Increased Bicycle Helmet Use in Sweden
Needs and Possibilities

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ABSTRACT

Background: From the perspective of what is called “vision zero” in Sweden, fatalities and injuries among bicyclists are unacceptable. Despite that, bicyclists constitutes approximately one third of all road user inpatients in Swedish hospitals, which is about the same proportion seen for drivers and passengers of motor vehicles. There are too many bicycle-related head injuries, but the risk of such traumas could be reduced considerably by the use of helmets. Bicycle helmet wearing can be increased by voluntary means, for instance by long-term community-based helmet promotion programs. However, the best effect has been achieved by combining promotion with a compulsory helmet law for all bicyclists, as has been done in Australia, New Zealand, and North America.

Aim: The general aim of the research underlying this dissertation was to provide further information about the need for increased bicycle helmet use in Sweden, and to determine what measures can lead to more widespread helmet wearing. The four papers included addressed two main questions: (1) What is the need for increased helmet wearing among different categories of bicyclists in Sweden? (2) Is a non-compulsory local bicycle helmet law a realistic alternative to a mandatory helmet law for all bicyclists?

Materials and methods: Observational studies of helmet use by bicyclists in Sweden were conducted once a year (average n = 37,031/year) during the period 1988–2002 (paper I). The general trend in observed helmet wearing in different categories of bicyclists was analyzed by linear regression, and the results were used to predict future trends in helmet wearing. Three studies (papers II–IV) were also performed to evaluate a non-compulsory local bicycle helmet “law” in Motala municipality during the study period 1995 to 1998 (papers II–IV). This law was introduced in 1996 and applies specifically to school children (ages 6–12 years), although the intention is to increase helmet use among all bicyclists. Adoption of the law was accompanied by helmet promotion activities. In one of the studies in the evaluation, written material and in-depth interviews (n = 8) were analyzed qualitatively to describe the process and structure of development of the Motala helmet law. The other two studies used a quasi-experimental design to assess the impact of the helmet law: one comprised an-
tual observations of helmet wearing among bicyclists in Motala (average n=2,458/year) and control areas (average n=17,818/year); and the other included questionnaire data on attitudes, beliefs, and self-reported behavior of school children in Motala (n=1,277) and control areas (n=2,198). The average response rate was 72.8%.

**Results and discussion:** There was a significant upward trend in helmet use in all categories of bicyclists from 1988 to 2002. Helmet wearing increased from 20% to 35% among children (≤ 10 years) riding bikes in their leisure time, from 5% to 33% among school children, and from 2% to 14% in adults. Total average helmet use rose from 4% to 17%. However, during the last five years of the study period (1998–2002), there was no upward trend in helmet wearing for any of the categories of bicyclists. If the historic trend in helmet use continues, the average wearing rate will be about 30% by the year 2010. The Motala helmet law was dogged by several problems, mainly during the initiation phase, and some of them led to poor rooting of the law in the schools and indistinct roles and responsibilities of the municipal actors. Despite that, the law initially led to a significant increase in helmet wearing among the primary target group (school children), from a pre-law level of 65% to about 76% six months post-law, whereas thereafter the wearing rate gradually decreased and was at the pre-law level 2 ½ years after the law was adopted. Nonetheless, a weak but significant effect on adult bicyclists remained: the pre-law level of about 2% rose to about 8% at the end of the study period. Only about 10% of bicyclists on bike paths in Motala wore helmets 2 ½ years post-law. The questionnaire study showed one significant effect on school children in Motala two years post-law, namely, a stronger intention to ride bicycles if a national compulsory helmet law was introduced. There was, however, no significant long-term influence on children’s attitudes or beliefs about helmet wearing, which agrees with the results of the observational study.

**General conclusions:**
It is indeed necessary to increase bicycle helmet wearing in Sweden. Both the current average rate of helmet use and the rate predicted for the near future are far from the goal of 80% that was officially proposed by several years ago. Previous research has shown that, to achieve substantial and sustained bicycle helmet use, it is necessary to use helmet promotion in combination with a national helmet law that is compulsory and applies to all bicyclists. The present evaluation of the non-compulsory local helmet law in Motala indicated that this type of initiative is not a powerful alternative to a mandatory national helmet law. Nevertheless, much has been learned from the initiation and implementation of this local action.

**Keywords:** bicyclist; head injuries; bicycle helmet; wearing rate; observational study; public health; safety promotion; injury prevention; helmet promotion; legislation; Sweden; questionnaire study; attitudes; beliefs.