

# ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	Human Factors of Vehicle-Based Lane Departure Warning Systems
University	University of Minnesota
Principal Investigator	Alice Ton
PI Contact Information	<i>PI is no longer with the University.</i>
Funding Source(s) and Amounts Provided (by each agency or organization)	Local Road Research Board: \$100,000 University of Minnesota: \$65,000
Total Project Cost	\$165,000
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 MnDOT contract 99008 work order 110 CTS# 2013073
Start and End Dates	04/16/2013 – 08/31/2015
Brief Description of Research Project	<p><i>Final report abstract:</i></p> <p>Run-off-road (ROR) crashes are a concern for two-lane rural and urban roadways throughout Minnesota due to the frequency by which they contribute to fatal crashes (Minnesota Crash Facts, 2013). Mitigating the severity of the ROR events is an on-going research goal in order to help reduce the number of ROR crashes. Examining countermeasures that may reduce ROR crashes is important to determine the most efficient and effective method of warning.</p> <p>Behavioral responses were examined through the use of an in-vehicle haptic-based lane departure warning system (LDWS) using a driving simulator. The study incorporated systematic variation to both the reliability of the warning and sequence of treatment conditions. An additional analysis examined the presence of behavioral adaptation after repeated exposure to the system. Severity of a ROR event was measured as the total time out of lane (TTL) and maximum lane deviation (MLD). Covariates (e.g. road shape) were examined to determine the influence they may have on the severity of a ROR.</p> <p>The results reveal overall LDWS efficacy. TTL was significantly longer when no system was active compared to when it was active. LDWS led to shorter duration of ROR events. Greater velocity was found to be highly predictive of longer TTL. MLD was also greater for baseline drives compared to treatment drives. No behavioral adaptation or system overreliance was detected, suggesting long term benefits of the LDWS. Drivers who actively engaged in a distraction task were at far greater risk of traveling</p>

Last updated (9/30/2019)



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	greater and more dangerous distances out of lane.
Describe Implementation of Research Outcomes (or why not implemented)  Place Any Photos Here	<i>No data available; PI is no longer with the University.</i>
Impacts/Benefits of Implementation (actual, not anticipated)	<i>No data available; PI is no longer with the University.</i>
Web Links <ul style="list-style-type: none"><li>• Reports</li><li>• Project website</li></ul>	<a href="http://www.cts.umn.edu/Research/ProjectDetail.html?id=2013073">http://www.cts.umn.edu/Research/ProjectDetail.html?id=2013073</a> <a href="http://www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2452">http://www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2452</a>