

Request for Research Funding for FY 2019–2020

Requesting Office		Priority High	# of # (projects may not have the same ranking – no ties)
Proposed Title	Understanding Florida Motorcycle Crashes and Injury Outcomes Using the Motorcycle Crash Causation Study (MCCS) Dataset		
Justification	Describe the current situation, why the research is needed, and how the research affects your office’s mission critical focus areas Florida has observed a continuous increase in registered motorcycles and drivers with motorcycle endorsements during the past decade. As of July 2018, Florida had 617,205 registered motorcycles, representing about 3.5% of registered vehicles in the state, and more than 1.2 million licensed drivers with a motorcycle endorsement. Unfortunately, Florida has also experienced a corresponding increase in motorcycle crashes and fatalities. According to the Fatality Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration (NHTSA), Florida had the highest number of motorcycle fatalities from 2015–2017 among all 50 US states. It is estimated that, in 2017, motorcycles represented less than 1% of traffic on Florida’s roadways, but motorcycle fatalities disproportionately represented nearly 17% of Florida traffic fatalities. The Florida Strategic Highway Safety Plan (SHSP) acknowledges the significance of motorcycle safety. Although Florida has made strong efforts to enhance motorcycle safety, including developing a Motorcycle Strategic Safety Plan (MSSP), these efforts often are hindered by limited understanding about motorcycle crash causation. Unlike for other passenger vehicles, motorcycle crash investigations require specialized training, and police crash reports often are limited in providing enough details on motorcycle-involved crashes. In addition, the reports include only basic information about motorcycle operators, such as age, gender, and helmet use. Considering that motorcycle safety enhancements often include various behavioral countermeasures, such as promoting personal protective equipment and encouraging risk-averse motorcycle riding and regular training, understanding the characteristics of motorcyclists is essential for promoting motorcycle safety in an effective and efficient manner. Given the importance of motorcycle safety in Florida, an investigation of the Motorcycle Crash Causation Study (MCCS) dataset and mapping it to Florida crash data is an essential task to enhance motorcycle safety in Florida. The MCCS is the most comprehensive study on data collection and complete documentation for investigating the causes of motorcycle crashes, rider demographics, and opportunities for countermeasure development in the 30+ years since the in-depth motorcycle study known as the Hurt Study (1981). The MCCS was conducted in Orange County, California, over a period of five years (2010–2015), and the final dataset included 351 on-scene crash investigations and 702 control cases. The Federal Highway Administration (FHWA) recently completed basic tabulation of the collected data, including a data dictionary, and made the dataset available to the public. This detailed crash database reveals confounding factors of motorcycle crashes to allow better understanding and insights about crash types, vehicle maneuvers, rider demographics, ambient conditions, and injury outcomes of crashes in a more in-depth data perspective. Whereas traditional crash data are unable to shed light on these contributing factors, data related to crash scene (e.g., tire marks, debris, roadside objects), traffic condition (e.g., high/medium/low volume), helmet and motorcycle type, and rider riding characteristics (e.g., riding history, training, license status, emotional state, origin-destination, injury details), MCCS data open up opportunities to understand and enhance motorcycle crash countermeasures. (https://highways.dot.gov/safety/motorcycle-crash-causation-study/motorcycle-crash-causation-study). As such, MCCS data can significantly contribute to closing well-recognized gaps in our understanding of motorcycle safety issues that evolved from traditional crash data. To bridge this gap between traditional crash data and MCCS, a well-planned research effort is needed in which MCCS data can be mapped to complement the limitations of traditional crash data for Florida. This mapping of MCCS data elements (1600+ data elements) can lead to increased insight on types of crashes resulting in particular injury levels for different age groups of riders (age groups under 30, 30–49, 50+) and riding different types of motorcycles (e.g., cruiser, sport, touring, scooter, other) in Florida.		
Impact	How shall the results impact practice? Consequences of not doing the research? With the MCCS dataset mapped with the Florida crash database, a complementary understanding and knowledge of characteristics related to locational, temporal, trip, motorcycle, injury, and contributing factors by most harmful event can lead to informed decision making by the Florida DOT on strategies, countermeasures, and policy implications (e.g., design standards for motorcycles in the <i>Manual on Uniform Traffic Control Devices</i> [MUTCD]). Given that the MCCS study investigated contributing factors leading to crashes, the knowledge gained from this research effort will identify and quantify the relationship between crash risks and characteristics of motorcyclists. This will provide increased insight into how to develop cost-effective and pragmatic solutions in the short to long ranges from roadway engineering, rider behavior (training, outreach, enforcement), and motorcycle or equipment technology perspectives. The safety performance measures set by FHWA highlight the motorcycle safety emphasis area, particularly motorcycle fatalities and serious injuries and their		

	rates by motorcycle exposure (e.g., vehicle miles traveled); this research effort will influence state stakeholders to advance in a positive direction by addressing critical motorcycle safety issues in Florida. Motorcyclists represent a small portion of the motoring public in the U.S. However, it is a group that has a well-developed and diverse sub-group culture that is also unique to each state, with different riding seasons and regulations. It is vital to comprehend the MCCA dataset in the Florida context; studies using the MCCA dataset at the national level may not be relevant to Florida or may provide only limited value to Florida.		
Affected Offices	Identify any office that will need to be involved in the scoping or conduct of the research, will be affected by implementation of the results, or will need to participate in the implementation process—including OTIT, if enterprise data/network software application will be a deliverable, and district staff, as appropriate, e.g., through statewide meetings. If the requesting office will not be the implementing office, please identify which office will have to serve in that capacity—has it been involved? • State Safety Office • State Traffic Engineering • Florida Department of Highway Safety and Motor Vehicles • Policy Planning (Safety Performance Measure) • FDOT District Offices		
Existing Work	There are limited studies on specific strategies in terms of motorcycle safety implementations to reduce fatalities and serious injuries at the state level from the comprehensive data analysis combining traditional state crash data and MCCA. However, the existing literature from ongoing projects provides some insights on why implementation of specific countermeasures is important for agencies such as State highway departments: Motorcycle Licensing and Safety (active project) The Wisconsin Department of Transportation (WisDOT) is conducting a study to encourage more motorcycle licensing for those who have registered motorcycles. It is analyzing crash data to determine the driving habits of unlicensed riders and to develop an understanding of the major barriers to obtaining licenses. The understanding from the crash data on the proportion of unlicensed motorcyclists involving in fatalities will help WisDOT improve its outreach and safety programs. Evaluation of Motorcycle Safety in Kansas (active project) The main objectives of this ongoing study are to investigate the characteristics of motorcycle crashes in Kansas to identify critical characteristics and to evaluate the effect of helmet use on motorcycle crash injury outcomes. This project also will identify other factors that contribute towards increased severity related to motorcycle crashes and concerns that motorcyclists have regarding wearing helmets. The study will evaluate overall motorcycle safety in Kansas.		
Keywords Used In Existing Work Search	Motorcycle safety, Motorcycle Crash Causation Study, Vehicle fatalities and serious injuries, Crash contributing factors, Motorcycle rider training, Motorcycle endorsement, Law enforcement, Motorcycle policy, Crash countermeasures, Safety performance measures		
Related Contracts (Give contract numbers)	N/A		
Funding Request	\$100,000	Anticipated Duration	12 months
Project Manager	Edith Peters / Joe Santos	Contracting Method	Direct contract with Center for Urban Transportation Research (CUTR) at University of South Florida
Urgency	1	Florida had the most motorcycle fatalities in the US from 2015 to 2017, according to a NHTSA report. A systematic research effort combining understanding from MCCA and Florida crash data is critical to identify and quantify risk and develop countermeasures by motorcycle coalition stakeholders at the direction of FDOT.	
Implementability	1	The developed knowledge base and potential countermeasures and methods will be compared with safety improvements by other states that focus on motorcycle safety and should be ready for implementation at the end of project.	
Project Benefits (Succinct, complete explanation) • Identify factors leading to different types of motorcycle crashes with other vehicles by motorcyclist age group and motorcycle types. • Understand the fluctuation of fatalities and serious injuries over the years for Florida from the state crash database from insights gained from MCCA.			

• Provide more insights on roadway engineering and design standards that might reflect possible changes to be considered in MUCTD for motorcycles. • Develop strategies and countermeasures to address to critical factors that affect motorcycle fatalities and serious injuries.		
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		
☐ Lives Saved/Injuries Prevented	Reduce number of motorcycle fatalities and serious injuries	The project team will conduct detailed analysis using MCCS and Florida crash data mapped with certain similar attributes to understand the factors affecting the variation of fatalities and serious injuries. This process will provide insights to set targets for the future to reduce motorcycle fatalities and serious injuries.
☐ Other (Explain)	Better understanding of applications and benefits of recommended countermeasures and technologies	The project team will conduct detailed analysis using MCCS and Florida crash data to develop a comprehensive database that will be used to develop countermeasures for roadway infrastructure (e.g., uneven road surfaces, pot holes, edge drops, intersection visibility, work zone plans for motorcyclists at night), rider training/endorsement, law enforcement and education outreach (e.g., speeding, driving under the influence, helmet usage).

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