Accident Analysis and Prevention 44 (2012) 1–2

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Editorial

Safety and mobility of vulnerable road users: Pedestrians, bicyclists, and motorcyclists

ABSTRACT

Traffic safety has improved greatly over the past few decades, but the progress in the safe mobility of vulnerable road users (VRUs) – especially motorcycle riders – has not been as consistent. The changing trends towards healthier and eco-friendlier lifestyle, coupled with the rising costs of fuel have increased the exposure and injury risk of pedestrians, motorcyclists, and bicyclists, especially in urban areas. To address the safe mobility issues of VRUs, Israel's *National Road Safety Authority* organized an international conference on the topic. This special issue contains the papers of the three plenary talks related to the safe mobility of each of the VRUs, and 18 more papers of the over 100 papers presented at the conference that were accepted for publication in AAP following the Journal's review process.

1. Prologue to special issue

The recent decades have witnessed remarkable improvements in traffic safety. By any measure – absolute or exposure based – fatalities and fatal crashes have decreased in nearly all countries (Shinar, 2007; OECD, 2009). Historically most of interventions have focused on the safety of vehicle occupants (World Bank, 2009). Yet the consistent and significant improvements in the safety of car occupants that have been achieved in most countries over the past decades have not necessarily been paralleled in the safety of all VRUs, especially in low- and middle-income countries. Worldwide, vulnerable road users (VRUs) account for nearly half (46%) of the traffic fatalities, and in most low-income and middle-income countries – who contribute to more than 90% of road traffic deaths – the most at-risk road users are pedestrians, cyclists, motorcyclists and passengers on unsafe public transport (WHO, 2009).

In hi-income countries the increasing motorization coupled with improved roadways, reduced the exposure of pedestrians and bicyclists, and the number of pedestrian and cyclist fatalities decreased even more than the overall number of traffic fatalities. However, the rising costs of fuel and other changes in lifestyle increased the exposure of motorcyclists, and their safety has lagged behind, to the point that in some countries (most notably Australia, France, Portugal, and the U.S.) the number of motorcyclists who died in crashes actually increased over the past 3–4 decades (see Table 1).

The relative neglect of the safety of VRUs has not escaped the attention of many international organizations. In 2010 the U.N. General Assembly, recommended "strengthening road safety management and paying particular attention also to the needs of vulnerable road users, such as pedestrians, cyclists and motorcyclists." Furthermore, the concerns for the safe mobility of VRUs will most likely increase in the coming years, as the trend towards urbanization continues (U.N., 2010). This is because VRUs are most at-risk in large cities, where they constitute the majority of severely and fatally injured road users; while car occupants typically account for less than 10% of the fatalities (see Fig. 1).

Thus, with increasing numbers and exposure of VRUs, combining mobility and safety of VRUs is a critical emerging issue in both developed and developing countries. Concerted efforts are now needed to analyze, understand, and define the core VRUs' traffic safety issues, and to propose and evaluate practical crash countermeasures. To address these issues, Israel's *National Road Safety Authority* (NRSA) organized and hosted in May 30–June 2 2010, in Jerusalem, an international conference on the Safety and Mobility of Vulnerable Road Users: Pedestrians, Bicyclists, and Motorcyclists. The conference was co-sponsored by the *U.S. Transportation Research Board* (TRB), and the *Forum of European Road Safety Research Institutes* (FERSI). The goal of this conference was to bring together the latest scientific information, best practices, and effective policies from different countries with different cultures and experiences in the hope that through the meeting of minds and personal interactions of professionals committed to these safety issues, significant improvements can be achieved. The conference was attended by over 200 researchers, policymakers, and operation professionals from over 20 different countries from Australasia, Africa, Asia, Europe, North America, and South America. Over 100 papers that included the latest research findings, proven policies, and successful countermeasures and programmatic implementations, were presented in the conference. Of these, 19 papers successfully passed the Conference's Scientific Committee screening and the AAP peer review process. These papers and those based on the three plenary talks are presented in this special issue on the Safety of Vulnerable Road Users. The full program and abstracts of all the presentations can be seen on the NRSA website at http://www.rsa.gov.il/ConferenceNew/Pages/ConferenceSafety.aspx.

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doi:10.1016/j.aap.2010.12.031

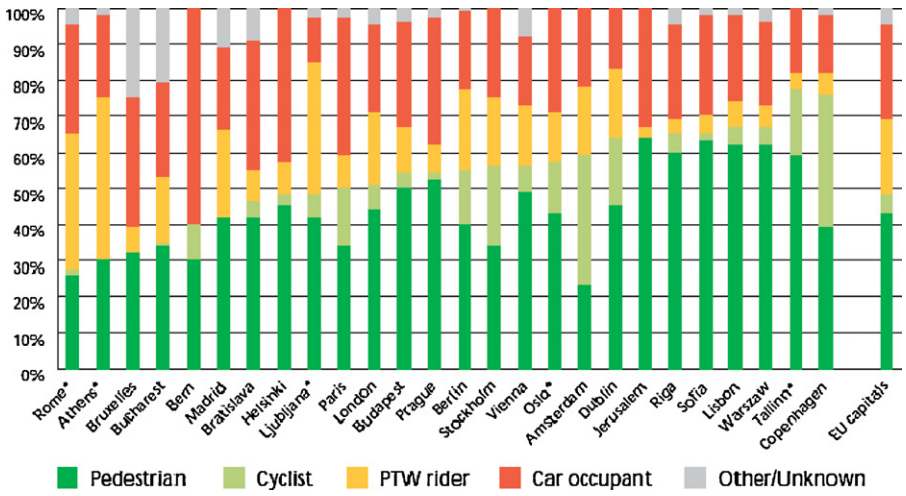

Fig. 1. Distribution of road deaths by road user group in EU capital cities, based on the average values for 2004–2006, and ranked by the share of pedestrians and cyclists together (*averages for Rome, Oslo, Ljublijana, Talinn, and Athens are based on data from 2005 to 2006 only).
Source: OECD, 2009.

Table 1
Percent change in traffic fatalities in OECD countries – overall, bicyclists, motorcyclists and pedestrians – 1970–2008 (OECD, 2009).

Country	Overall	Bicyclists	Motorcyclists[a]	Pedestrians
Australia	−61	−72	+42	−77
Austria	−69	−92	−63	−88
Belgium[+]	−55	−63	−20	−80
Canada[++]	−49	−31	−19	−36
Denmark	−66	−64	−5	−82
Finland	−67	−88	−13	−84
France	−74	−83	+138	−84
Germany	−80	−78	−68	−90
Ireland	−48	−77	−45	−78
Netherlands	−44	−72	−21	−91
New Zealand	−44	−64	+16	−69
Norway	−54	−76	+23	−82
Portugal	−45	−68	+137	−75
Sweden	−70	−79	−4	−85
Switzerland	−78	−76	−48	−88
United Kingdom[+++]	−66	−63	−56	−71
United States	−29	−8	+132	−51

[+] 1970–2007.
[++] 1970–2006.
[+++] 1980–2008.
[a] Includes riders of motor-scooters.

The first three papers in this issue are based on the plenary talks given by veteran researchers, who provided the setting and a broad sweep of the major issues related to the three groups of VRUs and they include: pedestrian crash trends and potential countermeasures from around the world (by Zegeer and Bushell), how to make more cycling good for road safety (by Wegman, Zhang, and Dijkstra), and powered two-wheelers in a changing world—challenges and opportunities (by Haworth). Of the remaining 19 papers, the first six focus exclusively on pedestrians, the next seven focus exclusively on motorcyclists, the next two focus exclusively on bicyclists, and the remaining four address more than one type of VRU. The studies reflect a broad range of research methods from laboratory and simulation studies, to on-the-road experimental and observational studies, to statistical analyses of national data bases. They represent the state of the art on study methods, findings, implications, and recommendations for greater safety for the VRU. I hope you enjoy and benefit from reading them.

Acknowledgments

The process of selecting 22 papers from the over 100 papers presented at the conference involved many experts who reviewed, and often greatly assisted the authors in improving their papers. I therefore thankfully acknowledge these colleagues who are listed in alphabetical order by first name. They are: Alison Smiley, Allan Williams, Andrew McIntosh, Andrew Tarko, Aslak Fyhri, Charlie Zegeer, Darren Walton, David Crundall, Dietmar Otte, Donlad Fisher, Feng Guo, Fred Wegman, Fridulv Sagberg, Geoffrey Underwood, Gunter Siegmund, Hashim Al-Madani, Helai Huang, Ian Walker, James Hedlund, Jennifer Dill, Joachim Meyer, Joannis Chilaoutakis, John Hill, Karel Brookhuis, Lei Li, Linda Boyle, Loren Staplin, Luis Ignacio Rizzi, Maria Papadakaki, Marie-Axelle Granie, Michael Sivak, Michael Sorensen, Mike Cynecki, Mohammad Mousa Hamed, Narelle Haworth, Richard Tyrrell, Rob Methorst, Samantha Jamson, Shalom Hakkert, Steve Garets, Sungyop Kim, Tal Oron-Gilad, Tamar Tomer-Fishman, Terje Assum, Timo Lajunen, Tsippy Lotan, Viola Cavallo, and Xuedong Yan.

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