

Request for Research Funding for FY 2022-2023

SPR Subpart B Project: FTO-23-02

Requesting Office	Forecasting and Trends Office, and Transit Central Office	Priority	2 of 2
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Proposed Title	Development of Modeling Framework for Modeling Micromobility
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Justification	<p>Transportation demand modeling and forecasting has become a valuable tool to model and forecast travel demand for automobile, freight and public transportation. But there is no model that is available to do the same for micromobility, because micromobility is new and there is no reliable data.</p> <p>Now things have changed. As of the end of 2021, the state of Florida has 15 cities that has micromobility services. Among them, four cities (Gainesville, Jacksonville, Orlando, and Tallahassee) have contracts obligating the vendor to provide ridership data to the cities.</p> <p>With the available data, it is now possible to develop micromobility models for planning and operation purpose to better understand travel behaviors, usage information, and the relationship between micromobility and existing public transportation networks.</p> <p>Therefore, the purpose of this research project is to develop a modeling framework for micromobility to answer the following questions:</p> <ul style="list-style-type: none"> (1) Who uses micromobility devices? What are their sociodemographic characteristics? (2) What are the trip origins and destinations? How is that related to land use types and intensities? (3) What are the trip purposes? (4) What are the trip distances and route choices? (5) What is the relationship between micromobility and existing transit services? <p>The aims of the proposed research are: (1) to develop a modeling framework for micromobility, (2) to provide guidance to FDOT, MPOs and local government agencies to plan and construct micromobility facilities such as bike lanes and docking stations, as well as micromobility policies and other regulations.</p>
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Impact	This research will help FDOT central office, districts and local transit agencies with tools and guidance to better plan for micromobility facilities and dock stations.
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Affected Offices	FDOT Forecasting and Trends Office, Transit central office, FDOT Districts and local transit agencies in the state of Florida.
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Existing Work	<p>"BDV31 TWO 943-02 Microtransit and Micromobility Inventory in the State of Florida" will be completed in March 2022. This will provide a good foundation and data for the proposed work.</p> <p>In addition, there are four related Transit Cooperative Research Program (TCRP) reports related to this research.</p> <ul style="list-style-type: none"> (1) TCRP Report 188 (2020): "Shared Mobility and the Transformation of Public Transit" examines the relationship of public transportation (including paratransit and demand-responsive services) to shared modes, including bikesharing, carsharing, microtransit, and ridesourcing services provided by companies such as Uber and Lyft. (2) TCRP J-05 (2021): "Legal Issues in Transit Agencies Providing/Subsidizing Innovative Micromobility Projects" explores what legal issues and legal guidance should transit agencies and government sponsors consider in order to implement micromobility programs effectively, equitably, and safely, in compliance with applicable law, to support public transit. (3) NCHRP Synthesis 20-05 (2021): "Micromobility Policies, Permits, and Practices" documents policies, permits, and practices that state departments of transportation (DOTs) are engaged with in regard to micromobility. (4) TCRP Research Report 195 (2018): "Broadening Understanding of the Interplay Among Public Transit, Shared Mobility, and Personal Automobiles" explores the effects of app-based transportation network companies on the cities in which they operate, including on public transit ridership, single-occupancy vehicle trips, and traffic congestion. <p>However, there is no study that provides a good modeling framework to model micromobility systems. This proposal is the first attempt to develop such a modeling framework.</p>
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Keywords Used In Existing Work Search (Cannot leave blank)	Micromobility, Travel demand modeling, Forecasting, Public Transportation		
Related Contracts (Give contract numbers)	BDV31 TWO 943-02 Microtransit and Micromobility Inventory in the State of Florida		
Funding Request	\$280,000	Anticipated Duration	18 Monts
Project Manager	Thomas Hill	Contracting Method	Direct contract with University
Equipment	NA	No additional equipment is anticipated for this research.	
Urgency	1	Micromobility is an emerging travel mode that has gained popularity in many cities in Florida and in the nation that can improve residents' mobility. But there is no existing micromobility models in FDOT and in the nation. Similar to the need to use travel demand models for transportation infrastructure planning, there is a need for micromobility models facility planning. Developing a micromobility model is critically important and urgent for Metropolitan Planning Organizations through the Long Range Transportation Planning Process. Micromobility is viewed as a supportive operation for transit planning and urban mobility. Districts, MPOs and local governments require a quantitative assessment methodology to evaluate and prioritize investments into micromobility infrastructure. The results of this project will immediately provide a methodology framework for MPO LRTP updates.	
Implementability	1	Comments: The results of this project would be directly implementable to Systems Forecasting and Traffic Modeling, and Transit Central Office at FDOT, as well as FDOT District Office and local governments. Florida's MPOs are beginning the update process for their LRTPs. This project will provide a framework to assess, explore and plan for the impacts of micromobility on the local transportation network.	
Project Benefits (Succinct, complete explanation)			
<ol style="list-style-type: none"> 1. This research will help FDOT and local agencies to better understand micromobility usage, trip origins and destinations, trip purposes, travel distances and route choices. 2. This research will help FDOT and local government better plan micromobility facilities like bike lanes and dock stations 3. This research will model and quantify the relationship between micromobility and public transportation. 4. This research will will provide a methodology framework to assess how microbilty can support and enhance existing transit services. 			
Project Benefits (Select all that apply and explain)	Quantifiable Benefits (units, dollars, etc...if applicable)	Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits	
<input type="checkbox"/> Materials Enhancement			
<input type="checkbox"/> Materials Savings			

○ Time Savings		
○ Lives Saved/Injuries Prevented		
○ Other (Explain)	Provide models and new tools to better plan micromobility programs.	Planning micromobility programs and facilities needs information about the geofenced areas, and specific lanes (e.g., bike lanes) and dock stations. Current planning is based on planners' experience and sometimes guesses. A micromobility model would help planners to model and quantify the planning process, and to conduct what-if analysis. Just like the traditional travel demand modeling helps transportation planning, a micromobility modeling tool would be valuable for miromobility facility planning.

*Comments should explain and support urgency, financial benefit, and implementability scores