



# Leveraging the Star Rating Mobility Snapshots Results

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Global Alliance of  
NGOs for Road Safety

iRAP

## About iRAP:

- Charity for a world free of high-risk roads
- Global standard for road infrastructure safety assessments
- Free tools and methodology
- Training, communications and advocacy to support large-scale action
- iRAP Board, Global Technical Committee, Global Policy Advisory Committee



Least safe

Safest

# PARTNERSHIPS FOR 2030 IMPACT

A WORLD FREE OF HIGH-RISK ROADS – PROGRESS BY JUNE 2024



**128**  
COUNTRIES ASSESSED

**180**  
COUNTRIES INFLUENCED

USDS  
**103** BILLION  
OF INFRASTRUCTURE INVESTMENT MADE SAFER

**700** THOUSAND LIVES AND SERIOUS INJURIES SAVED\*

**1.9** MILLION KM ROADS AND DESIGNS STAR RATED

**1.9** MILLION KM RISK MAPPED

**1,638** SCHOOLS STAR RATED USING SR4S IN 74 COUNTRIES

**73** THOUSAND PEOPLE TRAINED



iRAP

**32** THOUSAND PARTNERS

**241** ACCREDITED PRACTITIONERS

**134** INNOVATION PARTNERS

**82** 3-STAR OR BETTER POLICIES

**8.0** MILLION KM OF ROAD IN VIDA

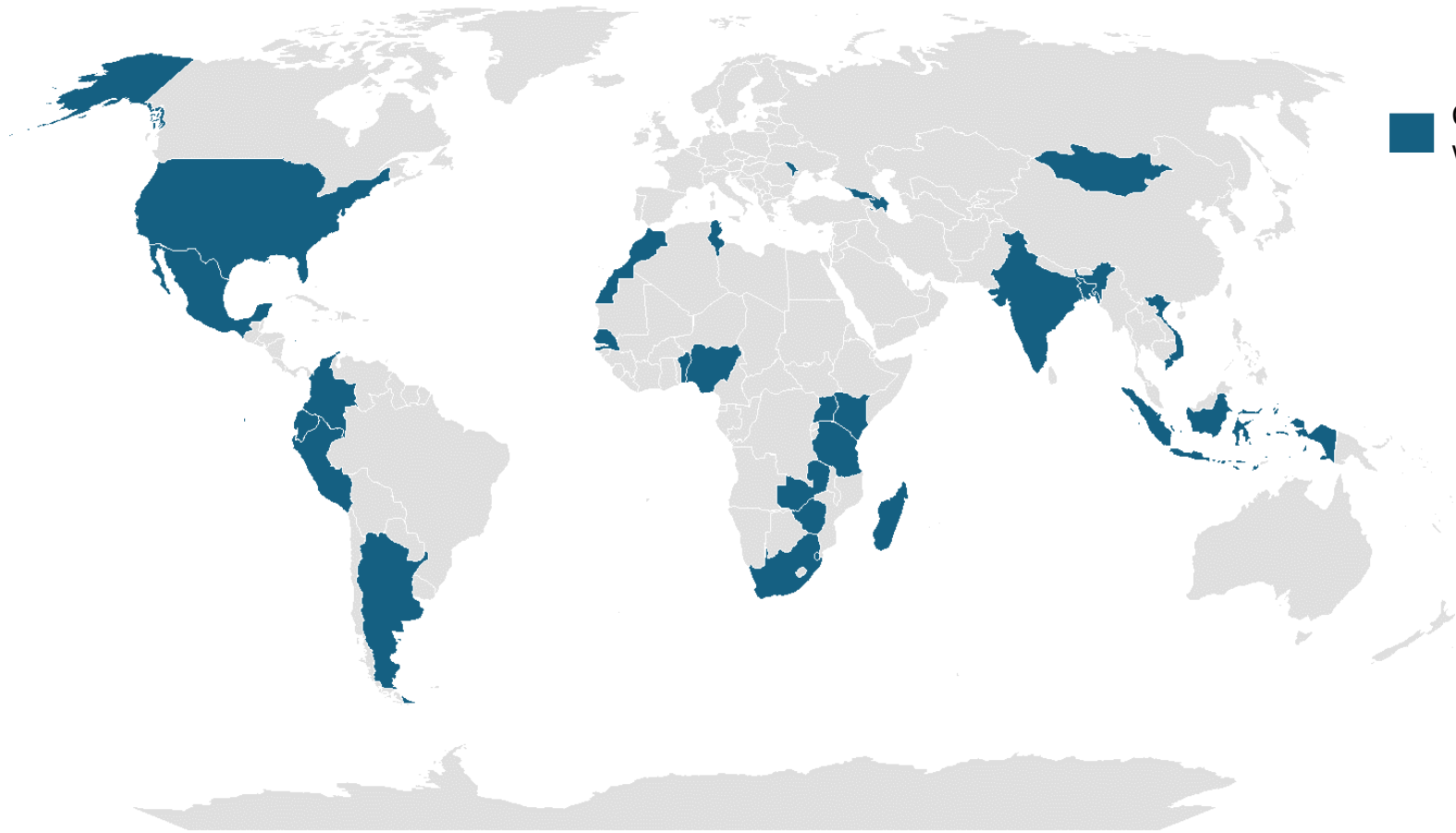
FIA FOUNDATION

[irap.org](https://irap.org) [irapsavinglives](https://irapsavinglives) [iRAPfb](https://www.facebook.com/iRAPfb)

\* De 2016 a dezembro de 2024. Pesquisa da Universidade Johns Hopkins publicada na PLOS ONE

# Overview of the Mobility Snapshots Results

- 55 snapshots, 27 countries



■ Countries where snapshots were taken



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## Information we prepared

1. Star Rating for the existing location (before)
2. Star Rating for the location with “priority” countermeasures (after)
3. % reduction in risk of fatality and serious injuries with “priority” countermeasures
4. List of priority countermeasures and cost estimates

Plus:

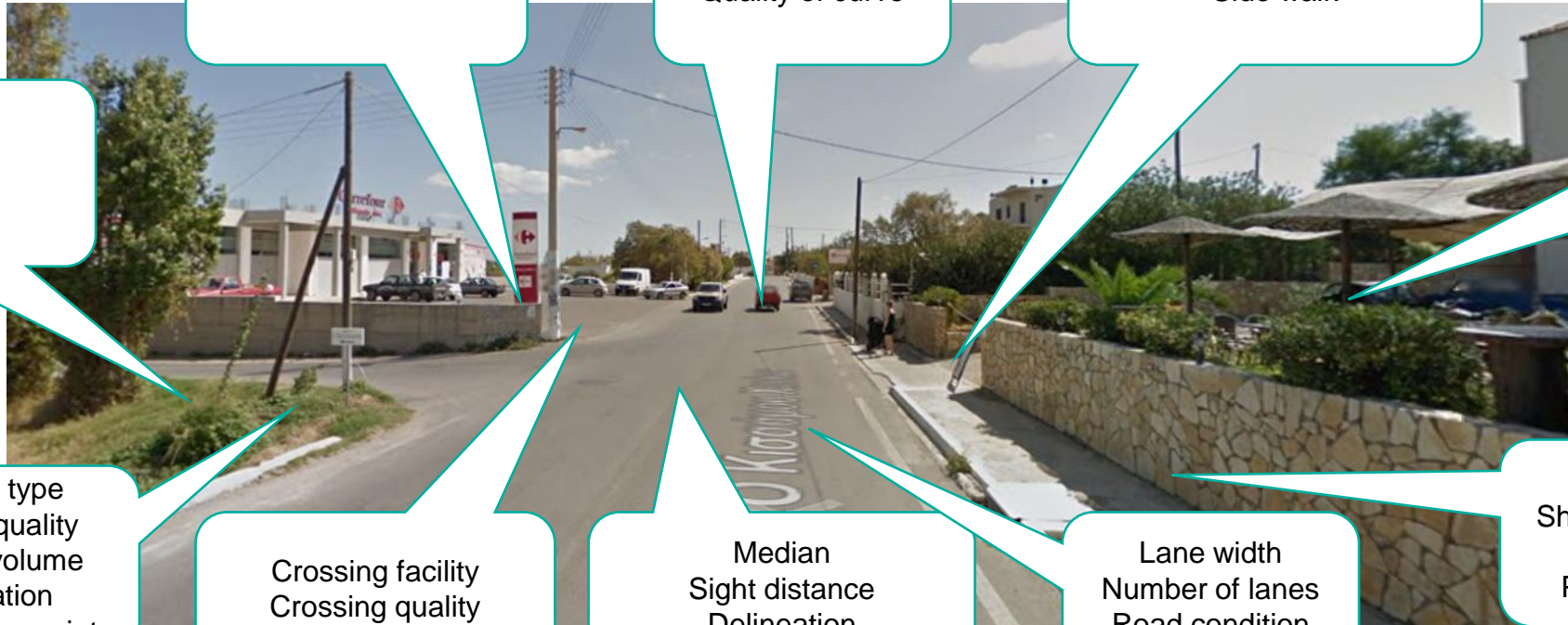
- Same as above but with “priority” + “additional” countermeasures



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# Attributes recorded to generate Pedestrian Star Rating



Pedestrian flow

Curvature  
Quality of curve

Paved shoulder  
Side walk

Land use  
Area type  
Speed  
Vehicle flow

Street lighting  
Shoulder rumble strips  
Vehicle parking  
Pedestrian fencing

Lane width  
Number of lanes  
Road condition  
Skid resistance

Median  
Sight distance  
Delineation  
Grade

Crossing facility  
Crossing quality  
Speed management

Intersection type  
Intersection quality  
Intersecting volume  
Channelisation  
Property access point

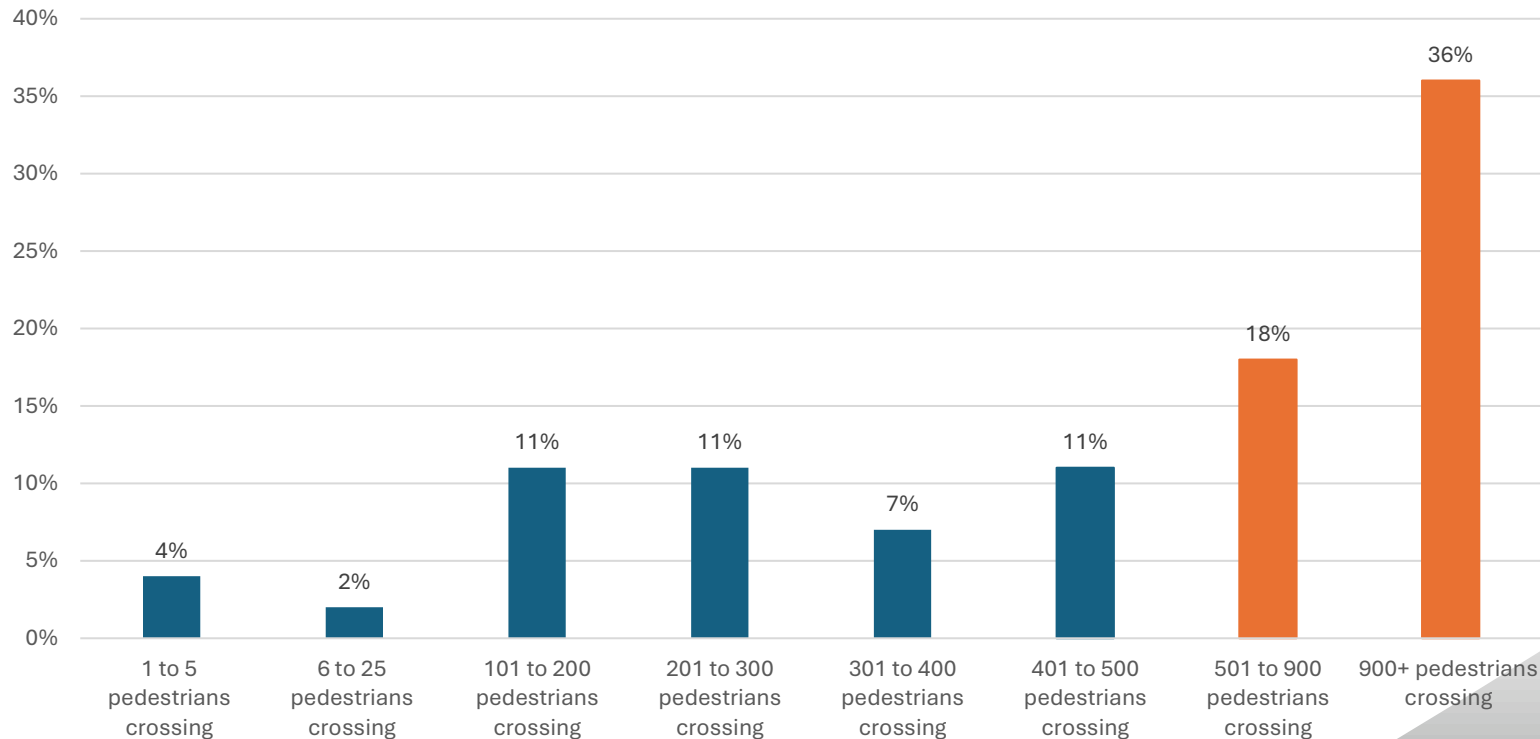
Paved shoulder  
Sidewalk



# Overview of the Mobility Snapshots Results

- **High pedestrian crossing flow** (people per peak hour): 30 intersections – 54% have very high pedestrian crossing flow from 501 pedestrians.

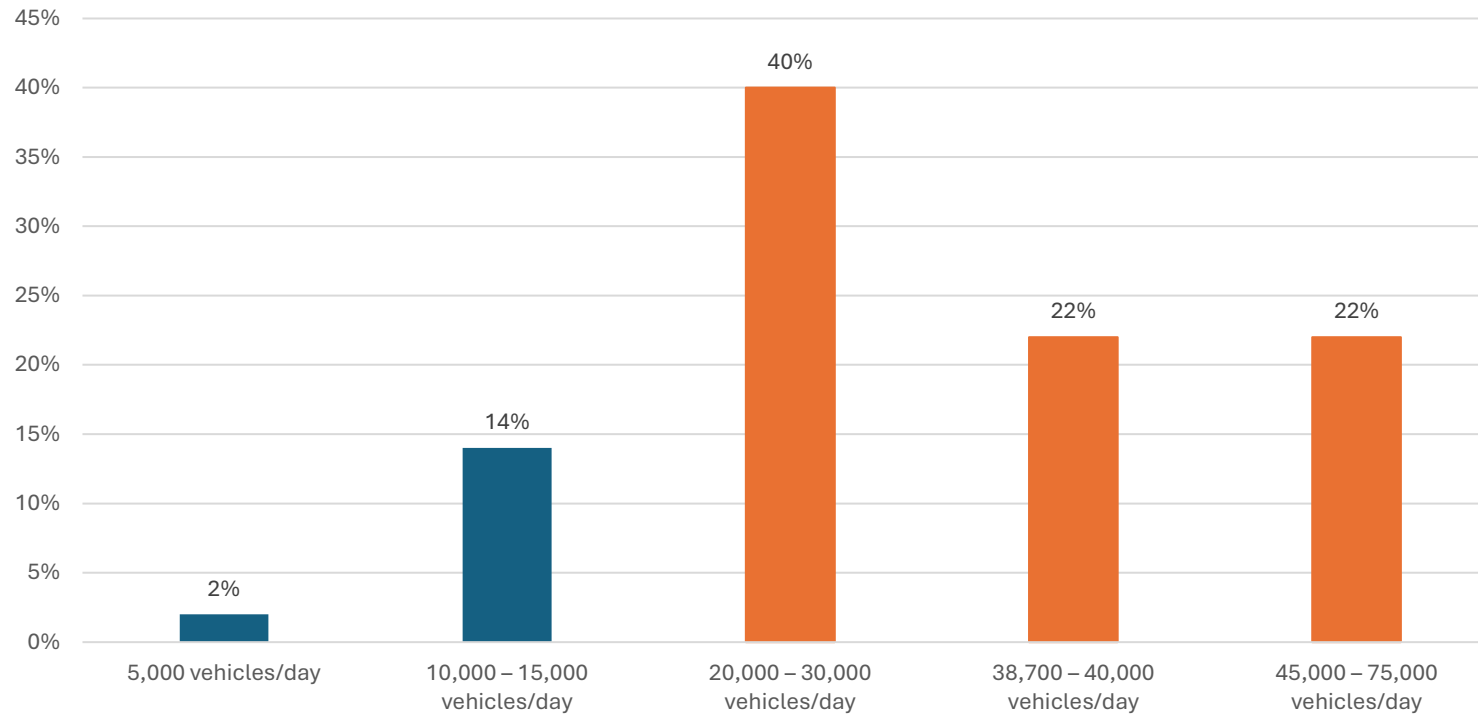
**Pedestrian crossing flow per peak hour  
(people per peak hour)**



# Overview of the Mobility Snapshots Results

- **High traffic flow (vehicles per day):** most of the intersections (46 intersections – 84%) have high traffic flow from 20,000 vehicles/day.

Traffic flow (vehicles per day)

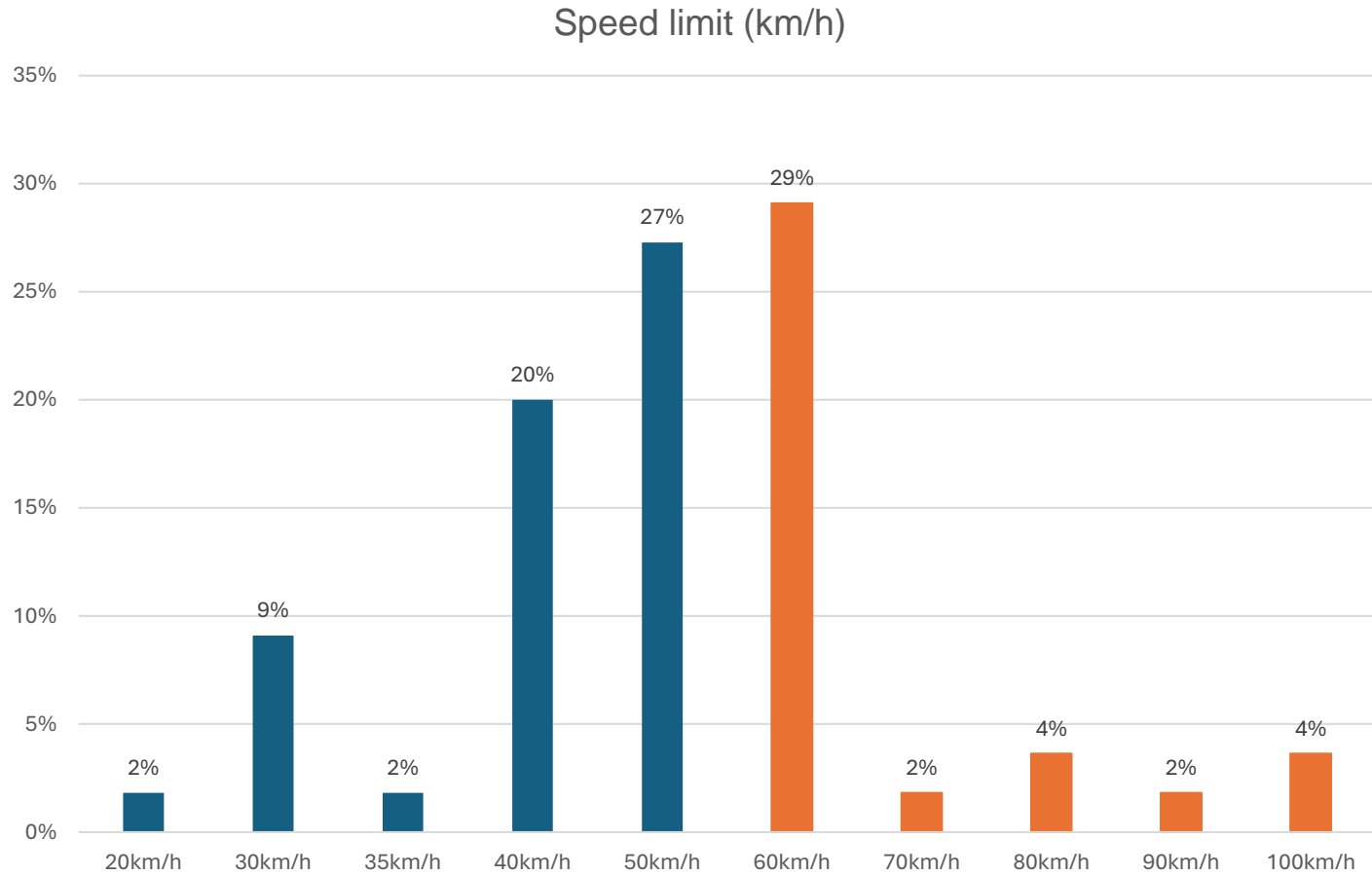


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# Overview of the Mobility Snapshots Results

- **High speed limit:** 41% the assessed intersections (22 intersections) have speed limit  $\geq 60\text{km/h}$



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# Overview of the Mobility Snapshots Results

- 30% have no sidewalks
- 44% have no pedestrian crossings
- 71% have multiple lanes of traffic in each direction
- 42% have no street lighting

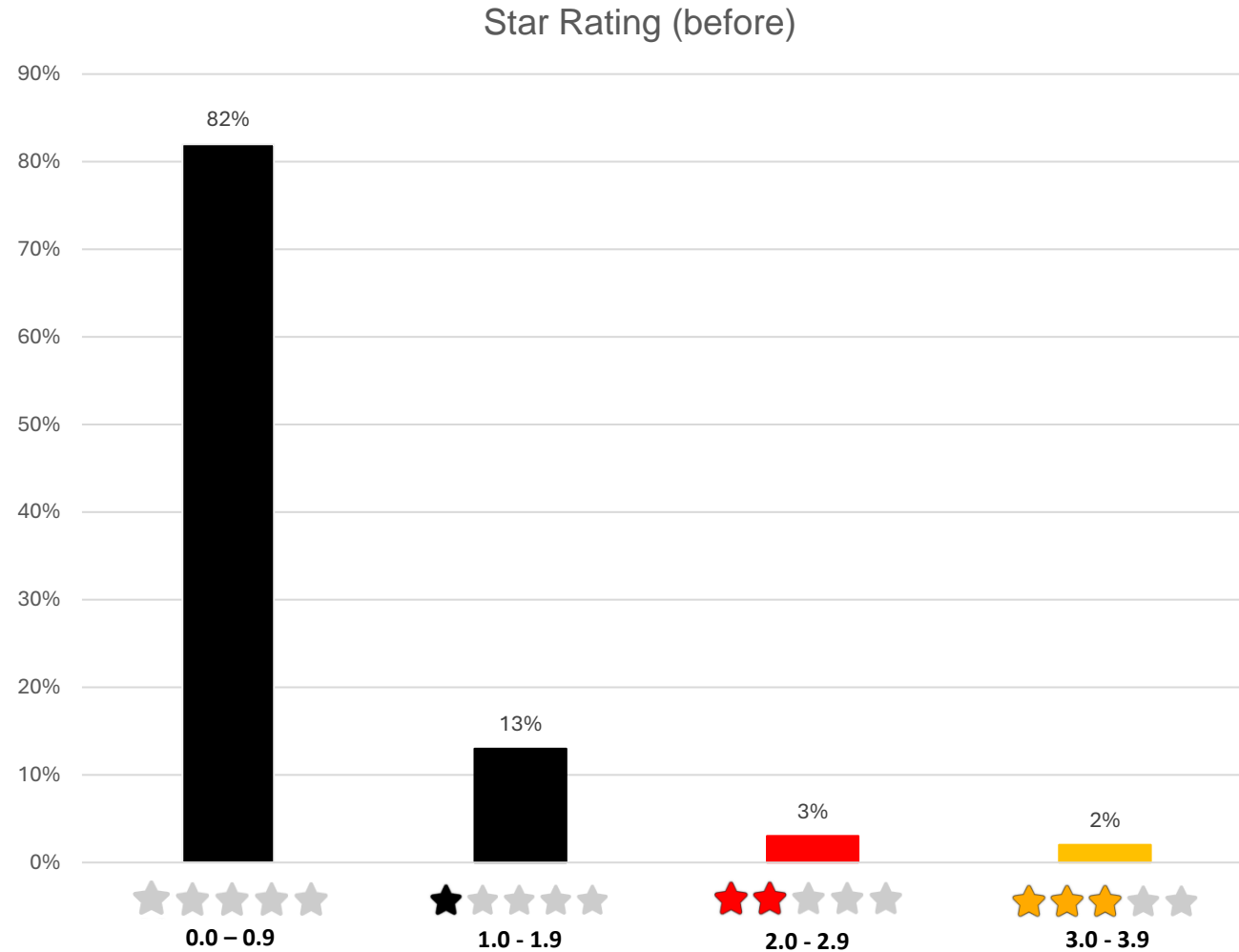


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# Overview of the Mobility Snapshots Results

- Star Rating (before):



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# Priority countermeasures

## 1. Footpaths





## Priority countermeasures

### 2. Unsignalized raised pedestrian crossings & Side road unsignalized raised pedestrian crossings





## Priority countermeasures

### 3. Signalized pedestrian crossings & Side road signalized pedestrian crossings



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## Priority countermeasures

### 3. Signalized pedestrian crossings & Side road signalized pedestrian crossings





# Priority countermeasures

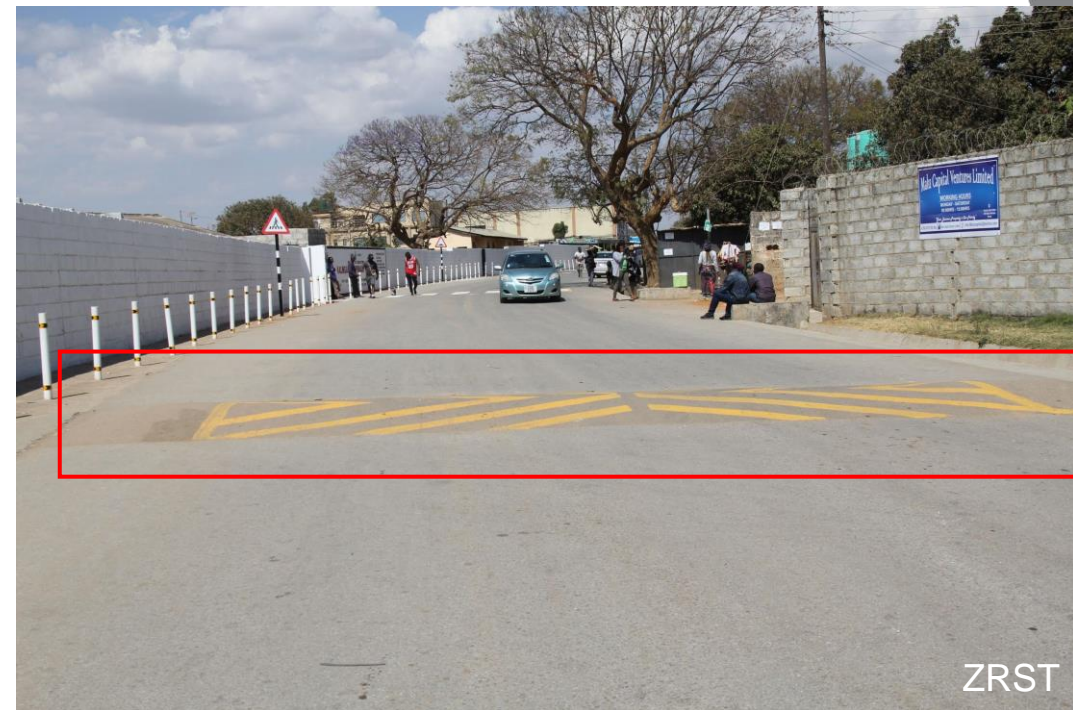
## 4. Upgrade pedestrian crossing quality

Pedestrian crossing quality records how well the pedestrian crossing can be seen by drivers, or if there are warning signs present.





### 5. Speed limit reduction & Traffic Calming

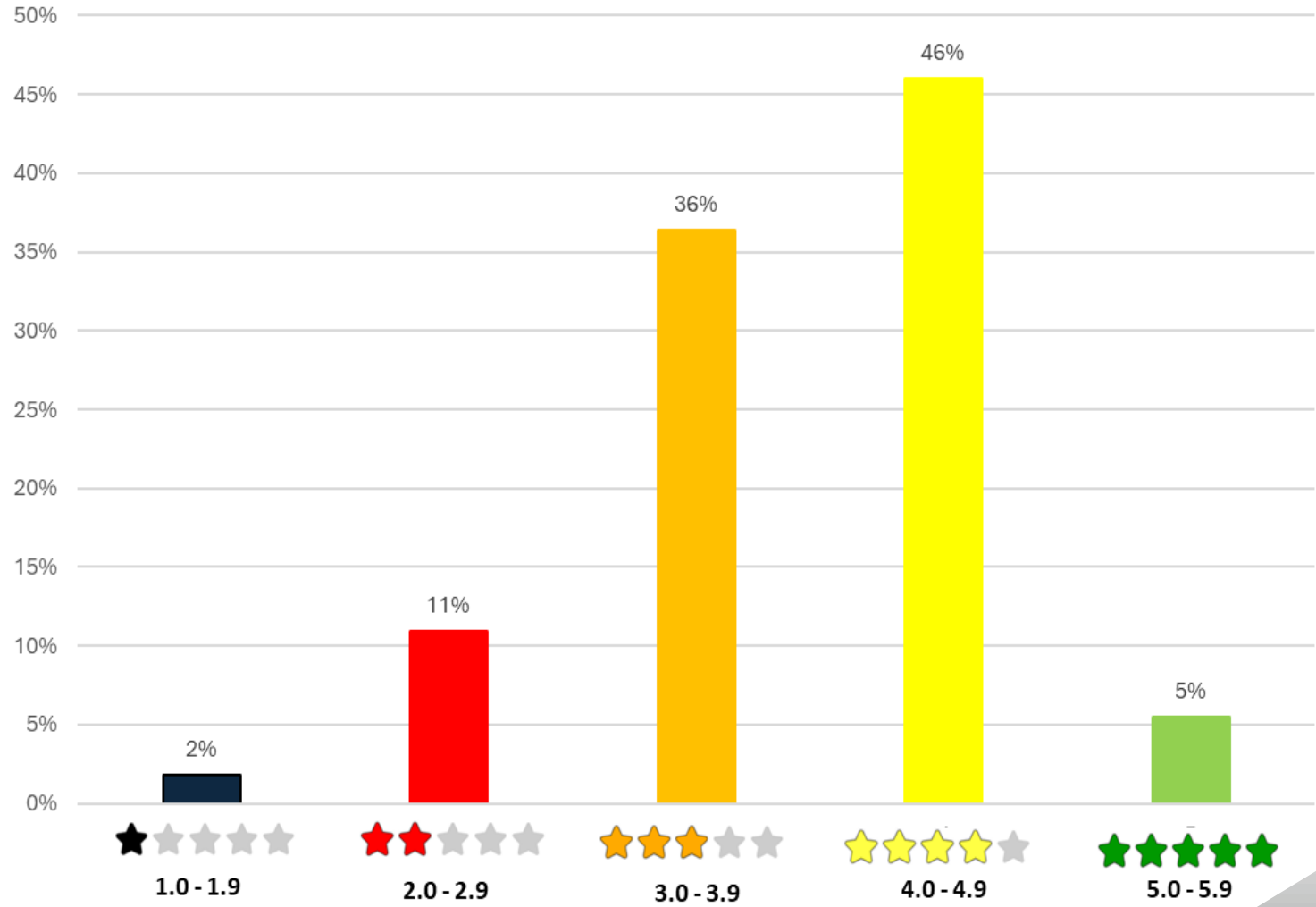


Lower speed limits are most effective when supported with traffic calming measures and/or enforcement to increase compliance with the legal limit.

# Overview of the Mobility Snapshots Results

- Star Rating (with priority countermeasures):

Star Rating (with priority countermeasures)



Average reduction in risk of fatality and serious injury: 94%



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## Estimated costs

- Considering:
  - Income level: high, upper middle, low/lower middle.
  - Single or multiple carriageways.
  - 3-leg or 4-leg intersection.
- Average cost per location: USD ~62,000
- Calculated only for engineering treatments, excluding costs for speed enforcement activities (police enforcement, campaigning).

Priority countermeasures	Sum of Priority countermeasures estimated cost (USD)
Footpath	5000
Side road unsignalised raised pedestrian crossing	15000
Signalised pedestrian crossing	50000
Traffic calming	6000
	<b>76000</b>
Footpath	6000
Side road signalised pedestrian crossing	25000
Signalised pedestrian crossing	37500
Speed limit reduction to 40 km/h	3500
Traffic calming	6750
	<b>78750</b>
Footpath	6000
Side road signalised pedestrian crossing	25000
Signalised pedestrian crossing	25000
Speed limit reduction to 40 km/h	3500
Traffic calming	4500
	<b>64000</b>
Footpath	3000
Side road signalised pedestrian crossing	25000
Signalised pedestrian crossing	37500
Speed limit reduction to 40 km/h	3500
Traffic calming	4500
	<b>73500</b>
Unsignalised raised pedestrian crossing	10500



# Example



Least safe

Safest

Intersection Merab Kostava St/ Shota Rustaveli Ave/ Dzmebi Kakabadzebi St/ Mikheil Javakhshvili St  
Tbilisi, Georgia

**900+ people walk here**  
in peak hour



30 km/h



Footpaths  
Crossings



Traffic calming



Star Rating before: 1.0

Star Rating after (priority countermeasures): 4.3





# Example





Least safe

Safest

Intersection with avenue  
Jeneral Charles de Gaulles  
Madagascar

**xxx people walk here**  
in peak hour

 30 km/h 

 Footpaths  
Crossings   


 Traffic calming 

Star Rating before: 1.9   
Star Rating after (priority  
countermeasures): 3.1   





# Example



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Intersection of Ingenieros  
Militares and Rodolfo Gaona  
Estado de México, México

**501 – 900 people walk here  
in peak hour**



30 km/h



Footpaths  
Crossings



Traffic calming



Star Rating before: 0.0

Star Rating after (priority  
countermeasures): 4.0





# Example





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Safest



The Cheema Boiler Chowk Airport Road Phase 8B Industrial Area Mohali, Punjab, India

**401 – 500 people walk here in peak hour**

 30 km/h 

 Footpaths Crossings   


 Traffic calming 

Star Rating before: 0.0   
Star Rating after (priority countermeasures): 4.5 



AVOID ACCIDENT

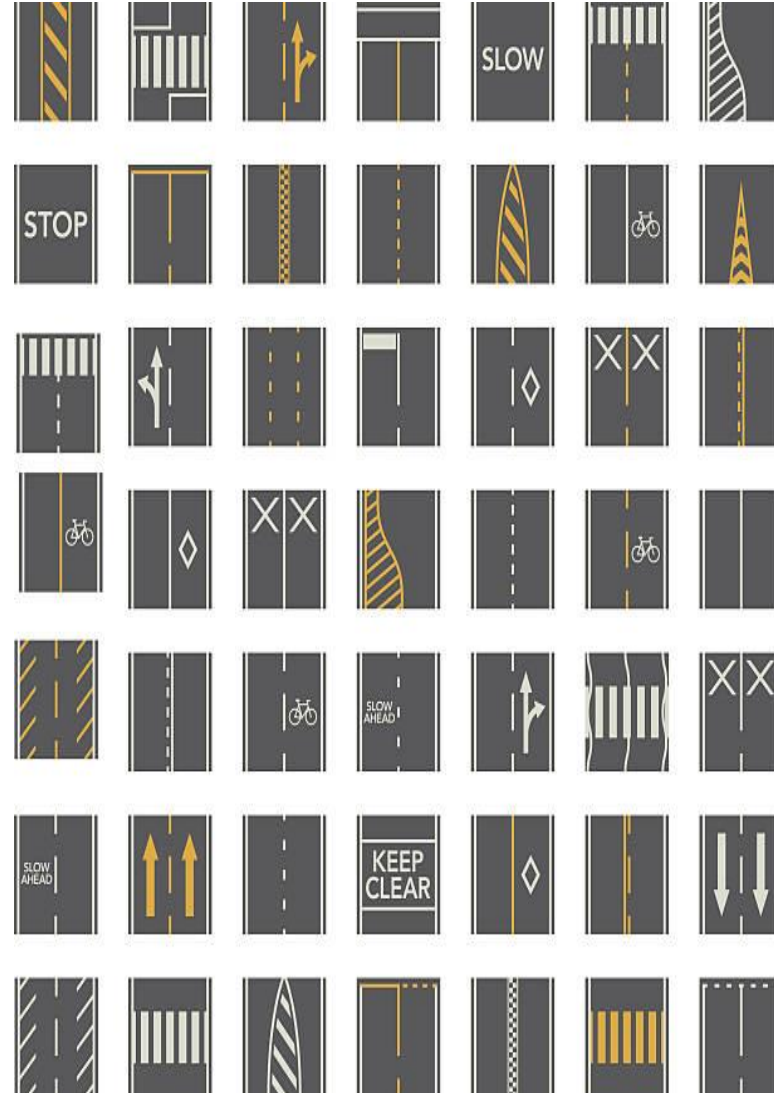
## Issues for discussion

- Are very large speed limit reductions practical?
- Are the safety treatments proposed feasible?
- How do I explain sometimes high costs?
- How do I put the quantitative (iRAP) and qualitative (Alliance) stories together?



# Additional countermeasures

## 1. Road markings and signs + Street lighting





# Additional countermeasures

## 2. Road surface grip



## Estimated percentage reduction in risk of death and serious injuries

A Star Rating Score (SRS) is calculated for each segment of road and each of the four road users, using the following equation:

$$\text{SRS} = \Sigma \text{Crash Type Scores}$$

where:

- the SRS represents the relative risk of death and serious injury for an individual road user; and
- Crash Type Scores = Likelihood x Severity x Operating speed x External flow influence x Median traversability

where:

- likelihood refers to road attribute risk factors that account for the chance that a crash will be initiated;
- severity refers to road attribute risk factors that account for the severity of a crash;
- operating speed refers to factors that account for the degree to which risk changes with speed
- external flow influence factors account for the degree to which a person's risk of being involved in a crash is a function of another person's use of the road;
- median traversability factors account for the potential that an errant vehicle will cross a median (only applies to vehicle occupants and motorcyclists run-off and head-on crashes).

$$\text{Estimated percentage reduction in risk of death and serious injuries (\%)} = \frac{\text{SRS before} - \text{SRS after}}{\text{SRS before}}$$

**In the Star Rating Mobility Snapshots, SRS is calculated exclusively for pedestrians.**



# For more information

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