I. PROBLEM NUMBER AND TITLE
18-067 A Framework to Evaluate Causes and Effects of Truck Driver At-Fault Crashes in Oregon

II. RESEARCH PROBLEM STATEMENT

Large truck crashes have a considerable impact on society and the economy. Although Oregon experienced a decrease in the number of truck driver at-fault crashes (757 to 709) in 2015, the number of fatalities associated with truck crashes increased from 34 to 54 for the same period. While most truck driver at-fault crashes result from poor driving habits (speeding, following too close, unsafe lane changes…) it is not clearly understood how driving habits have been affected by the increased presence of smartphones, on-board technologies, and other controllable distractions. A recent study by the Federal Motor Carrier Safety Administration found that distracted truck driving was a factor in 71 percent of all truck driving accidents.

III. RESEARCH OBJECTIVES

This research will evaluate the impact of distracted driving on truck driver at-fault crashes, examine the effectiveness of existing counter measures, and identify new counter measures. The research objectives will provide a framework to evaluate trends in truck driver at-fault crash injuries in Oregon and identify specific factors affecting crash fatalities. Furthermore, this study will provide a mechanism to assess the effectiveness of the different counter measures currently in place and help identify, if warranted, new counter measures. We aim to accomplish this through determining:

- Actions taken by other states to address the link between distracted driving and truck driver at-fault crashes;
- Available data to measure the effectiveness of current counter measures;
- Opinions available to commercial motor vehicle operators regarding distracted driving;
- Factors contributing to distracted driver crashes through behavioral and hotspot analyses; and
- The costs and safety benefits of current counter measures and possible new counter measures regarding factors identified as contributing to truck driver at-fault crashes.

IV. WORK TASKS, COST ESTIMATE AND DURATION

Task 1. Collect, review and analyze current literature [months 1-2]. The overall objective of this task is to review the most recent projects and literature of successful paradigms and lessons learned by other state agencies and other research activities with regards to distracted driving and truck driver at-fault crashes. In addition, review and synthesize information on the various safety policies and initiatives undertaken by local, state, and national governments. This will provide the research team with a list of policies and initiatives that can be studied for possible recommendation.

Task 2. Perform agency surveys to determine current practices [months 3-4]. In this task, the research team will develop and administer a stated preference survey instrument to public transportation planning agencies (e.g., other state DOTs) to determine and assess agency efforts with regard to reducing distracted driving and truck driver at-fault crashes.

Task 3. Perform commercial motor vehicle operator surveys [months 5-8]. These sets of surveys will seek information regarding truck driver behavior in relation to operating the commercial motor vehicle. Specifically, the surveys will be administered to licensed truck drivers in state and those who use the states highway system to uncover factors related to driving habits due to increased penetration of smartphones and applications, on board technologies, and other distracting activities while driving. This is important since we are interested understanding the frequency of use of these applications in a day-to-day and within-day driving behavior context. The survey will
also seek information to better understand compliance behavior on the factors commonly attributed to truck driver at-fault crashes. The designed surveys will be reviewed by the project monitoring committee. Any received comments and/or recommendations will be fully addressed and incorporated before the survey is conducted.

**Task 4. Collect and analyze data [months 1-8].** This task will seek to collect and inventory current data related to truck driver at-fault crashes, truck traffic, historical crash data analysis (will include a hot spot analysis to uncover hazard clusters), and synthesize and analyze the information collected from Task 1 through Task 3 to identify best practices and practice yet to be deployed. The goal of the statistical analysis is to calculate statistics that will reveal characteristics of the data and identify the key variables for the safety benefit (cost) analysis of current counter measures or those yet to be identified in Task X. In addition, data currently being collected through a current MCTD pilot program in which the PI is involved will be used to assess driver behaviors.

**Task 5. Identify Crash Contributing Factors through Behavioral and Hotspot Analyses [months 9-13].** Utilizing the results from Task 4, the research team will develop specific crash rate and injury severity models to identify those distracted truck driver at-fault crash contributing factors. These analyses have the potential to expose underlying causation relating to truck driver at-fault crashes on Oregon Highways.

**Task 6. Perform safety benefit (cost) analysis [months 13-16].** Utilizing the results from Task 4 and 5, the objective of this task is to assess the safety benefits (costs) of current counter measures and/or new counter measure implementation taking into account the results from Task 5.

**Task 7. Disseminate results [months 17-20].** Prepare a research report that describes and presents the findings of the research, and provides recommendations to ODOT for implementation in practice and whether further research is needed.

**The total duration of the project is anticipated to be 20 months at a budget of $188,000.**

**V. IMPLEMENTATION**

The main products of this research will be: (i) identification of factors affecting truck driver at-fault crashes with specific focus on driver distraction, (ii) guidelines for improving the effectiveness and knowledge of existing counter measures used by ODOT (iii) recommendations to the legislature for potentially providing addition resources if identified through this study to reduce the rate and severity of truck driver at-fault crashes, (iv) recommendations on truck driver safety improvement programs.

**VI. POTENTIAL BENEFITS**

This study complements current efforts by ODOT’s Motor Carrier Transportation Division (MCTD) to reduce truck driver at-fault crashes (a key performance measure), which is a top priority as outlined in the Oregon Commercial Vehicle Safety Plan (CSVP). In addition, the proposed research is highly relevant to an existing active study SPR 783 “Truck Parking: An Emerging Safety Hazard to Highway Users.” The research supports the RAC priority of “Enhance transportation and/or employee safety”, “Improve the reliability of Oregon’s transportation system” and “Lead to other efficiencies, cost savings and cost avoidance.”

The project will provide Oregon Department of Transportation with insights on the severity of the truck driver distraction problem and potential ways to reduce their occurrence. The project will provide insights on the effectiveness of the different counter measures currently in place and help identify, if warranted, new counter measures. Insights on knowledge of truck driver distractions will help develop better truck driver education programs. ODOT takes an integral role in providing a safe environment for highway workers and the driving public, and through this research, we hope to take an additional step toward further improvements.

**VII. SUBMITTED BY**

<table>
<thead>
<tr>
<th>Stage 1 Submitter</th>
<th>Stage 2 Submitter</th>
<th>ODOT champions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvador Hernandez Oregon State University 541-737-4740 <a href="mailto:sal.hernandez@oregonstate.edu">sal.hernandez@oregonstate.edu</a></td>
<td>Salvador Hernandez Oregon State University 541-737-4740 <a href="mailto:sal.hernandez@oregonstate.edu">sal.hernandez@oregonstate.edu</a></td>
<td>Doug Hedlund ODOT Motor Carrier Transportation Division 503-373-7184 <a href="mailto:William.D.HEDLUND@odot.state.or.us">William.D.HEDLUND@odot.state.or.us</a></td>
</tr>
</tbody>
</table>