



Center for Advanced Multimodal Mobility Solutions and Education

UTC Project Information – CAMMSE @ UNC Charlotte	
Project Title	Use of Multisensor Data in Modeling Freeway Travel Time Reliability
University	The University of North Carolina at Charlotte
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Funding Sources and Amount Provided (by each agency or organization)	U.S. Department of Transportation: \$60,000 The University of North Carolina at Charlotte: \$30,007
Total Project Cost	\$90,007
Agency ID or Contract Number	
Start and End Dates	10/01/2017 – 09/30/2019
Brief Description of Research Project	<p>Travel time reliability is an important measure which has been widely used to represent the traffic conditions on freeways. Accurately modeling travel time reliability is very important for both transportation agencies and road users. Nowadays anonymous vehicle probe data have been greatly improved in both data coverage and data fidelity, and thus have become a reliable source for freeway travel time reliability analysis. However, in most cases, vehicle probe data are calculated by collecting vehicular speeds on each individual segment and such data are then provided to users at the segment level. As such, modeling travel time reliability along a freeway corridor by leveraging vehicle probe</p>



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data solely may not be able to account for the potential correlations among consecutive roadway segments. The purpose of this project is to develop a systematic approach to modeling travel time reliability on freeway corridors by fusing different but valid data sources. Specifically, a new method will be developed and applied to estimate travel time along a freeway corridor by fusing vehicle probe data obtained from a third-party data vendor and sampled route travel time data collected by the researchers as well as other relevant data (e.g. weather and incidents). The integrated data structure will be further used for extracting travel time reliability measures at the corridor level.

In this project, a number of influential factors will be considered when modeling travel time reliability along freeway corridors. These may include, but are not limited to, time of day, day of week, month of year, year, season, traffic analysis zone, traffic volume, travel time, weather, and incidents. To do so, a comprehensive review of the literature will be conducted and previous experience in determining factors influencing travel time reliability will be carefully examined and synthesized. In addition to that, a list of candidate travel time reliability measures will also be identified, evaluated and compared. The most appropriate travel time reliability measure(s) will then be selected for use in model development. In this project, various regression models will be developed and compared. The model that provides the best



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	<p>statistical fit will be identified and then used to predict and analyze the travel time reliability on a freeway corridor.</p>
<p><i>Describe Implementation of Research Outcomes (or why not implemented)</i></p> <p><i>Place Any Photos Here</i></p>	
<p><i>Impacts/Benefits of Implementation (actual, not anticipated)</i></p>	
<p>Web Links</p> <ul style="list-style-type: none"> • <i>Reports</i> • <i>Project website</i> 	<p>https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2018-UTC-Project-Information-01-Fan.pdf</p> <p>https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2018-UTC-Project-Report-01-Fan-Final.pdf</p>