

more, there has been no material increase in the number of helmeted cyclists. Rather, cycling on a substantial scale has been deterred. The deterrence of the safest mode of urban transport will not contribute to overall road safety or public health.

Utility cycling is a low-risk activity. Although cyclists in Great Britain do not have a notably good safety record, the expectation for a fatal crash for the average cyclist is only once in 18 000 years (3 million regular cyclists, 165 deaths per year). Experience shows that strong helmet promotion or laws bring about a low-utility, high-injury cycling culture. In countries such as France, the Netherlands and Denmark, little interest is shown in helmets, despite high levels of utility cycling and much better safety records. Cycling is very safe where it is popular.² In France and Denmark, an hour of cycling is much safer than an hour of driving.³ In all countries for which I have seen data, pedestrians are more at risk than cyclists.^{4,5}

Research here in Great Britain by the Transport Research Laboratory shows that the public relates helmets and their promotion to danger, and this deters cycling.⁶ As the relevant report comments, "Fear of traffic peril is a huge deterrent, though fear usually exceeds true danger. Discussion of safety frequently sharpens fear and so deters cycling." The report observes that local authorities who ran prominent helmet campaigns saw a sharp drop in cycling activity.

The British Medical Association reviewed the question of a national helmet law in 1999 and concluded that helmets should not be made compulsory anywhere in Great Britain.⁷ This decision recognizes real-world experience in countries where helmets have come into general use, but little, if any, benefit has been observed in time trends of serious injuries.⁸ Injuries may even have increased.⁹ It is clear that a helmet will not prevent death in a serious crash with a motor vehicle.

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References

1. LeBlanc JC, Beattie TL, Culligan C. Effect of legislation on the use of bicycle helmets. *CMAJ* 2002;166(5):592-5.
2. Rutter H. *Transport and health: a policy report on the health benefits of increasing levels of cycling in Oxfordshire*. Oxford, UK; 2002. Available: www.modalshift.org/reports/tandh/print_version.htm (accessed 2002 June 26).
3. Carre JR. La bicyclette: un mode de déplacement méconnu dans ses risques comme dans son usage. INRETS. *Recherche Transports Securite* 1995;49:19-43.
4. Ramet M, Vallet G. Typologies des accidentés du trafic routier a partir de 5,459 dossiers. Rapports INRETS-LCB. Aug 1987. p. 106.
5. Robinson D. Head injuries and bicycle helmet laws. *Accid Anal Prev* 1996;28:463-75.
6. Transport Research Laboratory. *Achieving the aims of the National Cycling Strategy*. TRL report 365. Crowthorne, England: TRL; 1998.
7. British Medical Association. *Bicycle helmets*. London: The Chameleon Press; 1999.
8. Hendrie D, Legge M, Rosman D, Kirov C. *An economic evaluation of the mandatory helmet legislation in Western Australia*. Nedlands, Australia: University of Western Australia Public Health Department; 1999. Available: www.transport.wa.gov.au/roadsafety/Facts/papers/bicycle_helmet_legislation.html (accessed 2002 June 13).
9. Wardlaw M. Three lessons for a better cycling future. *BMJ* 2000;321:1582-5.

[One of the authors of the research article responds:]

In her editorial,¹ Mary Chipman states that the introduction of bicycle helmet legislation in Nova Scotia may have reduced cycling activity and the proportion of child cyclists² (see Table 1 of her article). However, our study design precludes drawing this conclusion. We sought to maximize the number of cyclists observed in a fixed observation period. Due to availability of observers, we could not standardize observation times from year to year. Not surprisingly, we observed large variations in the number of cyclists per unit time, depending on the time of day, the day of the week, or the month. For example, during 1998 and 1999 we collected data almost exclusively during weekdays, which largely reflected adult commuter traffic. These variations in collection methods are a far more plausible explanation for the variation in cycling rates and proportion of child cyclists than the legislation. In support of this view, the owners of 3 major Halifax bicycle shops informed me that although bicycle helmet sales surged after the introduction of the legislation, there was no reduction in the sale of bicycles and no discernable impact on cycling activity.

Chipman refers to an Australian report by Dorothy Robinson³ that revealed cycling by children under 12 fell by 36% after the introduction of helmet legislation. However, Robinson did not discuss whether the decline persisted or whether those who stopped cycling substituted other equally beneficial activities. Chipman did not cite the study conducted by her colleagues who directly assessed the impact of helmet legislation on cycling behaviour in Toronto.⁴ They found that the rate of child cyclists before and after the introduction of bicycle helmet legislation actually increased from 4.3 cyclists per hour in the preceding year to 6.8 cyclists per hour in the year following the introduction of a law similar to the Nova Scotia legislation.

Wilhelm Kreyes raises important points about the influence of correct use of helmets on their effectiveness. Incorrect size, orientation or misuse of buckles undoubtedly reduce a helmet's ability to protect from injury. However, a proper assessment of these elements would necessitate a different study design.

Thomas DeMarco continues to be dumbfounded by the widespread support of the medical profession for helmet legislation. Without offering any evidence, he concludes that "ultimately, helmet laws save a few brains but destroy many hearts." Such a conclusion cannot be drawn without knowing about the habits of those who abandoned cycling, and what activities if any they substituted in their quest for freedom from the burden of helmets.

Finally, based on calculations not warranted by our study design, Malcolm Wardlaw comes to the remarkable conclusion that cycling activity in Halifax has been cut in half. In addition, he ignores published literature that shows cycling rates continue to increase after the introduction of legislation⁴ as well as accumulating evidence, summarized in a Cochrane review⁵ and a subsequent able defence against its critics,⁶ that has already shown that helmets are effective in preventing head injuries. This evidence cannot be dismissed by inappropriate secondary analysis of our data.

In summary, opponents of helmet legislation speculate that helmet legislation leads to increased cardiovascular deaths by discouraging exercise. First, is there clear evidence that the introduction of helmet legislation is followed by reduced cycling? Although our study cannot be used to address this question, the Australian study shows reduced cycling following legislation. However, the Canadian study indicates cycling continued to increase after the introduction of legislation. Second, do cyclists who oppose legislation and decide to stop become inactive and obese, or do they substitute other physical activity? No empirical evidence exists to respond to this question scientifically. Policy debate concerning the benefits and risks of helmet legislation must be rooted in evidence, not in speculation or strongly held views that ignore evidence to the contrary.

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References

1. Chipman ML. Hats off (or not?) to helmet legislation [editorial]. *CMAJ* 2002;166(5):602.
2. LeBlanc JC, Beattie TL, Culligan C. Effect of legislation on the use of bicycle helmets. *CMAJ* 2002;166(5):592-5.
3. Robinson DL. Head injuries and bicycle helmet laws. *Acid Anal Prev* 1996;28(4):463-75.
4. Macpherson AK, Parkin PC, To TM. Mandatory helmet legislation and children's exposure to cycling. *Inj Prev* 2001;7(3):228-30.
5. Thompson DC, Rivara FP, Thompson R. Helmets for preventing head and facial injuries in bicyclists. *Cochrane Database Syst Rev* 2000;(2):CD001855.
6. Keatinge R, Thompson DC, Thompson R, Rivara FP. Helmets for preventing head and facial injuries in bicyclists. Comments. *Cochrane Database Syst Rev* 2000;(2):CD001855.

[The author of the commentary responds:]

John LeBlanc¹ actually reinforces my concern that the number of cyclists has decreased after bicycle helmet legislation.² His study was designed to maximize the number of cyclists observed in a fixed time interval, and he chose sites

and circumstances accordingly. However, despite this effort to observe more cyclists, he actually observed fewer after legislation, so I am quite convinced that the number of cyclists has been dropping. I noted in my commentary that part of the explanation might be variation in sites and weather, and I thank LeBlanc for confirming this.

I am chided for not quoting from an article by my Toronto colleagues.³ To the best of my knowledge, my copy of the journal in which the article was published arrived after I had written and submitted the commentary. Now that I have had a chance to include this material, I note that the major component of the increased use that impressed LeBlanc was off-street cycling in schoolyards and parks, where rates of use more than doubled to over 10 cyclists per hour. Rates on streets and at major intersections either remained the same or increased in this interval to 5.4 per hour. Changing where children cycle is one response to the increasing concern about road safety; however, such an option may not be available for the many adult cyclists who commute.

LeBlanc claims that his results cannot be used as evidence that cycling decreased after legislation was introduced. I agree that the results cannot

explain why the number of cyclists was lower at the 2 observation times after legislation. However, his data do indicate that the numbers dropped quite dramatically. This is consistent with an unfortunate and unintended side-effect of legislation, but may be only part of the explanation.

DeMarco looks at the longer-term consequences of having fewer cyclists on the roads, both in the cardiovascular health of cyclists and the risk of injury. With a decrease in cyclists on the roads, he foresees greater risk of heart disease and increased risk of injury if the environment becomes increasingly hostile to isolated cyclists. With such a short interval of observation, LeBlanc and colleagues can neither confirm nor deny such hypotheses.

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References

1. LeBlanc JC, Beattie TL, Culligan C. Effect of legislation on the use of bicycle helmets. *CMAJ* 2002;166(5):592-5.
2. Chipman ML. Hats off (or not?) to helmet legislation [editorial]. *CMAJ* 2002;166(5):602.
3. Macpherson AK, Parkin PC, To TM. Mandatory helmet legislation and children's exposure to cycling. *Inj Prev* 2001;7(3):228-30.

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