

CYCLE HELMET LAWS - FACTS, FIGURES AND CONSEQUENCES

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(German language translation [available here](#))

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INTRODUCTION

Few delegates at this conference need to be convinced of the benefits of cycling, either as environmentally friendly, pollution free transport, or as healthy exercise. Indeed, the British Medical Association reported: (despite the risk of accidents) "*car travel is more deleterious to health unless the motorist can exercise several times a week by other means that will maintain fitness*" (Cycling Towards Health and Safety, Oxford Univ Press, 1992). Nowadays, only a minority of the population takes sufficient exercise and several billions are spent every year on hospital treatment of heart and circulatory disease, much of which might be prevented by regular exercise such as cycling. Cycle helmets may be beneficial if they help reduce the risk of head injury, but many cyclists find them hot or uncomfortable. Helmet laws might therefore be counter-productive if they discourage cycling sufficiently for the loss of health and social benefits from reduced cycling to outweigh gains from fewer head injuries. Here, an attempt is made to shed light on this difficult question by reviewing available statistics on head injuries and cycling participation before and after helmet laws were passed in Australia.

HELMET LAWS AND CYCLING ACTIVITY

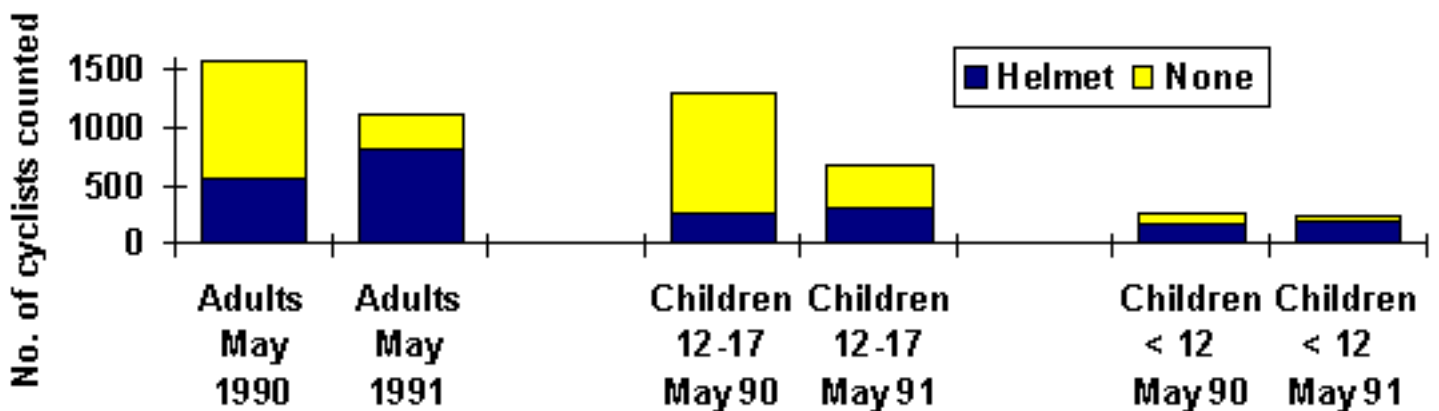
Only two states - Victoria and NSW - attempted to measure the effect of the laws on cycling activity by

pre- and post-law surveys at the same sites, observation periods, time of year and, where possible, the same observers. In NSW, data from identical pre- and post-law surveys were available only for children. Both surveys were conducted in excellent weather. Table 1 shows that the increase in numbers wearing helmets was only about half the decrease in cyclists counted, with similar outcomes for cycling in recreational areas, through road intersections, or to school. Reductions in rural NSW (35%) and in the Sydney Metropolitan area (37%) were almost identical. Another survey was carried out a year later, under fine and generally sunny conditions. Even fewer cyclists were counted.

Table 1. Counts of child cyclists in NSW before and in the first two years of the helmet law (RTA surveys* [14](#) , [33](#))

Year	1991 (Pre-law)		1992 (1st law yr)		1993 (2nd law yr)	
	Total counted	No helmeted	Total counted	No helmeted	Total counted	No helmeted
Road Intersections	1741	440	1188	874	881	582
<i>Change from 1991</i>			<i>-553</i>	<i>434</i>	<i>-860</i>	<i>142</i>
Recreational areas	1742	709	1236	899	1184	872
<i>Change from 1991</i>			<i>-506</i>	<i>190</i>	<i>-558</i>	<i>163</i>
School gates	2589	761	1433	1156	1349	1025
<i>Change from 1991</i>			<i>-1156</i>	<i>395</i>	<i>-1240</i>	<i>264</i>
Total child cyclists	6072	1910	3857	2929	3414	2479
<i>Change from 1991</i>			<i>-2215</i>	<i>1019</i>	<i>-2658</i>	<i>569</i>

Figure 1. Counts of cyclists with and without helmets in Victoria, pre- (May 1990) and post- (May 1991) helmet law (source: MUARC surveys [7](#)).



In

Victoria, both adults and child cyclists were counted. The same sites and observation times were used

and 82% of sites had the same weather classification. Overall, 36% fewer cyclists were counted (Figure 1). For sites which were fine in both 1990 and 1991, the reduction was, however, only 24%. The survey was repeated the following year, when a bicycle rally happened to pass through one of the sites. Excluding this site, numbers in the second year were down by 27% on the pre-law survey. These figures indicate, as in NSW, that the increase in numbers wearing helmets was less than the overall decrease in numbers of cyclists.

Attitude surveys confirm the potential of helmet laws to discourage cycling. A total of 1210 secondary school students were questioned as part of the Blacktown Bike Plan. Of those who had not ridden in the past week, helmet restriction was the most common reason (33.9%) compared with unsafe (11.8%) or even not owning a bike (33.8%). A street survey in the Northern Territory of more than 800 people found 20% had given up cycling because of the law and a total of 42% had reduced their cycling. In the ACT, when 325 cyclists were asked "Would you cycle less if helmets became compulsory?" 90 (28%) said they would. In Western Australia (WA), a telephone survey of 254 households in which adults responded on behalf of themselves and their children found 13% of Perth and 8% of country cyclists had given up or cycled less because of the law. [31](#) However, when the adult respondents replied for themselves, a proportion equivalent to 64% of current adult cyclists said they would cycle more if not legally required to wear a helmet. Thus, apart from the WA telephone survey (suffering from a small sample size and that parents may not always be aware of a child's true motives), street counts and survey interviews have both consistently revealed a substantial deterrent of helmet laws on cycling.

HEAD INJURIES

Figure 2. Cyclist hospital admissions for head and other injuries by month, Victoria. (MUARC Rpt 76)

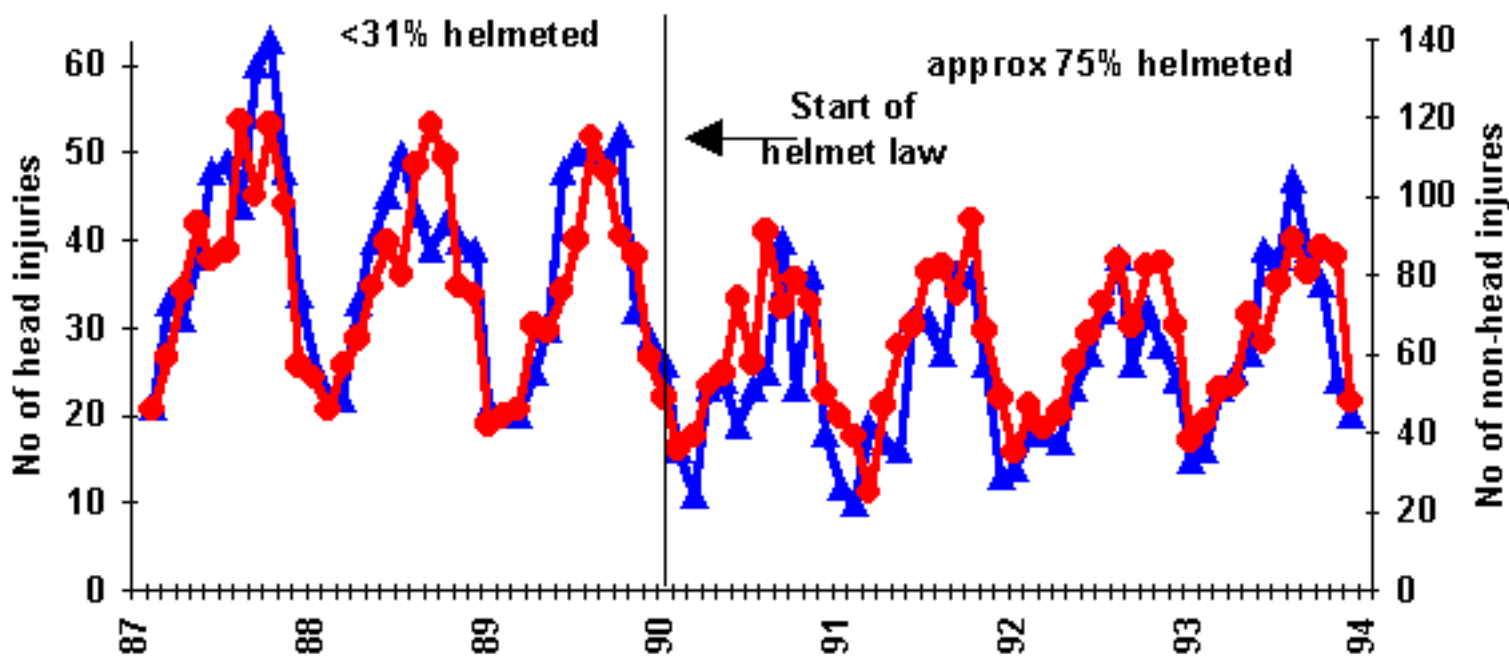


Figure 2 shows hospital admissions of cyclists for head and other injuries in Victoria in the years before

and after the helmet law. Non-head injury admissions (right hand axis of graph) outnumbered those for head injury by a factor of approximately 2:1, both before and after the law. Consistent with surveys indicating reduced cycling, the effect of the law can be clearly seen by a reduction in both head and non-head injury admissions, but, despite a substantial increase in helmet wearing from 31% of cyclists to 75%, the relative proportions of the two appear little changed.

Figure 3. NSW. Helmet wearing (w%) 14, 33 and cyclist hospital admissions by year to end June. NB law for children introduced 6 months after adult law.

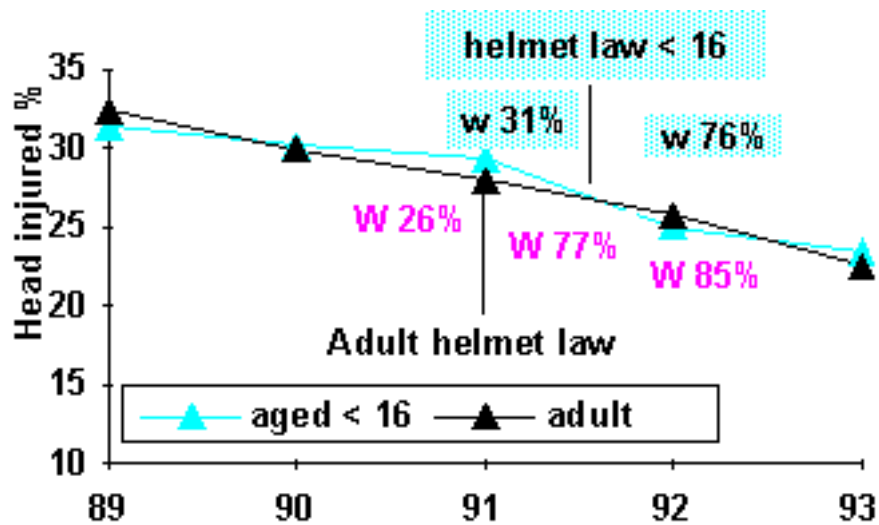
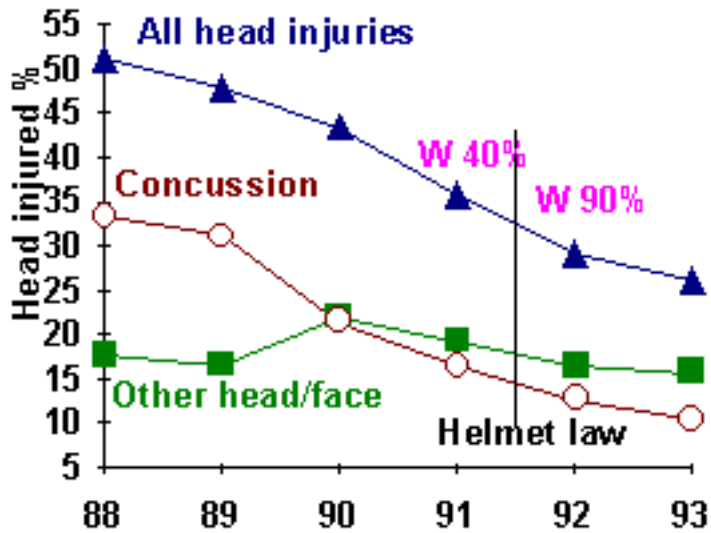


Figure 3 shows pre- and post-law helmet wearing rates in NSW14,33 together with hospital data. A generally declining trend is apparent in the percentage of adult cyclists admitted to hospital suffering head injuries, but no clear effect of the helmet law, estimated to have increased helmet wearing rates from 26% to 77% and 85% of adults in the 1st and 2nd years of the law. For child cyclists, a small reduction can be seen in the percentages with head injury over and above a generally declining

trend. However, head injuries to child cyclists declined by only 29% in years 1 and 2, compared with reductions of 36% and 44% in numbers of child cyclists observed.

If the surveys were representative of the effect of the law on cycling participation, then the risk of head injury would appear to have increased, rather than decreased, because of an increase in accident rates. Researchers have developed the theory of risk compensation to explain why accidents often appear to increase following adoption of a new safety measure. In many cases, the benefits of the measures are large and outweigh any effects of risk compensation. Comparison of head injury and cycling participation rates following helmet laws in NSW and other places leads to the possibility this is not the case for bike helmets.

Fig 4. South Australia. Cyclist hospital admissions and helmet wearing (%W) 20 by year to end June.

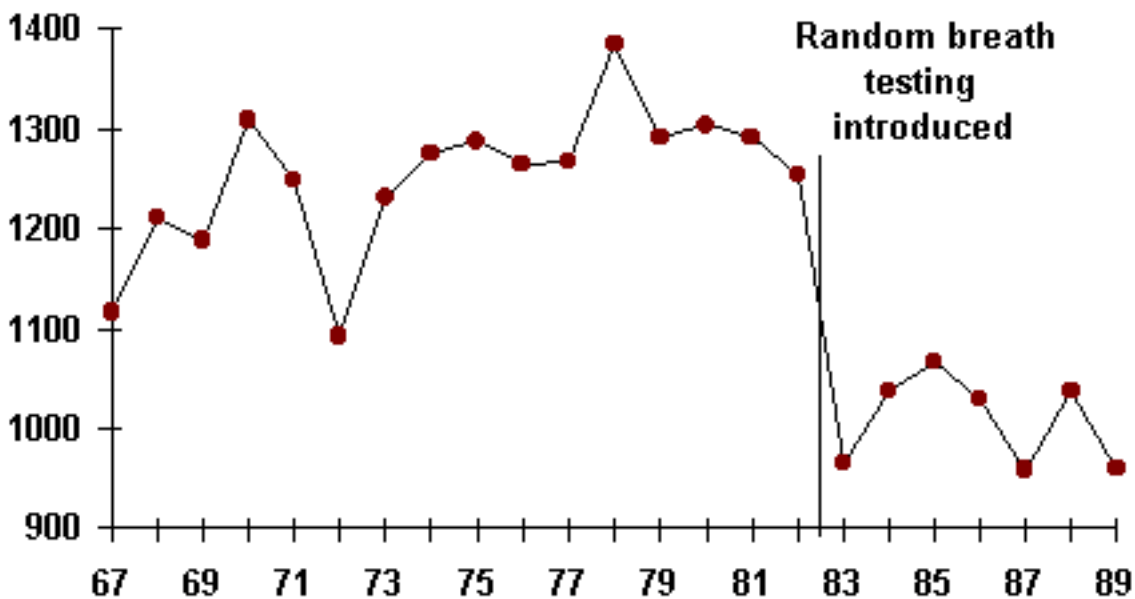


Hospital data for South Australia (SA) [20](#) is given in Figure 4. Percentage of cyclist admissions are graphed separately for those suffering concussion and other head/face injuries. The steady decline in admissions for concussion may, in part, relate to changes in admissions policy in that some hospitals no longer routinely admit patients who suffered a short episode of concussion. [29](#) No additional effect of the law is apparent on concussions. For other head injuries, the effect is difficult to determine. Rates were no different in 1992-3 with mandatory helmets than in 1988-89 when wearing was limited. We may therefore conclude increasing helmet wearing from 40

to 90% of all cyclists had a relatively small effect, compared with other factors affecting the risk of head injury. A similar conclusion was obtained from head injury data in New Zealand. As in the Australian data, trends were apparent in rates of head injury and noted to be "present before, and independent of, helmet wearing." [18](#) After accounting for this trend, increased helmet wearing had "little association with serious head injuries as a percentage of all serious injuries to cyclists." [18](#)

OTHER ROAD SAFETY MEASURES

Figure 5. Road fatalities in NSW by year



The relatively small effects of the helmet laws (except on numbers of cyclists) contrasts starkly with other measures such as random breath testing (RBT), introduced in NSW in December 1982. Other recent measures have included the highly successful Transport Accident Commission (TAC)

road safety campaign in Victoria which reduced accident costs by \$220 million for an outlay of \$5.5 million. [10](#) Included was a crack-down on speeding and drink-driving via speed cameras and increased RBT ('booze busses'). Pedestrian fatalities in Victoria fell from 159 in 1989 to 93 the following year. [9](#)

These initiatives started around the same time as the helmet law. Comparing the two years before the helmet law with the following two, the percentage of TAC pedestrian injury claims involving death or head injury fell by 4.2 from 19.6% to 15.4%. Despite increased helmet wearing from 31%-75%, the decrease for cyclists injured in collisions with vehicles was 3.1, from 12.0% to 8.9%. While some of this may have been due to helmets, the large effect seen for pedestrians, together with comparatively small effects for cyclists in accidents not involving motor vehicles, makes it plausible that a substantial proportion of this effect, previously attributed entirely to increased helmet wearing, may, in fact, have been due to the effective TAC campaign.

CONCLUSIONS

The fact that little or no obvious effect can be seen in hospital data does not imply cyclists choosing to wear lightweight, comfortable, well fitting helmets, will not benefit, provided they do not ride on more dangerous roads or take less care. The relatively small effects from helmet laws must, however, be contrasted with the large effect on numbers of cyclists and better responses from other road safety campaigns.

SOME WEB LINKS

Links To Other Interesting Road Safety and Bicycle & Environmental Issues

Each with their own links to interesting information on related topics!

[Head Injuries and Bicycle Helmet Laws \(Abstract of Refereed Journal Paper, Acc Anal Prev, 1996\)](#)

[Accidents at Roundabouts in NSW \(Abstract of Refereed Journal Paper, Transport Research, March 1998\)](#)

[Is There Any Reliable Evidence That Australian Helmet Legislation Works?](#) Velo Australis Paper by Bruce Robinson.

[Helmets for car occupants?](#) Though they do not seem to be effective for cyclists, a FORS report says bicycle-style helmets would be as effective as airbags and better than seat belts for vehicle occupants, reducing the severity of accidents by 50 per cent and saving the life of one in five head-injury victims.

[Helmet laws and cyclist accident rates](#)

[Helmet laws and Health](#) (short article published in the Australian Doctor, Feb 1998 and Injury Prevention, September 1998)

[Road Safety and Daylight Savings Time](#)

[Bicycle Federation of Australia](#)

[UK Cyclists Touring Club](#)

[Cyclists Rights Action Group](#)

[Pedalling Health - health benefits and cost savings from encouraging cycling](#)

[Air Pollution in Armidale, NSW, Australia](#)

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