Motorcycle Helmets and Helmet-Use Laws
Research Facts Every Rider and Legislator Needs to Know

Introduction

Compared with cars, motorcycles are an especially dangerous form of travel. The federal government estimates that per mile traveled, the number of deaths on motorcycles in 2006 was about 35 times the number in cars.[1] Motorcyclist deaths have been rising in recent years — more than doubling by 2006 from the all-time low in 1997. Motorcycles often have excessive performance capabilities, including especially rapid acceleration and high top speeds. They are less stable than cars in emergency braking and less visible to other motorists. Motorcyclists are more prone to crash injuries than car occupants because motorcycles are unenclosed, leaving riders vulnerable to contact hard road surfaces. This is why wearing a helmet is so important. Helmets are the principal countermeasure for reducing crash-related head injuries, the leading cause of death among unhelmeted riders.[2]

1. How effective are helmets?

Helmets decrease the severity of head injuries, the likelihood of death, and the overall cost of medical care. They are designed to cushion and protect riders' heads from the impact of a crash. Just like safety belts in cars, helmets cannot provide total protection against head injury or death, but they do reduce the incidence of both. The National Highway Traffic Safety Administration (NHTSA) estimates that motorcycle helmets reduce the likelihood of crash fatality by 37 percent.[2] Norvell and Cummings found a 39 percent reduction in the risk of death after adjusting for age, gender, and seat position.[3] Helmets are highly effective in preventing brain injuries, which often require extensive treatment and may result in lifelong disability. In the event of a crash, unhelmeted motorcyclists are three times more likely than helmeted riders to suffer traumatic brain injuries.[2] While no real-world crash studies have yet evaluated the effectiveness of novelty helmets or helmets that do not meet federal performance standards in preventing injury or death, recent NHTSA laboratory tests suggest that head injuries are much more likely with these helmets than with US Department of Transportation certified ones.[4]

2. Are there drawbacks to helmet use?

Claims have been made that helmets increase the risk of neck injury and reduce peripheral vision and hearing, but there is no credible evidence to support these arguments. A study by J.P. Goldstein often is cited by helmet opponents as evidence that helmets cause neck injuries, allegedly by adding to head mass in a crash.[5] More than a dozen studies have refuted Goldstein's findings. A study reported in the Annals of Emergency Medicine in 1994 analyzed 1,153 motorcycle crashes in four midwestern states and determined that "helmets reduce head injuries without an increased occurrence of spinal injuries in motorcycle trauma."[6]

Regarding claims that helmets obstruct vision, studies show full-coverage helmets provide only minor restrictions in horizontal peripheral vision. A 1994 study found that wearing helmets restricts neither the ability to hear horn signals nor the likelihood of seeing a vehicle in an adjacent lane prior to initiating a lane change. To compensate for any restrictions in lateral vision, riders increased their head rotation prior to a lane change. There were no differences in hearing thresholds under three helmet conditions: no helmet, partial coverage, and full coverage. The noise generated by a motorcycle is so loud that any reduction in hearing capability that may result from wearing a helmet is inconsequential. Sound loud enough to be heard above the engine can be heard when wearing a helmet.[7]

3. What is the history of helmet use laws in the United States?

In 1967, the federal government began requiring states to enact ***motorcycle helmet use laws*** to qualify for certain federal safety program and highway construction funds. Forty states enacted universal helmet use laws that went into effect by the end of 1969. By 1975, all but three states mandated helmets for all motorcyclists.

As the US Department of Transportation moved in 1976 to assess financial penalties on states without helmet laws, Congress responded to state pressure by revoking federal authority to assess penalties for noncompliance. Between 1976 and 1978, 20 states weakened their helmet use laws to apply only to young riders, usually younger than 18. Eight states repealed helmet use requirements for all motorcyclists.

In the 1980s and early 1990s, several states reinstated helmet laws applying to all riders. In the 1991 Intermodal Surface Transportation Efficiency Act, Congress created incentives for states to enact helmet use and safety belt use laws. States with both laws were eligible for special safety grants, but states that had not enacted them by October 1993 had up to 3 percent of their federal highway allotment redirected to highway safety programs.

Four years after establishing the incentives, Congress again reversed itself. In the fall of 1995, Congress lifted federal sanctions against states without helmet use laws, paving the way for state legislatures to repeal helmet laws. In 1997, helmet laws in Texas and Arkansas were weakened to apply only to younger riders. Kentucky weakened its law in 1998, Louisiana weakened its law in 1999 only to reinstate universal coverage in 2004, Florida weakened its law in 2000, and Pennsylvania weakened its law in 2003. Now 20 states and the District of Columbia have helmet laws covering all riders, and 27 states have laws covering some riders, usually people younger than 18. Illinois, Iowa, and New Hampshire do not have helmet laws.

4. How do helmet laws affect helmet use?

Based on studies of the effects of states' enactment, repeal, or weakening of universal helmet laws, use approached 100 percent when all motorcyclists were required to wear helmets, compared with about 50 percent when there was no helmet law or a law applying only to some riders.[8,9] According to NHTSA, in 2007, 97 percent of motorcyclists observed in states with universal helmet laws were wearing helmets, compared with 90 percent in 2002. In states without such laws, helmet use was 53 percent in 2002 and 50 percent in 2007. Based on helmets judged to be compliant with federal safety regulations, use was 73 percent in 2002 and 74 percent in 2007 among motorcyclists in states with universal helmet laws and declined from 46 to 42 percent among motorcyclists in states without such laws.[10,11]

5. How do helmet laws affect motorcyclist death and injuries?

In states that either reinstated or enacted universal motorcycle helmet laws, helmet use increased dramatically, and motorcyclist deaths and injuries decreased. In states that repealed or weakened their universal helmet laws, helmet use declined sharply, and motorcyclist deaths and injuries rose.

- California's helmet use law covering all riders took effect on January 1, 1992. Helmet use jumped to 99 percent from about 50 percent before the law.[12] During the same period, the number of motorcyclist fatalities in California decreased 37 percent to 327 in 1992 from 523 in 1991.[13]
- Nebraska reinstated a helmet law on January 1, 1989 after repealing an earlier law in 1977. The state then saw a 22 percent reduction in motorcyclist serious head injuries.[14]

- From 1968 to 1977, Texas had a universal helmet use law estimated to have saved 650 lives, but the law was amended in 1977 to apply only to riders younger than 18. The weakened law coincided with a 35 percent increase in motorcyclist fatalities. Texas reinstated its helmet law for all motorcyclists in September 1989. The month before the law took effect, the helmet use rate was 41 percent. The rate jumped to 90 percent during the first month of the law and had risen to 98 percent by June 1990.[15] Serious injury crashes per registered motorcycle decreased 11 percent.[16] But in September 1997, Texas again weakened its helmet law, requiring helmets only for riders younger than 21. Helmet use in Texas dropped to 66 percent by May 1998, and operator fatalities increased 31 percent in the first full year following the repeal.[17]
- Kentucky repealed its universal helmet law in 1998, followed by Louisiana in 1999. These actions resulted in lower helmet use, and quickly increased motorcyclist deaths in these states by 50 percent and 100 percent, respectively.[18]
- In 2000, Florida's universal helmet law was weakened to exempt riders 21 and older who have at least $10,000 of medical insurance coverage. An Institute study found that the motorcyclist death rate in Florida increased by about 25 percent after the state weakened its helmet law. The death rate rose from 31 fatalities per 1,000 crash involvements before the law change (1998-99) to 39 fatalities per 1,000 crash involvements after (2001-2002). An estimated 117 deaths could have been prevented during 2001-02 if the law had not been changed.[19] An evaluation of the Florida law change by NHTSA found a similar effect; motorcyclist deaths per 10,000 motorcycle registrations increased 21 percent during the two years after the law was changed compared with the two years before.[9]

6. What other benefits result from helmet use laws?

Helmet use laws may lead to a decline in motorcycle thefts, possibly because some potential thieves do not have helmets, and not wearing a helmet would attract police notice. After Texas enacted its universal helmet law, motorcycle thefts in 19 Texas cities decreased 44 percent between 1988 and 1990, according to the Texas Department of Public Safety. Motorcycle thefts dropped dramatically in three European countries after the introduction of laws that fined motorcyclists for failure to wear helmets. In London, motorcycle thefts fell 24 percent after Great Britain enacted a helmet law in 1973. The Netherlands saw a 36 percent drop in thefts in 1975 when its law was enacted. And in former West Germany, where on-the-spot fines were introduced in 1980, motorcycle thefts plummeted 60 percent.[20]

7. How do helmet use laws impact health care costs?

Unhelmeted riders have higher health care costs as a result of their crash injuries, and many lack health insurance. In November 2002, NHTSA reported that 25 studies of the costs of injuries from motorcycle crashes "consistently found that helmet use reduced the fatality rate, probability and severity of head injuries, cost of medical treatment, length of hospital stay, necessity for special medical treatments, and probability of long-term disability. A number of studies examined the question of who pays for medical costs. Only slightly more than half of motorcycle crash victims have private health insurance coverage. For patients without private insurance, a majority of medical costs are paid by the government."[21] Among the specific findings of several of the studies:

- A 1996 NHTSA study showed average inpatient hospital charges for unhelmeted motorcyclists in crashes were 8 percent higher than for helmeted riders ($15,578 compared with $14,377).[22]
- After California introduced a helmet use law in 1992, studies showed a decline in health care costs associated with head-injured motorcyclists. The rate of motorcyclists hospitalized for head injuries decreased by 48 percent in 1993 compared with 1991, and total costs for patients with head injuries decreased by $20.5 million during this period.[23]
- A study of the effects of Nebraska's reinstated helmet use law on hospital costs found the total acute medical charges for injured motorcyclists declined 38 percent.[14]

A NHTSA evaluation of the weakening of Florida's universal helmet law in 2000 to exclude riders 21 and older who have at least $10,000 of medical insurance coverage found a huge increase in hospital admissions of cyclists with injuries to the head, brain, and skull. Such injuries went up 82 percent during the 30 months immediately following the law change. The average inflation-adjusted cost of treating these injuries went up from about $34,500 before the helmet law was weakened to nearly $40,000 after. Less than one-quarter of the injured motorcyclists would have been covered by the $10,000 medical insurance requirement for riders who chose not to use helmets.[9]

Studies conducted in Nebraska, Washington, California, and Massachusetts indicate how injured motorcyclists burden taxpayers. Forty-one percent of motorcyclists injured in Nebraska from January 1988 to January 1990 lacked health insurance or received Medicaid or Medicare.[14] In Seattle, 63 percent of trauma care for injured motorcyclists in 1985 was paid by public funds.[24] In Sacramento, public funds paid 82 percent of the costs to treat orthopedic injuries sustained by motorcyclists during 1980-83.[25] Forty-six percent of motorcyclists treated at Massachusetts General Hospital during 1982-83 were uninsured.[26]

8. Are helmet use laws that apply only to young motorcyclists effective?

Weak helmet use laws that apply only to young riders are virtually impossible to enforce, and there is no evidence that these laws reduce deaths and injuries. In 2006, helmets were worn by fewer than 40 percent of fatally injured minors in states with weak helmet laws, even though the laws required them. Helmet use for all riders remains low in states where restricted laws are in effect, and death rates are 20 to 40 percent higher when states have weak laws or no laws, compared with rates when helmet laws apply to all riders.[27]

In 2000, Florida weakened its helmet law to exclude riders 21 and older with at least $10,000 of medical insurance coverage. Even though riders younger than 21 still were required to wear helmets under the law change, an Institute study found that riders younger than 21 were 97 percent more likely to die in crashes after the law change than before. Helmet use among fatally injured motorcyclists younger than 21 declined from 72 percent before the law change to 55 percent after.[19]

9. How have courts resolved challenges to helmet use laws?

Courts have repeatedly upheld motorcycle helmet use laws under the US Constitution. In 1972, a federal court in Massachusetts told a motorcyclist who objected to the law: "The public has an interest in minimizing the resources directly involved. From the moment of injury, society picks the person up off the highway; delivers him to a municipal hospital and municipal doctors; provides him with unemployment compensation if, after recovery, he cannot replace his lost job; and, if the injury causes permanent disability, may assume responsibility for his and his family's subsistence. We do not understand a state of mind that permits plaintiff to think that only he himself is concerned." This decision was affirmed by the US Supreme Court.

10. Are motorcycle education/training courses a substitute for helmet laws?

Although rider education courses can teach novice motorcyclists basic operating skills and help experienced motorcyclists refresh their skills, they don't appear to reduce the risk of crashes. A 1996 review of the effects of motorcycle rider training in the United States, Canada, and Europe on crash risk concluded that there is "no compelling evidence that rider training is associated with reductions in collisions."[28] The New York Department of Motor Vehicles conducted a large-scale analysis of motorcycle rider training between 1981 and 1985. In the NHTSA-sponsored study, motorcycle operator's license applicants were randomly assigned to one of four groups.

One group took the state's existing knowledge and driving test and another took a Motorcycle Operator Skill Test developed by NHTSA. The two remaining groups were assigned to rider training courses, plus the operator skills test. Riders who took the state's standard knowledge and driving test had fewer motorcycle crashes in the subsequent two years than riders in the three experimental training program groups.[29]

11. Do other countries have motorcycle helmet use laws?

Laws requiring motorcyclists to wear helmets are in effect in most countries outside the United States. Among them are Andorra, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, India, Indonesia, Ireland, Italy, Japan, Latvia, Liechtenstein, Luxembourg, Malaysia, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, San Marino, Singapore, Slovakia, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom, Venezuela, and Yugoslavia. The first motorcycle helmet use law in the world took effect on January 1, 1961, in Victoria, Australia.

12. Do people support mandatory helmet use?

According to a 2000 motor vehicle occupant survey conducted by NHTSA, 81 percent reported that they favored mandatory helmet use laws for motorcyclists. Support is more prevalent among females (88 percent) than males (72 percent) and among non-motorcyclists (83 percent) than those who drove motorcycles (51 percent). Support was higher in states requiring all riders to wear helmets (84 percent) compared with states with lesser requirements (75 percent) or no requirements (79 percent).[30]

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