

Motorcycle Accident Cause Factors and Identification of Countermeasures

Throughout the accident and exposure data there are special observations which relate to accident and injury causation and characteristics of the motorcycle accidents studied. These findings are summarized as follows:

1. Approximately three-fourths of these motorcycle accidents involved collision with another vehicle, which was most often a passenger automobile.
2. Approximately one-fourth of these motorcycle accidents were single vehicle accidents involving the motorcycle colliding with the roadway or some fixed object in the environment.
3. Vehicle failure accounted for less than 3% of these motorcycle accidents, and most of those were single vehicle accidents where control was lost due to a puncture flat.
4. In single vehicle accidents, motorcycle rider error was present as the accident precipitating factor in about two-thirds of the cases, with the typical error being a slideout and fall due to overbraking or running wide on a curve due to excess speed or under-cornering.
5. Roadway defects (pavement ridges, potholes, etc.) were the accident cause in 2% of the accidents; animal involvement was 1% of the accidents.
6. In multiple vehicle accidents, the driver of the other vehicle violated the motorcycle right-of-way and caused the accident in two-thirds of those accidents.
7. The failure of motorists to detect and recognize motorcycles in traffic is the predominating cause of motorcycle accidents. The driver of the other vehicle involved in collision with the motorcycle did not see the motorcycle before the collision, or did not see the motorcycle until too late to avoid the collision.
8. Deliberate hostile action by a motorist against a motorcycle rider is a rare accident cause. The most frequent accident configuration is the motorcycle proceeding straight then the automobile makes a left turn in front of the oncoming motorcycle.
10. Intersections are the most likely place for the motorcycle accident, with the other vehicle violating the motorcycle right-of-way, and often violating traffic controls.

11. Weather is not a factor in 98% of motorcycle accidents.
12. Most motorcycle accidents involve a short trip associated with shopping, errands, friends, entertainment or recreation, and the accident is likely to happen in a very short time close to the trip origin.
13. The view of the motorcycle or the other vehicle involved in the accident is limited by glare or obstructed by other vehicles in almost half of the multiple vehicle accidents.
14. Conspicuity of the motorcycle is a critical factor in the multiple vehicle accidents, and accident involvement is significantly reduced by the use of motorcycle headlamps (on in daylight) and the wearing of high visibility yellow, orange or bright red jackets.
15. Fuel system leaks and spills were present in 62% of the motorcycle accidents in the post -crash phase. This represents an undue hazard for fire.
16. The median pre-crash speed was 29.8 mph, and the median crash speed was 21.5 mph, and the one-in-a-thousand crash speed is approximately 86 mph.
17. The typical motorcycle pre-crash lines-of-sight to the traffic hazard portray no contribution of the limits of peripheral vision; more than three-fourths of all accident hazards are within 45deg of either side of straight ahead.
18. Conspicuity of the motorcycle is most critical for the frontal surfaces of the motorcycle and rider.
19. Vehicle defects related to accident causation are rare and likely to be due to deficient or defective maintenance.
20. Motorcycle riders between the ages of 16 and 24 are significantly overrepresented in accidents; motorcycle riders between the ages of 30 and 50 are significantly underrepresented. Although the majority of the accident-involved motorcycle riders are male (96%), the female motorcycles riders are significantly overrepresented in the accident data.
22. Craftsmen, laborers, and students comprise most of the accident-involved motorcycle riders. Professionals, sales workers, and craftsmen are underrepresented and laborers, students and unemployed are overrepresented in the accidents.
23. Motorcycle riders with previous recent traffic citations and accidents are overrepresented in the accident data.

24. The motorcycle riders involved in accidents are essentially without training; 92% were self-taught or learned from family or friends. Motorcycle rider training experience reduces accident involvement and is related to reduced injuries in the event of accidents.