An Roinn Iompair
Department of Transport

TRA
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Road safety in Low- and Middle-Income Countries – Analysis and Recommendations

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The PIARC Exchange project

- 2 Project partners:
  - National Technical University of Athens

    AIT Austrian Institute of Technology
  - Technical support: USA, Australia, Canada Québec, South Africa, Sweden

- Duration of the project:
  - 13 months (August 2022 – October 2023)

- Framework Program:
  - PIARC – World Road Association
  - Funding from USA, Australia, Canada Québec NZ

Introduction

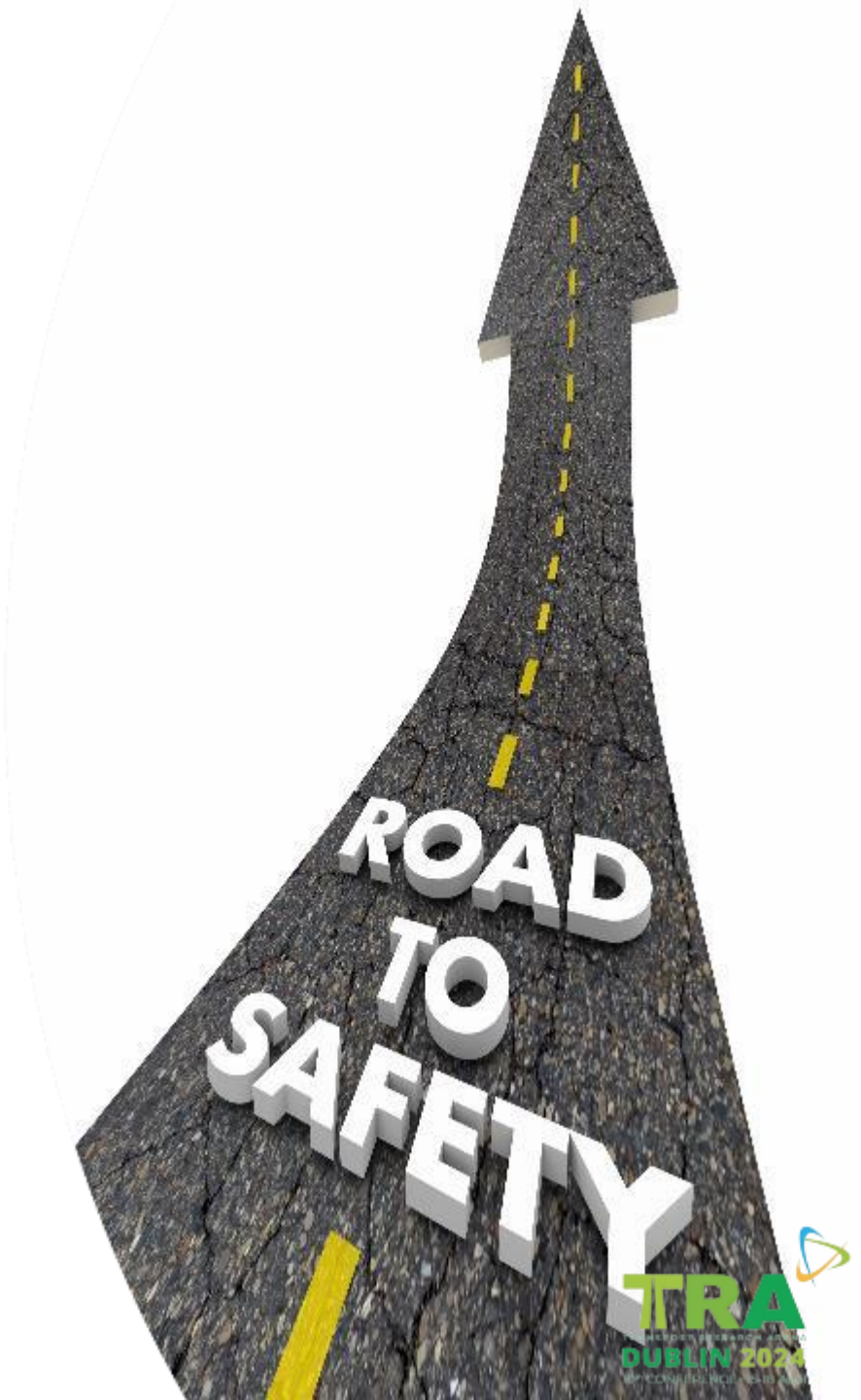
- Each year, 1.19 million people are killed on the worlds' roads, and a further 50 million are injured, with the vast majority of these (over 90 percent) occurring in LMICs.
- Death rates due to road traffic injuries in LMICs are three times higher than in high-income countries (HICs) (27.5 vs. 8.3 per 100,000 population).
- Despite the increased global attention and progress in policy-making at national level, the number of road casualties increased in 87 LMICs since 2013.

Objectives

- Aiming to promote knowledge sharing through appropriate implementation aids that will reflect PIARC road safety work.
- Focus on increasing road safety in LMICs by providing road authorities, operators, planners and other relevant stakeholders easier access to a wide depth of knowledge.
- More than 45 PIARC Technical Reports, Seminar Proceedings, Case Studies have been reviewed, grouped into 8 major Road Safety Areas: Management, Data, Speed, VRUs, Human Factors, Infrastructure, Vehicles and Tunnels.

Safe System Approach

- The development of an effective road safety strategy starts from the notion of Safe System Approach:
  - Death and serious injuries are unacceptable.
  - Humans make mistakes.
  - Humans are vulnerable.
  - Responsibility is shared.
  - Safety is proactive.
  - Redundancy is crucial.
- Improvements in infrastructure and vehicle safety will contribute to providing a forgiving road system for crashes arising from human errors.
- Lower level of compliance with road rules in most LMICs, when compared to HICs.



Road Safety Management

- The adoption of a country-wide management system framework is crucial to improving country /jurisdictional road safety performance. This management system is developed in three levels:
  - Institutional management functions
  - Targeted interventions
  - Desired Results

- LMICs should exercise caution in establishing complex targeted strategies and plans until data and appropriate management capacity are available. They should allow, support and power, but also enforce good oversight on the agencies.

Road Safety Data

- Better access to data on the effectiveness and costs associated with specific measures and investments can lead to further improvements and support for a broader implementation of road safety solutions.
- Training of data entry staff and police, improvements in the data collection tools and methods (e.g., crash report documents and devices, sensors) and quality assurance measures can contribute to the enhancement of data quality and reliability.
- Enforcement measures to ensure reporting of accidents, e.g., by making it a legal requirement, should be employed.

Speed

- Speed limits must be credible, homogenous, consistent, visible and maintained over time to increase driver compliance.
- Speed management requires the planning and designing of appropriate road layouts and networks to ensure safe travel speeds.
- Solutions such as speed bumps, lane narrowing, new pedestrian crossing solutions are low-cost essential techniques for LMICs.
- In urban areas where there is a mix of road users a maximum speed limit of 30km/h should be established.

Vulnerable Road Users

- LMICs have greater variety and intensity of traffic mixing the slow-moving and vulnerable non-motorized road users, as well as the motorcycles with fast-moving motorized vehicles.
- Road design should include self-explaining and failure-forgiving roads according to the users' needs.
- Measures to enhance VRU safety along road sections include wider and paved shoulders, proper crossing facilities, separated footpaths and lanes for cyclists/mopeds and appropriate road lane widths.
- To ensure compliance, a combination of communication and education campaigns and enforcement measures should be employed.

Human Factors

- The road transport system needs to anticipate and accommodate for human errors and prevent fatalities and serious injuries. This includes road infrastructure that facilitates safe behavior such as clear road signage, traffic calming designs and physical separation of road users.
- Road safety evaluations and inspections should be made by an interdisciplinary team including human factors and behavior experts.
- Developing countries should consider strategies that haven been successfully implemented in other countries. This might include the adoption of technologies such as alcohol interlocks and seat-belt warning systems.
- Legislative measures such as setting speed limits, establishing blood alcohol limits and mandating the use of protective equipment should be enacted and enforced.

Road Infrastructure

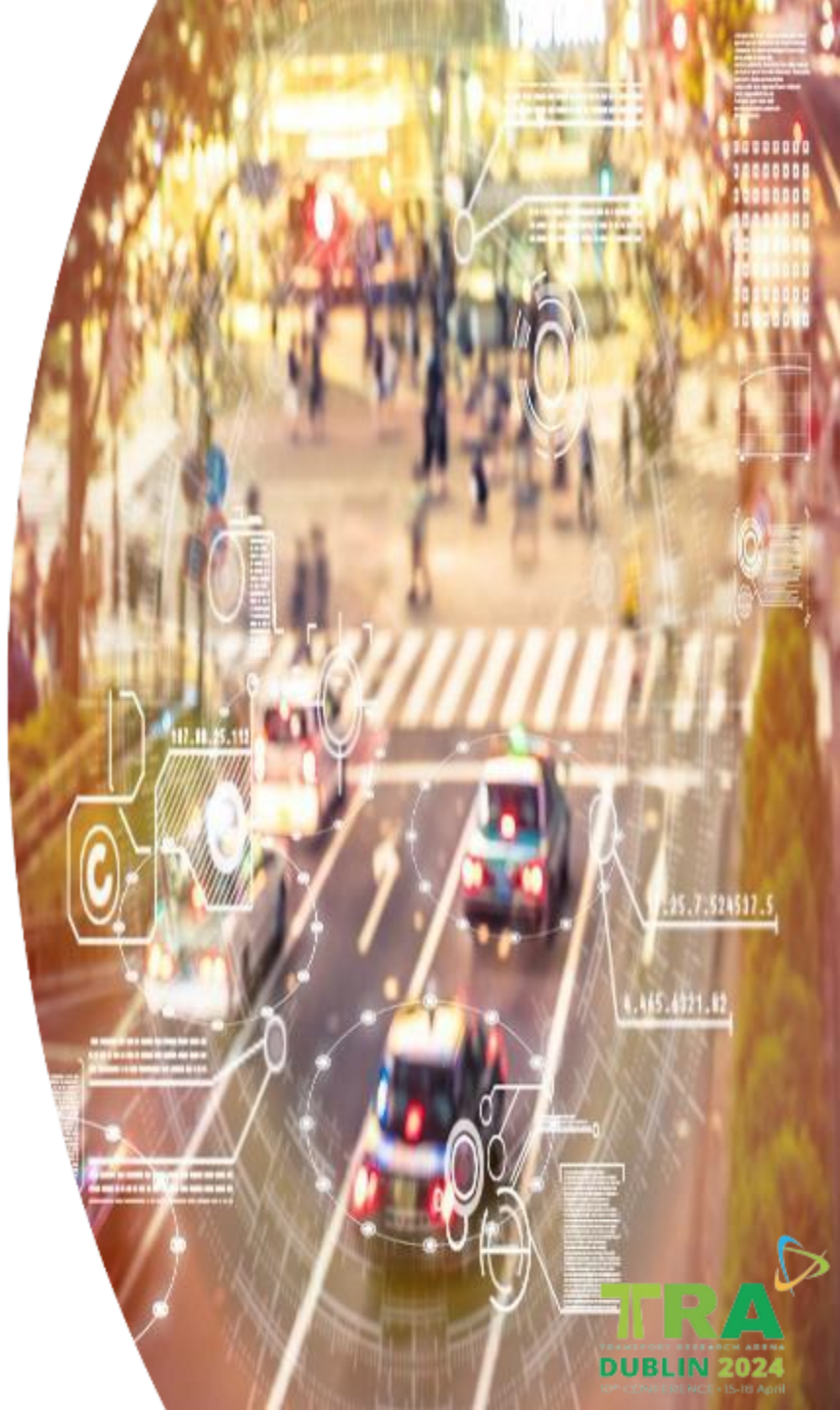
- Clear and well-defined policies related to the implementation of Safe System infrastructure are needed to drive road safety improvements.
- Risk assessments should be performed systematically by road authorities for the whole network, when possible, as well as at known high-accident locations.
- Developing countries should prepare for automation by implementing road infrastructure improvements related to pavements, lane markings and visibility of traffic signs, leading to safer roads for vehicles at all levels of automation.

Discussion

- Despite significant progress, disparities in financial commitments and strategic planning persist across regions, necessitating a more universally implemented approach.
- Crash data serves as a crucial cornerstone for infrastructure management in LMICs, aiding in assessing risks and implementing effective safety measures.
- PIARC's Road Safety Manual is designed to help all countries and especially LMICs, at every stage of infrastructure development to fulfill road safety objectives.
- PIARC's Human Factors Method (RSE_HF), aims to include into the road design and management procedures the study of human factors and human risk-taking behaviors. This approach supports LMICs that are still at the starting phase of the road safety management process.

Conclusions

- It is essential to support LMICs road safety authorities with a continuous consulting in every step of the road safety procedures, from road design to road management.
- The road transport system needs to anticipate and accommodate for human errors.
- Building awareness of the Safe System Approach's application is a crucial step for LMICs.
- Although this study was undertaken for improving road safety in LMICs, the recommendations and observations identified can be considered relevant and valuable for all countries aiming to improve safety on their roads.



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