

Request for Research Funding for FY 2021-2022

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| 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 | <p>During the last decade, motorcycle fatalities have significantly increased in Florida. In 2019, motorcycles represented about 3.5% of registered motor vehicles; however, motorcycle crashes resulted in 550 fatalities, representing 18.6% of total traffic fatalities (2,955) 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.” As a result, it would be necessary for Florida to measure and monitor annual motorcycle VMT.</p> <p>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.</p> <p>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.</p> | | |
| Impact | <p>Currently, Florida has no accurate information about annual 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.</p> | | |
| Affected Offices | <p>Traffic Ops. Safety Office.</p> | | |
| Existing Work | <p>There are few existing works, and most previous efforts failed to produce meaningful outcomes that can be adopted by Florida.</p> <p>Estimating Motorcycle Vehicle Miles Traveled (VMT) from State Annual Safety Inspection Data</p> <p>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.</p> <p>Collecting Accurate Motorcycle Travel Data to Reduce Rising Fatalities on the Nation’s Highways</p> <p>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.</p> <p>Research for AASHTO Standing Committee on Planning, Task 92: Counting Motorcycles</p> <p>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.</p> | | |

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| | Research is needed to identify a cost-effective practice to accurately produce motorcycle traffic counts. This study method was initiated by the AASHTO Standing Committee on Planning. | | |
| Keywords Used In Existing Work Search (Cannot leave blank) | Motorcycle VMT, Motorcycle Safety, HSIP, SHSP, CRF, Safety performance function, Safety performance targets | | |
| Related Contracts (Give contract numbers) | None | | |
| Funding Request | 200,000 | 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) | | | |
| <ul style="list-style-type: none"> • 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 vehicle 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 | |
| <input type="checkbox"/> Materials Enhancement | | | |
| <input type="checkbox"/> Materials Savings | | | |
| <input type="checkbox"/> Time Savings | | | |
| <input type="checkbox"/> Lives Saved/Injuries Prevented | | | |
| <input type="checkbox"/> Other (Explain) | | | |

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