



UNIVERSITY TRANSPORTATION CENTER RESEARCH BRIEF

PROJECT TITLE: Commuter Mobility Versus Work-Zone Safety: An Empirical Study using Data Mining of Anonymous User Generated Trip Information

PRINCIPAL INVESTIGATOR: Joseph Louis (OSU)

INSTITUTION: OREGON STATE UNIVERSITY

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Background

The PI's broader research interests lie at the intersection of the unique challenges posed in monitoring and controlling construction and infrastructure operations with the emerging fields of big-data analysis and connected technologies known

broadly as the "internet of things" (IoT)². The vast spread of construction sites and the extended physical area occupied by infrastructure create difficulties in their continuous monitoring for performance issues and disruptions. These problems have manifested themselves in the past as delayed and or myopic decision-making, leading to cost and schedule overruns on construction sites, and service inefficiencies and disruptions in the operation of infrastructure systems.

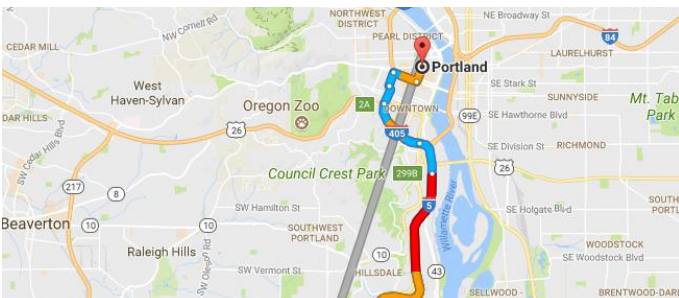
These traditional obstructions to real-time data collection and analysis can be overcome by recent advances in wireless sensor technologies have the potential for becoming ubiquitous in the built environment, and which is commonly referred to as the internet of things. The PI intends to exploit the falling costs of sensor hardware coupled with the increase computational power of handheld devices to provide data-driven insight into the various challenges posed in the construction and infrastructure arenas.



Research Project

The deterioration of the nation's highway system through wear and tear necessitates periodic maintenance activities, which inevitably puts construction workers on work zones in close proximity with the traveling public. While the safety of workers and travelers is paramount in the context of the work zone, it must necessarily be balanced with the mobility of the traveler. Thus the goals of safety and mobility, which are often spoken of in the same breath when it comes to highway work zones, are often in conflict with each other.

This research proposes to study the relationship and the tradeoffs between safety measures on highway work zones and the effect that they have on the mobility of the traveling public. Specifically, the travel times between two sections of the highway will be studied through the analysis of crowdsourced data collected from mapping services providers like Google Maps and Waze both before and after the introduction of a work zone. This will enable the quantification of delay that occurs as a result of the work zone, which can then be correlated with the different safety measures implemented on site. It is expected that this research will improve our understanding of the safety-mobility balance on highway work zones and enable state agencies and contractors to optimize their safety plans without unduly burdening the traveling public.



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