

Evaluating risk factors in motorcycle-passenger car crashes through real-world investigation

ABSTRACT

The study analyses 55 real world crashes involving motorcycles with passenger cars through on-the-spot crash investigation. Analysis was performed based on input gathered during vehicle damage assessment, crash site inspection and injury information provided by the treating hospital. Through the analysis performed, the data revealed that weekday crashes mostly occurred during morning period while weekend crashes were more prevalent at night. Crashes occurring during weekends were less likely to occur between 06:00 until 11:59 and 6.125 times more likely to occur during the night period (18:00 – 23:59). Most of the motorcycle – passenger vehicle crashes investigated involved situations whereby both the vehicles were travelling in the same direction, with one of the vehicle in turning manoeuvre. Moreover, 61.8% of the investigated crashes occurred when the passenger vehicles were at fault. The data revealed 28.7% of the involved riders suffered injuries to lower extremities, followed by head and neck injuries at 25%. In terms of injury severity of the involved riders, odds ratio value reveals that side impact, compared to other types of crash configuration were 3.750 times more likely to result in MAIS 3 and above. The result also proved that impact speed has a significant effect on the injury severity of the riders. MAIS level 2 and below injury severities were over presented for the lower range impact speeds while an adverse trend was observed for the higher range impact speeds.

Keyword: On-the-spot crash investigation; Motorcycle safety; Passenger vehicle; Injury severity