

**Statement concerning cycle helmets by C F Clarke, (see attached qualifications)**

A full reference list to the following statement can be provided if required.

Prior to helmet laws being introduced in Australia 1990 - 92, the majority of cycling injuries were to riders under 18 years of age. As one example, in Victoria the Traffic Accident Commission data for years 1986 to 1989, shows 76% of cyclist head injury claimants were under 18 years of age. Vehicle occupants had almost 10 times the number of claimants compared to cyclists and pedestrians more than double the number for cyclists<sup>1</sup>. Even before introducing helmet laws there were some indications that helmets may have unexpected consequences. The following list shows why there is still concern about the safety aspects of wearing helmets.

**Wasserman 1988<sup>2</sup>**

Reported interviewing 516 cyclists over the age of 10 years regarding helmet use. At the time of the interview, 40 out of 516 (7.8%) were wearing helmets. The 516 were asked if they had fallen and struck their heads in the previous 18 months. Out of 21 who reported such falls, 8 were helmeted at the time of their fall and 13 were not. For helmeted riders this represented 20% (8 from 40) of their group and for non-helmeted 2.8% of their group (13 from 476). Comparing the 20% to the 2.8% shows a ratio of 7 to 1 (700%) of helmeted riders being more involved in accidents.

**Rodgers 1988<sup>3</sup>**

Rodgers examined accident data over a 14 year period and found "increased helmet use is associated with an increased fatality rate". The report findings therefore suggest it is a possibility that accident involvement may increase with helmet wearing.

**1990****Victorian Bicycle Strategy 1990<sup>4</sup>**

Detailed statistics for the years 1984-1989 showed accidents and the estimated helmet wearing rates were as follows:

**1984** - 1534 - 20%

**1985** - 1505 - 24%

**1986** - 1752 - 25%

**1987** - 2121 - 26%

**1988** - 2400 - 27%

**1989** - 2244 - 32%

A change in reporting procedures resulted in a slight decrease from 1988 to 1989. In the three-year period from 1985 to 1988, accidents increased by 59%, some of which could have been due to increased numbers of cyclists.

**1991****Petition<sup>5</sup>**

Following helmet legislation, one officially lodged petition in 1991 was to the Victorian Parliament. It claimed helmet use would increase the accident rate. More than 1000 people signed the petition, copy attached.

Refer

<http://tex.parliament.vic.gov.au/bin/texhtmlt?form=VicHansard.dumpall&db=hansard91&dodraft=0&speech=5089&activity=Petitions&title=Safety+helmets+for+bicyclists&date1=28&date2=May&date3=1991&query=true%0a%09and+%28+data+contains+'bicycle'%0a%09and+data+contains+'helmets'+%29%0a>

The petition mentions;

“That your petitioners are gravely concerned that the introduction of the bicycle helmet wearing mandatory regulation has the effect of increasing the risk of having an accident by the combined reasons of 1 to 7 as listed:”

and

“The combined risks of 1 to 7 being reflected in the Victorian accident statistics for years 1984-89 as cyclists aged 17-50 years old had a 119 per cent increase in accidents.”

To my knowledge the 119% increase has never been disputed in the Victorian Parliament or the claim that helmet use increases the accident rate. It should be noted that at the time, in May 1991, survey reports showing the drop in cycling due to legislation had not yet been published.

## **1991<sup>6</sup>**

Details have been published showing how cycling has been discouraged by the helmet law requirement, ‘Australian Cyclist 1991, Helmet Law discourages cycling, Riding numbers plummet’ refer;

<http://www.cycle-helmets.com/australian-cyclist.html>

## **1996**

A detailed report by Robinson in 1996<sup>7</sup>, ( HEAD INJURIES AND BICYCLE HELMET LAWS, Robinson DL. Accident Analysis & Prevention, 1996 Jul;28(4):463-75.) provided the following information.

Table 1 provided details of surveys of children cycling in NSW,

pre law 1991 count 6072,  
post law 1992 count 3857, down 36%,  
post law 1993 count 3414, down 44%.

Not only were children discouraged from cycling but also their accident rate increased, as shown by details in Table 2 below.

Table 2 provided details of children admitted to hospital in NSW for cycling accidents, and calculates the equivalent number of injuries (both head and all other injuries) for pre law number of cyclists.

.....head injury rate -----other injury rate	
1991 pre law .....	384..... 926
1992 post law.....	425.....1273
1993.....	488.....1595

The general accident rate compared with the number of cyclists, increased by 72% (1595 divided by 926).

To my knowledge the data presented in Table 2 has never been disputed.

## 1998

European Cycling Federation published, ' IMPROVING BICYCLE SAFETY without making helmet-use compulsory' <sup>8</sup> , [060131 ECF Helmet brochure.pdf](#)

### Section 4.2 Fewer cyclists

States;

"The evidence from Australia and New Zealand suggests that the wearing of helmets might even make cycling more dangerous."

### Section 5. WHY ONLY FOR CYCLISTS?

Not all road accident victims with cranial injuries are cyclists, as statistics from the United Kingdom show: (fatalities due to head injuries, 1987-91)

Drivers 40.5%

Pedestrians 39.1%

Motorcyclists 11.9%

Cyclists 8.5%

Australian data from 1988 shows 17 times more fatalities due to head injuries to motor vehicle occupants than to cyclists, ( refer page 471 Robinson 1996 paper). The court may wish to bear in mind issues of discrimination, approximately 20+ times more adults in vehicles die from head injuries than adult cyclists and per hour of travel there is little difference in deaths due to head injury.

## 2003

Article 'The efficacy of bicycle helmets against brain injury' by Bill Curnow<sup>9</sup>, *Accid Anal and Prev*, 35, p287-292, 2003.

This article refutes the Australian Transport Safety Bureau's claim that scientific evidence shows that helmets reduce serious injury to the brain. That claim was made in an article published in the same journal (Attewell, Glase and McFadden, "Bicycle helmet efficacy, a meta-analysis", Volume 33, 2001) and also in the Bureau's report CR 195 "Bicycle helmets and injury prevention: a formal review" in June 2000.

The abstract reads as follows:

"An examination is made of a meta-analysis by Attewell, Glase and McFadden which concludes that bicycle helmets prevent serious injury, to the brain in particular, and that there is mounting scientific evidence of this. The Australian Transport Safety Bureau initiated and directed the meta-analysis of 16 observational studies dated 1987-1998. This examination concentrates on injury to the brain and shows that the meta-analysis and its included studies take no account of scientific knowledge of its mechanisms. Consequently, the choice of studies for the meta-analysis and the collection, treatment and interpretation of their data lack the guidance needed to distinguish injuries caused through fracture of the skull and by angular acceleration. It is shown that the design of helmets reflects a discredited theory of brain injury. The conclusions are that the meta-analysis does not provide scientific evidence that such helmets reduce serious injury to the brain, and the Australian policy of compulsory wearing lacks a basis of verified efficacy against brain injury. "

## **2005**

Curnow WJ; The Cochran Collaboration and bicycle helmets; *Accid Anal and Prev*, 37, p569-573, 2005. In Table 2 it compares "Deaths of road users in Australia, in total and by head injury". Data for 1988 and 1994 are listed and notes any percentage change. Head injury deaths went down for cyclist by 30%, pedestrians 38% and all road users 42%. It states "Despite a decrease in cycling, deaths to cyclists, even those due to head injury, declined less than other road users".

## **2006**

Do enforced bicycle helmet laws improve public health?

Robinson DL. . *BMJ*, 2006;332:722.

Stated;

"There is no clear evidence of benefit from countries that have enforced the wearing of cycle helmets.

Case-control studies suggest that cyclists who choose to wear helmets have fewer head injuries than non-wearers. Consequently, the BMA recommended that the United Kingdom introduce and enforce bicycle helmet laws.<sup>1</sup> However, regular exercise such as cycling is beneficial to health, and non-helmeted commuter cyclists have lower mortality than non-cyclists.<sup>2</sup> Helmet laws would be counterproductive if they discouraged cycling and increased car use. Wearing helmets may also encourage cyclists to take more risks, or motorists to take less care when they encounter cyclists.<sup>3</sup> Recent epidemiological research highlighted problems adjusting for confounders in observational studies, causing biased, misleading results.<sup>4</sup> Thus the best estimate of the benefits of helmet laws is what actually happens when laws are passed.

I reviewed data from all jurisdictions that have introduced legislation and increased use of helmets by at least 40 percentage points within a few months: New Zealand, Nova Scotia (Canada), and the Australian states of Victoria, New South Wales, South Australia, and Western Australia. To avoid confusing reductions in injuries (from safer

roads or less cycling) with benefits of helmets, I have focused on percentages of cyclists with head injuries. Head injuries were most commonly classified as admissions to hospital with head wounds, skull or facial fracture, concussion, or other intracranial injury. The data include 10 504 head injuries, and in most cases were available as percentages of all cyclist injuries. Details of data sources and methods are given on [bmj.com](http://bmj.com).”

## 2006

World Transport Policy & Practice Volume 12, No. 2, 2006 ‘The case against bicycle helmets and legislation’ <http://www.eco-logica.co.uk/pdf/WTPP12.3.pdf>

This report mentions a comparison of impacts that could occur to a bare head compared to one helmeted, refer Figure 3, and states “Average impact forces for the helmeted profile were 85% of the value of the bare head but they incurred 80% more impacts - 9 compared to 5.” The report also mentions details of helmet use resulting in an increased accident rate. In practice a helmeted cyclist will probably double their risk of hitting their head/helmet compared to bare headed cyclist, eg in 2007 a figure for the increase in accidents was published of 14% and combining with a 80% increase (9 compared to 5) leads to an estimate for the increase risk of hitting a helmeted head,  $1.14 \times 1.8 = 2.05$ , showing the impact rate can likely double.

## 2007

Research findings suggest an increase in accidents has occurred due to wearing helmets. Link below, page 28 of report, Erke and Elvik 2007 stated: “There is evidence of increased accident risk per cycling-km for cyclists wearing a helmet. In Australia and New Zealand the increase is estimated to be around 14 per cent.” <http://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2007/889-2007/889-2007-nett.pdf>

## 2008

*Curnow WJ. Health Promotion Journal of Australia, 2008 Apr;19(1):10-15*

After helmet legislation was introduced, rates of cycling declined sharply with loss of benefits for health, but the risk of casualty increased. Compulsion to wear a bicycle helmet is detrimental to public health in Australia.

## 2008

In 2008 Civil Liberties Australia published an assessment of the helmet laws in Australia and concluded they were not justified, this report considered a range of issues in its assessment. Refer Clarke CF, 'Mandatory Can Have Unexpected Consequences, Civil Liberties Australia, 25 Nov. 2008 <http://www.cla.asn.au/Article/081125BikesHelmetPolicy.pdf>

The main findings were;  
Cycling activity assessment– negative result  
Fatality assessment – negative result  
Injury assessment – negative result  
Health assessment – negative result  
Environmental assessment – negative result  
Accident compensation assessment – negative result  
Law enforcement assessment – reasonable

Data quoted from NSW, Victoria, and WA all indicates a higher accident rate than would be expected from the number of cyclists counted following helmet laws being imposed.

## 2009

### **Bicycle Helmet Research Foundation,**

<http://cyclehelmets.org/1012.html>

They ask "What evidence is there that cycle helmets save lives?"

They consider evidence from several countries and conclude;

"There is no direct evidence that the wearing of cycle helmets has led to fewer deaths amongst cyclists. Most research into cycle helmets has not included cyclist fatalities. The premise that helmets save lives is by extrapolation from research that has suggested that helmets might reduce injuries to the head. As most fatalities involve head injury (this applies to all major external causes of violent death, not especially cycling), the reasoning is that by reducing injuries to the head, cycle helmets can lead to fewer cyclist deaths. Whole population statistics for cycling fatalities do not support the above hypothesis.

One example quoted from a New Zealand report stated;

"Cyclist deaths were also investigated in Auckland, New Zealand [15]. 16 of 19 non-helmeted cyclists died from multiple injuries, so helmets would not have changed the outcome. Only one cyclist died of head injuries in a bike-only crash, the most likely situation for a helmet to help. That cyclist died despite wearing a helmet and a fall at moderate speed. The researchers concluded: *"This study indicates that the compulsory wearing of suitable safety helmets by cyclists is unlikely to lead to a great reduction in fatal injuries, despite their enthusiastic advocacy"*.

In general, for fatal accident instances, the force of impact is considered to be so significant that most protection would fail.

### **General statement**

The issue of cycle helmets has been controversial for many years and the evidence for their use is not conclusive. In general cycle helmets have not been proven to prevent fatalities and the risk is very low for cyclists, for example in 2007, 2683 people committed suicide in Australia compared with 1135 deaths to motor vehicle occupants,

239 motorcyclists, 201 pedestrians and 41 cyclists. The main risk faced by cyclists is that of injury, for example, 7928 cyclist hospital admission occurred in 2003-04, from a total in admissions of approximately 6,800,000 including about 50,000 due to land transport injuries.

Evidence shows cycle helmet use increases the risk of accident and acts to deter cycling, thereby lowering both health and safety, refer health benefits Chapter 2 (The health and fitness benefits of cycling) from *Cycling towards Health and Safety*, British Medical Association, Oxford University Press, 1992 and a summary of the health benefits is listed below.

### **Health benefits**

Moderate cycling has many physical and mental benefits (BMA 1992<sup>10</sup>) by reducing the risk of developing heart disease, diabetes, high blood pressure, colon cancer and depression, and helping to control weight and increase fitness. Dr Hillman from the UK's Policy Studies Institute calculated the life years gained by cycling outweigh life years lost in accidents by a factor of 20 to 1<sup>11</sup>. Reports from Australia also suggest the health benefits exceed the risks. In fact, cycling is much more likely to do you good than harm, because it's such a healthy thing to do. In other words, the benefits of cycling far outweigh the risks.

### **Conclusion**

The actual evidence detailed above shows the safety case for wearing a helmet is not conclusive and they could reduce safety rather than improve it. Helmet wearers hit their heads more often due to the larger size of a helmet compared to a bare head, however not one report has provided accurate details of by how much. This in part shows that the published research has not investigated the issues involved properly. The EU could consider requiring research into cycle balance so that riders who may be less stable could have ways to make them safer. Effectively being able to measure a person's balance and provide training or other measures to improve their balance, giving them more control when riding.

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<sup>1</sup> TAC data

<sup>2</sup> Wasserman RC; Bicyclists, Helmets and Head Injuries: A Rider-Based Study of Helmet Use and Effectiveness; *AJPH* Vol 78, No 9, pp 1220-21, September 1988.

<sup>3</sup> Rodgers 88

<sup>4</sup> vic bike strat

<sup>5</sup> petition

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<sup>6</sup> article

<sup>7</sup> rob 96

<sup>8</sup> ECF

<sup>9</sup> Bills 2003

<sup>10</sup> British Medical Association; Cycling towards Health and Safety, Oxford University Press,1992.

<sup>11</sup> Hillman M, Cycling and the promotion of health, Policy Studies Vol 14, Policy Studies Institute, London.



To whom it may concern

### **Cycle helmets and safety issues.**

I became particularly interested in cycle helmets following the introduction of helmet legislation in Victoria, Australia, in 1990, where I was living at the time. I have had an ongoing interest in the topic, analysing and scrutinising data and reports in order to determine accident, health and social effects of helmet use, promotion and legislation.

My cycling background includes 50 years of cycling experience, covering approximately 300,000 miles and visiting more than 20 countries, plus having working experience in cycle training and as a road safety instructor. I qualified as a British Cycling Federation Coach in 1970, having had cycle racing experience from 10 miles to 200+ miles.

Listed below are eight published articles, papers or letters relating to helmets and legislation that I have researched and written;

- a) Safer Cycling 1<sup>st</sup> Edition 1995, 80 page technical booklet detailing issues relating to cycling and safety plus information regarding helmets and legislation.
- b) Bicycle helmets and accident involvement; Cycling World, UK, June 2003, a technical article relating helmets and the accident involvement rate.
- c) Safety in numbers for walkers and cyclists; Health Promotional Journal of Australia, Vol 16, No 2, 2005, a letter detailing many of the concerns that exist relating to cycle helmet laws.
- d) The Case against bicycle helmets and legislation, Canadian Multidisciplinary Road Safety Conference, Winnipeg, Manitoba, Canada 2006. A paper presented at the main road safety annual conference in Canada explaining the basic case against helmet use and legislation.
- e) World Transport Policy & Practice Volume 12, No. 2, 2006  
The case against bicycle helmets and legislation  
<http://www.eco-logica.co.uk/pdf/WTPP12.3.pdf>
- f) The Case against bicycle helmets and legislation, VeloCity cycling conference, Munich 2007. A detailed report presented at the world's leading cycling conference providing details showing how helmet use and legislation has reduced both health and safety in general terms.
- g) Assessment of Australia's Bicycle Helmet Laws, refer 'Mandatory' can have unanticipated consequences – Civil Liberties Australia web site, 25 Nov. 2008. Providing details of the effects of the legal requirement to wear cycle helmets.  
<http://www.cla.asn.au/Article/081125BikesHelmetPolicy.pdf>

- h) Evaluating bicycle helmet use and legislation in Canada, 2009.  
<http://www.cycle-helmets.com/canada-hel ... ssment.doc> This paper evaluates helmet law effects for provinces with helmet legislation and compares to provinces without legislation for the period 1994 to 1998 and shows a relative net benefit for those without legislation.

I have also contributed to papers published by other authors, namely

- a) Robinson DL; Head injuries and bicycle helmet laws; *Accid Anal Prev*, 28, 4: p 463-475, 1996
- b) Curnow WJ; The efficacy of bicycle helmets against brain injury; *Accid Anal and Prev*, 25, p287-292, 2003.
- c) Curnow WJ; The Cochran Collaboration and bicycle helmets; *Accid Anal and Prev*, 37, p569-573, 2005.

In addition to the above I am a member of an informal international group who discuss the evidence for and against helmets on a regular basis and this helps me to keep up-to-date with changes and assessments. I am also a member of a group who support the rights of people having a choice in wearing helmets and again this draws information to my attention. My extensive cycling experience has given me an appreciation of the risks and benefits of cycling over many years. My views on helmets are based on extensive practical cycling experience and research information. I may be able to help others in understanding the issues involved and gain a fuller appreciation of the limited benefits and higher risks associated with helmet use. I should point out that I have no financial interest in helmets.

I was trained as a mechanical engineer (qualification Polytechnic Associateship in Mechanical Engineering, Huddersfield Polytechnic 1974) and worked in various industries, mainly as a contract draughtsman, for example, with Esso Australia, providing emergency response details for their gas and oil processing plant in Victoria and improving their safety procedures in case of any emergency. Apart from the petrochemical industries, I have also worked in steel production, car production, aircraft and general engineering. I am now retired.

Yours sincerely,

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