



Bookreview

INTELLIGENT TRANSPORTATION SYSTEMS

IEEE ITS SOCIETY NEWSLETTER

Vol. 9, No. 1, March 2007

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Book Review: *Traffic Safety*

By Leonard Evans

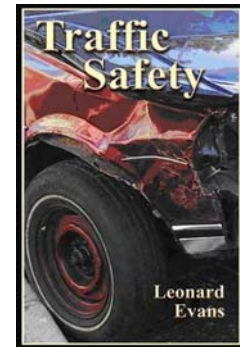
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Traffic Safety and the Driver published in 1991 by the same author was mainly devoted to reviewing and synthesising research that had already appeared in the research literature. According to the author, about half of the technical material in *Traffic Safety* (2004) is presented for the first time. In this book the term *traffic* is confined to *vehicles* "with engines travelling on wheels along public roads". The general concept of *safety* is the "absence of unintended harm to living creatures or inanimate objects".

The book is authored by Leonard Evans who grew up in Northern Ireland, graduated from The Queen's University of Belfast (BSc in Physics, 1st class) and holds a doctorate in Physics from Oxford University, England. He pursued 33-year research career with General Motors. Dr Evans is a Fellow of the Human Factors and Ergonomics Society, the Society of Automotive Engineers, and the Association for the Advancement of Automotive Medicine, and a member of the National Academy of Engineering (USA).

While the author's professional experience is mostly related to the USA this book is international in scope with information from 49 countries.

This book is not exactly focused on the core topics related to the Intelligent Transportation Systems but it is very much influential on the forming of the traffic safety policies. Thus, review of the most chapters will be very brief but some other will attract more attention.



The book is using methods of science to examine statistics related to deaths, injuries, and property damage from traffic crashes. Synthesis of results from Biomechanics, Criminology, Economics, Engineering, Epidemiology, Medicine, Physics, Psychology, and Sociology is attempted in order to produce easily understandable relationships.

Book consists of 16 chapters. Chapter 1 gives background information and definitions. (18 pages, 2 figures, 1 table, 37 references). Chapter 2 is describing available data sources (17 pages, 2 figures, 1 table, 37 references). Overview of traffic fatalities is presented in Chapter 3 (27 pages, 18 figures, 1 table, 15 references).

Two chapters are focusing on issues which are not related to humans. Chapter 4 is devoted to vehicle mass and size (35 pages, 14 figures, 6 tables, 34 references). Driving conditions such as environment, roadway and vehicles involved into crashes are discussed in Chapter 5 (22 pages, 4 figures, 8 tables, 45 references).

Five chapters are devoted to the human-related issues. Factors affecting likelihood of survival (gender, age and alcohol) are investigated in Chapter 6 (27 pages, 13 figures, 1 table, 25 references). Chapter 7 provides a broad epidemiological overview of how various risk measures change as driver age (28 pages, 20 figures, 7 tables, 21 references). A role of driver performance (knowledge, skill, perceptual and cognitive abilities) is analysed in Chapter 8 (32 pages, 5 figures, 1 table, 74 references) and the actual driver behaviour (use of person's abilities) is a topic of Chapter 9 (31 pages, 7 figures, 5 tables, 60 references). In Chapter 10 author gives special attention to alcohol-related issues (33 pages, 4 figures, 6 tables, 69 references).

Devices which may help to protect drivers and passengers are discussed in Chapter 11 (39 pages, 8 figures, 8 tables, 607 references) and the special attention to airbags is given in Chapter 12 (23 pages, 3 figures, 7 tables, 39 references).

Chapter 13 is addressing the relative contributions of different measures which have been introduced in order to reduce harm from traffic crashes (27 pages, 5 figures, 3 tables, 39 references). Ways to reduce person's risk are discussed in Chapter 14 (21 pages, 3 figures, 25 references).

The dramatic failure of US safety policy is a title of Chapter 15 (31 pages, 9 figures, 10 tables, 43 references). Here author starts from comparing USA with other countries in terms of fatalities per year, per thousand registered vehicles and per billion kilometre of vehicle travel. Three countries selected for comparisons are Australia, Canada and the UK which are "chosen because they have much in common with the US in terms of language, beliefs, and traditions" (for 23-year period from 1979 to 2002).

It is followed by the search for an explanation and declares that "the key is the uniquely powerful role litigation has come to play in the US" effects of which are:

- US safety policy priorities have been ordered almost perfectly opposite to where technical knowledge shows benefits are the greatest;
- Ideologically driven lawyers lacking knowledge or interest in technical matters have defined and led US policy;
- Powerful influence of law on all aspects of US society, which "is without parallel in any other country".

The airbag mandate, USA government requirement that airbags be installed in vehicles, is investigated and it is indicated that "technical information, such as the effectiveness of airbags, never impeded that goal". Author is presenting and discussing various statistics related to the airbag and other issues (e.g. seat belts).

It is followed by discussions on the topics such as where is US safety policy now and the importance of what the public believes. Quotation from Goethe (1749-1832) is used to illustrate what is happened: "There is nothing more fearful than ignorance in action".

Chapter 16 is focused on a vision for a safer tomorrow. The author is emphasising the two factors that determine an individual's risk in traffic such as the individual's behaviour and the behaviour of other road users. The following discussion is looking at "the extraordinary safety of commercial aviation" which is mostly credited to the pilots who are following the rules.

Issues related to traffic law enforcement such as low and capricious probability of detection as well as the public's view on justifiability and motivations behind traffic law and its enforcement (e.g. so called speed traps which are unreasonable low speed limits enacted solely to raise revenue)

A number of newer automatic enforcement technologies have been developed, and are in use to some degree in many countries, including Australia, Canada, New Zealand, the USA and a number of European countries including UK. These include photo radar (radar-based speed measuring device with photo camera) and red-light cameras (similar device monitoring intersections). Advantages of automatic monitoring of driving (high probability of detection as well as objectivity and completeness) are discussed and it is argued that a number of related policy changes shall be introduced in order to make automatic monitoring effective and acceptable.

One of the important author's conclusions is that if USA had matched safety progress in Britain, Canada, and Australia then 200,000 fewer Americans would have been killed between 1979 and 2002.

Traffic Safety, By Leonard Evans,
Science Serving Society, 2004, 445 Pages,
Hard Cover, ISBN 0-9754871-0-8

Recommended publisher's price for this book is 119.99 USD.