



# CR 195: Bicycle helmets and Injury Prevention: A Formal Review (2000)



## Summary

In this report, bicycle helmet efficacy is quantified using a formal meta-analytic approach based on peer-reviewed studies. Though several reviews have already been published advocating the use of helmets, this approach provides summary estimates of efficacy in terms of head injury, brain injury and facial injury based on studies of cyclists involved in crashes in which injury and helmet information is available for each individual. It also provides evidence concerning neck injury and fatal injury. These topics have only been partially addressed previously due to the small numbers of cases involved.

The results are based on studies conducted in Australia, the USA, Canada and the United Kingdom, published in the epidemiological and public health literature in the period 1987- 1998. The summary odds ratio estimate for efficacy is 0.40 (95% confidence interval 0.29, 0.55) for head injury, 0.42 (0.26, 0.67) for brain injury, 0.53 (0.39, 0.73) for facial injury and 0.27 (0.10, 0.71) for fatal injury. This indicates a statistically significant protective effect of helmets. Three studies provided neck injury results that were unfavourable to helmets with a summary estimate of 1.36 (1.00, 1.86), but this result may not be applicable to the lighter helmets currently in use.

In conclusion, the evidence is clear that bicycle helmets prevent serious injury and even death. Despite this, the use of helmets is sub-optimal. Helmet use for all riders should be further encouraged to the extent that it is uniformly accepted.

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**Author(s):** R Attewell, K Glase, M McFadden

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