

TheWashCycle

NHTSA admits 85% helmet effectiveness claim violates Data Quality Act

The federal government is withdrawing its long-standing claim that bicycle helmets prevent 85% of head injuries, in response to a petition filed by WABA under the federal Data Quality Act.

In 1989, a study in Seattle estimated that helmets prevent 85% of head injuries. Efforts to replicate those results during the 1990s confirmed that helmets reduce injuries, but not nearly as much as the Seattle study suggested. Yet public health advocates, government web sites, and the news media have continued to repeat the 85% factoid to the point that it has become a mantra.

Bad information can cause problems, even when it is promoted with the best intentions. If people think that helmets stop almost all head injuries, consumers will not demand better helmets, and legislators may think it makes sense to require everyone to wear one. So we asked two federal agencies to correct the misinformation, and they recently agreed to do so.

How Effective are Bicycle Helmets?

Helmets absorb the shock from a crash. If your head strikes the ground or a vehicle, your brain could be seriously shaken by the sudden deceleration. Helmets should decrease that shaking. The deceleration will be more gradual as your head depresses the foam in the helmet, rather than striking a hard surface. Helmets can also prevent head fractures by spreading the force of the impact, like the difference between being hit on the head by a rock or a beach ball with the same weight.

That's the theory. But how often do helmets actually prevent head injuries? It's hard to tell. Experiments on people are unethical. So researchers instead collect hospital data on people involved in bicycle crashes.

In 1989, a team of researchers from Seattle collected data about cyclists who went to area hospitals after a crash. The team was led by Robert S. Thompson, MD, who directed preventive care for the Group Health Cooperative of Puget Sound. Only 7% of the cyclists with head injuries wore helmets, but 24% of those without head injuries did wear helmets. Based on a statistical analysis they estimated that helmets had reduced the risk of a head injury by 85%. The study was published in the New England Journal of Medicine.

Doctor Thompson's study was a "case-control study." This type of study originally showed the link between smoking and cancer. "Case-control" is a misnomer because there is no true control group. Epidemiologists often say that case-control studies are a good way to show whether something has a good (or bad) effect on health, but not to accurately quantify that effect.

So the fundamental contribution of the Thompson study was to demonstrate that helmets do reduce the risk of head injuries. But public health advocates recognized that the 85% estimate was a good factoid for risk communication: it means that failing to wear a helmet makes you more than 6 times as likely to experience a head injury. Government web sites and newspapers repeated this factoid, to the point where it has become ubiquitous in discussions about bicycle helmets.

Meanwhile, dozens of researchers sought to replicate the Thompson findings in their own communities. They also found that helmets reduce the risk of head injuries. But they found less of a beneficial effects than Dr. Thompson found in Seattle. Some of the studies also found that helmets *increase* the risk of neck injuries.

In 2001, a review of all published studies found that helmets reduce the risk of head injuries by 45–71%, and increase the risk of neck injuries by 0–86%. That "meta-analysis" was updated in 2011: Helmets reduce head injuries by 25–55%, but because of the increased risk in neck injuries, the combined reduction in head and neck injuries is only 2–26%.

Yet government web sites, public health advocates, and the news media continue to repeat the 85% estimate.

Misinformation encourages helmet laws, discourages better helmets

Bicycle safety is one of WABA's central missions, and we have strongly supported bicycle helmets for the last few decades. We require helmets on all rides that we organize. One of our sponsored projects is the Bicycle Helmet Safety Institute (BHSI), which reviews bicycle helmets and encourages improvements in their design. (BHSI raises its own funds, and is not supported by WABA membership dues.)

In the 1990s, we supported proposals to require children under the age of 16 to wear bicycle helmets, which eventually became law.

Yet we draw the line when it comes to laws that require adults to wear helmets. Several researchers have demonstrated that such laws do little to promote safety; but they discourage bike share and other uses of bicycles for short trips. So this year we fought hard against a bill in the Maryland General Assembly that would have required all adults to wear bicycle helmets on any trip, no matter how short. Fortunately, objections from cyclists persuaded the sponsor of the bill not to push it forward—at least this year.

Thanks to occasional articles in *the Washcycle*, local cycling advocates have known for years that public health advocates overstate the effectiveness of helmets. But with all the ways by which drivers and cyclists misunderstand each other while navigating the roads, helmet effectiveness has not ranked high in our list of misconceptions to fix.

That changed this year. The Maryland Department of Transportation supported the mandatory helmet bill, based on the web site of the National Highway Traffic Safety Administration (NHTSA), which says that helmets prevent 85% of head injuries. An article in the Washington Post questioned why cyclists opposed the mandatory helmet bill, and stated that helmets prevent 80% of head injuries, according to the federal Centers for Disease Control (CDC). The mandatory helmet law was promoted by people who were relying on incorrect information on federal agency web sites.

As we prepared our testimony on the bill, we realized that most helmet research has been focused on making helmets *cool*, rather than more protective. Better ventilation and more fashionable designs might encourage more people to buy and wear helmets, but it does not make someone safer. Could that be because everyone is assuming that helmets are already 85% effective?

If people thought that helmets are less than 50% effective, might there be a greater focus on what really matters—a better helmet?

WABA pushed agencies to correct the misinformation

Last February, I sent emails to both CDC and NHTSA, pointing out that the 85% estimate is incorrect, and providing citations to newer research. A few weeks later, CDC thanked me for pointing out the new research. I spoke with an epidemiologist over the phone, who told me that CDC would remove the error. She confirmed the conversation in a letter.

NHTSA staff told me that they were too busy to discuss the matter. That led us to conclude that a more formal request would be necessary: The Data Quality Act requires information on federal web sites to be accurate and supported by appropriate research. So I asked NHTSA to provide the underlying documentation. NHTSA confirmed that the 85% figure was based on the Thompson study. [\[1\]](#)

On March 15, we sent our formal "request for correction" asking NHTSA to either remove the statement that helmets are 85% effective, or revise the quantitative estimate so that it accurately reflects the published literature. [\[2\]](#)

Sixty days later, NHTSA agreed to remove the 85% estimate from its web site. [\[3\]](#) We expect other agencies to follow the lead of NHTSA and CDC, though some may need some encouragement.

(Jim Titus is on WABA's Board of Directors, a resident of Prince George's County, and an occasional contributor

to The Washcycle. This article was reprinted from [WABA's web site](#); in this article "we" refers to WABA.)


[1]We also asked NHTSA to support its claim that helmets are “the single most effective to prevent head injury resulting from a bicycle crash”, but it was unable to do so.

[2]Our petition also asked NHTSA to “delete all statements ... asserting that wearing a helmet is the single most effective way (or device) to prevent a head injury, unless this claim has been substantiated by a peer-reviewed study showing that helmets are more effective than other ways or devices for preventing head injuries.”

[3]NHTSA did not, however, agree to our request that the agency either substantiate or remove the claim that “wearing a helmet is the single most effective way (or device) to prevent a head injury.” NHTSA said that WABA had not met its burden of proof. Evidently, WABA and NHTSA disagree on whether NHTSA is required to provide at least one study showing its statement to be correct, before WABA would be required to show the statement to be wrong. We are thinking about whether to appeal.

June 04, 2013 in [Advocacy](#), [Helmet](#), [Law & Courts](#), [Maryland Legislature](#) | [Permalink](#)

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Thanks for posting this very interesting and useful information.

Posted by: Kathy | [June 04, 2013 at 11:14 AM](#)

Jim & Washycle (David) an incredible, important, and useful victory in this action. Thank you.

Posted by: ken | [June 04, 2013 at 01:36 PM](#)

Nice work Jim Titus and WABA!

Posted by: freewheel | [June 05, 2013 at 10:20 AM](#)

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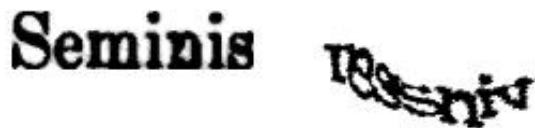
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