



**PIARC**  
**GLOBAL ROAD SAFETY**  
**KNOWLEDGE EXCHANGE**  
**HUMAN FACTORS AND BEHAVIOR**

## **PIARC TECHNICAL COMMITTEE ON ROAD SAFETY**

PIARC's Technical Committee for Road Safety recognizes that 90% of traffic deaths occur in Low- and Middle-Income Countries and uses this information to assess, identify and share best practices of road safety activities for LMICs through the development of documents and case studies highlighting international practices and lessons learned. In addition, the technical committee is focused on making proven countermeasures that effectively reduce the likelihood and severity of crashes available to LMICs for consideration in safety project development.

## **PIARC HUMAN FACTORS AND BEHAVIORAL SAFETY**

A key dissemination tool for road safety in the PIARC Technical Committee on Road Safety, is the Road Safety Manual (RSM). PIARC's RSM is designed to help countries at every stage of infrastructure development to fulfill road safety objectives. In addition, PIARC has highlighted the importance of understanding human factors to increase road safety levels. PIARC has also produced various reports, guidelines, case studies, and human factor documents that are available to all road authorities and stakeholders.



## Human Factors

Human factors causing crashes involve:

- The 6-second rule: The average driver needs 4-6 seconds to adapt to a new driving requirement.
- The Field of View Rule: The road must offer road users a safe field of view and pre-program the correct choice of speed.
- The Logic Rule: The road has to follow the driver's perception logic, formed by their experience and recent perceptions.



Critical locations include:

- Junctions, intersections, or crossings
- Lane splits/merges
- Bus/tram stops
- Motorway entrances/exits
- Monotonous approaching sections/surroundings
- Discontinuous bends in roads

## Human Behavioral Risk Factors



Despite the progress in improving legislation across the five key behavioral risk factors (speeding, drink-driving, helmet use, seatbelt use, and distracted driving), enforcement remains a major challenge in most countries, especially LMICs.

For example, 5%-35% of road deaths are reported as alcohol-related.

Wearing a seatbelt reduces the risk of death and serious injury among drivers and front seat occupants by 45%-50% and among rear seat occupants by 25%.

## United Nations Decade of Action for Road Safety



The United Nations (UN) Second Decade of Action for Road Safety aims to reduce road traffic deaths and injuries by at least 50% until 2030. In addition, the road transport system must anticipate and accommodate human errors and prevent consequent death or serious injury. The development of an

effective road safety strategy starts from the adoption of the Safe System approach, to prevent fatal and serious crashes. However, a Safe System cannot be achieved unless roads are designed and managed to account for human factors and human risk-taking behaviors.

## Safe Road Use Measures

It is important to ensure that road infrastructure accounts for the needs of all road users and is designed to facilitate safe behaviors, including clear road signage and road markings that are intuitive, use of roundabouts and traffic calming designs such as speed humps, physical separation of road users including use of protected bicycle lanes and pedestrian -only zones.



Safety evaluations should be based on human factors and behavior methods. Dedicated on-site inspections should be performed by an interdisciplinary team of designers, safety engineers, behavioral safety, and human factors experts; following a specific inspection protocol is essential. Road Safety Authorities must enact and enforce road safety legislation to deter and address risk taking behaviors. Establish a dedicated enforcement agency, provide training, and ensure adequate equipment for enforcement activities. Legislation must be consistently enforced and adjudicated in order to be effective.

## Human Factors Safety Recommendations



The road transport system needs to anticipate and accommodate human errors and prevent consequent death or serious injury, in all types of road environments and circumstances (e.g., even in temporary environments such as work zones).

An improved approach to implement road safety inspections and assessments is to perform a road safety evaluation based on the Human Factors Method (RSE\_HF presented in the PIARC report “Road Safety Evaluation based on Human Factors Method”), mainly by including human factor experts in the RSI team. This approach supports LMICs that are still at the starting phase of the road safety management process. LMICs must be open to considering strategies that are tested or have been successfully implemented in other countries and regions. This might include the adoption of novel technologies such as alcohol interlocks and seat-belt warning systems.

## Read More

- [Road Safety Manual. Planning, Design & Operation. Designing for Road Users](#)
- [Road Safety Evaluation based on Human Factors Method](#)
- [The Role of Road Engineering in Combating Driver Distraction and Fatigue Road Safety Risks](#)
- [Addressing Road Safety Worldwide: Vulnerable Road Users, Human Factors & RS in LMIC](#)
- [Human Factors Guidelines for a Safer Man-Road Interface](#)
- [Proceedings of the PIARC International Seminar on: “Road Safety in Low- and Middle-Income Countries: Issues and Countermeasures”](#)