

ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	In-Vehicle Work Zone Messages
University	University of Minnesota
Principal Investigator	Nichole Morris
PI Contact Information	nlmorris@umn.edu 612-624-4614
Funding Source(s) and Amounts Provided (by each agency or organization)	Minnesota Department of Transportation: \$52,583 Local Road Research Board: \$52,584
Total Project Cost	\$105,167
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 MnDOT contract 99008 work order 184 CTS# 2016020
Start and End Dates	7/14/2015 – 8/31/2017
Brief Description of Research Project	<p><i>Final report abstract:</i></p> <p>Work zones present an increased risk to drivers and the work crew. To mitigate these risks, this study investigated the potential effects of in-vehicle messages to communicate work zone events to the driver. The researchers conducted literature reviews on risks imposed by work zones, along with design guidelines for any in-vehicle messaging system. The researchers then conducted a work zone safety survey to illustrate driver attitudes in Minnesota toward work zones, along with smartphone use and in-vehicle messages through smartphones. The survey found that a significant number of drivers make use of smartphones in the automobile, and they placed these smartphones in various locations throughout the vehicle. The survey was followed by a driving simulation study that tested drivers in two different types of work zones. Participants drove through these work zones three times, each with different messaging interfaces to communicate hazardous events to the driver. The interfaces included a roadside, portable changeable message sign, a smartphone presenting only auditory messages, and a smartphone presenting audio-visual messages. There was better driving performance on key metrics including speed deviation and lane deviation for the in-vehicle message conditions relative to the roadside signs. Furthermore, drivers reported significantly less mental workload and better usability, work zone event recall, and eye gaze behavior for the in-vehicle conditions relative to the roadside sign condition.</p>
Describe Implementation of Research Outcomes (or why not implemented)	This project is expected to result in a greater effort by MnDOT to use in-vehicle messaging in substitution of portable changeable message signs in the future.

Last updated (9/30/2019)



ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	Nothing to report.
Web Links <ul style="list-style-type: none">• Reports• Project website	http://www.cts.umn.edu/Research/ProjectDetail.html?id=2016020

Last updated (9/30/2019)

