PostScript

LETTER

Robertson's reply to Evans' assertions

Evans' letter¹ regarding my review of his book² further illustrates my concern about the numerous non-scientific inferences in the book. He frequently makes assertions without supporting data. In the letter, he says that I "supported and profited" from lawyers. In fact, to avoid conflict of interest, I donated all of my consulting income (from lawyers, the Indian Health Service, Ford Motor Company, and several universities) to university based injury prevention programs. Also, in two books, I proposed an alternative to case by case litigation that would put personal injury lawyers out of the vehicle defect litigation business while providing an incentive for safer vehicle designs.^{3,4}

Evans further attacked my integrity by inferring that my research is of "sought-after" effects. Since we have never met nor corresponded, Evans has no basis for attributing motives to me.

Evans' claim that my study of vehicle regulation was refuted is also false. I showed graphically in a subsequent paper that the critic's claim of excess co-linearity was not true.⁵ There is nothing "opaque", as Evans characterized the analysis. Scientists who commonly use regression analysis will be astonished to see it called "hocus pocus", as Evans did in his letter. Evans quotes percent change in raw numbers of deaths in Canada and the US to claim "The Dramatic Failure of U.S. Safety Policy". He based the comparison on deaths beginning in 1979, after most of the vehicles that preceded federal safety standards were already scrapped. A graduate student in epidemiology who compared raw numbers without correcting for exposure and other differences would be flunked. The reviewer who called the comparison a "showstopper" needs a refresher course in epidemiology.

The reduced death rate per vehicle from 1979 to 2002 was 46% for the US and 64% for Canada. Simply correcting for differential change in number of vehicles substantially narrows the difference in raw numbers that Evans cited. As I said in my review, other factors must be accounted for in such comparisons: "demographic shifts, population and vehicle density in geographic areas and changing mix of vehicles", any one of which could close a gap between 46% and 64%. Evans asserts, without presenting any evidence, that vehicle mix in the two countries cannot explain the difference. Surely differences in vehicle growth that narrowed a raw difference from 34 percentage points (50-16) to 18 percentage points (64-46) resulted in a differential vehicle mix, not to mention potential differences in preferences by make and model in the two countries or other factors. One simple check on the generality of differences in countries is to look at relevant subsets. For example, the death rate per 100 000 vehicles in the 12 US states that border Canada in 2002 was 15.16,⁶ 6.2% lower than Canada's. Surely, US safety policy was not a "dramatic failure" only in the southern states.

As to Evans' mention of favorable consensus among other reviewers, one to whom I sent my review wrote me, "I agree with you! I should have read the book a little more carefully. Your review is much more detailed and sound technically." My full review of the book, which was not published because of space limitations, discusses the issues in greater detail. It can be read at http://www.nanlee.net/evans/Page_1x.html

L S Robertson

1071 W Mountain Nugget Drive, Green Valley, AZ 85614, USA; Nanlee252000@yahoo.com

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- 3 Robertson LS. *Injury epidemiology*. New York: Oxford University Press, 1992.
- 4 Robertson LS. *Injury epidemiology: research and control strategies*. New York: Oxford University Press, 1998.
- 5 Robertson LS. Automobile safety regulations: rebuttal and new data. *Am J Public Health* 1984;74:1390-4.
- 6 National Highway Traffic Safety Administration. *Traffic safety facts*, 2002. Washington, DC: US Department of Transportation, 2004.

BOOK REVIEW

The Handbook of Road Safety Measures

Edited by R Elvik, T Vaa. Elsevier, 2004, \$155, £103.50, €155, pp 700. ISBN 0-08-044091-6.

The growing problem of road traffic injuries requires sustained implementation of intervention measures by different sectors. Availability of information on effective measures is necessary to guide decision making. Rune Elvik and Truls Vaa have made an excellent effort to address this need.

The title of this book can easily mislead the reader—it gives the impression that the book provides guidelines on specific road safety measures. The book does not do this at all. Instead, it describes as objectively as possible what is known about the effects of road safety measures.

This book has four main parts. The first part is introduction, outlining the purpose, structure, methods used, factors contributing to road traffic collisions, basic concepts of road safety, quality of road safety evaluation research, and contribution of research to road safety policy making. The second part provides a description of general purpose policy instruments which affect road safety, including not only road safety legislation, road safety audits, and safe community programs but also the wider policy instruments such as land use plans, road pricing, and motor vehicle taxation. The third part gives details

on specific road traffic safety measures: road design and furniture, road maintenance, traffic control, vehicle design and protective devices, vehicle and garage inspection, driver training and regulation of professional drivers, public education and information, police enforcement and sanctions. Part four contains the vocabulary and index (definitions of technical terms and author index are presented). Extensive reference lists are provided in different parts of the book.

Questions that may arise are: What does this book add to existing literature? Don't we know a lot already about effective road safety measures? Don't we have articles on these measures in regular scientific journals? In my view, this book makes three key contributions to evidence and writing style on road safety measures. The first is that it assembles in one comprehensive document existing knowledge on effects of road safety measures. There is information on measures from different sources, such as journal articles and research reports, and this would have required major effort to assemble such information in one document. The book provides information on 14 general policy and 110 specific measures. The spectrum of measures covered is impressive, including such aspects as landuse planning, road safety audits, provision of medical services, road design, road maintenance, traffic control, vehicle design, vehicle inspection, requirements for drivers, road user education, and enforcement.

The second key aspect is that the book is an excellent example of the scientific rigour needed in road safety research. This book is based on extensive review of literature and systematic extraction of information from more than 1700 studies. The methods used are clearly described and the presentation of the main content is well structured into three main parts, each with chapters and good illustrations. Key conceptual and methodological issues such as risk, indicators, causation, and the research-policy link are clearly discussed in this book. The book is therefore not only a source of knowledge but also an excellent example of a well researched and written road safety document. There is much that both novice and advanced road safety researchers can learn from the scientific rigour in this book.

The third contribution is that the authors have refrained from patronizing the reader. They have avoided recommending any specific measure or slavishly guiding the reader on what to choose. They leave it to the reader to work out specific measures that are relevant to their settings. I think this approach provides opportunities for users to discuss the information presented before deciding on what may be applicable.

I have two main concerns. The first concern is conceptual. The authors have adopted a strong quantitative definition of a road safety measure. Though they justify their choice of this definition, I am of the view that they should have made an effort to include qualitative and perception indicators that are increasingly being used in research and programs, not only in road safety but a number of disciplines. The second concern is on the geographic coverage of studies that are