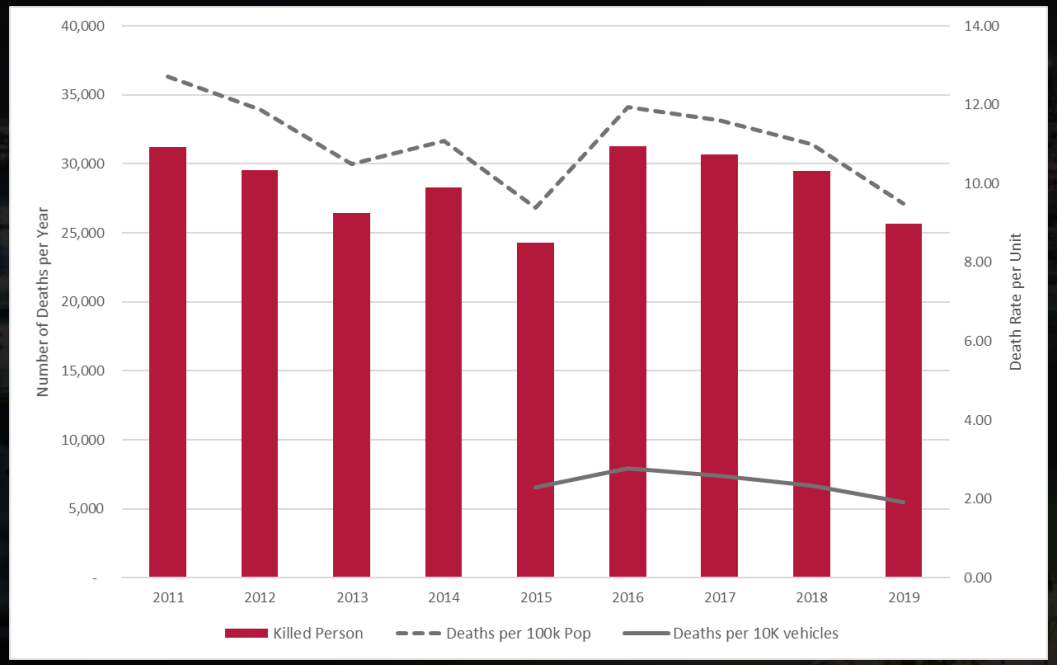
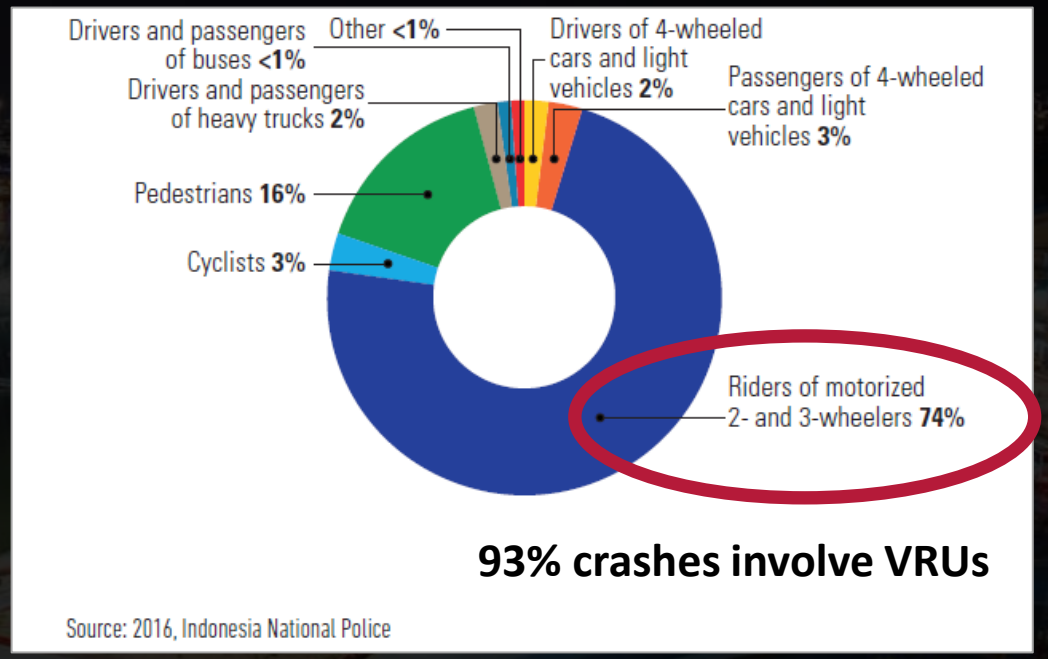
Indonesia Blackspots Studies – Urban Motorcycle Safety

Dr Shane Turner

PTWs - Indonesia Crash Statistics and Trends





93% crashes involve VRUs

Source: 2016, Indonesia National Police

- Considerable Variability in Reporting
- Death rate in range 25,000 to 49,000
- Mid-range estimate of **37,000 deaths per annum**
- **Death per 100,000 population of 13.7**
- Lower than global average of 18.2 and MIC of 20.

NZ - 7.8
Australia – 4.5
USA – 12.4
Sweden – 2.2

Population - 275M

Vehicles – 130M plus

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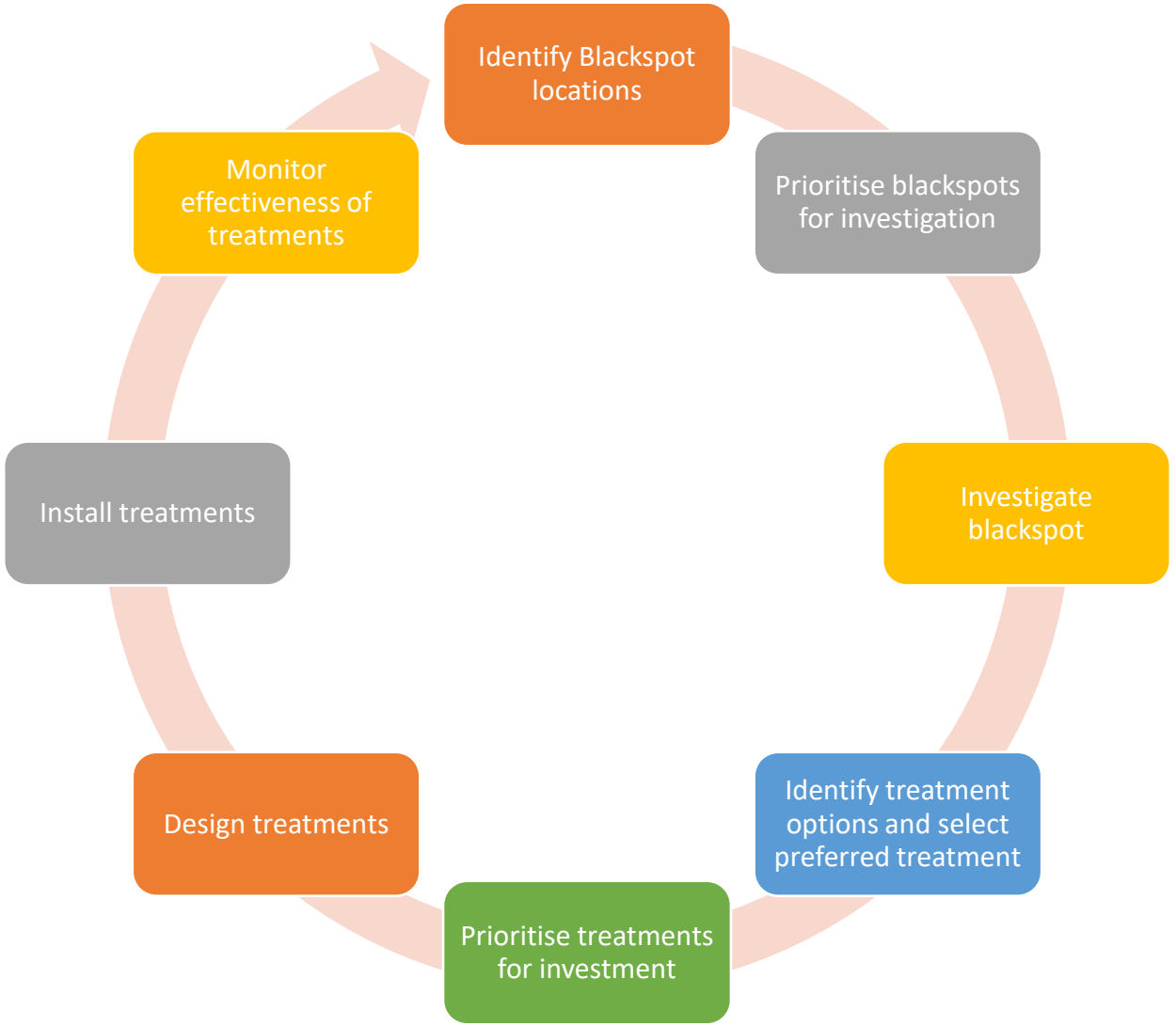
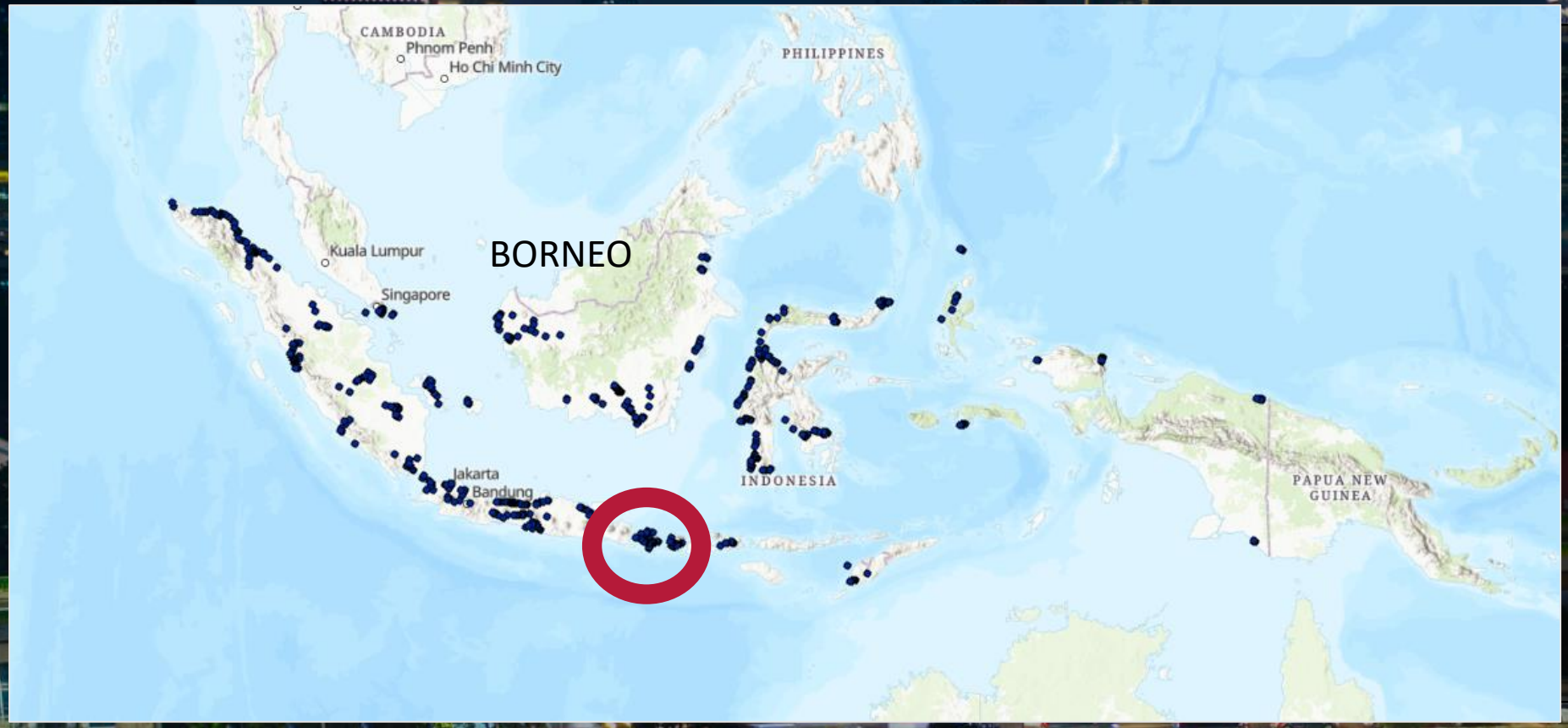
Australian Government

Blackspot lifecycle



Blackspots - Bali Case Study



BALI

Over 900 blackspots to be treated

Each with equivalent of three fatalities in two years (500m)

Identifying Blackspots (Bali) - over 50

Developed a program for the top 12 sites (500m)

Fatal - 10
Serious – 5
Minor – 1

Blackspot is Score over 30 (top 12 – had scores over 45)

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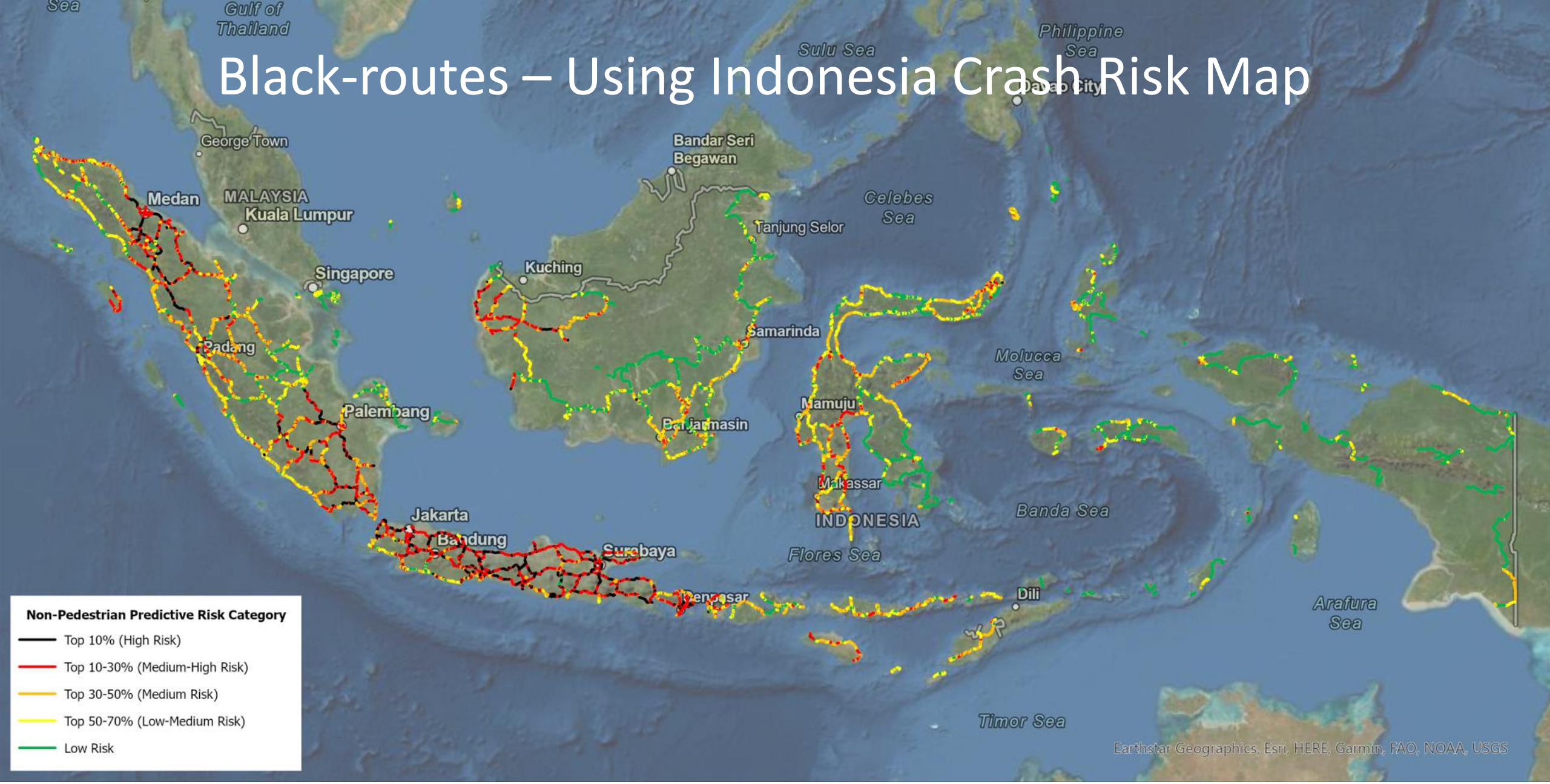
Black-routes – Using Indonesia Crash Risk Map



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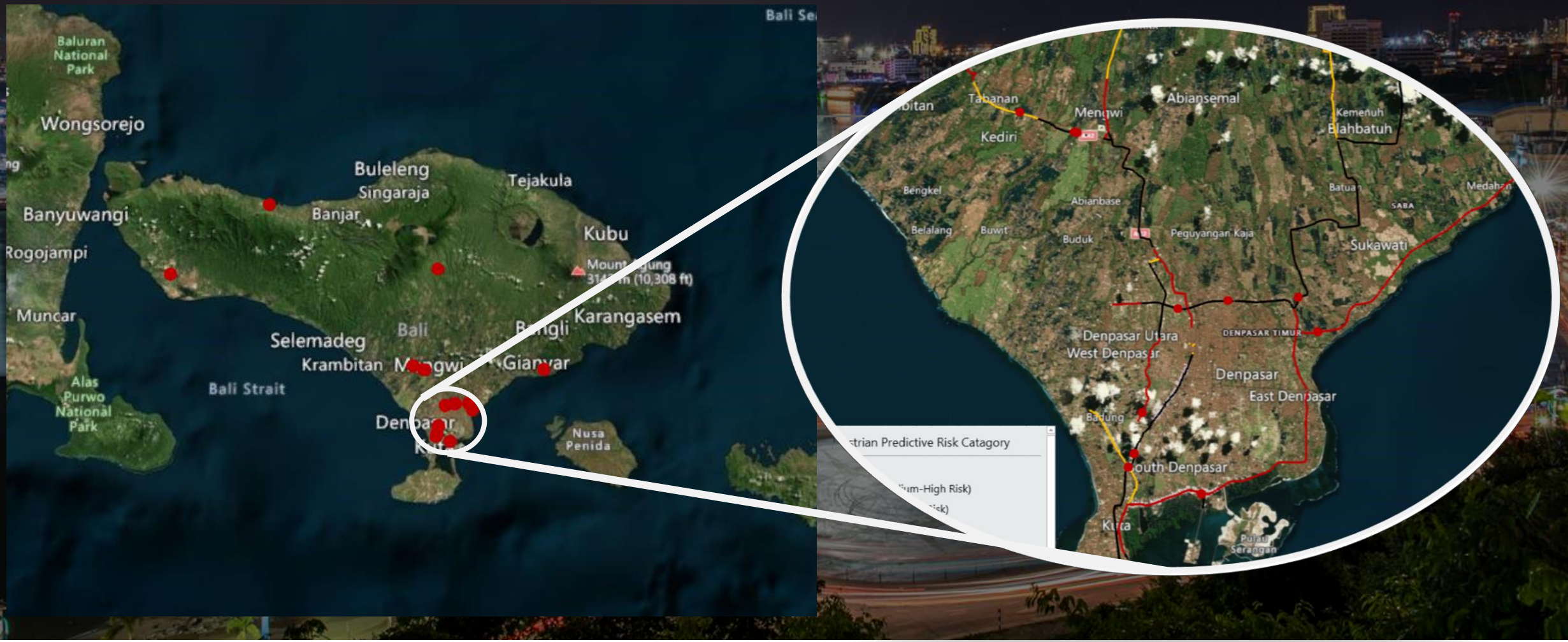
Steps to determining Black Routes

- Determine area of interest
- Look at all blackspots in the area of concern.
- Determine routes for assessment around blackspots
- Assess if route is a black route

Determine area of interest

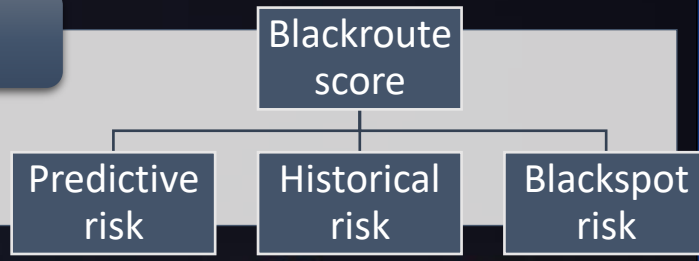
This could be the province, region or area where you want to determine if blackspots should be extended to black routes.



Assess if route is a black route

The route can be considered a black route if:

- See if there is a black route score of at least 2.25



Criteria	Definition	Score	Weighting
Non-Pedestrian Predictive risk rating	High risk	3	0.4
	Median-High risk	2	
	median risk or lower	1	
Non-Pedestrian Historic Crash rating	High risk	3	0.3
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Blackspots	2+ Blackspot	3	0.3
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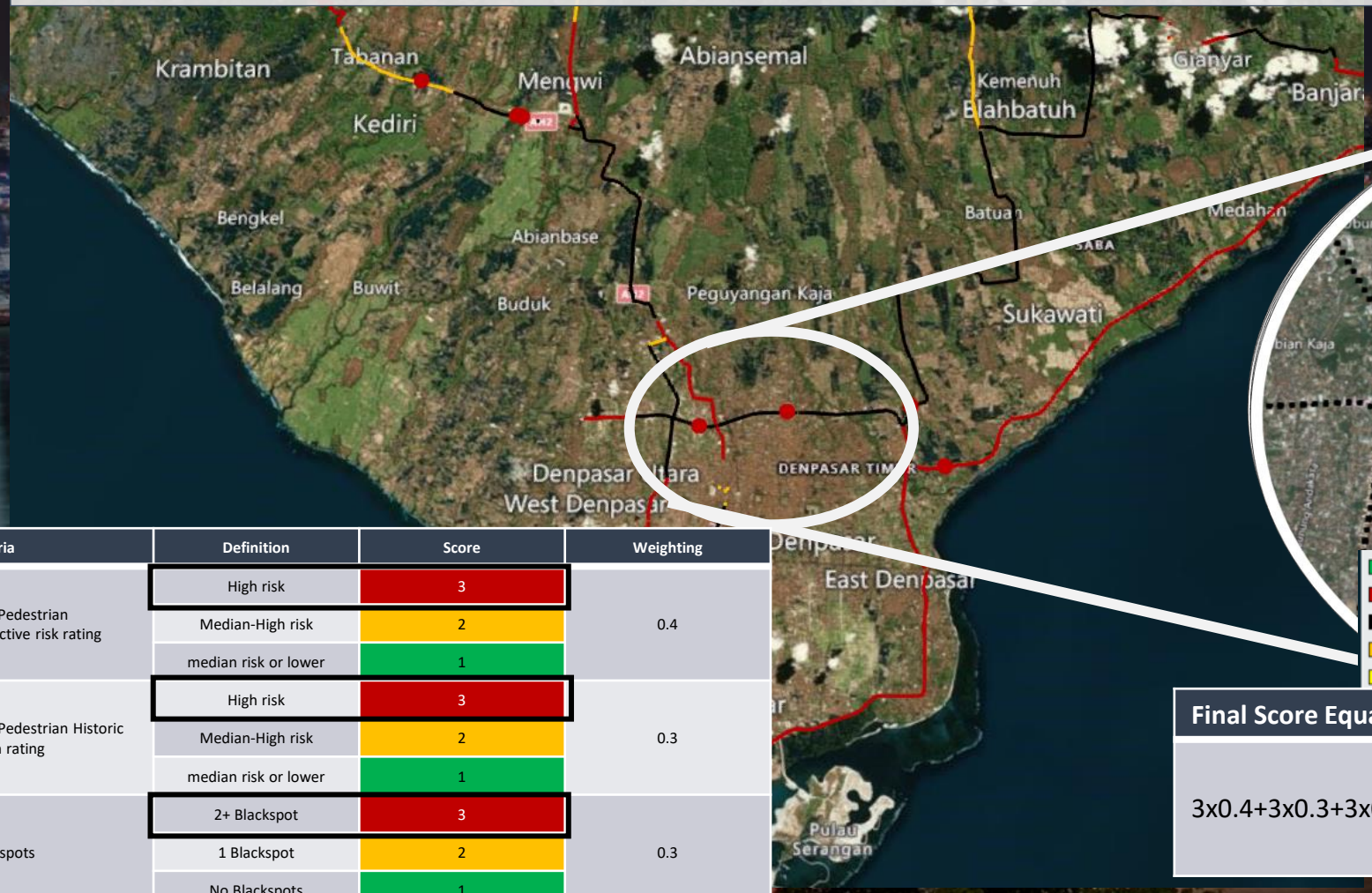

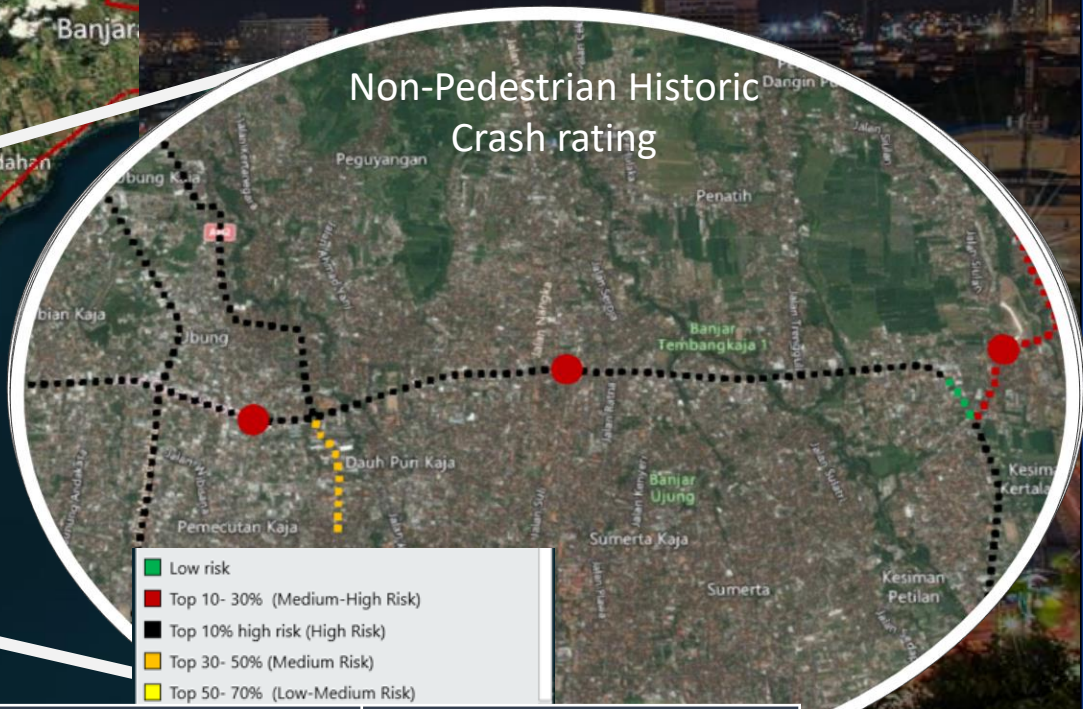

Blackroute score

- Predictive risk
- Historical risk
- Blackspot risk

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Final Score Equation	Final Score
3x0.4+3x0.3+3x0.3	3

Safety Issues -Similarities & Differences

Similarities

- Avoid operating outside safe system parameters - laws of physics apply & humans are vulnerable
- Unprotected road users (pedestrians and cyclists) are at higher risk – lots of these
- Speed kills and harms – speed effects both number and severity of crashes
- Pedestrians behaviour can be unpredictable
- Physical separation of users can be effective (e.g. medians)
- Speed humps and other vertical devices can slow down road users (can create dangers for PTWs)
- Pavement quality impacts on safety – especially bicycles and motorcycles

Differences

- Poor lane discipline by bicycle and motorcycle riders – relative to NZ
- Manual speed and other enforcement is less effective
- Drivers are on average less educated and have less driver training (if any)
- Victim blaming dominates - limited understanding of safe system approach
- Facilities for vulnerable road users are less prevalent and often not effective (zebra crossings & footpaths)
- Paint marking and signage is less likely to be obeyed
- Drivers travel on wrong side of urban roads to avoid congestion (one-way streets can reduce this)

Mid-block Blackspot Examples – overtaking is risky

Narrow Lanes & No Shoulders

BLACKSPOTS

Mid-Block Blackspot Examples – driver/rider surprise!!

Lanes
Too Wide

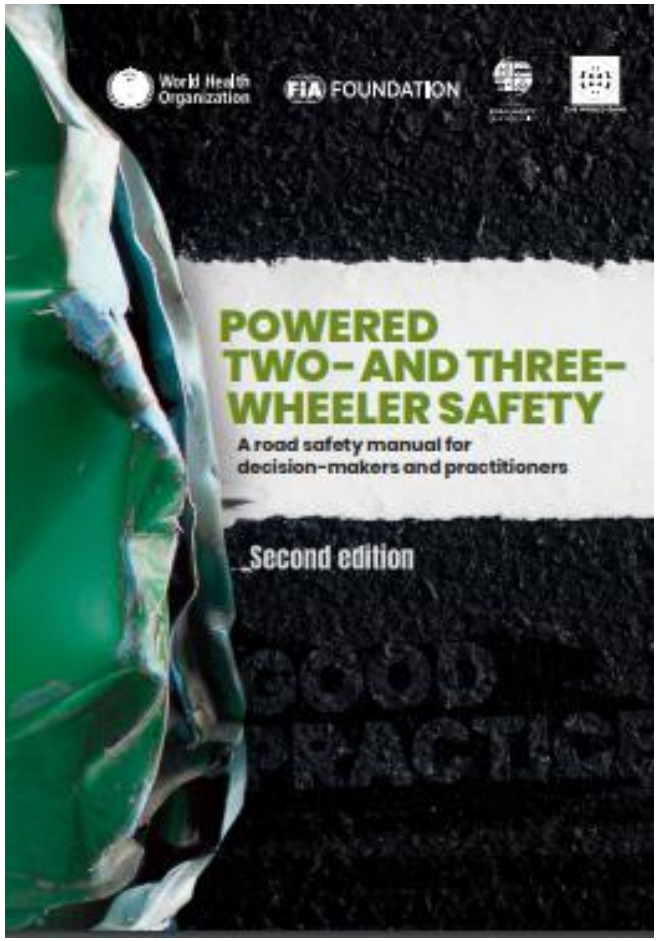
BLACKSPOTS

WHO - Safety Measures for PTWs

Key measures	Specific interventions	Effectiveness		
		Proven	Promising	Insufficient evidence
Safer roads and mobility	Exclusive motorcycle lanes	■		
	Protected turn lanes and widened shoulders or lanes		■	
	Removal of roadside hazards		■	
	Speed limiters and traffic calming structures		■	
	Improving road surface conditions		■	
	Modifying the composition of roadside barrier building material			■

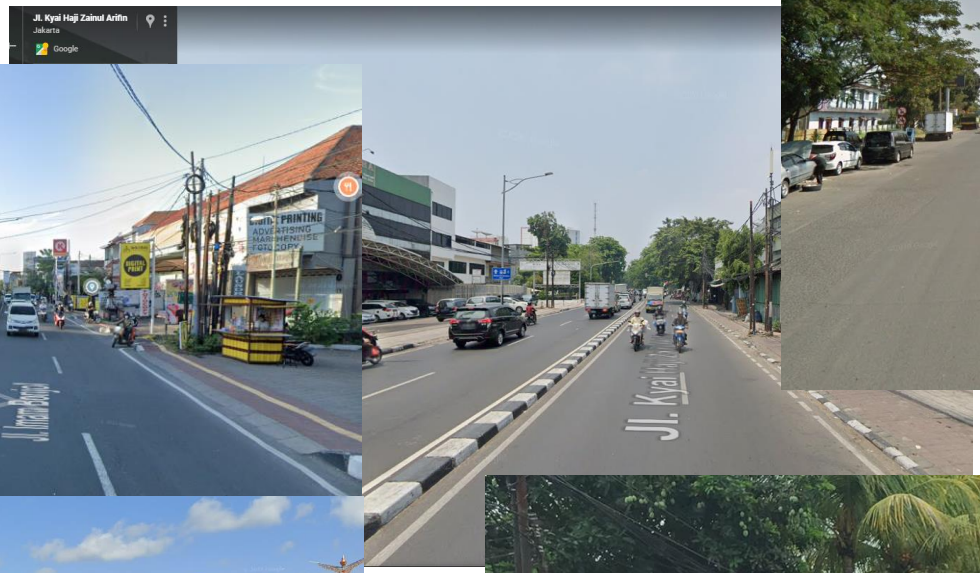
Speed limits and traffic calming

Traffic calming measures have been effective in reducing the number of crashes for all four-wheeled vehicles. However, the design of such interventions can have a negative impact on motorcyclists. One OECD report cites obstacles placed on the road, such as speed humps and other small vertical objects designed to minimize speed, as examples of how such interventions can be hazardous for motorcyclists *(9)*.



Effectiveness of Medians – Eliminate Head-on crashes

Median Treatments



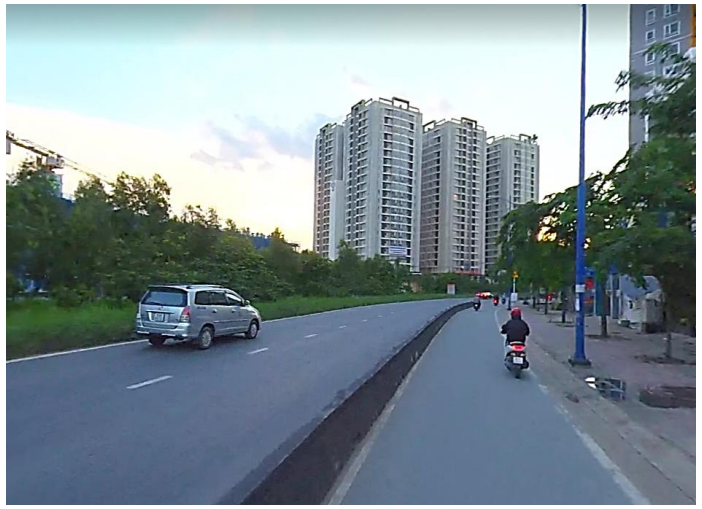
ONE WAY STREETS
ARE ALSO GOOD

Exclusive Motorcycle Lanes

Have a solid divider – some have accessways

Up to 40% reduction in crashes (Malaysia)

What about cities with higher proportions of PTWs?

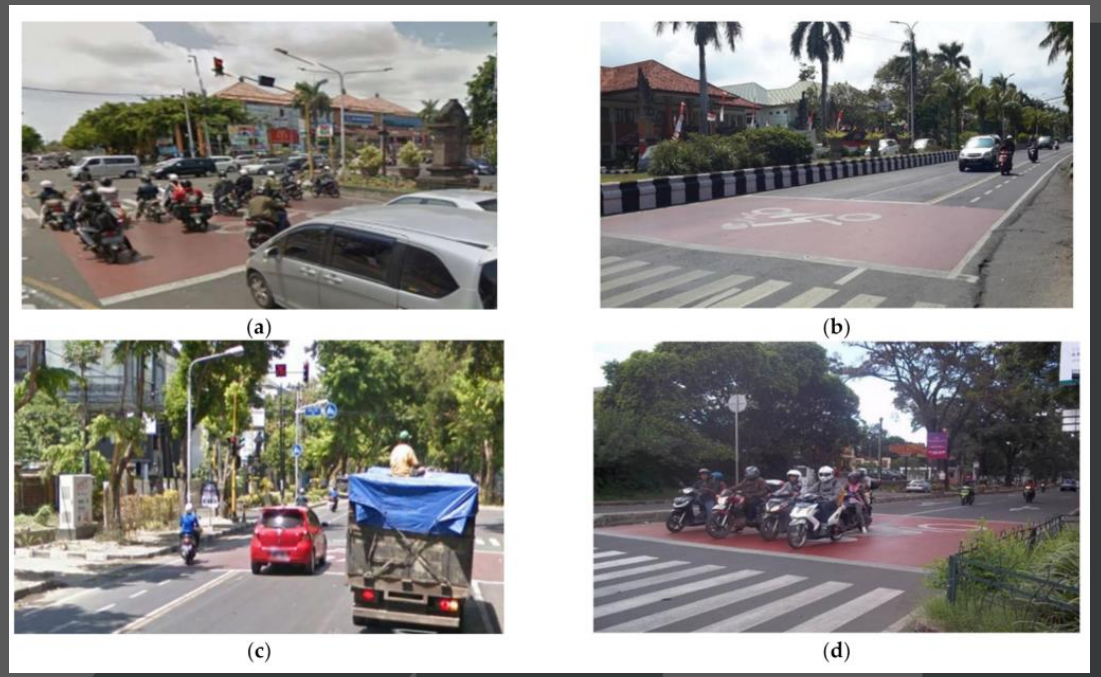


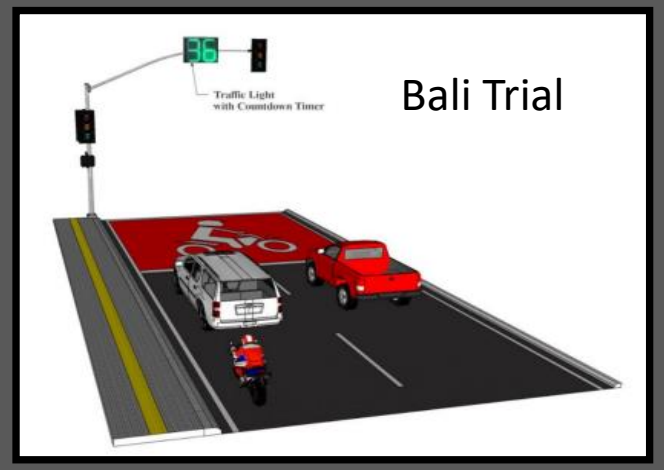
When are these effective??

Inclusive (non-exclusive) Motorcycle Lanes

Often just a painted line between motorcycles and traffic (or flush separator)

What to do at Major Intersections ?





Motorcycle Usage Levels & Facilties !!

Usage Level	Proportion of PTW	Example Cities	Safer Road Interventions
Very Low	Up to 9%	London, New York, Sydney, Auckland	Raise awareness of motorcyclists, wider lanes and shoulders at intersections and good surfacing
Low	10 to 19%	Rome, Barcelona, Madrid, Lima	Motorcycle lanes* on routes with greater 20% PTWs, wide lanes, shoulders, avoid shared lanes (Int) and good surfacing
Moderate	20 to 39%	Naples, Milan, Manila, Mumbai (India)	Motorcycle lanes, wide lanes & shoulders. Add motorcycle boxes/space and avoid shared lanes at intersections. Curve treatments & good surfacing
High	40 to 69%	**Jakarta, Bali**, KL, Bangkok, Karachi (Pakistan)	Design roads for PTWs – motorcycle lanes* provided for slower moving PTW.
Very High	70% plus	**Surabaya,** Lagos, Ho Chi Minh, Hanoi (Vietnam)	Design roads for PTWs – motorcycle lanes for slower moving PTW. **Treat other vehicles as special vehicles (like buses)??**

* Need to consider push bikes and micro-mobility user safety

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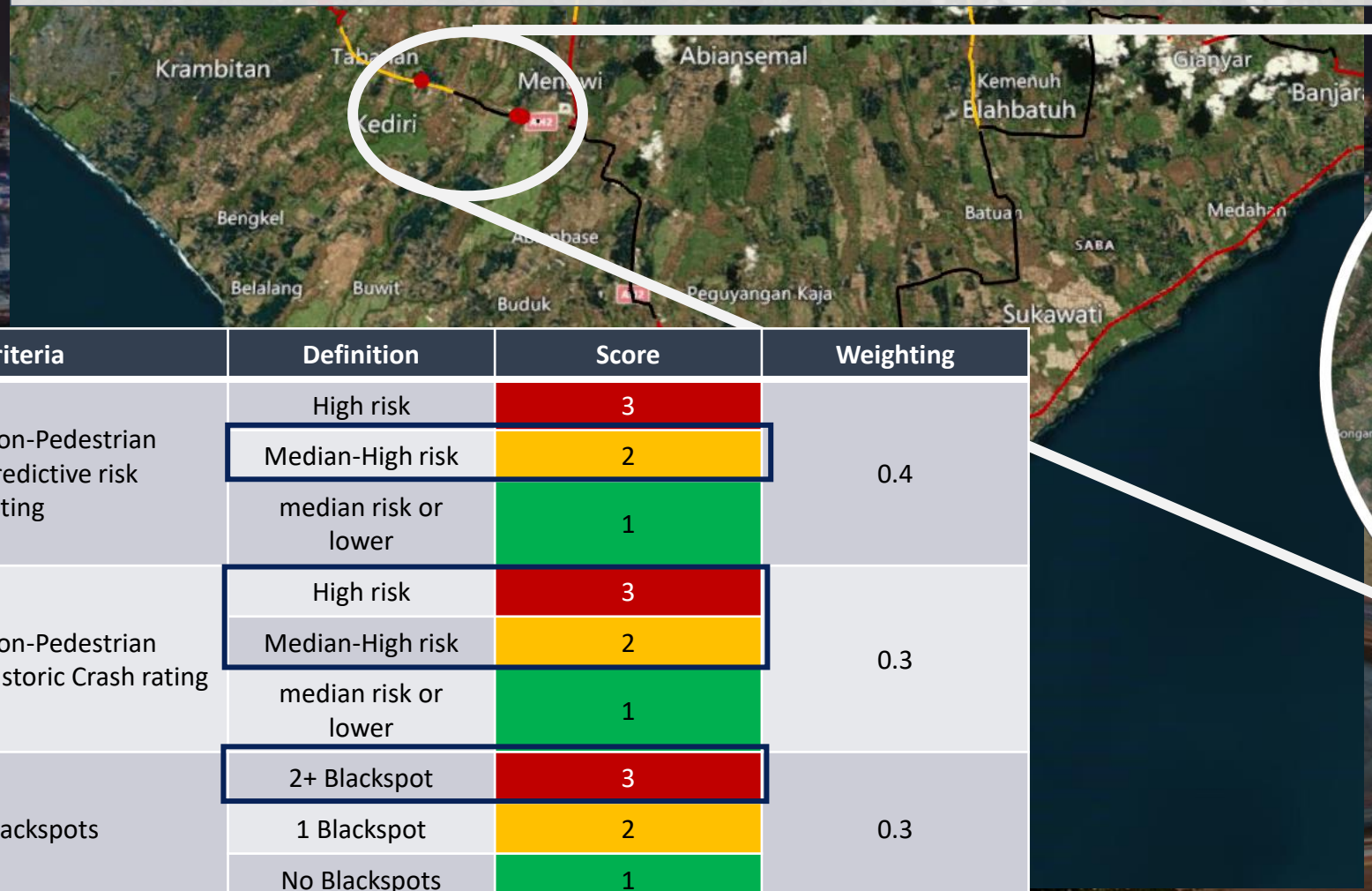

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