



Traffic Safety

Leonard Evans, Published by Science Serving Society, Bloomfield, MI, USA, 2004.
ISBN 0-9754871-40-8. 444 pages.

IMAJ 2005;7:62-63

The jacket to this impressive book reminds us that more than a million people, mostly young, are killed each year on the world's roads, and in any typical month, more people are killed in the USA than in the September 11 terrorist attacks on the Twin Towers. After reviewing and using his 1991 classic, *Traffic Safety and the Driver* – always within eye reach, I asked myself “What can Leonard Evans do for an encore?” The encore is even better than the original. In both books, he has laid out a persuasive case for major impacts on reducing road death tolls through targeting driver behavior, notably via speed reduction, targeting drunk driving, and promoting seat belt laws.

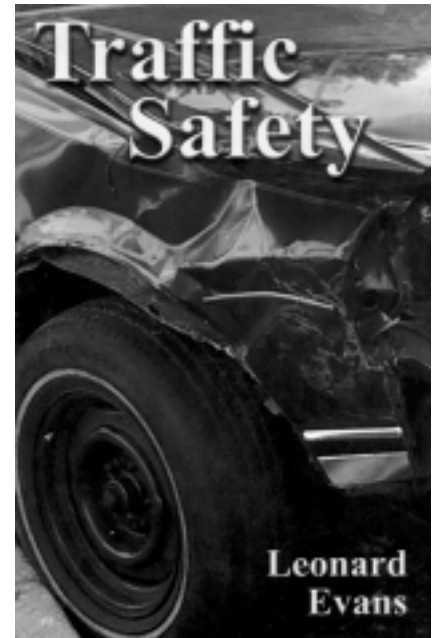
Evans, an Oxford-trained physicist, formerly a senior scientist at General Motors and president of Science Serving Society, has written a new edition in which he not only revisits but substantially updates the issues examined in his earlier book with new data and analyses. The target audiences are researchers, policymakers, and the concerned public. Evans is a pioneer in applying Newtonian models, which relate mass, velocity and kinetic energy and which enable him to sort out the relative weights of behavioral and environmental interventions targeted at pre-crash and crash phases of road injury. These models are applied to real world databases. However, they are not statistical but biomechanical, and obey the laws of Newtonian physics and therefore behave algebraically. I personally have archived from high ranking journals many juicy examples of misjudgments in the epidemiology of injury prevention made by senior scientists who ignore these models. These models take the reader out of the Ptolemaic rut of U.S.

injury epidemiology, in which ever more complex statistical models are increasingly divorced from Newtonian realities posed by rising travel speeds – or what I call speed creep.

This book updates and greatly expands on the material in the first book. Evans again addresses the importance of speed control, based on the fourth power relationship rises and falls in travel speeds and deaths, or in everyday language, a 1% rise in speeds leads to an approximately 4% rise in deaths. He cites work from Israel among the new studies showing this relationship, which was observed after this country raised its speed limit in 1993.

The big news from the last decade is that the reverse is true, and Evans, in this book, compares the disastrous situation in the U.S. – which raised speed limits and promoted speed (Israel is still doing the same) with more than 40,000 deaths at both the beginning and end of the decade – with the enormous progress in the UK, where deaths fell by some 35% and in Australia, where death tolls fell by 50% in Victoria following the introduction of speed cameras and draconian measures against drunk driving. The book contains an excellent update of his previous synthesis of the available knowledge on alcohol and drugs – which, contrary to conventional wisdom, are problems in Israel.

The centerpiece of Evans' book is a brilliantly written angry chapter on the dramatic failure of U.S. Road Safety Policy. This chapter, which has strong implications for Israel – and just about every other country in the world outside of the UK and Australia – is required reading and its message should be shouted from the rooftops. Statements making some of the



same points on the failure of U.S. policy, despite a national network of well-funded injury prevention centers, have been met by a loud silence from policymakers and researchers in the USA and Canada. Evans makes a persuasive case for the U.S. failure resulting from road injury prevention strategies oriented exclusively towards passive safety, i.e., making vehicles safer to crash in rather than preventing crashes. While such strategies have their benefits, he points to converging lines of evidence from many sources showing that one gets a better return for the buck (or shekel) from targeting behavioral risks. .

This book summarizes analytic data that verify Evans' earlier warnings not to expect large reductions in road deaths from airbags, as contrasted with the enormous benefits of seat belts and child restraints, although airbags do add some protection.

Evans, in dissenting with the paradigm dominant since the late 1980s, appears to have been right, judged by the bottom line: trends in deaths in the U.S. have not gone down in the last decade. In retrospect, the truth is that industry – the guys with the black hats – appears to have been closer to the truth than the non-government organization (NGO) advocates, the guys and gals with the white hats – Ralph Nader and Joan Claybrook, who did not give emphasis to speed control. Small increments in passive protection could not undo the fourth power relationship between speed and road deaths as upwards speed creep harvested its cruel toll. The combined effect of all U.S. Federal Motor Vehicle Standards is 11.4% – itself a non-trivial benefit – which I figure is equivalent to the reduction in deaths from a 1.8% reduction in speed. Compare this result with what happened following the introduction of speed cameras in Victoria (Australia), the UK and France, where deaths fell by 50%, 34% and 20% respectively.

For the community of policymakers, engineers, academics and NGOs in Israel, Evans presents abundant material on the various holy cows and golden calves that fascinate so many of Israel's policymakers

and eat up so much of its road safety budget, including advertising, mass media campaigns, driver education, and simulators. Although huge highways with optimal design speeds are safer than smaller roads, the relationships between more freeways with high design speeds, more travel and higher travel speeds, are complex. He reviews the by now obvious benefits of roundabouts.

However, those looking for guidance on the role of fatigue, long hours and work stresses on risks among truck drivers – a big issue in Israel, where death tolls involving commercial vehicles are extremely high – have to look elsewhere. The same holds true for “out of the box” solutions based on mass transit. He does not address “predict and provide” scenarios of congestion in which the cycle of more cars → more roads → more cars goes on and on and on.

Finally he presents a vision for tomorrow which others call Vision Zero, or no road deaths. Speed camera networks figure prominently. The move towards a nationwide network of speed cameras in Israel should result in a reduction of 30–50% in deaths, if the system is operated effectively. As for personal advice, here are some tips

from a neat table on p. 336: driving 5 kph slower on urban road reduces crash risk by 50%; driving 10 kph slower than other cars on an interurban road reduces crashes by 55%, wearing a seat belt reduces risks for deaths by 42% and not using a cell phone reduces crashes by 77%. Avoiding alcohol before driving is of course highly protective.

The Bible tells us that Joshua at Gibeon, just off what is now Route 1, the Tel Aviv–Jerusalem highway (average travel speeds >120 kph) made the sun stand still (Joshua 10:12–14) But the Biblical narrative warns that Joshua was the first and last person to ever successfully persuade God to suspend Newtonian laws of motion and that no other mortals will ever be able to do the same. We are still reaping the bitter harvest of experiments with speed which ignore this warning that Joshua's experiment would not be reproducible.

Buy, read and study Evans' sequel to the Biblical warning to understand why.

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You may fetter my leg, but Zeus himself cannot get the better of my free will

Epictetus (1st century), Stoic philosopher. A freed slave, Epictetus was banished with other philosophers from Rome and settled in Epirus. He taught that loving one's enemies, repudiating pleasure and understanding that all men are brothers are ways to serenity.

Capsule

Giving a self-antigen its natural identity

Natural killer (NK) T cells recognize lipids, rather than protein-derived antigens, that are presented by major histocompatibility class I-like CD1 molecules. Although certain artificial lipids and a handful derived from bacteria have been shown to stimulate NKT cells, the identity of naturally occurring endogenous lipid ligands has been elusive. Zhou and co-workers reveal that a single mammalian lysosomal glycosphingolipid, isoglobotrihexosylceramide, or iGb3, can stimulate large numbers of human and

mouse NKT cells, and found that mice lacking a subunit of an enzyme responsible for generating iGb3 have a profound deficiency in NKT cell development in the thymus. This lipid antigen may thus play a role in directing NKT cell development and function and may contribute to a variety of disease states, from infection to cancer.

Science 2004;306:1786

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