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Guest Editorial

The ESRA initiative: Towards global monitoring and analysis of road safety performance

1. Road safety performance indicators

Trends in road safety performance and the success of policy measures can be measured and monitored in different ways. Traditionally, the analysis focuses on the number of crashes, injuries, and fatalities. However, these figures do not provide sufficient information for understanding the causes of road traffic crashes. Moreover, they do not indicate the measures that should be taken to improve road safety [1]. Hence, data on crashes and victims should be supplemented by other indicators, such as safety performance indicators (SPIs). SPIs are used to assess the conditions of a road traffic system, monitor its progress, measure the impacts of safety interventions, and enable comparisons across countries [2]. They can also be used to support policy decisions [3]. Several SPIs have been developed internationally over the last 20 years. For example, in Europe, the SafetyNet project [4] defines and collects SPIs related to infrastructure, vehicles, trauma management, and road users' behaviour. Among these, SPIs on road users' behaviour can be based on data from roadside observations or questionnaire surveys [5]. Although roadside observations are generally the preferred method because they rely on observed (objective) behaviour, they are very time consuming, expensive, and often difficult to compare owing to methodological differences. An alternative is questionnaire surveys, which can yield valuable information on road safety performance and culture if they are properly designed and an adequate sampling approach is adopted. Moreover, they are relatively fast and inexpensive if conducted online. Furthermore, they enable additional non-observable information, such as socio-cognitive determinants of behaviour (attitudes, perceived social norms, risk perception, or existing habits), or additional socio-demographic information to be obtained. This offers valuable information for understanding the process that leads to road crashes [6].

Thus, it is tempting to use SPIs based on questionnaire surveys for benchmarking purposes. However, the results of such surveys are seldom comparable across countries owing to differences in aims, scope, or methodology. In Europe, the first attempt to collect cross-national road safety information via questionnaire surveys was the SARTRE project (Social Attitudes to Road Traffic Risk in Europe) which was financed by the European Commission. Questionnaires and study design were developed, and face-to-face interviews were conducted of a representative sample of the national adult population of European countries. Four editions of the survey were conducted (1991, 1996, 2002, and 2010) [7]. In 2015, the Vias institute (Belgium) launched the ESRA survey (*E*-Survey of Road users' Attitudes) to fill the gap that emerged after the SARTRE project [6].

2. ESRA initiative

ESRA is a joint initiative by road safety institutes, research organisations, public services, and private sponsors, with the aim of collecting comparable national data on road users' opinions, attitudes, and behaviour with respect to road traffic risks. At the heart of the project is an extensive online panel survey using a representative sample of the national adult population in each participating country. A common questionnaire is developed, translated into national language versions, and programmed in six different characters: Greek, Hebrew, Hindi, Japanese, Korean, and Latin. The themes covered are self-reported behaviour, attitudes and opinions on unsafe traffic behaviour, enforcement experiences, and support for policy measures. The survey addresses different road safety topics (e.g., driving under influence of alcohol, drugs and medication, speeding, and distraction) and targets all types of road users.

Although ESRA was initially a European initiative, it rapidly evolved into a global monitoring system. The first edition of the ESRA survey was conducted in 2015 in 17 European countries [5,8]. Currently, 48 countries across six continents participate in the ESRA initiative. The latest edition of the ESRA survey collected data from more than 50,000 respondents.

ESRA is funded by the partners' resources and includes countries all over the world. In each participating country, a national partner supports the initiative. National partners are responsible for funding the surveys, translating the questionnaire, and interpreting the findings. Vias institute (Belgium) coordinates the ESRA initiative in close collaboration with the following 11 core group partners: BASt (Germany), BFU (Switzerland), CTL (Italy), IATSS (Japan), IFSTTAR (France), ITS (Poland), KFV (Austria), NTUA (Greece), PRP (Portugal), SWOV (the Netherlands), and TIRF (Canada) [6].

3. Position of ESRA2 in IATSS

The International Association of Traffic and Safety Sciences (IATSS) is a unique interdisciplinary academic society in the field of traffic safety research in Japan. It conducts various research projects with regard to traffic and transportation in engineering, economics, planning, psychology, legal systems, education, and medicine for practical applications towards achieving a safer society.

One of the strategic projects of IATSS, called “International comparison: Target setting for road traffic safety and road traffic culture”, was initiated in 2016. In this research project, original questionnaire survey data on drivers' recognition, intention, and behaviour were collected

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from nine countries to understand the differences in traffic safety culture as a background of the traffic fatality levels in various countries. The survey revealed significant differences and similarities in drivers' perceptions in the nine countries and confirmed the significance of this type of international questionnaire survey. However, there were difficulties in collecting a sufficient number of high-quality data and performing surveys worldwide. As ESRA covers more countries and collects more data, including items in the IATSS questionnaire survey, the IATSS participated in ESRA as a representative organisation of Japan and one of the core partners in 2018. Since then, ESRA has been positioned as one of the key international co-operative research activities of IATSS as it is essential for understanding the cross-national differences in traffic safety and culture.

4. Importance of the results presented in this special feature

This special feature of *IATSS Research* is dedicated to ESRA. It illustrates the opportunities and challenges of monitoring road users' performance and attitudes by using online panels. We selected six articles to illustrate some examples of research questions that can be answered using ESRA data. The articles focus on benchmarking road safety performance, motivational factors for unsafe traffic behaviour, enforcement, impact of national culture, age effects, and the situation of vulnerable road users.

The first article provides an overview of the ESRA survey methodology and presents descriptive key results across 32 countries. It focuses on the perception of unsafe traffic behaviour (risk perception, and social and personal acceptability), self-declared unsafe traffic behaviour, and opinions with respect to traffic rules, penalties, and policy measures. The article presents general tendencies and demonstrates the possibilities that ESRA data offer based on national comparisons. ESRA provides unique benchmarks that support road safety policies in assessing one country's national road safety situation in relation to those of others.

The second article focuses on the socio-cognitive factors that are assessed in the ESRA survey (e.g., attitudes, norms, intentions, and habits). The ESRA questionnaire was developed based on the Theory of Planned Behaviour [2], in which the ESRA survey measures the motivational (socio-cognitive) factors that affect unsafe traffic behaviour. Insights on motivational aspects are essential for planning preventive measures. It is necessary to know, for example, if a national campaign on drunk driving should focus on risk perception, attitudes, or social disapproval (norms). Questions arise regarding whether the relevance of these motivational aspects differs by country and whether a common consensus can be reached in the framework of a global monitoring tool. This study investigates these questions based on the example of driving under the influence of alcohol, drugs, and medicine and on seven randomly selected countries: Australia, Belgium, Canada, Egypt, Japan, Nigeria, and Slovenia.

The third article focuses on driving under the influence of alcohol and drugs and also considers additional factors related to enforcement. The study examines self-reported impaired driving violations among car drivers, country differences, determinants of violation behaviour, and changes over time. Special attention is also paid to car drivers who have reported engagements in multiple offences, including drunk driving.

The fourth article illustrates research possibilities by combining ESRA data with other data sources. The authors combined ESRA data with cultural dimensions from Hofstede [8] and investigated the relationship between national culture, road safety performance, and support for policy measures. Hypotheses were formulated to explain the seemingly paradoxical finding that countries that witness high resistance to road safety policy measures have better road safety performance.

The fifth article highlights the relationship between age and road safety performance. Special attention is paid to young and elderly drivers as the literature indicates that they have the highest crash risks. The authors focused on attitudes and unsafe traffic behaviour related to mobile phone use and fatigue. They compared the results for young, elderly, and middle-aged drivers in Canada, the United States, and Europe. The two topics (mobile phone use and fatigue) were chosen because they have previously been demonstrated to be strongly affected by age .

The sixth article is dedicated to vulnerable road users. The ESRA survey addresses not only car drivers but also several other types of road users. Pedestrians, cyclists, and powered two-wheeler riders are considered vulnerable road users because they are prone to a high risk of injury in case of a crash. However, information on this group is scarce. ESRA offers unique cross-national information on vulnerable road users. The article describes the road safety performance and attitudes of vulnerable road users in 32 countries. It also compares the performance among countries and the demographic characteristics and provides recommendations that can enhance vulnerable road users' safety.

5. Closing remarks

The ESRA data offer a unique opportunity to gain valuable insights into cross-cultural differences in traffic safety. The initial aim of ESRA was to develop a system for gathering reliable and comparable information on the road safety performance and road user attitudes in some European countries. This objective has been achieved, and the initial expectations have been exceeded. ESRA has become a global initiative, and the data have become building blocks for several national and international road safety monitoring systems (e.g., ERSO, ETSC, Fia Foundation, and World Bank). The intention is to repeat this survey every three years and extend it to more countries. The next edition will be launched in 2021 or 2022 (for more information, please visit www.esranet.eu).

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Uta Meesmann
Vias institute, Haachtsesteenweg 1405, BE-1130 Brussels, Belgium
University of Liège, Urban & Environmental Engineering Department, Local Environment Management & Analysis (LEMA), Quartier Polytech 1, Allée de la Découverte 9, BE-4000 Liège, Belgium
Corresponding author at: Vias institute, Haachtsesteenweg 1405, BE-1130 Brussels, Belgium.
E-mail address: uta.meesmann@vias.be

Hideki Nakamura
Nagoya University, Graduate School of Environmental Studies, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan
E-mail address: nakamura@genv.nagoya-u.ac.jp

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