

CYCLE HELMETS: The dilemma

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Cycle helmets have been around since 1975. They were a 'spin-off' product from the development of expanded polystyrene foams for motorcycle helmets intended as a replacement for the 'hair-net' style of head gear then used in cycle sport.

At first they were promoted mainly by their manufacturers with competing claims about their effectiveness.

Then, during the 1980s, reports began to be published suggesting that if cyclists wore helmets they would be less likely to suffer head injury. From that time, the promotion of helmet wearing by cyclists has been a priority of road safety and health professionals in many countries.

Helmet research

Hundreds of papers have been published supporting helmet use.

but the number involving original research that has shown significant benefit is quite small, around 20 papers.

Indeed, the most frequently cited statistic, that helmets reduce head injuries by 85% and brain injuries by 88%, comes from only one paper, from Thompson, Rivara & Thompson in 1989. Even those same researchers couldn't reproduce these figures 7 years later, but they remain uncontested fact to many people.

Nonetheless the injury savings predicted by pro-helmet research are impressive, so it's not surprising that the promotion of helmets has attracted so much interest.

Dorsch, 1987	-90% fatalities
Thompson, Rivara & Thompson, 1989	-85% head injuries, -88% brain injuries
Wasserman, 1990	-29% concussions -82% skull fractures
McDermott, 1993	-39% head injuries (but none for adults)
Thompson, Rivara & Thompson, 1996	-69% head injuries -65% brain injuries

Cycling organisations

At first cycling organisations around the world responded in one of two ways.

Some organisations were keen to encourage the benefits of helmets and even to support helmet laws. As helmet wearing became more common so their support seemed justified as many cyclists began to relate how a helmet had 'saved their life'.

Other organisations were more cautious, but their response was based largely on libertarian issues, that cyclists should be able to decide for themselves whether or not to wear a helmet.

Laws, cycle use and health

In the early 1990s the first helmet laws were introduced and the first substantive doubts were voiced.

Because people started to notice that where these laws had been introduced, a lot of people had given up cycling. Indeed, in some cases the large proportional increases in helmet wearing were much more a result of fewer people cycling than of more people wearing helmets.

Around the same time the benefits of cycling for health were beginning to be recognised more widely and some people were concerned that helmet laws could erode those benefits.

Over the years, research has steadily revealed the considerable scale of the damage. In every place where laws have been introduced and enforced, cycle use has declined greatly.

Australian Capital Territory	33 - 50%
New South Wales	36 - 44%
Northern Territory	22 - 50%
Queensland	22 - 30%
South Australia	38%
Victoria	36 - 46%
Western Australia	30 - 50%
British Columbia	28 - 30%
Nova Scotia	40 - 60%
New Zealand	22%

But it's not just helmet laws that have proved a problem. It has also been shown that helmet promotion without laws can deter people from cycling, although the scale of the decrease is less than with a law.

Independent research

Growing concern among cyclists about the effect of helmet laws has led to a great deal of co-operation between cyclists across the world, facilitated greatly by e-mail and the Internet. It has also led to a great deal of independent research into the subject unconstrained by institutional bias.

Thus sound evidence has emerged that not only do helmet laws and helmet promotion discourage cycling, but in the real world they also have not led to noticeable reductions in the risk of head injury.

What is more, that risk of serious head injury that everyone has been made to fear - itself a significant deterrent to cycle use - is actually very small; significantly less than the risk of head injury as a pedestrian, for example.

This broader research has been reflected in an increasing number of papers published in the peer-reviewed journals challenging the view that cycle helmets are necessary and effective. Last month the British Medical Journal carried an authoritative review of enforced helmet laws which concludes that as well as significantly deterring cycle use, enforced laws have been counter-effective by *increasing*, not reducing, the risk of head injury. Peer responses on the BMJ website have overwhelmingly supported and supplemented this analysis.

In the past 18 months, at least five other research papers have found no benefit from helmet wearing in the groups targeted. Indeed, the UK Government has been forced to admit that it knows of no case where increased helmet wearing has led to a lower risk of head injury.

Contradictory evidence

So why the conflict between these findings and the pro-helmet research so often cited?

First, although many papers have found benefit from helmet use, the benefit they have found has not been the same. Thus some have found benefit for all cyclists, some have found no benefit at all for certain groups. Some find helmets effective in crashes with motor vehicles, others do not. Some find all helmets beneficial, some find benefit only from hard-shell helmets which nowadays are difficult to find. Some find helmets reduce facial injuries, others not, one says they are increased. Some note that bareheaded cyclists not only have more head injuries, but also

more non-head injuries, suggesting differences in riding style or environment.

Only Thompson, Rivara & Thompson are unequivocal that helmets work for everyone, everywhere, at any time.

Such inconsistencies are symptomatic of an underlying methodological problem. And, indeed, a closer look at pro-helmet papers has revealed serious biases through comparing quite different groups of cyclists. For example, changing the control group in the Thompson study to one more representative of cyclists in Seattle at the time – using additional data collected by the same researchers but published separately – changes the study's conclusion from a benefit of 85% fewer head injuries to no benefit at all. Very few people are aware of these contradictions and just how sensitive some papers are to quite small changes in data.

Analysing crashes involving cyclists is much more complex than is often assumed and it is very difficult to isolate the effect of helmets in the case control studies, which alone are the basis of all pro-helmet research.

And what about all those cyclists who claim that a helmet has saved their life? Well, there is strong evidence across many countries that helmets have not reduced deaths or the most serious types of injury across cyclists as a whole, so most of these perceptions of helmet benefit must be mistaken. On the other hand, there is reason to believe that helmeted cyclists hit their helmeted heads more often, perhaps simply because a helmeted head is larger. There is also evidence that people are more likely to ride in riskier circumstances if they believe themselves to be better protected. So the claims of helmets saving lives may be more indicative of problems with helmet wearing rather than benefits.

Helmet concerns today

Over the past 12 - 15 years, concerns about cycle helmets have moved on from being centred mainly around libertarian issues, although of course these arguments remain valid while more vulnerable groups, such as pedestrians, are not targeted to wear helmets.

- ◆ We now know that helmet promotion and laws greatly discourage cycle use
- ◆ and that cycling is a very safe activity not unduly susceptible to head injury.

- ◆ And we also now know that cycle helmets are not very good in preventing injury.

These things are known to those of us who have spent time investigating cycle helmets. They are very little known to most people, most doctors, most politicians or most cyclists.

As a result there remains formidable pressure for cyclists to wear helmets or to be forced to do so. At least 6 European countries already have helmet laws and in at least as many other countries they are on the agenda.

Meanwhile the public continues to get the message that cycling is an exceptionally dangerous activity that is best avoided.

Countering the threats

If we're going to be effective in countering these threats, cyclists across Europe need to work together.

ECF needs to be proactive against threats from the EU, WHO, European Transport Safety Council and other pan-European bodies

The ECF has established a Helmets Working Group but needs the support of as many national groups as possible to be effective. An e-mail group has been established for communication.

Internationally the Bicycle Helmet Research Foundation was established in 2003 by doctors, academics, various professionals and cyclists to raise the standard of debate about helmets and to undertake its own analyses. BHRF has a very active e-group linking cyclists across the world, and aims to provide a best available resource of data about helmets and helmet research through its website www.cyclehelmets.org. People associated with BHRF have been successful in getting analyses of helmet evidence published in the professional journals as well as responding to ill-informed claims. BHRF would welcome additions to its patrons and Editorial Board from more countries.

In your country

When you get home please:

- ◆ Keep on top of developments on helmets in your own country. If helmet laws are not yet a threat to you, they soon will be.
- ◆ Get and maintain good data about cycle use, helmet wearing and casualty trends - being better informed than your adversaries is paramount.
- ◆ Don't trust statements made about helmet effectiveness but look critically at the supporting data. Get help from ECF or BHRF if necessary. Remember that while doctors may be expert in treating people after crashes, very few of them are expert in cycling, crash analysis or avoidance, mechanics, plastics technology or statistical analysis - all of which are relevant to an objective assessment of the effectiveness of helmets.
- ◆ Keep ECF informed of the situation in your country and of all papers published in your language on helmets.
- ◆ Whatever you do, please don't be complacent. Helmet laws pose the biggest threat there has ever been to cycling as an everyday activity in Europe. To combat that threat needs the help of each and every one of us.