

## The Tragic Consequences of Motorcycle Helmet Law Repeal Five Michigan Specific Research Studies

When our elected decision makers made their tragic decision to repeal our lifesaving all-rider motorcycle helmet law, they had available to them nearly 40 years of national and international research which proves helmet use works to reduce deaths and injuries in the event of a crash and when an all-rider helmet law is in effect almost every rider wears a helmet. They chose to ignore that research. Now five years after repeal we have five years of fatality data showing non-helmeted riders who crash die at more than twice the rate of riders wearing helmets and also suffer serious injuries at a significantly higher rate. In addition, there are five Michigan specific research reports which substantiate the negative consequences of repealing the all-rider law.

Since 2012 the following Michigan specific research studies have been completed. This article will provide a summary of each.

- Chapman AJ, Titus R, Ferenchick H, Davis A, Rodriguez C. *Repeal of the Michigan helmet law: early clinical impacts*. Am J Surg. 2014; 207(3):352–356.
- Flannagan Carol A.C, Bowman Patrick J. *Analysis of Motorcycle Crashes in Michigan 2009-2012*. UMTRI-2014-35 November, 2014
- Rebecca H. Striker, D.O. , Alistair J. Chapman, M.D., Rachel A. Titus, M.D., Alan T. Davis, Ph.D., Carlos H. Rodriguez, M.D., F.A.C.S. *Repeal of the Michigan helmet law: the evolving clinical impact*. Am J Surg. Volume 211, Issue 3, March 2016, Pages 529–533.
- Patrick M. Carter, MD, Lisa Buckley, PhD, Carol A. C. Flannagan, PhD, Jessica B. Cicchino, PhD, Mark Hemmila, MD, Patrick J. Bowman, MS, Farideh Almani, MS, and C. Raymond Bingham, PhD. *The Impact of Michigan's Partial Repeal of the Universal Motorcycle Helmet Law on Helmet Use, Fatalities, and Head Injuries*. American Journal of Public Health 107(1):e1-e7, November 2016.
- Nicholas S. Adams et al. *The Effects of Motorcycle Helmet Legislation on Craniomaxillofacial Injuries*, Plastic and Reconstructive Surgery, May, 2017.

***Repeal of the Michigan helmet law: early clinical impacts.*** Access this article at:  
[http://www.americanjournalofsurgery.com/article/S0002-9610\(13\)00735-6/fulltext](http://www.americanjournalofsurgery.com/article/S0002-9610(13)00735-6/fulltext)

This study is a retrospective cohort study (a longitudinal study that studies a cohort of individuals that share a common exposure factor to determine its influence on a specific outcome) comparing outcomes among motorcycle crash victims in a 7-month period before and after the helmet law repeal. One hundred ninety-two patients were included. Findings include:

- After the repeal, nonhelmeted motorcyclists rose from 7% to 29%.
- There was no difference in mortality rate between helmeted and nonhelmeted riders after admission; however, crash scene fatalities for nonhelmeted riders increased significantly

- Intensive care unit length of stay was higher for nonhelmeted riders
- Mechanical ventilation time was higher for nonhelmeted riders
- Cost of stay was higher in the nonhelmeted cohort

The authors conclude “Our study highlights the negative ramifications of repealing a mandatory helmet law. Motorcyclists not wearing helmets increased significantly in a short period of time. Nonhelmeted motorcyclists more frequently died on the scene, spent more time in the intensive care unit, required longer ventilator support, and had higher medical costs.”

***Analysis of Motorcycle Crashes in Michigan 2009-2012.*** Access this study at:

<http://www.smarter-usa.org/documents/UMTRI-Nov2014-repeal-crash-data-analysis.pdf>

The goal of this analysis is to assess the consequences of the modification to the motorcycle helmet law that took effect on April 13, 2012, based on crash data from 2009-2013.

Key results include:

- In the crash population, helmet use dropped from 98% in 2008-2011 to 74% in 2012 and 2013 after modification of the helmet law.
- Before and after the modification, the percentage of out-of-state riders who were involved in Michigan crashes has remained stable at 5%. This is one way of estimating whether there has been any change in out of-state ridership after the modification.
- Helmet use rates for crash-involved riders age 16-20 dropped from 97% before the modification to 86% afterwards.
- Riders without motorcycle endorsements are somewhat less likely to wear a helmet, compared those with endorsements. Those with endorsements made up 58% of the crash population prior to 2012 and 50% of the crash population in 2012-13.
- Risk of fatality is 2.8 times higher for motorcycle riders who are not wearing a helmet.
- Risk of incapacitating injury is 1.4 times higher for motorcycle riders who are not wearing a helmet.
- The fatality rate in 2013 is the highest in 5 years at 3.6% of crash-involved riders. The overall rate since the modification is 8% higher than the overall rate for the three previous years.
- Regression models were used to estimate the number of fatalities and serious injuries attributable to changes in helmet use since the modification. Based on these models, 20% (24 per year) of fatalities and 10% (71 per year) of serious injuries were estimated to have resulted from reduced helmet use after the helmet-law modification.

***Repeal of the Michigan helmet law: the evolving clinical impact.*** Access this study at:

<https://www.ncbi.nlm.nih.gov/pubmed/26774124>

This is follow-up research to an earlier published report by these authors. In the first report they compared the 7 months before and after repeal of the law. This report includes the data from the three years after the legislative change. The authors observe increased injury severity score, higher in-patient mortality and worse neurologic injury. Specific findings include:

- Nonhelmeted riders increased from 7% to 28% after the repeal
- Nonhelmeted crash scene fatalities were higher after the repeal

- The nonhelmeted cohort had significantly higher in-patient mortality
- The nonhelmeted cohort had significantly higher injury severity score
- The nonhelmeted cohort had significantly higher abbreviated injury scale head
- Nonhelmeted riders had increased alcohol use, intensive care unit length of stay and need for mechanical ventilation
- The median hospital cost for the non-helmeted cohort was higher

***The Impact of Michigan's Partial Repeal of the Universal Motorcycle Helmet Law on Helmet Use, Fatalities, and Head Injuries.*** Access this study at:

<https://experts.umich.edu/en/publications/the-impact-of-michigans-partial-repeal-of-the-universal-motorcycle>

The authors conclude Michigan's helmet law repeal resulted in a 24% to 27% helmet use decline among riders in crashes and a 14% increase in head injury. The major findings of this study include:

- Helmet use decreased in crash involved riders after repeal
- Helmet use decreased in trauma involved riders after repeal
- Overall fatalities did not change
- Head injuries and neurosurgical intervention increased after repeal
- Helmet nonuse, alcohol intoxication, intersection crashes and crashes at higher speed limits increased fatality risk
- Helmet nonuse and alcohol intoxication increased odds of head injury

***The Effects of Motorcycle Helmet Legislation on Craniomaxillofacial Injuries.*** This research can be accessed at: <https://www.ncbi.nlm.nih.gov/pubmed/28538576>

This research analyzed the Craniomaxillofacial (CMF) injuries 3 years before and 3 years after the helmet law change. The main findings include:

- Under the new law, the proportion of motorcycle trauma patients who were riding w/o helmets more than doubled
- Compared to helmeted patients, those not wearing helmets were about twice as likely to sustain CMF injuries
- The difference was significant for both fractures and soft tissue injuries.
- Patients w/o helmets has higher injury severity scores
- Before & after the change in the helmet law, unhelmeted patients had higher blood alcohol content.

**Conclusion:**

The five years of fatality data available from Michigan OHSP combined with these five Michigan specific research reports prove without doubt the negative impact of the repeal of Michigan's all-rider helmet law. Michigan citizens have joined other states in becoming part of a tragic grand human experiment proving that motorcycle helmets work for their intended purpose – to protect the head, face and brain in the event of a crash and that when an all-rider helmet law is in effect, significantly more riders wear a helmet.