

# **Economic Impact of Motorcycle Helmets: From Impact to Discharge**

## **Abstract**

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### **BACKGROUND:**

The economic impact of helmet use remains controversial. Previous studies of injured motorcyclists suggest a marginal inpatient hospital cost difference between helmeted and unhelmeted riders. The purpose of this study was to expand the economic analysis of motorcycle helmet utilization to the point of injury by including motorcycle crash patients who do not require hospital admission.

### **METHODS:**

Prehospital motorcycle crash data were collected from the National Highway Transportation Safety Administration (NHTSA) General Estimates System (GES) database from 1994 to 2002 with respect to helmet use, injury severity, and transport to a hospital. A focused literature search yielded the hospital admission rates of helmeted and unhelmeted motorcyclists evaluated in the emergency department. The National Trauma Data Bank (NTDB) was queried from 1994 to 2002 to collect data including helmet use and hospital charges for injured motorcyclists. Cost analysis was performed by linkage of the queried databases and data from the literature. Statistical comparisons between groups were performed using an independent samples t test and chi analysis.

### **RESULTS:**

The NHTSA GES database yielded 5,328 sample patients. 1,854 patients (34.8%) were unhelmeted and 3,474 (65.2%) were helmeted. Transport to a hospital was required of 78.6% of unhelmeted and 73.3% of helmeted patients ( $p < 0.01$ ). Of motorcyclists evaluated in the emergency department, 39.9% of unhelmeted and 32.8% of helmeted patients required hospital admission. NTDB analysis of injured motorcyclists from the concomitant interval yielded 9,033 patients in whom helmet use data were available and 5,343 patients for whom associated hospital cost data were available. Unhelmeted motorcyclists incurred charges of 39,390 dollars + 1,436 dollars per injury, whereas helmeted motorcyclists incurred charges of 36,334 dollars + 1,232 dollars per injury. Mathematical extrapolation derived a charge of 12,353 dollars per unhelmeted and 8,735 dollars per helmeted motorcyclist for every crash with a difference of 3,618 dollars between helmeted and unhelmeted riders involved in a motorcycle crash.

### **CONCLUSIONS:**

With a current estimate of 197,608 motorcycle crashes/year in which 69,163 riders were unhelmeted, the differential healthcare economic burden between unhelmeted and helmeted motorcyclists is approximately \$250,231,734 per year and underscores the need for improved legislation to improve motorcycle helmet utilization.