Oregon Department of Transportation

Stage 1 Research Problem Statement

Number*: 25-68*

Proposed Title: Optimizing Work Zone Configurations in Oregon through Telematic Data: A Comprehensive Analysis Integrating Cost-Benefit and Safety Assessments

1. Concisely describe the **transportation issue** (including problems, improvements, or untested solutions) that Oregon needs to research.

A potential solution to the challenges faced by the Oregon Department of Transportation (ODOT) in optimizing work zone configurations could lie in the strategic application of telematic data. This data-driven approach would involve a detailed examination of traffic patterns and safety metrics from telematics to compare the efficacy of crossover work zones with that of overnight lane closures. The comprehensive study will merge this telematic data with field observations and additional public datasets, conducting a cost-benefit and safety analysis to determine the optimal configuration. The analysis aims to evaluate the effects on construction timelines, traffic flow, and economic outcomes, providing a basis for identifying the most efficient work zone strategy. Utilizing the insights from telematics, ODOT could develop evidence-based recommendations that inform and improve decision-making in work zone management. The goal is to enhance the efficiency and safety of Oregon's transportation infrastructure, reducing disruptions through informed and strategic use of telematic data.

2. Document how this **transportation issue** is important to Oregon and will meet the Oregon Research Advisory Committee Priorities

The transportation issue of optimizing construction work zone configurations, specifically the choice between crossover work zones and overnight lane closures, is of paramount importance to Oregon for several compelling reasons. Firstly, Oregon places a strong emphasis on maintaining and improving its transportation infrastructure to support economic growth and enhance the quality of life for its residents. Efficient construction practices in work zones directly contribute to minimizing traffic disruptions, reducing congestion, and improving overall road safety. As a result, this research aligns with Oregon's priorities for providing safe, reliable, and efficient transportation networks.

Additionally, the research addresses the Oregon Research Advisory Committee's priorities by promoting innovation and data-driven decision-making in transportation (e.g., this research will utilize freight telematics data provided by robinsight[1] in addition to field and publicly available data). By conducting a rigorous cost-benefit analysis of work zone configurations and recommending evidence-based solutions, this research contributes to improved resource allocation, enhanced construction planning, and ultimately, more effective use of public funds. It aligns with Oregon's commitment to research-driven solutions that benefit both transportation stakeholders and the broader community by reducing disruptions, improving traffic flow, and advancing the state's transportation infrastructure.

3. What **final product or information** needs to be produced to enable this research to be implemented?

To advance the research on construction work zone configurations, a detailed report that capitalizes on telematics data will be pivotal. This document will feature an in-depth cost-benefit analysis, utilizing the nuanced insights provided by telematics to compare crossover work zones with overnight lane closures (or other configurations identified through the research process). The analysis will explore a range of factors including the duration of construction, the safety outcomes, the effect on traffic flow, and the broader economic implications. Telematics

[1] robinsight - https://www.robinsight.com/

data will allow for a granular, real-time assessment, ensuring that recommendations are based on comprehensive, data-driven evidence. These recommendations will consider the unique aspects of each project, such as geographical location, traffic intensity, and potential community impact, to guide decision-makers in choosing the most efficient work zone strategy.

Furthermore, the report will integrate lessons learned from specific case studies, including those derived from the use of telematics on projects in Oregon. This approach will not only demonstrate the practical application of telematics data but also identify best practices for work zone management that can be applied across Oregon. The compilation of this report will include suggestions for any necessary policy reforms or procedural updates that stem from the telematics findings, ensuring the safe and effective adoption of the recommended work zone configurations. Ultimately, this report, enriched with telematics data insights, will serve as a crucial resource for transportation officials and construction planners in enhancing safety, reducing disruptions, and elevating the efficiency of construction projects throughout Oregon.

4. (Optional) Are there any individuals in Oregon who will be instrumental to the success of implementing any solution that is identified by this research? If so, please list them below.

Name	Title	Email	Phone

5. Other comments: Proposed Scope

As the Oregon Department of Transportation (ODOT) seeks to optimize work zone configurations to enhance roadway safety and efficiency, the strategic use of telematics data stands out as a promising solution. The proposed research initiative will deploy telematics to gather and analyze detailed traffic and safety data, enabling a data-driven evaluation of work zone strategies such as crossover configurations and overnight lane closures. This introductory set of tasks is designed to tap into the rich potential of telematics, merging it with diverse data sources to conduct a multi-faceted analysis. The outcomes will shape evidence-based recommendations, addressing the unique demands of varying project environments and ultimately fostering the development of policies and procedures that align with the innovative findings. The following key tasks will lay the groundwork for a transformative approach to managing work zones across Oregon's transportation network.

- **Telematics Data Analysis for Work Zone Evaluation**: Analyze traffic patterns and safety metrics from telematics data to compare the performance of crossover work zones against overnight lane closures.
- **Integration of Multi-Source Data**: Combine telematics data with field observations and existing public datasets to perform a comprehensive cost-benefit and safety analysis of work zone configurations.
- **Assessment of Impact Factors**: Evaluate how different work zone strategies affect construction timelines, traffic flow, safety, and economic factors to identify the most efficient practices.
- **Development of Evidence-Based Recommendations**: Formulate recommendations for work zone management based on the insights obtained from telematics data, taking into account project-specific variables.
- **Policy and Procedural Advancements**: Recommend policy and procedural changes based on telematics findings to ensure the safe and efficient implementation of work zone configurations.

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