCLE OVERREPRESENTATION ANALYSIS BY SOCIAL EQUITY INDEX

Table 10 shows the number of fatalities by race and ethnicity group during the five-year period from 2019 to 2023 using data from the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). Population data is based on the 2021 U.S. Census Bureau dataset.[4] Of the total 545 fatalities reported in the FARS dataset, Black or African Americans and American Indians or Alaska Natives are the people of color most over-represented in fatal crashes compared to the total population.[5]

[4] https://www.census.gov/quickfacts/OR?

[5] Understanding Pedestrian Crash Injury and Social Equity Disparities in Oregon, Project SP 841, Phase I Analysis. Oregon DOT. https://www.oregon.gov/odot/Programs/ResearchDocuments/SPR%20841Injuries-Equity.pdf

TABLE 10. VULNERABLE ROAD USER FATALITIES BY RACE AND ETHNICITY

RACE / ETHNICITY	NUMBER OF VRU FATALITIES	VRU FATALITIES PROPORTION	POPULATION (ESTIMATE)[6]	POPULATION PROPORTION
WHITE (NON-HISPANIC)	408	75%	3,138,802	74%
HISPANIC	64	12%	512,544	12%
TWO OR MORE RACES	4	1%	177,908	4%
ASIAN, ASIAN AMERICAN, OR OTHER PACIFIC ISLANDER ALONE	9	2%	232,975	6%
BLACK OR AFRICAN AMERICAN ALONE	14	3%	97,426	2%
AMERICAN INDIAN OR ALASKA NATIVE ALONE	26	5%	80,482	2%
OTHER RACE OR UNKNOWN	20	4%	0	0%
TOTAL	545	100%	4,240,137	100%

NOTABLE TRENDS IN CRASH LOCATION

The Safe System Approach encourages transportation infrastructure design that prioritizes safety for the traveling public and accommodates human mistakes and injury tolerances to reduce the severity of crashes that do occur. To evaluate environmental and roadway design elements related to the safety of vulnerable users, reported roadway condition data associated with vulnerable user crashes was analyzed.

INTERSECTIONS AND SEGMENTS

Location on the road has a different potential impact for people killed or seriously injured while walking or bicycling along roadway corridors. Roadway segments tend to be the primary location for crashes involving people walking (Table 11). Roadway segments account for 60% of fatalities and serious injuries to people walking, while intersections account for 40%. Conversely, when it

[6] Population is estimated using the race percentage and the total population of all races using parameters from this website: https://www.census.gov/quickfacts/OR?

comes to people bicycling, intersections pose a higher risk. Intersections account for 61% of fatalities and serious injuries to people bicycling, while roadway segments account for 39%.

TABLE 11. VULNERABLE USER FATALITIES AND SERIOUS INJURIES BY LOCATION TYPE

ROAD USER	% OF F&SI AT INTERSECTIONS	% OF F&SI ON SEGMENTS	TOTAL
PEDESTRIAN	40%	**60%**	100%
BICYCLIST	**61%**	39%	100%

LIGHTING CONDITION

Navigating the transportation system can be more challenging at night for all road users, including people walking and rolling. As shown in Table 12 below, 67 percent of fatal and serious injury crashes involving people walking occur in dark, dawn, or dusk conditions. Crashes involving people biking exhibit different characteristics, with only 26 percent occurring in dark, dawn, or dusk. Understanding these differences is challenging without considering factors like exposure (e.g., the number of cyclists and miles traveled in both daylight and dark conditions), making it complex to establish a cause-and-effect relationship.

TABLE 12. OREGON VULNERABLE USER FATALITIES AND SERIOUS INJURIES BY LIGHTING CONDITION

ROAD USER	DARK	DARK (WITH LIGHTS)	DAWN/DUSK	DAY
WALKING	24%	**37%**	6%	33%
BICYCLING	8%	13%	5%	**74%**

VEHICLE SPEEDS

The probability of a vulnerable user being seriously injured or killed in a crash increases as vehicle speed increases. Survivability at different speeds is further influenced by socio-environmental factors such as a person's age or health. For example, as illustrated in Figure 8, a 30-year-old has only a 50% chance of being killed in a crash with a car traveling 45 mph, while a 70-year-old has a 50% chance of being killed in a crash with a car traveling 35 mph.

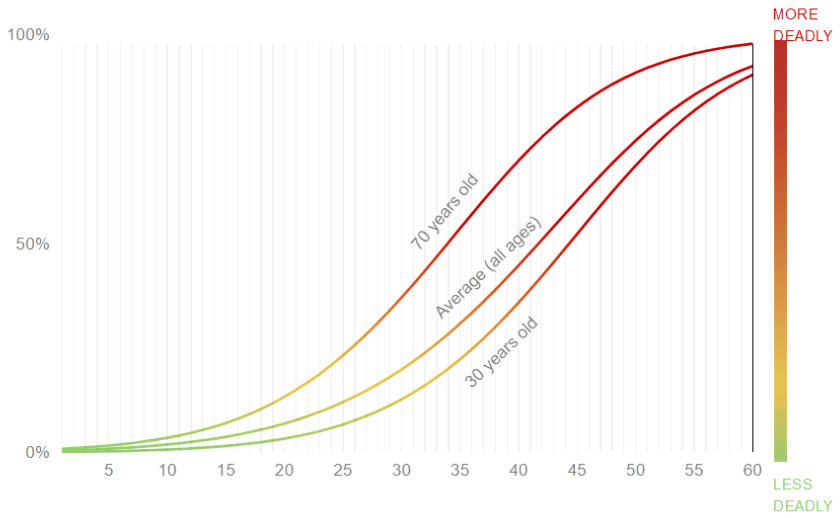


FIGURE 8. RISK OF PEDESTRIAN-VEHICLE FATALITY BY VEHICLE OPERATING SPEED AND PEDESTRIAN AGE

The size, type, and design of the vehicle involved in a crash further influences the impact of speed on vulnerable user crash outcomes. As illustrated in Figure 9, the probability of a vulnerable user being seriously injured or killed in a crash increases even more rapidly as the speed and size of vehicles increases.

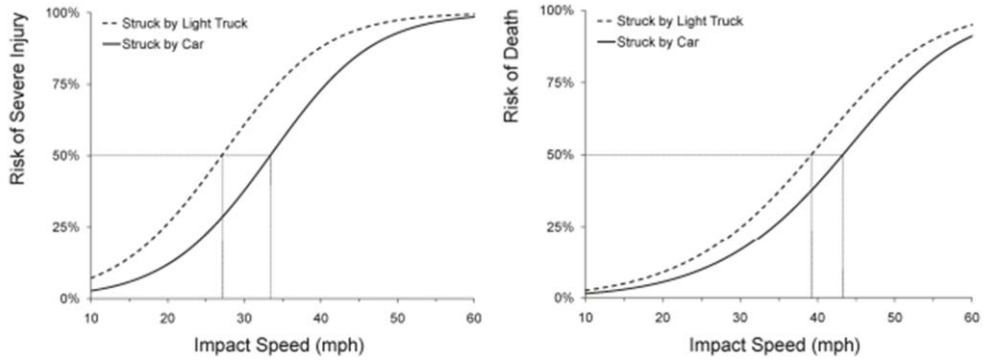


FIGURE 9. RISK OF SEVERE INJURY OR DEATH BY VEHICLE TYPE

To evaluate trends related to speed and vulnerable user safety in Oregon, ODOT evaluated posted speeds and vulnerable user crash data.

Vulnerable User Crash Severity by Posted Speed Limit. Figure 10 below shows the number of vulnerable user fatalities and injuries on roadways by posted speed limit,[7] which serves as a rough estimate for relative motor vehicle operating speed. It is important to note that the posted speed limit is available on state highways but is not consistently reported for local roadways. Of the vulnerable road user crashes studied, approximately 30% did not include a posted speed limit and are not reflected in Figure 10.

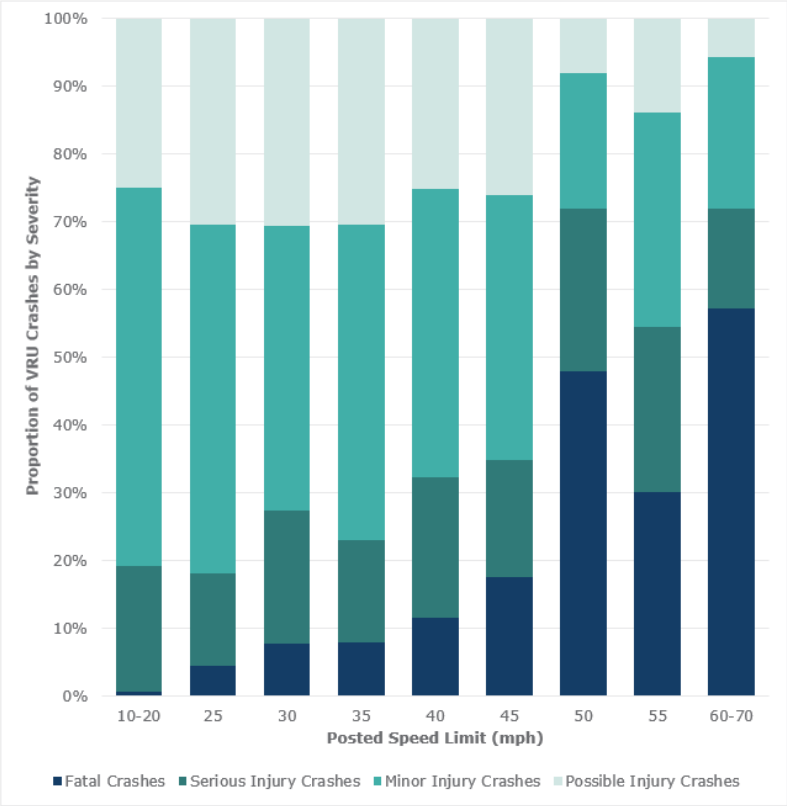


FIGURE 10. PROPORTION OF VULNERABLE ROAD USER CRASHES BY INJURY SEVERITY AND POSTED SPEED LIMIT, OREGON, 2019-2023

[7] Speed limit data collected from the law enforcement crash reports for each reported crash.

The figure demonstrates that higher posted speed limits are correlated with greater severity. For example, at posted speed limits of 45 mph and higher, very few possible injuries or minor injuries were reported.

SAFER VEHICLES

Vehicles are designed and regulated to minimize the severity of crashes – primarily focused on the vehicle's occupants. Unfortunately, some changes to vehicle design may increase safety risk for vulnerable road users outside of vehicles. As vehicles increase in weight and size, often reflecting consumer preferences and accommodating features such as expanded protective zones for occupant safety and space for electric batteries, the likelihood of a pedestrian or bicycle crash leading to fatal or serious injuries also rises. Larger, heavier vehicle designs also often require structures that can obstruct a driver's view of vulnerable users when making turns or backing up, increasing the likelihood of a crash.

The average weight of passenger vehicles has grown, with the average vehicle up 6% in total weight with pickups up 30% compared to pickups of the 1970s. Since 2010, the percentage of new vehicle sales in the US that are light trucks (Sport Utility Vehicles, Crossover utility vehicles, and pickups) has increased from approximately 53% to nearly 80% of all sales.

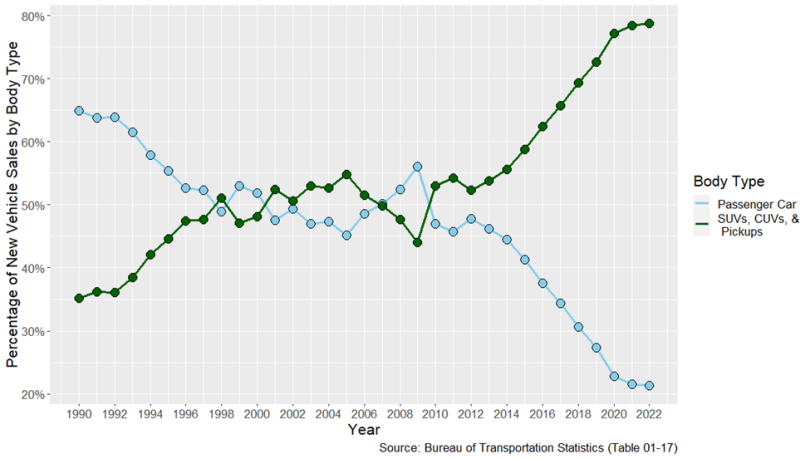


FIGURE 11. VEHICLE SALES BY BODY TYPE, 1990-2022

At an aggregate level, SUVs and pickup trucks are being linked to an increase in overall traffic injury for vehicle occupants and vulnerable road users alike. Without significant efforts directed towards safer vehicles, this trend is likely to continue.

POST CRASH CARE

The Safe System Approach promotes increasing the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and forensics teams investigating the scene.

Humans have a limited tolerance for crash forces, which necessitates swift action when a crash occurs. This is particularly important for vulnerable users because the initial impact with a motor vehicle is likely to cause personal injury. The "Golden Hour" in the context of post-crash care refers to the critical period following a traumatic injury, such as a roadway crash, when the likelihood of a positive outcome is highest if the injured person receives prompt and effective medical treatment within the first 60 minutes after the injury occurs.

On a state level, Oregon's state trauma system ensures that high quality community resources are available to respond to individuals who are traumatically injured by assuring an integrated statewide system of resources, including establishment of trauma regions and designation of trauma care hospitals.[8]

Within the Oregon Health Authority (OHA), the Emergency Medical Services and Trauma Systems Section administers Oregon's emergency medical services (EMS) data.[9] The Oregon Emergency Medical Services Information System (OR-NEMSIS) is Oregon's prehospital emergency medical services data system. OR-NEMSIS includes EMS agency and personnel licensing, EMS agency prehospital patient care reporting, and hospital trauma registry reporting. All licensed transporting EMS agencies submit patient care reports electronically to this central repository.

FIGURE 12. MEDIAN RESPONSE TIME BY ODOT REGION

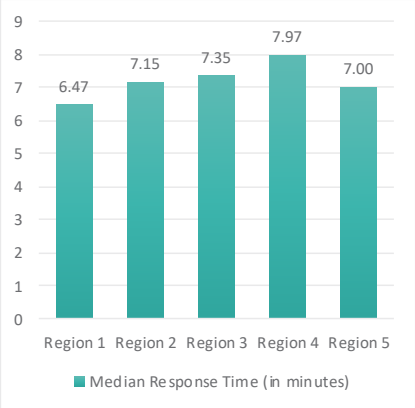
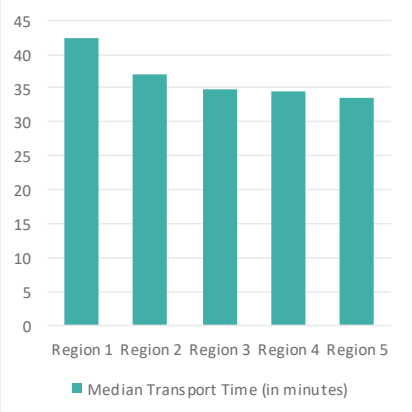


FIGURE 13. MEDIAN TRANSPORT TIME BY ODOT REGION



The efficiency of EMS plays a critical role in ensuring the well-being of those involved in roadway crashes. Median response and transport time varies by region. Varying terrains and population densities contribute to unique challenges for emergency response teams. In densely populated urban areas, factors such as traffic congestion and the complex layout of streets can affect how quickly emergency services can reach the scene. On the other hand, in rural or remote regions, where

[8] Oregon Health Authority : The Oregon Trauma and Tertiary Care Program : Trauma Systems : State of Oregon

[9] Oregon EMS Data Strategic Plan, 2022-2024

distances are often greater and road conditions may be less predictable, response times face a different set of challenges.