Florida Department of Transportation Research

Understanding Florida Motorcycle Crashes and Injury Outcomes Using the Motorcycle Crash Causation Study (MCCS) Dataset

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Current Situation

Motorcyclists are more likely to be seriously or fatally injured in crashes than drivers or passengers of cars or trucks. Motorcyclist safety and crash prevention are always priorities for the Florida Department of Transportation (FDOT), more so as the number of motorcycles in Florida continues to increase. Preventing these crashes requires understanding why they happen, but primary causes and contributing factors in motorcycle crashes and injury outcomes can be difficult to identify. The Motorcycle Crash Causation Study (MCCS) was conducted by the Federal Highway Administration in Orange County, California, from 2010 to 2015. The MCCS data include 351 on-scene crash investigations and 702 control cases and could be an important source of data. Analysis of these data could expand knowledge and understanding of Florida motorcycle crash causation and provide helpful information to mitigate common motorcycle crash types in Florida.

With the number of motorcycles on Florida's roads increasing, crash prevention is more important than ever.

Research Objectives

University of South Florida researchers examined MCCS data to determine the relationship of locational, temporal, trip, motorcycle, injury, and contributing crash factors and to develop a basis for informed decision making by FDOT for strategies, countermeasures, and policy.

Project Activities

A literature review was conducted to identify previous uses of the MCCS dataset. Seven studies were located, and while each one had different objectives, all aimed to identify causal and contributing factors for crash risk and injury severity.

The research team reviewed and analyzed Florida motorcycle crash data for 2011–2019 to obtain an in-depth understanding of primary crash types, injury severity levels, and correlates for severe injuries. In particular, three common crash types were identified: Left Turn Across Path (LTAP), Following Too Closely (FTC), and Run-Off-Road (ROR). With 893 Florida fatalities, LTAP was found to be the most common and dangerous crash type involving a motorcycle. However, conclusions about causes and contributing factors were restricted by the limited level of detail provided in the crash reports.

Next, a comprehensive analysis of MCCS data was conducted. This effort included a tabulation of unique variables that are only available in the MCCS dataset, which provided insight into contributing factors for motorcycle crashes that cannot be assessed using traditional crash databases. Although considerable insight was obtained, efforts were limited to a descriptive analysis of the three primary crash types, as statistical models could not be employed due to the limited sample size of the MCCS.

Finally, based on MCCS findings, Florida crash data were used to develop statistical models that address factors contributing to LTAP crash risk. Based on the risk factors that were identified, a list of recommendations that could prevent or mitigate motorcycle crashes and related injuries was provided. Those recommendations include the following: (1) increase visibility at night, (2) provide protected left-turn signal phases, (3) replace two-way left-turn lanes with raised medians, (4) install high friction surface treatments at intersections, (5) establish speed management, (6) provide education programs, and (7) enhance or increase law enforcement.

Project Benefits

Improved data and analysis related to motorcycle crashes can lead to a better understanding of causes and contributing factors and more effective measures to reduce motorcycle crashes, injuries, and deaths.

For more information, please see www.fdot.gov/research/.