

ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	In-vehicle Dynamic Curve Speed Warnings At High Risk Rural Curves
University	University of Minnesota
Principal Investigator	Brian Davis
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Funding Source(s) and Amounts Provided (by each agency or organization)	Minnesota Local Road Research Board: \$80,902 Minnesota Department of Transportation: \$80,901
Total Project Cost	\$161,803
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 MnDOT contract 99008 work order 231 CTS# 2017001
Start and End Dates	6/10/2016 – 4/30/2018
Brief Description of Research Project	<p><i>Final report abstract:</i></p> <p>Lane-departure crashes at horizontal curves represent a significant portion of fatal crashes on rural Minnesota roads. Because of this, solutions are needed to aid drivers in identifying upcoming curves and inform them of a safe speed at which they should navigate the curve. One method for achieving this that avoids costly infrastructure-based methods is to use in-vehicle technology to display dynamic curve-speed warnings to the driver. Such a system would consist of a device located in the vehicle capable of providing a visual and auditory warning to the driver when approaching a potentially hazardous curve at an unsafe speed.</p> <p>This project seeks to determine the feasibility of in-vehicle dynamic curve-speed warnings as deployed on a smartphone app. The system was designed to maximize safety and efficacy to ensure that system warnings are appropriate, timely, and non-distracting to the driver. The developed system was designed and implemented based on the results of a literature survey and a usability study. The developed system was evaluated by 24 Minnesota drivers in a controlled pilot study at the Minnesota Highway Safety and Research Center in St. Cloud, Minnesota.</p> <p>The results of the pilot study showed that, overall, the pilot study participants liked the system and found it useful. Analysis of quantitative driver behavior metrics showed that when receiving appropriately placed warnings, drivers navigated horizontal curves 8-10% slower than when not using the system. These findings show that such a curve-</p>

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	speed warning system would be useful, effective, and safe for Minnesota drivers.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	Nothing to report.
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=2017001 http://www.roadwaysafety.umn.edu/publications/researchreports/reportdetail.html?id=2670