Center for Advanced Multimodal Mobility Solutions and Education

UTC Project Information – CAMMSE @ UNC Charlotte	
Project Title	Analyzing Cycling Behavior During Different Time Periods Using Crowdsourced Bicycle Data
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	Cycling, as a healthier and greener travel mode, has been encouraged for short-distance trips by city planners and policy makers. Since cycling provides an efficient way to improve public health, alleviate traffic congestion, and save energy consumption, it is essential to analyze the cycling behavior of current cyclists, so as to quantify the impacts of certain attributes on cycling behavior and further increase bicycle volume. To analyze cycling behavior, data including cycling speed, distance, time of day, day of week, etc. are quite indispensable. The methods for data collection are diverse. The most commonly used ones

include traditional manual counts, travel surveys, and crowdsourced data from third party. Most of the previous research efforts have used the first two methods to collect the data of interest. However, these two methods can be expensive and time consuming, and perhaps of most importance, lack of spatial and temporal information. Crowdsourced data, on the contrary, are cost effective and time saving, which makes it widely used in many recent research studies. Among all the crowdsourced data, data collected from smartphone applications including Strava, CycleTracks, ORcycle, etc. have become more and more prevalent. Crowdsourcing has increased the availability of data collection, and provided an efficient way to address the data gap for decision making and performance measures.

This research will concentrate on the analysis of cycling behavior using crowdsourced bicycle data collected from Strava in the City of Charlotte. A choice set generation method will be developed and applied for the preparation of the cycling behavior analysis. In addition to that, a Path Size Logit model based on the crowdsourced bicycle data will be developed to evaluate the impacts of different attributes on cycling behavior in the City of Charlotte. Finally, a comparison of distinctive cycling behavior during different time periods will be made. Based on the research results, recommendations on increasing bicycle volume will be provided.

Describe Implementation of Research Outcomes (or why not implemented) *Place Any Photos Here*	
Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links • *Reports* • *Project website*	https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2019-UTC-Project-Information-03-Fan.pdf https://cammse.uncc.edu/sites/cammse.uncc.edu/files/media/CAMMSE-UNCC-2019-UTC-Project-Report-03-Fan-Final.pdf