

ICORSI

Independent Council for  
Road Safety International



**Karolinska  
Institutet**

# Globalising Vision Zero: Generating Scientific Evidence for the Road Ahead

A pre-conference event on the occasion of the  
3rd Global Ministerial Conference on Road Safety

18 February 2020

Karolinska Institutet  
Solna Campus, Samuelssonsalen, Tomtebodavagen 6,  
Stockholm



# Contents

Programme.....	1
Speakers.....	3
Notes.....	6
Evidence and Gap Map (EGM).....	9
Evidence and Gap Map (EGM): Effectiveness of Road Safety Interventions.....	10
Recent ICoRSI publications.....	15
Independent Council for Road Safety International (ICoRSI).....	19
Department of Global Public Health, Karolinska Institutet.....	19
The Campbell Collaboration.....	19
Campbell South Asia.....	20

# Programme

## **08:30 Registration**

### **Session 1**

09:00	Opening remarks	Dinesh Mohan	Director ICoRSI
09:05	Welcome	Ole Petter Ottersen	President Karolinska Institutet
09:20	Vision Zero in the international context	Barry Sheerman	MP UK Parliament Chair ICoRSI
09:35	Evidence & Gap Maps	Howard White	CEO Campbell Collaboration

## **09:55 Coffee**

### **Session 2**

#### **Chair Jac Wismans**

**SAFETEQ & Visiting Professor Chalmers/SAFER,  
Gothenburg**

10:20	EGM on road safety	Dinesh Mohan	ICoRSI
10:30	Evidence: Roads and infrastructure	Geetam Tiwari	Professor, IIT Delhi
10:50	Which factor is more important - design or behavioral adaption?	Rune Elvik	Senior Research Officer, TOI Norway
11:10	Discussion		

### **Session 3**

#### **Chair Ingrid Skogsmo**

**Research Leader, VTI, Linköping**

11:40	Evidence: Vehicle issues	Kavi Bhalla	Assistant Professor, University of Chicago
12:00	Speed control: future concerns	Christer Hyden	Emeritus Professor, Lund University
12:20	Discussion		

## **12:45 Lunch**

#### **Session 4**

**Chair Stephen Perkins**

**Head of Research and Policy Analysis  
ITF-OECD**

- |       |   |                  |   |
|-------|---|------------------|---|
| 13:30 | Evidence: Pre-hospital care                               | Mathew Varghese  | Head Orthopaedics,<br>St. Stephen's Hospital, Delhi               |
| 13:50 | The victim's right to<br>effective emergency<br>treatment | Ian G. Roberts   | Professor, LSHTM, London  |
| 14:10 | A public health approach                                  | Marie Hasselberg | Head, Department of Global<br>Public Health, Karolinska Institute |
| 14:30 | Discussion  |                  |   |

**15:00 Coffee**

#### **Session 5**

**Chair Barry Sheerman**

**Chairperson ICoRSI**

- |       |                                    |                |  |
|-------|------------------------------------|----------------|--|
| 15:30 | Evidence: Human factors            | Dinesh Mohan   | Director, ICoRSI                                     |
| 15:50 | Evidence and global road<br>safety | Soames Job     | Global Lead Road Safety,<br>World Bank and Head GRSF |
| 16:10 | Future directions                  | Mark Stevenson | Professor,<br>University of Melbourne                |
| 16:30 | Discussion                         |                |  |
| 17:00 | Close                              |                |  |

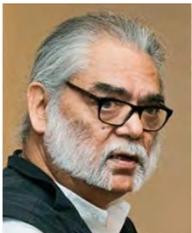
## Speakers



**Barry Sheerman** has been the Member of Parliament for Huddersfield, UK, since 1979. As a new MP, Barry organized a group that successfully introduced compulsory seat-belt wearing for adults and restraints for all children in cars. This group later became the charitable trust, Parliamentary Advisory Council for Transport Safety (PACTs). He organized the European Transport Safety Council (ETSC) with leaders from the Netherlands, Sweden & Germany. Barry was founding supporter of the World Bank's Business Partners for Development, which created the Global Road Safety Partnership (GRSP), where he served as Chair. He is the Chairperson of the Independent Council for Road Safety International (ICoRSI).



**Christer Hyden** obtained his civil engineering degree at Lund University in 1971. Since then he has been employed at Lund University in the Department of Traffic Engineering (now the Department of Technology and Society), where he has been Professor since 1993, and Emeritus since 2012. His main areas of research are safety in urban areas, assessment technique like the traffic conflict technique, speed, speed limiters in cars, and ITS. He has been the Chairman of International Cooperation on Theories and Concepts in Traffic Safety. He won the Volvo Traffic Safety Award in 1991.



**Dinesh Mohan** is Honorary Professor for Biomechanics and Transportation Safety at the Transportation Research and Injury Prevention Programme at the Indian Institute of Technology Delhi. He obtained his Ph.D. degree in Biomechanics from the University of Michigan, Ann Arbor, and has worked at the Insurance Institute for Highway Safety, Washington, DC, and the University of Michigan Transportation Research Institute. His research includes transportation research (safety and pollution), human tolerance biomechanics and road safety. Dinesh is the Director of the Independent Council for Road Safety International (ICoRSI).



**Geetam Tiwari** is the MoUD Chair Professor for Transport Planning at the Department of Civil Engineering, and Transportation Research and Injury Prevention Programme (TRIPP) at IIT Delhi. She obtained her B. Arch degree from the University of Roorkee, and a Master of Urban Planning and Policy, and Ph.D. in Transport Planning and Policy, from the University of Illinois, Chicago. She has received the degree of Doctor of Technology honoris causa from Chalmers University of Technology, Sweden, in 2012. She has been an Adlerbretska Guest Professor for sustainable urban transport at the Chalmers University of Technology, Sweden, 2007- 2010. She has been working in the area of traffic and transport planning focusing on pedestrians, bicycles, and bus systems. She is editor-in-chief of the International Journal of Injury Control and Safety Promotion.



**Howard White** is the Chief Executive Officer of Campbell Collaboration. He was previously the founding Executive Director of the International Initiative for Impact Evaluation (3ie) and has led the impact evaluation program of the World Bank's Independent Evaluation Group. Howard started his career as an academic researcher at the Institute of Social Studies in The Hague, and the Institute of Development Studies, University of Sussex. As an academic, he leans towards work with policy relevance and working in the policy field believes in academic rigor as the basis for policy and practice. His other interests are running and walking, preferably long distances in remote places, and reading English history.



**Ian Roberts** is Professor of Epidemiology at the London School of Hygiene & Tropical Medicine. He trained as a paediatrician in the UK and then in epidemiology at the University of Auckland, New Zealand and McGill University, Canada. He is a clinical academic who works collaboratively with health professionals world-wide to conduct large multi-centre clinical trials aimed at improving patient outcomes in life threatening emergencies. He works with others to build global research partnerships to answer questions together that could not be answered by anyone working alone. He has played lead roles in several large trials including the CRASH trials and the Woman trial.



**Ingrid Skogsmo** has over 25 years of industry experience, mainly from Volvo Cars (1985-2007), where she was Director, Volvo Cars Safety Centre from 2003. She has also worked at Volvo Group (Vice President, Corporate Strategy) and Ford, Dearborn (safety manager). Ingrid Skogsmo was deputy director of SAFER Vehicle & Traffic Safety Research Center 2012-2015. In 2015-2018 she was expert for automated driving and road safety at the European Commission. Today she is research leader at VTI. She has authored or co-authored over 20 papers. Ingrid Skogsmo has a masters' degree from Chalmers, Sweden, and was awarded an Honorary Doctorate in 2008



**Jac Wismans** is since 2008 owner of the company SAFETEQ in Son, The Netherlands (see [www.safeteq.com](http://www.safeteq.com)), working as an independent consultant in the field of road safety. From 2007-2018 he was visiting Professor at Chalmers University, working in the field of computational human body models, safety of future vehicles and global road safety. From 1978-2008 he worked at TNO in the Netherlands in different positions and was part-time professor in vehicle safety at Eindhoven University of Technology in the Netherlands. At TNO he was amongst others responsible for the development of the crash analyses software package MADYMO and crash dummy research.



**Kavi Bhalla** is an assistant professor in the Department of Population Health, Biological Sciences Division, and affiliated faculty of the Harris School of Public Policy at the University of Chicago. His research aims to develop transport systems that are safe, sustainable and equitable, with a central focus on road safety in low- and middle-income countries. His recent work has focused on the development of analytical tools for improving estimates of the incidence of injuries in information-poor settings using available data sources. Kavi co-led the injury expert group of the 2010 Global Burden of Disease Project. Kavi is the Convener of the Independent Council for Road Safety International (ICORSI).



**Marie Hasselberg** is Head of the Department of Global Public Health at the Karolinska Institutet in Stockholm, Sweden. She is professor in Public health epidemiology with a PhD in Social Medicine from Karolinska Institutet. Her research includes studies of socio-demographic factors behind injuries and evaluation of interventions aimed at reducing injuries especially in low- and middle-income countries. Her recent work has also focused on quality of life after road traffic injuries.



**Mark Stevenson** is an epidemiologist and Professor of Urban Transport and Public Health at the University of Melbourne. He is a National Health and Medical Research Council (Australia) Fellow, an Honorary Professor in the Peking University Health Science Centre, China, and an advisor for injury to the Director General of the World Health Organization. Dr. Stevenson has worked on numerous national and international projects that have directly influenced transport policy and worked with both Federal and State Governments in Australia. He is the director of the Transport, Health and Urban Design Research Lab comprising a cross-disciplinary research team exploring how the effects of urban form and transportation influence the health of residents in cities.



**Mathew Varghese** is the Head of the Department of Orthopaedic Surgery and the former Director of St Stephen's Hospital, Delhi. He is a post-graduate in orthopaedic surgery from the Maulana Azad Medical College, Delhi University. He specializes in trauma care with particular emphasis on reconstructive surgery for complex trauma to the musculo-skeletal system and in pre-hospital care for trauma patients. He is the chair of the Project Review Committee on Trauma Care for the Indian Council for Medical Research and member, Technical Committee on Trauma and Emergency Care Services (TECS) at the WHO, Geneva.



**Rune Elvik** was educated as a political scientist at the University of Oslo. He has worked as road safety researcher at the Institute of Transport Economics since 1980. He obtained doctoral degrees from the University of Oslo in 1993 and 1999 and from Aalborg University in Denmark in 2007. He was associate editor of *Accident Analysis and Prevention* from 1997 to 2004 and editor-in-chief (together with Karl Kim) from 2005 to 2013. He has participated in many research projects funded by the European Commission, and been a member of Transportation Research Board committee on safety data, analysis and evaluation. He is the author of about 120 papers in scientific journals and many research reports.



**Soames Job** is Head of the Global Road Safety Facility, and Global Lead for Road Safety with the World Bank. Soames has successfully headed government lead organisations in road safety (as the Executive Director of the Australian National Road Safety Council, and of the New South Wales Centre for Road Safety), was previously a professor in road safety, President of the Australasian College of Road Safety, and a global consultant. He has advised and guided over 80 countries and states on road safety. Soames has over 400 published papers and (as part of a team) has received many awards for successful road safety delivery.



**Stephen Perkins** is the Head of the Joint Transport Research Centre of the OECD and the International Transport Forum. The Joint Research Centre undertakes economic research in support of transport policy development. Its work underpins the activities of the Forum and facilitates policy dialogue and exchange of experience for transport research institutes and transport ministries. Stephen's previous experience includes work on energy industry restructuring and regulation at the International Energy Agency, work on economic regulation for a major gas utility and consultancy on energy policy and environmental issues for government and industry.

# Notes

# Notes

# Notes

# Evidence and Gap Maps

## Campbell Collaboration<sup>1</sup>

EGMs are systematic and visual presentations of the availability of rigorous evidence for a particular policy domain. EGMs consolidate what we know and do not know about "what works" by mapping out existing and ongoing systematic reviews and impact evaluations in this field; and by providing a graphical display of areas with strong, weak or non-existent evidence on the effect of interventions or initiatives. A typical map is a matrix of intervention categories (rows) and outcome domain (columns). There may be additional filters for study design, location and population sub-group.

EGMs show what evidence there is and not what evidence says.

### Evidence and gap maps must:

- Have a pre-specified protocol
- Have a systematic search strategy
- Have clear inclusion and exclusion criteria which are systematically applied
- Systematically report all eligible studies

Evidence may be global or for a particular region(s). It may cover different types of evidence (but most examples are of effectiveness studies), and may include primary studies and systematic reviews.

The map is presented in two dimensions: the rows list interventions and sub-categories, and the columns lists the outcome domains. Each cell shows studies which contain evidence on that combination of intervention and outcome. Included studies are coded for additional characteristics which can be used in filters, such as country, region and population categories.

The evidence is identified by a search following a pre-specified, published search protocol. The map is accompanied by a descriptive report to summarize the evidence for stakeholders such as researchers, research commissioners, policy makers, and practitioners.

EGMs are useful for policymakers and practitioners looking for evidence to inform policies and programs. For donors and researchers, these maps can inform a strategic approach for commissioning and conducting research.

### Why make evidence and gap maps?

- Guide users to available high quality evidence to inform strategy and programme development
- Tell users where there is no high quality evidence
- Identify gaps to be filled by evidence synthesis and new studies for researchers and research commissioners - and so more strategic, policy-oriented approach to research agenda

---

<sup>1</sup> <https://www.campbellcollaboration.org/evidence-gap-maps.html>

# Evidence and Gap Map (EGM): Effectiveness of Road Safety Interventions

## Summary

Dinesh Mohan, Geetam Tiwari, Mathew Varghese, Kavi Bhalla, Denny John,  
Ashrita Saran, Howard White

### Scope of the EGM

The scope of this EGM is to cover relevant studies in road safety sector from all countries and present the effectiveness of interventions in terms of mainly traffic crash injuries as its outcome. The EGM will cover all aspects of road safety interventions except car-design. Safety standards for car design including crash worthiness standards have been evolving since 1970s. For car occupant safety there is general consensus on car technologies which work and don't work internationally and car designs around the world are converging to similar international standards. Safer car designs are also influenced by the market because of car safety ratings announced by agencies like NCAP. However, infrastructure design, safety policies and enforcement are not subject to market mechanisms in the same way. Hence, car design interventions associated with vehicle occupants have been excluded from this EGM.

The interventions adopted in this EGM are classified into five broad categories: Human factors, vehicle factors and protective devices, road design, infrastructure and traffic control, post-crash pre-hospital care and legal and institutional framework. They are described as follows:

- Human factors: These cover all interventions including any factor or road user behaviour that leads to occurrence or consequence of road traffic injuries.
- Vehicle factors and protective devices: These are mainly focused on design of different vehicle modes except cars and protective equipment which may lead to reduction in injuries.
- Road design, infrastructure and traffic control: These interventions cover various types of infrastructure (geometry, traffic control etc.) present on different categories of roads (urban and rural roads) and are critical factors affecting road traffic injury.
- Post-crash pre-hospital care: These pre-hospital interventions (e.g. road side, in ambulance etc.) aims to reduce the severity of injury consequences once a road traffic crash has occurred.
- Legal and institutional framework: These mainly focus on insurance policies, vehicle taxes, fuel and road pricing, central government, research institutions and laws addressing road traffic injury.

In this EGM importance has been given to primary outcomes as there is little agreement among researchers on the relationship between behavioural/knowledge changes and reductions in traffic crashes. Therefore, studies are included only if the outcome is measured in changes in RTI (fatal, injury only) or use of protective devices, changes in vehicle speeds or drinking and driving.

### Overall aim and objectives

The overall aim of the evidence gap map is to gather and present any research on interventions aiming to reduce the road traffic injuries and fatalities anywhere in the world. This protocol provides a project plan to introduce the first Evidence Gap Map (EGM) that takes into account the existing studies and newly published literature on the effectiveness of interventions pertaining to road safety. No comprehensive mapping has

been done to show whether studies on road safety originate from LMIC or HIC. This EGM moves toward extending the scope of mapping such studies to a global scale.

The aim of the EGM is to identify, map, and describe the existing evidence on the effectiveness of interventions to improve road safety across all countries.

The objectives of this EGM are:

- 1) To identify existing evidence from all effectiveness studies and systematic reviews (SRs) related to road safety interventions
- 2) To identify existing gaps in evidence where new primary studies and systematic reviews could add value.

The EGM aims to direct the future research and discussions based on systematic evidence towards the approaches and interventions which are most effective in the road safety sector. This could enable generation of evidence for informing policy at global, regional or national levels.

## Methodology

### *Framework*

The final EGM will have a structured framework of interventions and outcomes relevant to road safety with various filters in a user-friendly way.

Key features:

- The EGM will contain all the relevant evidence from systematic reviews (SR) and primary studies and provide access to user-friendly summaries and appraisals of those studies.
- The EGM will show where completed studies have been conducted.
- The EGM will highlight absolute gaps (lack of studies for particular interventions/outcomes) and synthesis gaps (where there is a density of primary studies but lack of high-quality SRs or an update of existing SRs)

### *Intervention*

The EGM will include any intervention aiming to reduce road traffic injuries and fatalities as an objective excluding the effectiveness of car design intervention in the vehicle factors and protective device category.

1. Human Factors
  - a. Enforcement
  - b. Sanctions and Penalties
  - c. Driver Training and Licensing
  - d. Road user education, awareness building and public campaigns
2. Vehicle Factors and Protective Devices
  - a. Bicycle
  - b. Powered Two-wheeler
  - c. Bus
  - d. Truck
  - e. Other Vehicles (excluding car)
3. Road Design, Infrastructure and Traffic Control
  - a. Road design and urban form
  - b. Protective Infrastructure
  - c. Speed Control Infrastructure
  - d. Bicycle, PTW and Pedestrian Paths
  - e. Traffic Control and Junctions
  - f. Work zones and tollbooths

4. Post-Crash Pre-hospital Care
  - a. Extrication
  - b. Ambulances
  - c. Level of medical personnel
  - d. Time to hospital
  - e. Drugs and medications
  - f. First aid training of bystanders, drivers and policeman
  - g. Stay and play vs Scoop and run
5. Legal and Institutional framework
  - a. Pricing
  - b. Safety Institutions
  - c. Motor Vehicle Insurance
  - d. Laws

**Outcomes**

1. Primary Outcomes- Health and Traffic crashes
  - a. Fatal crashes
  - b. Non-fatal injury crashes
2. Intermediate Outcomes- Safe road-use practices
  - a. Change in use of seat belts
  - b. Change in use of helmets
  - c. Change in Speed
  - d. Change in Drug/Alcohol use

**Criteria for including and excluding studies**

The EGM includes impact evaluations and systematic reviews of the effectiveness of interventions. Impact evaluations are defined as intervention evaluations or field experiments that use quantitative approaches applied to experimental or observational data to measure the effect of an intervention relative to a counterfactual representing what would have happened to the same group in absence of that intervention. Impact evaluations may also test different intervention designs.

**Details of study designs**

- a) Prospective studies allocating the participants to the intervention using randomised or quasi-randomised mechanisms at individual or cluster levels.
  - i. Randomized control trial (RCT) with assignment at individual or cluster level (e.g. clustering at market, round-about etc.)
  - ii. Quasi-RCT using a quasi-random method of prospective assignment (e.g. alternation of clusters)
- b) Non-randomised designs with selection on unobservables:
  - i. Natural experiments using methods such as regression discontinuity (RD)
  - ii. Panel data or pseudo-panels with analysis to account for time-invariant unobservables (e.g. difference-in-difference (DID), or fixed- or random-effects models)
  - iii. Cross-sectional studies using multi-stage or multivariate approaches to account for unobservables (e.g. instrumental variable, IV, or Heckman two-step estimation approaches)
- c) Non-randomised designs with selection on observables:
  - i. Controlled before and after studies with an intervention and comparison group using methods to match individuals and groups statistically (e.g. PSM) or control for observable confounding in adjusted regression.
- d) Studies explicitly described as systematic reviews and that describe methods used for search, data collection, and synthesis.

We will include impact evaluations where the comparison/control group receive no intervention (standard road safety intervention), a different intervention (e.g. police enforcement), a placebo or the study employs a pipeline (wait-list) approach. All theoretical, modelling or laboratory studies would be excluded.

Qualitative research studies have not been included.

We will not be critically appraising the quality of the included primary studies (impact evaluations), but will collect data on study design. For the purpose of the present map it is not necessary to critically appraise the interventions effectiveness, beyond indicating whether the evidence is from randomised, non-randomised studies, or observational studies as the systematic reviews provide overviews of the body of evidence, including their quality, where they exist. A major purpose of the map is to provide access to the body of work on particular outcomes and interventions to encourage further syntheses of those studies by researchers in road safety sector.

### **Acknowledgement**

We would like to acknowledge the role of Guneet Saini and Kauma Kurian C. and Abhaya Jha, in the preparation of this EGM.

### **Sources of support**

This EGM is supported by Independent Council for Road Safety International. Partial support received from Tata Research and Educational Foundations, Tata Sons & Mawana Sugars.

## Recent ICoRSI publications

### ***Preventing motor vehicle crash injuries and deaths: science vs. folklore lessons from history***

Brian O'Neill & Dinesh Mohan

#### ***Abstract***

Not long after the beginnings of motorization in the early 1900s, deaths and injuries from motor vehicle crashes became a problem in a number of high-income-countries (HIC)s, especially the United States. With the biggest problem the US led early efforts to address this issue, and for six decades these efforts were based on folklore (ie a body of widely held but false or unsubstantiated beliefs). They were not evaluated, but clearly were unsuccessful as crash deaths and injuries continued to rise. It was not until the 1970s that a broader range of countermeasures began to be adopted and was scientifically evaluated, and as a result, crash deaths and injuries declined. This history has important lessons today for many low-and-middle-income countries that have growing numbers of motor vehicle crash deaths and injuries, many of which are pedestrians and motorcyclists. This is because there continue to be advocates for many of the failed approaches (especially educational) that dominated the early efforts in HICs.

<https://doi.org/10.1080/17457300.2019.1694043>

### ***Opportunities to reduce road traffic injury: new insights from the study of urban areas***

Mark Stevenson, Jason Thompson, Jasper S. Wijnands, Kerry Nice, Gideon Aschwanden & Haifeng Zhao

#### ***Abstract***

Over the past four decades considerable efforts have been taken to mitigate the growing burden of road injury. With increasing urbanisation along with global mobility that demands not only safe but equitable, efficient and clean (reduced carbon footprint) transport, the responses to dealing with the burgeoning road traffic injury in low- and middle-income countries has become increasingly complex. In this paper, we apply unique methods to identify important strategies that could be implemented to reduce road traffic injury in the Asia-Pacific region; a region comprising large middle-income countries (China and India) that are currently in the throes of rapid motorisation. Using a convolutional neural network approach, we clustered countries containing a total of 1632 cities from around the world into groups based on urban characteristics related to road and public transport infrastructure. We then analysed 20 countries (containing 689 cities) from the Asia-Pacific region and assessed the global burden of disease attributed to road traffic injury and these various urban characteristics. This study demonstrates the utility of employing image recognition methods to discover new insights that afford urban and transport planning opportunities to mitigate road traffic injury at a regional and global scale.

<https://doi.org/10.1080/17457300.2019.1704790>

## ***What can we learn from the historic road safety performance of high-income countries?***

Kavi Bhalla, Dinesh Mohan & Brian O'Neill

### ***Abstract***

Road traffic deaths in high-income countries (HICs) have been steadily declining for five decades, but are rising or stable in low- and middle-income countries (LMICs). We use time-series cross-sectional methods to assess how age- and sex-specific death rates evolved in 20 HICs during 1955-2015, controlling for income, population density and urbanization. Past work has attributed improvements in safety in HICs to income growth, suggesting that countries intervene when they become richer (Kuznets hypothesis). In contrast, we show that HICs had statistically significant declines in road traffic injuries starting in the late 1960s that persist after controlling for income effects, and inclusion of a lagged dependent variable. These findings are consistent for all age-sex groups but the effects are strongest for the elderly and young children. We argue that the reversal in the traffic injury trend did not occur because HICs reached an income threshold. Instead, the 1960s were a period of paradigmatic change in thinking about road safety. Subsequent, safety improvements occurred because countries at different income levels established regulatory institutions that had a legislative mandate and financial resources to conduct large-scale safety interventions.

<https://doi.org/10.1080/17457300.2019.1704789>

## ***How much would low- and middle-income countries benefit from addressing the key risk factors of road traffic injuries?***

Kavi Bhalla, Dinesh Mohan & Brian O'Neill

### ***Abstract***

Despite strong advocacy, the UN Decade of Action for Road Safety (2011-2020) is ending with most low- and middle-income countries (LMICs) no closer to the Sustainable Development Goals target of reducing traffic mortality by half. In contrast, most high-income countries (HICs) have seen large benefits in recent decades from large-scale safety interventions. We aimed to assess how much LMICs would benefit from interventions that address six key risk factors related to helmet use, seatbelt use, speed control, drink driving, and vehicle design for safety of occupants and pedestrians. We use a comparative risk assessment framework to estimate mortality and health loss (disability adjusted life years lost, DALYs) that would be averted if these risks were reduced through intervention. We estimate effects for six countries that span all developing regions: China, Colombia, Ethiopia, India, Iran, and Russia. We find relatively large benefits (27% reductions in road traffic deaths and DALYs) from speed control in all countries, and about 5%-20% reductions due to other interventions depending on who is at risk in each country. To achieve larger gains, LMICs would need to move beyond simply learning from HICs and undertake new research to address risk factors particularly relevant to their context.

<https://doi.org/10.1080/17457300.2019.1708411>

## ***Driver education: how effective?***

Brian O'Neill

### *Abstract*

In the early 20th century, the numbers of motor vehicles in use grew rapidly in the USA, Canada, and many European countries. By the 1930s, the number of automobile crashes and the resulting deaths and injuries was a significant problem and various safety organizations tried to address it with education and publicity programs aimed at changing driver behaviour. It is not clear when the high crash risks of young drivers were first identified, but in the early 1930s driver education courses began to be offered in US high schools (feasible because US licensing ages were 16 or younger) and soon such courses were being touted (with no evidence) as 'the most obvious way' to reduce traffic crashes. Over the years many claims were made for the effectiveness of high school driver education, however, it was not until the late 1960s that competent research studies (including randomized control trials) were undertaken. The consistent findings from these studies have been that high school driver education does not reduce crashes. Furthermore, the trained students get their licenses sooner, and because teenagers have very high crash risks, the net result of high school driver education is increased numbers of crashes.

<https://doi.org/10.1080/17457300.2019.1694042>

## ***Dealing with existing theory: national fatality rates, vehicle standards and personal safety***

Dinesh Mohan & Brian O'Neil

### *Abstract*

In this paper we discuss some of the weaknesses in exiting theories and understandings behind road safety interventions and policy making. The paper deals with four main issues: road traffic fatality rates and per capita income of countries, vehicle crashworthiness standards, role of pedestrian and powered two-wheeler share in traffic on fatalities, and safety standards for vehicles other than cars. Recent data indicate that there may not be a strong relationship between income and road safety performance and it is possible for low and middle-income countries (LMIC) to decrease death rates at present income levels. Safer cars have had a major role in reducing fatality rates, but, gains in traffic safety in high income countries may be partly due to reducing exposure of vulnerable road users. Small lightweight vehicles (like tuk-tuks, three-wheeled scooter taxis) operating in many LMIC appear to have low fatality rates though they do not follow any crashworthiness standards. Very different crashworthiness standards need to be developed for low mass vehicles incapable of operating speeds greater than 50 km/h. LMIC may not be able to reduce fatality rates below about 7 per 100,000 population unless there are innovative developments in road design and all vehicle safety standards.

<https://doi.org/10.1080/17457300.2019.1680565>

## ***Progress in pedestrian safety research*** **Geetam Tiwari**

### *Abstract*

This paper looks at the pedestrian safety issue and the research that has followed to understand and solve the problem of pedestrian safety in the last 120 years - since the time of the first reported pedestrian fatality in 1899. Researches have studied the epidemiology of pedestrian crashes, pedestrian behaviour, pedestrian movements and pedestrian flows. The suggested strategies to reduce pedestrian crashes have ranged from controlling vehicular speeds to controlling pedestrian behaviour. This study presents a summary of the progress we have made in understanding pedestrian crash patterns. Pedestrian behaviour observed in different regions of the world tend to have similarity in pedestrian behaviour: gap acceptance, preferences of route choice and location for crossing roads. High income countries(HIC) have reported reduction in pedestrian fatalities as compared to low and middle income countries(LMICs), however pedestrian trips have also reduced in these countries leading to concerns about the effectiveness of 'known' strategies. Speed control through active measures have been found to have the maximal benefit and education and training programs for altering pedestrian behaviour on the road the least benefits. Low and middle income countries face pedestrian exposure on high speed roads. New research efforts are required to address pedestrian safety in both HIC and LMICs.

<https://doi.org/10.1080/17457300.2020.1720255>

## ***Safety of motorized two-wheeler riders in the formal and informal transport sector***

**Maria Isabel Gutierrez & Dinesh Mohan**

### *Abstract*

Road fatalities are largely preventable problem with large socioeconomic impact. Due to the rapidly increasing population, transport systems and road infrastructure have not met the demand. The use of motorized two-wheeler vehicles has increased, as informal transport. However, evidence on their safety is scarce. The aim of this article is to examine the safety and social equity issues in MTW in the informal transport sector. Factors can be used to explain traffic collisions in MTW in the formal/informal transport sectors: design, rider behavior, road design, enforcement, and regulation of the informal transport sector. Evidence suggests that MTWs could be a common related to pedestrian fatalities. Informal transport drivers are typically poor, uneducated, young men who due to lack of other employment options move into the informal sector. Their vehicles are old, unmaintained and have a lack of protective equipment for themselves and their passengers. Young, male drivers speed, take risks and not use protective equipment. Users of informal transport live in the poorer peripheries of cities, which, have limited, inefficient or unaffordable public transport. The provision of transport has therefore become an often unrecognized, important social equity issue and studies are urgently needed on MTW in the informal transport sector.

<https://doi.org/10.1080/17457300.2019.1708408>

## ***Speed in a high-speed society***

Christer Hydén

### ***Abstract***

Speed control is the most important aspect of promoting road safety world-wide. The question is how are speeds developing? The European Transport Safety Council concludes: There is little progress on reducing speeds in Europe. Similar conclusions can be drawn from the US and Australia. Attitude surveys show that people's answers are not very consistent and represent statements without any strong bearing on norms or behaviour. Many factors are 'pro-speed': higher performance vehicles, more comfort, media coverage, etc. Enforcement, particularly with cameras and with section control is efficient, but the scale of adoption is too small. Traffic calming is efficient in cities, but the most obvious measure is one that makes it impossible to drive faster than the speed limit. During the last 30 years, a few trials have taken place which are promising; speeds at or below the speed limit, improved behaviour, and attitudes. The predicted effect is a reduction of up to 50% of fatalities in a regulation-driven scenario and a benefit to cost ratio of 3.5 to 4.8. It is time for authorities to see to it that lower speeds with the help of efficient vehicle-based solutions becomes part of the agenda.

<https://doi.org/10.1080/17457300.2019.1680566>

## ***Prehospital trauma care evolution, practice and controversies: need for a review***

Mathew Varghese

### ***Abstract***

Modern medicine and surgery is historically very recent, and most interventions that are so commonly done in a hospital now are only 60 to 70 years old. Understanding of emergency care of the injured is more recent; however, for the sake of temporal convenience trauma care has become compartmentalized into phases: first aid, bystander care, prehospital care, emergency care, definitive levels of care and rehabilitation. The injured patient's body physiology is changing continuously from the time of the impact at the injury site. The outcome of trauma is dependent not only on what is done in the prehospital phase but also on hospital care and rehabilitation. Our understanding of the changes and the response to interventions in a trauma patient has been evolving over the years. This paper discusses the need to review recent advances in our understanding of the care process and how we need to improve it and how there is a pressing need to generate valid evidence on what we do in emergency care.

<https://doi.org/10.1080/17457300.2019.1708409>

## **Independent Council for Road Safety International (ICoRSI)**

ICoRSI ([www.itorsi.org](http://www.itorsi.org)) is a not-for profit organization that provides independent authoritative advice on global road safety policies by road safety scientists that have no financial conflicts of interest.

ICoRSI aims to:

- Provide rapid, independent and evidence-based information on road safety policy and practice to policy makers and the public.
- Strengthen the capacity of safety professionals and policy makers to understand existing evidence and undertake new research.
- Facilitate in capacity building for safety professionals and policy makers in the field of transportation safety.

*Chair: Barry Sheerman*

*Director: Dinesh Mohan*

## **Department of Global Public Health, Karolinska Institutet**

Researchers at the Department of Global Public Health conduct research, teaching and applied work based on public health science and epidemiology. Special focus is placed upon social, behavioural and lifestyle factors of importance for human health. Studies are conducted to identify social determinants of health and the impact of policy on access to care and health in specific groups in different contexts. Researchers are often involved in translating research results into health policy and public health practice in high and low-income settings. The Group Injury Sociology Aetiology and Consequences (ISAC) also works on road safety issues nationally and internationally (<https://ki.se/en/phs/department-of-public-health-sciences>).

*Head of Department: Marie Hasselberg*

## **The Campbell Collaboration**

The Campbell Collaboration (<https://campbellcollaboration.org>) promotes positive social and economic change through the production and use of systematic reviews and other evidence synthesis for evidence-based policy and practice. Campbell systematic reviews and related evidence synthesis products provide unbiased summaries of entire bodies of empirical evidence, making them uniquely useful sources of information for policy and practice. Campbell provides opportunities for social work scholars, practitioners, and consumers to contribute to knowledge about the processes and outcomes social, behavioral, and economic interventions.

*CEO: Howard White*

## Campbell South Asia

Campbell South Asia is a regional centre of the Campbell Collaboration. Its role is to promote Campbell's global efforts to increase the uptake of reliable evidence for informed decision making in social sciences. The primary focus is to encourage the greater production and use of Campbell reviews nationally and in South Asian regions. Campbell South Asia (a) Supports training and building research capacity in relation to systematic review methodology, (b) seeks funding to support research teams in South Asia to undertake Campbell reviews, and (c) collaborates with research organisations, universities, NGOs and local and national governments to encourage the greater use of Campbell reviews and promote a stronger focus on evidence-informed decision making.

*Evidence Synthesis Specialist: Denny John*

*Editor-IDGC: Ashrita Saran*

# Support

**Tata Sons**

**Tata Trusts**



Independent Council for Road Safety International  
[www.icorsi.org](http://www.icorsi.org)