Collaborative Sciences Center for ROAD SAFETY

RESEARCH BRIEF

A Safe Systems Approach to Motorcycle Safety

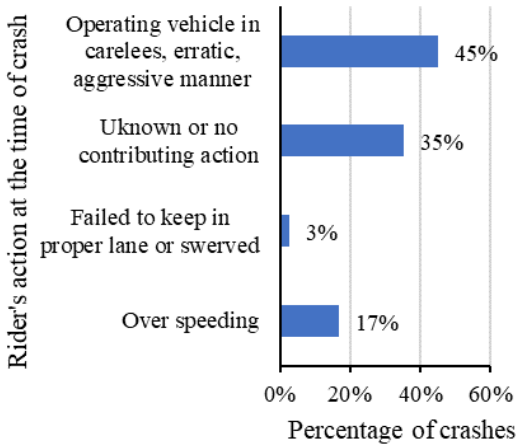
Globally, motorcycles are the fastest growing mode of transportation, a trend that is even more prominent in low- and middle-income countries where powered two-wheelers (PTWs) are a standard transportation option for motor vehicles. In the United States in 2017, motorcyclists were about 27 times more likely to be killed per vehicle-mile-traveled than car occupants.

Like other vulnerable road users such as pedestrians and bicyclists, the safety of PTWs could be improved by the Safe System approach, which is a comprehensive approach to road safety that works through multiple layers of protection to prevent crashes, and fatalities or serious injuries in crashes that do occur. The Safe System approach includes four main principles:

1. People make mistakes that lead to road crashes.
2. The human body has a known and limited ability to tolerate crash forces.
3. System designers share responsibility with road users for crash prevention.
4. All elements of the system should be strengthened to multiply their effects.

A Safe System approach posits that life and health should not be compromised to meet mobility demands. The Safe System approach to motorcycle safety works to reduce the injury risk to an acceptable level by improving the four cornerstones of the system: roadways, speeds, vehicles, and people.

This report examines motorcycle safety from a Safe Systems perspective and is divided into two sections: (1) a synthetic review of the literature that seeks to understand motorcycle safety from within the four dimensions that comprise a Safe System, and (2) an examination of motorcycle crash data drawn from Southeast Florida, which includes Miami-Dade, Broward, and Palm Beach Counties, from 2015 to 2017. During this period, 6,624 PTW riders were involved in crashes, with 481 crashes involving motorcycles that had pillion passengers.



Distribution of PTW crashes on exit and entrance ramps, according to motorcyclist's action during a crash

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