

Increased facial and head injuries after motorcycle helmet law change in Michigan

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Skull fractures and other head and facial injuries from motorcycle trauma in Michigan have doubled since that state relaxed its motorcycle helmet laws, reports a study in the June issue of *Plastic and Reconstructive Surgery*, the official medical journal of the American Society of Plastic Surgeons (ASPS). The new study is one of the first to focus on how helmet laws affect CMF trauma rates.

"Our study demonstrates the negative impact of weakened [motorcycle](#) helmet laws leading to decreased helmet use," said lead author Nicholas S. Adams, MD, of Michigan State University College of Human Medicine and Spectrum Health, Grand Rapids. The findings suggest that higher numbers of craniomaxillofacial (CMF) injuries can be added to increased deaths, serious injuries and health care costs when motorcyclists ride without helmets.

'Significant Negative Impact' of Weakening Helmet Laws

The researchers used a state trauma quality improvement database to analyze changes in the rate of CMF injuries to motorcycle riders since the change in Michigan helmet laws. In 2012, Michigan repealed its universal motorcycle helmet law in favor of a partial law. Under the new law, riders are eligible to ride without helmets if they meet criteria for age (over 21), training/experience and insurance coverage.

Trends in CMF injuries were analyzed for three years before and three years after the change in helmet laws. The study included a total of 4,643 motorcycle trauma patients seen at 29 Michigan trauma centers.

Under the new law, the proportion of motorcycle trauma patients who were riding without helmets more than doubled, from 20 to 44 percent. Compared to helmeted patients, those not wearing helmets were about twice as likely to sustain CMF injuries.

The difference was significant for fractures and soft tissue injuries. Patients without helmets had higher [injury](#) severity scores. Before and after the change in helmet laws, unhelmeted patients had higher blood alcohol content.

The absolute rate of CMF injuries increased from 25.5 percent under the universal helmet law to 37.2 percent under the partial helmet law. This translated into a relative 46 percent increase in overall CMF injuries, including a 28 percent increase in fractures and a 56 percent increase in soft tissue injuries.

The researchers also noted an increase in certain patterns of [facial injuries](#) after the change in helmet laws. Fractures of the cheekbones (malar fractures) increased significantly, as did facial lacerations, contusions and abrasions. All types of injuries were more common in unhelmeted patients.

There is a long history of debate over motorcycle helmet laws. Previous studies have shown that helmets prevent nearly 40 percent of fatal injuries and 13 percent of nonfatal serious injuries. Yet, up to one-third of motorcycle riders do not wear helmets, even more in states without universal helmet laws.

Dr. Adams said, "We urge state and national legislators to reestablish

universal motorcycle [helmet laws](#)."

Based on their findings, the researchers estimate that wearing a motorcycle helmet can decrease the risk of facial [trauma](#) by half, while requiring all riders to wear helmets could decrease facial injuries by more than 30 percent.

More information: Nicholas S. Adams et al. The Effects of Motorcycle Helmet Legislation on Craniomaxillofacial Injuries, *Plastic and Reconstructive Surgery* (2017). [DOI: 10.1097/PRS.00000000000003370](#)

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