



# An overview of Commercial Motor Vehicle Safety Research and Partnerships in the Pacific Northwest

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# Outline



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- Introduction to TranSaL
- Discuss recent studies and partnerships
- Concluding remarks



# Introduction to TranSaL



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International Journal of Transportation Science and Technology

Perceived safe and adequate parameters binary logistic regression model for Pacific Northwest

Accident Analysis and Prevention

A time of day analysis of crashes involving large trucks in urban areas

Vehicle Crash Rate Analysis

Analytic Methods in Accident Research

Roadway classifications and the accident injury severity of heavy-vehicle drivers

Contributing Factors to Run-Off-Road Crashes Involving Large Trucks under Lighted and Dark Conditions

An empirical analysis of run-off-road injury severity crashes involving large trucks

Accident Analysis and Prevention

Abstract

Introduction

Conclusion

References



# Recent Studies & Partnerships



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- **OREGON:**
  - **SPR783: Truck Parking: An Emerging Safety Hazard to Highway Users**
  - **SPR810: A Framework to Evaluate Causes and Effects of Truck Driver At-Fault Crashes**
  - **Oregon Motor Carrier Safety Action Plan (OMCSAP)**
- **PACTRANS:**
  - **Confounding Factors of Commercial Motor Vehicles in Safety Critical Events**
  - **Understanding Truck Parking Behavior and Choice of Commercial Motor Vehicle Operators: Impacts on Roadway Safety**
- **EROAD**
  - **An Exploratory Study Using Big Data for Improved Safety and Operational Efficiency: A New Zealand Case Study**



# Oregon Partnerships (1/3)

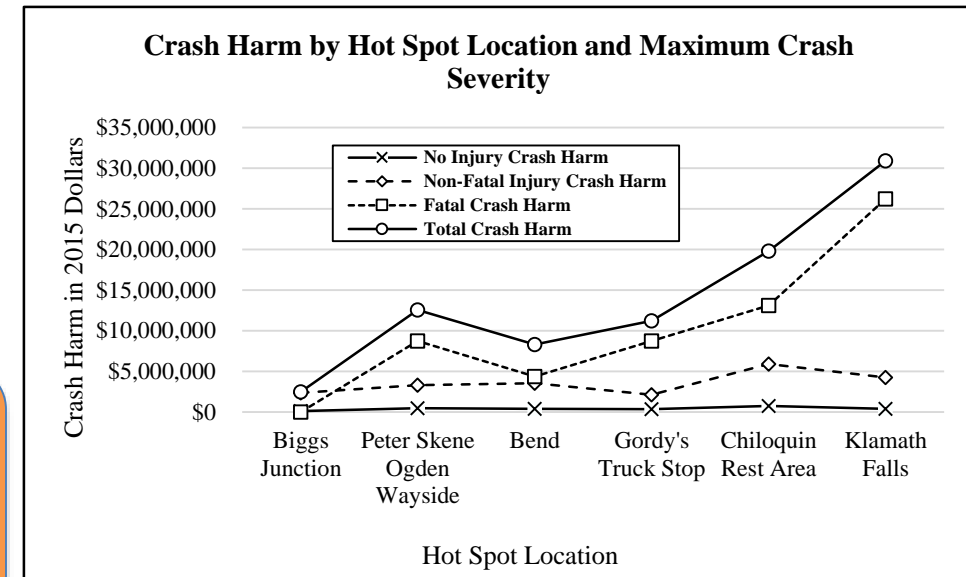


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## *SPR783: Truck Parking: An Emerging Safety Hazard to Highway Users*

- **Purpose:** A closer look at truck parking along a high-use corridor in Oregon, namely US-97 and the inherent safety concern for all highway users along this route
- **Methods:** Collected lots of data, Conducted CMV driver Surveys, performed a parking demand analysis to assess current and future trucking parking demand on US97, and estimated crash harm potential for US97.

- **Findings:**
  - Two-thirds of surveyed truck drivers encountered trouble when looking for safe and adequate parking.
  - Crash trends in terms of time-of-day, day of the week, and month of the year follow the time periods drivers stated having trouble finding safe and adequate parking.
  - Crash harm estimates suggest a substantial impact on the economy.



**Figure 1: Crash Harm by Hot Spot Location and Maximum Crash Severity**



# Oregon Partnerships (2/3)



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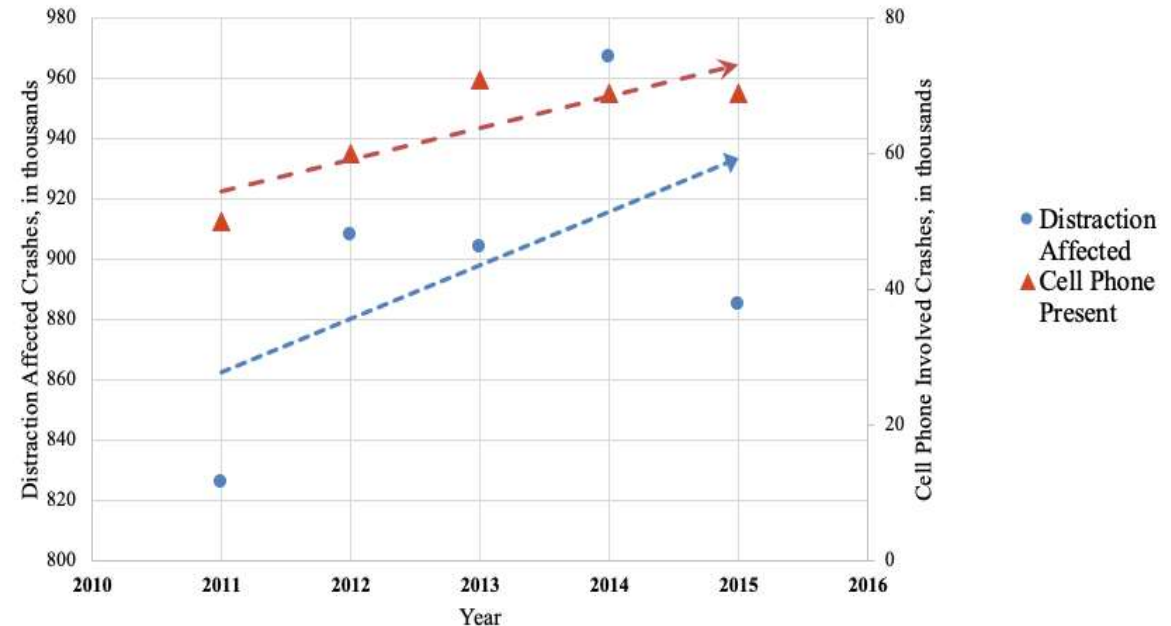
## *SPR810: A Framework to Evaluate Causes and Effects of Truck Driver At-Fault Crashes*

- **Objective:**

- Evaluate the impact of distracted driving on truck driver at-fault crashes,
- Examine the effectiveness of existing counter measures, and identify new counter measures.

- **Expected Outcomes:**

- This research will provide ODOT with insights on the severity of distracted driving among truck drivers
- And identify potential actions that can be taken to reduce the occurrence of truck driver distracted driving.



**Figure 2.** Source: National Center for Statistics and Analysis. (2017, March). Distracted driving 2015. (Traffic Safety Facts Research Note. Report No. DOT HS 812 381). Washington, DC: National Highway Traffic Safety Administration.

# Oregon Partnerships (3/3)



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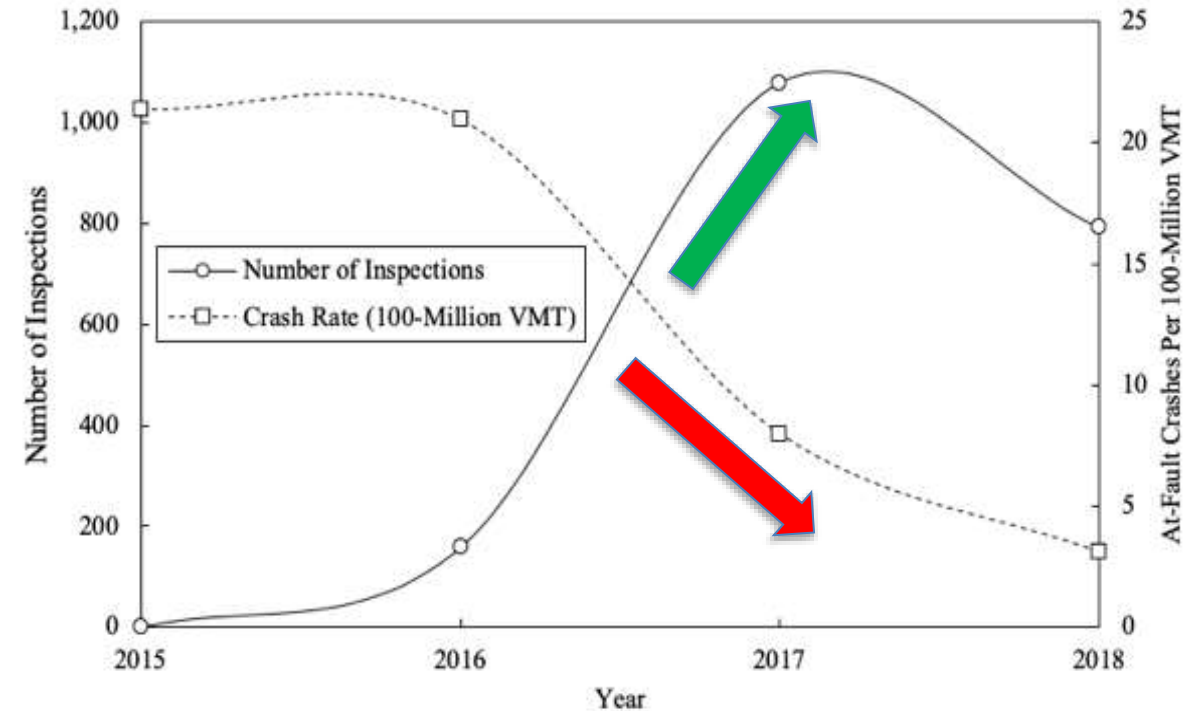
## *Oregon Motor Carrier Safety Action Plan (OMCSAP)*

- **Objective:**

- State funded pilot program, the goal of this study is to reduce truck-at-fault crashes in Oregon by focusing on and addressing unsafe commercial motor vehicle (CMV) driver behaviors that cause truck crashes

- **Expected Outcomes:**

- To reduce truck-at-fault crashes through focusing attention on increased traffic enforcement to identify truck driver behaviors associated with high truck-at-fault crash numbers in the State.



**Figure 3.** Number of Inspections and Truck At-Fault Crashes Per 100-Million VMT on I-205 Segment

# PACTRANS & Partnerships (1/2)

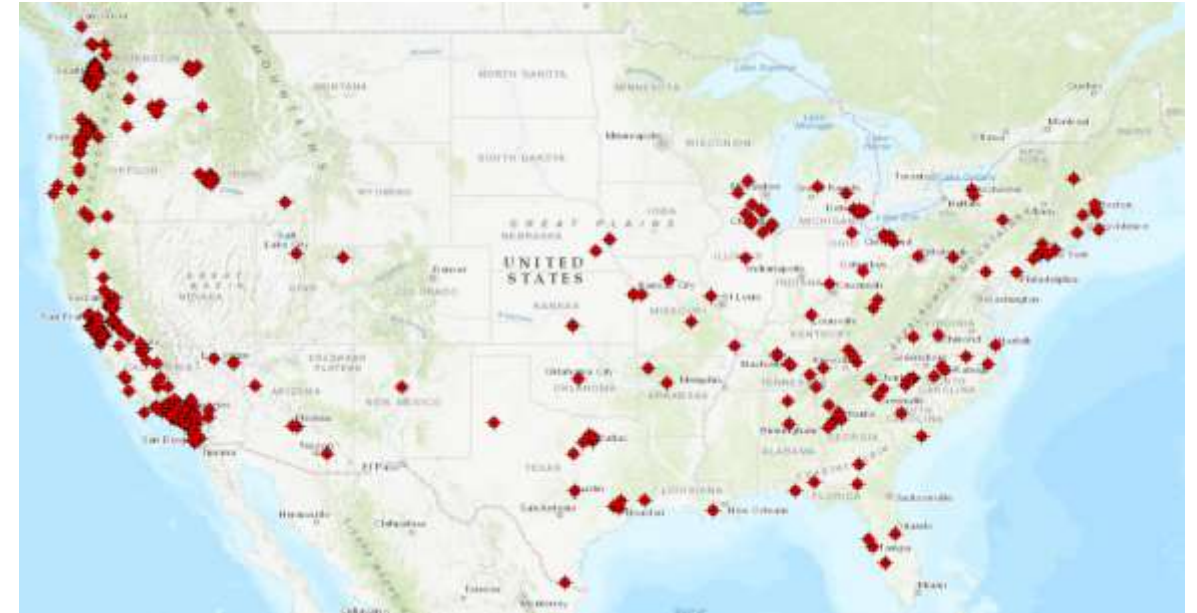


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## *Confounding Factors of Commercial Motor Vehicles in Safety*

### *Critical Events*

- **Purpose:** To seek to uncover existing relationships between the HOS observations and a set of potential confounding factors related to TOD on crash
- **Methods:**
  - The application of advanced discrete choice econometric models that account for unobserved factors (unobserved heterogeneity) to CMV drive Survey



**Figure 4.** Origins of truck drivers who deliver goods in the Pacific Northwest

## **Outcome: 2 Manuscripts**

- Understanding Truck Driver Behavior with Respect to Cell Phone Use and Vehicle Operation
- Lane-Changing Behavior and the Opinions of Drivers of Large Trucks in the Pacific Northwest: A Multivariate Probit Analysis



# PACTRANS & Partnerships (2/2)



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## *Understanding Truck Parking Behavior and Choice of Commercial Motor Vehicle Operators: Impacts on Roadway Safety*

- **Purpose:** This study sought to identify the contributing factors that influence CMV operator truck parking behavior and choice through the application of discrete choice modeling approaches

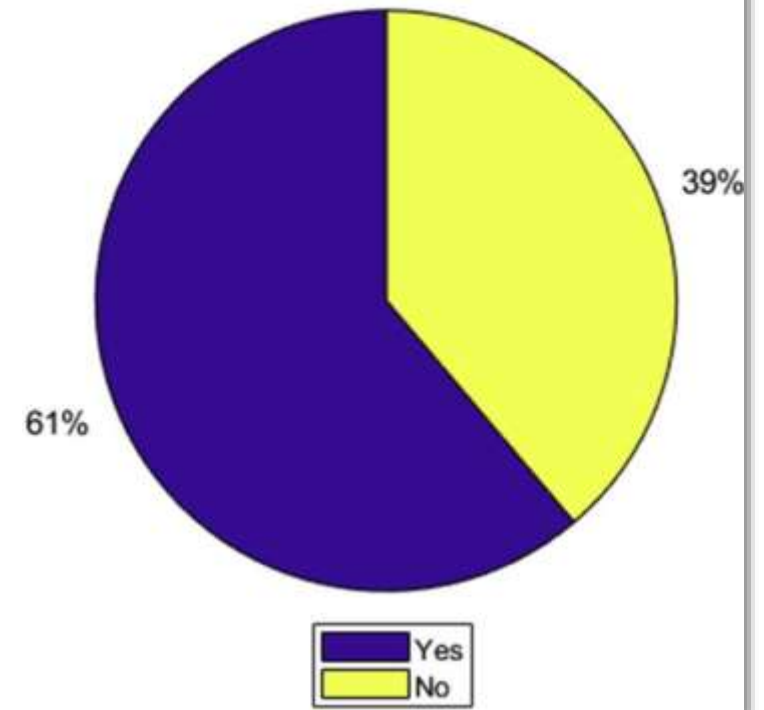
- **Methods:**

- Truck driver survey regarding their experiences related to the availability of safe and adequate parking (Pacific Northwest).
- A binary outcome (logit) model was estimated to evaluate how different factors, obtained from the driver survey, impact the likelihood of finding safe and adequate parking from the perspective of the driver

- **Findings:**

- 11 factors were found to be statistically significant and provide insights into what impacts or affects the probability that a driver will encounter problems finding safe and adequate parking

Have You Ever Encountered Issues When Finding Safe and Adequate Parking?



**Figure 5.** Percentage of drivers that have encountered issues when finding safe and adequate parking.

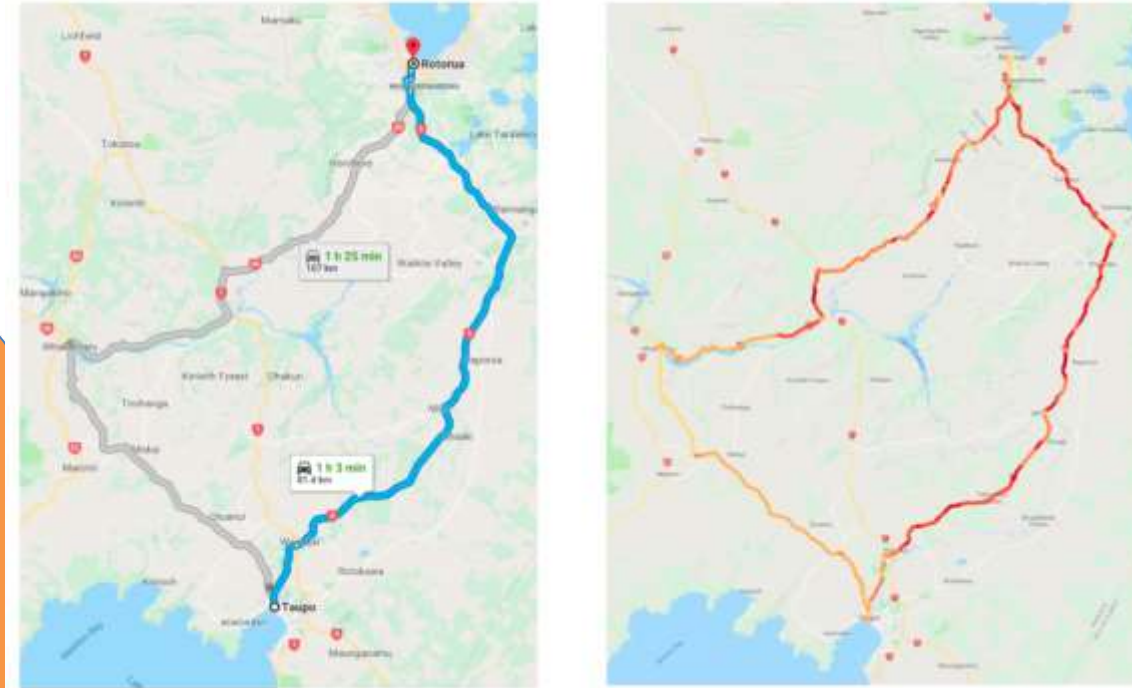
# EROAD & Partnerships



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## *An Exploratory Study Using Big Data for Improved Safety and Operational Efficiency: A New Zealand Case Study*

- **Purpose:** To describe the road network in terms of the risk imposed on individual drivers by others using the network
- **Methods:**
  - Three metrics were developed that demonstrated a strong correlation with harsh braking and speeding,
  - and attempts to convert these measures into a single metric that could be used to make improved routing decisions on the network
- **Findings:**
  - It is found that the shortest route, that would normally be suggested by most consumer routing applications, exposes the vehicle to a higher risk than the alternative route



**Figure 6.** Route choice between Taupo and Rotorua, NZ showing varying drive times, right image shows the varying risk on the two routes.

# Thanks



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**Go Beavs!**

