DRAFT

US 97 High Bridge to Madras Safety Study

TM#4 – Crash Countermeasure Toolbox – Application Summary

Prepared by
Oregon Department of Transportation, Region 4
Planning and Technical Center
63055 N. Hwy 97, Bldg M, Bend OR 97703

Project Contact
Ken Shonkwiler, Principal Planner
Oregon Department of Transportation, Region 4
63055 N. Hwy 97, Bldg M, Bend OR 97703
Cell: 541-815-6877

Kenneth.d.shonkwiler@odot.oregon.gov

1. Introduction

TM#4 Crash Countermeasure toolbox is intended to be a summary of all possible countermeasures that may be considered in the project. Countermeasures listed in this document are not final decisions but serve as a starting point for reducing fatal and serious injury crashes and countermeasure selection. Also Included in the memo are solutions that may not have crash reduction factors but are considered operational, access management or ITS solutions that have expected safety benefits from an engineering perspective and follow the goals of both the Jefferson County TSP and the US 97 High Bridge to Madras project.

2. Crash countermeasure literature summary

The following is a discussion of manuals and tools that will assist the ODOT project team in the review of alternatives to improve safety on US 97. Final preferred alternatives are not limited to the tools below as operational fixes may be considered in alternatives development as well.

Highway Safety Manual

The Highway Safety Manual (HSM), published by the American Association of State Highway Transportation Officials (AASHTO) is the recognized source of information and methods for quantitatively evaluating traffic safety performance on existing or proposed roadways. The HSM provides a science-based, technical approach that helps State and local agencies take the guesswork out of safety analysis. FHWA has developed supporting implementation tools including the Interactive Highway Safety Design Model (IHSDM), the Crash Modification Factors (CMF) Clearinghouse, and the Systemic Safety Project Selection Tool. These tools greatly advance ODOT's ability to incorporate explicit, quantitative consideration of safety into their planning and project development decision making.

The HSM provides a science-based, technical approach to facilitate consideration of safety in roadway planning, design, operations, and maintenance decisions. This allows safety to be quantitatively evaluated alongside other transportation performance measures such as traffic operations, environmental impacts, pavement durability, and construction costs.

Crash Modification Factors

Crash Modification Factors (CMFs) are a key component of highway safety analysis, used to quantify the safety impacts of specific design features, traffic control measures, or other interventions on roadways. These factors provide estimates of how changes to various roadway characteristics or features affect the likelihood and severity of crashes. CMFs are one tool from the Highway Safety Manual.

The ODOT list of approved CMFs is intended to provide consistency among projects; it does not prohibit other countermeasures and CMFs from being evaluated. The supporting information provides details about the area(s) a CMF applies to, applicable crash type(s), applicable severity type(s), standard error (if available), and a star rating. The star rating system is managed by the FHWA and denotes the CMF's quality on a one-to-five scale, where five indicates the highest or most

reliable rating. CMFs with the highest star ratings were prioritized for use in this analysis, when possible.

Crash Prediction Module

The Crash Prediction Module is one tool within the Interactive Highway Safety Design Model that aids practitioners in assessing the safety performance of an alternative. The Crash Prediction Module estimates the frequency and severity of crashes that can be expected on a roadway based on geometric and traffic conditions. This model can evaluate rural two-lane highways, rural multilane highways, and urban and suburban arterials. Data for the model includes roadway, traffic, and crash data. The benefits of the IHSDM are that the results not only help users to make decisions to improve the safety performance of their roadways, but the results also justify and defend geometric design decisions.

ODOT Safety Investigation Manual

The ODOT Safety Investigation Manual is a resource for ODOT traffic investigators with highway safety project investigation, analysis, evaluation, and documentation. The manual includes checklists and analysis procedures suitable for a variety of field and office safety investigations and assessments. The manual also includes information about the ODOT highway safety programs and tools, linkage to current standards and resources where design and operations methods are stipulated, a comprehensive procedure for safety investigation at both intersection and highway segments, and countermeasure definition and guidance. Although the content of this manual is targeted for use within ODOT, the procedures outlined could be easily adapted by local jurisdictions for highway safety assessments. This manual does not contain roadway design policies or practices. The state traffic safety engineer maintains the Safety Investigations Manual.

Intelligent Transportation Systems

Intelligent Transportation System (ITS) infrastructure enhances traffic flow, maintenance activities, and safety through the application of technology. The provision of reliable ITS infrastructure to inform motorists about incidents, weather conditions, and congestion is a useful and cost-effective tool for rural areas, such as Jefferson County. ITS improvements are one part of the ODOT Statewide Transportation Systems Management and Operations (TSMO) Plan.

ODOT has developed county- and area-wide Intelligent Transportation System plans for some counties in Region 4. The need for an ITS plan and ITS-related improvements on state facilities is documented in the Jefferson County TSP. While an ITS plan has yet to be developed for Jefferson County, ITS-related improvements that coordinate with and resemble those in the Deschutes County ITS Plan and Lower John Day ITS Plan are to be considered in alternatives development. ITS improvements may include identifying locations for fiber, weather stations, video monitoring cameras, dynamic speed limit or speed advisory signs, curve speed warning signs, intersection warning signs, and real-time transit information.

3. Single Lane versus Multi-Lane Highway Evaluation

US 97 in the project area is a single-lane highway (one lane in each direction) with varying cross-sections that include passing/climbing lanes, passing zones (centerline skip striping), no-passing zones (double yellow centerline striping), and a mix of intersections with and without turn lanes. This section discusses the potential benefits and impacts widening US 97 to a multi-lane, four-lane highway would have.

The primary benefit of widening a highway from a two-lane highway to a four-lane highway is highway capacity. Highway capacity of a two-lane highway is defined based on Level of Service (LOS)—a methodology that scores highway operation on a A-F system. Rural highways are generally designed to a LOS C operation, which represents a well-utilized system where posted speeds are maintained and flow is stable. LOS E represents when highway operation is near capacity and some congestion may be experienced. LOS F represents when highway demand has exceeded capacity, resulting in significantly lower speeds than the posted speed. Highway operations are generally considered acceptable in the LOS A-D range; it is not until operations degrade to LOS E conditions that capacity increasing measures would be considered. As described in the Existing Conditions section, this section of US 97 operates acceptably at LOS C conditions at peak times during peak summer travel. Therefore, highway widening is not justified based on operational needs.

Highway safety is another consideration when evaluating number of lanes. The primary safety benefit of widening US 97 from two lanes to four lanes would be to address sideswipe-overtaking crashes (passing maneuvers) and head-on crashes resulting from passing maneuvers. As described in the crash data and analysis section of the existing conditions section, there were three sideswipe-overtaking crashes where passing zones were present. However, there were seven sideswipe-overtaking crashes where passing lanes were present (two lanes per direction). Therefore, the crash data suggests that providing passing lanes or widening the entire highway from two lanes to four lanes would not remedy sideswipe-overtaking crashes. Furthermore, there are two primary safety concerns when widening a highway from two lanes to four: 1) highway speeds increase and 2) intersections and driveways become less safe. Speed is one of the primary factors in collision severity outcomes; facilitating higher speeds with a four-lane highway is expected to result in more severe crash outcomes. There were 52 intersection/driveway crashes, including 7 fatal and severe injury crashes; widening the highway to a four-lane highway would exacerbate this safety issue. Overall, widening US 97 from two to four lanes is expected to worsen safety on the corridor.

Another consideration of widening US 97 to provide a four-lane highway are property and access impacts. There are a number of properties along the highway with homes close to the existing right-of-way boundary; widening the highway would require significant right-of-way takes and possibly even fully taking houses Additionally, widening the highway would also need to consider access points to/from the highway through either removal of accesses or restriction accesses to right-in/right-out in order to maintain safety.

Given there is no demonstrated operational or safety need to widen the highway from two lanes to four, the safety concerns of widening the highway to four lanes, the right-of-way and access impacts, and the incredibly high and potentially unrealistic cost of widening the highway to four lanes, a four-lane highway cross-section is not being considered as part of this safety planning effort.

4. Countermeasure Toolbox

This section provides a toolbox of crash countermeasures applicable to this section of US 97. The countermeasure toolbox is based on ODOT All Roads Transportation Safety (ARTS) program resources. The ARTS countermeasure toolbox has been refined for this project to focus on countermeasures appropriate for the context of this highway—for example, all urban and signal countermeasures have been removed as this is a rural highway with no existing signalized intersections. Additionally, this refined toolbox does not include bicycle and pedestrian countermeasures as the existing conditions analysis suggests that bicycle and pedestrian travel and safety needs are negligible along this section of US 97. The countermeasure toolbox provides a countermeasure number based on the type of countermeasure (H = Hotspot, I = Intersection, RD = Roadway Departure), in alignment with the ARTS countermeasure toolbox. The target crash and target severity columns document how the crash reduction factor (CRF) is applied. More detailed information on a given countermeasure can be found in the ODOT Crash Reduction Factor Manual.

Table 1: Countermeasure Toolbox

CM No	Name	Target Crash	Target Severity	CRF
H2	Right Turn Lane on Single Major Road Approach	All	All	14%
H3	Right Turn Lane on Both Major Road Approaches	All	All	26%
H6	Channelized Right Turn Lane with Raised Median	All	All Injury	35%
H9	Left Turn Lane on Single Major Road Approach	All	All	44%
H10	Left Turn Lane on Both Major Road Approaches	All	All	48%
H17	Channelized Left Turn Lane with Raised Median on All Approaches	All	All Injury	27%
H18	Install Roundabout	All	All Injury	82%
H29	Install Lighting at Intersection	Night	All Injury	38%
H32	Install New Guardrail	Run off the Road	All Injury	47%
H40	Install Traversable Median	All	All	12%
H41	Install Passing Lane or Climbing Lane	All	All Injury	25%
H42	Widen Rural Paved Lane Width by 1 foot	All	All	5%
H43	Flatten Horizontal Curve	All	All	#[1]
H44	Flatten Crest Vertical Curve	All	All	20%
H45,H46	Improve Superelevation Variance (SV) on Rural Curves	All	All	#[1]
H48	Increase Pavement Friction by Installing High Friction Surface Treatment on Curves	Run off the Road	All	52%
H52	Install Rural Variable Speed Limit Signs	All	All	20%

CM No	Name	Target Crash	Target Severity	CRF
H60,H61	Reduce Intersection Skew Angle	All	All	#[1]
H65	Install Offset (Buffered) Right Turn Lane	Angle and Turning	All	69%
I15	Install Flashing Beacons as Advance Warning at Intersections	All	All	13%
I17	Increase Triangle Sight Distance	All	All Injury	48%
I21	Improve Intersection Warning: Stop Ahead Pavement Markings, Stop Ahead Signs, Larger Signs, Additional Stop Signs and/or Other Intersection Warning or Regulatory Signs	All	All	20-30%
I23	Increase Retroreflectivity of Stop Signs	Angle	All	7%
I25	Provide Flashing Beacons at Minor Road Stop Controlled Intersections	Angle	All	13%
I27	Install Transverse Rumble Strips on Stop Controlled Approaches	All	Fatal/ Serious Injury	25%
I28	Install Raised Divider on Stop Approach (Splitter Island)	All	All	15%
I30	Provide "Stop Ahead" pavement markings	All	All	31%
RD1,RD2	Increase Distance to Rural Roadside Obstacle	All	All	22-44%
RD3	Flatten Rural Side Slopes	All	All	#[1]
RD4	Increase Pavement Friction by Installing High Friction Surface Treatment	Wet Road	All	57%
RD12	Install Speed Feedback Sign	All	All	10%
RD13	Install Raised or Recessed Pavement Markers	Night	All	15%
RD14	Install Post-Mounted Delineators on Curves	Curve crashes at Night	All	30%
RD16,17	Install Centerline Rumble Strips	All	All Injury	12%
RD18	Install Shoulder Rumble Strips	Run off the Road	All	22%
RD20	Install Widen Paved Shoulder	All	All	6-18%
RD24	Install Wider Edgelines (4 in. to 6 in.)	All	All	14%
RD25	Install Median Barrier	All	All Injury	30%

Notes:

1: The '#' indicates when the CRF is based on an equation or look-up table. For more information regarding how the CRF is determined for these countermeasures, refer to Chapter 3 of the ODOT Crash Reduction Factor Manual.

5. Countermeasure Application

Possible countermeasures were selected for each of the systemic issues and areas of safety concern documented in TM#3. Included are operational and ITS recommendations where appropriate; approvals and subsequent planning documents may be needed to support countermeasure installation. Systemic countermeasures are intended to serve long stretches or several locations in the corridor, whereas the Areas of Safety Concern have countermeasures that are applicable to that location. Projects from the Jefferson County TSP (S-4, S-6a, S-2, S-Sa, S-5b, S-6b) were reviewed, matched, and included in the Countermeasure toolbox.

Systemic Issues and Countermeasures

Upgrade signage, rumble strips, and low-cost safety countermeasures:

- Centerline Rumble Strips
- Shoulder Rumble Strips
- Improve Intersection Warning: Stop Ahead Pavement Markings, Stop Ahead Signs, Larger Signs, Additional Stop Signs and/or Other Intersection Warning or Regulatory Signs
- Increase retro reflectivity of Stop Signs
- Install Lighting at Intersection
- Install New Guardrail

Left turn related crashes

- Channelized Left Turn Lane with Raised Median
- Restricted Crossing U Turn (RCUT)
- Left Turn Lane on Major Road Approaches
- Roundabouts

Roadway departure and weather crashes:

- Shoulder rumble strips
- Increase distance to rural roadside obstacle
- Flatten horizontal curve
- Rural variable speed limit signs
- New guardrail
- Widen paved shoulder (1 to 3 ft)
- Post mounted delineators on curves
- Increase pavement friction by installing High Friction Surface Treatment
- Weather information units
- Recessed pavement markers

Head on Crashes

- Median Barrier
- Traversable median
- Centerline rumble strips

Areas of Safety Concern Countermeasures and Potential Solutions

1. **US 97/Colfax Lane/US 26***

   *US 97 South Madras Facility Plan has long-term preferred alternative which includes median barrier and intersection improvements.

Countermeasure	Consideration
Traffic signal or roundabout	Roundabout may have better safety performance and decrease side street delay. Freight considerations with roundabout.
Simplify and reduce size of intersection	Low cost to mid cost, drainage considerations
Illumination	Low cost
Recommend future speed zone study	Not likely to reduce speed unless surrounding land use develops

2. **US 97 Waldorf to Dover – MP 97.7 to 98.3**

Countermeasure	Consideration
Traversable median/TWLT	Right of way (R/W) will be needed but likely most low-cost countermeasure
Consider access/frontage road	High cost, right of way impacts
Median barrier/RCUT**	R/W needed and slight out of direction travel
Increase Distance to Rural Roadside Obstacle	Low cost

**Roundabout consideration at US 26/Colfax/US97 would assist with circulation from out of direction travel from median installation.

3. **US 97 – Dover Lane***

   *Improvements in 2023 not reflected in crash data

Countermeasure	Consideration
Restrict left turns from Dover, consider RCUT**	R/W needed and slight out of direction travel
Reduce intersection skew	High cost and significant R/W impacts
Improve sight distance on NE side (westbound approach).***	Low cost

**Roundabout consideration at US 26/Colfax/US97 would assist with circulation from out of direction travel from median installation.

***ODOT maintenance is making initial improvements to sight distance at this location in Summer of 2024 as a result of this study.

4. US 97 Passing Lanes MP 98.7 to 99.6

Countermeasure	Consideration
Reduce passing lane length to remove conflict with left turns into auction yard	Passing lane is sufficiently long enough currently and would not be substandard.
Install traversable median, remove passing lane	Would remove passing lane conflict with accesses
Install traversable median	Cost is significantly higher than with removal of passing lanes

5. US 97 – Falcon Lane to Highland

Countermeasure	Consideration
Consolidate accesses and make turning improvements at one or two primary accesses	Out of direction travel.
Install Median Barrier* RCUT RIRO	More expensive
Install Channelizing island/porkchop	More cost effective than median barrier, less compliance than a median barrier
Install warning activation lights	Cost, approval or effectiveness
Recessed pavement markers, review striping	Low cost

*Detour evaluations would need to occur when evaluating access consolidations

6. US 97/Jericho Lane intersection

Countermeasure	Consideration
Focus improvements at Iris and US97/Culver Highway, limit traffic at Jericho to RIRO. Work with county to improve Iris so that it can accommodate recreational travel*	Cost
Install channelization/pork chop to limit left turns on Jericho	Out of direction travel
Median Barrier*	Right of way, cost
Improve turning radius at Jericho	Would need to be applied with another countermeasure for safety consideration
Install warning activation lights	Cost, approval or effectiveness

*Detour evaluations would need to occur when evaluating access consolidations

7. US 97/SW Culver Highway

Countermeasure	Consideration
Install Roundabout	Vehicle speeds approaching Juniper Butte. Cost
Offset T intersection design	May not address all turning movement crashes
Realign Intersection: Realign west leg of Culver highway, install acceleration lane for eastbound right turn onto US 97. Consider removing eastbound left turn on OR 361 and consider closing approach on Old Culver Highway.*	Cost, but possibly similar to that of a roundabout. East leg of Culver is occasionally used when US 97 is closed for crashes Criteria for Acceleration Lane may not be met.
Illumination	Maintenance of lighting at this location could be difficult.
Increase Northbound left turn lane storage	Dependent on preferred alternative

*Detour evaluations would need to occur when evaluating access consolidations

8. US 97 – Juniper Butte Area

Countermeasure	Consideration
Install Median Barrier	Cost, available space.
Traversable Median	Likely more cost effective
ITS improvements - concept of operations, including weather stations and variable speed limit signs	Dependent on approved Concept of operations
Install wider shoulders	May be limited by topography
Longer merge lane for truck scales	May be limited by topography
Roadside clearing	Low cost

9. US 97 – Railroad Overcrossing

Countermeasure	Consideration
ITS improvements for icy conditions on bridge, tied to Road Weather Information System (RWIS) system	Need approval through ITS Concept of Operations
Consider guardrail extension	Accesses

10. Eby Avenue

Countermeasure	Consideration
Improve Intersection Warning: Stop Ahead Pavement Markings, Stop Ahead Signs, Larger Signs, Additional Stop Signs and/or Other Intersection Warning or Regulatory Signs	Low cost
Left turn lane	Cost and R/W impacts
Widening approach on Eby	A Deschutes County project
Consider RIRO on Eby	Left turns directed to Terrebonne accommodated when Terrebonne project is constructed

6. Non-Engineering Countermeasures

Law Enforcement and Emergency Services

One goal of the ODOT Transportation Safety Action Plan (TSAP) is to utilize a multi-disciplinary approach to highway safety. The TSAP recommends collaboration with law enforcement and EMS during the safety planning process and encourages multi-disciplinary solutions that address the four E's (engineering, emergency response, law enforcement, and education). High Visibility Enforcement grants, training enrollment and cost reimbursement, as well as other innovative safety program ideas can be submitted annually to Oregon's Transportation Safety office. Projects providing support for first responders and enforcement activities can be applied for by individual agencies, or via local political subdivisions directly through TSO. Information can be found about how to apply to the various types of funding sources by visiting the Grantee Resources page on the TSO website.

This safety study is being developed with input from the Jefferson County Sheriff's Office and Oregon State Police. The Jefferson County Sheriff has identified a **$1.25 million/year** need to train and staff a traffic deputy to patrol US 97. Enforcement would focus on human behaviors such as speeding, impaired driving, and distracted driving which are behavioral trends identified in the past five of crash data.

Jefferson County Fire and EMS is also represented on the PAC and has provided input on EMS needs in the corridor. Emergency services needs are listed below:

- Medium duty rescue unit for specialized extrication and heavy extrication- 400-600k
- New Medic Unit for response to crashes on 97 corridor- 375k
- Additional Staffing, if possible, would be great we would look at 2 people for 120k each employee per year.
- Extrication Tool upgrade 35k
- Purchase of 2 Combi-extrication tools for each ambulance 18k each x 3 = 54,000

Detour Routes

Several county roadways operate as detour routes in the event of a road closure from vehicular crashes. ODOT Region 4 maintenance recommends that coordination occurs with Jefferson County in the event that a project does modify or consolidate an access. Detour routes currently need to be reviewed and updated, as well as re-evaluated in the event of a project.

Education

ODOT's Transportation Safety Office (TSO) creates a Triennial Highway Safety Plan (3HSP) to outline Oregon's goals, objectives, and countermeasure strategies for improving traffic safety, as well as performance measures to evaluate progress. Utilizing specific strategies from the Transportation Safety Action Plan (TSAP), the 3HSP details the state's approach for how various streams of safety funding are spent, and which behavior-based countermeasures are being implemented through identified projects. Innovative safety programming as well as new partnerships with local, county, tribal and state agencies are always being sought and prioritized for funding.

Utilizing annual statewide crash data, and relying on published reports, studies, reviews, various types of data and resources, recommendations are made to reduce fatal and serious injury crashes involving specific crash factors such as speeding, pedestrians, distracted driving, occupant protection, etc. It is from the 3HSP that proposed countermeasures and interventions will be provided for the US97

Corridor Safety Study. These recommendations should not be viewed as limitations for the types of projects that would be considered for funding through the State Highway Safety Office (TSO) but identified and state supported methodologies.

Distracted Driving

Distraction occurs when a driver diverts attention to something not related to driving. There are four types of distraction: visual, auditory, manual, and cognitive. Distracted Driving is a dangerous behavior for drivers, passengers, non-occupants, and non-motorized travelers alike.

TSAP Selected Strategies:
Strategy 1.1.1 Promote safe travel behavior through educational initiatives, focusing on how system user behavior can contribute to a safer transportation system for all.
Strategy 1.2.2 Implement best practices for ongoing enhancement of safety culture training, information, and tools within ODOT and across agencies and partners.
Strategy 3.1.1 Support a data-driven approach to law enforcement, using data analysis to efficiently deploy enforcement resources to locations or corridors.
Strategy 5.3.1 Collaborate with the media and partner agencies' public information offices to develop information which improves public awareness of safety programs, laws, roles, responsibilities, and expectations. Ensure campaigns take into account Oregon demographics.

There is strong evidence, in Oregon and in other states that laws and enforcement efforts are only successful if they are effectively and continuously publicized, and in conjunction with high visibility enforcement efforts when available. According to the National Highway Traffic Safety Administration (NHTSA), public information programs should be comprehensive, seasonally focused, and sustained. The Distracted Driving Program works to reduce the incidences of distracted driving, especially with mobile electronic devices, by raising awareness of its dangers through public service ads, media, education and

high visibility enforcement. Increasing these efforts through grant projects with local level partners is an ongoing objective of the Distracted Driving program at TSO.

Impaired Driving

TSAP Selected Strategies:
Strategy 3.1.1 Support a data-driven approach to law enforcement, using data analysis to efficiently deploy enforcement resources to locations or corridors.
Strategy 3.1.2 Support a high-visibility enforcement program increasing traffic, bicycle and pedestrian law enforcement capabilities (priority and funding).
Strategy 3.1.4 Engage law enforcement in community safety activities such as teaching education classes on safer behaviors.
Strategy 3.1.5 Conduct education and outreach to law enforcement to increase understanding and enforcement of traffic, commercial vehicle, pedestrian, and bicycle laws.

Strategy – High Visibility Enforcement for Impaired Driving

According to the Countermeasures That Work (NTSHA, 2023), the most effective strategy that is allowed by Oregon law is High Visibility Enforcement (HVE). State-level enforcement campaigns from seven states were found effective in reducing 11 to 20 percent of total alcohol related fatalities when enforcement and paid media were combined (National Academies of Sciences, Engineering, and Medicine, 2018). Researchers found that 58 percent of high visibility enforcement efforts related to alcohol-involved driving reduced the number of crashes and prohibited impaired driving behaviors observed within the enforcement area. The Impaired Driving Program provides grants annually to local police departments, sheriffs' offices, and the Oregon State Police to conduct enforcement activities that promote compliance with Oregon's impaired driving laws.

Strategy – Training/Education

According to the Oregon Triennial Highway Safety Plan produced by the Transportation Safety Office, "Communications and outreach strategies seek to inform the public of the dangers of driving while impaired by alcohol or drugs and to promote positive social norms of not driving while impaired. As with prevention and intervention, education through communications and outreach strategies is especially important for youth under 21 years old." Year-round public education is necessary to inform and educate motor vehicle drivers and passengers regarding Oregon laws on impaired driving, making good choices, the effects of impairing substances, and consequences of substance related crashes and driving under the influence. They often go hand in hand with communications messaging.

The Impaired Driving program is also working to provide grants to fund training to law enforcement, prosecutors, and other partners in topics related to their discipline to improve their ability to prevent, adjudicate and respond to incidences of impaired driving in Oregon. This includes specialized training for detection of drug impairment to school administrators, commercial motor carrier inspectors, employers and law enforcement, and for skills needed for effective prosecution of DUII-drug cases.

Strategy – Mass Media Campaigns for Impaired Driving

Media campaigns serve as a powerful tool for raising awareness, educating the public, and influencing behavior change regarding impaired driving. Numerous studies have demonstrated the effectiveness of media campaigns in reducing impaired driving incidents and promoting responsible behavior. These campaigns typically employ a combination of television, radio, print, digital platforms, and social media to disseminate messages targeting various demographics and communities. By employing evidence-based strategies, such as creating emotionally impactful content and using persuasive communication techniques, media campaigns can effectively engage audiences, increase knowledge about the risks of impaired driving, and promote safer alternatives.

The two types of messaging Oregon uses are behavioral- and awareness-based. Funding is provided to allow for campaigns statewide and the location of messaging is based on data and diverse population needs annually. Impaired driving offenders come from every demographic of society in Oregon, and media campaigns must target diverse audiences, while concentrating on those most likely to engage in risky behaviors including messaging that targets specific subcategories such as impaired motorcycle riding, impaired driving in urban/pedestrian-heavy areas, and surrounding impaired driving heavy events.

To effectively address impaired driving in Oregon and ensure the inclusion of non-English-speaking Oregonians, it is crucial to develop media campaigns that feature prevention messaging in languages other than English, with an emphasis on Spanish. By tailoring the content to the specific needs, cultural context, and language preferences of the Spanish-speaking population, these campaigns can increase their reach and impact. TSO funds contracted media design, education material revisions, social media advertising, radio public service announcements and billboards, as well as program specific direct purchase, reproduction, and distribution of educational and outreach materials at the statewide level. Local messaging, initiatives and campaigns are another option for targeting specific risk-taking behaviors within over-represented populations or underserved communities.

Speeding

TSAP Selected Strategies:
Strategy 3.1.2 Promote safe travel behavior through educational initiatives, focusing on how system user behavior can contribute to a safer transportation system for all.

Strategy 3.1.5 Provide transportation safety educational opportunities for people of all ages, ethnicities, and income levels.

The Speed Program at TSO works to reduce speed-related deaths and injuries on all Oregon roads through grants to assist law enforcement agencies with enforcement and speed enforcement equipment; training in conjunction with DPSST for certification needs for radar and lidar; and to provide public information and education efforts.

Strategy – High Visibility Enforcement

Law enforcement diligence in high visibility enforcement remains a top priority in order to maintain or decrease the number of speed related injuries and deaths on Oregon roadways. Under ORS 810.420, Use of Speed Measuring Device, a police officer may not issue a citation based on a speed measuring device

unless the officer has taken and passed a training course, approved by the law enforcement agency that employs the officer, in the use of the speed measuring device.

Strategy – Communications and Outreach Supporting Enforcement

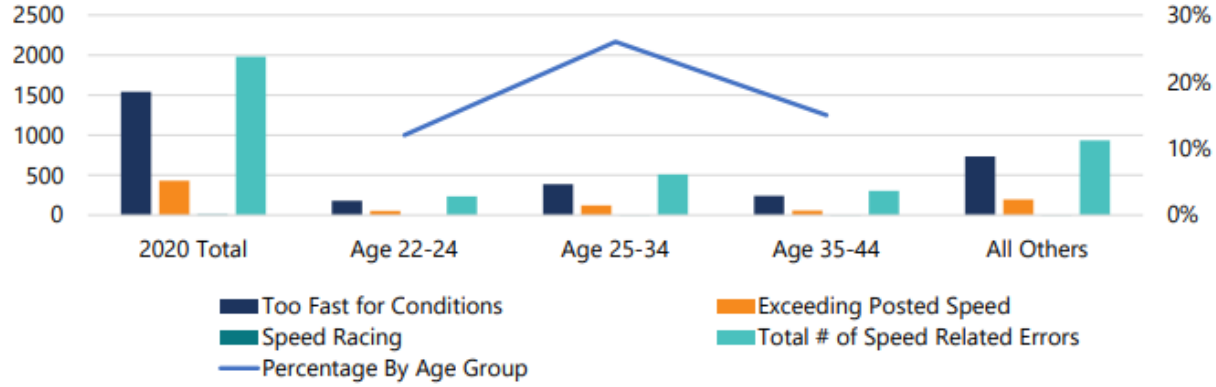
According to Countermeasures That Work (NTSHA, 2023), "high-visibility communications and outreach are essential parts of successful speed and aggressive-driving enforcement programs (Neuman et al., 2003; NHTSA, 2000)." Other than enforcement, education campaigns are one of the only proven countermeasures available to reduce risky speeding behaviors. The three types of messaging Oregon uses are behavioral, enforcement, and awareness based. Funding is provided to allow for campaigns statewide, where the content of the messaging is based on the level of funding available for enforcement activities, as well as specific to the evidence-based high incidence locations to conduct enforcement.

Targeted speeding education and awareness campaigns can assist in reaching the highest represented demographics in speed involved crashes, including messaging about relevant regional or seasonal factors such as weather and road conditions, local events that impact all road users, or populations of multiple cultures and/or languages. Partnering agencies looking to create programs to address a speeding education program in collaboration with high visibility enforcement campaigns would be most effective tailoring messaging with information about the audience in mind. (E.g.: Utilizing crash data as seen below refined by geographic area.)

2020 Basic Rule Errors in Oregon Crashes*	2020 Total	Age 22-24	Age 25-34	Age 35-44	All Others
Too Fast for Conditions	1542	180	386	242	734
Exceeding Posted Speed	430	54	121	58	197
Speed Racing	8	0	2	3	3
Total # of Speed Related Errors	1980	234	509	303	934
Percentage By Age Group		12%	26%	15%	

*Source: Crash Analysis and Reporting Unit, Oregon Department of Transportation. * Does not include Property Damage Only Crashes.*
Note: Speed- involved offenses and convictions count the following statutes: ORS 811.100, 811.111, and 811.125.

FIGURE 167: 2020 BASIC RULE ERROR IN OREGON CRASHES



Source: ODOT Statewide Crash Data System (CDS), Does not include Property Damage Only Crashes

7. Safety Evaluation Framework

The Safety Evaluation Framework was developed to support decision making in the next phase of the project. The framework's evaluation criteria are based on the original US 97 High Bridge to Madras Safety Study project goals, drafted by the project team and reviewed by the Participant Advisory Committee (PAC). Alternatives will be scored by the project team in the subsequent phase of the project based on feedback from the June 2024 PAC meeting.

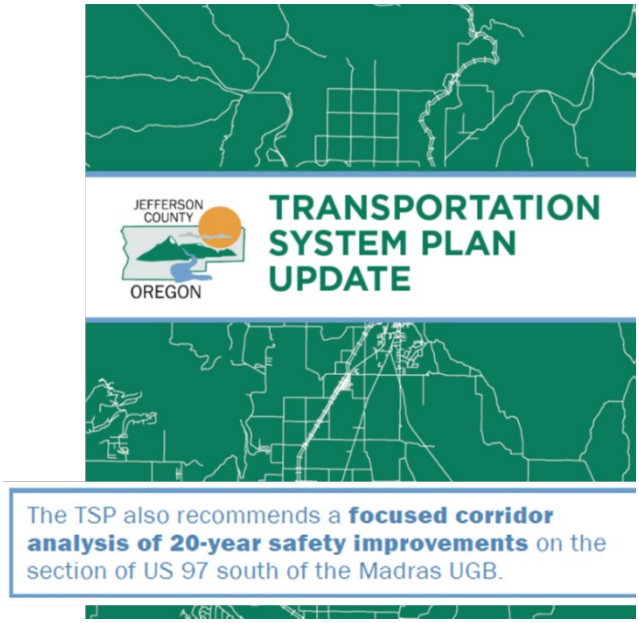
Table 2: Safety Evaluation Framework

Goal Category	Goal	Criteria 1	Criteria 2	Notes
Multi Modal Safety	Ensure that the US 97 corridor is safe for everyone using the highway, including drivers, freight, and people who use active transportation or take transit.	Alternative does not disproportionately affect safety of one mode over another.		Planning and engineering judgement, best practices via qualitive assessment
Safety	Reduce fatal and serious injury crashes on the US 97 corridor.	Addresses known safety issues and crash type in the corridor.	Provides greatest benefit for reasonable cost, consider most practical design solution.	Utilize CRF's and HSIP manual - Some operational fixes may not be prioritized as high so we would need to capture some kind of perceived safety benefit.
Access	Balance the need for access with safety improvements and corridor through movement.	Aligns with two or more goals of the 2021 Jefferson County TSP.*	Prioritizes access consolidation while considering improvements at primary access location(s).	Qualitative assessment of whether the alternative meets the goals of the TSP, i.e. yes or no

Protect	Protect the natural and built environments with practical design solutions.	Consider environmental impacts.	Consider private/personal property impact.	Environmental impacts summarized at high level by Enviro resource. R/W impacts would be generally summarized (high=homes or business, medium =farms, yards or open space, low=small R/W needs or barren federal land).

*The original goals of the Jefferson County TSP 2021 that were intended to guide the development of the US 97 High Bridge to Madras Safety Study are below:

- Facilitating turning movements at key intersections
- Closing or modifying turning movements/accesses
- Identifying county roadway projects
- Reducing crash frequency, severity and risk
- Encouraging appropriate speeds and behavior
- Accommodating freight
- Improving shoulders



8. Summary

Internal workshops, coordination with Jefferson County Public Works, feedback from the Participant Advisory Committee (PAC), and our Open House and Online Survey results helped shape considerations for the countermeasure lists. These countermeasures will act as a starting point for drafting alternatives in the next phase of the project.

References

Kirley, B. B., Robison, K. L., Goodwin, A. H., Harmon, K. J. O'Brien, N. P., West, A., Harrell, S. S., Thomas, L., & Brookshire, K. (2023, November). *Countermeasures that work: A highway safety countermeasure guide for State Highway Safety Offices, 11th edition, 2023* (Report No. DOT HS 813 490). National Highway Traffic Safety Administration

Oregon Transportation Safety Office. (2023). Impaired Driving. In O*regon Triennial Highway Safety Plan FFY 2024-2026* (p.186)