



# iRAP – Assessment Process

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# Agenda

- 1 Introduction and Overview
- 2 RAP Philosophy and Protocols
- 3 Road Risk and Risk Mapping
- 4 Performance Tracking
- 5 RAP Star Rating
- 6 Road Attributes and Road User Specific Maps
- 7 RAP Safer Roads Investment Plan
- 8 Typical iRAP Projects

**About iRAP:**

Registered charity

Vision: a world free of high risk roads

Inspect high-risk roads and develop Star Ratings and Safer Roads Investment Plans

Active in 70+ countries

500,000km + assessed

# TRL

- TRL involved in the EuroRAP and iRAP since inception
- Key delivery partner for the Road Safety Foundation in the UK
- Played a significant role in the development of the iRAP methodology and models
- Has recently become an iRAP Centre of Excellence
- Generate programmes of effective low cost infrastructure countermeasures
- Provide an economic analysis of the countermeasure programmes





iRAP - Africa  
John Mumford

Transport Research  
Laboratory

EuroRAP  
Steve Lawson

ChinaRAP

usRAP  
Peter Kissinger

Research Institute  
of Highways

iRAP Asia Pacific  
Greg Smith

ARRB  
Group

Midwest  
Research  
Institute

Instituto Mexicano  
del Transporte

iRAP - Latin America and  
the Caribbean  
Julio Urzua

Malaysian Institute  
of Road Safety  
Research

AusRAP  
Andrew McKellar

KiwiRAP  
Mike Noon

# Basic RAP Philosophy

There are four major pillars to the iRAP philosophy:

1. For large sectors of the world's population road death is the biggest fatality risk.
2. Road fatalities are largely avoidable - people take unnecessary risks without knowing.
3. Road designs that help the motorist understand what to do and mitigate risk can cut out many of these fatalities.
4. Targeted improvements in existing roads have a very good economic payback.



# The Economic Impact is huge

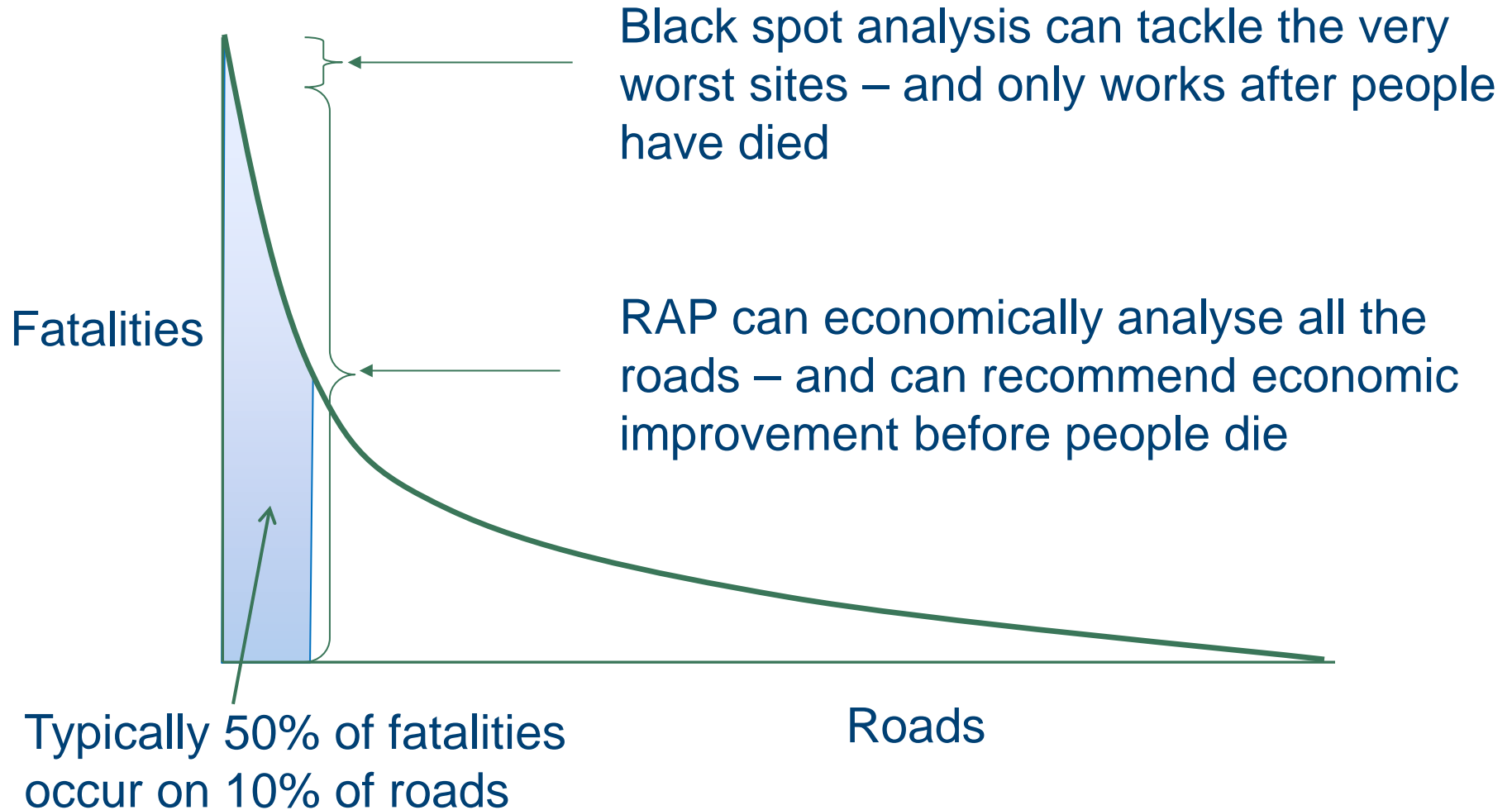
1-5% of GDP per annum per country

US \$2-4 billion a day globally

All sectors of the economy suffer

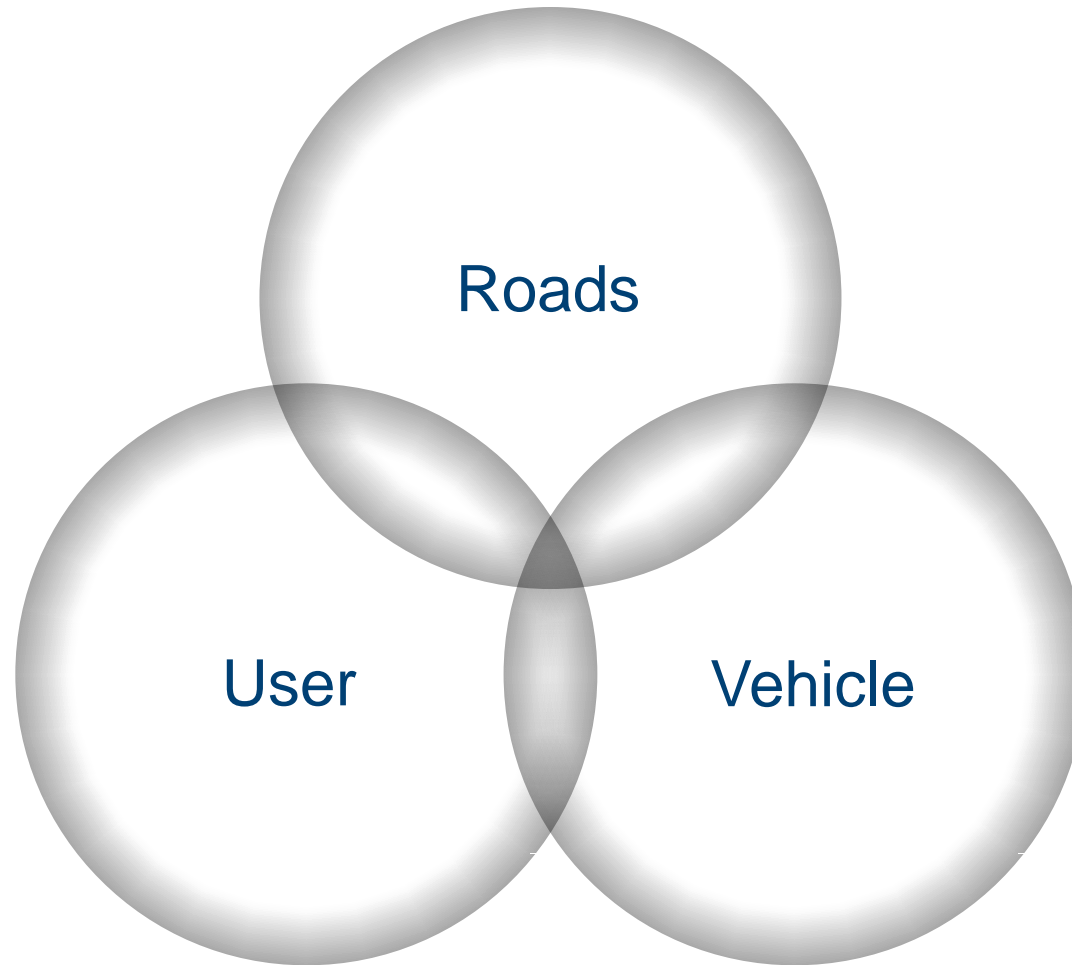


# Analysing the Road Risk





# The Safe System



The safe road system is a shared responsibility

# iRAP Protocols

Protocols that can be applied in any country

- Risk Mapping
- Performance Tracking
- Star Ratings
- Safer Roads Investment Plans



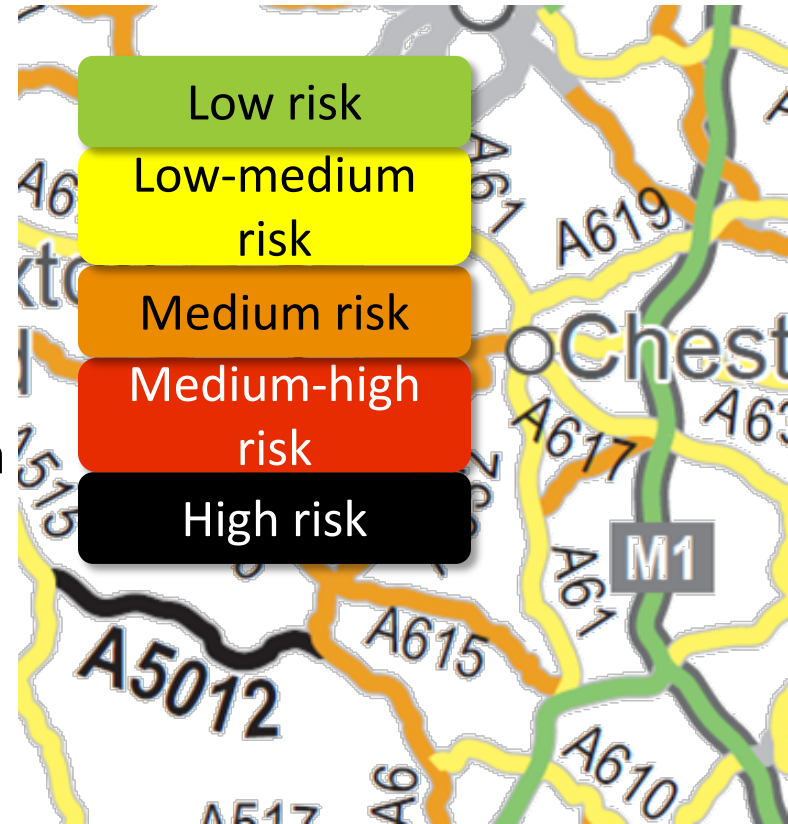
# Risk Mapping

Individual road users exposure to risk

Based on:

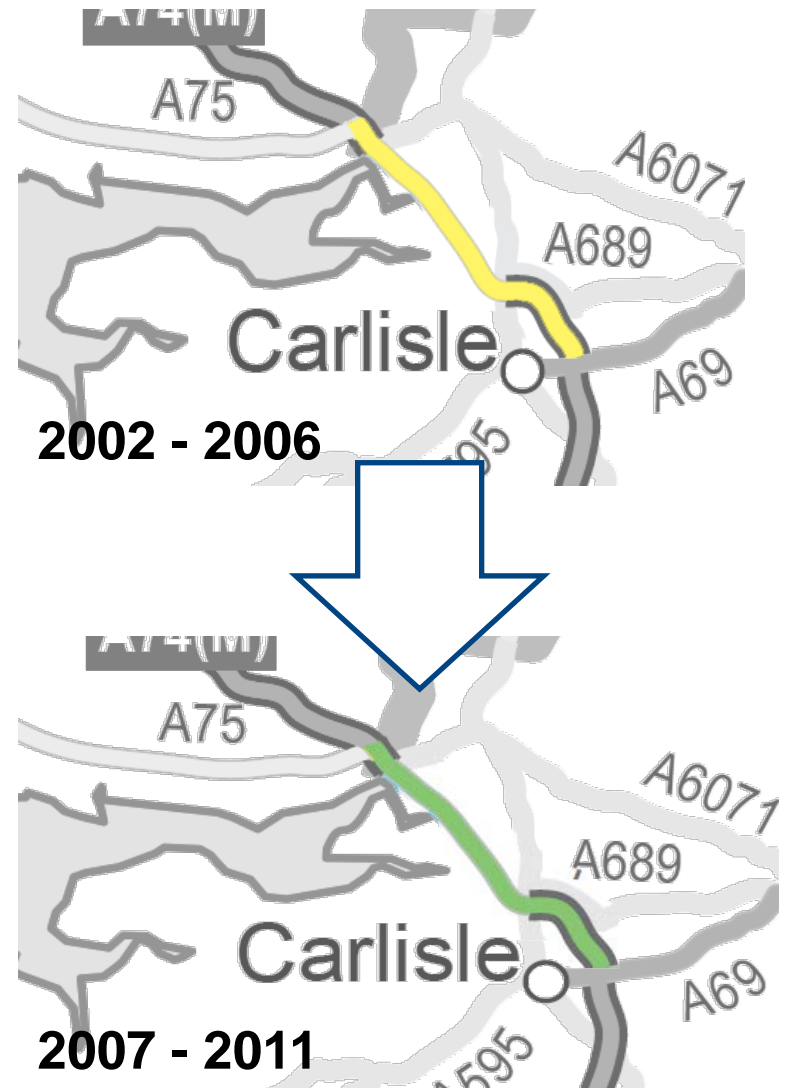
- Vehicle km travelled
- &
- Number of crashes resulting in death or serious injury

Allows comparison of performance  
at national & regional level



# Performance tracking

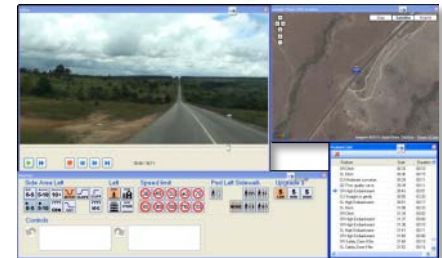
- Data compiled for consecutive risk maps compared
- Assessment of change in risk over time
- Road authorities consulted on issues, measures (including cost-benefits) & planned actions





# RAP Star Rating

- Video inspection of the road
- 40+ road attributes recorded
- Assessed every 100 meters
- Model based on crash studies from around the world
- Used to generate Safer Roads Investment Plans

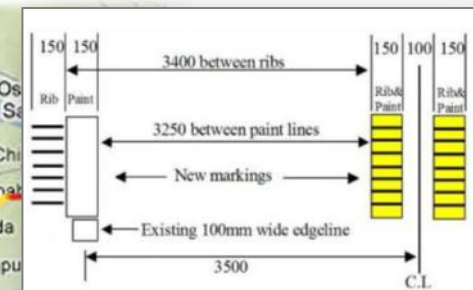
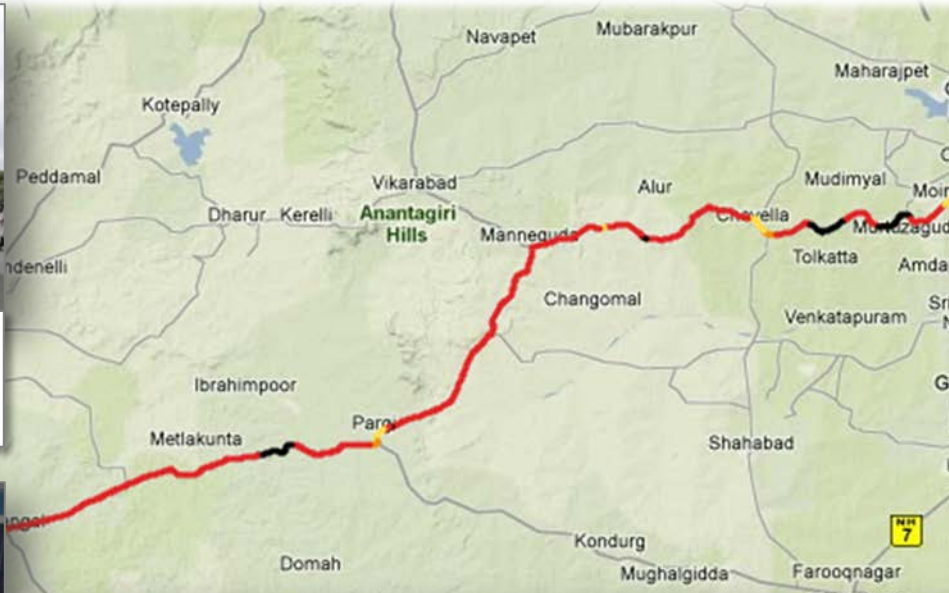


# Typical iRAP Project



## Road Survey

Georeference video data of the road collected



## Implementation

Recommendations built into road designs and projects



## Road coding

Infrastructure features that influence road user risk recorded



## Star Ratings

For car occupants, pedestrians, bicyclists and motorcyclists



## Life-Saving Countermeasures

Recommendations for simple, affordable improvements

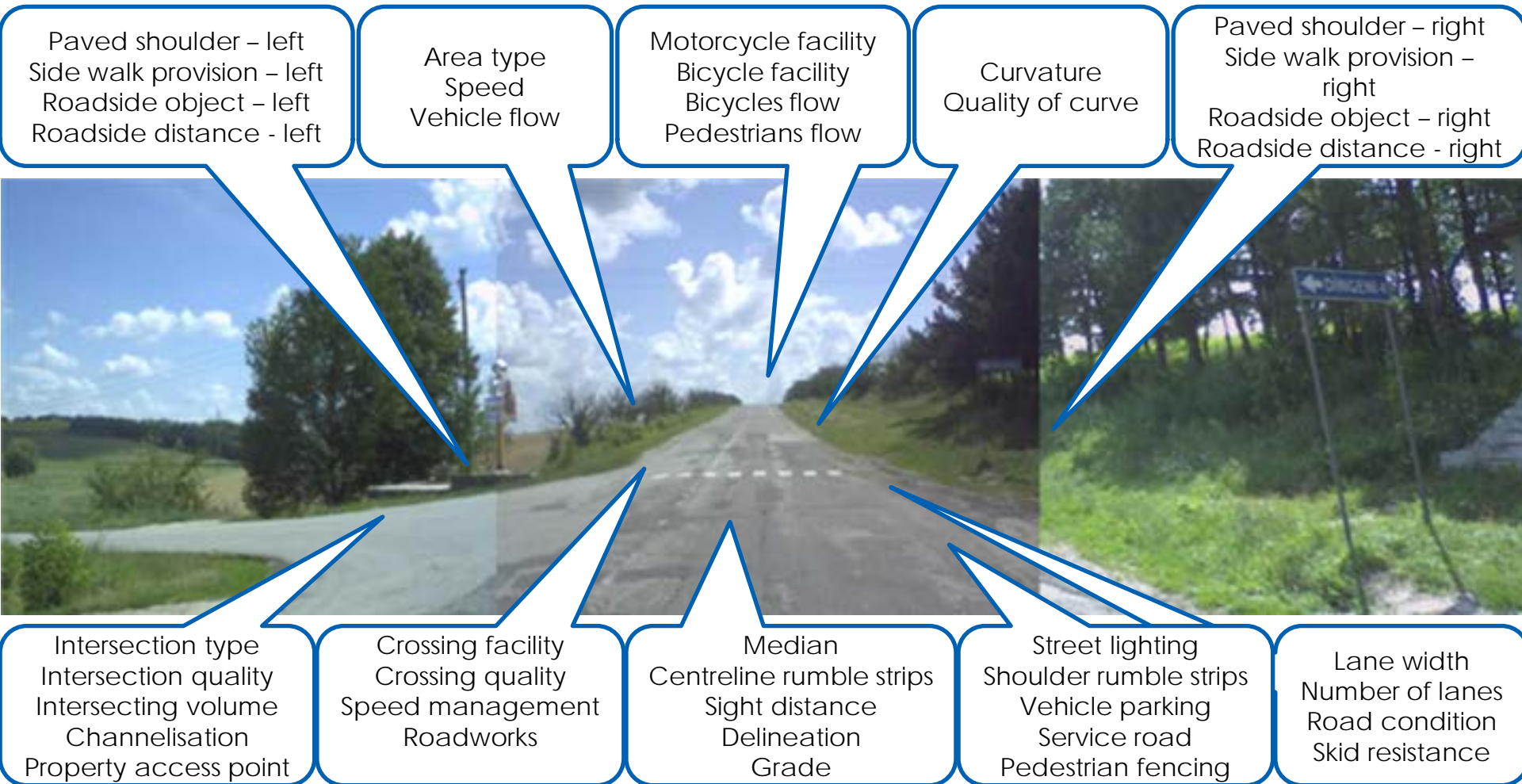


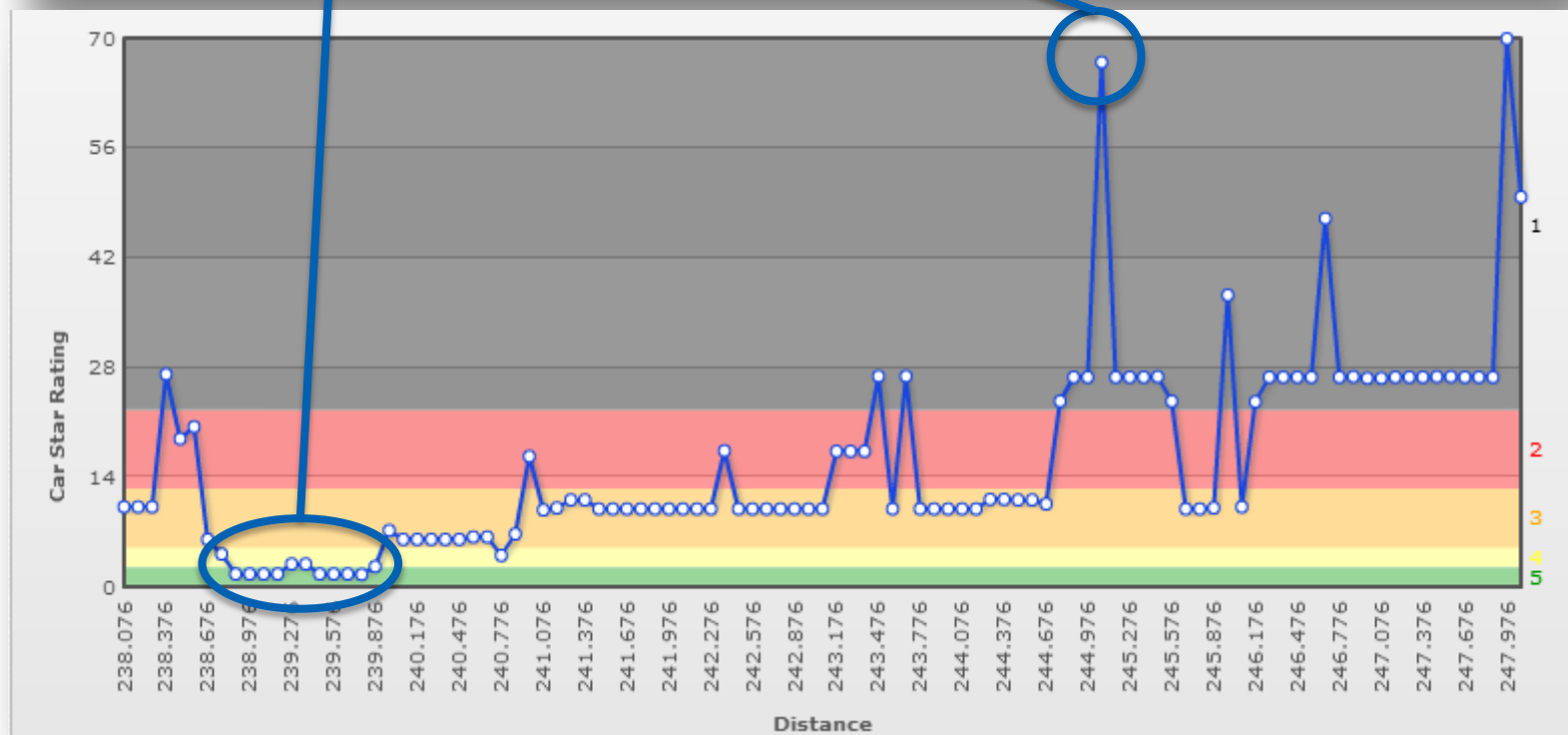
## Training

For local engineers in risk assessment and countermeasures



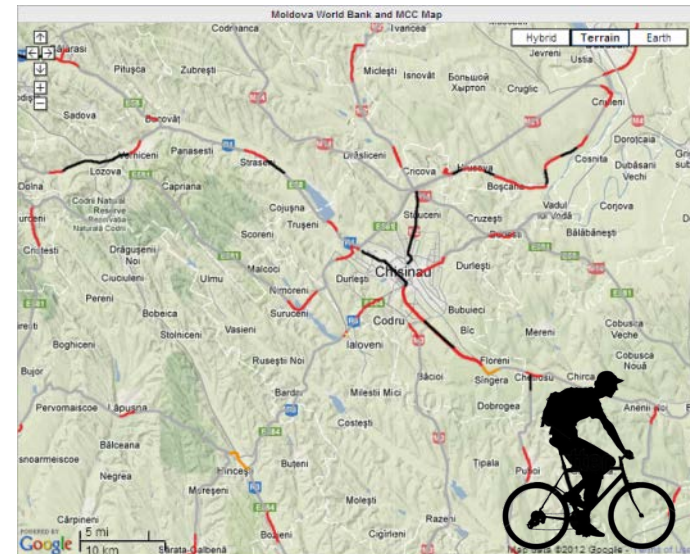
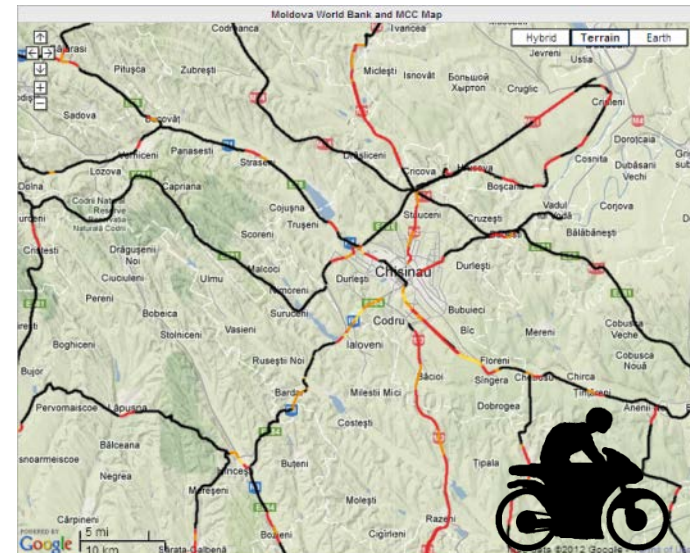
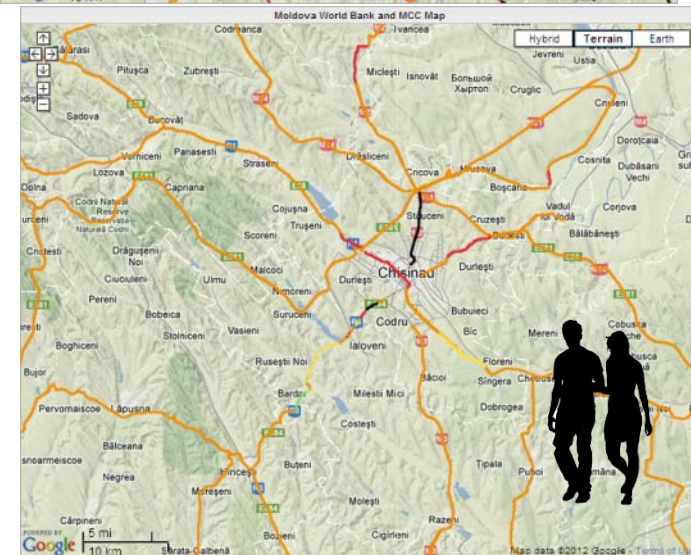
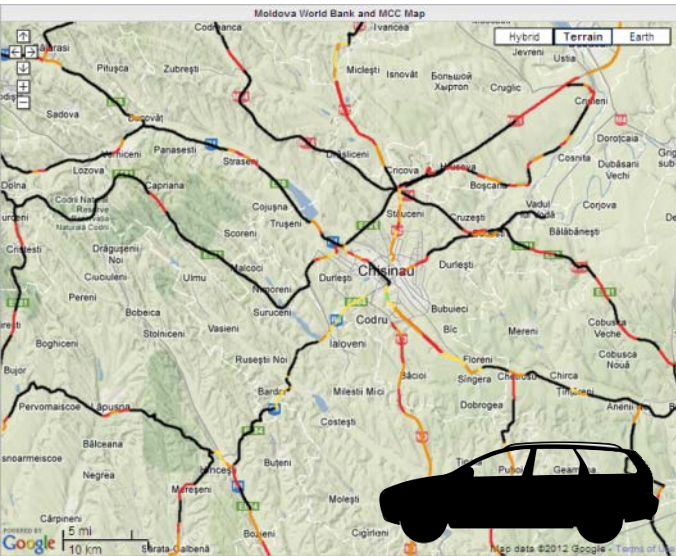
# Road attributes



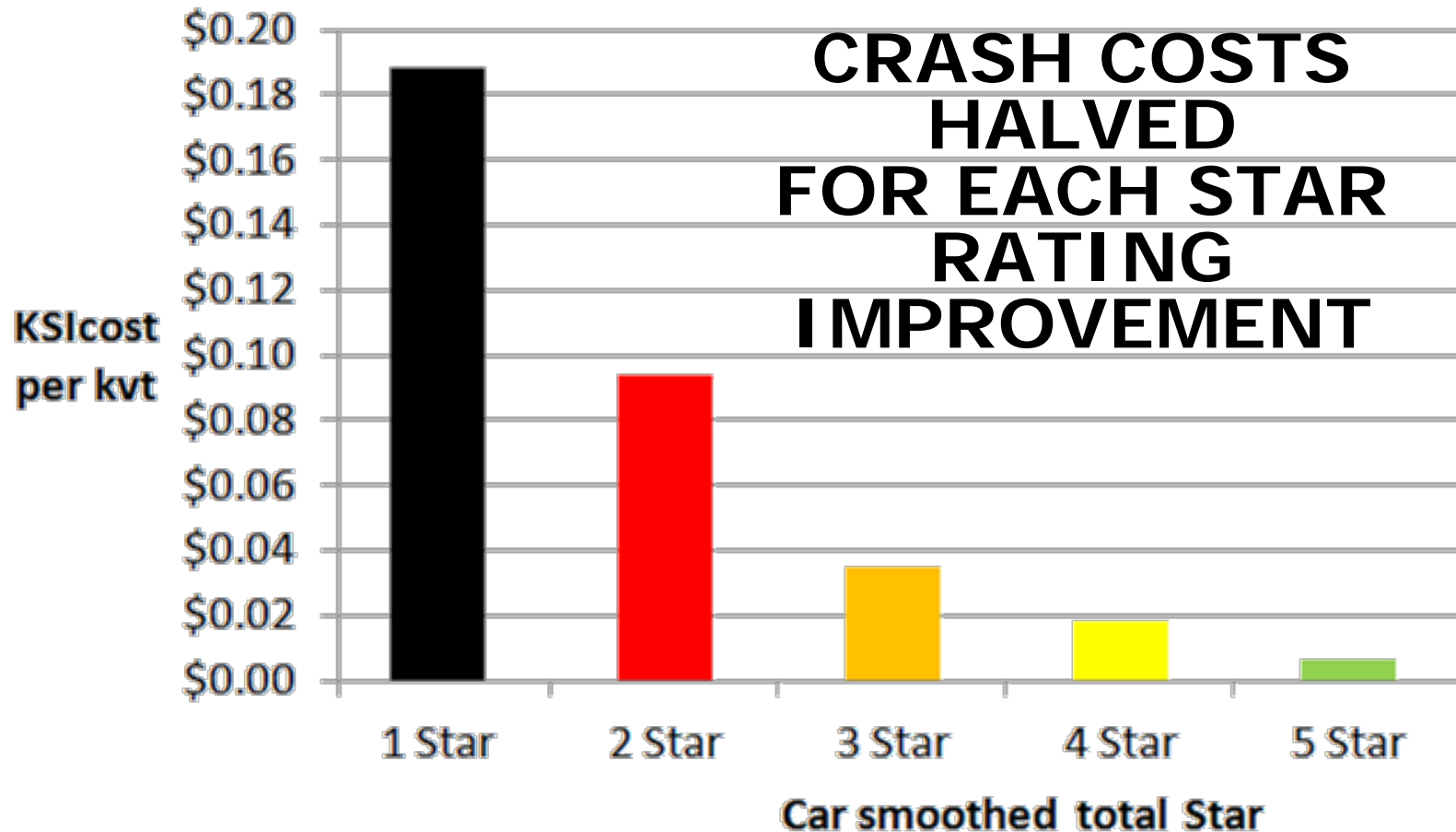




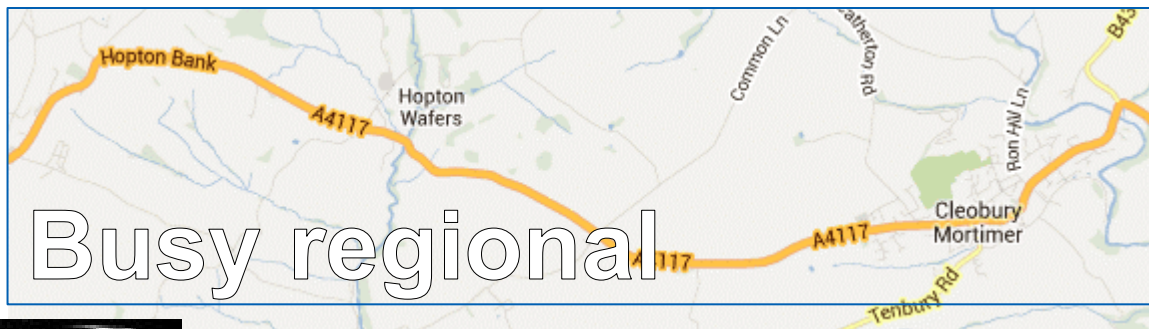
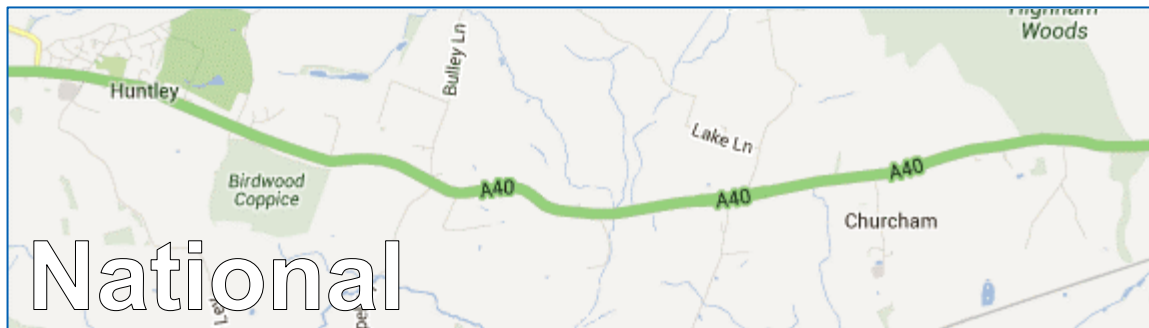
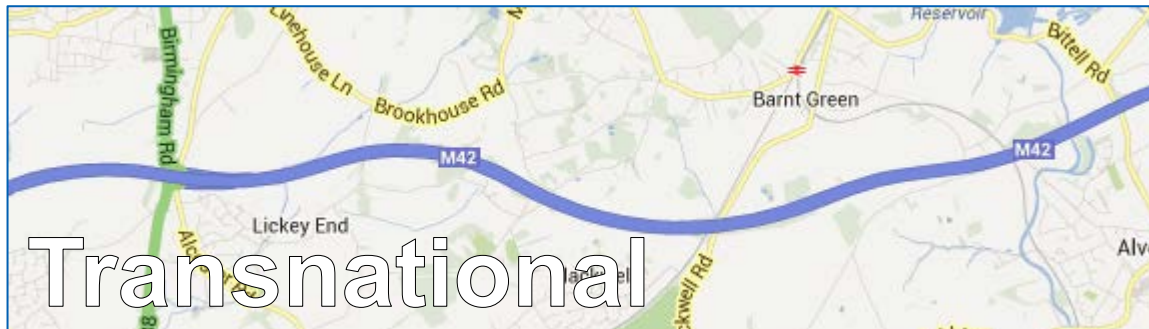
# Road user specific maps



## Star Ratings and Crash Data



# Economic Safety Performance Targets





# Measuring to Manage

- Sweden
  - 75% of travel on safe (3/4-star) roads by 2020
- Netherlands
  - minimum 3-star for national roads by 2020
- New Zealand
  - 4-star for “roads of national significance” by 2020
- World Bank Projects
  - adopting minimum 3-star designs





# RAP Safer Roads Investment Plans

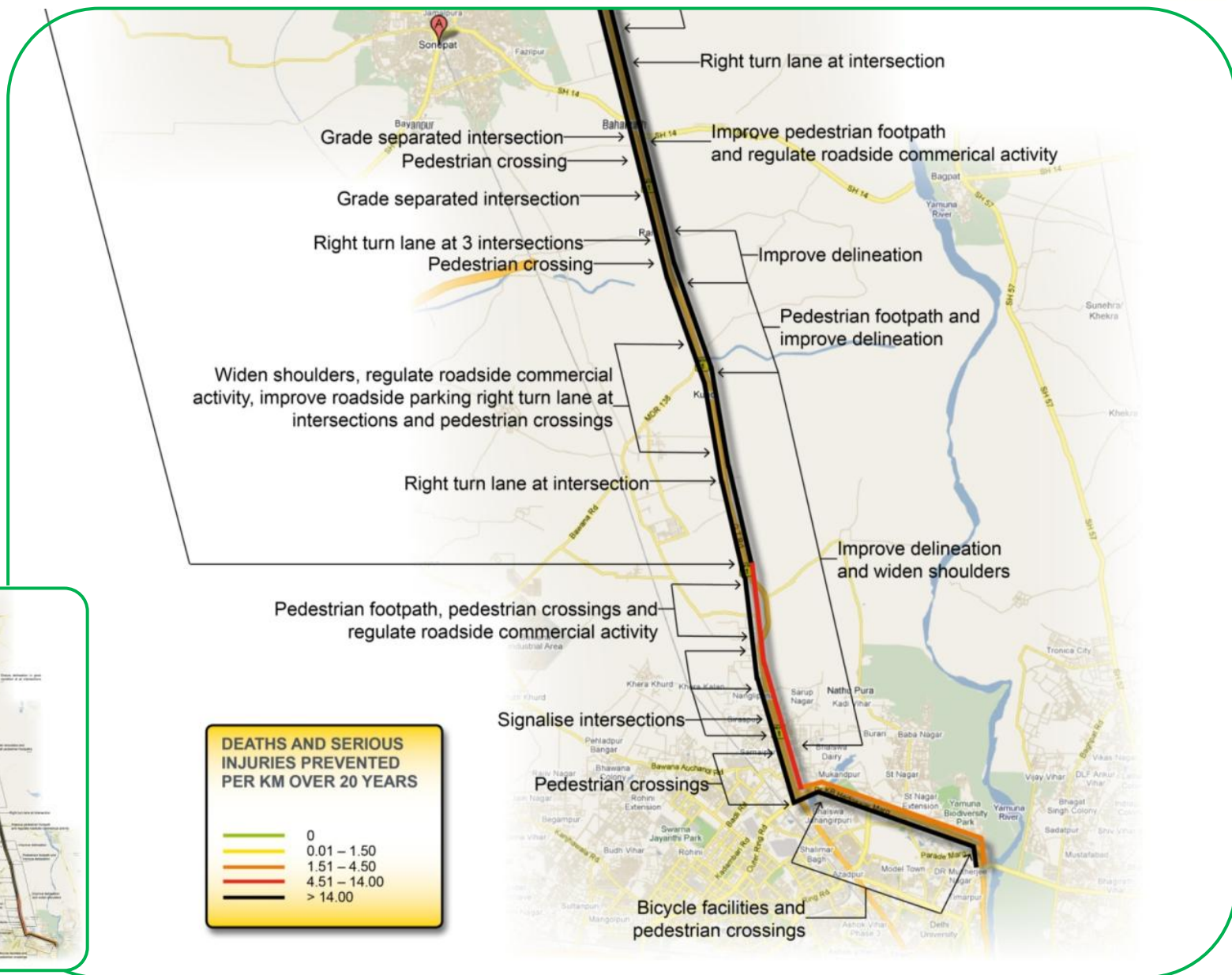
- 90 proven countermeasures and safer road treatments
- Calculate potential lives saved
- Minimum BCR criteria set



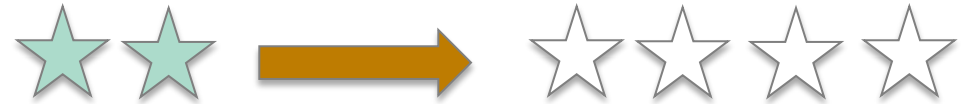
# Uganda

Countermeasures		Cost per KSI saved	Programme Benefit Cost Ratio
<div> <div> <div>Arba Minch</div> <div>Hybrid Terrain</div> <div>Hybrid Terrain</div> </div> <div> <div>Central hatching</div> <div>Road: Kampala - Hoima A009</div> <div>Section: Homia rd 4</div> <div>Distance: 1.2</div> <div>Landmark: None</div> <div>Comments: Doreen14 - 02.09</div> </div> <div> <div>Kampala-Hoima</div> </div> </div>		\$377	24
		\$284	20
		\$600	9
		\$1,217	8





# Saving Lives – New Zealand



**5 years prior**

- 6 fatal head-on crashes
- 3 injury head-on crashes

**4 years after**

- No fatal head-on crashes
- No injury head-on crashes





# Mexico

## iRAP Mexico National Network Both

iRAP Mexico National Network Both Before and After CM

A story map



Before

After

45,000km of highways assessed by SCT  
\$250m investment will reduce  
1 & 2-star sections by 20%.  
20,000km more underway

SCT

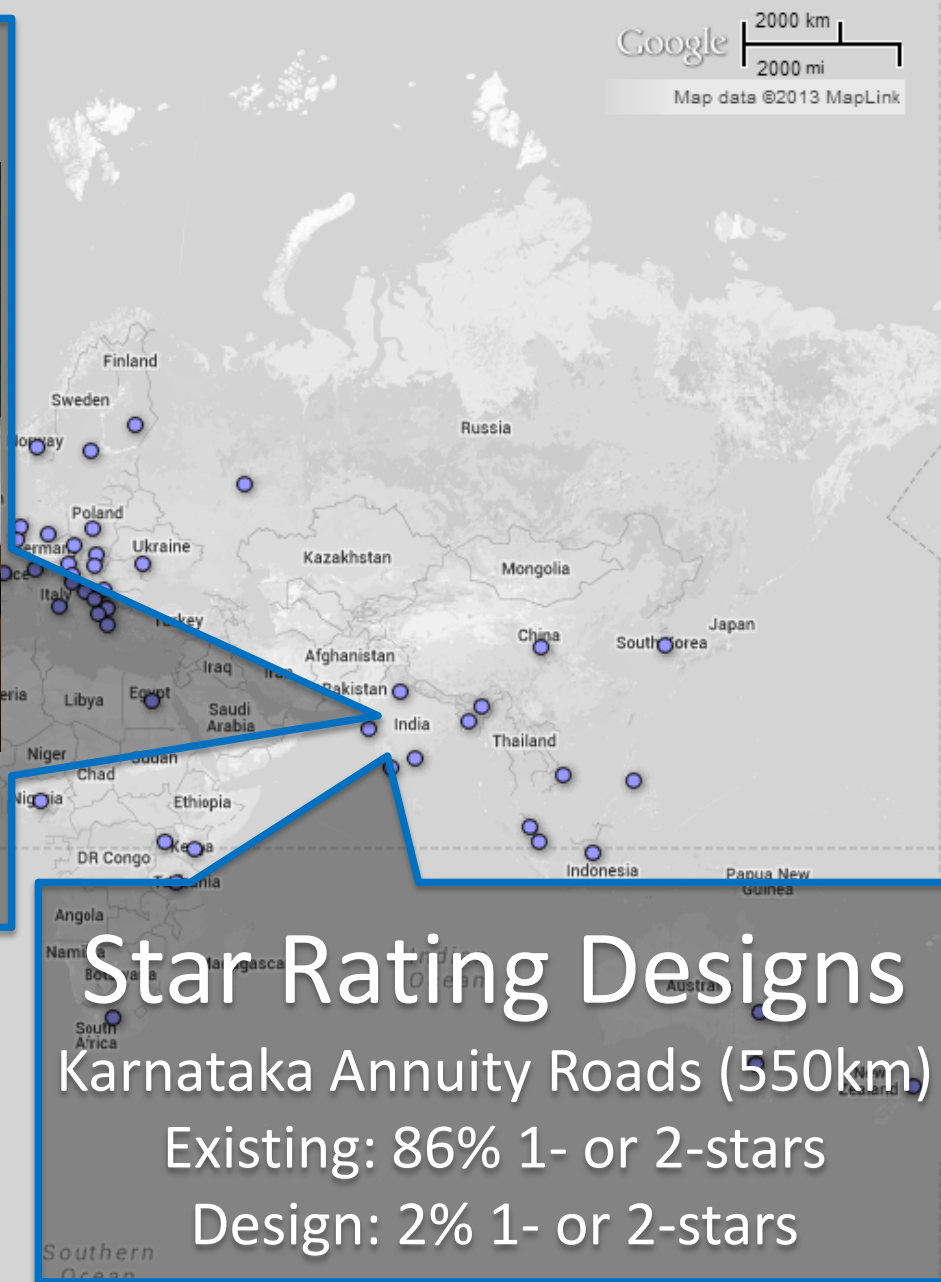
SECRETARÍA DE COMUNICACIONES  
Y TRANSPORTES



# India



iRAP being used in projects worth  
US\$3.5 billion across 7 states



**Star Rating Designs**  
Karnataka Annuity Roads (550km)  
Existing: 86% 1- or 2-stars  
Design: 2% 1- or 2-stars

# Australia



22,000km Star Ratings & Investment plans  
Integration with crash data.

Before and after star ratings promoted.  
Auto-club & road authority partnership.



Australian Government  
Department of Infrastructure  
and Regional Development





# Closing the Financial Loop



Net claims incurred	(2,833,323)
Administration costs	(146,254)
Marketing and road safety expenditure	(48,931)
Safer road infrastructure expenditure	(94,481)
Trauma projects expenditure	(11,426)
Premium collection fees	(33,829)
Underwriting expenses	(334,921)

## SAFER ROADS

The TAC invests in safety-based infrastructure improvements to Victoria's road network. We have committed more than \$650 million towards road improvement projects, from 2008-2017.







# Questions?

# Thank you

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