Research Problem Statement

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I. TITLE

17-014 Examining the temporal effects of driver behavior on sustained compliance through work zones: Utilizing existing and inexpensive technologies

II. PROBLEM

State agencies have adopted a number of approaches to promote safe speeds and increase compliance and safety through work zones—for example, variable speed limit signs and speed monitoring and display variable messages with information regarding number of ticketed to date. These approaches are designed to reduce the likelihood of crashes and improve safety in-and-around construction and maintenance work zones. Unfortunately, experience has shown that the effectiveness of these measures in reducing the speed of traffic through work zones varies widely and in some cases may lead to increased driver skepticism of the validity of the measures, leading to compliance issues. Recent studies have tried to evaluate and prescribe speed and compliance measures through works zones by utilizing common measure of effectiveness (MOEs)—for instance, mean traffic speed, 85% percentile speed range over speed limit, percentage of drivers exceeding the posted speed limit, etc. However, the drawback of these MOE's is that they do not capture the link between the temporal effects of driver behavior through work zones (especially for those drivers who traverse the work zone multiple times) and compliance to the speed reducing measures in place. Understanding this link would provide enhanced guidance in the selection and planning process of speed reducing strategies through work zones.

With this premise in mind, the goal of this research is to develop a process to aid ODOT in determining the most effective speed reducing strategies that promote increased safety and sustained compliance of drivers through work zones using existing technologies already utilized by ODOT (e.g., Bluetooth sensor drum readers and speed sensors). The project will provide guidance for improved safety and sustained compliance through work zones, which will provide benefits in a number of RAC priorities: "Enhance transportation safety", "Enhance mobility" and "Lead to other efficiencies, cost savings and cost avoidance."

III. PROPOSED RESEARCH, DEVELOPMENT, OR TECHNICAL TRANSFER ACTIVITY

The goals of this research are to first study the temporal link between driver behavior through work zones and compliance to the speed reducing measures in place by identifying and classifying driver behaviors. To achieve this we propose the following two approaches:

(i) Collect speed deviations of drivers utilizing Bluetooth sensor drum readers along the work zone over the duration of a construction or maintenance project. Here, we hope to capture the speed profiles of the same individual over time through the Bluetooth technology to gain insights on compliance of drivers.

(ii) Administer a stated preference survey to licensed drivers in state to better understand compliance behavior through work zones and the perceived effectiveness of various speed reducing strategies

Together, these two approaches will provide valuable data on the effectiveness of various speed reducing strategies not attainable through current practices.

The second goal is to utilize the results of the first goal to provide a set of guidelines on the selection of the most effective speed reducing strategy(s) that promote increased safety and sustained compliance of drivers through work zones.

IV. POTENTIAL BENEFITS

The research study is expected to: enhance ODOT's understanding on work zone traffic control plan standards/practices for construction and maintenance work zones and the corresponding impacts on mobility; aid in identifying crash potential; and provide guidance and support to ODOT for identifying effective work

zone safety measures. 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.

V. IMPLEMENTATION

The envisioned products of this research are: (i) an enhanced measure of effectiveness that takes into account the temporal effects on drivers through the duration of a work zone, and (ii) a set of guidelines that ODOT could utilize that describe the effectiveness of various speed reducing measures for various work zone configurations based on (i).

VI. LIST OF REFERENCES *(optional)*

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