ROADWAY SAFETY INSTITUTE

Advancing roadway safety with user-centered solutions

UTC Project Information	
Project Title	Improving Intersection Safety Through Variable Speed Limits For Connected Vehicles
University	University of Minnesota
Principal Investigator	Michael Levin
PI Contact Information	mlevin@umn.edu 612-301-7137
Funding Source(s) and Amounts Provided (by each agency or organization)	Roadway Safety Institute-Office of the Vice President for Research: $100,000
Total Project Cost	$100,000
Agency ID or Contract Number	UTC Grant Number: DTRT13-G-UTC35 CTS Project Number: 2018055
Start and End Dates	02/26/2018 - 05/31/2019
Brief Description of Research Project	*Final report abstract:* Autonomous vehicles create new opportunities for innovative intelligent traffic systems. Variable speed limits, which is a speed management systems that can adjust the speed limit according to traffic condition or predefined speed control algorithm on different road segments, can be better implemented with the cooperation of autonomous vehicles. These compliant vehicles can automatically follow speed limits. However, non-compliant vehicles will attempt to pass the moving bottleneck created by the compliant vehicle. This project builds a multi-class cell transmission model to represent the relation between traffic flow parameters. This model can calculate flows of both compliant and non-compliant vehicles. An algorithm is proposed to calculate variable speed limits for each cell of the cell transmission model. This control algorithm is designed to reduce the stop-and-go behavior of vehicles at traffic signals. Simulation is used to test the effects of VSLs on an example network. The result shows that VSL is effective at reducing the energy consumption of the whole system and reduce the likelihood of crash occurrence.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	*Nothing to report.*

Last updated (9/27/2019)

Impacts/Benefits of Implementation (actual, not anticipated)	*Nothing to report.*
Web Links • Reports • Project website	http://www.roadwaysafety.umn.edu/research/search/projectdetail.html?id=2018055 http://www.roadwaysafety.umn.edu/publications/researchreports/reportdetail.html?id=2790