



Center for Advanced Multimodal Mobility Solutions and Education

UTC Project Information – CAMMSE @ UNC Charlotte	
Project Title	Optimizing Transit Equity and Accessibility by Integrating Relevant GTFS Data Performance Metrics
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: \$30,006
Total Project Cost	\$90,006
Agency ID or Contract Number	
Start and End Dates	10/01/2018 – 09/30/2020
Brief Description of Research Project	Public transit mode continues to be seen as a crucial part of transportation planning in the United States. Building upon the assessment of public transit equity and accessibility, one important task of transit planning is to optimize relevant metrics and measurements by modifying current service parameters (e.g., route layouts, schedules, and frequencies), or having new investments. For an existing public transit system, balancing between the service redundancies and less accessible regions will likely enable expanded regional coverage of equity to be provided through a redesign or redistribution of public transit systems. In this context, many studies had been undertaken to perform the gap analysis and



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discuss the potential use of such analyses to further optimize the public transit service via making modification to the current transit systems (El-Geneidy et al. 2014; Karner et al. 2016). To establish new services of public transit, planners and managers will need to take both budgets and maximization of equity into consideration. Both improvements are particularly important for disadvantaged populations. Thus, there is a strong need for effective and efficient models and solution approaches to analyze and tackle those problems. In the meantime, recent development of the General Transit Feed Specification (GTFS), a well formatted transit feeds open data, provides new opportunities for a better understanding of both spatial and temporal characteristics of public transit due to the ease of use of such data and proved efficiency in relevant analysis. Although years of research efforts have been made by using various accessibility measures in network design optimization models, only a limited number of studies have used and explored GTFS data. In addition, most research studies based on the GTFS data focus on optimizing accessibility which mainly utilize attributes such as routes and schedules. However, when it comes to equity, other factors (such as fares, travel times, transfer policies, and access to terminals) could be included. Based on availabilities of those different attributes in GTFS data, measurements representing equity need to be carefully chosen. In order to further leverage such data source to contribute to both the state-of-the-art and the state-of-the-practice, this research will review the current



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	practices in this field and develop an appropriate mathematical optimization model for improving the public transit equity and accessibility by integrating GTFS data relevant performance metrics and measurements, for public transportation planning and operation.
<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>	Project has not begun yet, so no impacts have been realized.
<p><i>Web Links</i></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-2019-UTC-Project-Information-02-Fan.pdf</p>