ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	Driver Behavior in Left-Turn and Other Two-Vehicle Crashes
University	University of Minnesota
Principal Investigator	Gary Davis
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Funding Source(s) and Amounts Provided (by each agency or organization)	Roadway Safety Institute (USDOT): $199,756 Roadway Safety Institute – Office of the Dean, College of Science & Engineering: $28,477 Roadway Safety Institute – Office of the Vice President for Research: $34,805
Total Project Cost	$263,038
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 CTS# 2015021
Start and End Dates	5/1/2014 – 6/30/2018
Brief Description of Research Project	During 2012, nearly 3300 crashes involving a vehicle turning left into oncoming traffic occurred in Minnesota, including more than 1100 fatal and personal injury crashes. Many agencies, including the Minnesota Department of Transportation, are interested in using a flashing yellow arrow to implement within-day changes in left-turn (LT) treatment, but this requires being able to predict how the risk of LT crashes varies at particular intersections, as traffic characteristics change during a day. This project has inter-related objectives: (1) to contribute empirical findings regarding LT gap acceptance, the trajectories followed by LT drivers, and the behavior of drivers involved in LT crashes, and (2) to develop and validate a simulation model of LT crashes that could ultimately be used to predict the safety-related effects of design or operational changes. To accomplish these, the researchers reduced video data of drivers making permitted left turns and characterized both LT gap acceptance and LT turning trajectories. These findings were then incorporated in a prototype LT crash simulation model and the model's predictions were compared to an empirical model of LT crash risk developed in a recently completed MnDOT project. The project also developed methods for quantifying uncertainty in the reconstruction of planar impact crashes and for estimating driver behavior variables from pre-crash data collected from event data recorders.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	*Project still active.*

Last updated (5/1/2018)

Impacts/Benefits of Implementation (actual, not anticipated)	Davis's methodology for reconstructing planar impact crashes is the first to support uncertainty quantification while combining data from event data recorders, vehicle damage, and the crash scene.
Web Links • Reports • Project website	http://www.roadwaysafety.umn.edu/research/search/projectdetail.html?id=2015021