



Vulnerable User Crash Response Program Annual Report

Delivery & Operations Division

Engineering & Technical Services Branch

Traffic Engineering Section

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Vulnerable User Crash Response Program

Background

The Oregon Department of Transportation is working to create safer networks for walking and biking in and between communities across the state. In alignment with the direction set out in the Transportation Safety Action Plan (TSAP) and consistent with direction received from the Oregon Transportation Commission, ODOT initiated the Vulnerable User Crash Response Program in July 2023 to address vulnerable road user (VRU) safety events equitably and rapidly across Oregon.

While this program is new to ODOT, the epidemic of vulnerable user fatalities is not new. Fatal crashes involving people walking, rolling or bicycling steadily increased over 10+ years in Oregon, peaking in 2022 (see Figure 1).

Traditional safety projects can take several years to complete due to the complexities with funding processes, right of way purchases, environmental permitting and other multi-discipline design work. The Vulnerable User Crash Response Program, however, enables ODOT to act quickly after the report of a death of a vulnerable road user on the state highway system.

This program focuses on treatments that can be implemented in a year or less at fatal vulnerable road user crash sites or along high-priority corridors on state highways. The program is funded at \$10.6 million through HB 2017 State Safety Priority Funds (SSPF) for the 2024-2027 STIP.

The program utilizes a two-track approach to address vulnerable road user safety.

- Responsive – Assess fatal vulnerable user crashes as they occur and respond as appropriate with safety improvements within one year.
- Systemic – Identify and assess high-priority safety and equity corridors for vulnerable road user safety improvements along an entire corridor and implement within one year.

Budget splits for the program as well as upper limits for individual projects are shown in Table 1.

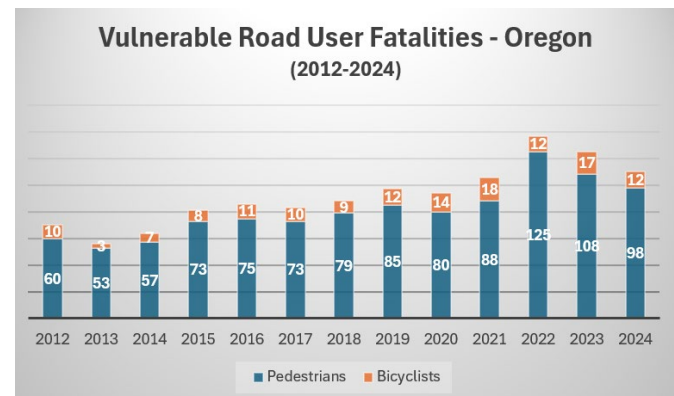


Figure 1: Vulnerable road user fatalities – Oregon (2012-2024)

Vulnerable User Crash Response Program

Table 1: Budget splits for VCR Program

Budget Splits	Funding Target (2024-2027)	Triggering Event	Project Amounts
Program Admin.	5% (\$530k)	n/a	n/a
Responsive	60% (\$6.39M)	Fatal pedestrian or bicycle crash on state system.	\$10k per location for investigation. Up to \$500k per location for design and construction.
Systemic	35% (\$3.73M)	Priority corridors identified each STIP cycle.	\$20k per corridor for investigation. \$1.2 – 1.6M per corridor for design and construction.

Responsive Program

A multi-discipline VRU fatal crash review team started monthly meetings in January 2024. Each month, they review recent vulnerable user fatal crashes, discuss site conditions and identify potential contributing factors to each crash.

Next, they develop a list of potential treatments and actions for each crash site that could be applied in a short timeframe to minimize future risk. The results are directed to the appropriate ODOT region office for a thorough investigation including considering additional solutions based on local knowledge, existing planning documents and field visits.

In 2024, the VRU fatal crash review team reviewed each of the 50 fatal crashes that occurred on the state highway system. Appendix A includes a map of those vulnerable user fatal crash locations.

The VRU fatal crash review team recommended the region offices further investigate specific safety treatments at 26 of those crash sites. As of March 31, 2025, four reviews resulted in maintenance (inspection, vegetation trimming) or operational activities (signal timing), seven reviews resulted in projects that are now in their design or construction phases, and nine potential projects continue under region investigation into 2025. Six projects were concluded at the end of their region investigation phase with a finding of no quick-build, low cost treatment solutions.

The VRU fatal crash review team recommended no treatments at 24 of those crash sites. This finding was primarily due to the crashes occurring on expressways, freeways, or in rural areas with very dispersed patterns of bicycle and pedestrian use where quick-build, low-cost treatments were not possible.

Vulnerable User Crash Response Program

Trends and Observations

Several trends are evident in the fatal VRU crash data.

Facility speed and expressway/freeway designations are a leading risk factor in VRU fatalities.

Seventy percent (35 of 50 total fatal crashes) occurred on facilities with a posted speed of 45 mph or higher. Over 40% (21 of 50) of the crashes occurred on facilities that are designated as expressways in the Oregon Highway Plan. The posted speed at each of the VRU crash sites in 2024 is shown in Figure 2. Seventy percent (35 of 50 total fatal crashes) occurred on facilities with a posted speed of 45 mph or higher.

While the Vulnerable User Crash Response Program identified treatments that can be applied to urban arterials, measures to address VRU crashes on high speed rural and expressway/freeway facilities are limited. We advanced further investigation for eight of the 35 fatal crashes on higher speed facilities, however only two of these locations resulted in planned construction projects by the end of 2024. In general, vulnerable user pathways are typically separated from expressway-type facilities. We need to explore actions we can take to reduce the risk of these types of fatal crashes in the future. Within the safety program, we are looking at the efficacy of the types of safety improvements we have been using to address crashes on higher speed facilities – and we want to look at both design solutions and circumstances surrounding vulnerable users' exposure on high speed rural and expressway-type facilities.

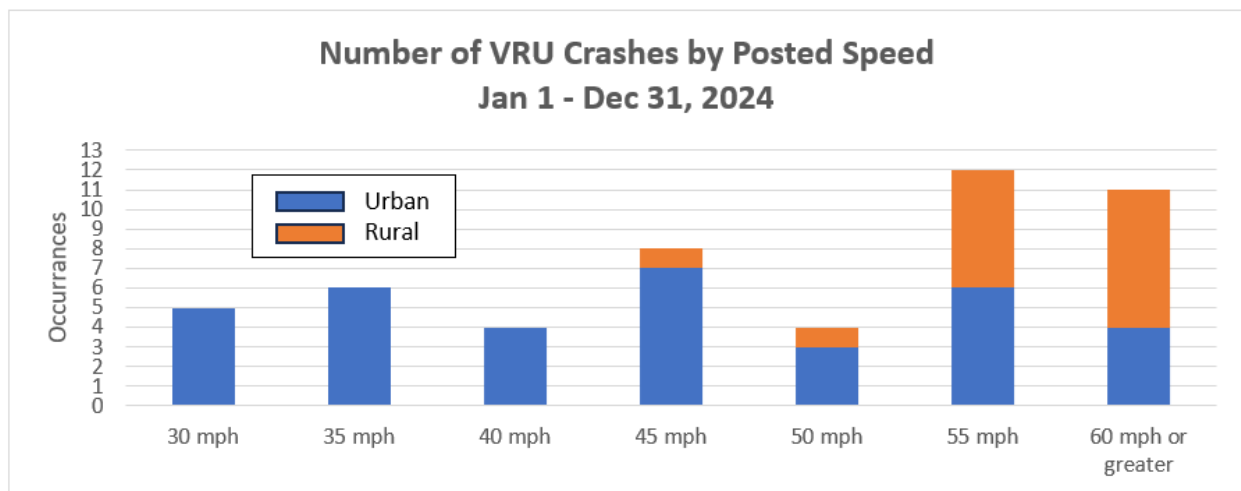


Figure 2: Number of Crashes by Posted Speed

Crash reports from the first three quarters indicated that drugs and/or intoxicants were involved in 62% of the crashes for either the driver or vulnerable road user. That proportion may change as evidence related to several crashes in the last quarter of 2024 is available.

Vulnerable User Crash Response Program

Another significant trend is the high proportion of VRU crashes that occurred during hours of darkness. In 2024, 82% of these crashes occurred during hours of limited daylight (dark or dusk). All seven VCR Program projects currently under project design or construction include illumination installations.

Responsive Program Countermeasures

Over the past year, the VRU fatal crash review team suggested a wide range of countermeasures for region consideration. Suggestions for further consideration included:

- Illumination
- Signing
- Bike lanes and green bike lane conflict pavement markings
- Fencing
- Vegetation management
- Sidewalk infill
- Pedestrian push buttons
- Enhanced crossings with visibility enhancements and refuge islands
- Operational changes to traffic signals.
- Lowering speed limits

Responsive Project Schedules

The following charts (Figure 3) illustrate a timeline for each of the Vulnerable User Crash Response Program projects recommended by the VRU crash review team. The charts show the initial crash date, ODOT response timelines for 26 projects involving potential capital improvements, and operational improvements (i.e., signal retiming) and maintenance work (i.e., fencing inspection and vegetation trimming).

All milestones shown in dashed line styles are taken from the region's initial estimate at the conclusion of their initial investigation and before engineering design began. There are no project milestones shown for design or construction if the region has not yet completed the investigation phase. As noted in the charts, four projects involved maintenance/operations work, nine projects are in their region investigation phase, five projects are in their design phase, two projects are in their construction phase and six projects were concluded at the end of their region investigation phase with a finding of no feasible quick-build, low cost treatment solutions.

Vulnerable User Crash Response Program

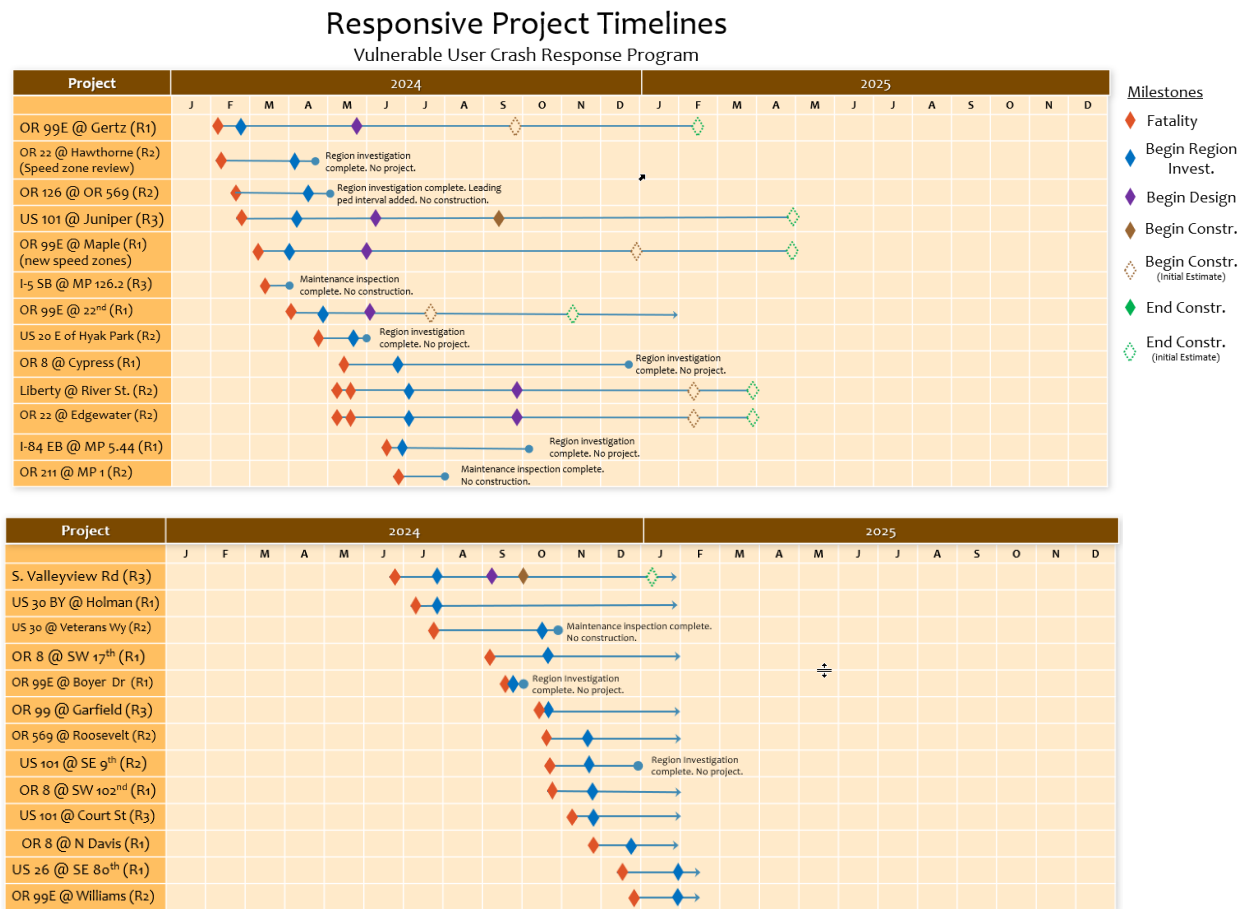


Figure 3: Responsive Project Timelines

Responsive Project Budget

As of Dec. 31, 2024, the VUCR Program authorized \$1,803,840 for safety investigations, analysis, design work and anticipated construction work associated with 16 of the 26 responsive projects identified in Figure 3. The budget and expenditures for the 16 responsive projects with program funding are listed in Table 2. Seven of those 16 projects have been further authorized for design and construction phases. The nine projects that are shown to be in the region investigation stage are undergoing a thorough project analysis and scoping effort at the respective region traffic engineering offices. Some of those projects will have design and construction phases, and additional funds from the program will be authorized for those phases. Several of the projects in their investigation stage may end with a determination that no safety treatments meeting the parameters of the program are feasible and there is no need for additional funding.

As of Dec. 31, 2024, expenses for the 16 projects totaled \$132,006; that figure is expected to rise as more projects enter their design and construction phases in 2025.

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In addition to funds allocated to specific projects, \$188,050 has been expended on program development, crash summary reports, crash review team meetings, and other administrative tasks since the program's inception in July 2023.

Table 2: Responsive Project Budgets and Expenditures

Crash Date	City	Project Name	Current Status	Project Description	Budget	Expend through 12/31/24
2/5/2024	Portland	OR 99E (MLK) at Gertz Road & vicinity, pedestrian safety improvements	Design	Illumination, new guide signing, new median separator, lane markings.	\$600,000	\$20,109
2/27/2024	Reedsport	US 101 - North Reedsport, pedestrian safety improvements	Construction	Enhanced crosswalk at Juniper with RRFB, illumination, new curb ramps.	\$510,000	\$59,019
3/9/2024	Clackamas Co.	OR 99E (McLoughlin Blvd) at SE Maple St & vicinity, pedestrian safety improvements	Design	Enhanced crosswalk at Maple St with RRFB, island, illumination. Speed zone review, new speed limit signing if speed limit is lowered.	\$160,000	\$7,510
4/9/2024	Milwaukie	OR 99E (McLoughlin Blvd) at SE 22nd Ave, pedestrian safety improvements	Design	Add fencing along east side of McLoughlin Blvd.	\$137,000	\$7,011
5/22/2024	Salem	Pedestrian Safety Improvements on OR 99E (Liberty St) at River St NE	Design	Enhanced crosswalk at the intersection of Liberty St & River St NE.	\$159,640	\$14,007
5/11/2024	Salem	Pedestrian Safety Improvements on Edgewater St (OR 22) near MP 24	Design	Delineate and clarify ramp alignment and path, add illumination.	\$107,200	\$14,007
6/29/2024	Jackson Co.	Pedestrian Safety Improvements on South Valley View Road (I-5 conn) near Eagle Hill Rd and Bear Creek Greenway	Construction	Illumination and/or additional ped warning signs.	\$40,000	\$4,652
7/14/2024	Portland	Pedestrian Safety Analysis and Improvements on US 30B Bypass (NE Lombard St) at MP 9.15 and vicinity	Region Investigation	Investigation includes an estimate of cost & feasibility of added illumination.	\$10,000	\$1,554

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Crash Date	City	Project Name	Current Status	Project Description	Budget	Expend through 12/31/24
9/7/2024	Hillsboro	Pedestrian Safety Analysis and Improvements on OR 8 (Baseline Ave) between 17th and Main	Region Investigation	Investigation includes consideration of added sidewalk, signing.	\$10,000	\$0
10/11/2024	Medford	Pedestrian and Bicycle Safety Analysis & Improvements on Rogue Valley Highway	Region Investigation	Investigation includes consideration of added bike lane, restriping, drainage basin adjustment.	\$10,000	\$0
10/20/2024	Eugene	Pedestrian Safety Analysis and Improvements - OR 569 between OR 126 and Roosevelt Rd	Region Investigation	Investigation includes consideration of adding rumble strips.	\$10,000	\$0
10/23/2024	Beaverton	Pedestrian and Bicycle Safety Analysis and Improvements on TV Hwy between SW 102nd and SW 104th	Region Investigation	Investigation includes intersection control study as well as consideration of new pedestrian crossing, illumination, sidewalk infill.	\$10,000	\$0
11/10/2024	Harbor Area	Pedestrian Safety Analysis and Improvements on US 101 in Harbor Area	Region Investigation	Investigation includes consideration of illumination, new pedestrian crossing.	\$10,000	\$514
11/19/2024	Cornelius	Pedestrian Safety Analysis and Improvements – OR 8 near N Davis St	Region Investigation	Investigation includes consideration of accessibility of push buttons, consideration of illumination.	\$10,000	\$0
12/15/2024	Portland	Pedestrian Safety Analysis & Improvements - US 26 near SE 80th	Region Investigation	Investigation includes consideration of median barrier, street trees, and lower posted speed.	\$10,000	\$0
12/27/2024	Woodburn	Pedestrian Safety Analysis & Improvements – OR 99E near Williams Ave	Region Investigation	Investigation includes consideration of visibility enhancements for island, RRFB modifications, and illumination	\$10,000	\$0
Totals					\$1,803,840	\$132,006

Vulnerable User Crash Response Program

Systemic Program

A component of the VUCR Program includes addressing high-risk corridors in a systemic fashion where cost-effective treatments and improvements are applied based on risk of future crashes.

Selecting high-risk corridors and implementing proven safety countermeasures such as bike lanes, crosswalk visibility enhancements, pedestrian refuge islands and lower speed limits will help safely connect people to the bus stops, shopping areas, schools and parks that are often located along these same corridors. Treating entire corridors in one project helps meet our Strategic Action Plan goal of identifying corridors to apply strategic safety investments.

Methodology for Systemic Corridor Selection

In alignment with the VRU Safety Assessment in the Transportation Safety Action Plan (TSAP), the selection of corridors for the systemic portion of the program was based on a combination of a risk score and a crashes per mile score (2018-2022 data). The risk score was based on the presence or absence of certain roadway and demographic risk factors associated with higher VRU crash frequencies. The risk score was calculated using the following factors:

1. Medium-high or high equity index.
2. Functional classification of minor arterial or major collector.
3. Annual average daily traffic between 10,000 and 40,000 vehicles.
4. Schools within one mile.
5. Transit stops within one mile.
6. Posted speed limit greater than or equal to 35 mph.
7. Number of lanes greater or equal to two lanes per direction.
8. Traffic signals within 0.5 miles.
9. Access density greater or equal to 40 access points per mile.
10. No bike lane.
11. No sidewalk.
12. Shoulder width less than or equal to 6 feet (rural only).
13. No street lighting (ODOT Region 1 only).

Similar to treatments used in the responsive portion of the program, the treatments selected for corridor use will be lower cost and able to be installed quickly. The initial corridor screening list ranked 25 high priority highway segments in Oregon. In Fall 2024, region representatives shared their insights and recommendations for the top corridors in their regions.

The top corridors included highways where illumination, enhanced pedestrian crossings and other traffic calming measures could be easily applied. Region representatives on the review team assisted the VUCR Program to select the OR 540 (North Bend, Cape Arago Hwy.) corridor for design and construction in 2025. That project is expected to add several new enhanced pedestrian crosswalks, illumination, bike lanes, and ADA curb ramps. Additional corridors will soon be selected for 2026 using the latest set of risk factors and crash data.

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Systemic Project Schedule and Budget

With the goal of completing systemic projects on three corridors, approximately \$3.7M was allocated for the systemic component of the VUCR Program. As the first corridor (OR 540 Cape Arago Hwy, in North Bend) is estimated at \$1.6M, the succeeding two systemic projects will be expected to limit project costs to approximately \$1M each unless budget allocations are adjusted. Region 3 has begun design work on the OR 540 systemic project in North Bend; that project is expected to advance to construction in 2025.

2024 Accomplishments

Initiation of the Vulnerable User Crash Response Program in 2024 has helped the agency realize a goal of responding to fatal VRU crashes in a quick, effective, and coordinated manner. Program funds totaling \$3.4M have facilitated project investigation, design, and construction of safety treatments at nearly half of all VRU fatal crash sites. Specific accomplishments for the program include:

- All 50 fatal crashes involving one or more VRU's were reviewed by the VRU crash review team.
- Four reviews resulted in maintenance or signal retiming activities.
- 22 of the crash reviews led to a more in-depth analysis by the region traffic investigation team. Seven of those crash sites are now associated with a project that is in design (5) or that has proceeded to construction (2).
- One systemic corridor (OR 540, Cape Arago Hwy. in North Bend) was selected for design and construction in 2025. A similar screening tool will be used again to select one or two additional corridors for implementation in 2026.

Appendix A

Fatal Vulnerable Road User Crashes, ODOT Highways
Jan 1 – Dec 31, 2024

