



## A Bicycling Mystery: Head Injuries Piling Up

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by Julian E Barnes

[Detailed statistics](#)

Millions of parents take it as an article of faith that putting a bicycle helmet on their children, or themselves, will help keep them out of harm's way.

But new data on bicycle accidents raises questions about that. The number of head injuries has increased 10 percent since 1991, even as bicycle helmet use has risen sharply, according to figures compiled by the Consumer Product Safety Commission. But given that ridership has declined over the same period, the rate of head injuries per active cyclist has increased 51 percent [\[1\]](#) just as bicycle helmets have become widespread.

What is going on here? No one is very sure, but safety experts stress that while helmets do not prevent accidents from happening, they are extremely effective at reducing the severity of head injuries when they do occur. Almost no one suggests that riders should stop wearing helmets, which researchers have found can reduce the severity of brain injuries by as much as 88 percent.

Still, with fewer people riding bicycles, experts are mystified as to why injuries are on the rise. "It's puzzling to me that we can't find the benefit of bike helmets here," said Ronald L. Medford, the assistant executive director of the safety commission's hazard identification office.

Some cycling advocates contend that rising numbers of aggressive drivers are at fault, while others suggest that many riders wear helmets improperly and do not know the rules of the road. Some transportation engineers say there are not enough safe places to ride.

Many specialists in risk analysis argue that something else is in play. They believe that the increased use of bike helmets may have had an unintended consequence: riders may feel an inflated sense of security and take more risks.

In August 1999, Philip Dunham, then 15, was riding his mountain bike in the Great Smoky Mountains National Park in North Carolina and went over a jump on a trail. As he did, his back tire kicked up, the bike flipped over and he landed on his head. The helmet he was wearing did not protect his neck; he was paralyzed from the neck down.

Two years later, Philip has regained enough movement and strength in his arms to use a manual wheelchair. He has also gained some perspective. With the helmet he felt protected enough to ride off-road on a challenging trail, in hindsight perhaps too safe.

"It didn't cross my mind that this could happen," said Philip, now 17. "I definitely felt safe. I wouldn't do something like that without a helmet."

In the last nine years, 19 state legislatures have passed mandatory helmet laws. Today, such statutes cover 49 percent of American children under 15.

And even some professionals have embraced helmets. While most of the riders in the Tour de France have worn helmets infrequently, Lance Armstrong, the American cyclist favored to win the race today, wore a helmet through most of the race.

Altogether, about half of all riders use bike helmets today, compared with fewer than 18 percent a decade ago, the first year the safety commission examined helmet use.



During the same period, overall bicycle use has declined about 21 percent as participation in in-line skating, skateboarding and other sports has increased, according to the National Sporting Goods Association, which conducts an annual survey of participation in different sports. Off-road mountain biking is often considered more risky than ordinary bicycling, but it is unlikely to account for the recent increase in bicyclists' head injuries. Participation in off-road mountain biking has declined 18 percent since 1998, the association said.

Even so, bicyclists suffered 73,750 head injuries last year, compared with 66,820 in 1991, according to the safety commission's national injury surveillance system, with the sharpest increase coming in the last three years. Children's head injuries declined until the mid- 1990's, but they have risen sharply since then and now stand near their 1991 levels even with fewer children riding bikes.

The safety commission is investigating why head injuries have been increasing. Officials hope that by examining emergency room reports more closely and interviewing crash victims, they can find out if more of the injuries are relatively minor, and how many people suffered head injuries while wearing helmets. Some bicycling advocates have doubted the statistics on participation in cycling, and the commission plans to re-examine those as well.

Dr. Richard A. Schieber, a childhood injury prevention specialist at the Centers for Disease Control and Prevention and the leader of a national bicycle safety initiative, said public health officials were realizing that in addition to promoting helmet use, safety officials must teach good riding skills, promote good driving practices and create safer places for people to ride.

"We have moved the conversation from bicycle helmet use to bicycle safety," Dr. Schieber said. "Thank God that the public health world is understanding there is more to bicycle safety than helmets."

Promoting bicycle helmets without teaching riders about traffic laws or safe riding practices can encourage a false sense of security, according to several risk experts. Helmets may create a sort of daredevil effect, making cyclists feel so safe that they ride faster and take more chances, said Mayer Hillman, a senior fellow emeritus at the Policy Studies Institute in London.

"You would be well advised to wear a helmet provided you could persuade yourself it is of little use," Dr. Hillman said.

One parallel, risk experts said, is anti-lock brakes. When they were introduced in the 1980's, they were supposed to reduce accidents, but government and industry studies in the mid-1990's showed that as drivers realized their brakes were more effective they started driving faster, and some accident rates rose.

Insurance companies have long been familiar with the phenomenon, which they call moral hazard. Once someone is covered by an insurance policy there is a natural tendency for that person to take more risks. Companies with workers' compensation insurance, for instance, have little incentive to make their workplaces safer. To counter such moral hazard, insurers may give discounts to companies that reduce hazardous conditions in their factories, said Robert Hartwig, chief economist for the Insurance Information Institute.

"People tend to engage in risky behavior when they are protected," he said. "It's a ubiquitous human trait."

Even cyclists who discount the daredevil effect admit that they may ride faster on more dangerous streets when they are wearing their helmets.

On May 5, Noah Budnick, a 24- year-old New York resident, was wearing a helmet and cycling on Avenue B in Manhattan when he had to pull out from the side of the street to avoid a double-parked car and a taxicab idling behind it. As he moved to the left, the cab pulled out, striking Mr. Budnick. He broke his fall with his hands and did not hit his head on the ground, but the accident left him with a deep cut on his leg and a badly strained knee.

Although the cab was at fault for the accident, Mr. Budnick said, if he had been riding more slowly he might not have had the accident.



"I probably would have ridden more cautiously and less aggressively without the helmet," he said. "I don't know if I would ride in Manhattan at the speed I was going."

Still, many cycling advocates contend that it is not bicyclists but drivers who are more reckless. Distractions like cell phones have made drivers less attentive, they say, and congestion is making roads more dangerous for cyclists. They also believe that some drivers of sport utility vehicles and other trucks simply drive too close to cyclists.

Brendan Batson, a 16-year-old high school sophomore in central Maine, had been knocked off the road twice by drivers, so as he entered the home stretch of a 60-mile ride on May 26, he was wearing his helmet. But as he passed through Norridgewock, Me., riding along the shoulder of a rural highway, a pickup truck struck him from behind. It hit Brendan with enough force to rip the helmet from his head, the straps gouging his face before tearing off. Brendan was dragged along the road, past a friend he was cycling with, then thrown to the side. He was killed instantly.

It is difficult to show statistically that drivers have become more reckless in the last decade. The percentage of fatal bicycle accidents that involved cars has declined, falling from 87 percent in 1991 to 83 percent in 1998, according to the C.D.C.

Thom Parks, a vice president in charge of safety for the helmet maker Bell Sports, said safety standards could be upgraded and helmets could be designed to meet them. But that would make helmets heavier, bulkier and less comfortable. "There are limits to what a consumer would accept," Mr. Parks said, adding that if helmets became bigger, fewer people might wear them.

Dr. James P. Kelly, a neurologist and a concussion expert at Northwestern University Medical School, said that even as helmets were currently designed, patients who were wearing them when they were injured were much better off than those who were not.

"Bicycle helmet technology is the best we have for protecting the brain," Dr. Kelly said. "The helmets serve the function of an air bag."

But the most effective way to reduce severe head injuries may be to decrease the number of accidents in the first place.

"Over the past several decades, society has come to equate safety with helmets," said Charles Komanoff, the co-founder of Right of Way, an organization that promotes the rights of cyclists and pedestrians. "But wearing a helmet does not prevent crashes."

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[1] Note: The increase in risk per cyclist is 40 percent. The higher figure cited in the article represents a calculation error.

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The Bicycle Helmet Research Foundation (BHRF), an incorporated body with an international membership, exists to undertake, encourage and spread the scientific study of the use of bicycle helmets. Also to consider the effect of the promotion and use of helmets on the perception of cycling in terms of risk and the achievement of wider public health and societal goals.

BHRF strives to provide a resource of best-available factual information to assist the understanding of a complex subject, and one where some of the reasoning may conflict with received opinion. In particular BHRF seeks to provide access to a wider range of information than is commonly made available by those that take a strong helmet promotion stance. It is hoped that this will assist informed judgements about the pros and cons of cycle helmets.

For more information, please visit [www.cyclehelmets.org](http://www.cyclehelmets.org).

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