XXVIITH WORLD ROAD CONGRESS PRAGUE 2023

PIARC

ROAD SAFETY IN LMICS: IDENTIFICATION AND ANALYSIS OF SPECIAL ISSUES

TC 3.1 ROAD SAFETY

DR. HANS GODTHELP AND DR. AHMED KSENTINI

CO-CHAIRS WG ROAD SAFETY IN LMICS

NETHERLANDS/TUNISIA

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Road Safety in LMICs: identification and analysis of special issues

- Background
- Approach
- Special issues
- Illustrative examples
- Follow up.

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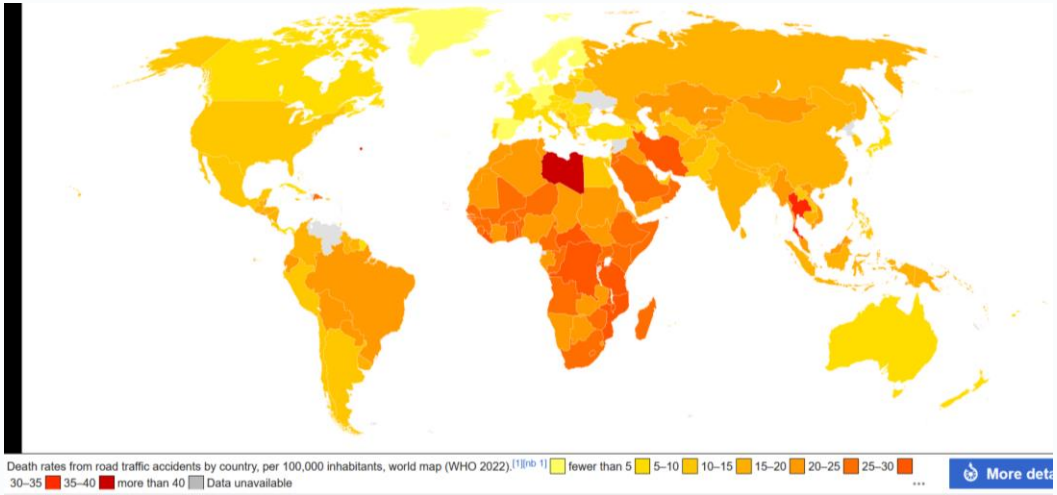
- **Worldwide 3700 fatalities per day**

- **90% in LMICs**



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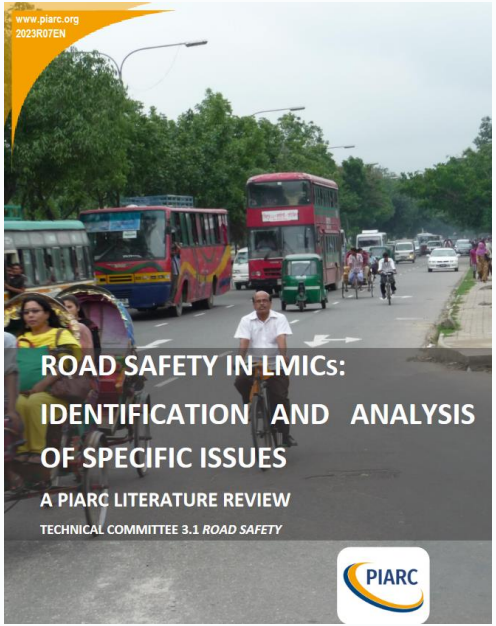
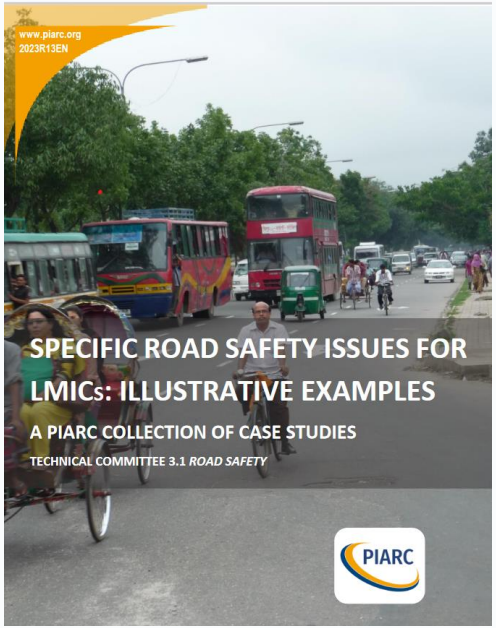


LITERATURE REVIEW: SPECIFIC ISSUES

ILLUSTRATIVE EXAMPLES: CASE STUDIES



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Strategical

I. Sustainable Development Goals
II. Road safety culture
III. Road safety management and leadership
IV. Building road safety expertise and science

Tactical

V. The transportation system as a whole
VI. City design, architecture, land use, rural planning.
VII. Selecting cost effective measures
VIII. Legislation and enforcement

Operational

IX. Speed
X. Sustainable safe roads
XI. Safe vehicles
XII. Post crash health care

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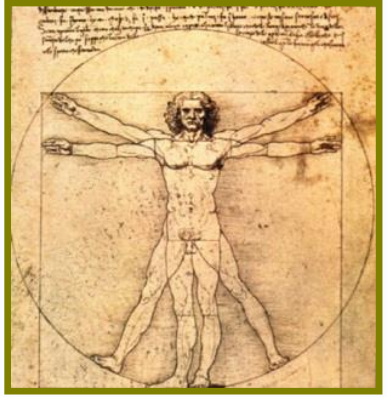

The issue of SPEED:

	Strategical:	bus driver incentive system
Safe system:	Tactical:	enforcement
	Operational:	road design

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12 ISSUES at 3 LEVELS

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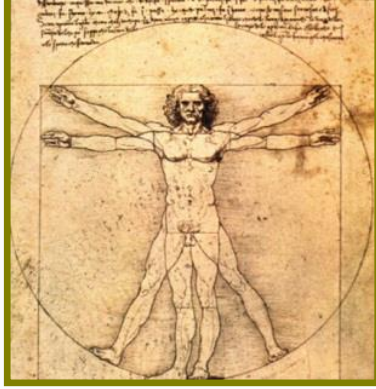

Focus areas for LMICs: an example:

IV. Building road safety expertise and science

LMICs to:

- develop university road safety programs at bachelor and master level
- build research capacity in centers of road safety excellence
- connect to regional road safety observatories
- connect to international network of universities and centers of excellence

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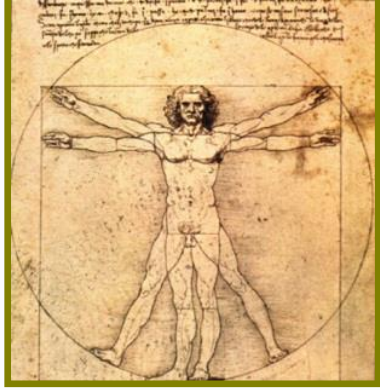

Focus areas for LMICs: an example

VI. City design, architecture,land use and rural planning

LMICs to:

- adopt a systems-oriented approach which puts road safety and public health policies in a broad context of improved transport and health
- embrace the compact city approach of shorter distances, slower speeds, higher residential and population densities, and design that promotes walking, cycling, and public transit.
- develop evidence-based transportation plans that undergo a participative process

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ISSUES	EVIDENCE BASED CASES
I. SDG's: integral approach	Bicycle safety in Bogota
II. Road safety culture	Bus driver incentives Kigali bus network
III. Road safety management	Road safety institutions in Argentina
IV. Road safety expertise	Knowledge gaps
V. The transportation system	Safe effects of the BRT system
VI. City design, architecture	Safe and sustainable mobility in Fortaleza
	The case of SARSAI in Tanzania
VII. Cost effective measures	Cost effective enforcement in Uganda
VIII Legislation and enforcement	Motorcycle helmet use in Vietnam: a four-year study
IX. Speed	Speed measures in Bangladesh
X. Sustainable safe roads	Motorcycle lanes in Malaysia
XI. Safe vehicles	The case of vehicle safety in Latin America
	Comparing ASEAN NCAP Ratings
XII. Post crash health care	Rapid emergency care in Viet Nam

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Cases

Brasil:	Fortaleza case:	safe city
Bangladesh:	Dacca N2:	speed management
Tanzania:	Dar es Salaam:	school area

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Fortaleza Case

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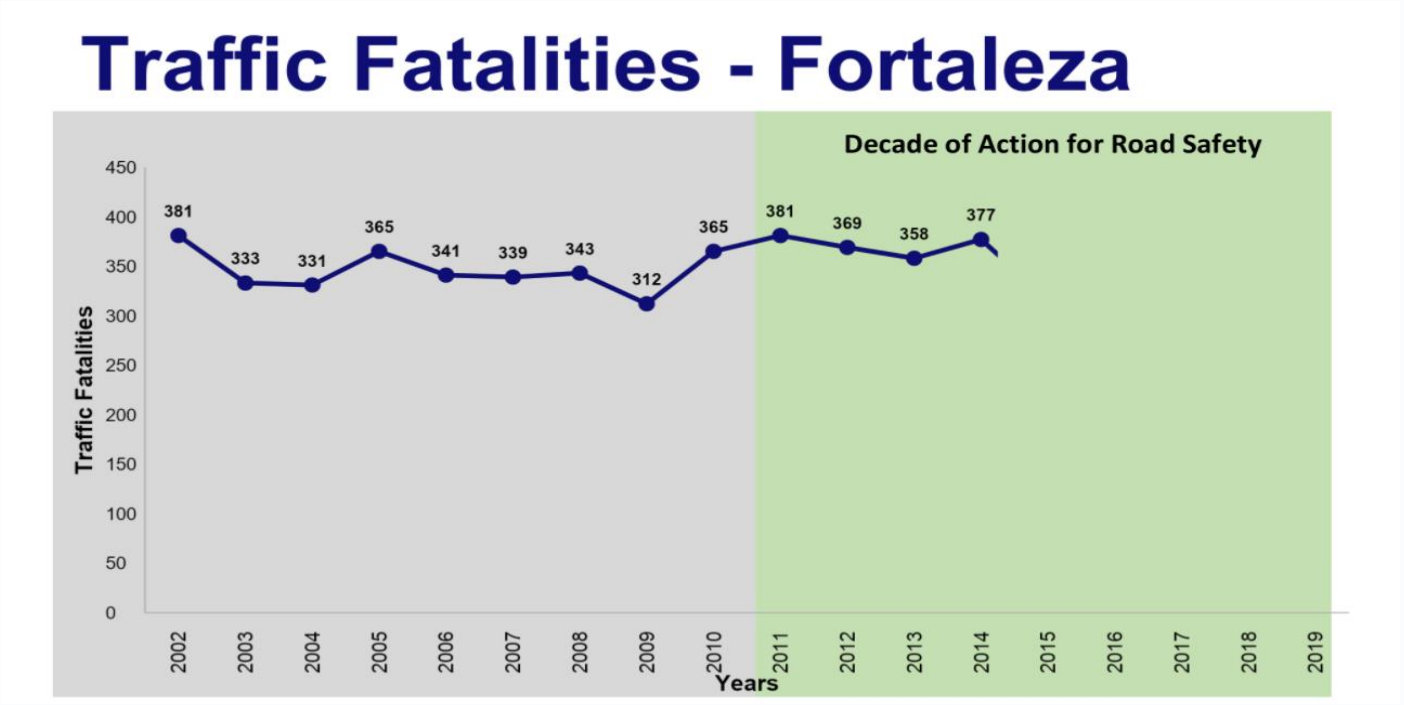
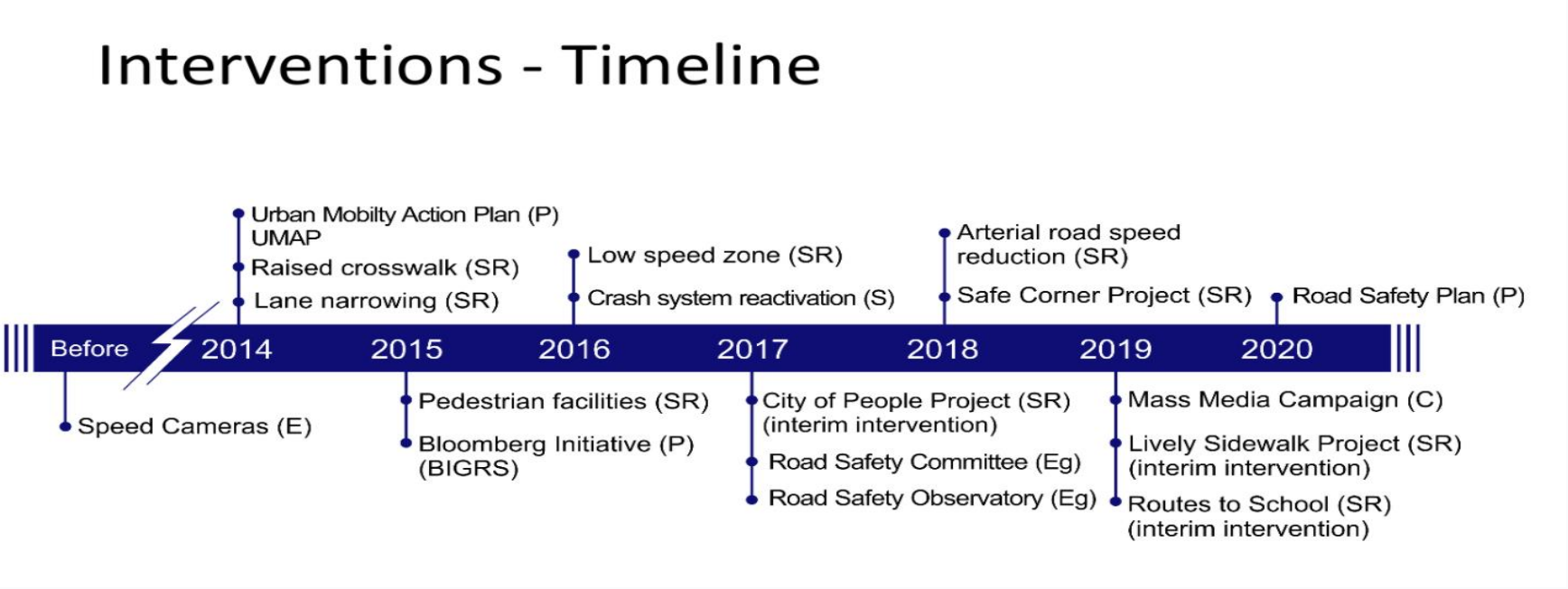


Fortaleza Case



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Lively Sidewalk Project

Source: Prefeitura Municipal de Fortaleza and Bloomberg Philanthropies

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Low Speed Zones

Source: Prefeitura Municipal de Fortaleza and Bloomberg Philanthropies

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INTERVENTION:

Advanced areas for motorcycles – “Moto box” – signalized intersections

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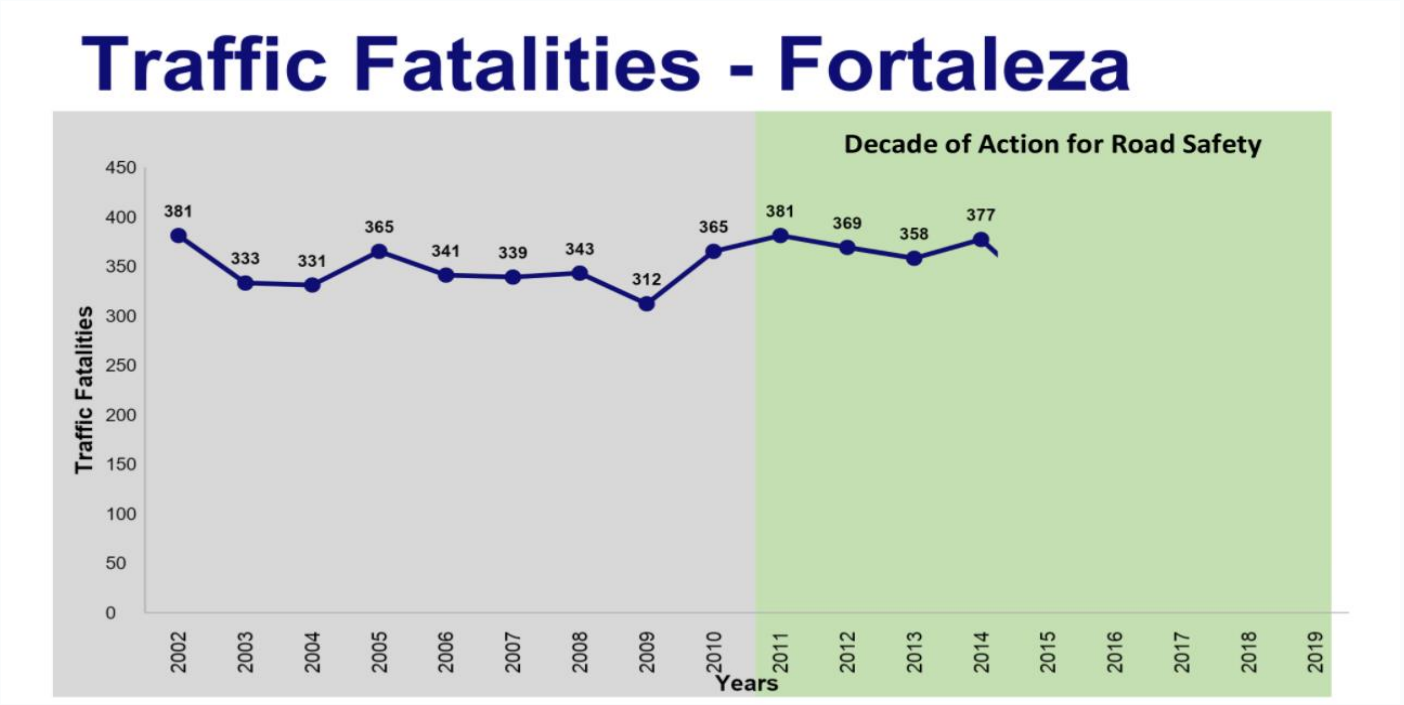
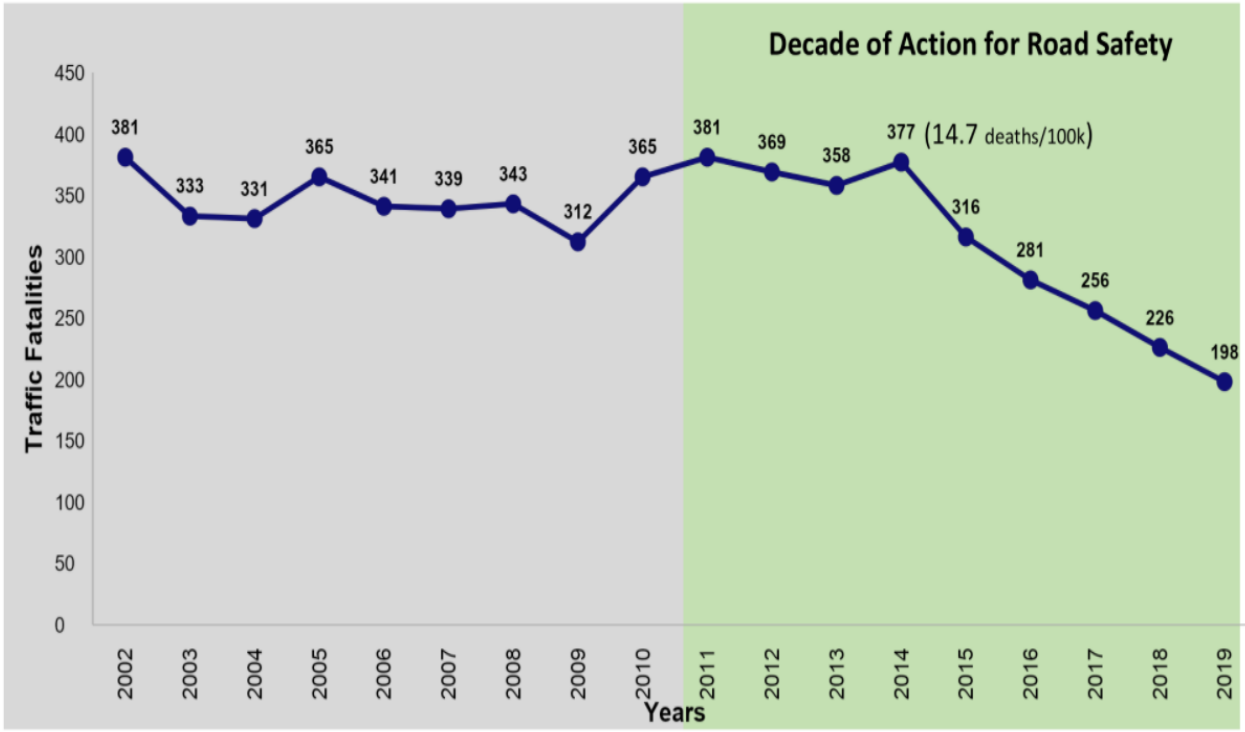


Traffic Fatalities - Fortaleza



2020: 193

(7.2 deaths/100k)

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Fortaleza Case

58% fatality reduction

2014: 377 **2022: 157**

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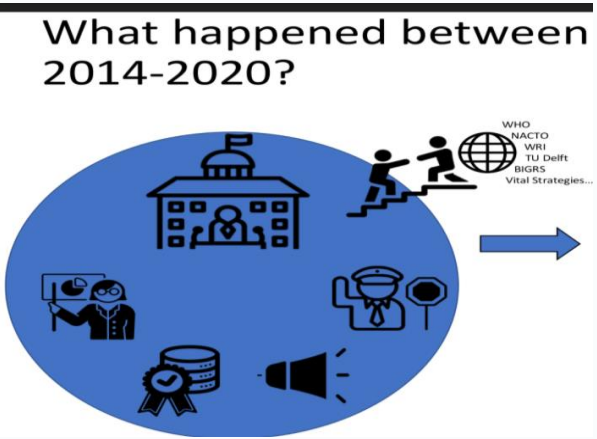

Fortaleza Case

- Leadership
- Local centre of excellence

The Bangladesh case

In 3 rural villages on the N2 highway

The N2 national highway connects the capital Dhaka to the Sylhet district. It is a single carriageway two-lane asphalt road, that is notorious for the number of road crashes.

▲ Crash: a head-on smash between two trucks on the Dhaka to Sylhet highway. Photograph: Richard Wix for the Observer

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That showed a high risk of road crashes

High speed and overtaking, particularly by buses

Mix of high- and low-speed traffic

Large number of pedestrians crossing the highway

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Comprehensive program with 3 main parts

Infrastructural measures	Educational and awareness programs	Active community involvement
Speed humps, rumble strips, pedestrian crossings, bus bays, and road markings	Practical road safety education for children; Awareness campaign for pedestrians and bus drivers	Local Road Safety Committees, local record keepers, and village video shows

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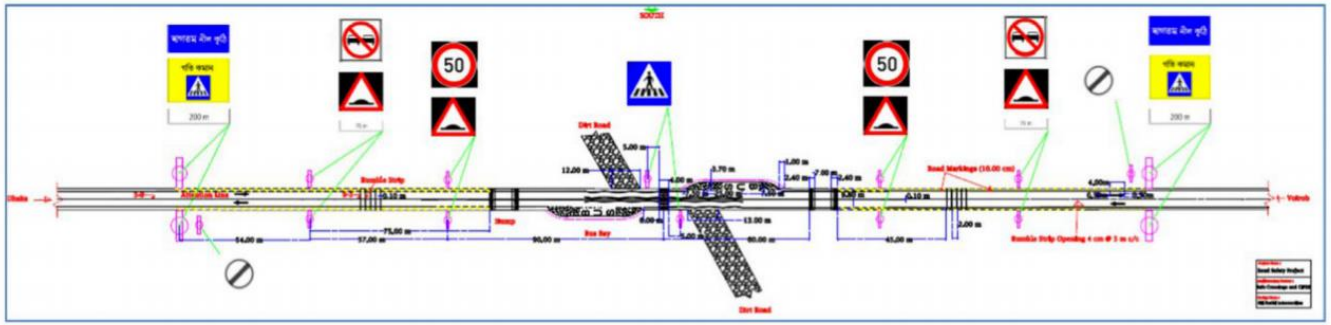
Infrastructural measures in detail



Nil Kuthi intersection

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The Bangladesh case

67% fatality reduction

59% serious injury reduction

	LRK data				Power model	
	Before	After	Difference (absolute)	Difference (relative)	95% Confidence interval[1]	Best estimate[1]
Average speed[2] (km/hr.)	63,6	51.1	-/- 12,5	-/- 19,7%		
Number of fatalities	9	3	-/-6	-/- 67%	[-/- 58%...-/- 68%]	-/- 63%
Number of serious injuries	69	28	-/- 41	-/- 59%	[-/- 10%...-/- 70%]	-/- 54%

1. Using Elvik's (2009) exponents for rural roads/motorways; 2. Of buses, cars, trucks

For all three locations combined

The Bangladesh case

Perspective from the local communities

After the interventions:

- **74%** of the people in the local communities felt **safe** to cross the road
- Wide support for road safety interventions

The Bangladesh case

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Martijn C. Thierry[b], Jasper M. Vet[c] Safe Crossings

AKM F. Rahman, Arif Uddin Centre for Injury Prevention and Research Bangladesh (CIPRB)

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Concluding

- central role of:

  - national road safety agency leadership
  - national road safety centres of excellence
    . universities curricula
    . road safety research institutes
  - local road safety committees

-

roadsafety forall.org

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The SARSAI case, Tanzania

Original article

School Area Road Safety Assessment and Improvements (SARSAI) programme reduces road traffic injuries among children in Tanzania

Ayikai Poswayo,[1] Simon Kalolo,[1] Katheryn Rabonovitz,[2] Jeffrey Witte,[1] Alejandro Guerrero[2]

[1]Amend, Dar es Salaam, Tanzania
[2]InterTrauma Consulting, New York City, New York, USA

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ABSTRACT

Purpose To determine the impact of a paediatric road traffic injury (RTI) prevention programme in urban Sub-Saharan Africa.

Setting Dares Salaam, Republic of Tanzania.

Methods Household surveys were conducted in catchment areas around 18 primary schools in Dar es

more recently, RTIs have become a mounting public health concern in low-income and middle-income countries (LMICs), where nearly 90% of all RTI-related deaths occur.[2–6] One study from Ghana found that between 1995 and 2010, there was a threefold increase in RTI-related mortality.[7] The escalating burden in LMICs has been attributed to rapid

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The SARSAI case, Tanzania

SARSAI program:
https://thecityfix.com/blog/african-cities-taking-on-road-safety/

The SARSAI case, Tanzania

Big Impact with Limited Resources

Data is at the heart of what makes SARSAI effective. To achieve maximum impact with limited resources, Amend's engineers and statisticians first survey a city for the most high-risk school areas. Then they build out from there, selecting physical interventions that best fit the area.

https://cleantechnica.com/2019/04/06/corridors-of-safety-urban-transformation-in-tanzanias-capital-safer-children-mean-better-neighborhoods/

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The SARSAI case, Tanzania

INFRASTRUCTURE ENHANCEMENT	• A standardized assessment of school areas that looks at the behavior of children, behavior of drivers and other road users, and physical infrastructure
	• Identifying appropriate measures to improve safety, based on the assessment
	• Implementation of infrastructure improvements
	  ○ Speed bumps
	  ○ Bollards
	  ○ Sidewalks
	  ○ Signage
	  ○ New school gates
	• Compensated crossing guards at peak hours

SCHOOL-BASED EDUCATION	Teach a maximum of 50 children at a time: • How to cross safely • How to be seen by drivers • How to choose safe place to cross • How to walk safely along the road • How to find a safe place to play, relax, or do business • Any community specific RTI characteristics, for example, motorcycle pedestrian injuries in the morning Training of Road Safety Instructors

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The SARSAI case, Tanzania: 48% injury reduction

Table 1 Demographics

	Baseline control	Baseline intervention	Post-control	Post-intervention
Male	2887	3281	3321	3333
Female	3306	3483	3372	3529
Total	6193	6764	6693	6862
Age (±SD)	9.92 (±2.31)	9.86 (±2.31)	9.77 (±2.26)	9.69 (±2.21)
Injuries	92 (1.49*)	89 (1.32*)	125 (1.87)*†	66 (0.96*)†‡

*Injury incidence per 100 person-years.
†Comparing number of road traffic injuries (RTIs) in post-control and post-intervention $p<0.001$.
‡Comparing number of RTIs in intervention baseline versus intervention follow-up $p=0.045$.