Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Measuring Impact of Emerging Transportation Technologies on Community Equity in Economy, Environment and Public Health or Equity Assessment for Emerging Transportation Technologies: A Comprehensive Literature Review and Case Study
University	University of South Florida
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Funding Source(s) and Amounts Provided (by each agency or organization)	US DOT: $80,179 USF: $40,115
Total Project Cost	$120,294
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	Start date: 12/1/2017 End date: 9/30/2018
Brief Description of Research Project	This proposal aims to develop understanding and quantify skewed distributions of benefits from emerging transportation technologies and services across different demographic groups in a metropolitan area. We will propose new equity measures in economy, environment and public health that can be integrated with multi-model transportation systems that include emerging technologies. A chronological comparison study will be conducted to analyze the impact of the emerging technologies on these equity measures. A case study in the Hillsborough County,

	Florida will be conducted to test and validate these measures, while their transferability to other metropolitan areas across the nation will be also investigated.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	A new approach was proposed to evaluating the equity performance of bike-sharing systems using disaggregated data. We applied this method to the Coast Bike Share System in Tampa.
Impacts/Benefits of Implementation (actual, not anticipated)	We have identified several research gaps on equity measures on emerging transportation technologies: (1) assessment of other emerging technologies, (2) proposition of station-free measurements, (3) consideration of the operation characteristics of emerging transportation services, (4) assessment under a multimodal transportation system context, (5) integrated assessment with respect to economy, environment, and public health, and (6) disaggregate measures with high-resolution inputs. The main findings of the bike sharing analysis in Tampa included the following points. 1. From the horizontal perspective, the distribution of bike-sharing accessibility is highly skewed among both the population and the geographic space in southern Tampa, with both Gini indexes higher than 0.95. Geographic mapping analysis reveals that the accessibility is concentrated in areas within and around downtown Tampa. 2. From the vertical perspective, the bike-sharing accessibility is not evenly distributed among different sociodemographic groups. Overall, the bike-sharing accessibility is higher for whites, Asians, non-Hispanic, male, middle and upper income classes, and people aged between 18 and 45 and over 65. However, the distributions change substantially with the accessibility level for some individual attributes, such as race, income level and age. 3. The bike-sharing accessibility in southern Tampa is relatively low due to its low density and the large portion of long-distance travel. By considering the "walking-cycling-walking" process in a bike-sharing trip and the trip chaining in individuals' travel itinerary, the proposed method avoids overestimating the bike-sharing accessibility. This finding demonstrates the necessity and importance of the proposed tour-based modeling

	approach.
	4. The disaggregated data enable us to analyze the horizontal and vertical equity at the individual level, which unveils many important messages that might be absorbed with existing methods using aggregated data. Indeed, aggregated data (e.g., mean) may dilute the disparities among individuals, which might mislead our understanding of the equity issue from both the horizontal and vertical perspectives. Thus, it is helpful to incorporate disaggregated data into transportation equity analysis.
Web Links • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/