

Request for Research Funding for FY 2019-2020

Requesting Office	TDA	Priority	#1 of #1 (projects may not have the same ranking – no ties)
Proposed Title	Development of Motorcycle VMT estimation method using a hybrid approach		
Justification	During the last decade, motorcycle fatalities have increased by 50%, with a significant change of +/- 12% annually in Florida. In 2016, motorcycles represented about 3.5% of registered vehicles; however, motorcycle crashes resulted in 545 fatalities, representing 17.0% of total traffic fatalities (3,176) in Florida. This disproportionate representation of motorcycle fatalities is alarming. Considering that weather and seasonality can be important factors in motorcycle riding, motorcycle exposure data are critical to understanding the trend of motorcycle crashes and fatalities in Florida. In addition, five safety performance measures were established by FHWA under the FAST Act, including “Rate of fatalities per 100 million VMT” and “Rate of serious injuries per 100 million VMT.” Although the urgency of improving motorcycle Vehicle Miles Traveled (VMT) is widely known, it is also a challenging task. For example, the full-lane-width piezo and loop system appears to exhibit problems for motorcycles and other light vehicles, with less than 50% accuracy compared to 95% accuracy for other vehicles. Previous attempts to identify one or more states whose data collection protocols could serve as an adequate example for others to follow have not been successful. Research is needed to develop a practical methodology for Florida that can be used to obtain accurate motorcycle volume and VMT-related data, with special attention given to accuracy and sustainability.		
Impact	Currently, Florida has no accurate information about motorcycle VMT, which makes many motorcycle safety-related measures vulnerable. This prevents Florida DOT from developing adequate countermeasures and allocating proper resources to mitigate the problem. Considering that Florida is a major motorcycling state, the proposed research is expected to provide a practical solution to mitigate this issue		
Affected Offices	The District and Central Office Traffic Monitoring Sections, as well as the Safety Offices will be directly affected handling a new category of data. Forecasting & Trends Office will utilize the data for expanded reporting capabilities and statewide meetings.		
Existing Work	There are few existing works, and most previous efforts failed to produce outcomes that can be adopted by Florida. Estimating Motorcycle Vehicle Miles Traveled (VMT) from State Annual Safety Inspection Data There are different matrices to compute fatality rates to account for motorcycle exposure, such as fatalities per registered motorcycles, fatalities per licensed motorcycles, and fatalities per motorcycle VMT. Among these, motorcycle VMT is a true reflection of motorcycle exposure level for understanding the level of risk associated with fatalities or serious injuries between passenger vehicles as opposed to motorcycles. The challenge of measuring motorcycle VMT lies in the inability of detectors to identify a motorcycle as a vehicle or to distinguish between individual or groups of motorcycles or to separate car, trucks, and motorcycles with accuracy. One possible way to measure VMT is to conduct annual odometer readings during motorcycle safety inspections at the state level. This study method was initiated by the University of North Carolina Highway Safety Research Center. Collecting Accurate Motorcycle Travel Data to Reduce Rising Fatalities on the Nation’s Highways The challenge of measuring motorcycle VMT with accuracy is being able to clearly distinguish between passenger vehicles, large trucks, and motorcycles in the detection process. This misclassification of motorcycles in terms of volume leads to research seeking new methodologies to address this issue. Moreover, the methodologies should include adjustment factors associated with motorcycle volume or VMT when comprehensive and reliable motorcycle exposure data are not available to transportation professionals. To compute fatality rates per million motorcycle VMT accurately, exposure data (i.e., motorcycle VMT) are critical and will allow informed decisions for motorcycle safety at different levels of transportation agencies. This study method was initiated by FHWA. Research for AASHTO Standing Committee on Planning, Task 92: Counting Motorcycles Motorcycle VMT is a critical measure of motorcycle exposure. As the detection process does not accurately classify motorcycles from other vehicles, motorcycle exposure data are missing and have gained increasing attention over time. Research is needed to identify a cost-effective practice to accurately produce motorcycle traffic counts.		

Keywords Used In Existing Work Search (Cannot leave blank)	Motorcycle VMT, Motorcycle Safety, HSIP, SHSP, CRF, Safety performance function		
Related Contracts (Give contract numbers)			
Funding Request	\$ 200,000.00	Anticipated Duration	18 months
Project Manager	Joey Gordon	Contracting Method	Direct contract with the Center for Urban Transportation Research (CUTR) at the University of South Florida
Urgency	1	Florida had the most motorcycle fatalities in the U.S. during the past three years, according to a report from the National Highway Traffic Safety Administration (NHTSA). With a significant annual fluctuation in motorcycle fatalities, it is critical to have a method to estimate reasonable motorcycle VMT.	
Implementability	1	The developed method will be pilot-tested and should be ready to be implemented at the end of project.	
Project Benefits (Succinct, complete explanation) • Measure the safety performance measures set by FHWA for motorcycles in terms of fatalities per 100M motorcycle VMT and fatalities and serious injuries per 100M motorcycle VMT. • Quantify the safety performance of different functional classes of roadways by measuring the level of exposure of motorcycles, which is important to control related to other vehicle types. • Differentiate the level of exposure between passenger vehicles, heavy vehicles, and motorcycles and understand the impact on fatalities and serious injuries across these vehicles types. • Understand the historical trend of fatalities and exposure level (motorcycle VMT) and associate their relationship with other external factors such as economy, gas price, weather condition, safety, and policy interventions (e.g., helmet law, motorcycle endorsement, motorcycle insurance, etc.).			
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	
☐ Materials Enhancement			
☐ Materials Savings			
☐ Time Savings		Better data accuracy/collection methods allow more effective research and reporting capabilities...less allegorical information and time spent corroborating collection techniques.	
☐ Lives Saved/Injuries Prevented		Better data collection/accuracy allows better applications to be developed and more efficient use of resources to combat problem areas.	
☐ Other (Explain)			

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