



PIARC Global Road Safety Knowledge Exchange Speed

Summary

- **About PIARC**
- **Speeding Safety Fundamentals**
- **Speeding Issues**
- **Speeding Safety Measures**
- **Recommendations**

About PIARC



PIARC

World Road Association

- Founded in **1909** as a non-profit, non-political Association
- Foster and facilitate global discussion and **knowledge sharing on roads and road transport**
- **124 government members** worldwide
- Retains **consultative status** to the Economic and Social Council of the **United Nations**
- **4 Strategic themes**: ST1 road administration, ST2 mobility, ST3 safety and sustainability, ST4 resilient infrastructure
- **16 Technical Committees (TCs)**, 4 per strategic theme, unite experts from numerous areas including road safety and design, network operations and maintenance, finance and governance.



PIARC Road Safety Technical Committee

Technical Committee T.C. 3.1: Road Safety part of ST3:

- Observes specific **road safety issues for LMICs**
- Explores the implementation of **proven countermeasures**
- Updates the “**Road Safety Audit Guidelines**” and the “**Road Safety Manual**”
- Disseminates and encourages the **application of the manuals**
- Provides **access to well-chosen safety measures** and their dissemination among **LMICs**
- Studies the implications of **connected and automated vehicles**

PIARC Road Safety Activities

- **Technical reports** prepared by the Technical Committees
 - Well-Prepared Projects
 - Automated Vehicles – Challenges and Opportunities for Road Operators and Road Authorities
- **Road Safety Manual:** an electronic manual for all technicians and managers concerned about road safety issues **acknowledged by the United Nations**
- **Seminars** organised by the Association available online
 - Connected and Autonomous Vehicles, a Pathway towards a Safer Future, 27-28 October 2021
 - Road Safety in Low to Middle Income Countries, 18-20 May 2021
- Declaration of **Support** to the **UN Decade of Action**

PIARC Global Road Safety Knowledge Exchange Project

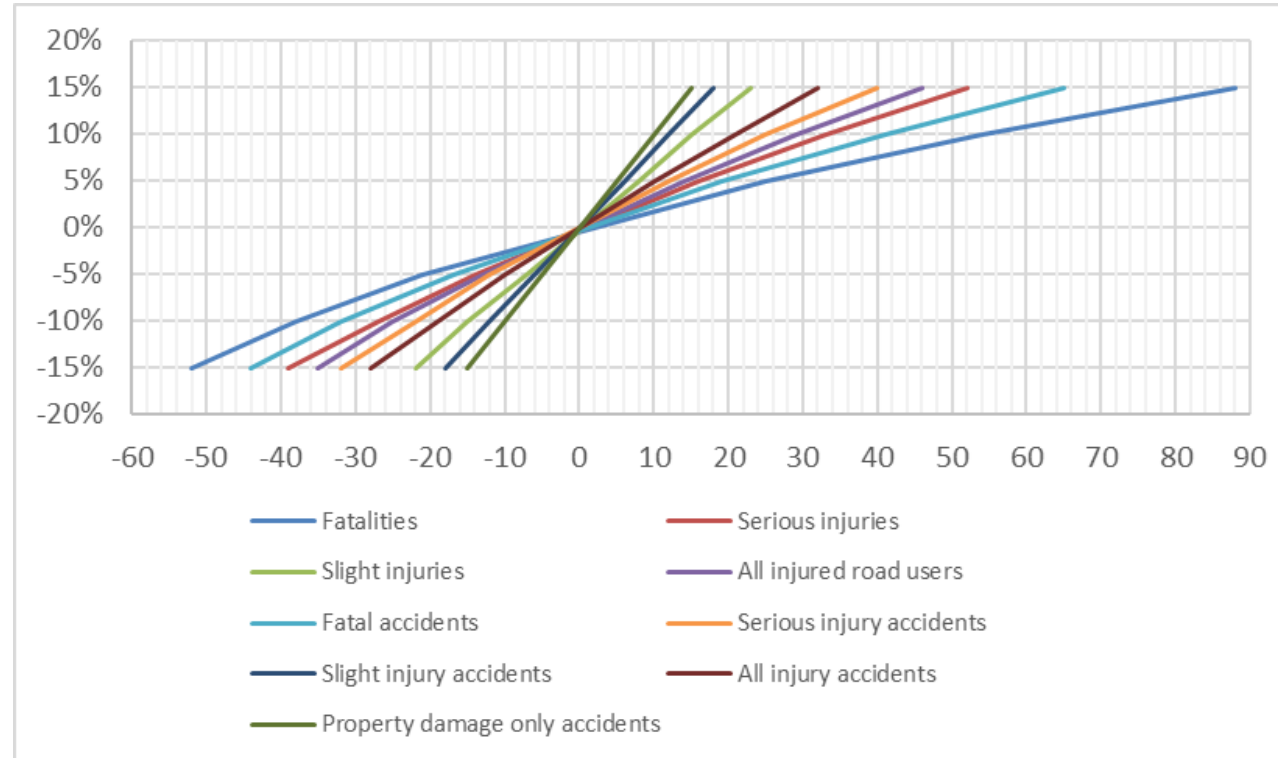
- Aiming to **promote knowledge sharing** through appropriate implementation aids that will reflect previous work of but not limited to PIARC
- Focus on spreading road safety knowledge to **Low- and Middle-Income Countries**, where **death rates** due to road traffic injuries in LMICs are **three times higher** than in high-income countries (HIC).
- With the support of National Technical University of Athens (**NTUA**) and Austrian Institute of Technology (**AIT**)
- Deliverables for this project include **fact sheets, presentations**. Based on the road safety manual and other relevant **material produced by PIARC** technical committees (reports, case studies etc.).

Speeding Safety Fundamentals



Speeding Safety Fundamentals

- **15% increase over the mean speed → 88% increase in road accident fatalities**
- **15% reduction in the mean speed → 52% reduction in road accident fatalities**



Speeding Issues



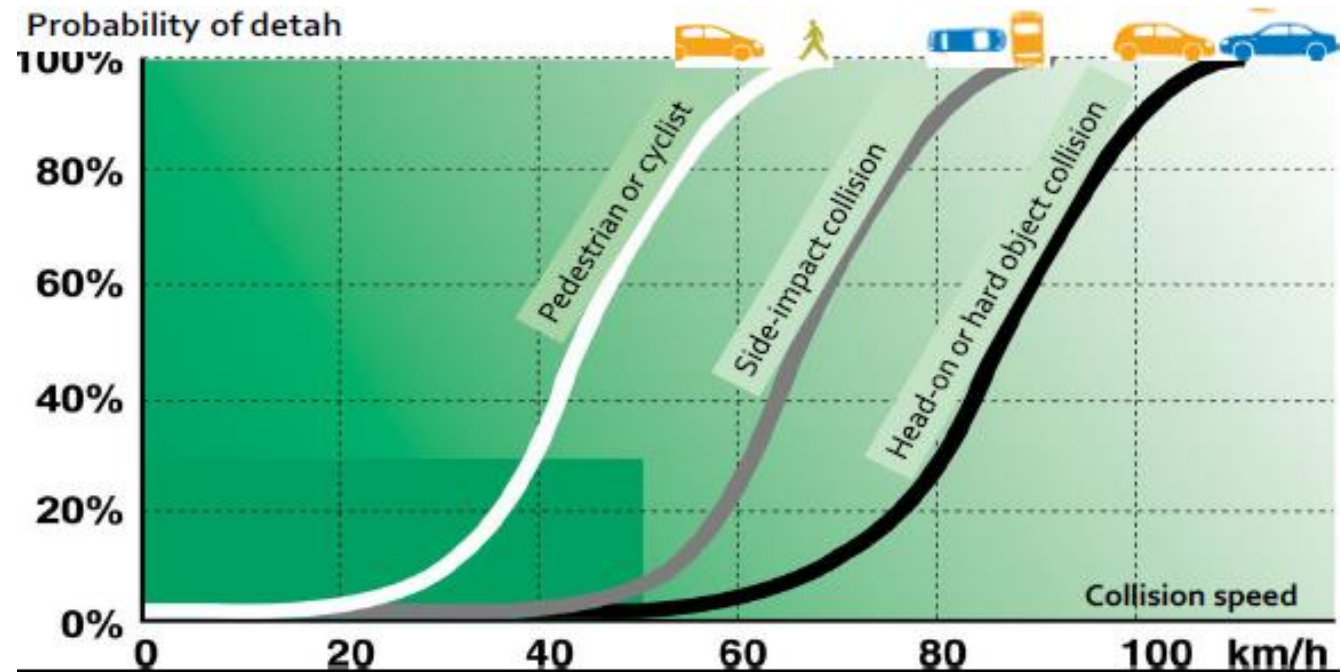
Influence of speed in accident rate

- Definition of safe speed depends on the **road complexity**
- Roads with **low complexity** are generally designed to allow drivers reach **higher speeds**
- **Risk of a road accident** occurrence is mostly related to the **difference between the speed** defined as “**safe**” for the road and the **speed actually held by the driver**.



Influence of speed in accident severity

- **Highest impact speed at which a person can survive is:**
 - 80km/h for a head-on collision.
 - 60km/h for a side-impact collision.
 - 30km/h without safety equipment installed



Speed limits factors

- **In rural areas:**
 - Existence of median physical separation, e.g. safety barrier
 - Lateral clearance, e.g. shoulder
 - Formation of intersections
 - Road shared with VRUs
- **In population centers:**
 - Separation of pedestrian/bicycle lanes from motor vehicle lanes
 - Interval between intersections
 - Existence of space after the end of the main road width (shoulder space)

Behavior Issues

- Conscious **violation of traffic rules** and regulations; deliberately exceeding speed limit
- Extreme and **conscious improper behavior**; thrill seeking
- Difficulty in **understanding complex infrastructure** and traffic situations
- Slow **reaction times**
- **Stress**
- **Fatigue**
- **“Crowd-bahavior”**



Speeding Safety Measures



UN Decade of Action for Road Safety



Safe System Approach

- **UN Second Decade of Action for Road Safety**, with a goal of reducing road traffic deaths and injuries by at least 50 per cent from 2021 to 2030
- Adoption of Safe System Approach is necessary to prevent fatal and serious crashes.
- **Managing speed** is critical to the effective implementation of the Safe System approach
- In urban areas where there is a mix of road users a **maximum speed limit of 30km/h** should be established

Safe System Principles



**Death/Serious Injury
is Unacceptable**



**Humans
Make Mistakes**



**Humans Are
Vulnerable**



**Responsibility
is Shared**



**Safety is
Proactive**



**Redundancy
is Crucial**

Speed management interventions

■ Road design and engineering

- Employing speed humps or cushions
- Raised platform crossings
- Roundabouts
- **Safe speed limits**

■ Vehicle interventions

- Speed limiting
- **Intelligent Speed Assistance**

■ Behavior change

- Legislation
- Enforcement
- **Promotion to deliver effective general deterrence of speeding**



Reduce operating speed

- **Good balance** between road design, speed limit, and public perception of appropriate speed is vital
- Adding vibration **deceleration marking** at curved roads,
- Using **stone pavement section** at village entrance,
- **Narrowing lanes** by turning the centerline to color wide solid line
- Setting up **snapshot systems**



Credible speed limits characteristics

Speed limit signs must be:

- **Credible**: used in the right place, reflect road characteristics and environment, not used massively
- **Homogeneous** over the road network to maintain driver's awareness,
- **Visible** by day and by night,
- **Maintained** over time
- **Consistent** with horizontal markings and delineation.



Safe speed vs Operating speed

- Operating speed \leq road **safe** speed \rightarrow safe driving
- **Operating** speed \gg safe speed \rightarrow risk of accident occurrence increases
- **Self-explaining** road ensures **drivers perceive the right behavior** to adopt and adjust their speed, reducing the gap between operating and safe speed.
- Not self-explaining road leads to **operating speed higher** than the safe speed
- Speed limits must be **credible** to achieve **driver compliance**



Driver's compliance to speed limits

- Measures to enable speed limits to be complied with even if not credible:
 - Improve **signs readability**, understanding and action
 - Make **drivers** more **respectful** of road law by education
 - Change **road environment**
 - **Enforcement**
- Measures to enable credible speed limits to be complied with:
 - Road characteristics should **match the drivers expectations**
 - Locally manage road environment to **improve self-explanation**
 - **Reasons of reduced speed** limit must be **fully understandable** by drivers.

Recommendations



Speeding Safety Recommendations (1/2)

- Speed management is not only about regulating the speed but also **planning and designing appropriate road layouts** and networks for safe travel speeds.
- The main **countermeasures** used to **reduce operating speed** (measures that force drivers to reduce their operating speed to the imposed speed limit value) are:
 1. **Improving signs readability** and understanding
 2. **Road and Road Environment Improvement** and (slight) modification
 3. **Enforcement.**
- The main countermeasures used to **increase road safe speed** (measures that increase the speed at which it is possible to drive safely) are:
 1. **Improving road physical characteristics**
 2. **Road and Road Environment (heavy) modification.**

Speeding Safety Recommendations (2/2)

- Managing speed through **behavioral change or speed compliance regulations** could be done by enforcement, education, demerit points and fines to road users.
- Engineering **treatment at high risk locations** for speed reduction, such as traffic calming could also be one of the options.
- With the **help of technology**, speed management is now more manageable through speed limiting technology or intelligence speed adaptation where speed limiters and data recorders were involved.

PIARC IS BOOSTING ROAD SAFETY IN LMICs

- **Managing speed** is a **key priority** for increasing road safety and critical to the effective implementation of the Safe System Approach.
- PIARC Road Safety Technical Committee has provided detailed information and **up-to-date recommendations** on the planning, enforcement and implementation of speed limits and speed control systems.
- PIARC is engaged in **promoting road safety** all over the world and committed to **actively support safety in LMICs**.
- The new knowledge-sharing campaign for road safety will provide **monthly updates**, on social media and on PIARC website, for **all essential road safety areas**.
 - **Stay tuned for more actions and events!!**



Relevant PIARC reports

- [Road Safety Manual. Planning, Design & Operation. Roles, Responsibilities, Policy Development and Programmes](#)
- [Road Safety Manual. Planning, Design & Operation. Designing for Road Users](#)
- [Road Safety Manual. Planning, Design & Operation. Intervention Selection](#)
- [Proceedings of the “International Seminar and Workshop on Safer Roads by Infrastructure Design and Operation”](#)
- [Setting Credible Speed Limits](#)
- [1st Webinar on COVID-19 and Road Safety](#)
- [2nd Webinar on COVID-19 and Road Safety](#)
- [COVID-19: Initial Impacts and Responses to the Pandemic from Road and Transport Agencies](#)
- [Road Safety Evaluation based on Human Factors Method](#)
- [Land use and Safety: An introduction to understanding how land use decisions impact safety of the transportation system](#)

Thank you for your attention!



World Road Association (PIARC)
Grande Arche – Paroi Sud – 5^e étage
92055 – La Défense Cedex – France



@PIARC_Roads



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www.piarc.org

