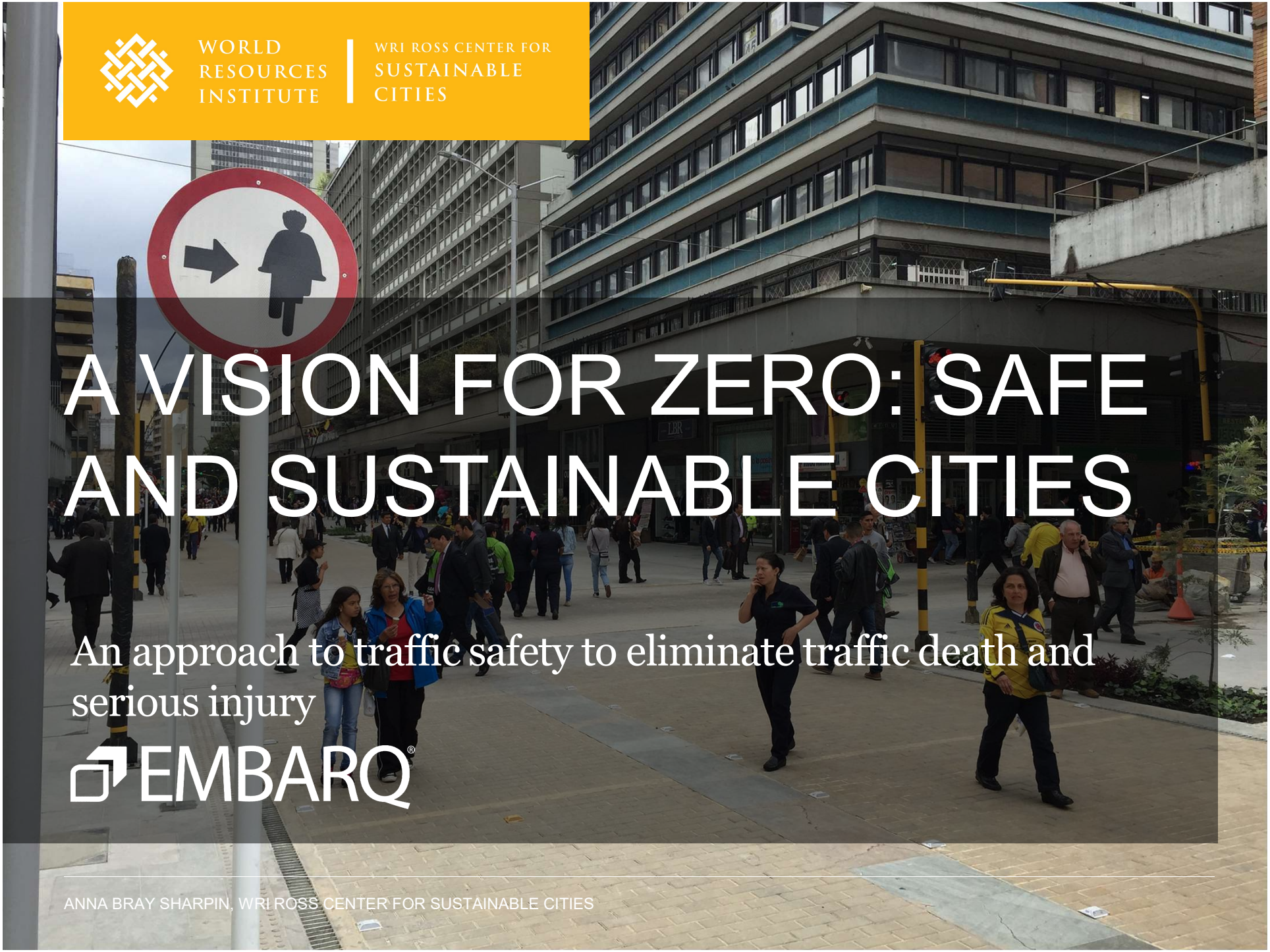


WORLD RESOURCES INSTITUTE | WRI ROSS CENTER FOR SUSTAINABLE CITIES

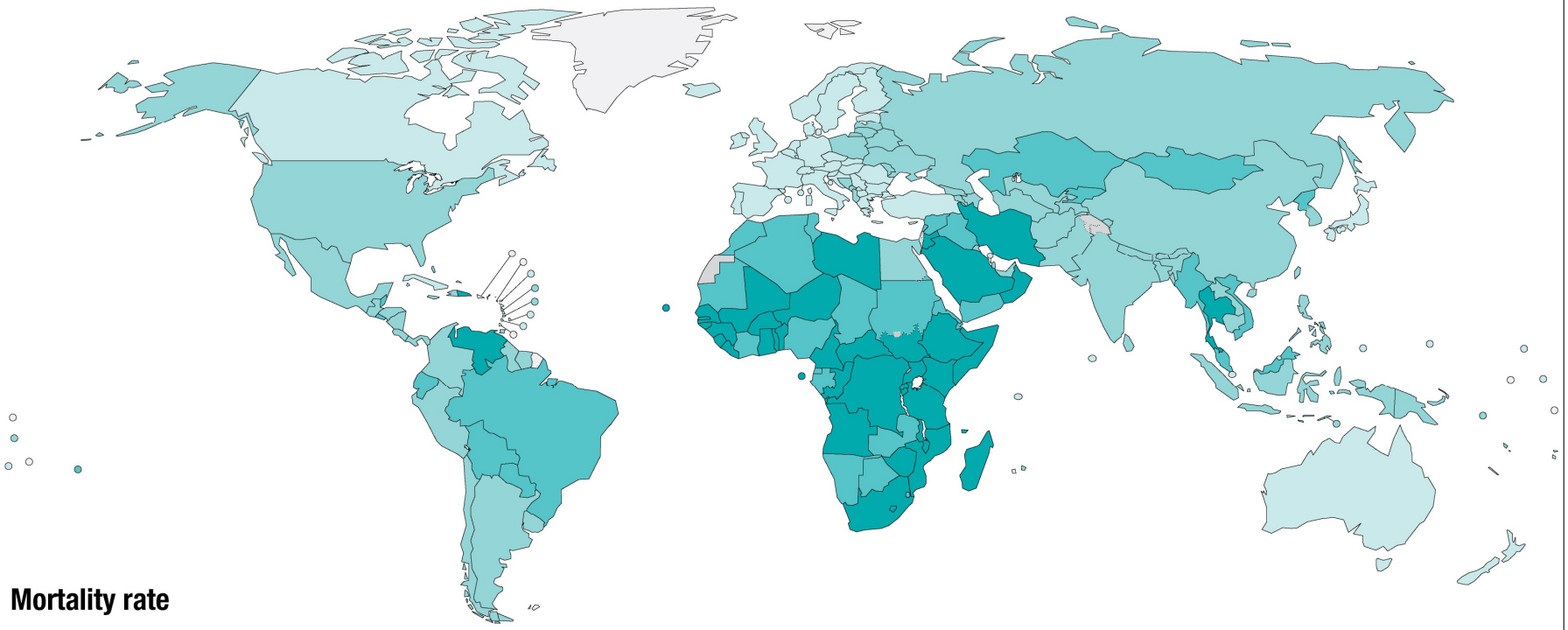
A VISION FOR ZERO: SAFE AND SUSTAINABLE CITIES

An approach to traffic safety to eliminate traffic death and serious injury

EMBARQ®

ANNA BRAY SHARPIN, WRI ROSS CENTER FOR SUSTAINABLE CITIES

Road traffic mortality rate, 2013*



Mortality rate

(per 100 000 population)

- <10.0
- 10.0–19.9
- 20.0–24.9
- ≥25.0
- Data not available
- Not applicable

0 750 1500 3000 Kilometres

* WHO Member States with a population of less than 90 000 in 2015 who did not participate in the survey for the Global status report on road safety 2015 were not included in the analysis.

Data Source: World Health Organization
Map production: Information Evidence and Research (IER)
World Health Organization

World Health Organization

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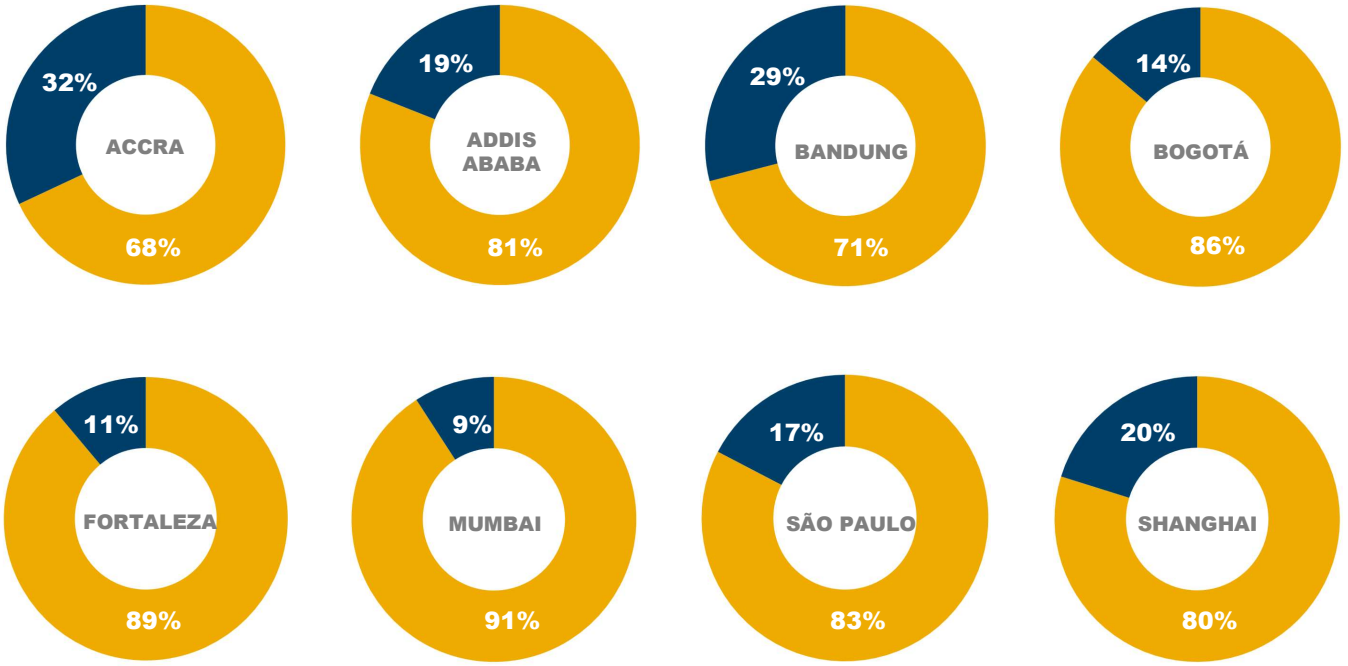
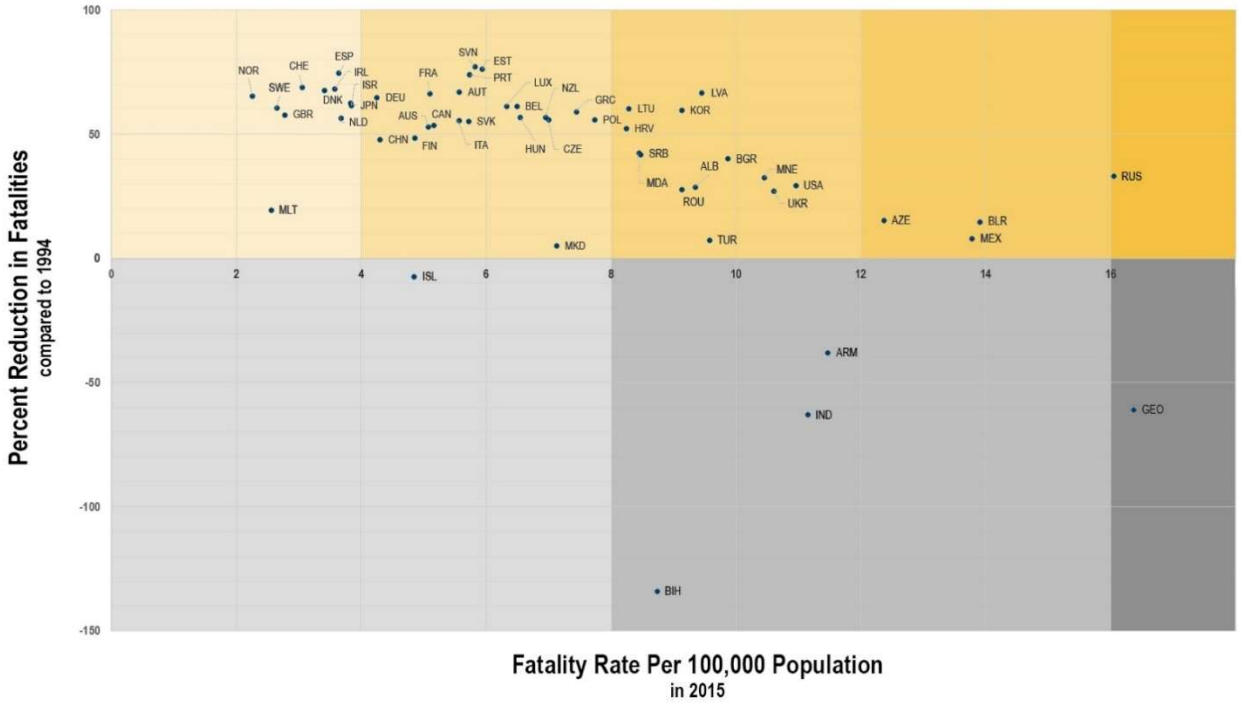
AT GREATEST RISK: PEOPLE WALKING, BICYCLING AND RIDING MOTORCYCLES



Source: WRI Research, Data collected by WRI

SAFE SYSTEM: MOST RAPID REDUCTIONS AND THE LOWEST FATALITY RATES



Country Codes:

ALB = Albania	CHN = China	HRV = Croatia	LVA = Latvia	ROU = Romania
ARM = Armenia	CZE = Czech Republic	HUN = Hungary	MDA = Moldova	RUS = Russia
AUS = Australia	DEU = Germany	IND = India	MEX = Mexico	SRB = Serbia
AUT = Austria	DNK = Denmark	IRL = Ireland	MKD = Macedonia	SVK = Slovakia
AZE = Azerbaijan	ESP = Spain	ISL = Iceland	MLT = Malta	SVN = Slovenia
BEL = Belgium	EST = Estonia	ISR = Israel	MNE = Montenegro	SWE = Sweden
BGR = Bulgaria	FIN = Finland	ITA = Italy	NLD = Netherlands	TUR = Turkey
BIH = Bosnia and Herzegovina	FRA = France	JPN = Japan	NOR = Norway	UKR = Ukraine
BLR = Belarus	GBR = Great Britain	KOR = South Korea	NZL = New Zealand	USA = United States of America
CAN = Canada	GEO = Georgia	LTU = Lithuania	POL = Poland	
CHE = Switzerland	GRC = Greece	LUX = Luxembourg	PRT = Portugal	

Analysis: WRI based on OECD Data
Data Source: https://data.oecd.org/

PRINCIPLES OF A SAFE SYSTEM

SAFE SYSTEM INTERVENTION AREAS

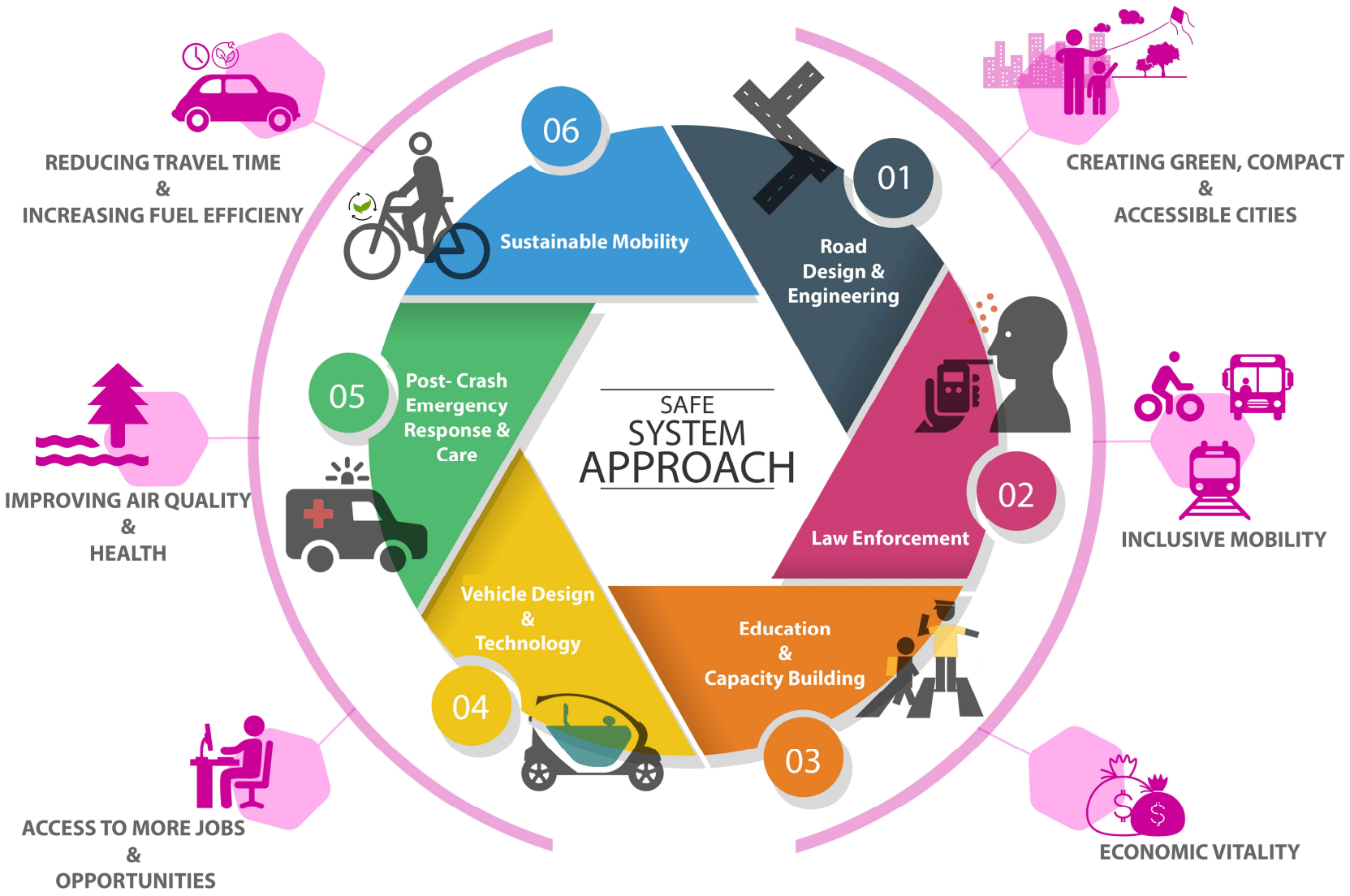


Photo: WRIGraphics2017

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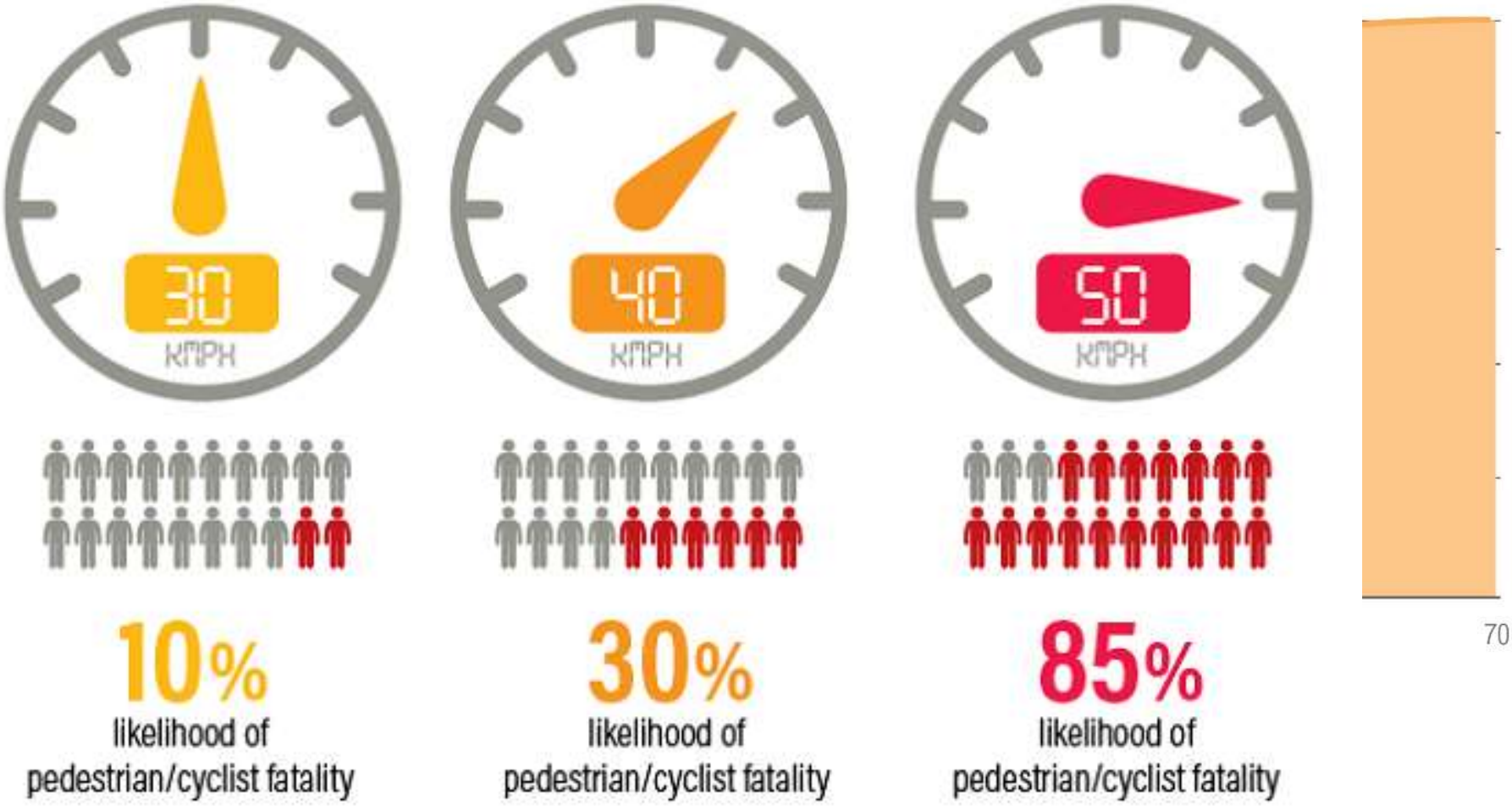
Higher Vehicle Speeds Increase Likelihood of Pedestrians/Cyclists Dying in Collisions



10%
likelihood of pedestrian/cyclist fatality

30%
likelihood of pedestrian/cyclist fatality

85%
likelihood of pedestrian/cyclist fatality

Source: Cities Safer by Design (2015)
wri.org/publication/cities-safer-design

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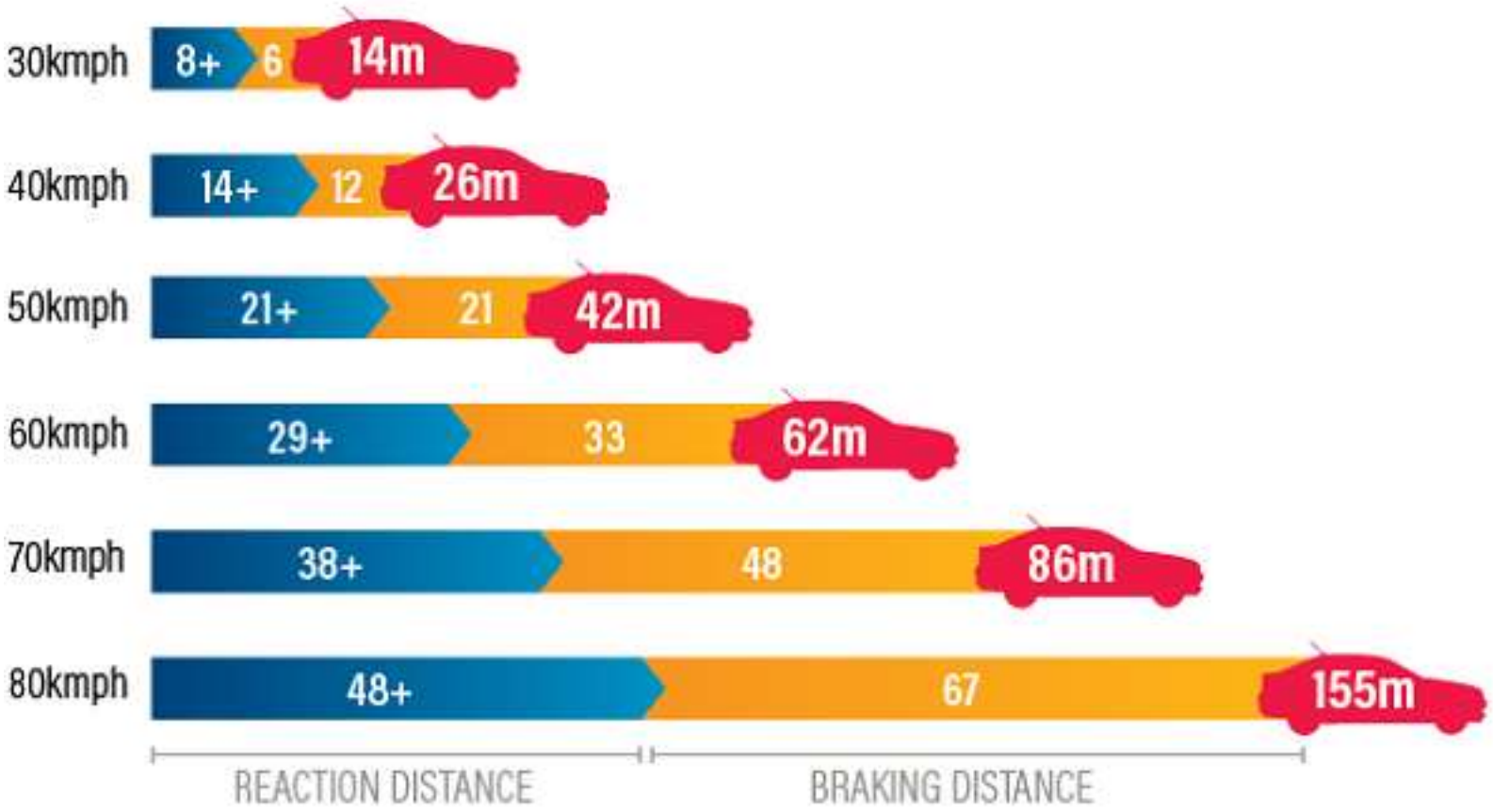
Higher Vehicle Speeds Require Longer Stopping Times



Note: Above distances are typical distances. The total stoppoing distance also depends on the thinking distance, road surface, weather conditions and age/condition of the vehicle.

Source: Cities Safer by Design (2015)
wri.org/publication/cities-safer-design

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SAFE DESIGN FOR ALL ROAD USERS

Urban design that reduces the need for vehicle travel and fosters safer vehicle speeds

Traffic calming measures that reduce vehicle speeds or allow safer crossings

Arterial corridors that ensure safer conditions for all road users

A network of connected and specially designed bicycling

Safe pedestrian facilities and access to public spaces

Safe access to mass transport corridors, stations, and stops

SPEED MANAGEMENT FOR A SAFE SYSTEM

RURAL ROADS

RURAL ROADS : 70 km/h

2 - LANE ROADS : 80 - 90 km/h
(Milled rumble strips)

2 + 1 ROADS : 100 km/h

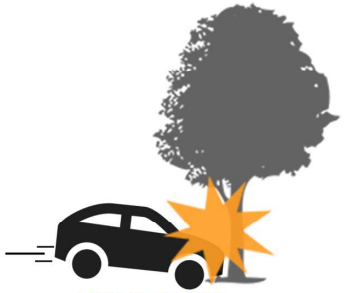
MOTORWAYS : 110 km/h

HIGH STANDARD MOTORWAYS
AND LOW TRAFFIC FLOW: 120 km/h

URBAN ROADS

RISK OF HEAD
ON CRASH : 70 ≤ km/h

RISK OF CRASH
AT INTERSECTIONS : 50 ≤ km/h



RISK OF CRASH
WITH OBSTACLES : 60 ≤ km/h

RISK OF CRASH WITH
VULNERABLE ROAD USERS: 30 < km/h

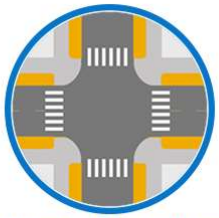
Source : VTI (Swedish National Road and Transport Research Institute)

CHANGES IN THE STREETS

Dedicated Bike Lanes
Shanghai, Fortaleza, São Paulo, Addis Ababa

Bikeshare
Bandung, Shanghai, Fortaleza

Vehicular Lane Markings
Accra, Addis Ababa, Bogota



Redesigned Intersections
Addis Ababa, Fortaleza, Bandung

Crosswalks
Addis Ababa, Bandung, Bangkok, Fortaleza**

Sidewalk Improvements
Mumbai, Bandung, São Paulo, Accra, Bangkok*, Ho Chi Minh City*

Refuge Islands
Bogota, Ho Chi Minh City, Fortaleza

Slow Speed Zone
Bogota, Fortaleza

Bus Lanes & BRT
São Paulo, Ho Chi Minh City, Addis Ababa, Accra, Fortaleza, Shanghai

Safe Access to Mass Transit
Ho Chi Minh City, Mumbai, Addis Ababa

Street Lights
Accra

Plaza/Public Space
São Paulo, Addis Ababa

* These cities have installed protected pedestrian sidewalks
**Fortaleza has constructed raised crosswalks

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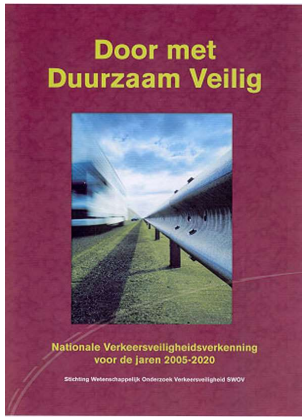
SAFE SYSTEMS IN THE WORLD

NOLLVISIONEN
20 ÅR

TOWARD ZERO DEATHS
EAST CENTRAL MINNESOTA

VISION ZERO
nyc.gov/visionzero



VISION ZERO INITIATIVE
TRAFFIC SAFETY BY SWEDEN

VØ

VISION ZERØ
SAFER STREETS FOR SEATTLE

VISION ZERO
NO MORE TRAFFIC DEATHS

TZD Toward Zero Deaths™
National Strategy on Highway Safety

VISIÓN CERO BOG

HARYANA VISION ZERO
NO MORE TRAFFIC DEATHS.
#HRYVisionZero

Sarika Panda Bhatt
Manager, Cities & Transport, WRI India

SHARED MOBILITY PRINCIPLES FOR LIVABLE CITIES

Rational

- **The rise of shared and autonomous travel powered by new technologies presents an unprecedented opportunity to transform cities** to be more sustainable, equitable, and just.

- **Cities are the primary guardians of the public good; they need to be clear about their goals**

Robin Chase, Founder of Zip-Car

Ten Principles

1. Plan our cities and their mobility together
2. Prioritize people over vehicles
3. Support the shared and efficient use of vehicles, lanes, curbs, and land.
4. Engage with stakeholders
5. Promote equity
6. Lead the transition towards a zero-emission future and renewable energy
7. Support fair user fees across all modes
8. Aim for public benefits via open data
9. Work towards integration and seamless connectivity
10. Support that autonomous vehicles (avs) in dense urban areas should be operated only in shared fleets

SUSTAINABLE AND SAFE

LAUNCHING: JANUARY 2018