World Bank GRSF and Asian Development Bank (ADB), in partnership with APRSO, iRAP and GRSP

Helping save lives from road crashes in Asia-Pacific

Thank you for joining, we will start shortly

World Bank GRSF and Asian Development Bank (ADB), in partnership with APRSO, iRAP and GRSP

Helping save lives from road crashes in Asia-Pacific

5-part webinar series - 8, 10, 15, 17, 24 February 2022

This webinar series was developed in partnership between:

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

ADB

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

GRSF
Global Road Safety Facility

Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

iRAP

GLOBAL ROAD SAFETY PARTNERSHIP

MODERATOR

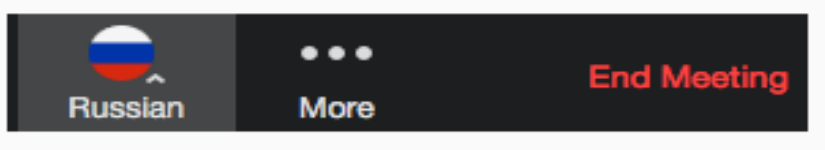
Blaise Murphet

Global Road Safety Partnership (GRSP)

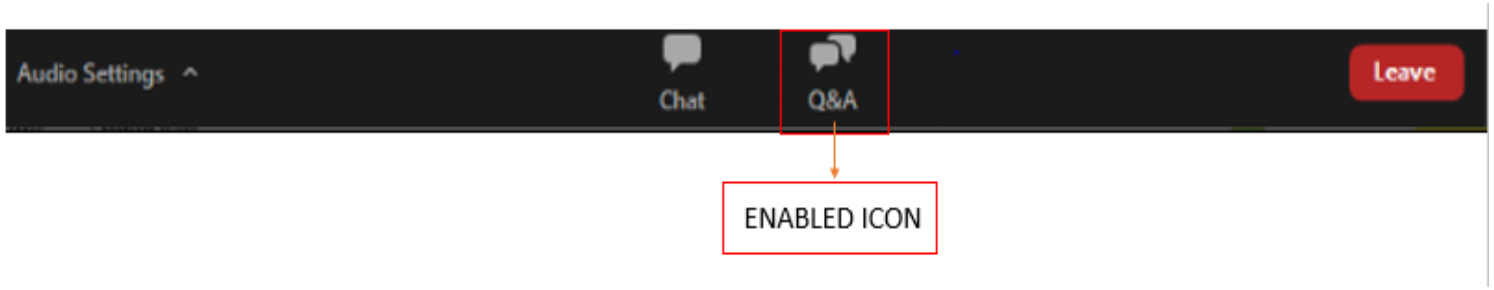
Blaise.MURPHET@ifrc.org

PARTICIPANTS GUIDE ON ZOOM

- Russian translation is available during the session. Please select your language preference (English or Russian) through the interpretation button.



- Sessions will have Q&A portion during the presentations and towards the end of each session. A Q&A icon is available for all participants. All questions will be managed by the moderator. Participants are strongly encouraged to submit questions and comments throughout each session in the Q&A icon function, and these will be raised, when possible, with facilitators.
- Zoom Webinar Icon meeting enabled for participants



HOUSEKEEPING

#HelpingSaveLives

Presentations and recordings available after the session

Please change your zoom name to your full name

COURSE NOTES

- Certificate of Attendance will be issued to the participants who have completed all sessions.

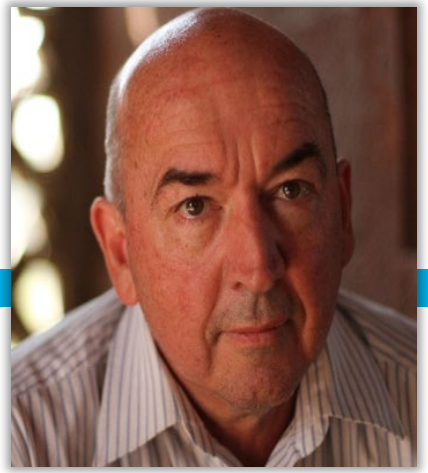
- Practical activity is optional, but highly recommended

- Optional extra panel discussion - 24 February session

PRESENTERS

Greg Smith
Global Programme Director
iRAP

Morgan Fletcher
LAC Operations Team Lead
iRAP



Phillip Jordan
International Road Safety Engineer

Jigesh Bhavsar
Consultant
World Bank

Marisela Ponce de León Valdés
Transport Specialist
World Bank

Brett Harman
Asia Pacific Manager
Global Road Safety Partnership (GRSP)

Overview of the webinar session

Topic	Speaker
Open	Blaise Murphet, GRSP
Overview of key infrastructure safety tools	Greg Smith, iRAP
Safety inspections and assessments and the iRAP methodology	Morgan Fletcher, iRAP
Road Safety Audits and Star Rating targets	Phil Jordan, ADB
Black Spot programs and Crash Risk Mapping	Jigesh Bhavsar, World Bank
Questions from the audience	Blaise Murphet, GRSP
Requirements for implementation of the Global Plan	Marisela Ponce De Leon, World Bank GRSF
Infrastructure, communications and enforcement	Brett Harman, GRSP
Questions from the audience	Blaise Murphet, GRSP
Summary and close	Blaise Murphet, GRSP

Overview of key infrastructure safety tools

Greg Smith
Global Programme Director
iRAP

DECADE OF ACTION FOR ROAD SAFETY 2021 - 2030

GLOBAL PLAN

DECADE OF ACTION FOR ROAD SAFETY
2021–2030

Box 2

Recommended actions to improve the safety of road infrastructure

- Develop functional classifications and desired safety performance standards for each road user group at the geographic land-use and road corridor level.
- Review and update legislation and local design standards that consider road function and the needs of all road users, and for specific zones.
- Specify a technical standard and star rating target for all designs linked to each road user, and the desired safety performance standard at that location.
- Implement infrastructure treatments that ensure logical and intuitive compliance with the desired speed environment (e.g. 30 km/h urban centres; ≤ 80 km/h undivided rural roads; 100 km/h expressways).
- Undertake road safety audits on all sections of new roads (pre-feasibility through to detailed design) and complete assessments using independent and accredited experts to ensure a minimum standard of three stars or better for all road users.
- Undertake crash-risk mapping (where crash data are reliable) and proactive safety assessments and inspections on the target network with a focus on relevant road user needs as appropriate.
- Set a performance target for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).

PROACTIVE AND REACTIVE

Proactive:

We add a safety rail now

Reactive:

We wait for someone to fall

1
1

PROACTIVE AND REACTIVE

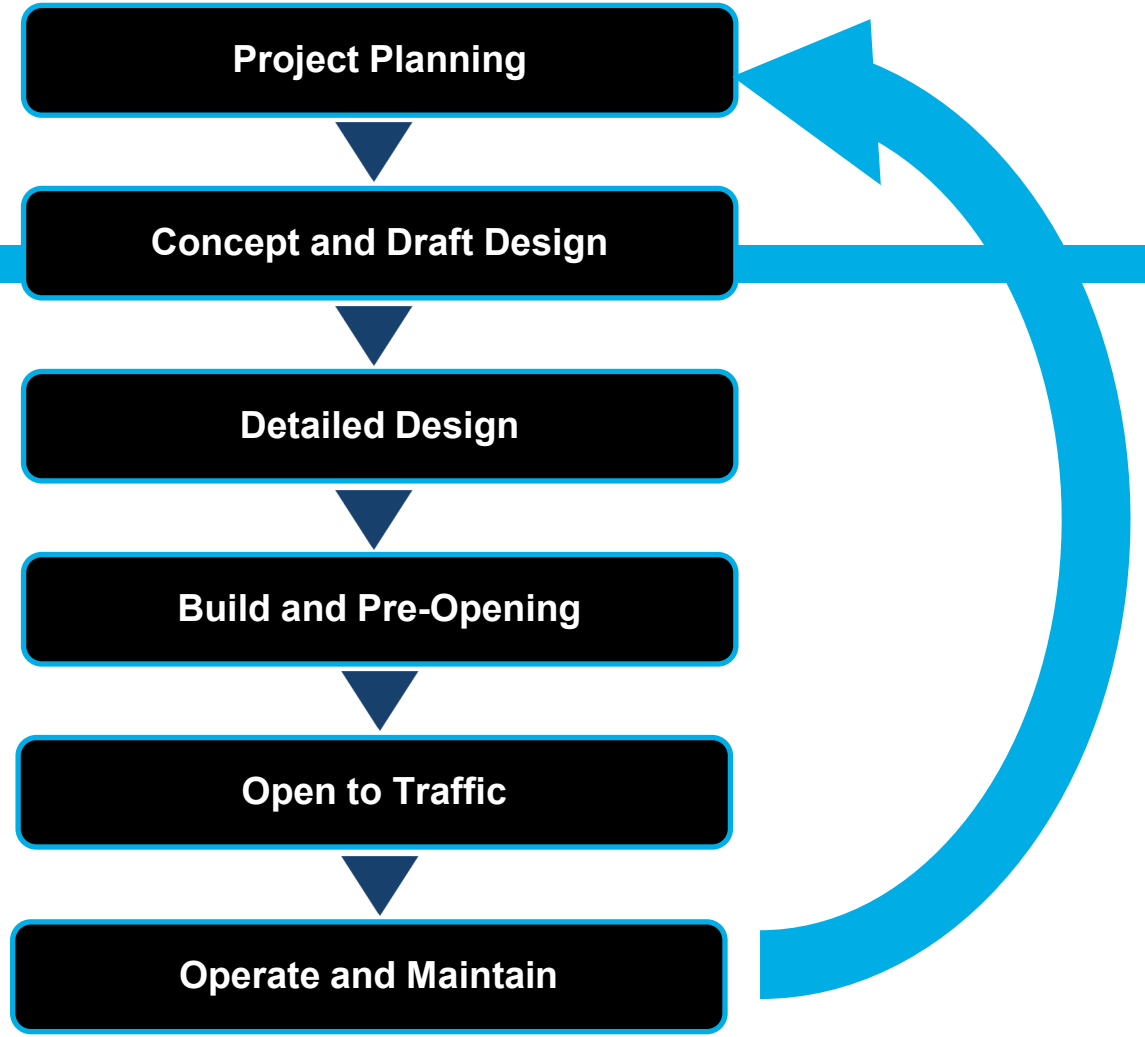
Proactive:

- iRAP Star Ratings
- Road Safety Audits

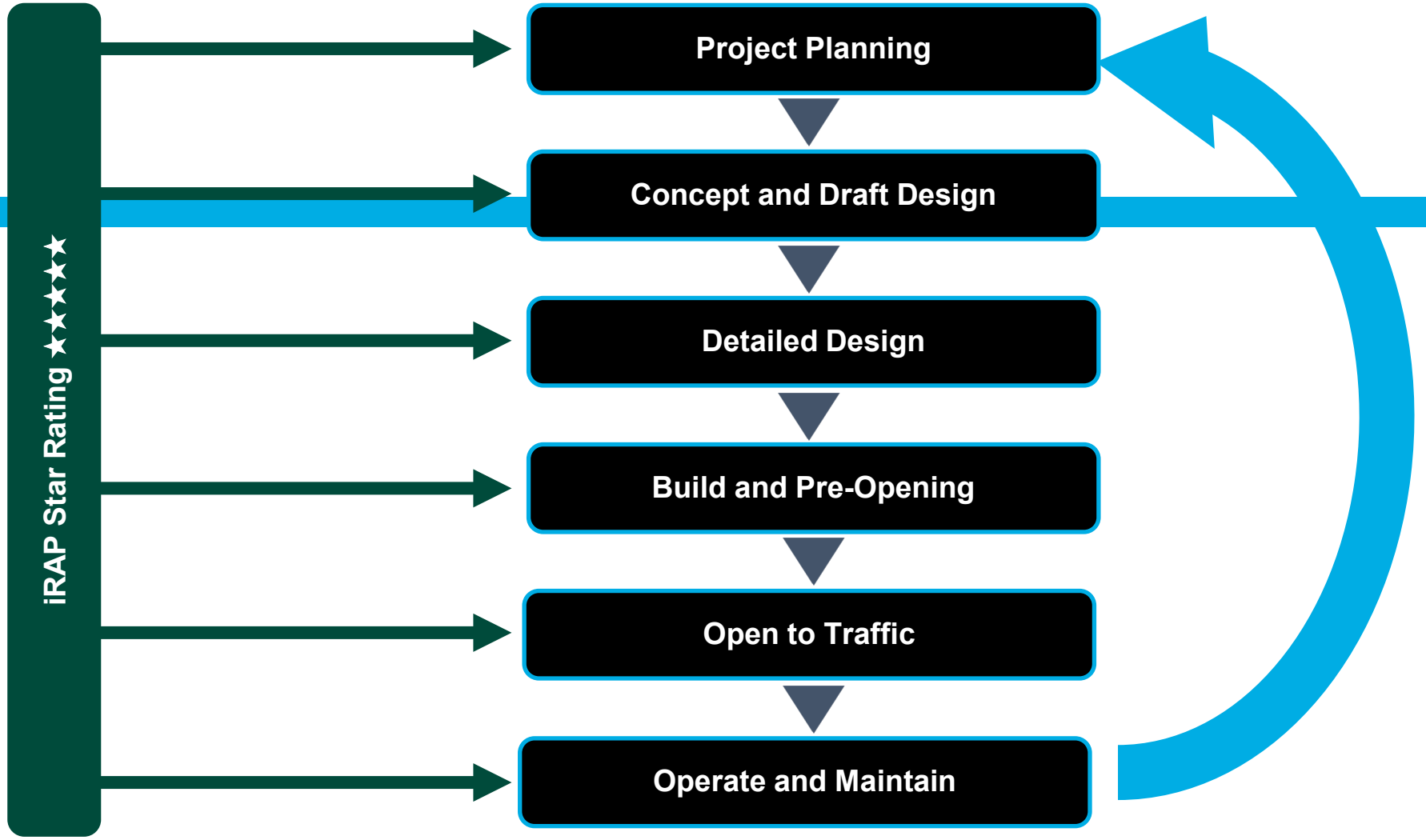
Reactive:

- Black spot programmes
- iRAP Crash Risk Mapping

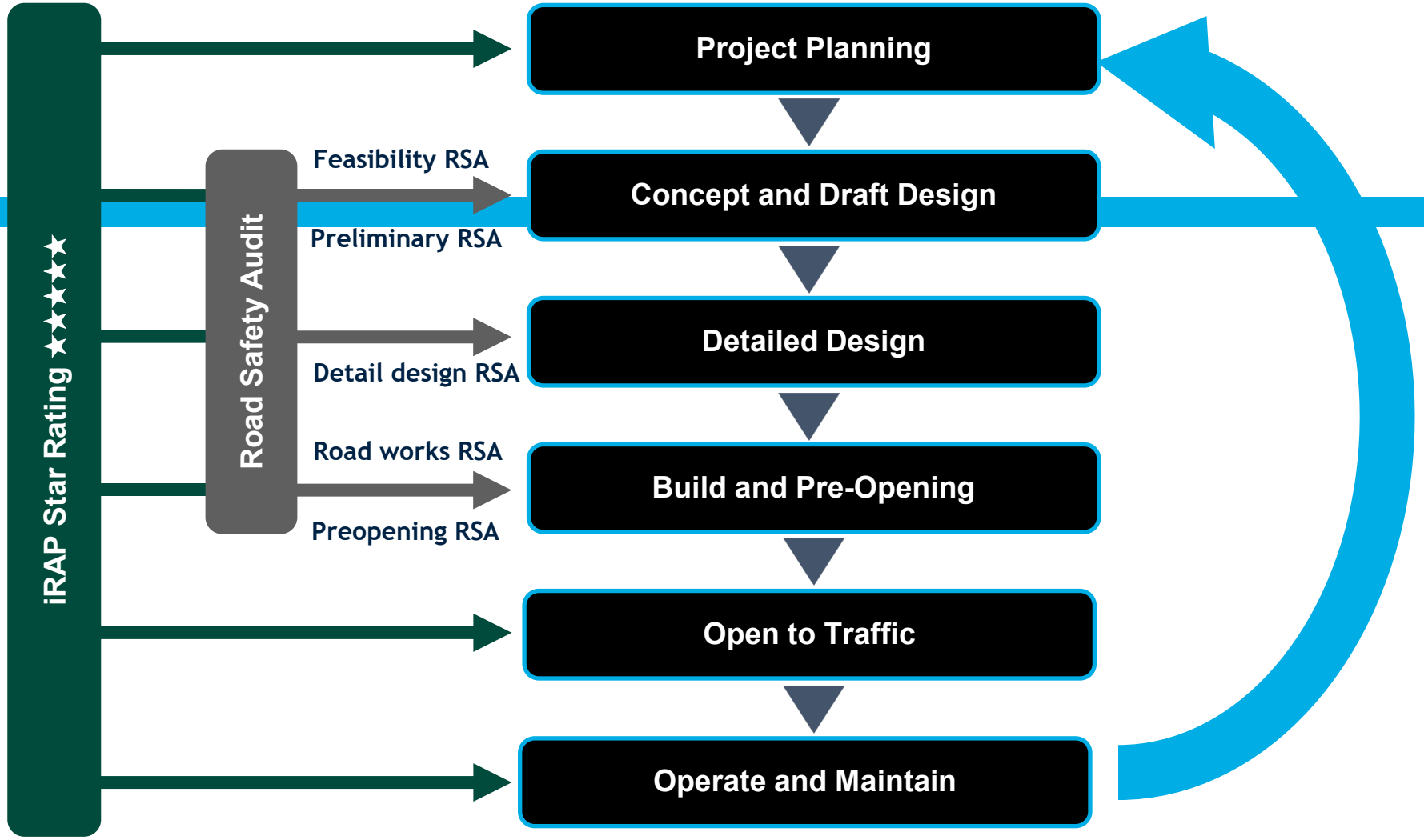
ROAD LIFE-CYCLE



ROAD LIFE-CYCLE



ROAD LIFE-CYCLE



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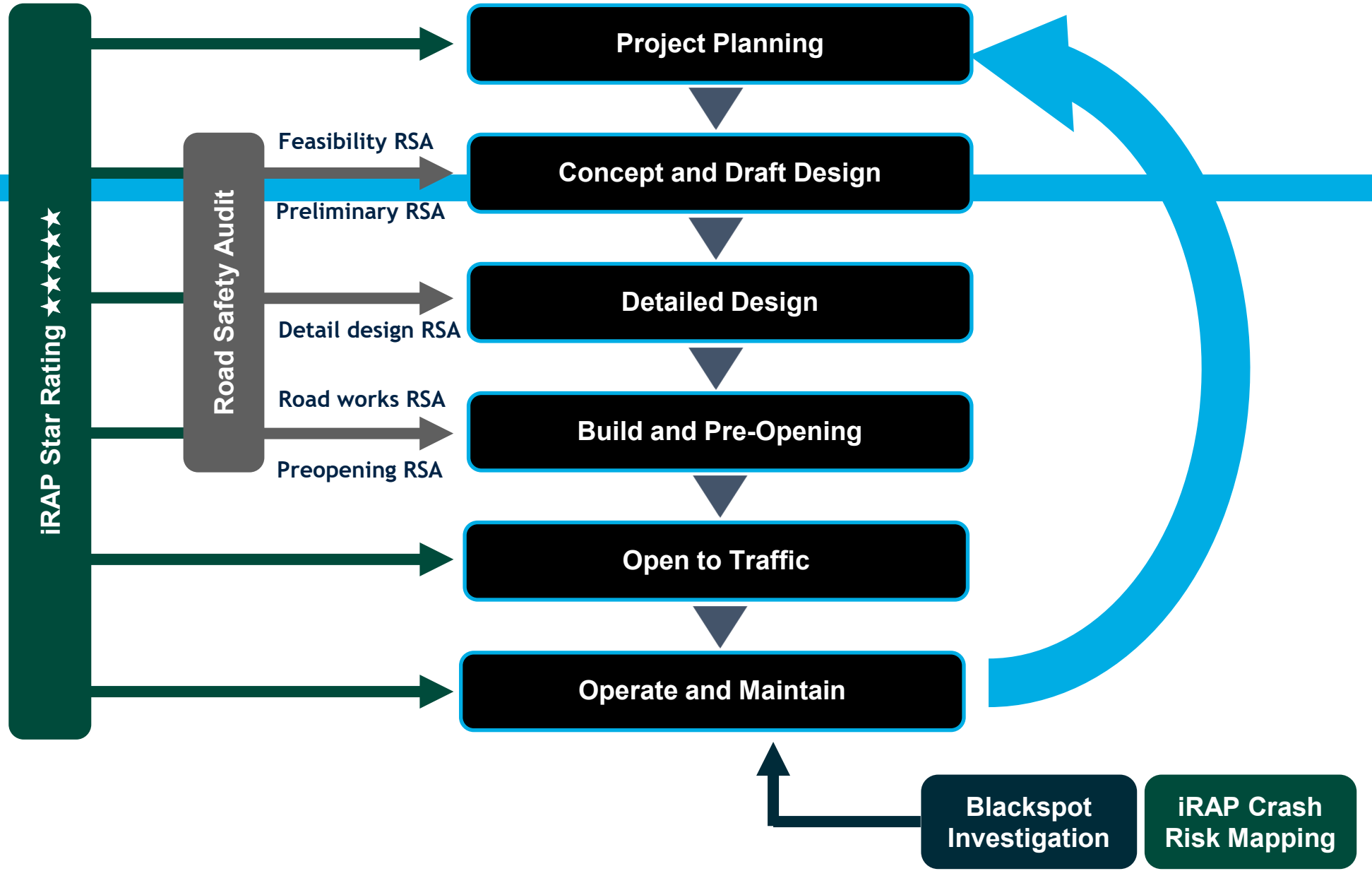
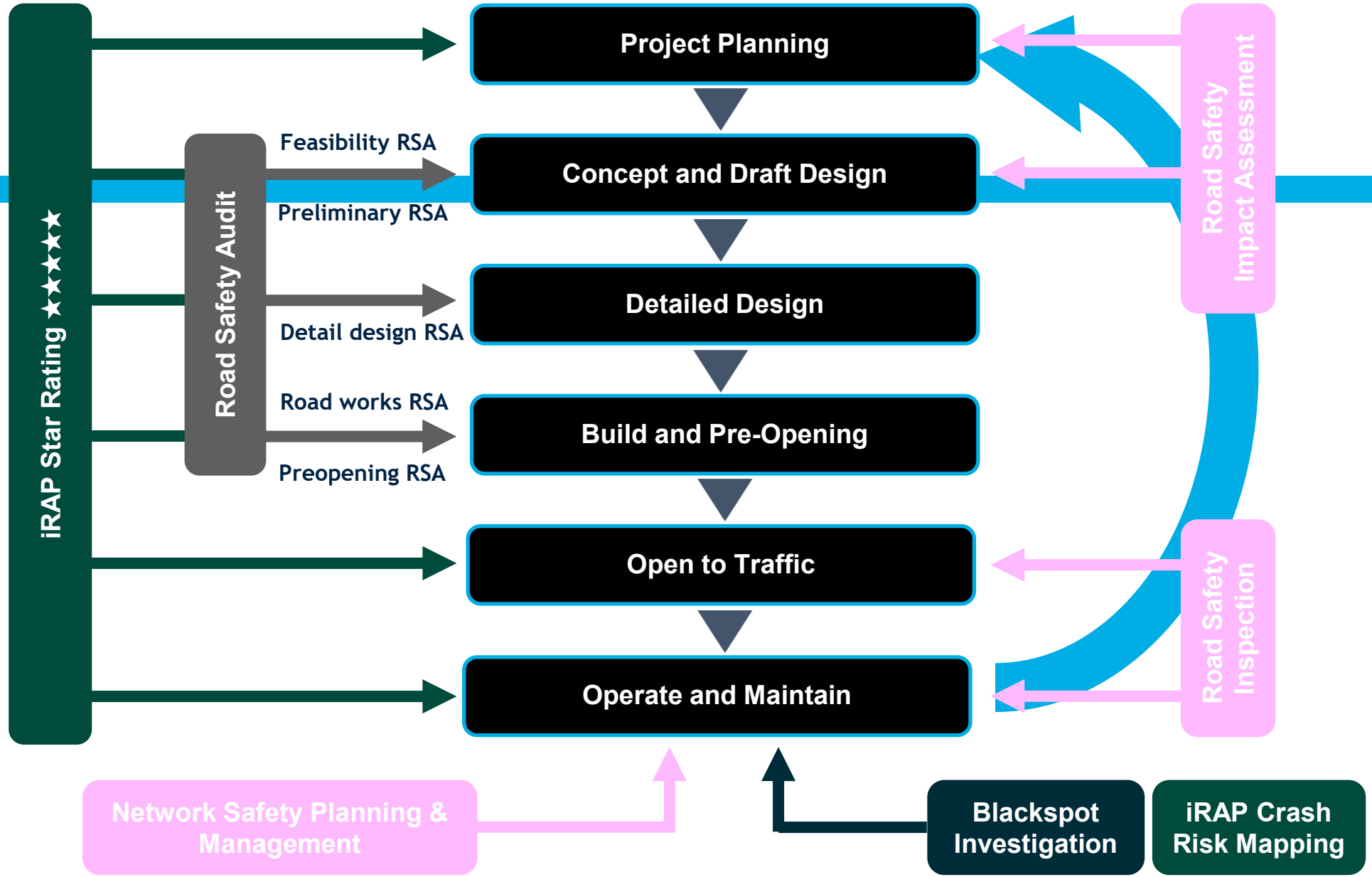


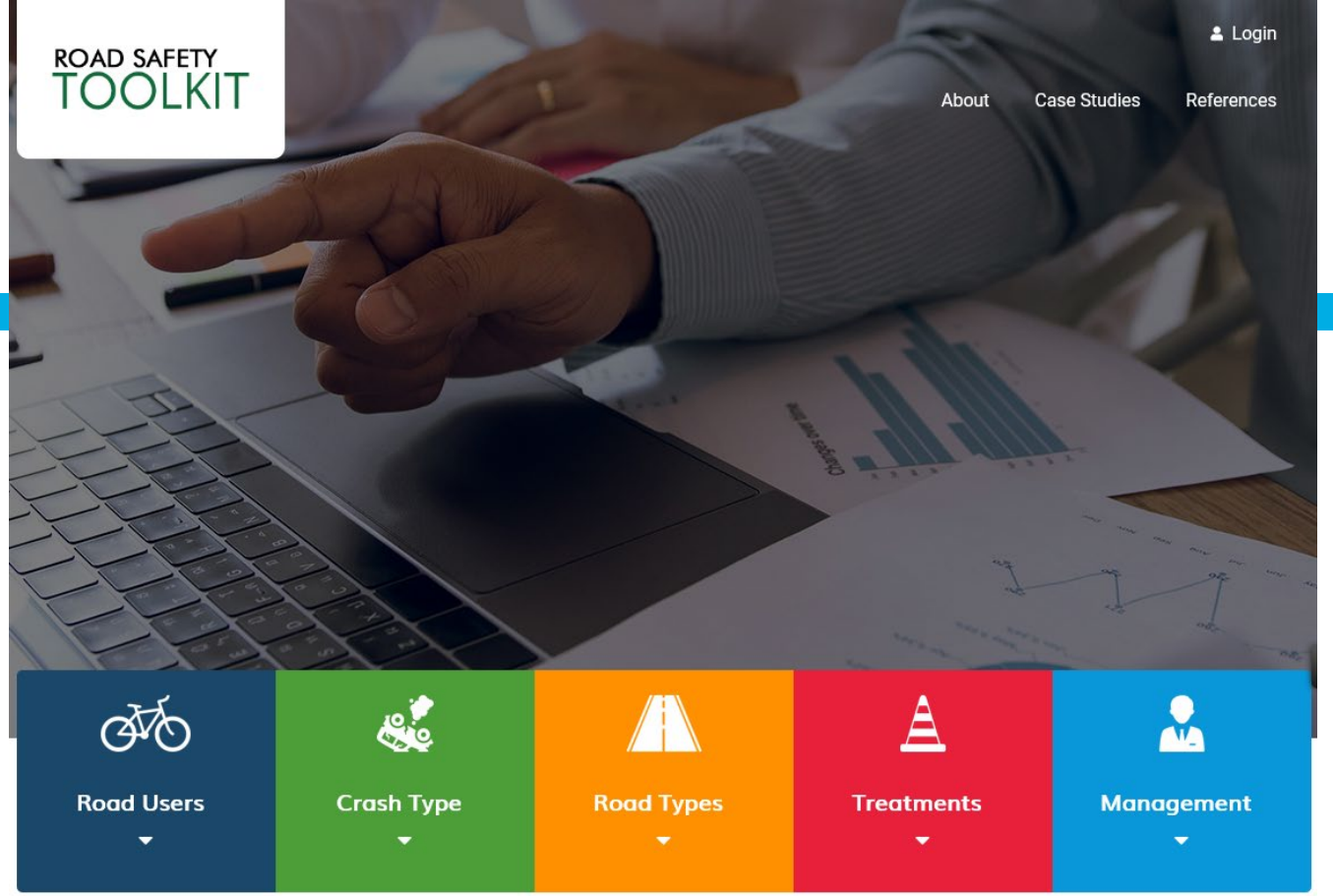
ROAD LIFE-CYCLE



FURTHER READING

NEW Road Safety Toolkit page coming soon:

http://toolkit.irap.org/management/infrastructure-safety-management-tools/



Home / Management / Infrastructure Safety Management Tools

Infrastructure Safety Management Tools

Safety must be addressed at all stages of a road's lifecycle and there are several tools available globally that support infrastructure safety management.

Black spot programs

Black spot programs are used to develop safety plans for locations where clusters of serious crashes have occurred in the past. As they rely on historical crash data, these programs are known as a reactive approach. The definition of a black spot varies though typically it is based on a minimum number of serious casualty crashes over a given time period (e.g. at least 3 fatal crashes in 3 years). Some programs also allow lengths of road to be included in a program, based on a minimum

Case Studies

Examples of related Case Studies

- Reducing Traffic Accidents in China – Strengthening the Use of Road Safety Audits
- Delivering Road Safety in India

View all case studies »

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

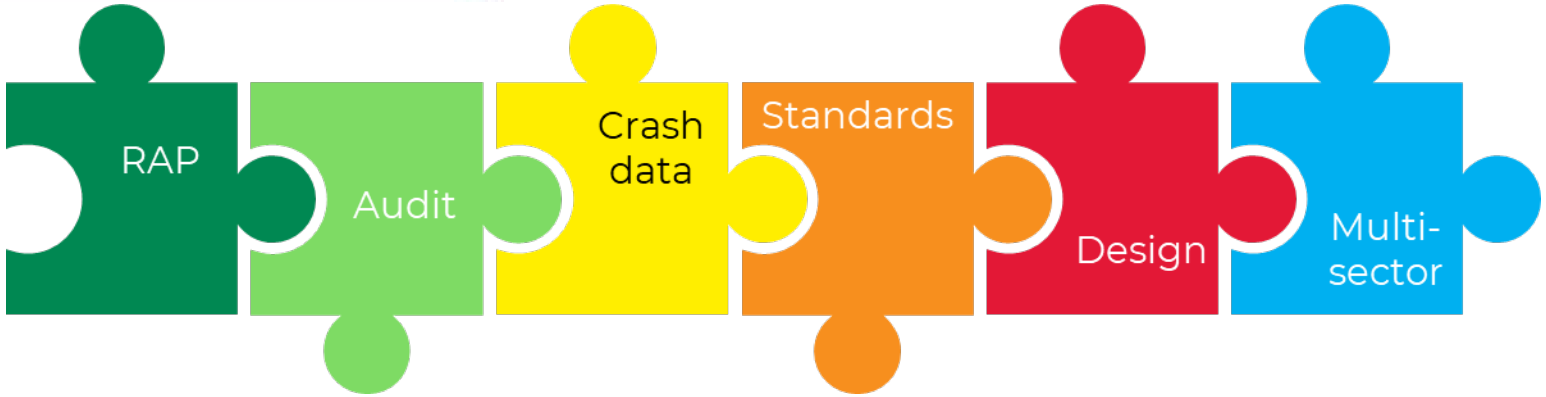
Questions?

Safety inspections and assessments and the iRAP methodology

Morgan Fletcher
LAC Operations Team Lead
iRAP

Safety inspections and assessments and the iRAP methodology

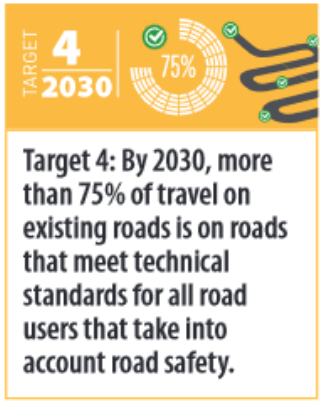
DECADE OF ACTION FOR ROAD SAFETY
2021 - 2030



Global Plan Safer Roads Recommendations And Themes

Recommendation	Description
Recommendation 3	***Specify a technical standard and star rating target for all designs*** *linked to each road user, and the desired safety performance standard at that location.*
Recommendation 5	*Undertake road safety audits on all sections of new roads (pre-feasibility through to detailed design) and* ***complete assessments using independent and accredited experts*** *to* ***ensure a minimum standard of three stars or better for all road users.***
Recommendation 6	*Undertake* ***crash-risk mapping*** *(where crash data are reliable) and* ***proactive safety assessments and inspections*** *on the target network with a focus on relevant road user needs as appropriate.*
Recommendation 7	*Set a performance target for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).*

About the iRAP methodology



- ✔ Free
- ✔ Proactive and reactive protocols
- ✔ Data and evidence-driven
- ✔ Global standard, highly repeatable
- ✔ All road users
- ✔ Single location or entire network
- ✔ Supports all stages of road life-cycle
- ✔ Metrics can be used for quantitative target setting and monitoring
- ✔ Supports Global Road Safety Performance Target 3 and 4

Star Ratings

Safer Roads Investment Plans

Crash-rate risk maps

Performance tracking

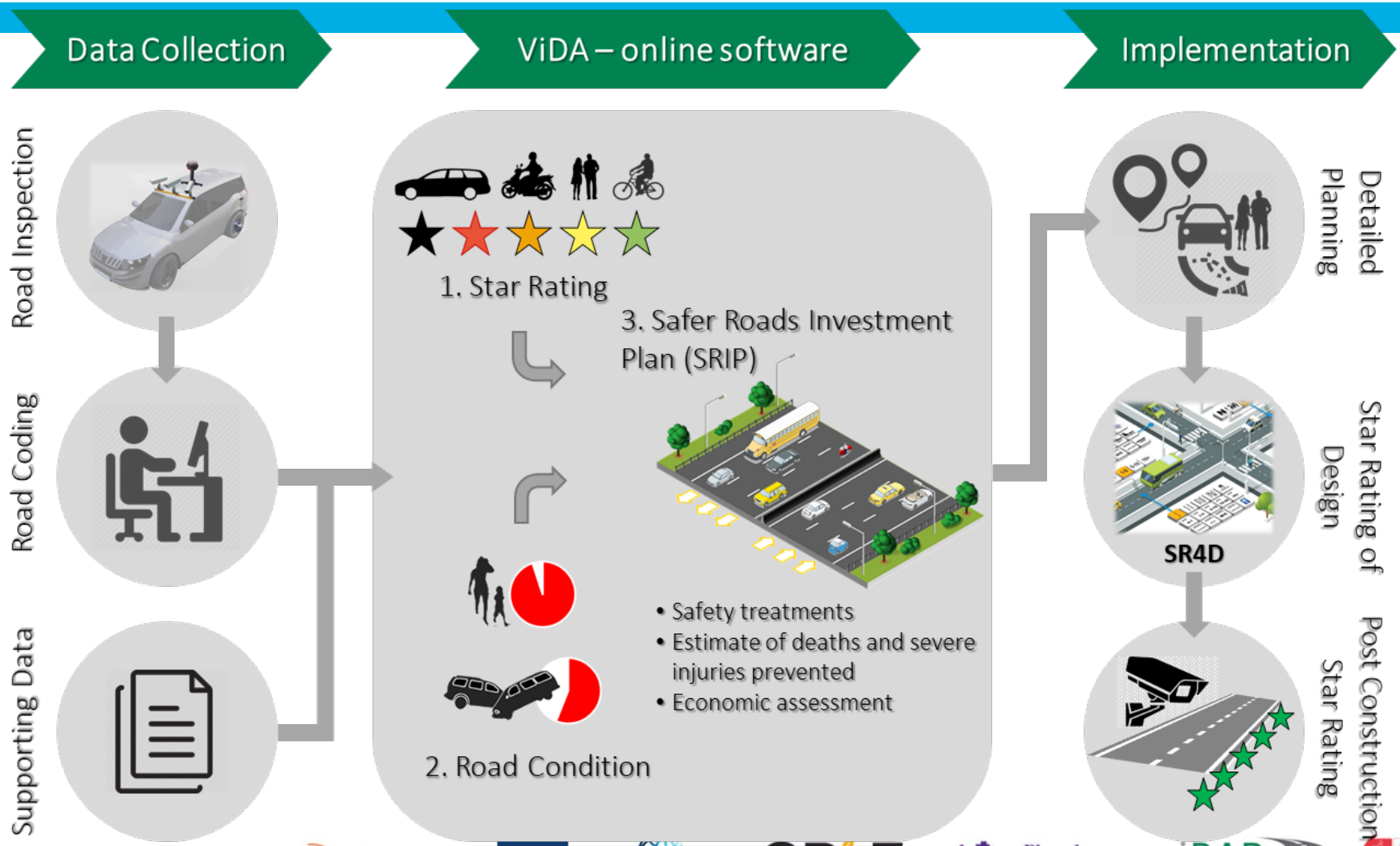
https://irap.org/resources/

General Star Rating and Investment Plan Process

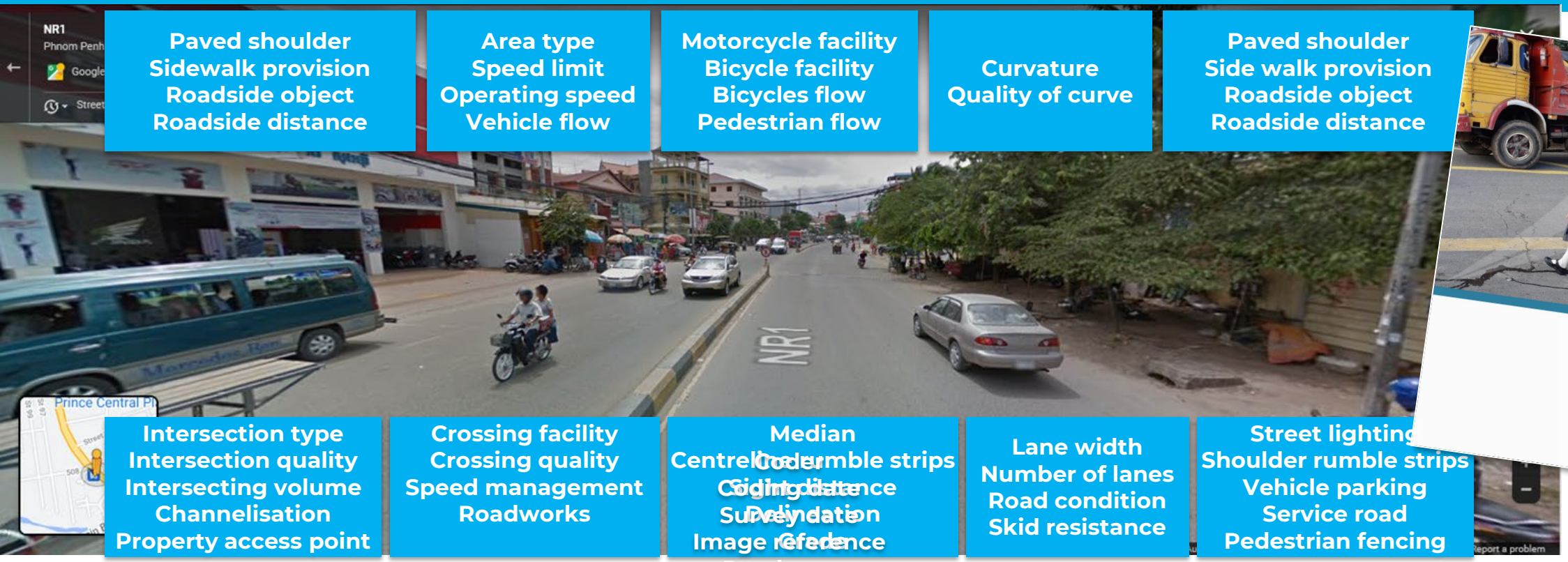
Collection of video or images and GPS coordinates

Recording of more than 50 attributes for each 100-meter road segment

Supporting data like traffic flow and vehicle operating speed (85th percentile speed)



Attributes that influence likelihood and/or severity of a crash



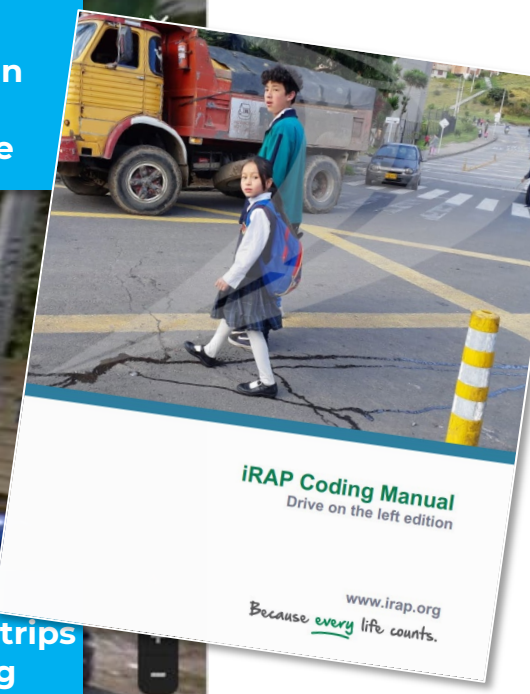
Paved shoulder
Sidewalk provision
Roadside object
Roadside distance

Area type
Speed limit
Operating speed
Vehicle flow

Motorcycle facility
Bicycle facility
Bicycles flow
Pedestrian flow

Curvature
Quality of curve

Paved shoulder
Side walk provision
Roadside object
Roadside distance



Intersection type
Intersection quality
Intersecting volume
Channelisation
Property access point

Crossing facility
Crossing quality
Speed management
Roadworks

Median
Centreline rumble strips
Survey date
Image reference

Lane width
Number of lanes
Road condition
Skid resistance

Street lighting
Shoulder rumble strips
Vehicle parking
Service road
Pedestrian fencing

Road name
Section
Distance
Length
Latitude
Longitude

https://irap.org/methodology/

Global Plan Safer Roads Recommendations And Themes

Recommendation	Target
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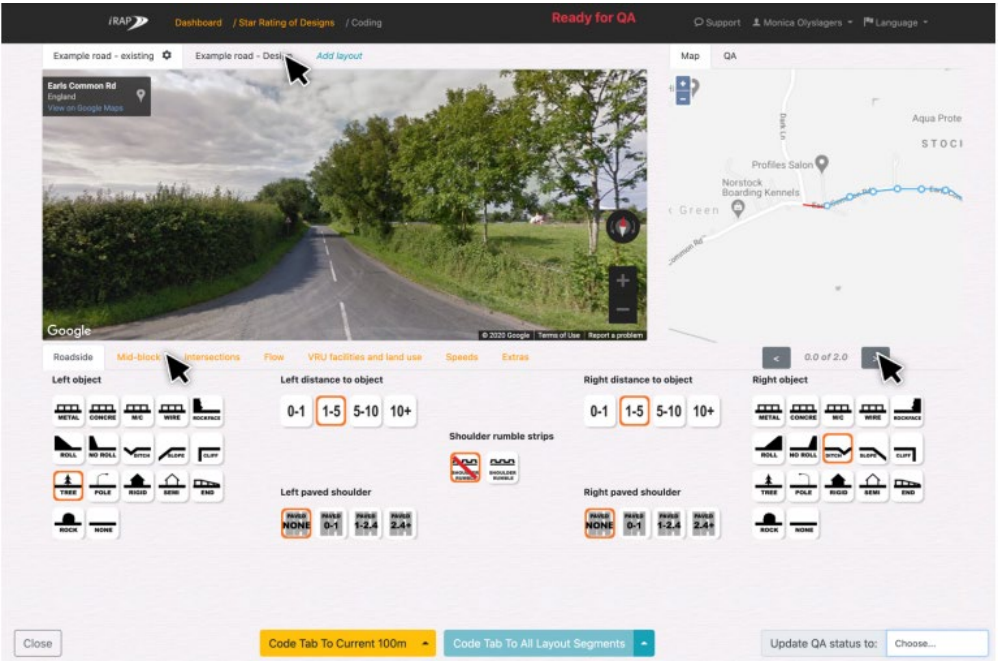
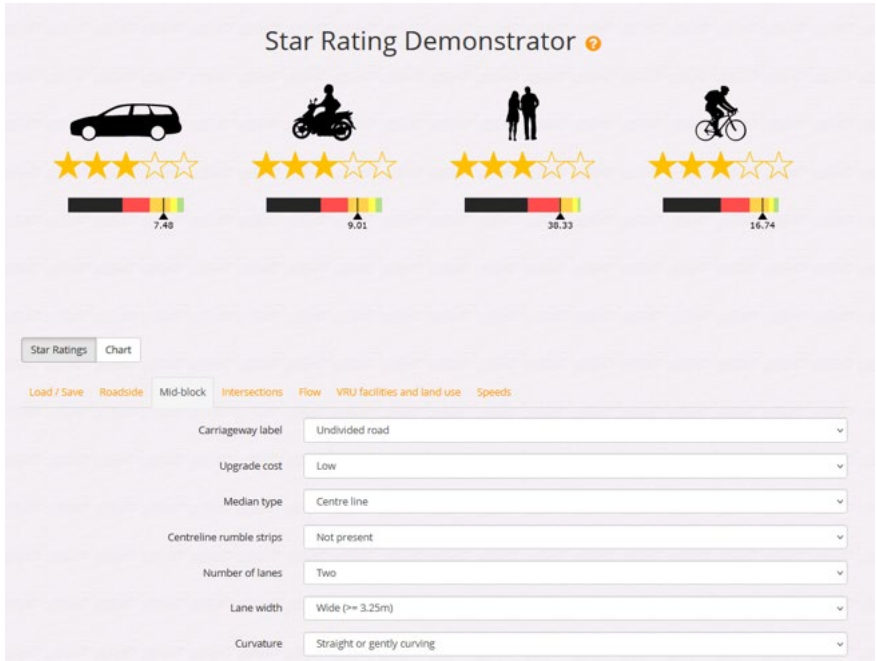
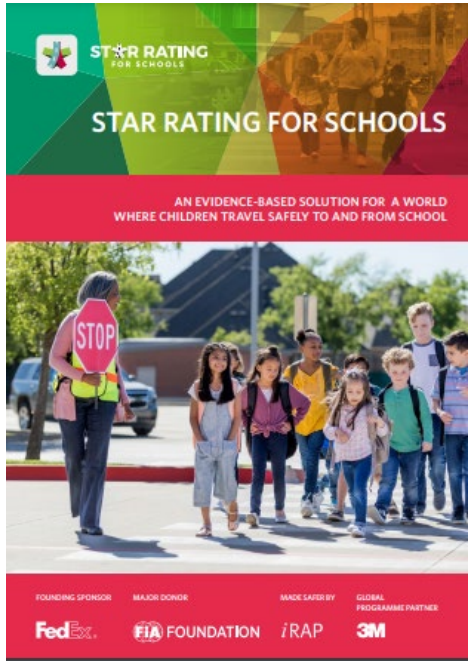
SR4D/ Demonstrator / SR4S

- ***Recommendation 3: Specify a technical standard and star rating target for all designs*** *linked to each road user, and the desired safety performance standard at that location.*

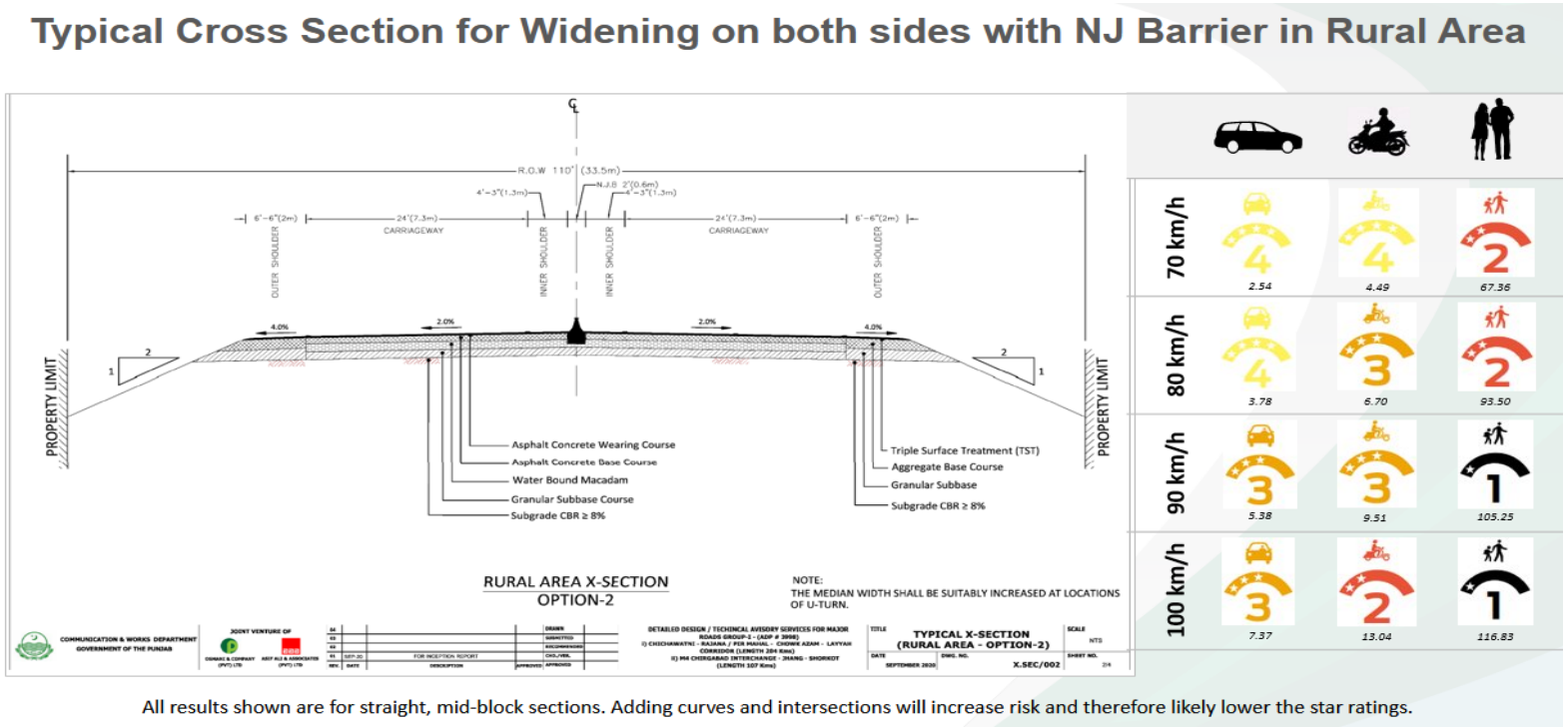


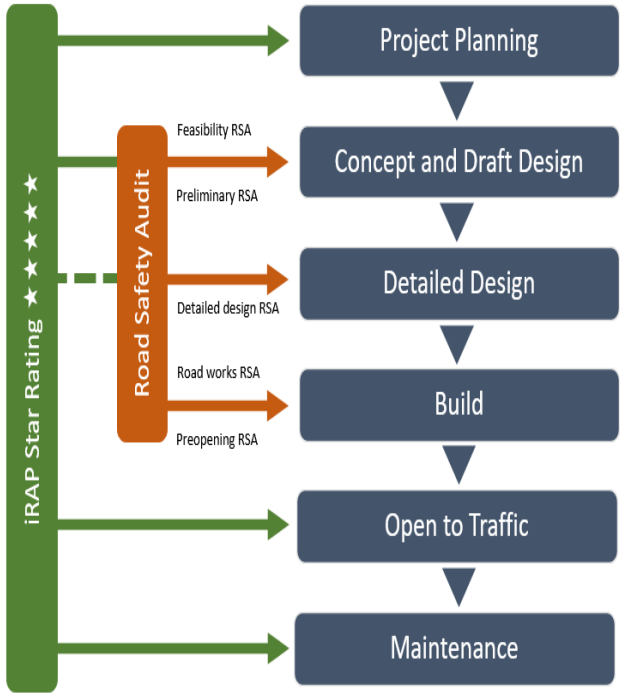




Road safety audits

Recommendation 5: *Undertake road safety audits on all sections of new roads (pre-feasibility through to detailed design) and* ***complete assessments using independent and accredited experts*** *to* ***ensure a minimum standard of three stars or better for all road users.***





Safety audits and the iRAP methodology

Item	Road Safety Audit	iRAP Assessment
Strengths	• Expert experience • Relatively easy • No limit to safety concerns • No limit to level of detail • No limit to road users • All stages of design • All types of roads • Day and night	• Global standard, highly repeatable • Vehicle occupants, motorcyclists, pedestrians and bicyclists • Can be 100 metre or an entire network • Objective metrics enables targets and economic analysis • All existing roads and designs • Results in a central web platform and global training and accreditation
Limitations	• No global standard • Dependent on expertise of auditor • Subjectivity • Challenging on long lengths • Vulnerable road users sometimes neglected • Tend towards low-cost but low-impact treatments • No financial or quantified impact analysis	• Fixed list of attributes • Segment lengths fixed at 100 metres • performed in daylight and does not consider weather • The quality of results depend on the quality of input data • Results can be misinterpreted • Data requirements for a full assessment

Safety audits and the iRAP methodology

- Help countries position to achieve Global Road Safety Performance Target 3
- Focus on integration of iRAP into RSA
- Star Ratings for Designs

Reactive vs. proactive

Recommendation 6: *Undertake* ***crash-risk mapping*** *(where crash data are reliable) and* ***proactive safety assessments and inspections*** *on the target network with a focus on relevant road user needs as appropriate.*

- Reactive
  - Crash data analysis
  - Hotspot analysis
  - Crash prone locations identification

RAP Crash Rate Risk Mapping

- Proactive
  - Road Safety Inspections
  - Road Safety Audit
  - Network wide road safety assessments

RAP Star Rating and Safer Roads Investment Plan

What is RAP Crash Risk Mapping

- Using approved RAP protocols, based on real crash and traffic data
- Colour-coded maps show a risk of an individual road-user (or the community as a whole), being involved in a road accident
- Identifying high-risk routes rather than blackspots or cluster sites
- The raw data collated for each country is adjusted to allow comparisons of relative safety risk
- Shows how risk on the network has changed over time

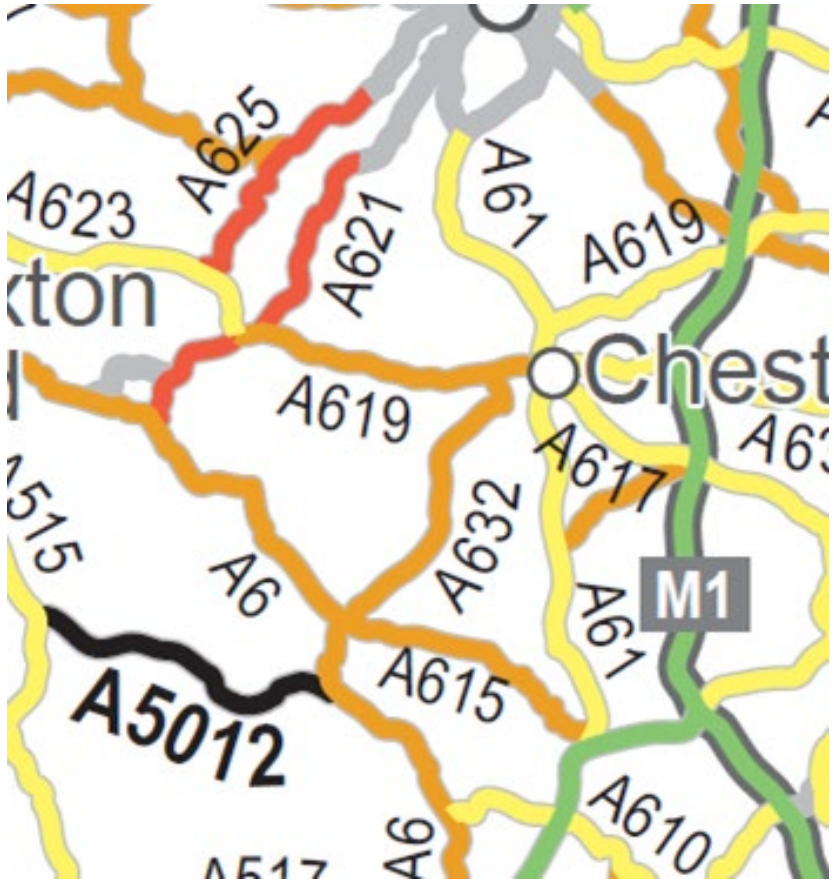
Low risk

Low-medium risk

Medium risk

Medium-high risk

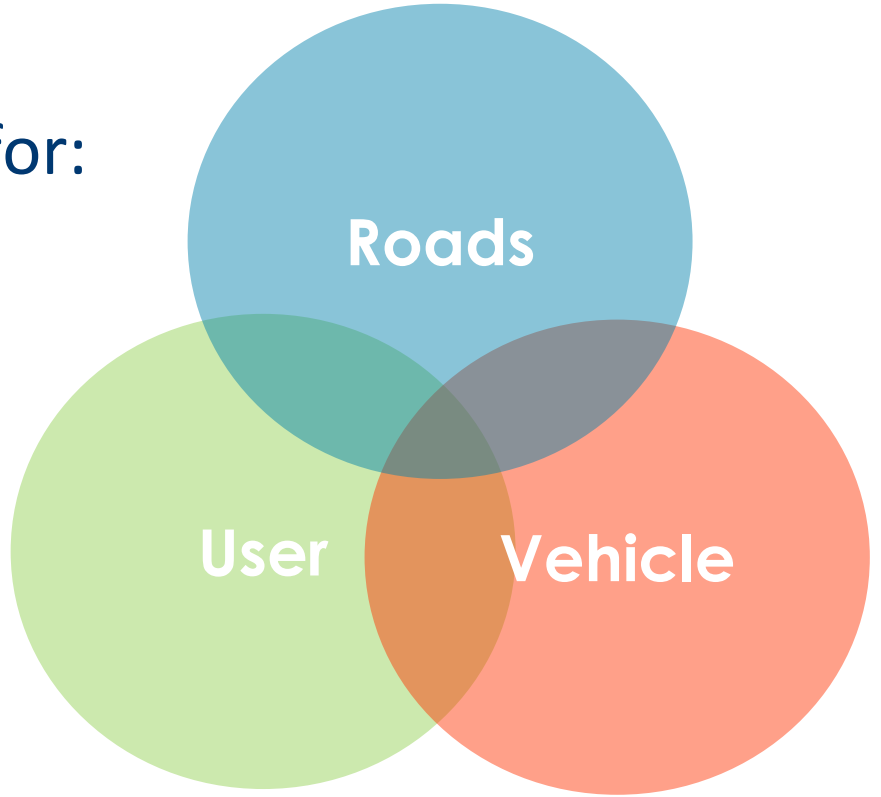
High risk



Risk Mapping Focus

- Risk Mapping shows the combined interaction of vehicles, road users & road environment.
- Maps can show risk of a fatal or serious injury for:
- Individual road user
- The community as a whole

Takes into account all three Road Safety pillars



Emphasis on high risk sections

NOT "hotspots"

3-Star or Better Policy

Recommendation 7: *Set a performance target for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).*

NATIONAL GOVERNMENT LEADERSHIP

United Kingdom: 90% of travel on 3-star or better strategic road network by 2020, and 4 and 5-star motorways

New Zealand: 4-star roads of national significance; toll road minimum 4-star standards; Safety Alliance to upgrade existing roads to 3-star or better standards

Malaysia: 75% of travel on 3-star or better high volume roads by 2020

Sweden: 75% of network at 3-star or better by 2020 and near 100% by 2025

PRC Five year Road Safety Plan requires national implementation of road assessments and rapid treatment of high-risk road sections

Netherlands: No 1 or 2-star national roads by 2020

Chile: Autopista Central toll roads upgrade to meet minimum 3-star standard

Australia: 80% of travel on 3-star or better for state roads and 90% for national highways by 2020; Queensland target 90% of travel on 3-star or better roads by 2022; Tasmanian Midlands Highway 3-star minimum standard.

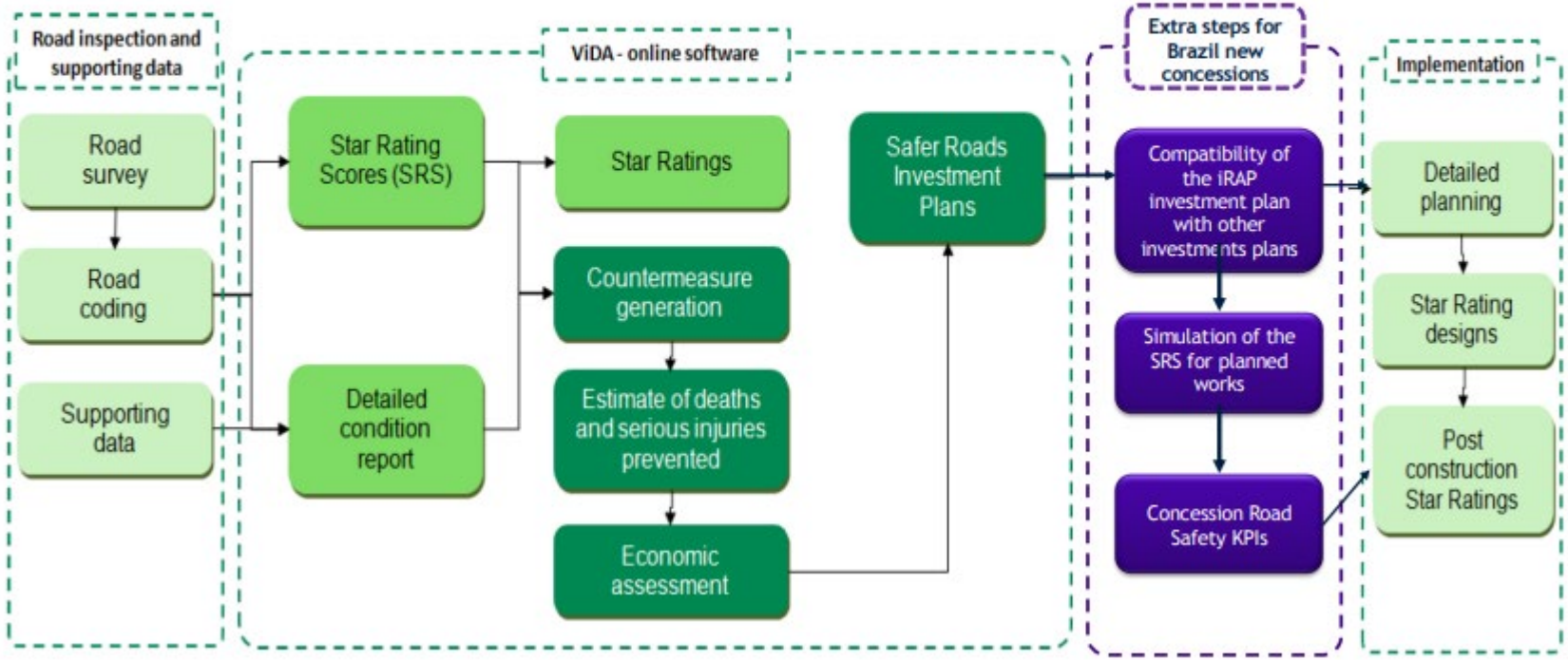
Saudi Arabia: 70% of highways to be 3-star or better by 2022 and 100% 3-star or better by 2030.

3-Star or Better Policy

Recommendation 7: *Set a performance target for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).*

IRAP METHODOLOGY AND MORE!

paves iRAP



Bloomberg Philanthropies INITIATIVE FOR GLOBAL ROAD SAFETY

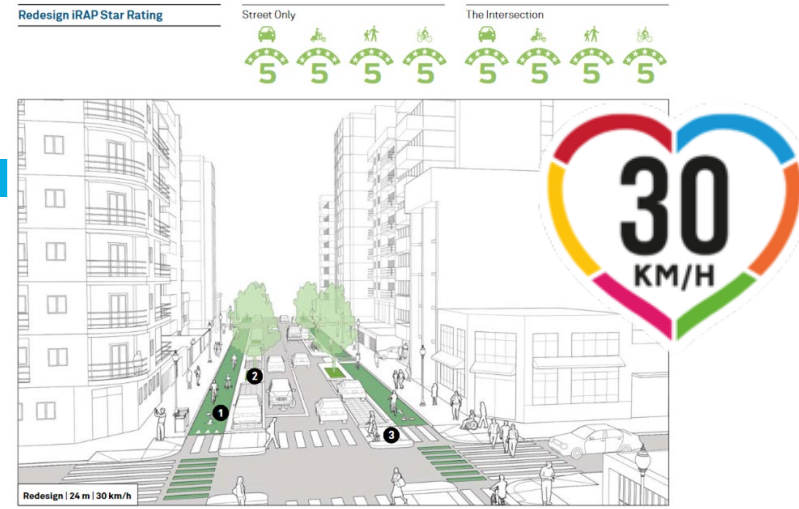
iRAP

GLOBAL ROAD SAFETY PARTNERSHIP

Innovation partnerships

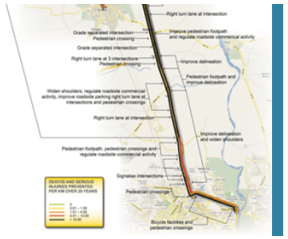
Light Star Ratings

STAR RATING FOR DESIGNS
SAFE ROADS, RIGHT FROM THE START



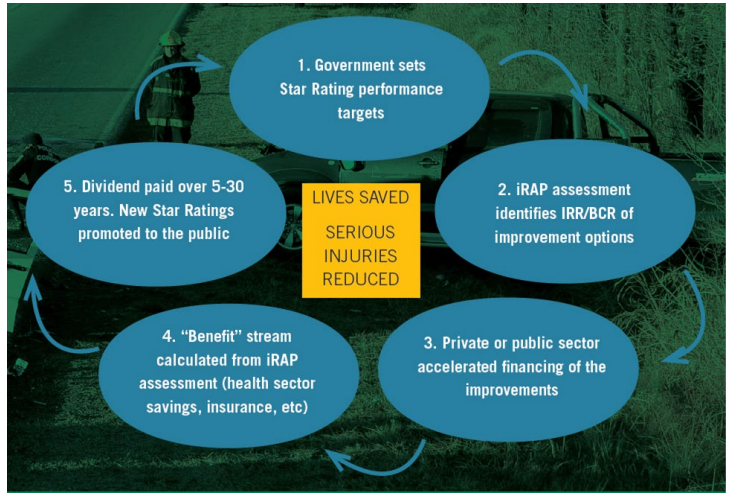
Social Impact Investment

STAR RATING FOR SCHOOLS



User Defined Investment Plans

cycleRAP



https://irap.org/innovation/

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GLOBAL ROAD SAFETY PARTNERSHIP

Training and Accreditation

https://irap.org/training

https://irap.org/accreditation

iRAP ACCREDITED

Questions?

Road Safety Audits and Star Rating targets

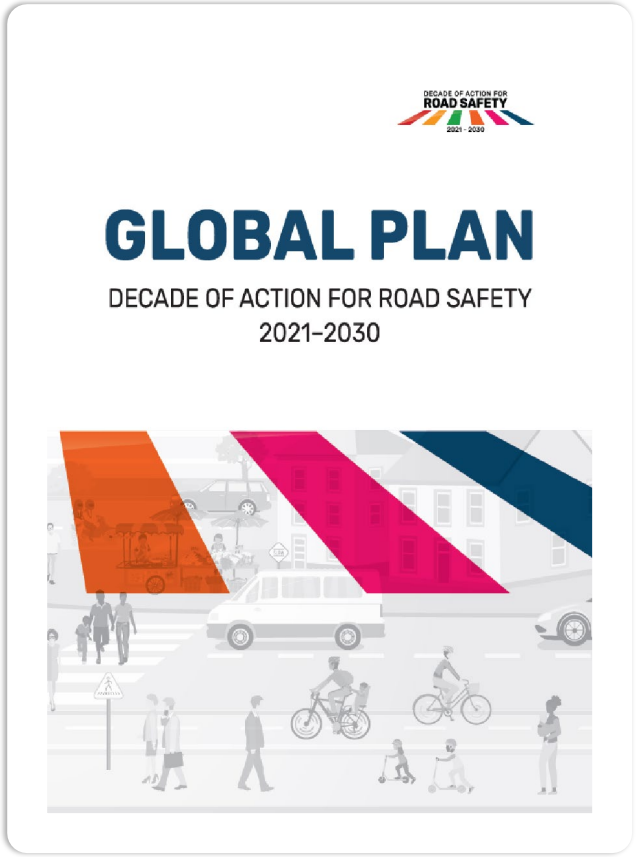
Phillip Jordan
International Road Safety Engineer

Road Safety Audits and Star Rating targets

- The road safety audit process

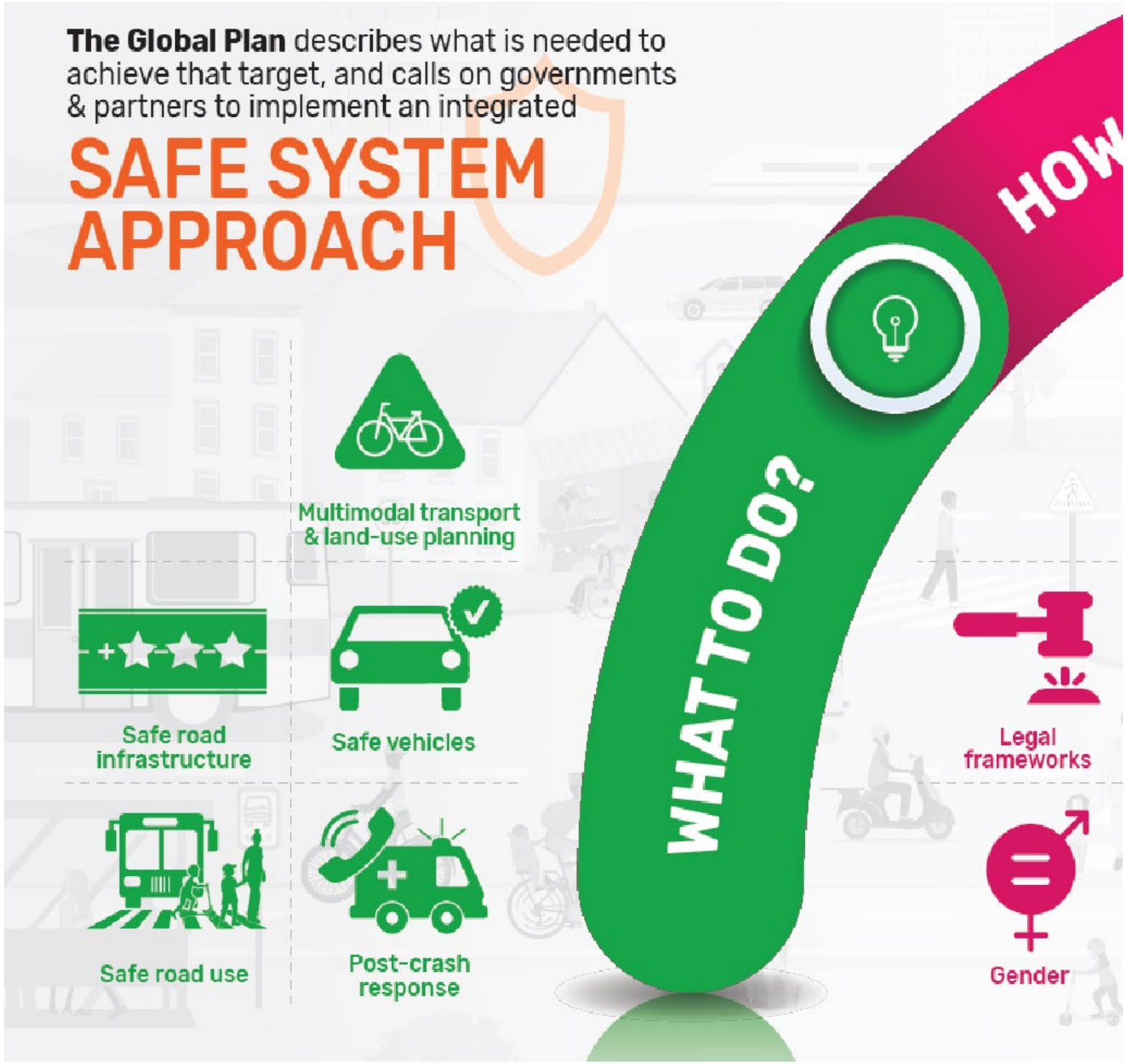
- Managing audits; what does your country need?

- Star rating targets



This **Global Plan** has been developed by the World Health Organization and the United Nations Regional Commissions, in cooperation with partners in the United Nations Road Safety Collaboration and other stakeholders, as a guiding document to support the implementation of the Decade of Action 2021–2030 and its objectives.

2 Safer road infrastructure



Recommended actions to improve the safety of road infrastructure

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- Set a performance target for each road user based on the inspection results with clear measurable metrics at the road-attribute level (e.g. sidewalk provision).

4
4

The ROAD SAFETY audit process

phillip.jordan@roadsafetyinternational.com

A road safety audit is……
"a formal, systematic and detailed examination of a road project by an independent and qualified team of auditors that leads to a report listing the potential safety concerns in the project."

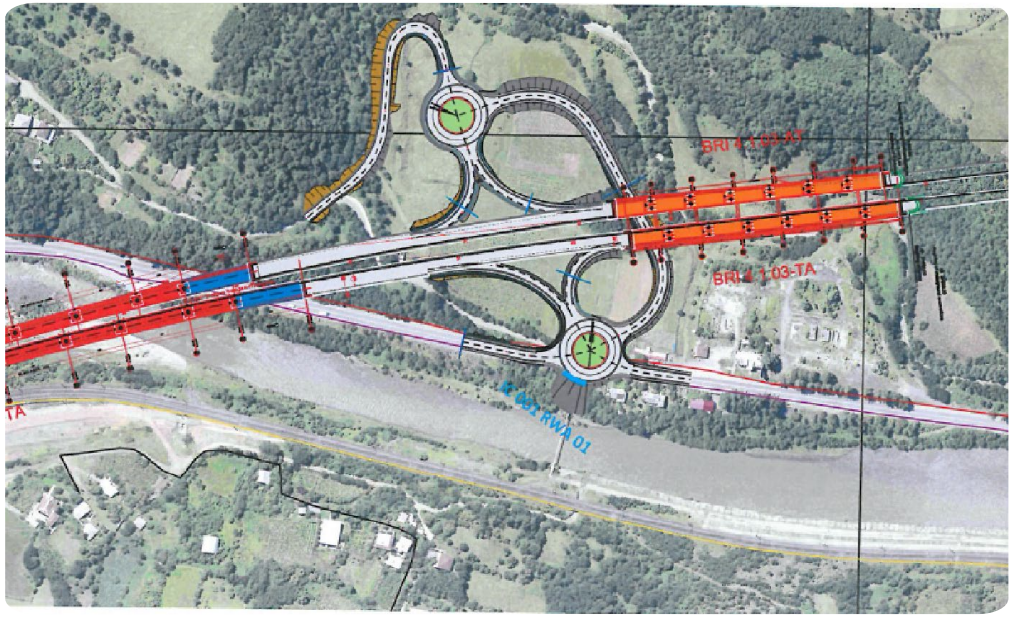
(CAREC 2018)

A road safety audit is……

"a formal, systematic and detailed examination of a road project by an independent and qualified team of auditors that leads to a report listing the potential safety concerns in the project."

(CAREC 2018)

The international stages of road safety audit



- Planning
- Preliminary design
- Detailed design
- Traffic management
- Pre-opening
- Existing road (called road safety inspections)

Table 1: Key Steps in the Road Safety Audit Process

Road Safety Audit Step	Responsibility
1. Determine if an audit is needed.	Project manager
2. Select an audit team leader, who then engages the audit team.	Project manager and road safety audit team leader
3. Draft the pre-audit communication to provide information (drawings and design reports) about the project to the team leader, outlining the project and discuss the audit ahead.	Designer (via project manager) and road safety audit team leader
4. Assess the drawings for safety issues (the "desktop" audit).	Audit team
5. Inspect the site both during daytime and nighttime.	Audit team
6. Write the audit report and send to the project manager.	Team leader with assistance from audit team
7. Discuss the key safety issues and clarify outstanding matters during post-audit communication.	Project manager (plus designer) and road safety audit team leader
8. Write a response report, referring to each audit recommendation.	Project manager
9. Follow up and implement agreed changes.	Project manager (and designer)

Decide

Select audit team

Pre-audit communication

Desktop audit

Inspect site

Write audit report

Post-audit communication

Respond to the report

Implement

CAREC 2018

Key audit steps….

- Select an audit team
- Review the design drawings
- Inspect the site, day and night
- Write audit report
- Project manager reads, responds
- Decisions are made, actions taken

Road Safety Audit

Prevention is better than cure

The management of the audit process

- Road safety audit is a useful, low-cost and positive process.
- But how is it going in your country?

What do you need to make it work well in your country?

- A safety culture in the road agency?
- Management commitment?
- A national policy for audits?
- Experienced auditors/road safety engineers?
- A register of accredited auditors?
- Funds? Help from Development Agencies?

Road safety audits HAVE *PROVEN* BENEFITS…

UK Highways Agency – found it much lower cost to make “changes“ during design, than after construction was complete

Surrey County Council – audited sites had fewer crashes after they were built than unaudited sites

Jordan – First Year Rate of return = 120%

Denmark – First Year Rate of return = 146%

AUSTROADS – showed BCR’s for design stage audits over 200:1

What projects are audited in your country?

DO YOU HAVE A NATIONAL AUDIT POLICY?

A SUGGESTED AUDIT POLICY…

“All road projects will be road safety audited at the following stages according to the class of road, in accordance with the procedures contained in the CAREC Road Safety Audit manual”

DO YOU HAVE A NATIONAL audit POLICY in your country?

AUDIT	EXPRESSWAYS & INTERNATIONAL HIGHWAYS	NATIONAL HIGHWAYS	MAJOR ROADS (URBAN/RURAL)	LOCAL STREETS & VILLAGE ROADS
FEASIBILITY	√	Optional	Optional	N/A
PRELIMINARY DESIGN	√	Optional	Optional	N/A
DETAILED DESIGN	√	√	√	√
ROAD WORKS	√	Optional	Optional	Optional
PRE-OPENING	√	√	√	√
SAFETY INSPECTIONS OF EXISTING ROADS	ACCORDING TO LOCAL POLICY AND RESOURCES			
NO. OF AUDITS	5	Minimum 2	Minimum 2	Minimum 2

Audit Team – what does your policy require?

Two-person (minimum) teams should be the minimum for arterials, expressways and other big road projects

One person “team” - only for small local street projects.

Does your country have experienced auditors? If not, how will you get them?

Audit Team qualifications

Relevant university degree or similar experience? No

Experience with road design, blackspots or road safety engineering? Yes

Additional training – an RSA workshop. Yes

Experience doing audits before leading a team. Yes

Knowledge of the Safe System. Yes

Most countries have two levels of auditor:

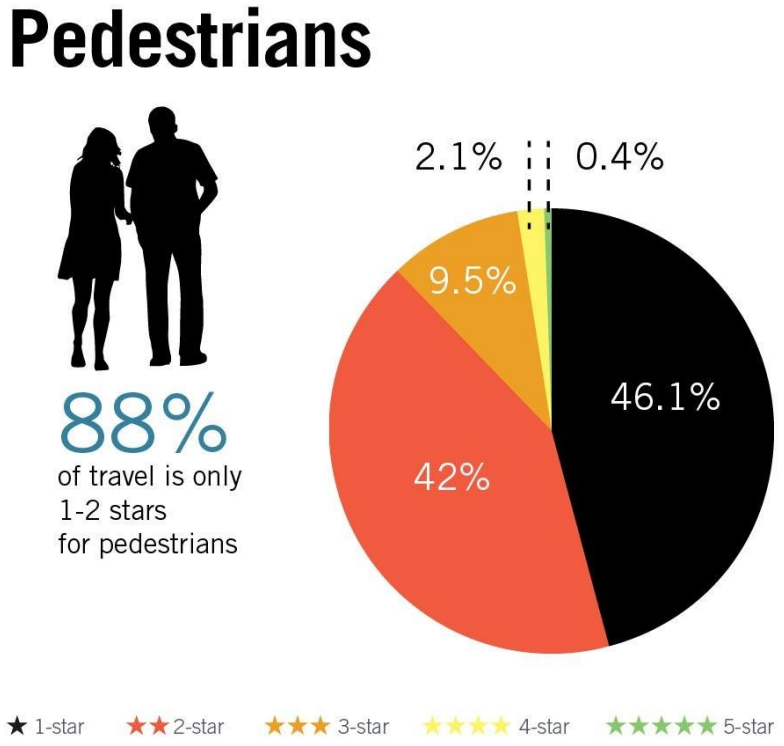
Senior Road Safety Auditor – experienced, trained, numerous audits, able to lead audit teams.

Road Safety Auditor – understands the process, has completed an RSA workshop.

Star Rating Targets

1-Star roads have the highest risk
5-Star roads the lowest risk.

Star Ratings are an objective measure of the level of safety which is 'built-in' to the road through more than 50 road attributes that influence risk for vehicle occupants, motorcyclists, bicyclists, and pedestrians.

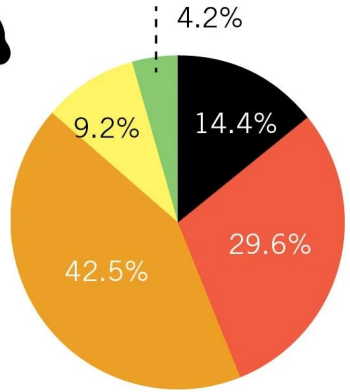


STAR RATING TARGETS

iRAP Star Ratings are used for road safety inspections, road safety impact assessments, and in designs.

Vehicles

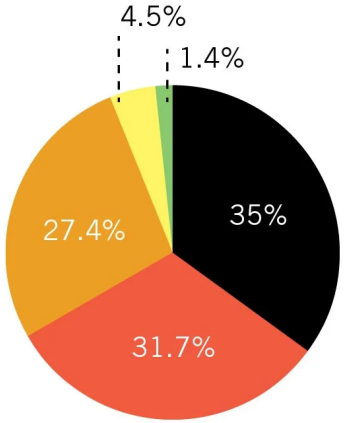
44%
of travel is only
1-2 stars
for vehicles



★ 1-star ★★ 2-star ★★★ 3-star ★★★★ 4-star ★★★★★ 5-star

Motorcyclists

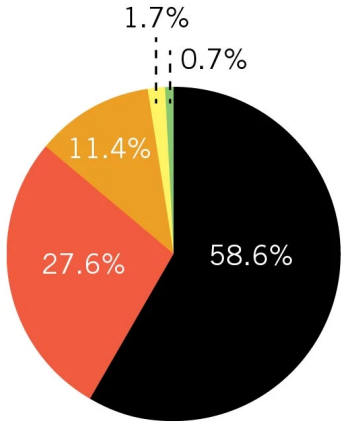
67%
of travel is only
1-2 stars
for motorcyclists



★ 1-star ★★ 2-star ★★★ 3-star ★★★★ 4-star ★★★★★ 5-star

Bicyclists

86%
of travel is only
1-2 stars
for bicyclists



★ 1-star ★★ 2-star ★★★ 3-star ★★★★ 4-star ★★★★★ 5-star

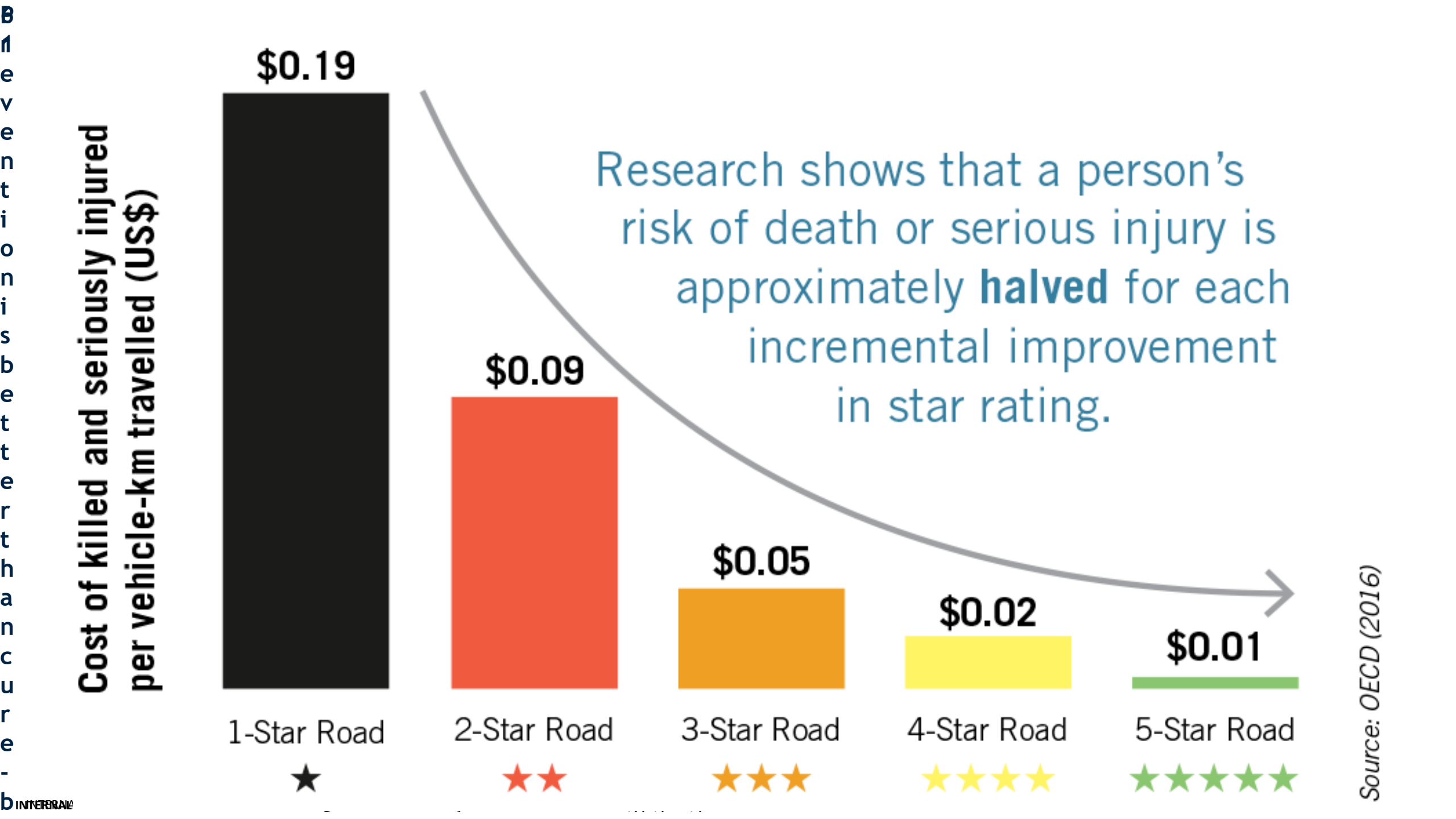

Cost of killed and seriously injured per vehicle-km travelled (US$)
$0.19
$0.09
$0.05
$0.02
$0.01
Research shows that a person's risk of death or serious injury is approximately **halved** for each incremental improvement in star rating.
1-Star Road
2-Star Road
3-Star Road
4-Star Road
5-Star Road
Source: OECD (2016)

Table 3: Star rating of roads – what makes a road safe?

Star Rating				
★	No sidewalk, No safe crossing, 60 km/h traffic	No cyclepath, No safe crossings, poor road surface, 70 km/h traffic	No motorcycle lane, undivided road, trees close to road, winding alignment, 90 km/h traffic	Undivided road with narrow centerline, trees close to road, winding alignment, 100 km/h traffic
★★★	Sidewalk present, pedestrian refuge, street lighting, 50 km/h traffic	On-road cycle lane, good road surface, street lighting, 60 km/h traffic	On-road motorcycle lane, undivided road, good road surface, >5m to any roadside hazards, 90 km/h traffic	Wide centerline separating oncoming vehicles, >5m to any roadside hazards, 100 km/h traffic
★★★★★	Sidewalk present, signalized crossing with refuge, street lighting, 40 km/h	Off-road dedicated cycle facility, raised platform crossing of major roads, street lighting	Dedicated separated motorcycle lane, central hatching, no roadside hazards, straight alignment, 80 km/h traffic	Safety barrier separating oncoming vehicles and protecting roadside hazards, straight alignment, 100 km/h traffic

* For details on the full model for all road users and more urban and rural examples see https://www.irap.org//3-star-or-better/what-is-star-rating.

Source: Global Status Report on Road Safety 2018

Table 3: Star rating of roads – what makes a road safe?

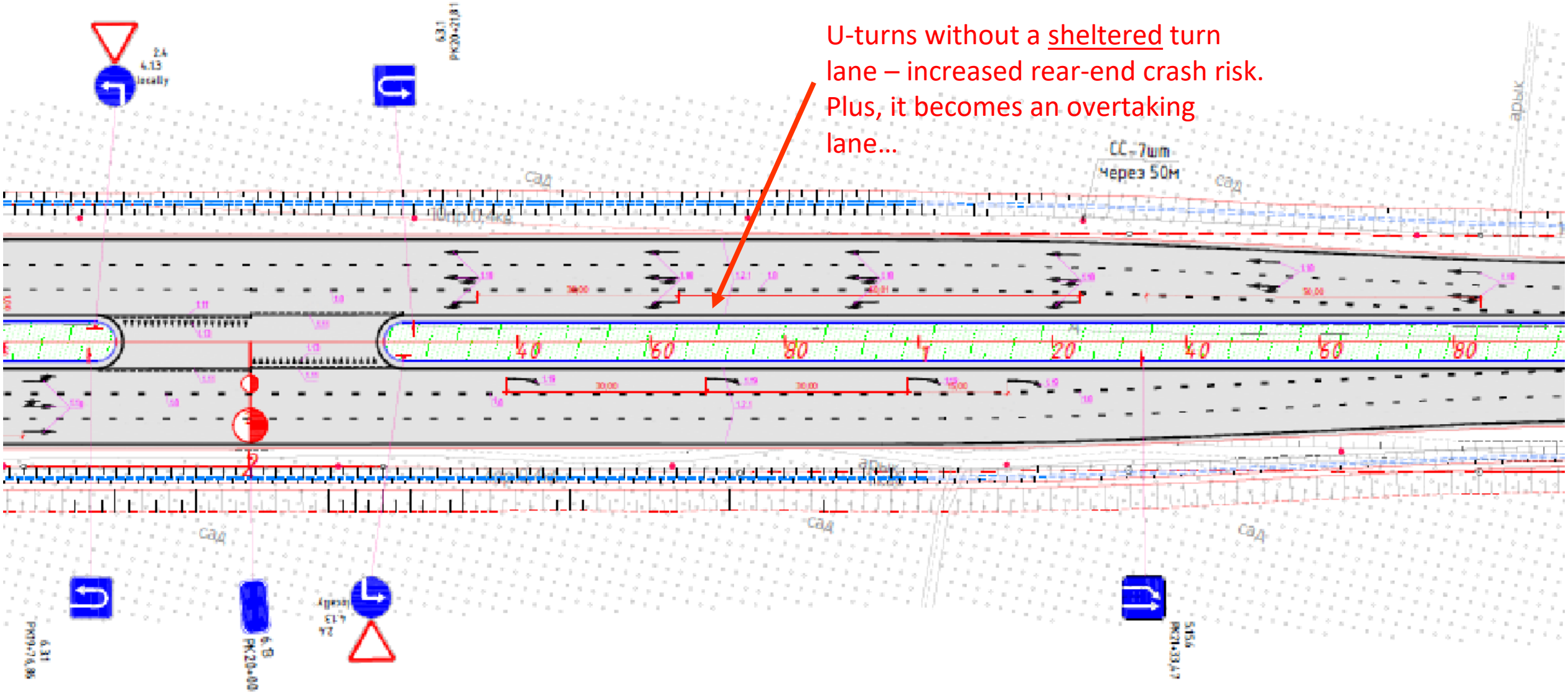
Star Rating				
★	No sidewalk, No safe crossing, 60 km/h traffic	No cyclepath, No safe crossings, poor road surface, 70 km/h traffic	No motorcycle lane, undivided road, trees close to road, winding alignment, 90 km/h traffic	Undivided road with narrow centerline, trees close to road, winding alignment, 100 km/h traffic
★★★	Sidewalk present, pedestrian refuge, street lighting, 50 km/h traffic	On-road cycle lane, good road surface, street lighting, 60 km/h traffic	On-road motorcycle lane, undivided road, good road surface, >5m to any roadside hazards, 90 km/h traffic	Wide centerline separating oncoming vehicles, >5m to any roadside hazards, 100 km/h traffic

Star Rating Targets

Infrastructure upgrades and speed management are the most effective ways to achieve 3-star or better roads for all road users.

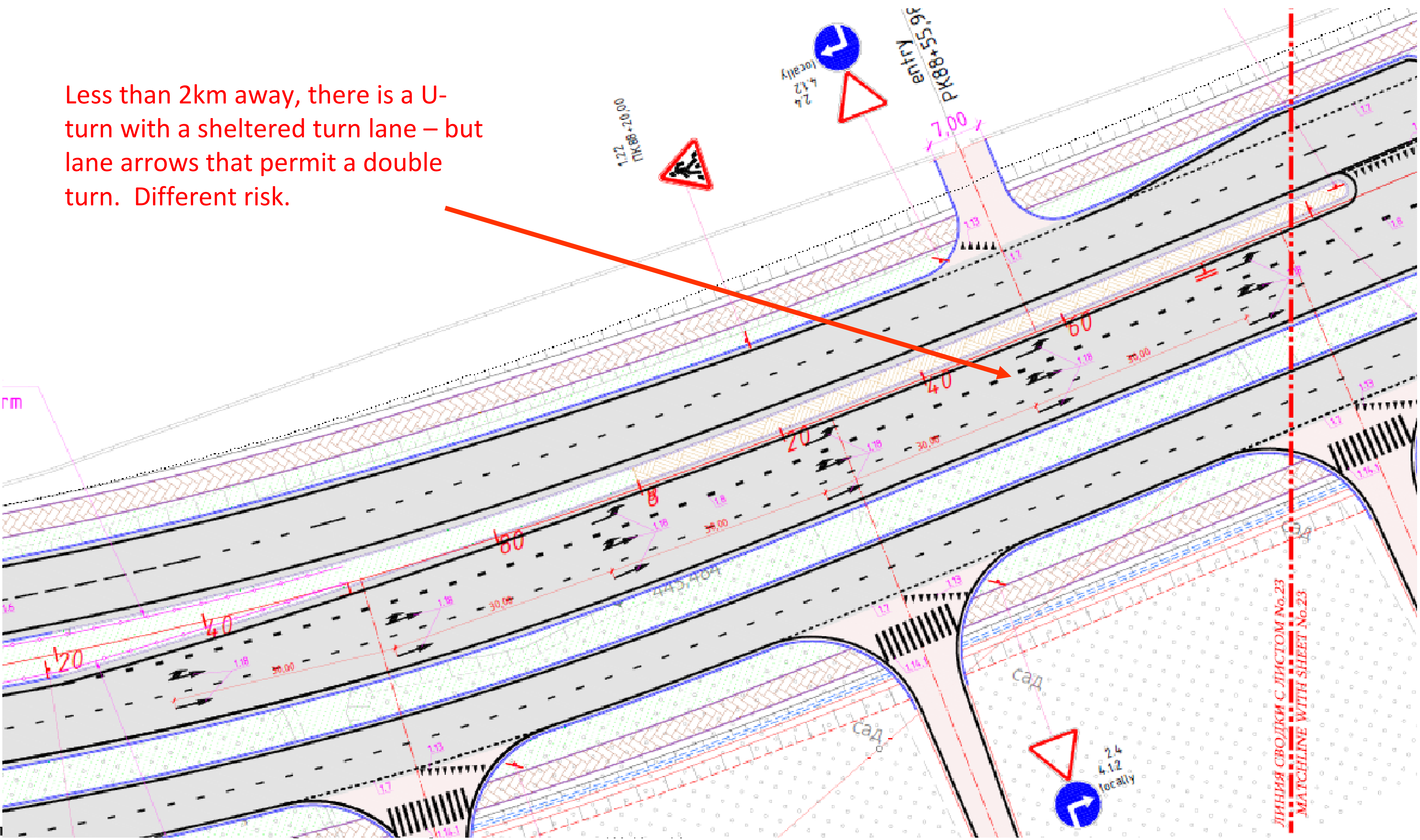
When investment is not readily available, or is restricted, improvements can be achieved by a mix of low-cost infrastructure options (such as line markings) and reductions in speed on the most hazardous sections of the road.

TO CONCLUDE – DRAWINGS FOR A CURRENT ROAD PROJECT, showing WHY WE NEED GOOD AUDITS!



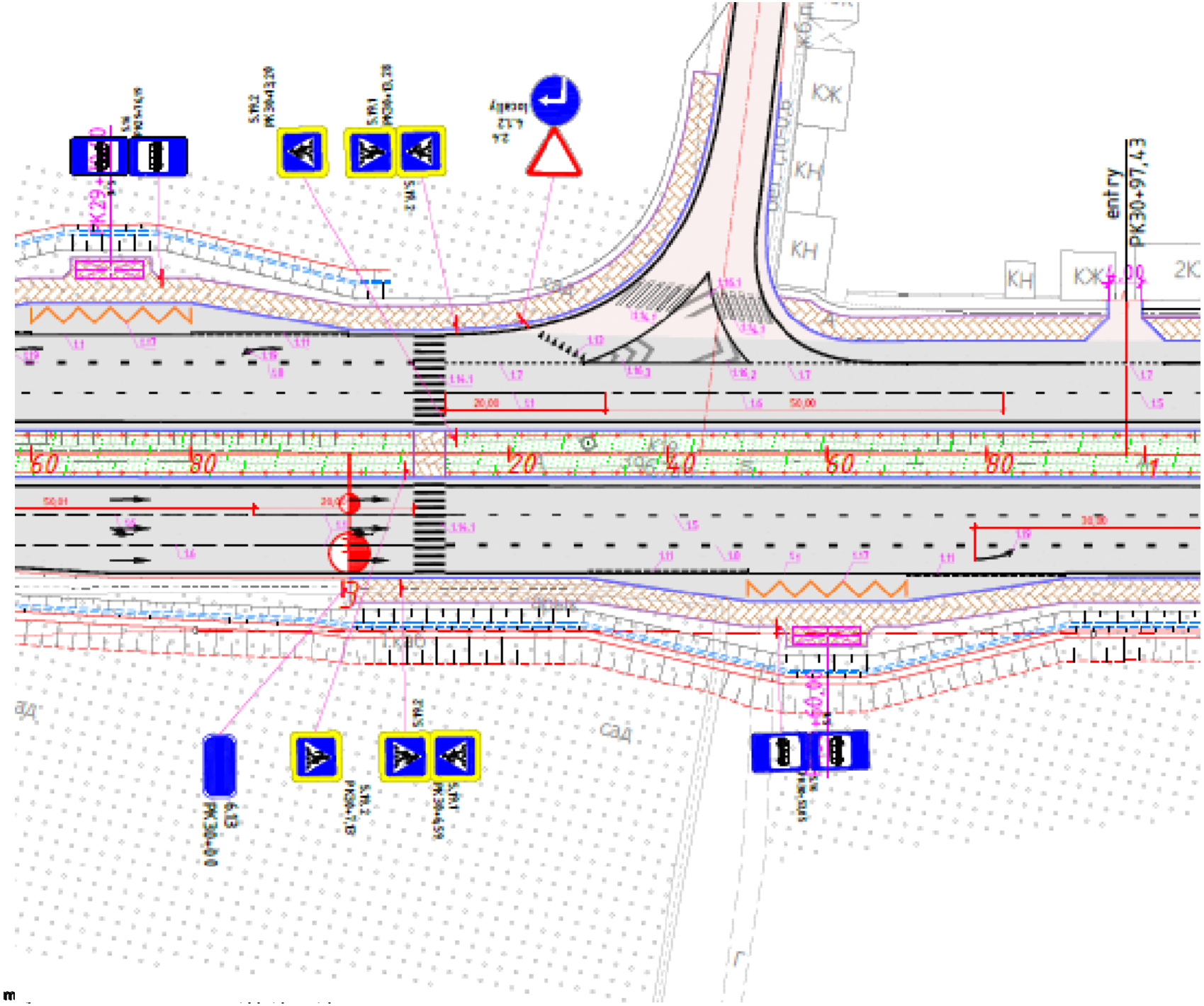
evention is better than cure - b

Less than 2km away, there is a U-turn with a sheltered turn lane – but lane arrows that permit a double turn. Different risk.



Never install pedestrian crossings (zebra) across more than a single lane for each direction.

Large painted islands are ineffective in snow, or if maintenance is poor.



The drawings show typical (standard) practices for this country.

Will the Project Manager and design team agree with these safety issues?

To do so, they must be prepared to question current practices for their roads.

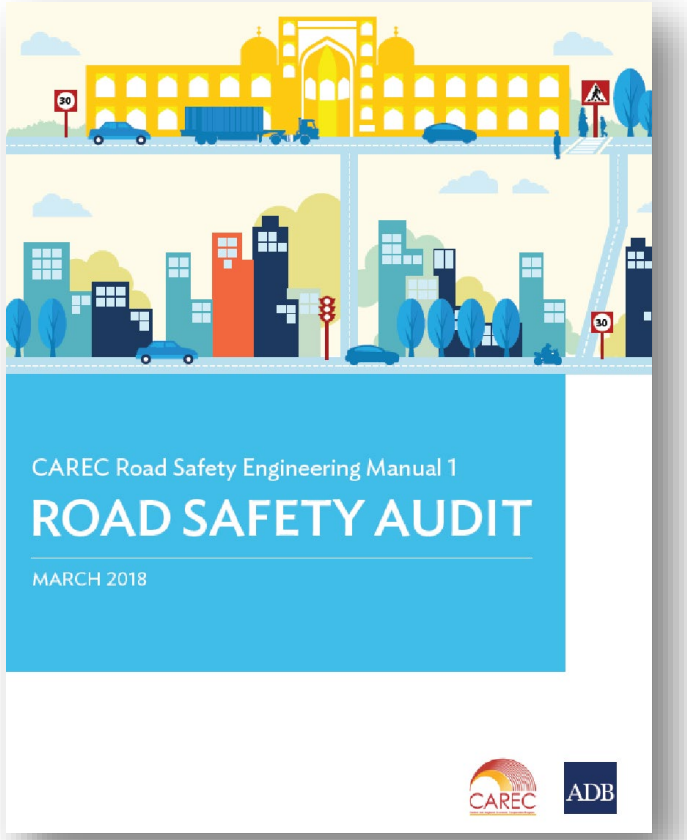
“Old” practices do not always equal safe roads!

Aim for 3 stars for all road users.

In conclusion

Road safety audit is a positive road safety process.
It leads to safer roads.
Is it being managed well in your country?

Are *you* aiming for 3-star safety rated roads?



Thank you!

For more information:

AUSTROADS.com.au

ADB.org

iRAP.org

GRSF

phillip.jordan@roadsafetyinternational.com

Questions?

Black Spot programs and Crash Risk Mapping

Jigesh Bhavsar
Consultant, World Bank

What is a Blackspot?

- A place or stretch of road where road crashes have historically been concentrated
- It could be a spot or a stretch, say 500m in length
- Extended definition includes number of crashes or number of fatalities occurred in past years

What do crash data tells us

- Number of fatalities and serious injuries
- Where do they occur
- Time / Day / Month, weather, lighting condition
- Type of road user involved in crash
- Type of crash
- Cause / reason of crash (requires in-depth analysis)

Good quality crash data is essential

Blackspot Improvement Program

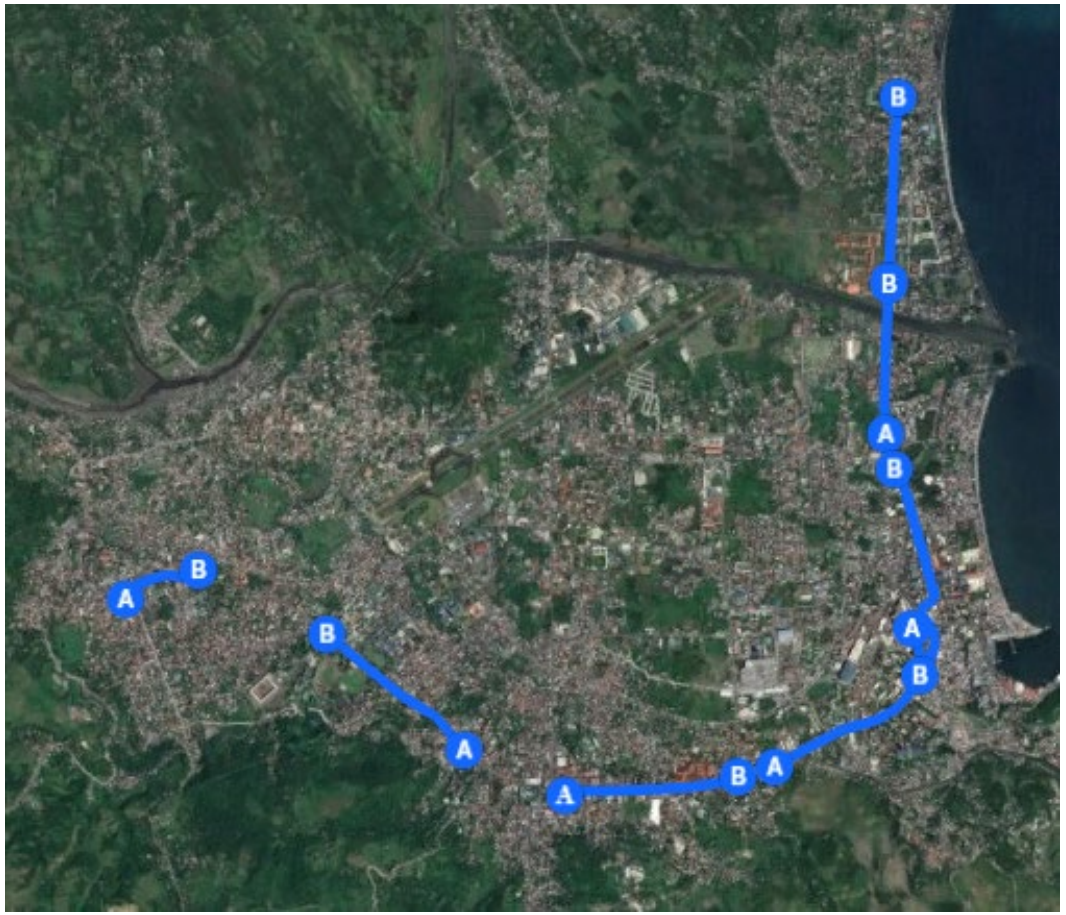
- Treating blackspots often require prioritization, further detailed analysis, site visit and design of safety countermeasures before implementation
- It can be highly effective when data indicates a dominant crash type / road user and for which remedial measures are available
- Crash data quality matters a lot!

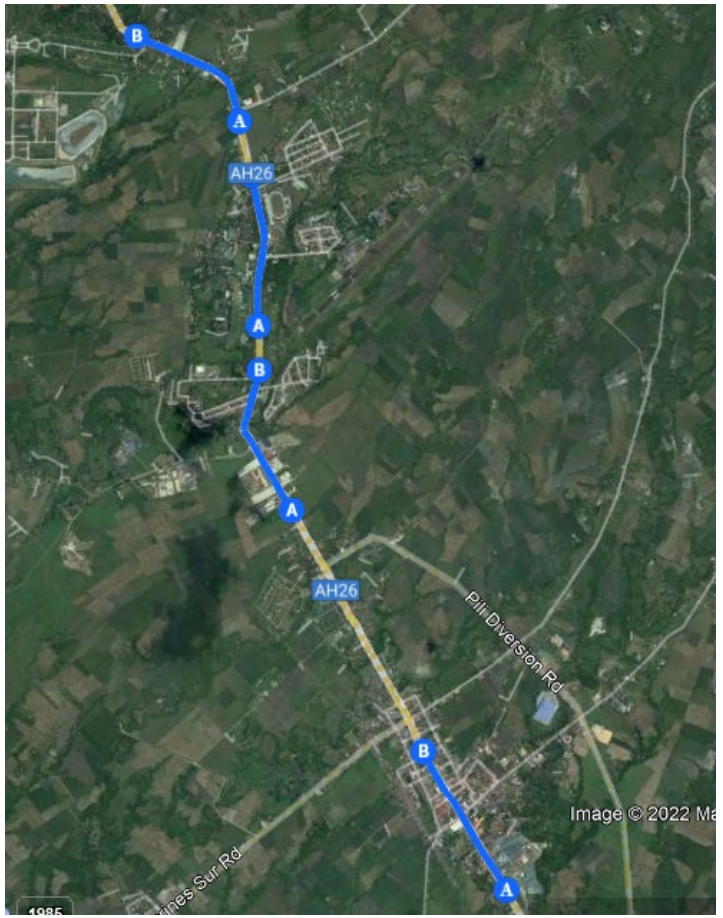
Need to tweak the approach

- Blackspot corridors (cluster of sites) – multiple sites on a road
- Multiple crash types – often VRUs on an urban / semi-urban stretch
- Insufficient data – we don't know who are the victims or crash types

These conditions exist typically in Asia-Pacific region

Blackspot corridors – Philippines





10 blackspots 0.5-1km long each

Spread over 8km stretch in urban area

4 blackspots on 4km stretch

Blackspot corridors - India

2 km long stretch of NH passing through urban area
6 blackspots each about 200-500m long (some are overlapping)

Crash Risk Mapping – a better approach?

- Crash Risk Map is prepared based on the crash and traffic data using RAP protocols
- Colour-coded maps show a risk of an individual road-user (or the community as a whole)
- Identify high-risk routes rather than Blackspots or cluster of sites
- The raw data collated for each country is adjusted to allow comparisons of relative safety risk
- Shows how risk on the network has changed over time

Crash Risk Maps

- Better to identify high risk corridors that leads to development of route action plan
- Widely done for the European road network

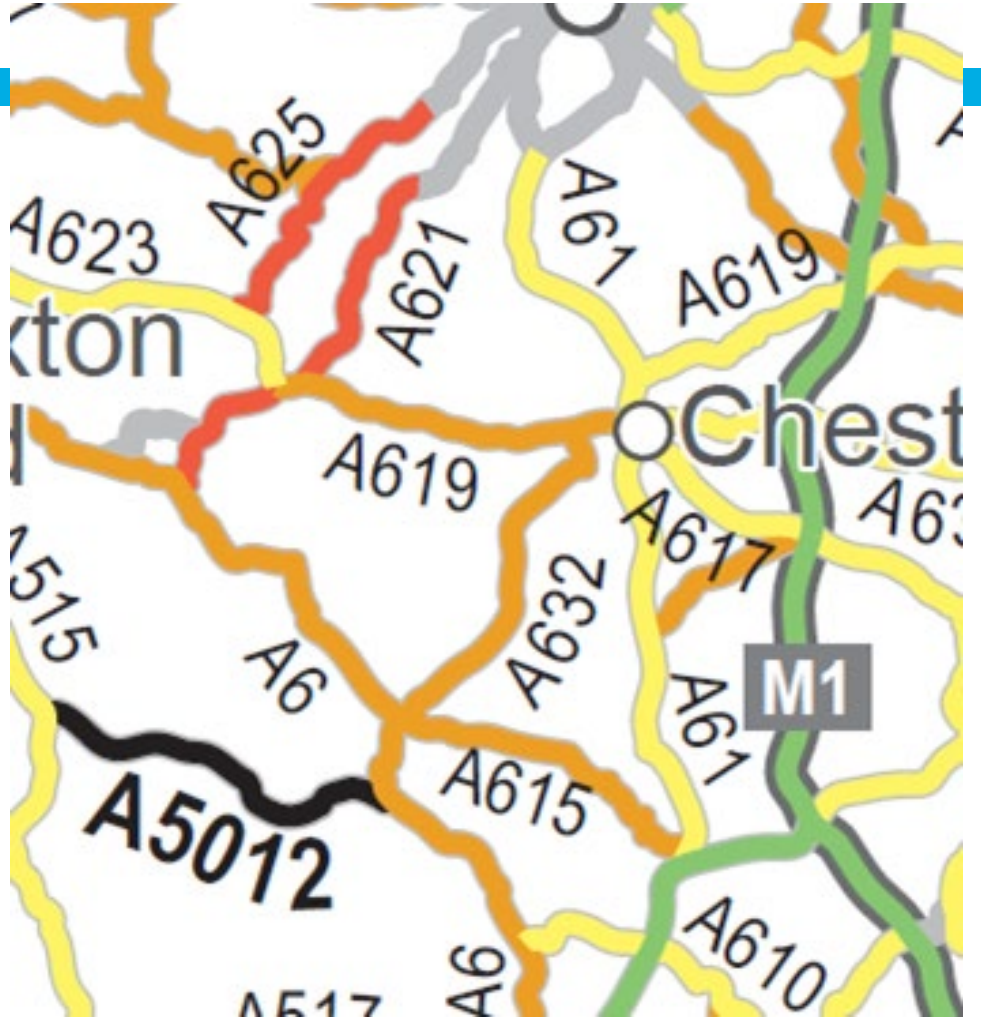
Low risk

Low-medium risk

Medium risk

Medium-high risk

High risk



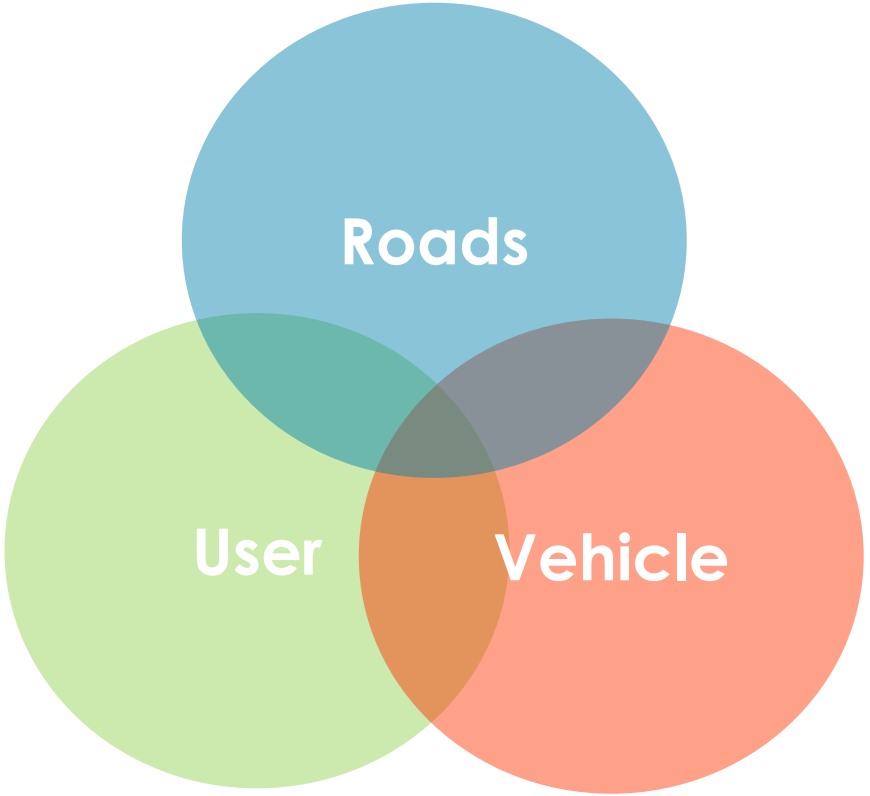
Risk Mapping Focus

- Risk Mapping shows the combined interaction of vehicles, road users & road environment.
- Maps can show risk of a fatal or serious injury for:
  - Individual road user
  - The community as a whole

Emphasis on high risk sections

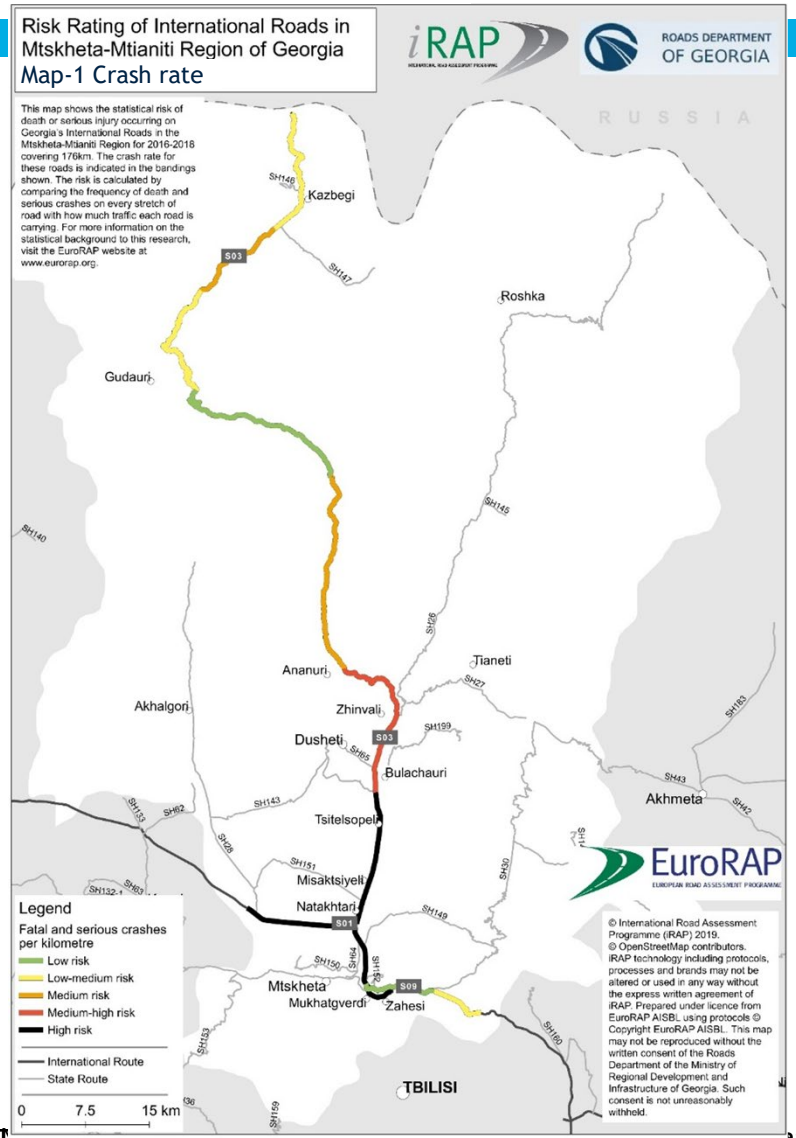
NOT "hotspots"

Takes into account all three Road Safety pillars

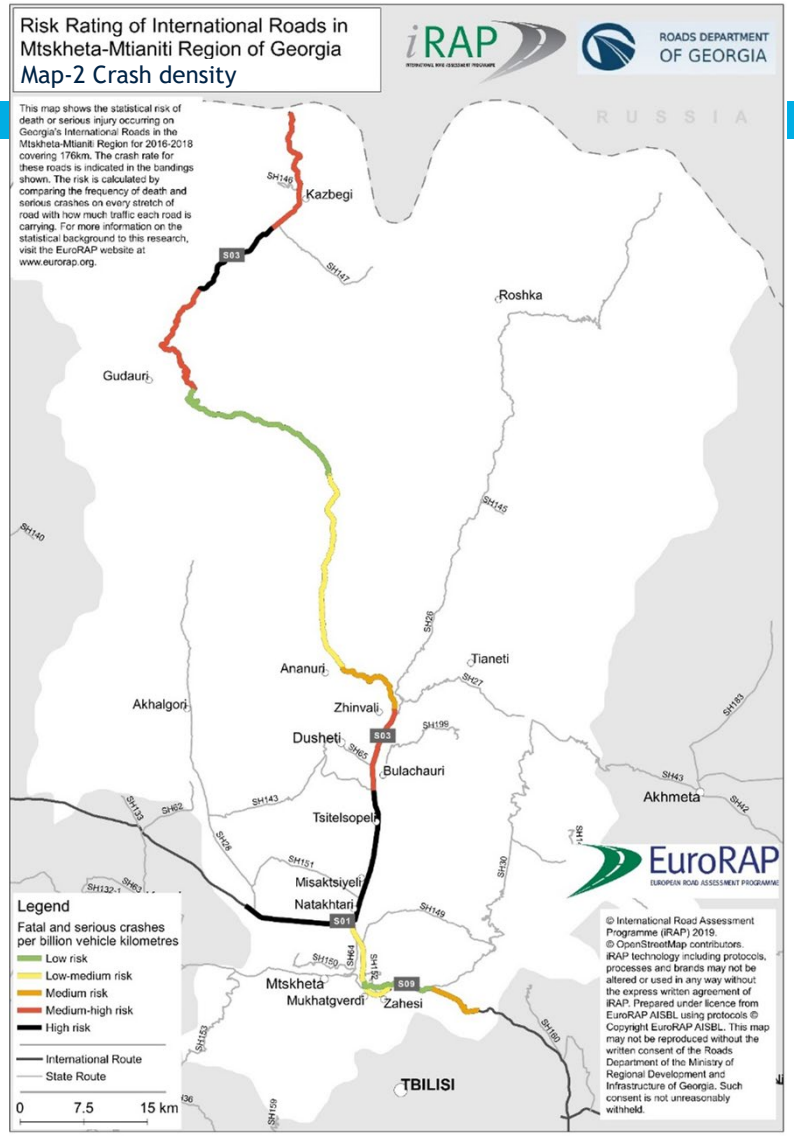


Crash Risk Mapping and Star Rating – Georgia

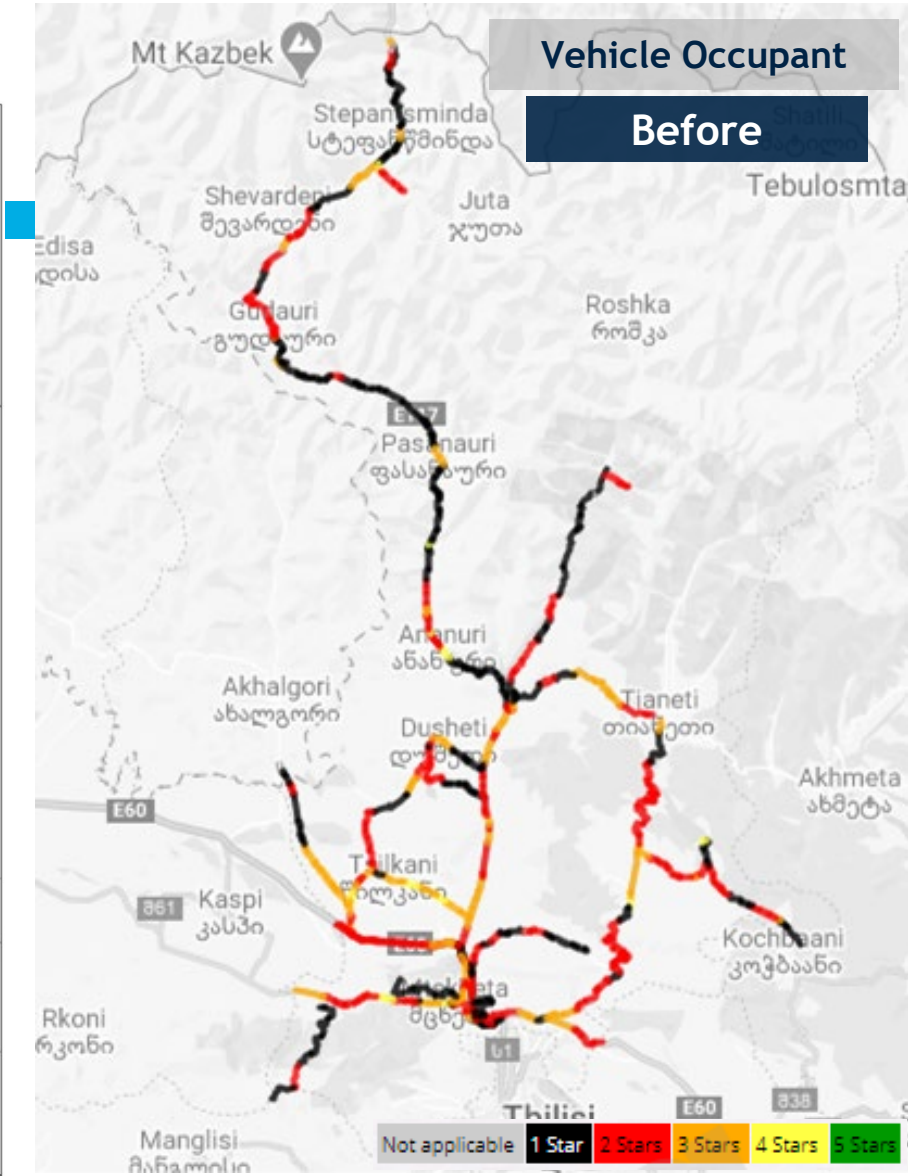
Fatal and Serious Crashes per km



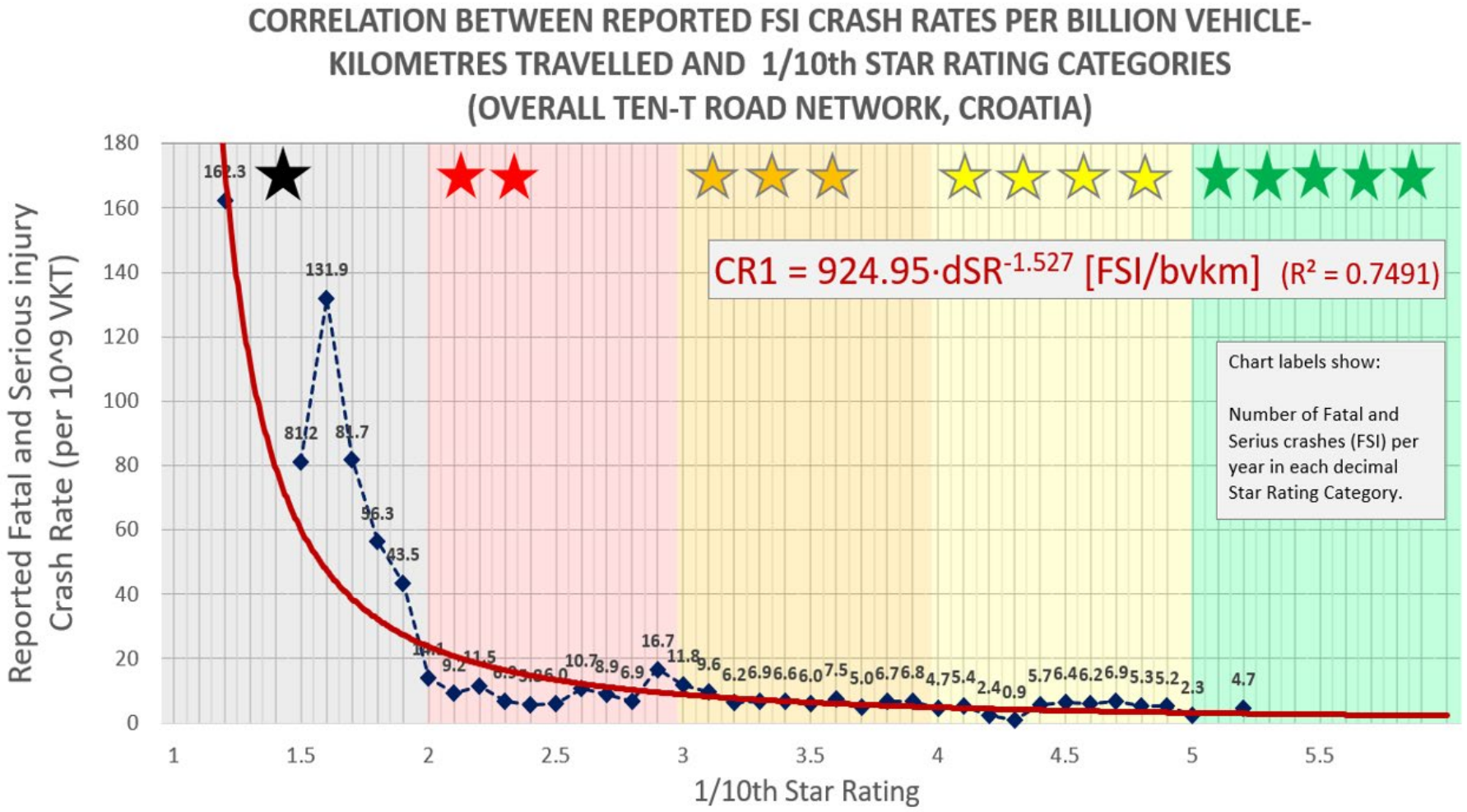
Fatal and Serious Crashes per billion veh-km travelled



Star Rating



Combining the Star Rating and Crash risk mapping



SLAIN
Saving Lives Assessing and Improving TEN-T Road Network Safety

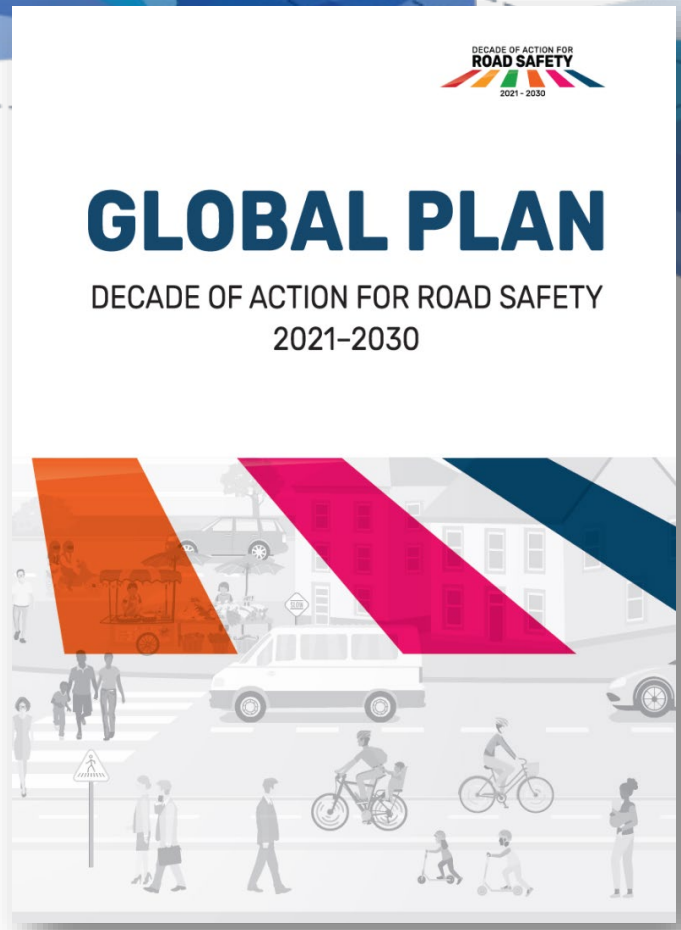
Summary

- Blackspot investigation and treatment good approach to address the crashes where it is occurring more frequently
- Cluster of blackspots, and not so good quality crash data points to some alternatives – crash risk mapping or infrastructure Star Rating
- Eventually this leads to route action plan to implement safety treatments
- Crash locations cluster in urban or semi-urban areas and involvement of VRUs often lead to implement speed management

Questions?

Requirements for implementation of the Global Plan

Marisela Ponce de León Valdés
Transport Specialist
World Bank



THE SAFE SYSTEM APPROACH

Safe road infrastructure

Safe Speeds

Safe road users

Safe vehicle

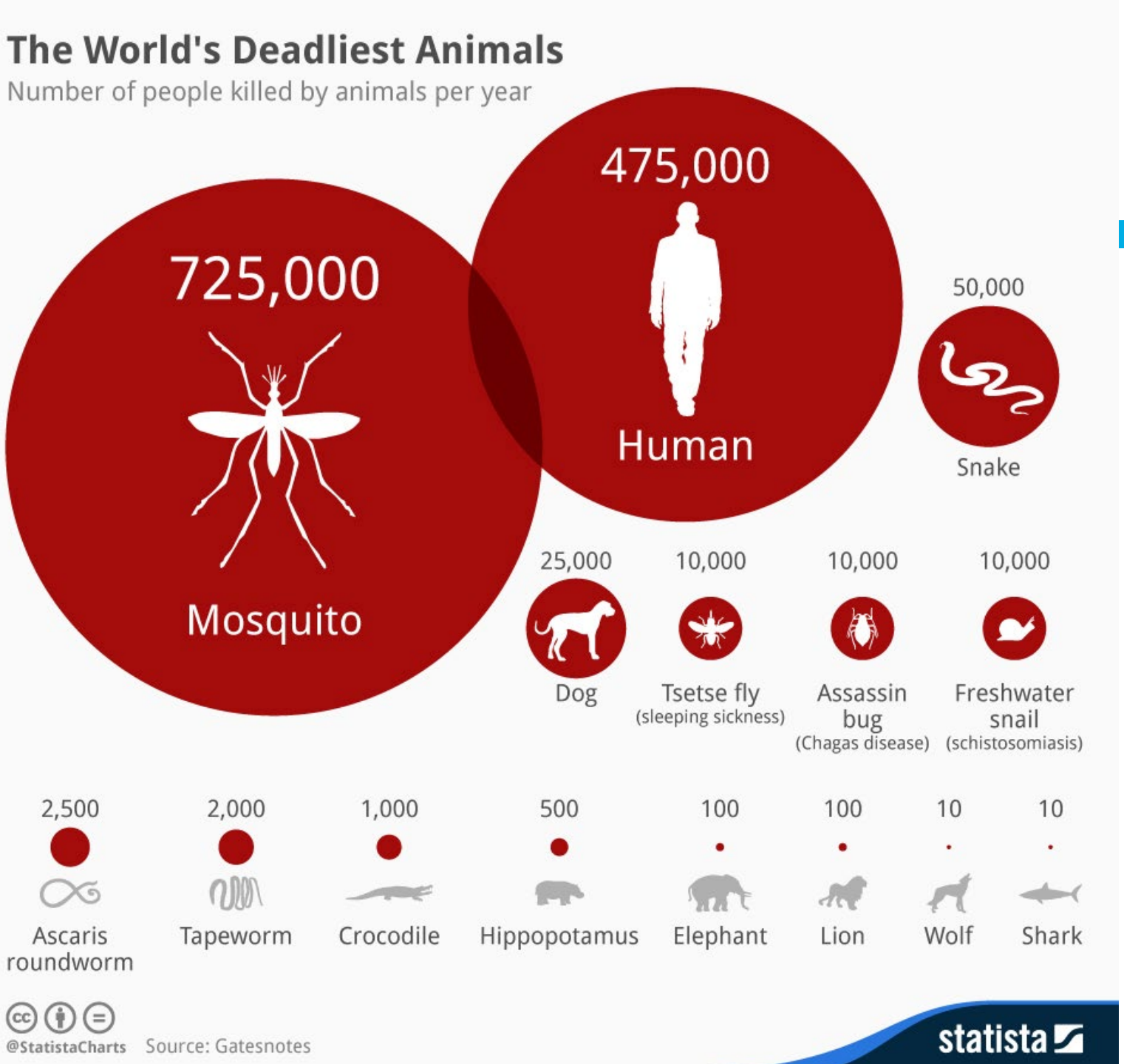
Effective post-crash care

All within an effective road safety management approach

- People make mistakes
- Death and serious injury are not acceptable
- Road users are vulnerable
- Responsibility is shared

Please go to www.menti.com

and use the code **8794 7787**



- This example reminds us of the importance of using evidence base and not “common sense” or personal perceptions when dealing with people’s lives.
- Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work
- Speed Management Hub
- Some evidence - based interventions can be low - cost high impact.
- A Safe System response needs a comprehensive approach.

1. Financing

- Long-term, sustainable investment is required.
- Leverage existing investments in broader areas of transport.
- **Road safety must be embedded in, and integral to, transport decision-making.**
- Sustainable sources of funding.

2. Legal frameworks

United Nations (UN) road safety legal instruments provide a strong foundation for countries to build domestic legal frameworks and systems that contribute to road safety and facilitate international road traffic:

- 1968 Convention on Road Traffic
- 1968 Convention on Road Signs and Signals
- 1958 Agreement concerning the Adoption of Harmonized Technical United Nations Regulations for Wheeled Vehicles, Equipment and Parts
- 1997 Agreement concerning the Adoption of Uniform Conditions for Periodical Technical Inspections of Wheeled Vehicles
- 1998 Agreement concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts
- 1957 Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

3. Speed Management

- Managing speed is critical to the effective implementation of the Safe System approach.
- It is a cross-cutting risk factor that needs to be addressed.
- In densely populated urban areas, a maximum speed limit of 30 km/h (20 mph) should be established.
- Speed management interventions comprehend road design and engineering; vehicle interventions; and behavior change.
- The effective integration of these often-fragmented efforts will improve speed management and deliver more powerful, fully effective outcomes.

4. Capacity Development

- Capacity-building for road safety professionals working for the government, the private sector, civil society and research institutions.
- Lack expertise in adapting Safe System principles to local conditions.
- Carrying out quality road safety research.
- Accreditation of road safety as a field of study within institutions of higher learning and professional development.
- Short-term courses and continuing education activities.
- Training for professionals in allied fields (such as journalism).

5. Gender perspective

- Road safety apply differently to men and women for a variety of physical, behavioral and social reasons.
- There are also large gender differences in road injury patterns. However, most of regulatory tests assessing vehicle occupant safety only use models of the average male, and so do not reflect the specific physical features and needs of women.
- More women must be involved in the transport sector and its processes.
- A greater focus is needed on gender differences in relation to the design and construction of all aspects of transport infrastructure.

6. Adapting technologies

- Potential of emerging technologies (advanced driver assistance systems, including electronic stability control, lane-change warnings and automatic emergency braking are already saving lives in many countries).

- Technologies outside the vehicle could also make a difference in low- and middle-income countries.

- Communications and logistics technologies can reduce the need for travel.

- Stimulating the development of safety technology that would be appropriate in a wide range of settings (require assessment and updating of policies, regulations, and traffic laws).

7. Focus on LMICs

- Account for more than 90% of all road traffic deaths despite having less than 60% of the world's motor vehicles.
- LMICs can leapfrog traditional, standalone interventions to address road safety and adopt an integrated approach to safe and sustainable transport.
- Commitment and adherence to road safety principles by private corporations should be the same in LMICs than in HICs.
- Collaboration can also offer an opportunity to amplify the voice of individual countries. Through the establishment of regional networks and alliances.

Call to action

- Question your environment, the infrastructure and systems around you, and demand for safe infrastructure.
- “Vulnerable users” are not ‘more’ vulnerable in themselves, but they are due to the environment, technologies and speeds around them.
- Always evidence-based interventions, add then, when possible, a touch of innovation and creativity.
- SLOW DOWN
- Become a road safety ambassador, specially by leading with your example in your different roles and unite forces with others (as we’ve done).

Let’s continue the discussion…

GRSF Global Road Safety Facility

TRANSFORMING TRANSPORTATION

ASIA-PACIFIC ROAD SAFETY OBSERVATORY · ADB · THE WORLD BANK · GRSF Global Road Safety Facility · Bloomberg Philanthropies INITIATIVE FOR GLOBAL ROAD SAFETY · iRAP · GLOBAL ROAD SAFETY PARTNERSHIP

Thank you!

Your questions & comments are welcome!

@WBG_Transport

@MariselaPdLV

bit.ly/**GlobalRoadSafetyFacility**

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

ADB

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

GRSF
Global Road Safety Facility

Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

iRAP

GLOBAL ROAD SAFETY PARTNERSHIP

Questions?

Infrastructure, communications and enforcement

Brett Harman
Asia Pacific Manager
Global Road Safety Partnership (GRSP)

About Us

GLOBAL ROAD SAFETY PARTNERSHIP

We work alongside the private sector, civil society, multilateral and government partners including police and related enforcement agencies.

Focused mainly on L/MIC countries across the Asia - Pacific, Africa and Latin America.

GLOBAL ROAD SAFETY PARTNERSHIP

Key Challenges

1: Humans are not good at assessing risk

2: Laws are not always seen as fair or necessary

3: Changing attitudes and behaviour takes resources & time

4: Human beings and human behaviour are complex

5: If people do not know what is safe, they cannot demand safety

Modifying Behaviour

A wide range of factors impact on the behaviour of road users including

- Psychological and physiological conditions
- Social influences
- Past experiences including habits formed over time
- Situational factors including the behaviour of other road users
- Current state and immediate goals

Enforcement and Road Safety

Limited public understanding of the link between their behaviours and their

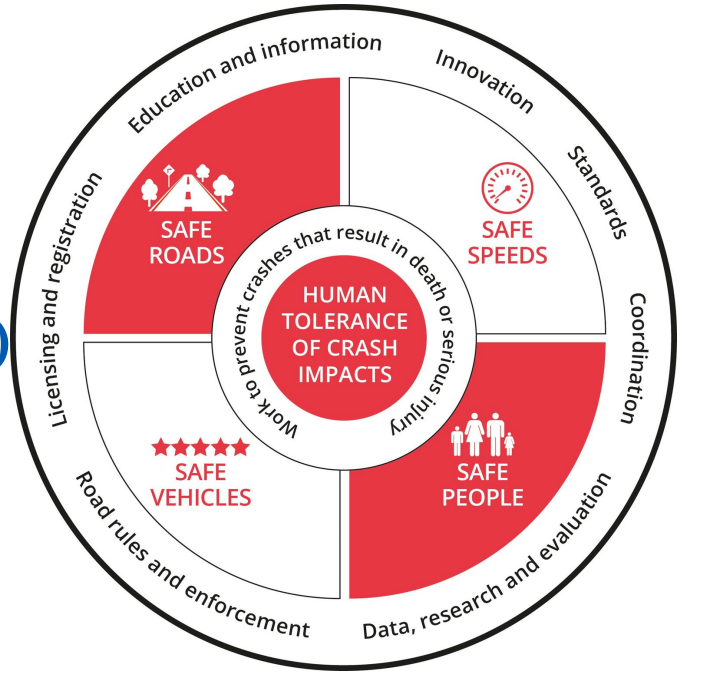
- risk of being in a crash
- severity of outcome if involved in a crash

People are not good at assessing risk

- Illusion of control (I'm a good driver, I can control vehicle)
- Familiarity with local roads (I am only going a short distance)

Experience shows us that enforcement can change behaviour which can then change attitudes and levels of moral acceptance

Strong track record of changing behaviour and attitudes using enforcement + education when they are used together



GLOBAL ROAD SAFETY PARTNERSHIP

The Role of Enforcement

Road Policing enforcement involves three processes:

1. Supporting setting of appropriate traffic laws
   - Blood alcohol limits, speed limits, helmet & use of restraints, setting penalties
2. On-road policing methods
   - Roadside breath testing, speed cameras, officer speed and offence detection
3. Application of sanctions
   - Monetary fines, demerit points, loss of licence.

It is most effective when it encourages community-wide compliance with road rules (and doesn't just involve apprehending and punishing offenders)

Police Legitimacy

Reflects the belief that the police ought to be allowed to exercise their authority to maintain social order, manage conflicts, and solve problems in their communities.

Legitimacy is reflected in three judgments:

- ✔ ***Public trust and confidence in the police.***
- ✔ ***The willingness of citizens to defer to the law and to police authority,***
- ✔ A belief that police actions are morally justified and appropriate to the circumstances.

GLOBAL ROAD SAFETY PARTNERSHIP

Deterrence Theory

- Influence a potential traffic offender through ‘fear’ of detection and the consequences to avoid offending.
- Targets ALL road users
- Has the potential to influence ALL road users


Source: MUARC Research Report, 270 Sept. 2006

Deterrence Principles

3 Elements:

1. Perceived risk of detection
2. Severity of punishment
3. Immediacy of punishment

The higher the perceived risk of detection, the less likely a road user is to commit an offence.

GLOBAL ROAD SAFETY PARTNERSHIP

Key Elements of High Value Enforcement

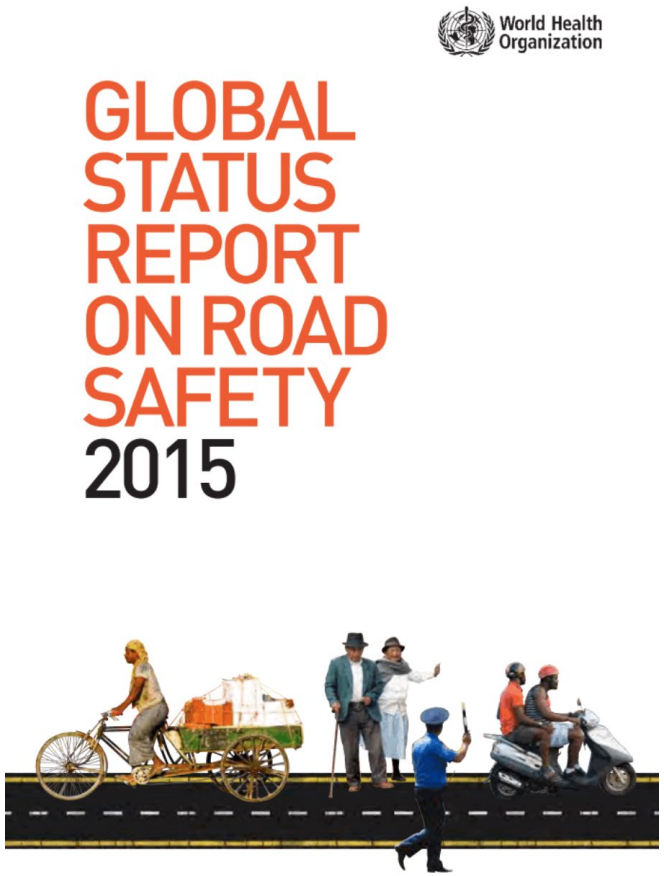
- **Highly Visible**
  As many drivers as possible should see highly visible testing.

- **Rigorously Enforced**
  No one avoids testing, regardless of occupation or status. All are treated the same.

- **Sustained**
  Enforcement targets the correct times and is sustained throughout each year and is unpredictable.

- **Well publicised**
  Publicity & media support greatly enhances impact.

Linking Enforcement and Communications



The most positive changes to road user behaviour occur when road safety legislation is supported by strong and sustained enforcement and public awareness. **(page 7)**

Effective Strategic Communication

Mass media campaigns coordinated with enforcement can play *an essential role* in addressing risky road user behaviors, operating as an integrated component of a system approach.

- Evidence-based design
- Strong messages and creative executions
- Sufficient media exposure
- Link with visible depiction of enforcement
- Raise the profile of road safety and supports enforcement of road safety laws

Mass Media

- Campaigns linked to enforcement raise awareness about the dangers of high risk behaviour
- Coordinated campaigns make it easier for governments & Police to act by reducing some resistance otherwise encountered.
- When communities are informed of the risks (e.g., speeding) and are convinced that the behaviour is unacceptable, will likely result in an increase in community support for enforcement

Source: Managing Speed, World Health Organisation, 2017

Effective Strategic Communication

Builds awareness and support among public and stakeholders – for road safety policy and enforcement initiatives, for infrastructure initiatives

Media stories can play a key role by:

- **Raising salience of road safety issues on the public agenda**
- **Amplifying campaign messages**
- **Highlighting life-saving results of enforcement efforts**
- **Telling personal stories, including from police**
- **Shaping the narrative of road safety as a public health issue**

Source: Strategic Alignment of Mass Media and Public Awareness Campaigns with Enforcement, Vital Strategies, 2021

GLOBAL ROAD SAFETY PARTNERSHIP

Rethinking road safety and crash investigation

Scenario – a driver crashes into a tree

- **The 'old' question:**

  "Why did that person crash into the tree?

- **The additional 'new' question:**

  "Why was the tree planted there to be crashed into in the first place"?

Enforcment consideration by design

The absence or lack supporting infrastructure can be counterproductive to enforcement and harm reduction efforts.

Consideration in the design phase should be given to the inclusion of emergency refuge areas to enable police to conduct manual enforcement operations safely (e.g. speed and drink driving enforcement), and emergency stopping lanes given an adequate safety buffer when intercepting offending vehicles.

Image source: roadsafetyfacts.eu

Enforcement consideration by design

- **Focusing entirely on road design and neglecting the needs of other interventions such as enforcement, will not yield the greatest benefits.**
- **Engagement with Police and enforcement agencies early on is critical to reductions in harm over time.**
- **Strategic Communication when there is any change in the environment should always involve consultation with the police**

Source: traffictechnologytoday.com/

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Questions?

ANNOUNCEMENTS / UPCOMING EVENTS

- UN High Level Meeting - New York
  - 30 June - 1 July, 2022
- Safety 2022 - Adelaide, Australia
  - 27 - 30 November, 2022
- Transforming Transportation - Online
  - 16 - 17 February, 2022

ROAD SAFETY CAPACITY BUILDING PROGRAMME FOR THE ASIA-PACIFIC:

HELPING SAVE LIVES FROM ROAD CRASHES IN ASIA-PACIFIC - WEBINAR SERIES ON SAFER ROAD INFRASTRUCTURE IN THE ASIA-PACIFIC

ORGANIZED BY

Thank you for joining and see you in our next session (15 February)!