

Questions and Answers

1. Do motorcycle helmets save lives?

Head injury is a leading cause of death in motorcycle crashes. Helmet use has been shown to limit injury severity and reduce both the number of traumatic brain injuries and the fatality rates. According to the National Highway Traffic Safety Administration (NHTSA), helmets are 37 percent effective at preventing fatalities in motorcycle accidents. In other words, if 100 nonhelmeted motorcycle riders who were killed in motorcycle accidents had been wearing helmets, 37 of them would have survived the crash because of the helmet. Helmets cannot prevent all motorcycle fatalities, but they saved the lives of 1,829 motorcyclists in 2008, according to NHTSA estimates. If all motorcyclists had worn helmets in 2008, an additional 823 lives could have been saved.

2. What are the benefits to using an FMVSS 218-compliant helmet?

Helmets that comply with FMVSS 218 must meet 3 testing criteria: impact attenuation, penetration, and helmet retention system. Accordingly, these helmets are designed with an outer shell robust enough to protect the head from direct impact in a collision. Inside the outer shell is an impact-attenuating liner that can absorb the energy created from an impact so it is not transferred directly to the brain. Lastly, the retention system is strong and designed so that the helmet does not fall from the head during an accident. In 2007, NHTSA released research after testing 7 popular novelty helmets. All 7 novelty helmets failed all 3 testing criteria. In fact, the analyses of the testing results gave a 100 percent probability of brain injuries and skull fracture, indicating that a person wearing any of these helmets would have sustained fatal head injuries.

3. If helmets are effective, why do motorcyclists continue to die in crashes, particularly in states that require all riders and passengers to wear helmets?

Unfortunately, as in all modes of transportation, some crashes are simply not survivable. In motorcycle crashes, there sometimes are fatal non-head injuries that a helmet could not prevent. The fact remains, however, that head injuries are a leading cause of death among motorcyclists, and helmets that meet federal standards provide the best protection against fatal head injuries in a motorcycle crash. Studies have repeatedly shown that when states enact laws that require all riders and passengers to use motorcycle helmets, more motorcyclists wear helmets and the fatality rate from motorcycle accidents declines.

For example, after California enacted its universal helmet law, helmet use increased from 50 percent to 99 percent, and the number of fatalities declined by 37 percent. After Louisiana limited its helmet requirement to only a certain segment of the rider population in 1999, Louisiana's motorcycle fatality rate increased by more than 25 percent. The state found that nonhelmeted riders in accidents experienced head injuries at twice the rate of helmeted riders involved in accidents. As a result, Louisiana reinstated its universal helmet law in 2004 and saw its total number of motorcycle deaths decline.

4. Do motorcycle helmets also cause injuries, such as neck injuries?

Several studies examining crash causation and injury data have not identified a link between helmet usage and neck or spinal injuries. In fact, an article published in March 2011 in the *Journal of the American College of Surgeons* identified a decrease prevalence of cervical injuries among helmeted riders compared to nonhelmeted riders. Researchers reviewed over 40,000 complete cases in the National Trauma Databank and determined that helmeted riders had 22 percent reduced odds of cervical injury and 65 percent decreased odds of traumatic brain injury after a motorcycle crash when compared with nonhelmeted riders.

The most robust helmets (those that comply with federal standards) only weigh about three pounds, and the weight is explained by the impact-attenuating liner. Injuries from whiplash are rare among helmeted riders because the outer shell and impact-attenuating liner keep the head from moving inside the helmet during impact, which reduces the motion of the neck after the crash. In some extreme cases, helmeted motorcyclists are killed, but none of their severe injuries can be reasonably attributed to the use of a helmet.

The fact is that any possible risk of neck injury is far outweighed by the benefits of using a helmet. One study provides two real-life examples of how well helmets perform in crashes: (1) rider goes head first into a concrete curb at 28 mph, and (2) rider goes head first into an automobile windshield at a relative speed of 40 mph. In both cases, despite differences in their deceleration rates, angles of impact, and contact with roadside hazards, both HELMETED riders survived with only minor head and neck injuries.

5. Do helmets impede your ability to see and hear?

This is a popular argument among some motorcyclists, but in fact, studies, such as the U.S. General Accounting Office's 1991 *Report to Congressional Requesters Highway Safety: Motorcycle Helmet Laws Save Lives and Reduce Costs to Society*, cannot confirm that motorcycle helmets interfere with a rider's ability to hear or visually detect potential traffic hazards. Another 1995 study found that helmets could reduce peripheral vision, but the authors concluded that the effect on vision was negligible in contrast to the protection they offer. The study identified no significant differences in hearing thresholds between riders using full helmets, partial helmets, or no helmets. In fact, as noted by the Motorcycle Safety Foundation, helmets benefit a rider's ability to hear and see by limiting wind noise, protecting the face and eyes from wind, and repelling objects.

6. What do the statistics tell us about motorcycle safety?

During the 12-year period between 1997 and 2008, motorcycle fatalities increased by an alarming 150 percent (from 2,116 to 5,290) during a period when overall highway fatalities declined. In 2009, fatalities among motorcyclists declined, perhaps because of the economic recession and a decline in recreational driving. Nevertheless, in 2009, 4,462 motorcyclists were killed, an average of 12 per day. An additional 90,000 were injured.

Although motorcycles represent only 3 percent of the 257 million vehicles on our roads, motorcyclists still account for 13 percent of highway deaths. In 1997, the motorcycle fatality rate per 100,000 registered vehicles was 55.30. By 2007, the rate per 100,000 registered vehicles was 72.48, an increase of 31 percent. In other words, the number of fatalities grew at a greater rate than the number of registered motorcycles.

7. What do the most recent studies tell us about motorcycle safety?

In 2008, the University of Pittsburg completed a study of motorcycle injuries and fatalities in Pennsylvania for the 2 years before and after Pennsylvania limited its motorcycle helmet law to riders with limited experience and riders and passengers under age 21. In the 2 years after Pennsylvania changed its law, the number of nonhead injury deaths increased 25 percent, but the number of head injury deaths increased 66 percent. Motorcycle-related head injury hospitalizations increased an astounding 78 percent compared to 28 percent for nonhead injury hospitalizations. Even when accounting for an increase in vehicle registrations, the number of head injury deaths or hospitalizations outpaced vehicle registrations. Acute care hospital charges for motorcycle-related head injuries increased 132 percent, and the number of head injured hospitalized motorcyclists requiring additional care at other facilities, such for rehabilitation or long-term care, increased 87 percent, compared with a 16 percent increase for nonhead injured motorcyclists.

8. Is the NTSB mandating the use of motorcycle helmets?

No. The NTSB does not have the authority to enact laws, regulations, or any other type of mandate. NTSB's mission is to investigate transportation accidents and conduct safety studies, and then, based on the results of those investigations and studies, issue recommendations that it believes would enhance transportation safety if adopted. Because highway safety is primarily the purview of the individual states, many NTSB highway-related safety recommendations are issued directly to the states. Some recommendations ask for legislative changes, while other recommendations focus on highway design and highway safety programs. In the case of motorcycle safety, the NTSB issued several recommendations in 2007 following its Motorcycle Safety Forum. Out of concern for the rising number of motorcycle fatalities, in November, 2010, the NTSB added motorcycle safety to its Most Wanted List of Transportation Safety Improvements.

9. Has the federal government ever enacted laws requiring the use of motorcycle helmets?

In 1967, the federal government required states to enact mandatory motorcycle helmet use laws in order to qualify for certain federal safety program and highway construction funds. By 1975, all but three states satisfied this requirement.

In 1976, Congress revoked federal authority to assess penalties for failing to have a mandatory motorcycle helmet use law. Between 1976 and 1978, 20 states weakened their laws, and 8 states fully repealed their helmet use laws.

In the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), Congress established an incentive program to encourage states to enact mandatory helmet use laws. The ISTEA provision also imposed a penalty on any state that did not enact such a law by October 1993, transferring up to 3 percent of a state's federal highway allotment to highway safety programs.

In 1995, Congress again lifted federal sanctions against states without helmet use laws. Several states subsequently weakened their universal helmet laws.

10. What states require all motorcycle riders and passengers to use motorcycle helmets?

Currently, 20 states, the District of Columbia, American Samoa, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands require all riders including passengers to wear helmets. Only 13 States (California, Georgia, Louisiana, Massachusetts, Missouri, Nebraska, New Jersey, New York, North Carolina, Oregon, Tennessee, Vermont, and Washington) and Puerto Rico require that the helmets meet U.S. Department of Transportation Federal Motor Vehicle Safety Standard (FMVSS) 218, as recommended by the NTSB.

11. Who supports universal helmet laws?

A number of motorcycle-related groups, including the National Association of State Motorcycle Safety Administrators (SMSA), the Motorcycle Safety Foundation (MSF), and the American Motorcyclist Association (AMA), encourage riders to wear motorcycle helmets, and most do not oppose laws mandating such use by minors. The Skilled Motorcyclist Association – Responsible, Trained and Educated Riders, Inc. (SMARTER), a Michigan-based association of motorcycle riders, specifically supports laws that mandate helmet use for all riders and passengers.

The National Agenda for Motorcycle Safety (NAMS), supported by NHTSA, the MSF, and motorcycle manufacturers such as BMW, Ducati, Harley-Davidson, American Honda Motor company, Kawasaki, Suzuki, and Yamaha, includes an urgent recommendation to increase the use of FMVSS 218- compliant helmets.

Other institutions that support universal helmet laws include but are not limited to:

- AAA
- Advocates for Highway and Auto Safety
- Allstate Insurance Company
- American Academy of Family Physicians
- American Association of State Highway and Transportation Officials
- American College of Pediatrics
- American College of Emergency Physicians
- American Insurance Association
- American Medical Association
- American Public Health Association

- American Trauma Society
- Brain Injury Association
- Emergency Nurses Association
- GEICO
- Motorcycle Industry Council
- National Center for Injury Prevention and Control
- National Conference of Black Mayors
- National Flight Nurses Association
- National Safety Council
- National Sheriffs Association
- Nationwide Insurance
- National Organizations for Youth Safety
- Prudential Insurance
- Safe Kids
- State Farm Insurance
- Think First Foundation
- Wellness Council of America

12. Do state helmet laws that apply only to younger riders and passengers protect this younger riding population?

This would seem like a logical result, but experience has shown the opposite. Laws that require only younger riders and passengers to use helmets have resulted in higher injury rates among precisely the population that the laws are designed to protect. For example, after Florida amended its helmet law to apply to riders under age 21, there was a 26 percent decline in helmet use among young riders killed and a twofold increase in young rider fatalities. In addition, according to a 2010 University of Pittsburg study, there is a 37 percent increased risk of serious/severe traumatic brain injuries for youth motorcycle riders in states with these “partial laws.” Alternatively, fatality rates in states that require all riders and passengers to use helmets are 31 percent lower among 15-20 year olds than fatality rates in the states with partial laws. In addition, partial laws tend to be difficult to enforce. Law enforcement officers cannot easily discern a rider’s age simply from observation.

13. Is there an increase in fatalities when helmet laws are repealed?

It has been shown time and again that when states repeal universal helmet laws, helmet usage rates dramatically decrease while motorcycle deaths and injuries dramatically *increase*. Hundreds of deaths and thousands of injuries could have been avoided had the states that repealed their universal helmet laws not done so. Examples of these unfortunate, tragic experiments include:

Arkansas: Eighteen months after limiting its helmet law to riders and passengers under age 21, Arkansas saw helmet use drop from 97 percent to 30 percent. Arkansas experienced more than double the number and rate of nonhelmeted crash scene fatalities, and more than double the hospital admission rate for nonhelmeted motorcycle crash survivors.

Kentucky: After Kentucky amended its law in 1998 to apply only to riders with limited experience and riders and passengers under age 21, helmet use dropped from 96 percent to 65 percent. Motorcycle fatalities increased from 26 to 42. Accident-involved riders who were not using helmets were 4 times more likely to suffer traumatic brain injury and severe brain injury.

Pennsylvania: In the 2 years after Pennsylvania limited its helmet law to riders with limited experience and riders and passengers under age 21, there was a 32 percent increase in head injury deaths and a 42 percent increase in head injury-related hospitalizations.

Texas: After Texas changed its helmet law in 1997 to require helmets only for riders and passengers under age 21 or riders without at least \$10,000 worth of insurance, use dropped from 97 percent to 66 percent. Operator fatalities increased by 31 percent, meaning that over 80 more motorcyclists died in the 2 years following than in the 2 years prior to the change in the law. The number of nonhelmeted riders with traumatic brain injuries skyrocketed from 55 in 1997 to 511 in 2001, and the number of nonhelmeted riders placed in rehabilitation facilities increased from 9 in 1997 to 90 in 2001.

14. Doesn't the decision not to use a helmet only affect the motorcycle rider or passenger?

No. For many years, the NTSB has been responsible for assisting families of those injured and killed in transportation accidents and does not accept the notion that surviving family and friends are not affected when motorcyclists decide not to wear a helmet and are killed or injured. In addition, there are economic costs associated with traffic crashes, and those crashes are frequently borne by individuals other than the person injured or killed in the crash.

Research from the Pacific Institute of Research and Evaluation, presented at the NTSB's 2006 Public Forum on Motorcycle Safety, revealed that in 2005, nonhelmeted motorcyclists comprised only 36 percent of the total motorcyclists involved in crashes, but they accounted for 70 percent, or an astonishing \$12.2 billion, of the costs. The Pacific Research Institute also estimated that the 2005 average cost per motorcyclist involved in a crash was \$71,000 for helmeted and \$310,000 for nonhelmeted motorcyclists.

The fact is that nonhelmeted riders are significantly more likely to have longer intensive-care-unit and hospital stays than helmeted riders. Compared to helmeted riders, those not using helmets are more likely to have either no health insurance (29.7 percent versus 19.2 percent) or government-funded health insurance (10.9 percent versus 8.3 percent). Additionally, nonhelmeted riders are significantly more likely to be discharged into a rehabilitation hospital or nursing home than helmeted riders.

Again, specific state examples demonstrate that the decision not to use a helmet has far-reaching consequences:

Arkansas: Eighteen months after Arkansas changed its helmet law, helmet use dropped and the rates of nonhelmeted crash scene fatalities and hospital admissions for nonhelmeted motorcycle crash survivors increased. Associated with this increase was a substantial increase in the amount of nonreimbursed charges for initial treatment. The amount of unpaid medical charges per rider for those not wearing helmets averaged about \$14,000 more than for helmeted riders.

Kentucky: In addition to the decrease in helmet use and increase in fatalities following Kentucky's amendment to its universal helmet law, hospital charges were found to average more than \$25,000 for nonhelmeted motorcyclists than for helmeted motorcyclists involved in a crash. Of the 153 nonhelmeted patients included in the study, 48.4 percent were either uninsured or received state government-subsidized insurance.

Nebraska: A 1992 study compared the medical charges from motorcycle fatalities one year before and after legislation requiring all riders to use helmets. As helmet use increased, the number of motorcycle riders needing ambulance transportation to the hospital decreased. Medical charges decreased from a total of \$862,309 before the law to \$537,661 after the law. Of the \$1.4 million in overall medical charges, 48 percent was either unpaid or paid for by the state of Nebraska.