Regional trends and issues for children and vulnerable road users in Asia Pacific/South East Asia Region

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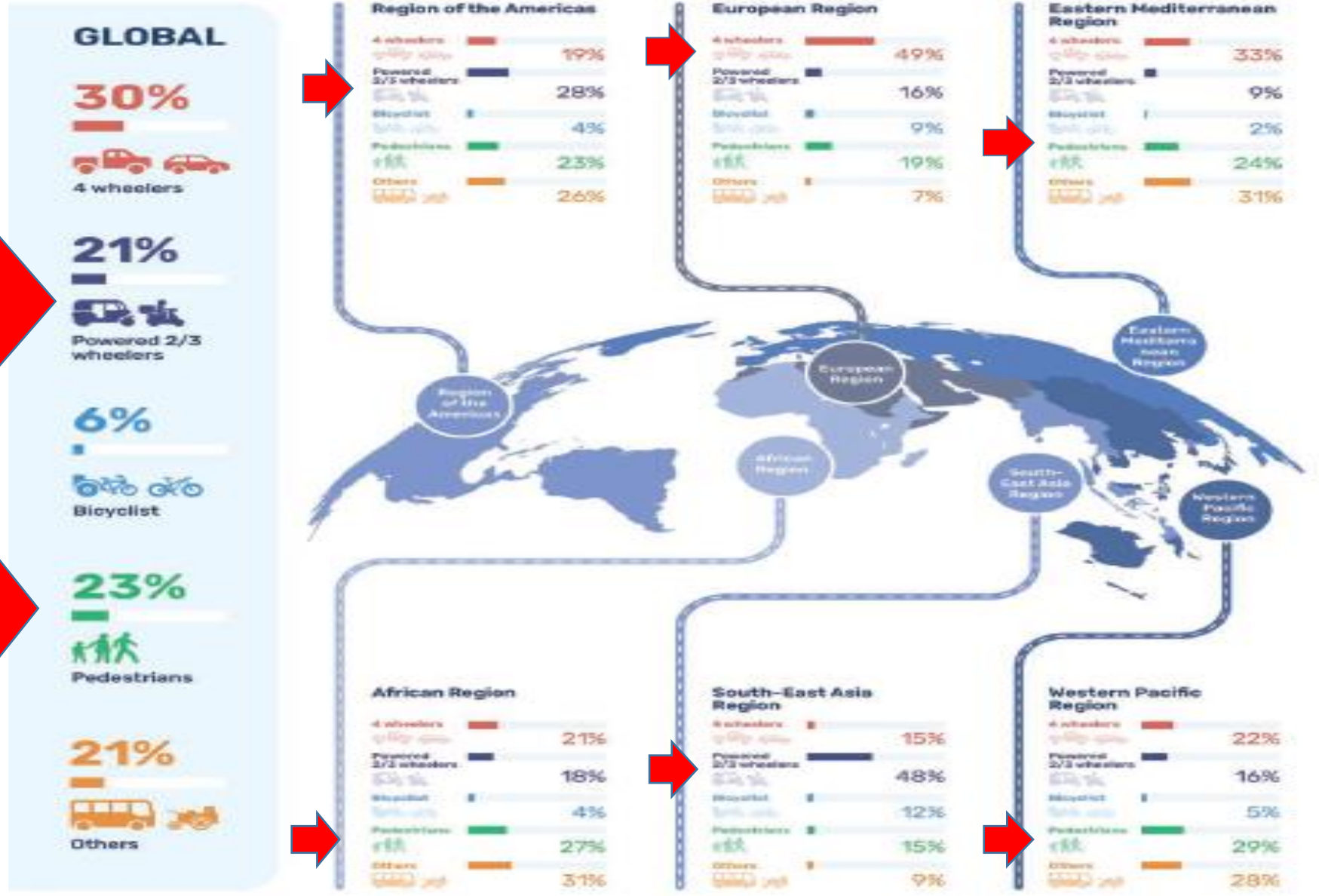
VRU Safety trends in ASIA Pacific-South East Asia Region (SEAR)

- Traffic safety trends in SEAR vs other regions
- VRUS safety trends in SEAR
- Children safety trends-Globally and SEAR
- Data shortcomings
- Risk Factors
- VRU Safety Challenges

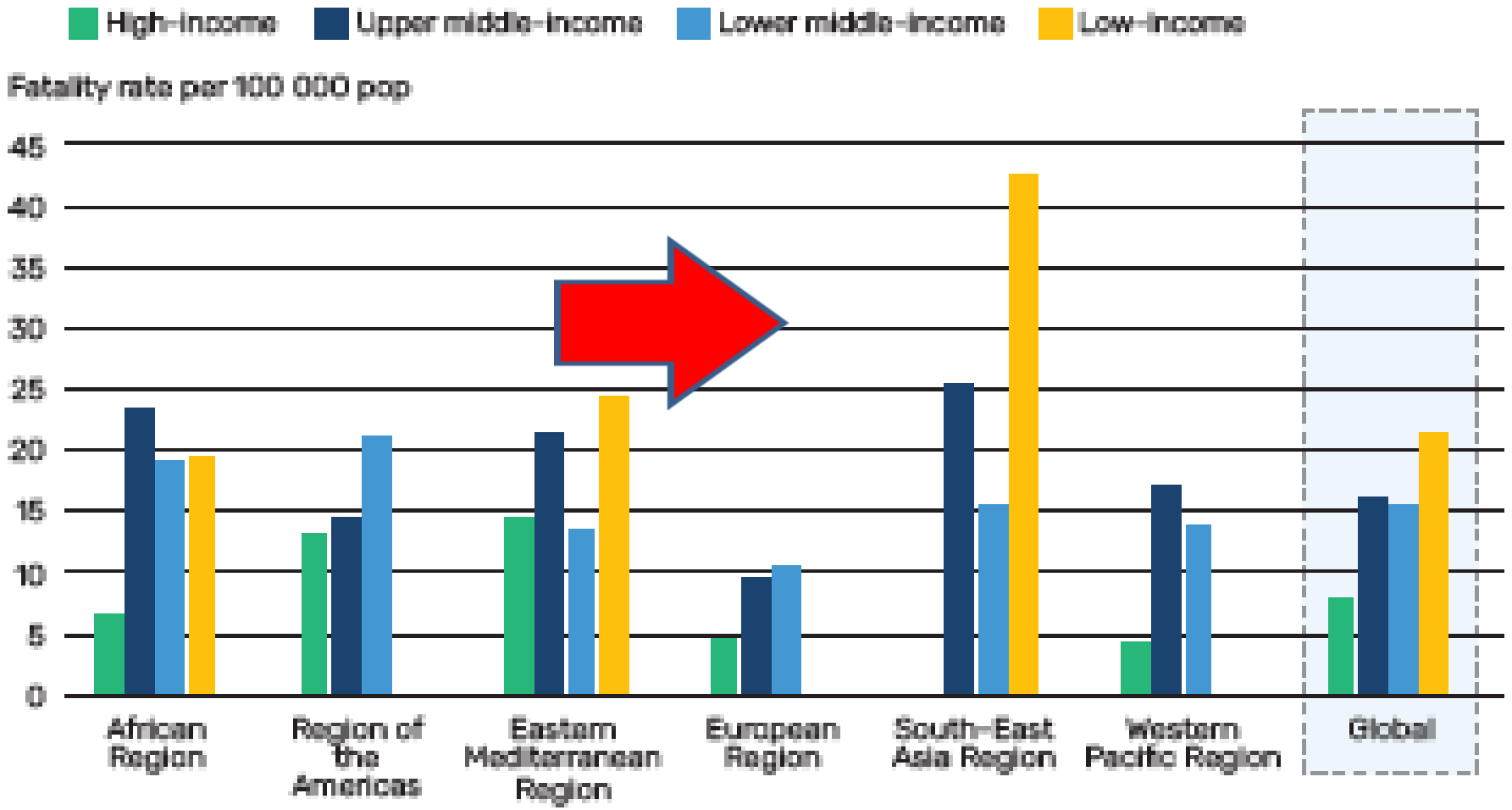
Victims in Fatal crashes, WHO regions, GSRRS, 2023

Except European region, largest share of RTC fatalities comprise of PTW and pedestrians



Road safety in WHO regions: Variation by income

SEAR countries have the highest RTF per 100K population



Data Discrepancy in SEAR: Country reported data vs IHME estimates

Member State	Estimated Population in 2021 (million)	Reported Road traffic fatalities in the year 2010	Reported Road traffic death per 100,000 population in the year 2010	Reported Road traffic deaths in the year 2021 [% change since 2010]	Reported Road traffic deaths per 100,000 population in the year 2021 [% change since 2010]	WHO estimates of road deaths per 100 000 population for the year 2010	WHO estimates of road deaths per 100 000 population for the year 2021 [% change since 2010]	Estimated rate/ Reported rate for the year 2021
Bangladesh	169.36	2,872	1.9	5,084 [+ 77.0]	3.0 [+ 55.4]	17.3	18.6 [+ 7.5]	6.2
Bhutan	0.78	79	10.9	71 [- 10.1]	9.1 [- 10.3]	17.7	12.2 [- 31.1]	1.3
DPRK	25.97	Data not available				33.5	42.7 [+27.5]	-
India	1407.56	130,037	10.6	153,972 [+ 18.4]	11.3 [+ 9.2]	17.1	15.4 [- 9.9]	1.4
Indonesia	272.89	31,234	13.0	25,266 [- 19.1]	9.3 [- 29.1]	13.2	11.3 [- 14.4]	1.2
Maldives	0.52	6	1.9	5 [- 16.7]	1.0 [- 53.7]	3.6	1.3 [- 63.9]	1.3
Myanmar	53.80	2,464	5.1	5,325 [+116.1]	9.9 [+ 94.1]	34.4	19.3 [- 43.9]	1.9
Nepal	30.03	1,689	5.6	2,883 [+ 70.7]	9.6 [+ 72.4]	25.0	28.2 [+12.8]	2.9
Sri Lanka	21.77	2,483	11.9	2,513 [+ 1.2]	11.5 [- 1.5]	13.6	11.5 [- 15.4]	1.0
Thailand	71.60	13,365	19.3	16,957 [+ 26.9]	23.7 [+ 34.1]	45.8	25.4 [- 44.5]	1.1
Timor-Leste	1.32	99	8.8	59 [- 67.8]	4.5 [- 48.9]	18.6	12.0 [- 35.5]	2.7

[1] Source: World Population Prospects projections for the year 2021

[2] For the Year 2019

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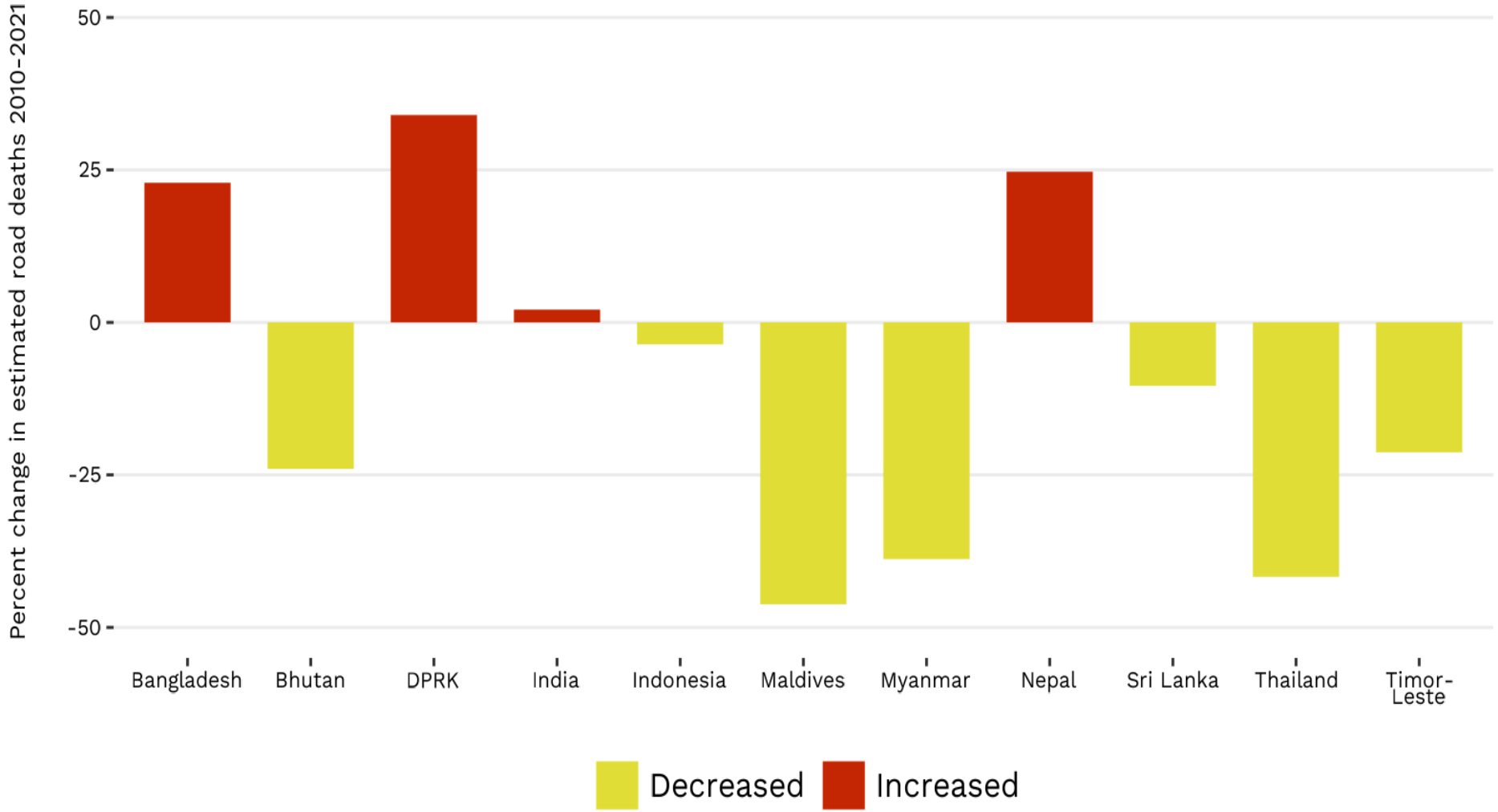
Change in RTF rates 2010-2021 (IHME Estimates)

Bangladesh, Nepal and DPRK RTF increased more that 25%



Road Safety in SEAR Countries: Share of VRUs(IHME estimates)

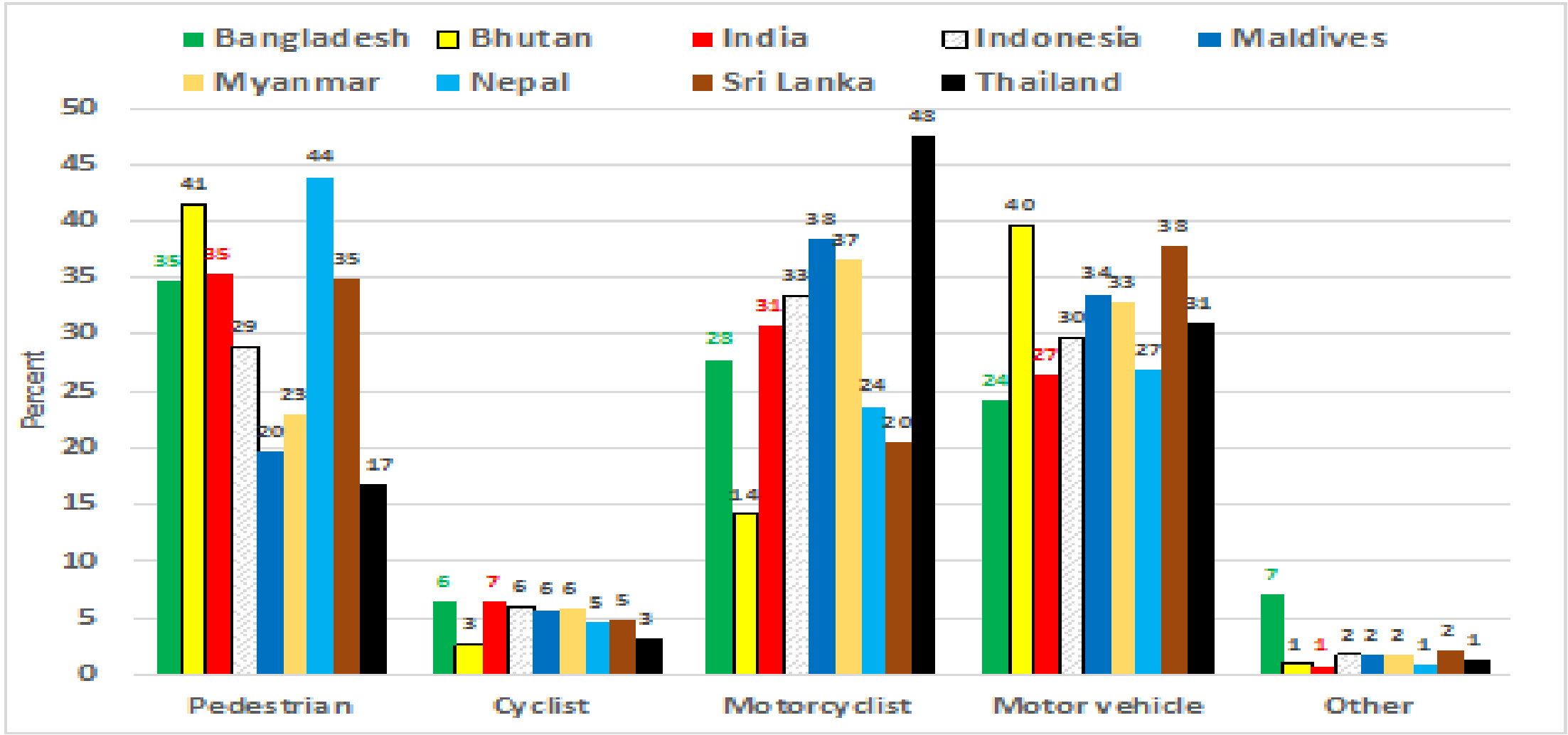
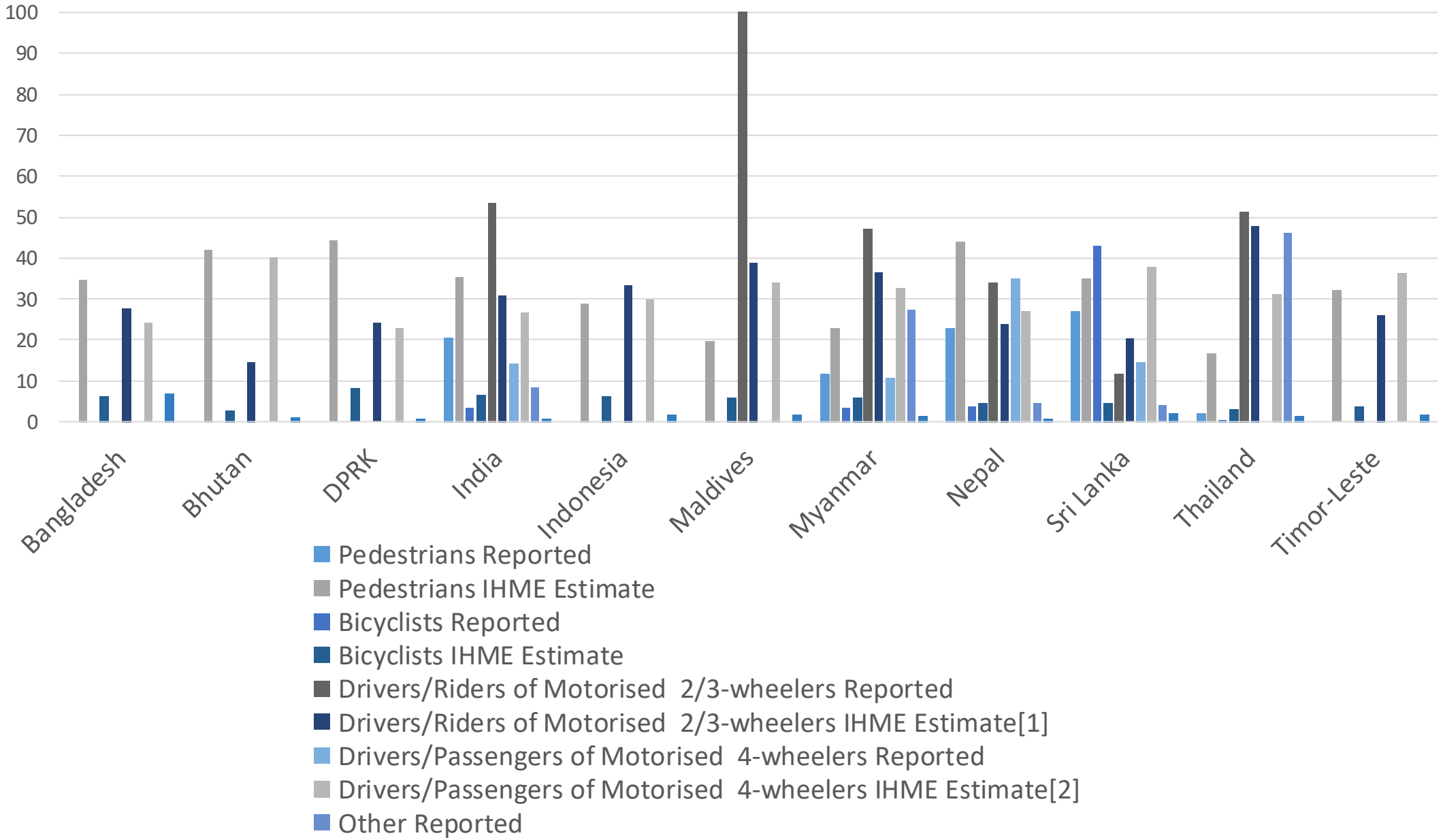


Figure 2. Percent RTC fatalities by road user type based on IHME estimates for 2019 (Global Burden of Disease Collaborative Network, 2020).

Road traffic crash victims: Reported vs Estimated

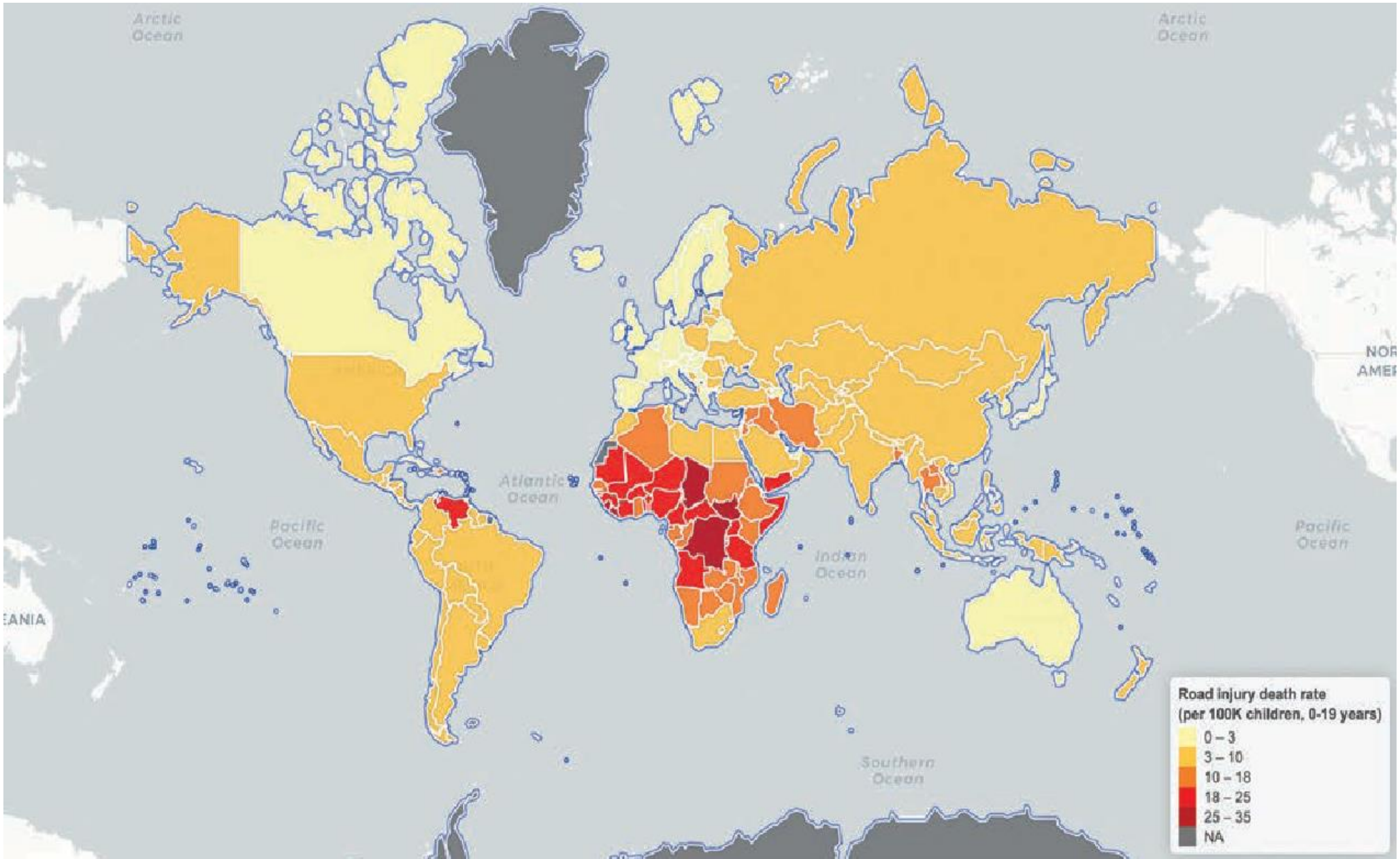
Estimated share of victims are higher than the reported share



Leading cause of death in children(0-19 years) globally(UNICEF 2023)

Rank	Age under 1 year	Deaths	Age 1 to 4	Deaths	Age 5 to 9	Deaths	Age 10 to 14	Deaths	Age 15 to 19	Deaths	Age 0 to 19	Deaths
1	Prematurity	1,031,945	Respiratory infections	205,093	Diarrhoeal diseases	76,189	Diarrhoeal diseases	52,982	Road injury	72,656	Prematurity	1,043,452
2	Birth asphyxia and birth trauma	639,342	Diarrhoeal diseases	171,536	Road injury	53,999	Road injury	42,560	Tuberculosis	59,685	Respiratory infections	811,505
3	Respiratory infections	538,796	Malaria	165,894	Tuberculosis	39,894	Malignant neoplasms	21,648	Interpersonal violence	45,952	Birth asphyxia and birth trauma	652,399
4	Congenital anomalies	398,845	Measles	69,255	Respiratory infections	35,142	Respiratory infections	20,691	Self-harm	35,634	Diarrhoeal diseases	536,716
5	Neonatal sepsis and infections	341,379	Tuberculosis	67,201	Meningitis/ encephalitis	24,864	Meningitis/ encephalitis	18,802	Diarrhoeal diseases	27,028	Congenital anomalies	485,701
6	Diarrhoeal diseases	208,980	Whooping cough	53,401	Measles	23,474	Drowning	17,485	Malignant neoplasms	26,284	Neonatal sepsis and infections	341,437
7	Malaria	102,676	Congenital anomalies	48,430	Malaria	22,233	Other unintentional injuries	16,998	Cardiovascular diseases	25,192	Malaria	310,163
8	Meningitis/ encephalitis	76,737	HIV/AIDS	42,707	Malignant neoplasms	20,638	HIV/AIDS	16,883	Maternal conditions	19,124	Tuberculosis	244,791
9	Measles	72,567	Drowning	41,492	Congenital anomalies	18,243	Congenital anomalies	13,486	HIV/AIDS	16,349	Road injury	219,637
10	Tuberculosis	67,029	Other unintentional injuries	40,717	Drowning	17652	Cardiovascular diseases	13,461	Other unintentional injuries	16,075	Meningitis/ encephalitis	167,993
11	Whooping cough	45,547	Road injury	40,392	Other unintentional injuries	16,823	Malaria	11,348	Drowning	13,012	Measles	165,417

Road Traffic death rates for children(0-19)globally



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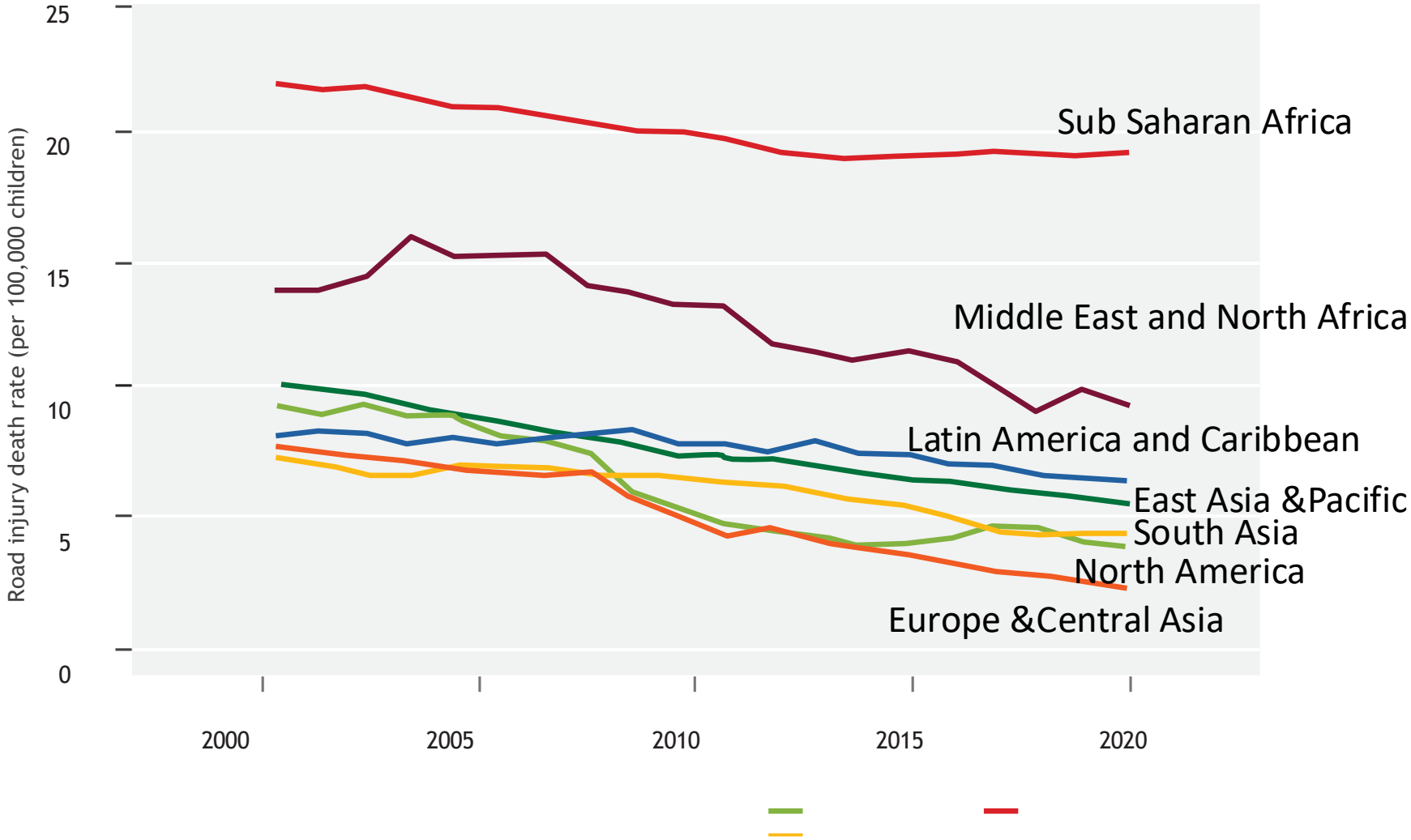
Road traffic death rates(Children) by UNICEF regions

UNICEF* region*	Average road injury death rate	Lowest rate in the region	Highest rate in the region
Sub-Saharan Africa	17.6	2.9	31.5
Middle East and North Africa	6.9	2.0	22.0
South Asia	5.8	0.8	11.0
Latin America and Caribbean	5.5	0.0	18.5
East Asia and Pacific	5.2	0.1	17.6
North America	3.5	2.4	4.5
Europe and Central Asia	2.2	0.8	8.2

Trend of RTF Rate for 0-19 years by region

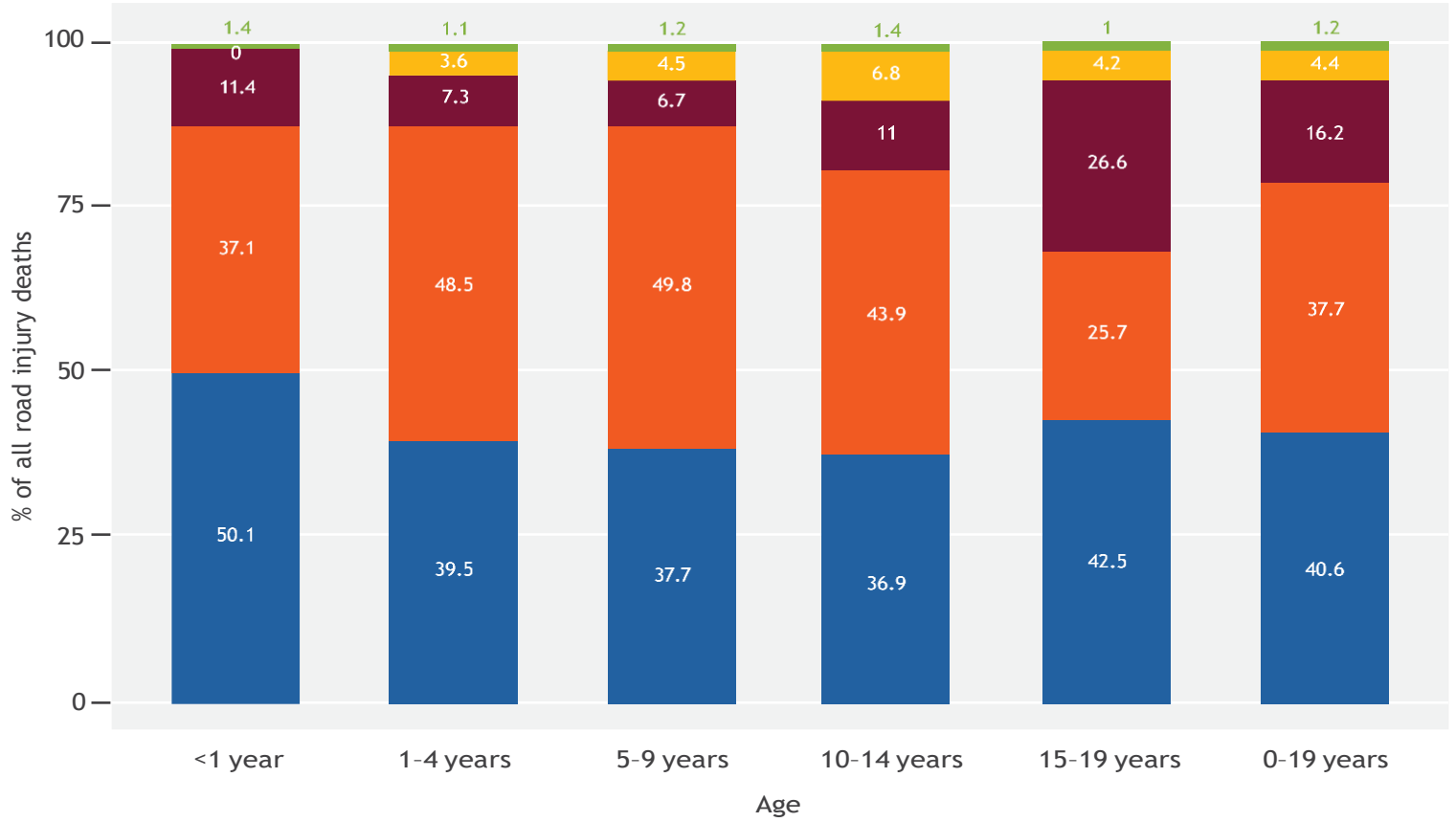
Sub Saharan Africa and South Asia region RTF has remained unchanged for the last ten years



RTC victims(0-19 years) by age and travel mode

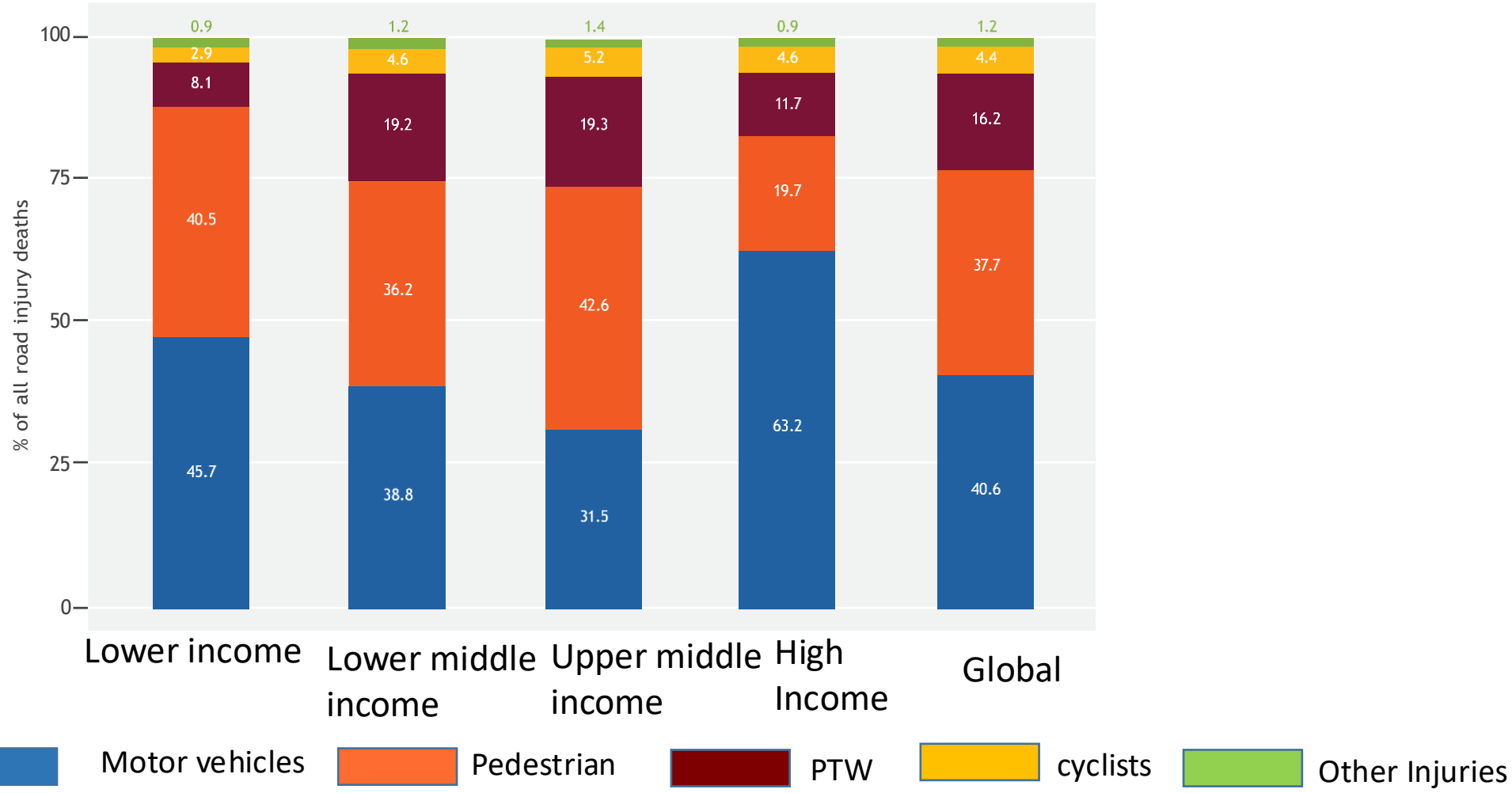
High proportion of Pedestrians and Motor vehicle occupants for all age groups

PTW becomes significant for 15-19 years



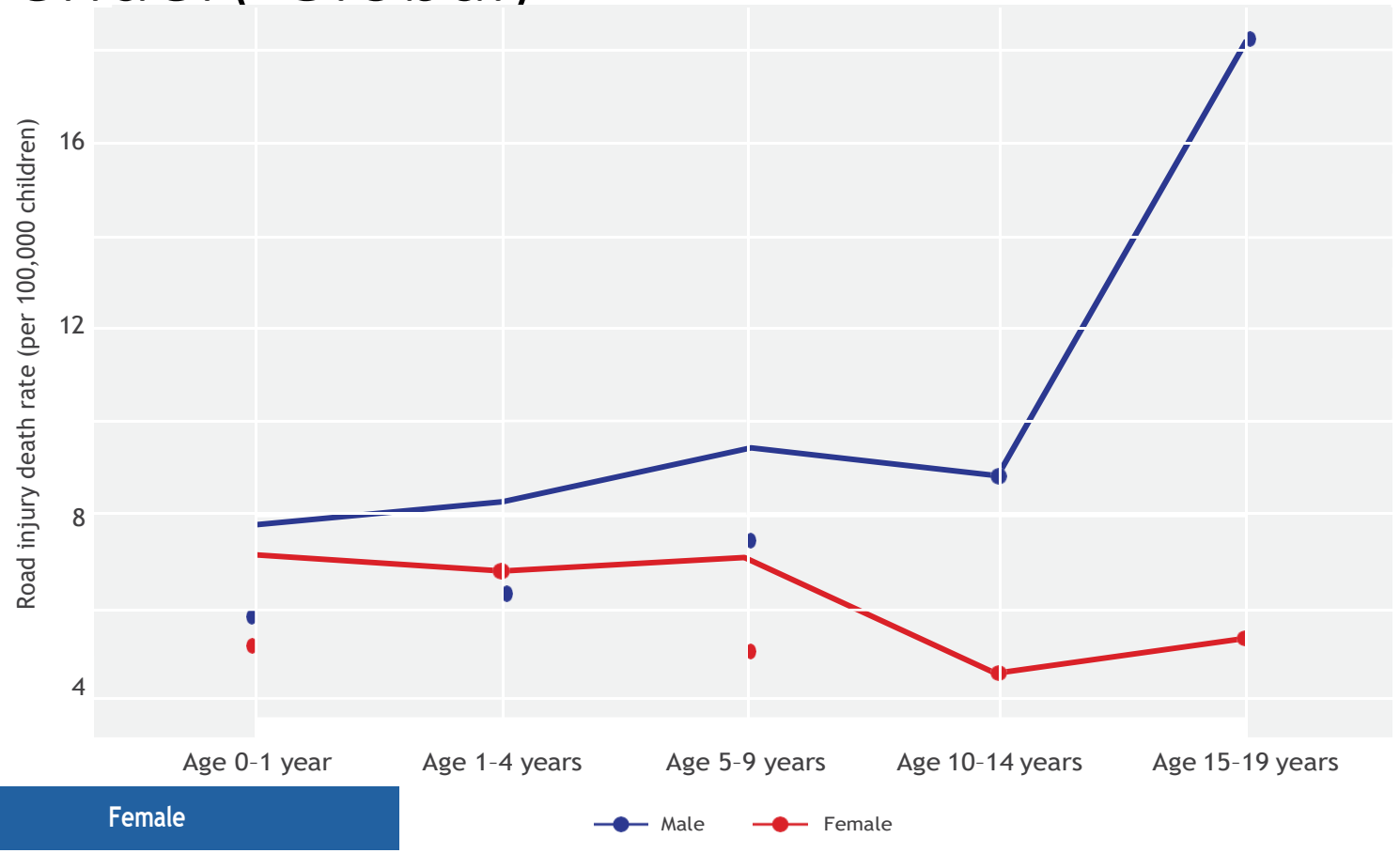
RTC victims(0-19 years) by income and travel mode

Share of pedestrian and PTW much higher in LMIC as compared to HIC



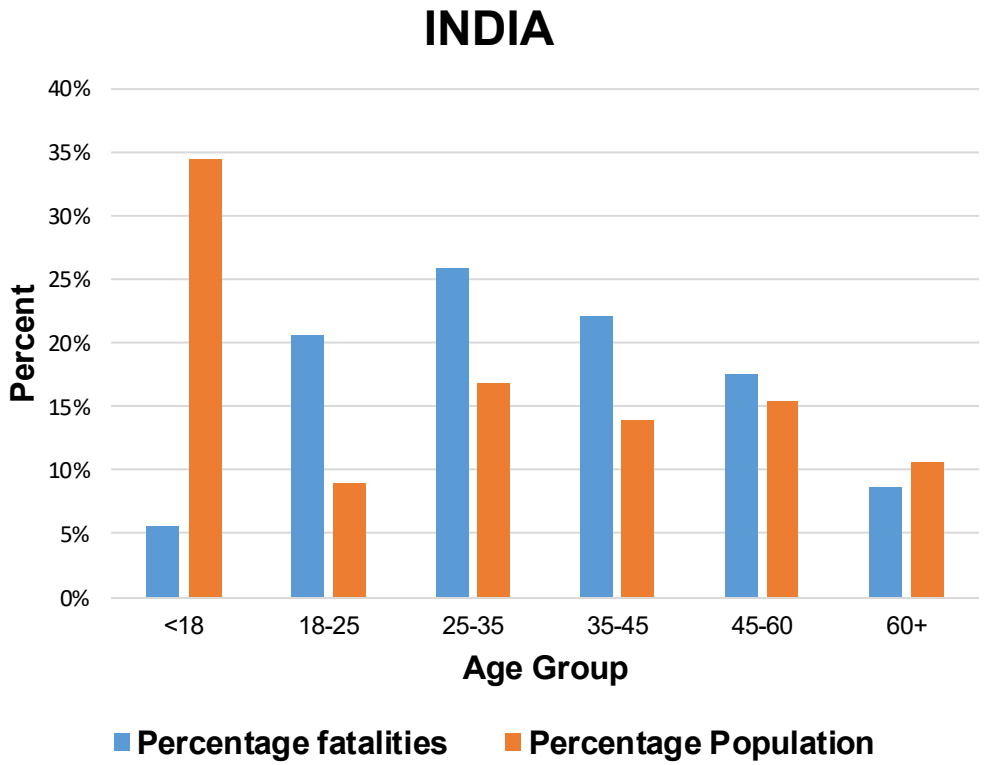
RTF rate by Age and Gender(Global)

RTF of Males increases after 9 years and
RTF of females decreases after 59 years

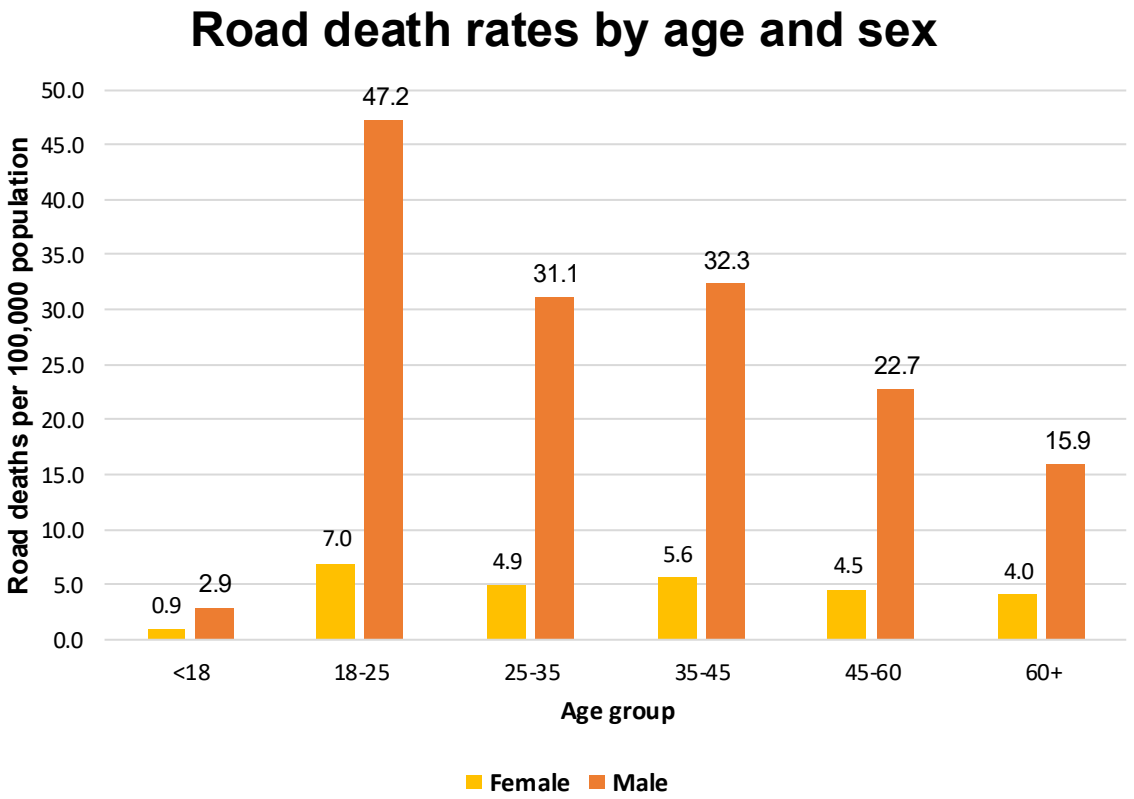


Age group	Male		Female	
	Deaths	Rate	Deaths	Rate
Age 0-1 year	5.402	7.73	4.628	7.04
Age 1-4 years	22.857	8.21	17.534	6.71
Age 5-9 years	31.806	9.34	22.193	6.96
Age 10-14 years	28.758	8.77	13.802	4.51
Age 15-19 years	57.340	18.29	15.316	5.23

Who are the victims? (AGE, GENDER, SOCIO ECONOMIC status)



Which age group has higher risk of road traffic fatality?



Females have lower risk as compared to males

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VRU (Pedestrians and PTW) crash pattern in SEAR

- Who are the victims?(Pedestrian, PTW , Child Pedestrian and PTW users)
- Where do the crashes occur? (Rural and Urban, Midblock, near PT Stops, near grade separated facilities)
- Impacting vehicle type?(Trucks, Buses, cars, PTW, single vehicle)
- Lack of pedestrian facilities(safe crossing options, comfortable walking paths) in roadway design.
- High speed of motorized vehicles

Key Principles of Safe System Approach Vision Zero(1997)

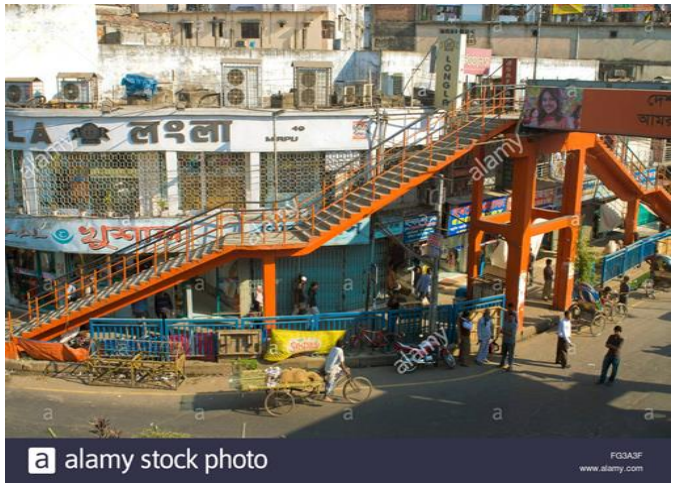
- Principle 1 : Recognition of human frailty
- Principle 2 : Acceptance of human error
- Principle 3 : Creation of a Forgiving environment and appropriate crash energy management.

Thus design of roads play an important role in road safety and improved geometric design of road infrastructure could in turn improve road safety.

Where do the crashes occur?

- Near bus stops (mid block)
- Near Junction
- Urban Arterial roads
- NH/SH passing through habitations
- Foot of the flyover
- Near FOB

Pedestrian crossing preference



Comfort and convenience prioritized over safety

Difference in Perceived safety vs actual safety

Pedestrian road crossing behavior on divided roads

Staged crossing safer on wide roads

Shorter waiting delays for better compliance

Pedestrian crossing on NH

6 lane NH 44 near Sonipat, Haryana

Emerging risk due to landuse and traffic interaction;
Pedestrian risk perception vs convenience

High Risk Locations (Rural)

- Urban vs Rural

  The proportion of pedestrian victims in road traffic crashes in rural areas may be higher in low- and middle-income countries as compared to high income countries(Speed and Design implications).

  High risk near bus stops, junctions, highway passing through habitations

- Infrastructure Quality

  Pedestrian facilities such safe crossing facilities near bus stops and junctions are missing. Pedestrians are exposed to high risk from speeding motorized traffic.

What kind of traffic control and speed management strategies are relevant?

High Risk Locations (Urban)

- High risk near bus stops, junctions, foot of the flyover, arterial roads

- Inadequate Infrastructure

  Pedestrian facilities such as footpaths, safe crossing facilities are not present in most Indian cities.

  When present, their poor maintenance and poor construction quality make them unusable.

  Pedestrians are forced to share the road space with motorized vehicles and to cross the roads where there is no safe pedestrian crossing

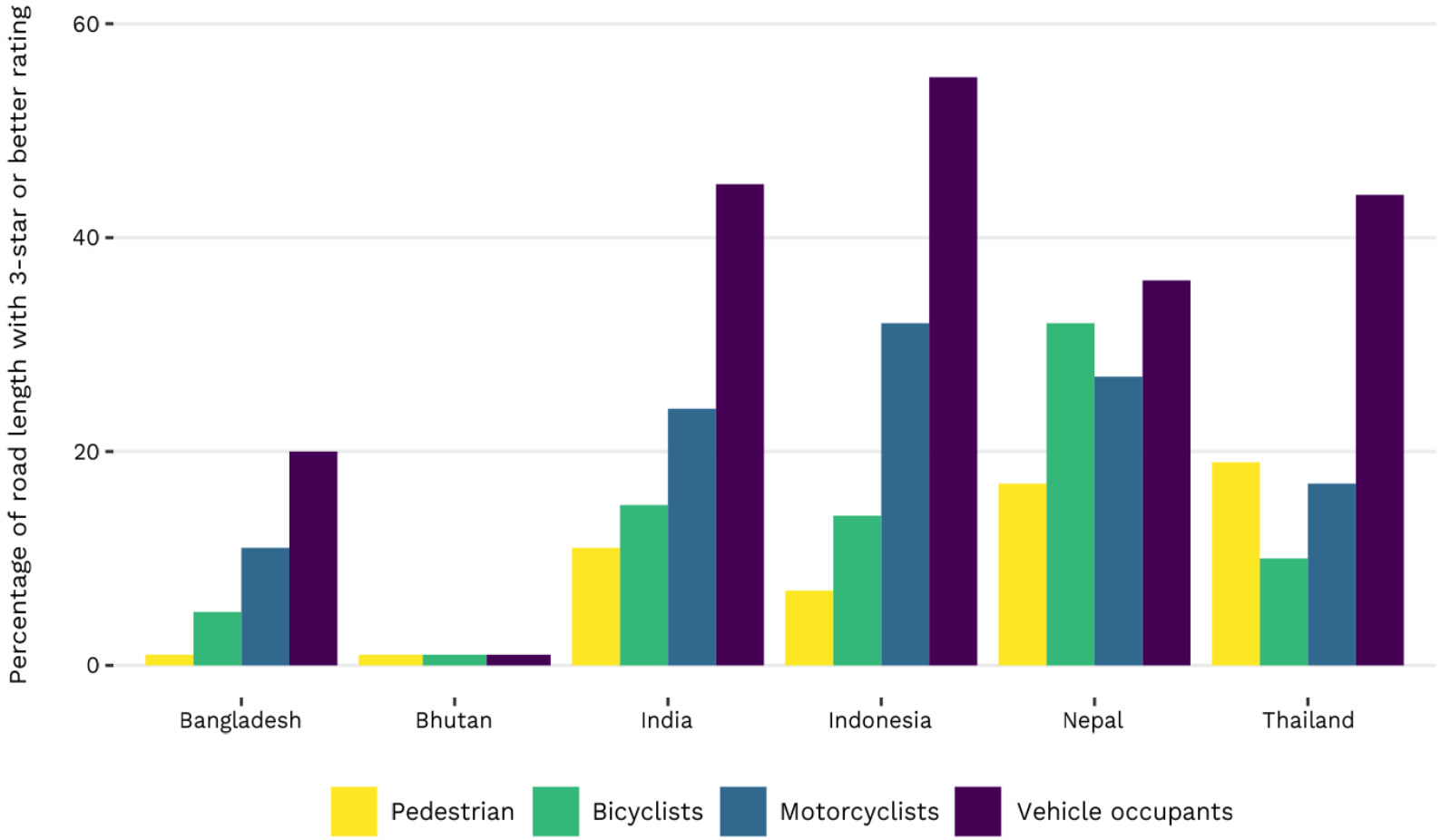
How to establish priority for pedestrian need vs mortised vehicles needs?

Safe Infrastructure for Pedestrians and PTW

>15% roads have 3 star rating for Pedestrians

>30% roads of 3 star rating for PTW

Do we know safety measures for pedestrians and PTW on high speed roads?



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Principle 3 – important principle – physically separate vulnerable road users or provide travel speeds <30 km/h

- All countries have a national law setting a speed limit,
- Bangladesh, India, and Thailand have set the maximum urban speed limit above 50 kmph, which violates the WHO best practice criteria.
- Local authorities are empowered to modify the limits only in Bangladesh, India, Indonesia, and Maldives.
- Enforcement of speed limit remains a challenge!

Motorcycle helmet and seat belt use

- All countries have a national law mandating use of helmet for motorcyclists, but the laws in Indonesia, Maldives, and Nepal do not mandate helmet fastening.
- All countries also have a national law mandating use of seat belts but is not applicable to all occupants in Indonesia, Nepal and Sri Lanka.
- The baseline estimates of rate of wearing helmet and seat belt are reported by very few countries and the reported rates are hardly reliable.
- India, Myanmar, Sri Lanka, and Thailand have a national law mandating child restraint system but no country has specified any standards for CRS.

Children on Motorcycles

- In India, it is mandatory to use a safety harness for children under four years old on motorcycles, as per the Central Motor Vehicles (Second Amendment) Rules, 2022. This rule requires children to be secured with a harness and a crash helmet to enhance their safety while riding with an adult. The safety harness is a vest worn by the child, with straps that attach to the adult rider to ensure they are securely fastened
- The incidence of children falling off motorcycles during normal operation (i.e., in a non-crash scenario), which is the specific scenario that harnesses are designed to prevent, has not been documented before.

Children on Motorcycles

- Young children who fell off motorcycles during normal operation (i.e., in a non-crash scenario) in the trauma surveillance data, there were at most 5 (≤ 0.1% of injured motorcyclists) (Source: (1) Emergency Room surveillance data from the largest Level 1 trauma center, AIIMS, (2) Police reports of fatal crashes in six states in India)
- The additional risks imposed by harnesses on young children in a crash scenario exceed the benefits they offer in terms of reducing their falling off during normal riding

Traffic Safety around schools
Safe Environment?

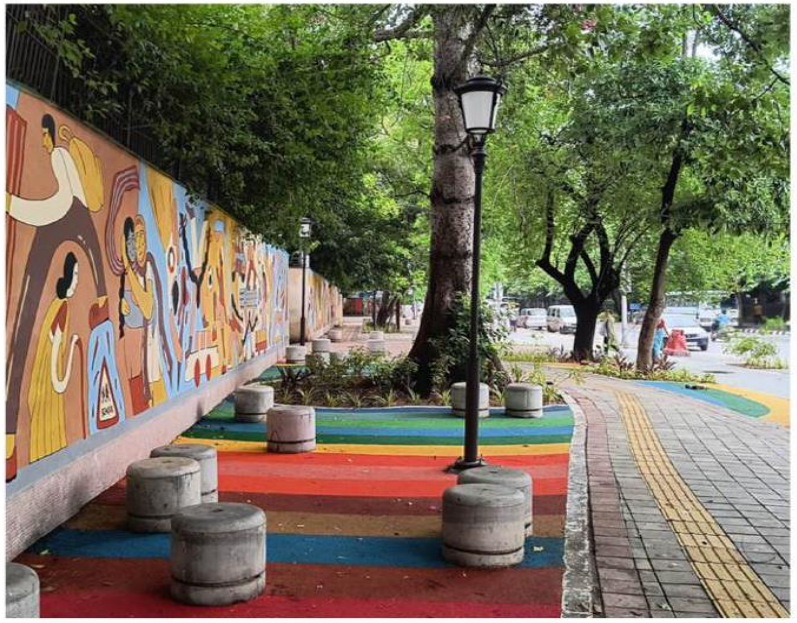
- Low speed limit zones near schools(20km/h)
- Introducing traffic calming techniques near school zones for better speed management and compliance.
- Making bicycling and walking options (safe routes to schools).
- Encourage bus transport instead of cars or two wheelers.

Street Transformation South Delhi

(https://www.humanqind.org/crosswalk-initiative

20 Km/h speed mandatory by design
Narrow lanes by texture
Bicycle tracks
Pedestrian path
Play zone
Speed calming before every entrance (50m spacing)

Safe School Zone Elements



Challenges

- Data Quality?
- Knowledge gap- pedestrian presence on high speed roads, increasing use of PTW in rural and urban areas,
- VRU priority vs motorized vehicles needs- *Is the local community empowered to negotiate with powerful vested interest groups?*