

Motorcycle Helmet Research

Many studies have been conducted regarding motorcycle helmets. A summary of research studies was published in *Safe Cycling* (Motorcycle Safety Foundation, Winter 1998, Vol. 20, No. 3). When the evidence from these research studies are viewed as a whole, the conclusion is clear that helmets are very important and should be used to reduce the likelihood of head injury. The research also supports the lifesaving benefits of mandatory helmet laws.

Helmet Effectiveness

1. *Helmet Effectiveness in Preventing Motorcycle Driver and Passenger Fatalities*. L. Evans and M. C. Frick. General Motors R & D Center Safety Laboratory. October 1986. **Helmets were 27 plus or minus 9 percent effective in preventing fatalities to motorcycle riders.**
2. *Motorcycle Accident Cause Factors and Identification of Countermeasures*. H. H. Hurt Jr., J. V. Ouellet and D. R. Thom. Head Protection Research Laboratory of Southern California. January 1981. **Helmeted riders and passengers showed significantly lower head-and-neck injury (all types, all levels).**
3. *The Effectiveness of Motorcycle Helmets in Preventing Fatalities*. D. D. Wilson. National Center for Statistics and Analysis. March 1989. **Helmets were estimated to be 29% effective in preventing fatalities.**
4. *Accident Performance of Motorcycle Safety Helmets*. H. H. Hurt Jr., D. R. Thom and P. M. Fuller. Head Protection Research Laboratory of Southern California. November 1990.
5. *Injury Severity, Medical Costs and Associated Factors for Helmeted and Unhelmeted Motorcyclist Crash Cases Transported to Hospitals in Amarillo, Austin, Corpus Christi, and San Antonio, Texas*. R. K. Goodnow. Texas Department of Public Safety. 1988. **Four out of 5 motorcyclists studied who died were not wearing helmets.**
6. *Simulation Analysis of Head/Neck Impact Response for Helmeted and Unhelmeted Motorcyclists*. B. W. Bowman and L. W. Schneider. Transportation Research Institute. University of Michigan. April 1980.
7. *Motorcycle Helmet Laws Save Lives and Reduce Costs to Society*. United States General Accounting Office. July 1991.
8. *Interim Report on Safety Belt and Motorcycle Helmet Effectiveness*. United States General Accounting Office. May 1991. **Helmeted riders experienced fatality rates that were 28% to 73% lower than unhelmeted riders.**
9. *Motorcyclist Head Injury Mechanisms—With and Without Helmets*. H. H. Hurt Jr. and D. R. Thom. Annual Proceeding of the Association for the Advancement of Automotive Medicine. 1992. **Current helmets offer no hazard for use, and...are true agents of head protection.**
10. *The Impact of Motorcycle Helmet Use*. P. J. Offner, F. P. Rivara and R.V. Maier. Brooke Army Medical Center. 1992. **Acute care costs were 40% less with helmet use.**
11. *Motorcycle Helmets—Medical Costs and the Law*. N. E. McSwain and A. Bellis. Tulane University School of Medicine. October 1990. **Average hospital stay for helmeted riders, 5.8 days; for unhelmeted, 11.8 days.**
12. *Motorcycle Helmet Use, Incidence of Head Injury, and Cost of Hospitalization*. C. May and D. Morabito. Journal of Emergency Nursing. September/October 1989. **Of 231 victims of motorcycle crashes during a 24-month period, 7 of the 8 who died were unhelmeted.**

13. *Motorcycle Helmet Use and Injury Outcome and Hospitalization Costs from Crashes in Washington State.* J. Rowland, F. Rivera, P. Saizberg, R. Soderberg, R. Maier and T. Koespell. American Journal of Public Health. January 1996. **The average hospital stay for unhelmeted riders was longer and cost 60% more overall than for helmeted.**
14. *Head Injuries Associated with Motorcycle Use in Wisconsin, 1991.* T. A. Karlson and C. A. Quade. Health Systems Research and Analysis Center.
15. *Is Helmet Use Beneficial to Motorcyclists?* V. G. Wagle, C. Perkins and A. Valiera. Department of Neurosurgery. Hartford Hospital. January 1993. **Nine of 10 patients declared dead on arrival were unhelmeted.**
16. *A Progressive Study of the Impact of Helmet Usage on Motorcycle Trauma.* P. Kelly, T. Sanson, G. Strange and E. Orsay, Program in Emergency Medicine. University of Illinois. Chicago. August 1991. **The lack of helmet use was found to be a major risk factor for increased severity of injury.**
17. *Relationship of Helmet Use and Head Injuries Among Motorcycle Crash Victims in El Paso County, Colorado, 1989–1990.* B. Gabella, K. Reiner, R. E. Hoffman, M. Cook and L. Stallones. Accident Analysis and Prevention. 1995.
18. *Fatal Injuries in Motorcycle Riders According to Helmet Use.* S. Sarkar, C. Peek and J. Kraus. Southern California Injury Prevention Research Center. University of California. Los Angeles. February 1995. **Cerebral injury, intercranial hemorrhage, face, skull vault, and cervical spine injuries were more likely to be found in fatally injured unhelmeted motorcyclists than in helmeted motorcyclists.**
19. *Patterns of Injury in Helmeted and Nonhelmeted Motorcyclists.* B. Bachulis, W. Sangster, G. Forrell and W. Long. Emanuel Hospital and Health Center. Portland, OR. The American Journal of Surgery. May 1988. **Severe brain injury was 600% higher for unhelmeted riders.**
20. *Craniofacial Trauma in Injured Motorcyclists: The Impact of Helmet Use.* R. M. Johnson, M. McMarthy, S. Miller and J. Peoples. The Journal of Trauma. June 1995. **Nonhelmeted motorcyclists were 3 times more likely to suffer facial fractures; skull fracture occurred in one helmeted patient versus 36 nonhelmeted.**
21. *Motorcycle Helmets and Spinal Injuries: Dispelling the Myth.* E. Orsay, R. Muelleman, T. Peterson, D. Jurisic, J. Kosasih, and P. Levey. The Annals of Emergency Medicine. April 1994.
22. *The Public Cost of Motorcycle Trauma.* F. P. Rivara, B. G. Dicker, A. B. Bergman, R. Darcy and C. Herman. Journal of the American Medical Association. July 1988.
23. *Report to Congress: Benefits of Safety Belts and Motorcycle Helmets.* National Center for Statistics and Analysis. February 1996. **Helmet effectiveness ranged from 9% in preventing any kind of injury to 35% in preventing a fatality.**

Effects of Helmet-Law Repeal

1. *Motorcycle Fatalities and Helmet-Law Repeal: A Policy Impact Study.* J. D. Cleary, M. Reynolds-Rucinski and J. Williams. Minnesota Department of Public Safety. June 1991.
2. *Head Injury Associated Death from Motorcycle Crashes.* D. M. Sasin, J. J. Sacks and P. Hoimgreen. Journal of the American Medical Association. November 1990. **Two states that weakened their helmet laws had increases in motorcycle-related head-injury death rates of 184% and 73%.**

3. *Impact of Motorcycle-Helmet Usage in Colorado: A Three Year Study*. S. W. Krane and L. A. Winterfield. National Technical Information Services. July 1980.
4. *Motorcyclist Fatalities and the Repeal of Mandatory Helmet-Wearing Laws*. T. C. Chenier and L. Evans. General Motors R & D Center Safety Laboratory. Accident Analysis and Prevention. 1987. **After repeal, in 24 cases out of 26, fatalities increased more in states that repealed the laws than in those that did not.**
5. *Impact of the Repeal of the Kansas Mandatory Helmet Law*. M. L. Lummis and G. J. Tucker. Kansas University, College of Health Science. January 1979. **Data indicated that the crude death rate for those involved in accidents without helmet protection is significantly higher.**
6. *Effect of Motorcycle Helmet Usage on Head Injuries and the Effect of Usage Laws on Helmet-Wearing Rates*. A. Berkowitz. National Technical Information Service. March 1981
7. *The Effects of Helmet-Law Repeal on Motorcycle Fatalities*. Virginia A. de Wolf. National Technical Information Service. December 1986. **The repeal was associated with a 10.4% to 33.3% increase in the fatality rate per accident.**
8. *Evaluation of State Motorcycle-Helmet Laws Using the National Electronic Injury Surveillance System*. A. Berkowitz. National Technical Information Service. October 1981.
9. *Impact of Motorcycle Helmet Law Repeal in South Dakota 1976-1979*. C. Struckman-Johnson and V. S. Ellingsted. South Dakota University.
10. *Impact of the Re-Enactment of the Motorcycle Helmet Law in Louisiana*. N. E. McSwain Jr. and A. B. Willey. Tulane University School of Medicine. December 1984.
11. *The Effect of Helmet-Law Repeal on Motorcycle Fatalities: A Four-Year Update*. E. S. Hertz. National Highway Traffic Safety Administration, Office of Traffic Injury Control Programs. September 1989.
12. *Florida's Motorcycle Helmet Law Repeal and Fatality Rates*. A. Muller. American Journal of Public Health. 2004. **48.6% increase in motorcycle-occupant deaths the year after the law change.**
13. *Evaluation of Motorcycle Helmet Law Repeal in Arkansas and Texas*. D. F. Preusser, J. H. Hedlund and R. G. Ulmer. Preusser Research Group, Inc. U.S. Department of Transportation. September 1997, May 1999, December 1999, February 2000.
14. *Evaluation of the Repeal of Motorcycle Helmet Laws in Kentucky and Louisiana*. Preusser et al. 2000.
(<http://www.nhtsa.dot.gov/people/injury/pedbimot/motorcycle/kentuky-la03/>).

Effects of Helmet-Law Introduction

1. *Compliance with the 1992 California Motorcycle Helmet Use Law*. J. F. Kraus, C. Peek and A. Williams. American Journal of Public Health. January 1995.
2. *The Evaluation of the 1992 California Mandatory Helmet Use Law: Changes in Helmet Use, Statewide Fatalities, and Fatal and Non-Fatal Injuries; Final Report*. J. F. Kraus and C. Peek. Southern California Injury Prevention Research Center. UCLA School of Public Health. December 1994. **Fatalities decreased post law by 37.5%.**
3. *The Impact of the Texas 1989 Motorcycle Helmet Law on Total and Head-Related Fatalities, Severe Injuries, and Overall Injuries*. N. S. Fleming and E. R. Becker. Medical Care. September 1992. **Declines: 12.6% for total fatalities, 57% for head-related fatalities, 13.1% for severe injuries, 12.3% for injuries overall, 52.9% for head-related injuries.**

4. *Injury Prevention Strategies to Promote Helmet Use Decrease Severe Head Injuries at a Level I Trauma Center.* C. N. Mock, R. V. Maier, E. Boyle, S. Pitcher and F. P. Ivara. *The Journal of Trauma*. July 1995.

Mortality declined from 10% to 6%.

Cost of Injuries Resulting from Motorcycle Crashes

1. *Cost of Injuries from Motorcycle Crashes: A Literature Review.* U.S. Department of Transportation. National Highway Traffic Safety Administration. November 2002. **Only slightly more than half of motorcycle-crash victims have private health insurance coverage. The government pays a majority of medical costs for uninsured patients. Helmet use reduced the fatality rate, the probability and severity of head injuries, the necessity for special medical treatments, and the probability of long-term disability.**

Additional Helmet-Study Sources

1. *Heads, Helmets and Heat.* B. Carpenter. *Road Rider Magazine*. September 1987.
2. *California's Motorcycle Helmet Law Has Saved Lives and Tax Dollars Since 1992!* Injury Prevention Research Program. Trauma Foundation. 1996.
3. *FMVSS (Federal Motor Vehicle Safety Standards) No. 218, Motorcycle Helmets.* National Center for Statistics and Analysis.
4. *The Effects of Motorcycle Helmets on Hearing and the Detection of Warning Signals.* W. K. Van Moorhem, K. P. Shepherd, T. D. Magleby and G. E. Torian. *Journal of Sound and Vibration*. 1977.
5. *The Effects of Motorcycle Helmets Upon Seeing and Hearing.* A. J. McKnight and A. S. McKnight. National Highway Traffic Safety Administration, Office of Traffic Injury Control Programs. 1994.

The One (and Only) Study Often Referenced by Anti-Helmet Groups

1. *The Effect of Motorcycle Helmet Use on the Probability of Fatality and the Severity of Head and Neck Injuries.* Jonathan P. Goldstein, Ph.D. Bowdoin College Department of Economics. Brunswick, ME. 1986. (<http://www.helmet.8m.net/goldstein.htm>).

Michigan-Specific Research

1. *Trends in Motorcycle Crashes in Michigan: 1997-2002.* L. P. Kostyniuk and L. L. Miller. University of Michigan Traffic Research Institute. (http://www.michigan.gov/documents/motorcycles_final_0104_85473_7.pdf).
2. *Motorcycle Crash Trends in Michigan: 2001-2005.* L. P. Kostyniuk and L. L. Miller. University of Michigan Traffic Research Institute. (<http://deepblue.lib.umich.edu/bitstream/2007.42/48740/1/99783.pdf>).

The One Best and Most Recent Study

1. *Motorcycle Helmet Laws: The Facts, What Can be Done to Jump-Start Helmet Use, and Ways to Cap the Damages.* Melissa Neiman, M.D., J.D. (<http://www.mneiman.com/pdfs/helmet.pdf>).