Child Cycling Head Injuries

Claims, Reality, Perspective

Based on data presented at:
http://www.chapmancentral.co.uk/hospital-admissions.html

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The context for this presentation is the presentation in Parliament of a Private Member's Bill seeking to make it an offence to allow any child to ride a pedal cycle without a helmet.

Is this draconian action justified by the figures?

Recent documents from CTC and others have denounced the helmet bill currently in Parliament as being disproportionate. This presentation is based on my analysis of data provided to CTC by the Department of Health, covering child hospital admissions for the years 1995-2002 and seeks to outline some of the facts which underlie that position.

Aims

- Review the real risks of cycling
- Discuss the relative risks of cycling and other activities
- Assess whether these risks justify compulsion
- Discuss whether these risks match the claims of the pro-helmet lobby

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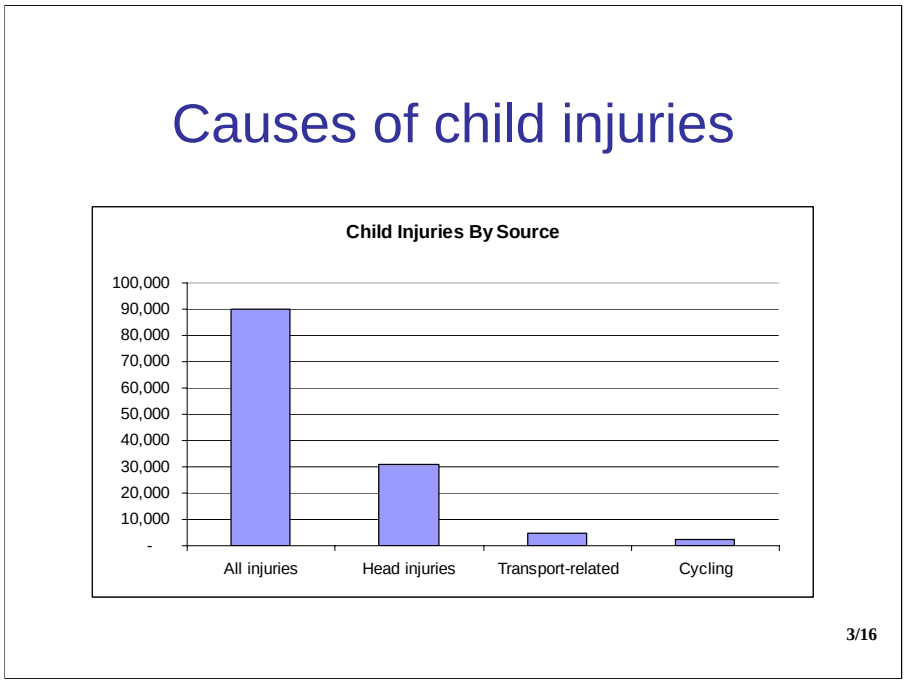
My main aims this afternoon are:

•Review of the real risks of cycling
•Discuss of the relative risks of cycling and other activities
•Assess whether these risks justify compulsion
•Discuss whether these risks match the claims of the pro-helmet lobby



Perspective is often a crucial missing ingredient when helmets are discussed.

For example, how does child cycling figure nationally as a cause of injury? This chart shows the magnitude of child cycling head injuries compared with transport-related injuries as a whole (more on that later), all head injuries, and all injuries combined.

Immediately we can see that the scale of the problem, especially given that half of the nation's 11.8 million children have bikes, is actually relatively small.

But that doesn't really answer the questions which certainly arose in my mind when I started looking into this, which were:

- Is cycling uniquely productive of head injuries
- How do cyclists fare compared with other modes of transport
- In as much as there is risk, where is it to be found?

This last is one of the easier questions to answer, as we'll see.

Traffic vs. non-traffic

- Traffic
  - few crashes
  - serious outcomes
  - helmets not effective
- Non-traffic
  - many crashes
  - mainly trivial outcomes
  - helmets not justified
- 90% of cycling is off-road, but over half of child cyclist head injuries are road traffic

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Part of the problem for me is that there are really two separate activities under discussion: road and leisure cycling. This is not helped by the fact that helmeteers often deliberately blur the boundaries, for example using mainly road traffic fatality data to imply danger in offroad cycling.

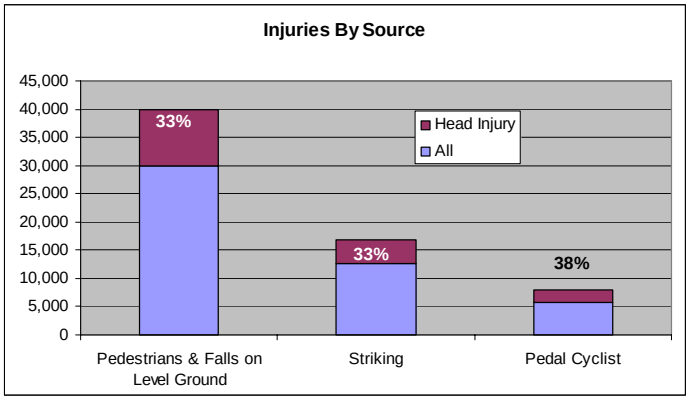
We understand that around 90% of child cycling is off-road (cycle tracks, Sustrans, recreation grounds and so on). We know from the figures that in England in 2002-2003 2,183 children were admitted to hospital with a cycling related head injury, and of those 1,124 were the result of road traffic crashes. And we know that in an average year typically one or fewer children will die of head injuries sustained when riding off road.

So it is obvious that road traffic is disproportionately dangerous to child cyclists.

Actually we've always known it is disproportionately dangerous to all cyclists, and indeed anybody not in a motor vehicle. Fortunately we also know that, according to the BMA, the benefits substantially outweigh the risks, otherwise we would all pack up and go home.

Using new data provided by the Department of Health I'll now look at relative risk in more detail

Cycling v. Walking (1)



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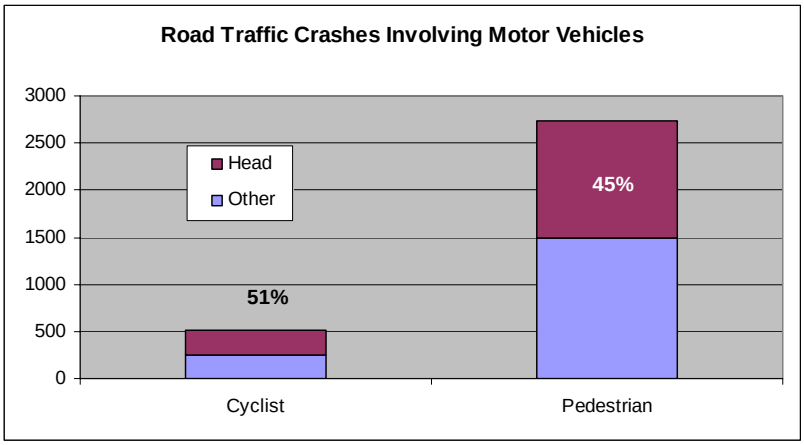
Walking injuries may be recorded as pedestrian injury, if a vehicle is involved, or as falls on level ground otherwise. All cycle crashes are recorded as cycle crashes. So there are two ways of working out the relative risk of walking versus cycling: one is to compare cycling with walking plus falls on level ground, another is to consider solely crashes involving motor vehicles.

First let's consider the larger data set: cycling versus walking, trips and falls. This chart shows that, firstly, cycling results in substantially fewer hospitalisations than walking, and secondly, the proportion of injuries which are head injuries, is not substantially higher. It is in fact about average taking all injury sources into account.

I've also included striking, by the way, which is just hitting yourself on something. This is partly a bit of fun but also to make a serious point. Many more children are admitted to hospital with head injuries as a result of simply banging their head on something, than from cycling.

Certainly there is nothing here which says to me that there is a pressing problem with cycling which does not also affect walking. But then, we do an awful lot of walking; although the figures compare on one level, there is no credible measure available for the level of exposure. So let's look at some figures which should be directly comparable, those for crashes involving motor vehicles.

Cycling v. Walking (2)



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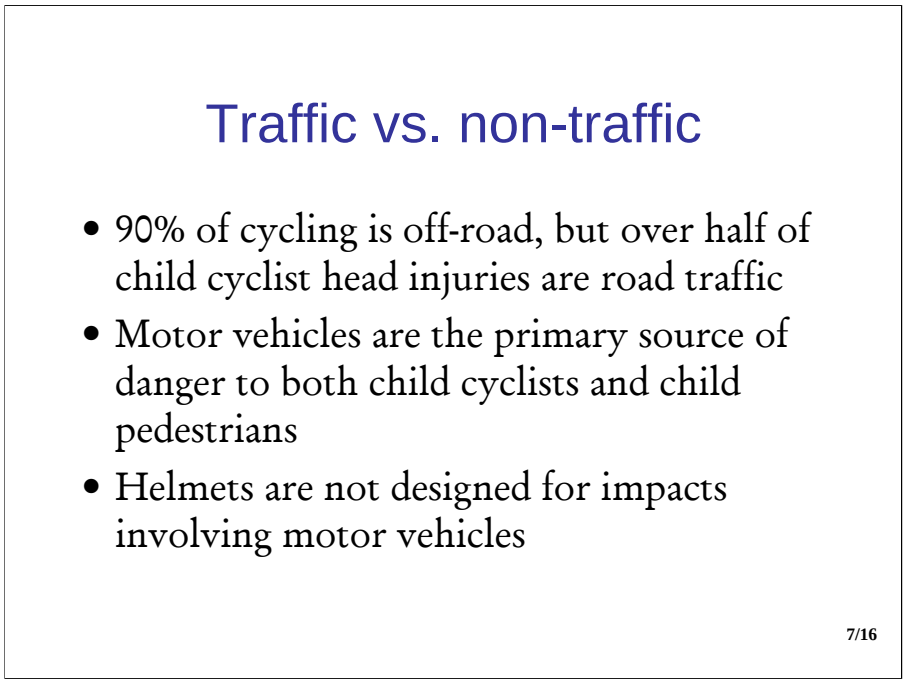
Here I am comparing only road traffic crashes involving motor vehicles, for the year 2002-2003. The first thing you notice is that the proportion of head injuries is well above the norm, and this is consistent between the two groups. Clearly the major factor here is not whether or not you are a cyclist, but whether a motor vehicle is involved.

I asked earlier if cycling were uniquely productive of head injuries. Evidently not. Not only that, looking at these figures you can see that, on a lives-saved basis, you could make a far stronger case for helmets for pedestrians. Five times as many child pedestrians are hospitalised for head injuries as child cyclists.

This is supported by the fatality figures from Transport Statistics Great Britain. In 2002 just under five times as many child pedestrians died on the roads as child cyclists.

So any measure which fails to address the uniquely serious nature of motor vehicle injuries is doomed to fail. Indeed, one of the fundamental flaws with helmet promotion is that it fails to acknowledge the fact that helmets simply are not designed to protect in injuries involving motor traffic.



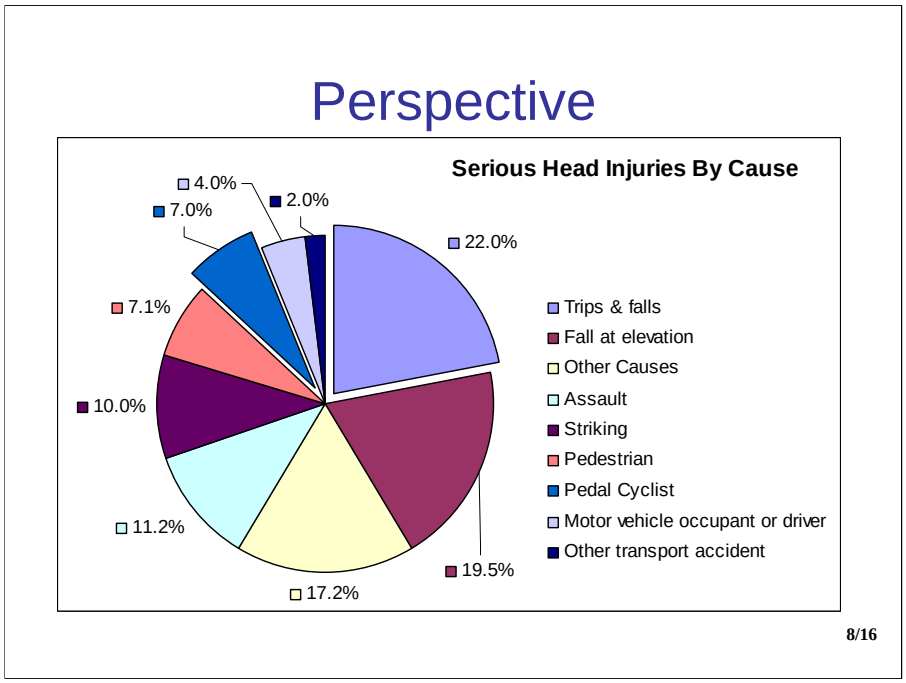
It would be easy to go round in circles on this, but it seems to me that by now we know enough to say that the idea of off-road cycling as a dangerous activity requiring mandatory protective equipment is unsupportable. Off-road cycling emerges as a very low-risk activity, especially given its health benefits, with only around 3% of head injuries coming from this source.

But as a utility cyclist I am also opposed to compulsory helmet use on road, not least because it is clear from these figures that even if cycling were eliminated entirely, most of the injuries would remain. Most of the injuries are sustained by child pedestrians. Actually more children suffer head injuries on the roads as car passengers than as cyclists.

Nationally, the penny is starting to drop. I believe in the Telegraph recently there was an editorial pointing out that the school run was a major source of the traffic danger from which parents seek to protect their children by driving them to school. Nearly 3,000 child pedestrians were killed or seriously injured on the roads in 2002, and about 600 child cyclists. In all around 40,000 people died or suffered a serious injury in a road traffic crash.

Cycle helmets are an irrelevance. Worse, they are a distraction from the real business of minimising danger.

As anybody with an industrial health and safety background will readily affirm, protective equipment is the last resort when all attempts to reduce danger at source have failed.



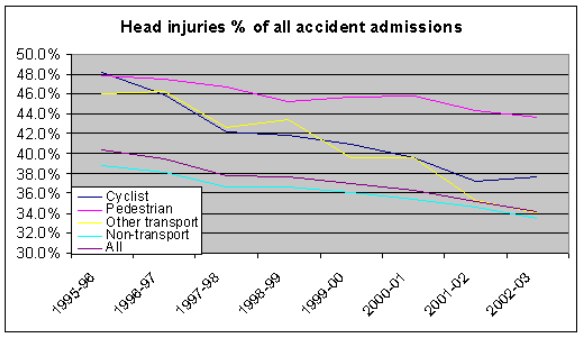
I've said perspective is key and mentioned some other sources of injury, so lets take a quick look at the overall picture.

This is the breakdown of serious child head injuries by source. The figures are much the same for all head injuries, but it's the serious ones which exercise campaigners most.

As you will see, cycling is a long way from being the biggest. Where is the justification for the idea that cycling is uniquely dangerous? Remember, according to the best estimates at least half of all children have bicycles. Yet more children suffer serious head injuries due to assault than due to cycling.

Remember, too, that this cycling figure includes both road and off-road cycling, about half and half, whereas the pedestrian figure includes only road traffic injuries. The figure for injuries as a motor vehicle passenger is larger than either of the two cycling figures.

What are the trends?



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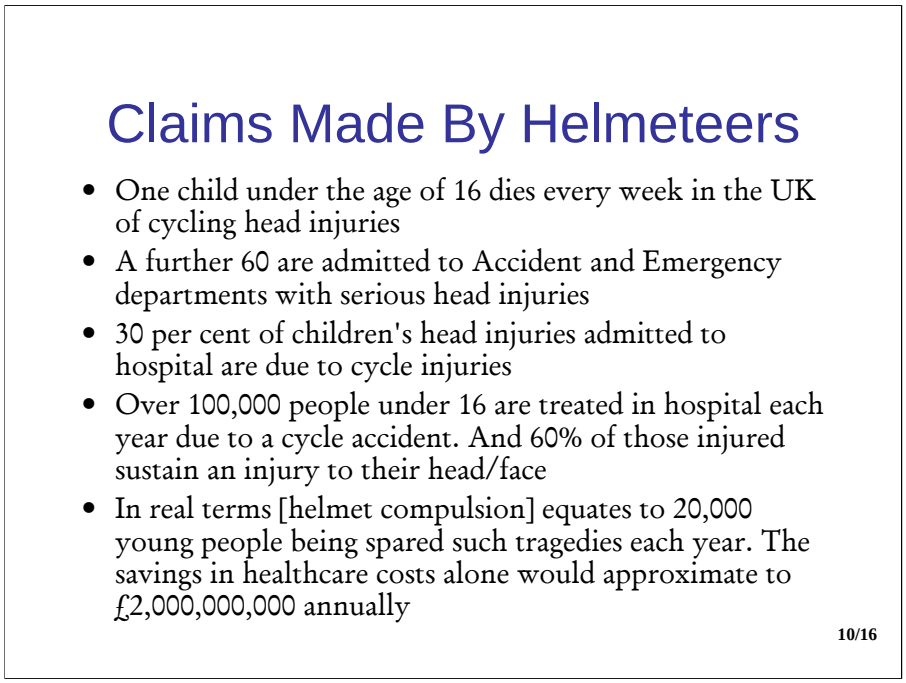
Even that is not the whole story. These are the trends over the last eight years or so; the proportion of head injuries from a number of sources. You can see that the cyclist trend is very much like the trend for all transportational injuries. You can also see that it is reducing steadily, although TRL say that helmet use is pretty much steady. You can also see that the pedestrian trend is significantly worse than that for cycling.

A worsening trend might support calls for mandatory helmets. A percentage substantially higher than for other causes might also be a justification. Clearly neither of these is the case. Once again we see that singling cyclists out over pedestrians is simply not justified by the facts.

I've only shown you a few charts here. I have spent many hours slicing and dicing the data along different lines, and however you analyse it you get the same answer: cycling is neither uniquely dangerous, nor uniquely productive of head injuries.

According to the sponsors of the current Bill, a child riding a tricycle in the park is so dangerous that its parents should be guilty of a crime if they do not force it to wear a helmet. These figures, provided by the Department of Health, show otherwise.



This presentation is about rebutting exaggerated claims, providing real figures, and putting the problem of child cyclist head injuries into perspective.

So what are the claims are made by those promoting helmets? Here are just a few.

•One child under the age of 16 dies every week in the UK of cycling head injuries

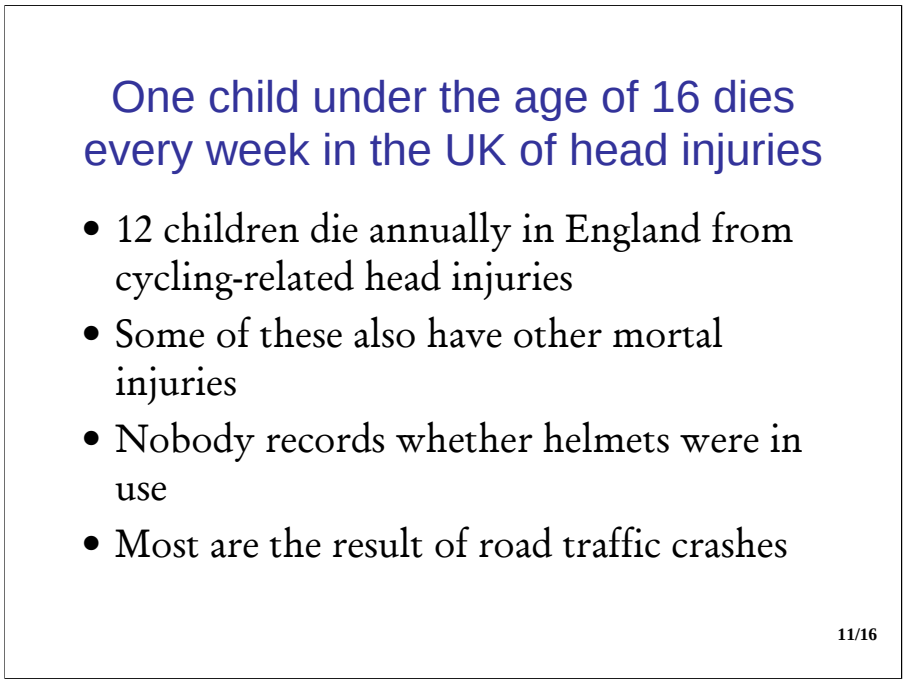
•a further 60 are admitted to Accident and Emergency departments with serious head injuries

•30 per cent of children's head injuries admitted to hospital are due to cycle injuries

•Over 100,000 people under 16 are treated in hospital each year due to a cycle accident. And 60% of those injured sustain an injury to their head/face

•In real terms [helmet compulsion] equates to 20,000 young people being spared such tragedies each year. The savings in healthcare costs alone would approximate to £2,000,000,000 annually

If these claims were true it might indeed represent a case for compulsion. But of course they are not.



One child under the age of 16 dies every week in the UK of head injuries. So they might, but not from cycling.

12 children die annually in England from cycling-related head injuries

Less than two dozen children per year die cycling in the UK, of which one or two at most are off-road. Figures from the Department for Transport and the Leisure Accident Surveillance System (LASS) run by the DTI indicate that an average of around a dozen children a year die from cycling-related head injuries. Without wishing to trivialise these, this is roughly equivalent to one and a half days' death toll on the roads – a death toll which we seem to accept with equanimity.

Many would also have other mortal injuries

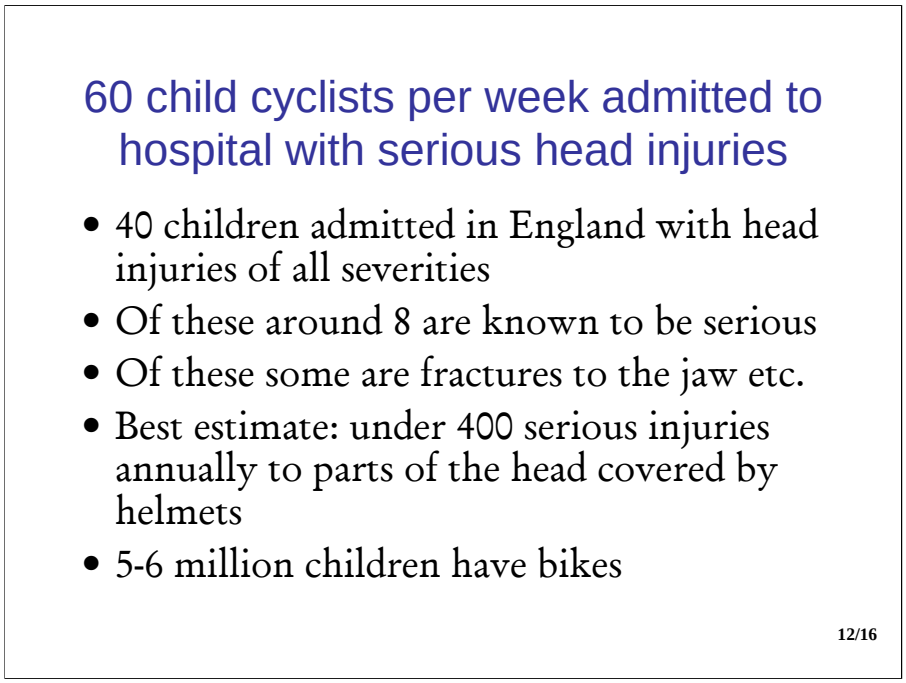
Investigation of adult cyclist fatalities has shown that between 50% and 100% of those analysed, whose primary cause of death was recorded as head injuries, had other mortal injuries as well.

Nobody records whether helmets were in use

There is a clear implication from helmeteers that all deaths would have been prevented had helmets been worn, but in fact we (and they) simply don't know if there is any difference between the fatality rates for helmeted and unhelmeted cyclists because the information is not collected. Where whole populations have been forcibly converted to helmet wearing the proportion of head injury deaths does not change, so there are good grounds for suggesting that, as the manufacturers' specifications indicate, helmets are essentially ineffective in crashes severe enough to cause death.

Most are the result of road traffic crashes

This is a fundamental point. Most traffic crashes are not "accidents" they are caused by negligence. Whether they could be prevented by better training of the cyclists or better training of the drivers is moot: in either case, a helmet is not much good, and the best course of action is to try to prevent the crash rather than devote excessive resources to attempts to mitigate injury afterwards. Worse, the promotion of helmets using exaggerated statistics may actually encourage greater risk-taking, making these inherently less survivable crashes more common.



Sixty children a week, we are told, are admitted to hospital with serious head injuries due to cycling crashes.

Not as such. Actually the figure is nearer 40 children, for all head injuries of all severities.

The proportion of these injuries which might be categorised as severe is open to interpretation; something over a third of injuries are classified as "other" or "unknown" and in analysing the data one could take the view that these are either not serious (which is defensible because serious injuries are more likely to be recorded correctly); or that they divide between serious and non-serious in the same proportions as the rest of the injuries (which is defensible because they may simply be the result of missing information). So around 17% are known to be serious, or 28% if you assume that the unknown injuries divide as per all injuries.

This gives us a best estimate range of between 370 and 600 serious head injuries per year, probably nearer 400, which will include broken jaws and the like which are not helmet preventable. That's closer to 8 per week than 60.

As an aside, in order to try and sell their FaceSaver helmet, BeHIT have started claiming that 60% of injuries are to the face, a claim which actually undermines some of their other figures.

30% of children's head injuries due to cycling

- Actual figure is 7.1%
- Average for last decade is under 9%
- Cycling accounts for fewer head injury admissions than:
  - Trips and falls
  - Falls from ladders and steps
  - Striking
  - Assault
  - Pedestrian

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We don't know the basis on which this claim is made, it looks as if it was simply made up.

We do know, from the DoH data, that the real figure for the proportion of all child head injury admissions which result from cycling injuries is 7.1%, or 7% of serious injuries, and that this figure has been falling steadily for some years. This decline, incidentally, is not explainable by increased helmet use – not least because, according to the Transport Research Laboratory, helmet use in children is not actually increasing.

There is certainly no reason to believe that trivial injuries would divide significantly differently form those serious enough to be admitted.

We also know that more injuries would be saved by forcing child pedestrians to wear helmets. And it seems that compulsory helmets for climbing stairs would also be in order.

>100,000 child cyclists treated in hospital each year due; 60% head/face injuries

- Child head admissions: numbers for all causes
- Head injuries admissions: 37% of all injuries

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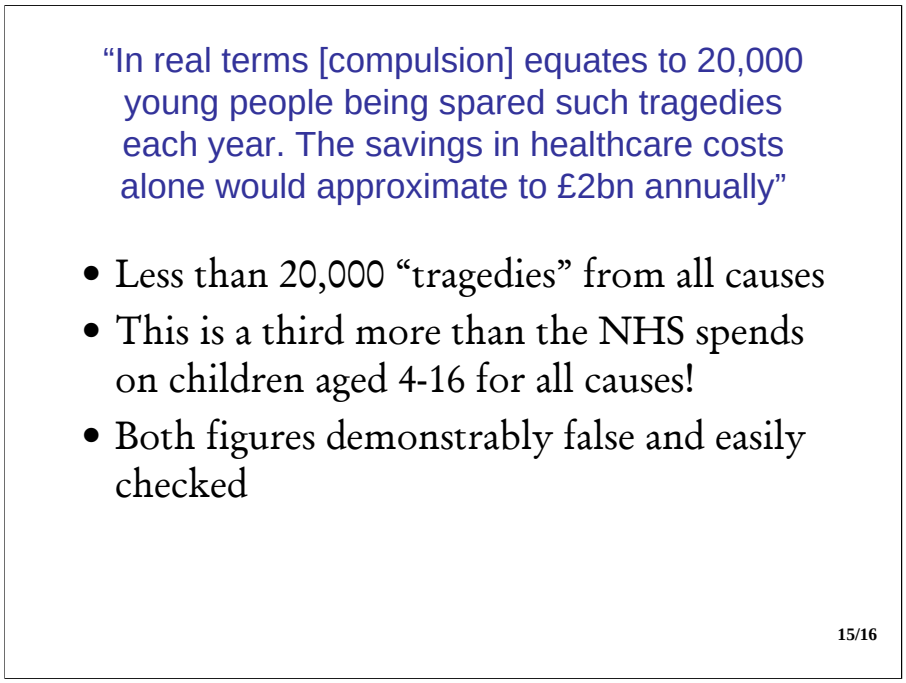
The figure of 100,000 child cyclists is somewhat greater than the grand total of all child injury admissions to English hospitals from all causes. They may have found a number for those treated in minor injuries units and never admitted but by definition, an injury which is never admitted even for observation is very unlikely to be serious.

Child head injuries of any seriousness, especially those resulting in concussion, are routinely admitted for observation. The vast majority of these are reportedly discharged the following day with no lasting effects. In my youth I had three such overnight stays. One was the result of an assault, one from a low doorway in an old mill, and one the result of a clueless driver who wasn't looking where she was going. None had any lasting effects – unless of course you know different. In no case was I wearing a helmet, although there is no doubt that I would have less scar tissue on my head if I had been worn a helmet in the first two cases. My Milletts balaclava prevented any scalp wounds in the cycling crash.

The idea that 60% of injuries are to the head and face is also not supported by the facts we have from the Department of Health. For admissions, the figure is around 37%, and there is no particular reason to believe that it will be different for all injuries – although it is plausible that more facial injuries than, say, leg and arm injuries might be presented for treatment.

All this is speculation. What is certain is that neither of these claims represents grounds for compulsion, as even if the numbers are right the injuries sustained are evidently not serious.



This is one of my favourites; a claim – two claims, rather - made by Angela Lee of BeHIT in a letter to the Reading Chronicle.

First, the 20,000 figure. This is pretty much the total of all serious child head injury admissions from all causes, not just cycling, as we have already seen. It is an order of magnitude greater than the number of head injury admissions due to cycling, of all severities. Less than four hundred of these are known to be serious, and how many of those are "tragedies"? Does, say, a broken jaw count as a tragedy, for the purposes of hand-wringing?

I looked up the NHS spend in England on children aged 4-15. It is £1.5bn. For all treatments, all causes (bear in mind that the major causes of death in childhood are still disease and congenital defects). So plastic hats would save the NHS more than it actually spends!

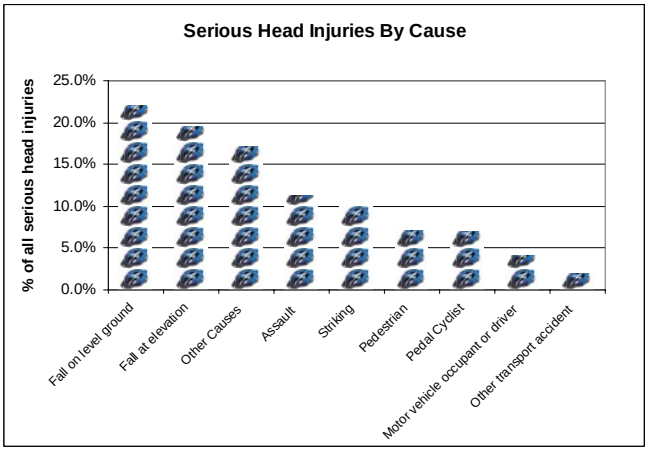
Both these numbers are easily verified, of course. Both are in the public domain, from parliamentary written answers published in Hansard and from the relevant websites. But we are not dealing with entirely rational people. Many helmeteers have seen a child with a brain injury, and automatically assume – because they believe the small-scale studies which tell them so – that it would necessarily have been prevented by a helmet.

I am not a great fan of anecdotal evidence, much of which is distasteful shroud-waving, but I came on a case recently which I want to share with you, as it provides an insight into the workings of the helmeteers' minds.

Troy Annetts was hit by a car while riding his bike in 2002 while not wearing a helmet. He suffered what appeared at the time to be a trivial blow to the head, but died eight days later of brain haemorrhage. His mother has been roped in to the campaign for cycle helmets.

The coroner's report stated that he had ridden off the pavement into the path of a car. The principal causes of the crash were that his front brake was broken, and he was riding along an apparently notorious stretch of pavement. Why should this story be seen as a reason to compel children to wear plastic hats, rather than a reason to get their bikes maintained and teach them to ride properly on the road?

A Sense Of Proportion



http://www.chapmancentral.co.uk/child-cycling.pdf

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In conclusion, then, here is the league table of serious head injuries by cause again.

Which do you think is most deserving of compulsory helmets?

There are many reasons to oppose compulsory helmet legislation; in my view the figures we've seen today prove that one reason is simply that the problem is not large enough to warrant the legislative and enforcement effort which would be required. Indeed, it would be iniquitous to single cyclists out for this treatment when it is undeniable that walking accounts for far more injuries.