Request for Research Funding for FY 2019-2020			
Requesting Office	District 5, Modal Development Office	**Priority**	# of # (projects may not have the same ranking – no ties)
Anticipated timeframe for submitting project scope (if approved)		Month/Year: One month after the approval (scope is mostly ready)	
Proposed Title	Improving Multimodal Traffic Safety for Six-Lane Arterial Highways		
Justification	Due to the high and continued population growth in Florida, urban residential, commercial, and mixed use development have significantly increased. To accommodate the additional demand, adjacent arterial highways have been expanded by adding multiple lanes. Multi-lane corridors present several challenges and it is essential to understand the effects roadway design and land use have on vehicle speeds and traffic safety for various road users (e.g., passenger cars, buses, pedestrians, bicyclists). In multi-lane corridors, drivers are more likely to exceed the posted speeds increasing the risk of crashes and severe injuries or fatalities. The risk is even higher for non-motorized corridor users because they lack the protection that the motor vehicle affords. The purpose of the research is to collect Big Data, including but not limited to: crashes and violations; short-term speed data; roadway design; land development patterns; traffic; socio-demographic information; and transit ridership, and analyzing the data to identify factors affecting speeding related crashes and violations, and vehicle speeds. In addition, a driving simulator experiment will be used to collect drivers' behavior of a diverse sampled driving population on six-lane arterials. The University of Central Florida has driving simulator equipment and extensive experiences in conducting experiments using it. Based on the findings and the state-of-the practice, we will propose effective countermeasures to manage speeds through enhanced roadway design and land use. The proposed countermeasures will be evaluated using driving simulator experiments with a diverse population sample to capture varying behavior. To understand the safety risk of non-motorized road users, we will develop a methodology to accurately measure vehicle, pedestrian and bicyclist trips on the arterial highways. These trip data will be used as exposures and are required to identify hotspots for multimodal traffic safety. Big Data will be utilized from multiple sources/methods: ATSPMs (Automated Traffic Signal Performance Measures), UAV (Unmanned Aerial Vehicle) videos, as needed, field surveys, traditional transportation planning modeling, Strava (crowd sourced data), and transit ridership. Using the non-motorized user exposure data, it is possible to understand the risk that they are exposed to and develop solutions to minimize the risk. We envision that many lives of different road users on six-lane arterial highways could be saved by implementing the developed countermeasures from this research.		
Impact	The research project will offer numerous benefits to Florida's improved multimodal traffic safety for six-lane arterial highways. In short, we expect three major benefits (1) Identifying effective countermeasure from the state-of-the practice and the data analysis from this research; (2) developing a methodology to accurately measure pedestrian and bicyclist exposure using Big Data; and (3) recommendation of the practical applications of the suggested solutions considering the FDOT implementation of the Complete Streets Policy. The research team will choose four to eight six-lane arterials with frequent pedestrian and bicycle crashes in District 5 in this research.		
Affected Offices	All districts, Systems Planning, Traffic Operations, Safety, Roadway design.		
Existing Work	There have been some studies to improve safety on multilane arterial highways. Not many studies addressed the traffic safety of various road users considering speeds, roadway design, and land use. . Studies of speed management on six-lane highways are scarce. We have extensive experience in identifying the impact of roadway design and land-use on traffic safety in previous studies; but they did not particularly target speed management and multimodal users. Thus, the proposed ideas in this project are essential to identify factors that affect traffic safety and speeds, especially from the perspective of roadway designs and land use, to implement		

	effective and practical solutions to enhance safety for six-lane arterial highways for different roadway corridor users.		
Funding Request	Around $320K	**Anticipated Duration**	This is an extensive and ambitious project that requires a total of 24 months for completion.
Project Manager	Ms. Brenda Young, PE	**Contracting Method**	Direct contract with the University of Central Florida
Urgency	Score 1-5 1= highest, most immediate need	Project should have the highest priority. It is urgent for the ongoing rapid application of multimodal traffic safety improvement for six-lane arterial highways in Florida. The expected safety benefits would be substantial.	
Implementability	Score 1-5 1=greatest likelihood of and proximity to implementing results	Once the project is complete, we will know exactly the benefits and feasibility of the different countermeasures, and where they should be implemented with high priority. The results will inform implementation strategies for ongoing pedestrian and bicycle safety efforts (e.g., safety action plans, vision zero plans) throughout the state. It would be expected that implementation starts immediately.	

Project Benefits (Select all that apply and explain)

Project Benefits	**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**
o Materials Enhancement		
o Materials Savings	Funding, fatal, severe, and property damage only (PDO) crashes	Implementation of the effective safety countermeasures through improved roadway design and land-uses would provide resources to the state of designs and land-uses for six-lane arterial highways and other facilities. The countermeasures will reduce traffic crashes, delays caused by crashes, and relevant resources/social costs (e.g., police, ambulance, loss of productivity, insurance).
o Time Savings	Delays	There will be reductions in delays that would be caused by traffic crashes.
o Lives Saved/Injuries Prevented	Lives and injuries prevented from traffic crashes	(1) A before-and-after study using historical Big Data and (2) surrogate safety investigation using the driving simulator experiments and if needed interactive surveys, we will quantify the safety benefits of the proposed countermeasures.
o Other (Explain)	Guide development	The research will provide a clear strategic plan on improvement of traffic safety on six-lane arterial highways. Further, the research will undertake comprehensive data analysis of the effects of different roadway designs and land-uses on traffic safety and vehicle speeds. In addition, the research will develop a methodology to measure pedestrian and bicyclist trips using Big Data, which is essential for establishing plans to encourage walking and cycling and improve the safety of non-motorized users. Lastly, we will assess if our proposed countermeasure would be practical and applicable considering input from FDOT, local government, law enforcement, resident and roadway corridor users.

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