Indonesia: Road Safety Risk Analysis Tools

Dr Shane Turner

abley

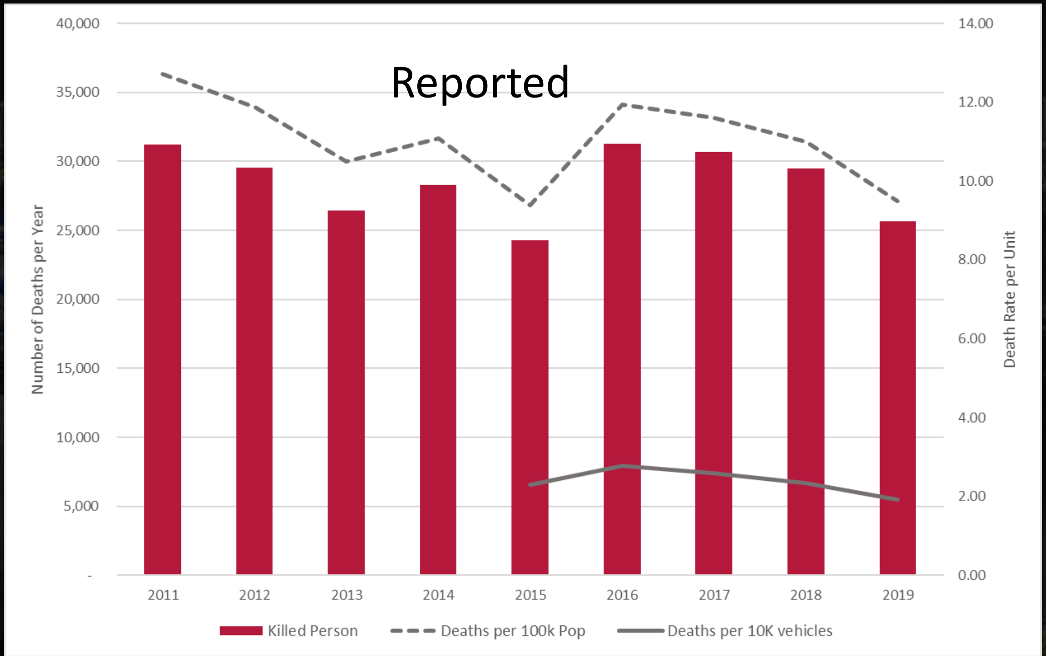
KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

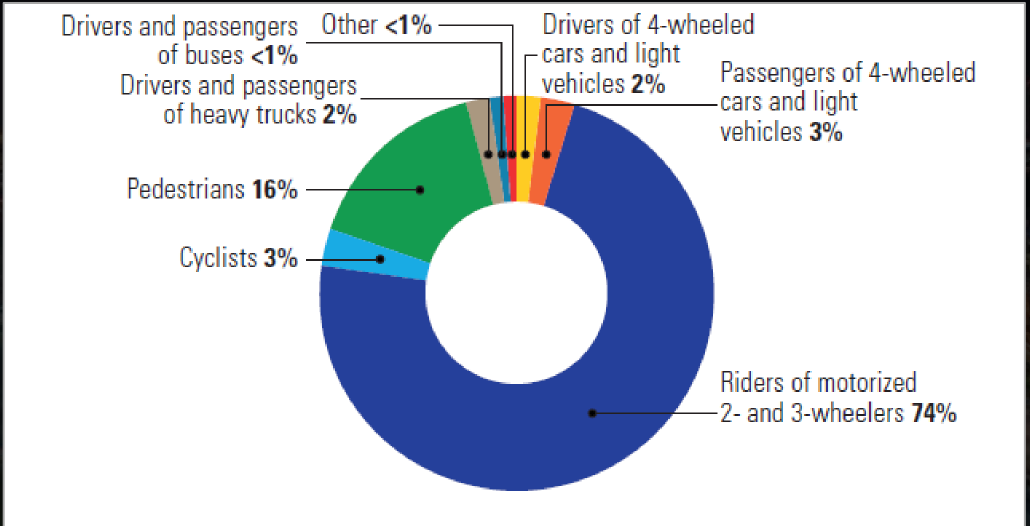
abley

Kementerian PPN/ Bappenas

Australian Government

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

KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

ably

Kementerian PPN/ Bappenas

Australian Government

Indonesian Project Overview

- Client: Indonesian - Australian Partnership for Infrastructure (KIAT)

- IRAMS-DC project covers asset management, bridge inspections & road safety

- Contract focuses on National Highway Network of 47,000km
- This network is managed by Bina Marga (or DGH)
- DGH only manage infrastructure (not speed limits etc.)

- Road Safety Program Consists of:
  - Development of KPIs (and SPIs)
  - Development of Safety Performance Functions (SPFs)
  - Star Ratings and SRIP using InaRAP (iRAP)
  - Blackspot investigation – Capacity Building
  - Development of Safety Forward Works Programs

Risk Maps – from Safety Performance Functions

- Model categories:
  - Land Use Types
    - True Urban,
    - Rural Shopping,
    - Rural Housing and
    - True Rural
  - Road Stereotypes
    - Number of Lanes (99% coverage)
    - One-way vs two-way
- Model Parameters
  - All Vehicle Crashes (mostly 2/3 wheelers)
  - Pedestrian Crashes
  - Daily traffic volume (4 wheelers)
  - Length of link

SPF Models

Land use and Stereotype combination	SPF Used	e^a	b	c	d (G1)	d (G2)	d (G3)	d (G4)
True_Urban_22UD	True_Urban_22UD	0.113	0.32721	0.92613	1	0.678	0.333	0.737
True_Urban_42UD	True_Urban_42UD	0.55	0.1817	0.9832	1	1	1	1
True_Urban_42D	True_Urban_42D	0.29	0.07247	0.89759	1	0.291	1.275	2.769
True_Urban_4+2D	True_Urban_4+2D	0.29	0.07247	0.89759	1	0.291	1.275	2.769
True_Rural_22UD_LR	True_Rural_22UD_LR	0.0193	0.55659	0.77679	1	0.915	0.573	0.32
True_Rural_22UD_HR	True_Rural_22UD_HR	0.00488	0.72452	0.695	1	0.85	0.407	0.161
True_Rural_42UD	True_Rural_42UD	0.0664	0.4296	1.0288	1	1	1	1
True_Rural_4+2D	True_Rural_4+2D	0.0116	0.5895	1.0168	1	1	1	1
Rural_Housing_22UD_LR	Rural_Housing_22UD_LR	0.0298	0.4778	0.9915	1	1.016	0.599	0.433
Rural_Housing_22UD_HR	Rural_Housing_22UD_HR	0.00174	0.7969	1.0956	1	1.046	0.725	0.282
Rural_Housing_42UD	Rural_Housing_42UD	0.0664	0.4296	1.0288	1	1	1	1
Rural_Housing_4+2D	Rural_Housing_4+2D	0.0116	0.5895	1.0168	1	1	1	1
Rural_Shopping_22UD_LR	Rural_Shopping_22UD_LR	0.133	0.3424	0.9718	1	0.978	0.571	0.303
Rural_Shopping_22UD_HR	Rural_Shopping_22UD_HR	0.0182	0.5329	1.1695	1	1.537	0.698	0.161
Rural_Shopping_42UD	Rural_Shopping_42UD	0.0664	0.4296	1.0288	1	1	1	1
Rural_Shopping_4+2D	Rural_Shopping_4+2D	0.331	0.268	1.0467	1	0.946	0.368	0.227

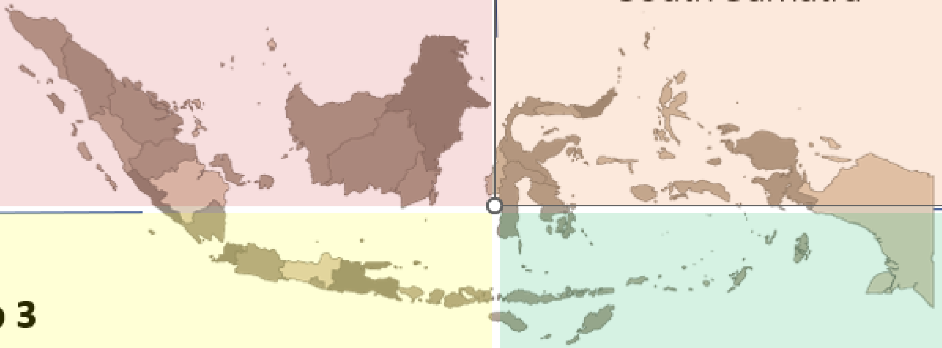
SPF Province Groups

Group 1

West Java, East Java, Banten, Central Java, DI Yogyakarta

Group 2

Lampung, North Sumatra, Bali, West Kalimantan, South Sumatra



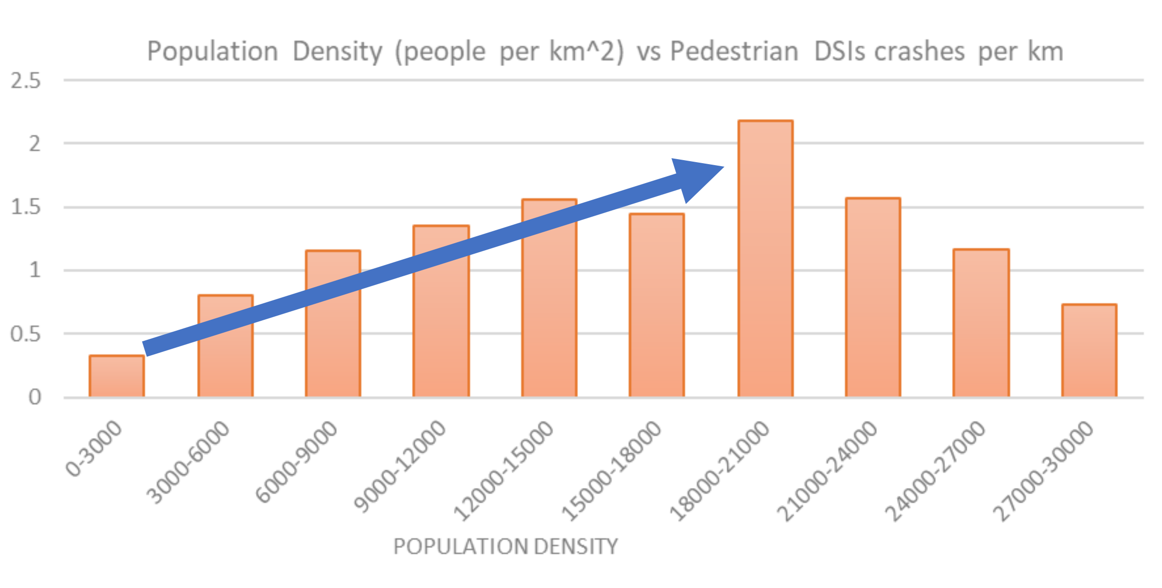
Group 3

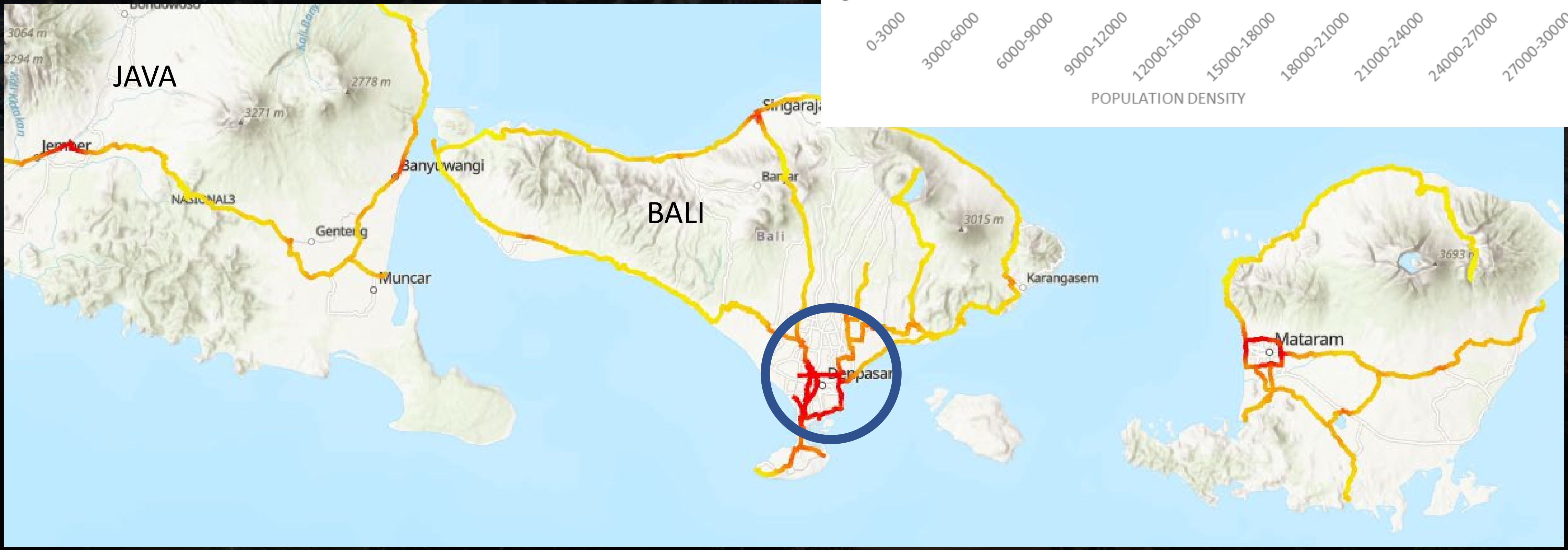
DI Aceh, South Sulawesi, NTB, South Kalimantan, North Sulawesi, NTT,
West Sumatra, Kepulauan Riau, Riau, West Sulawesi, Bengkulu

Group 4

Jambi, Bangka Belitung, East Kalimantan, Central Sulawesi, Maluku Utara, Gorontalo, West Papua, Southeast Sulawesi, Maluku, Central Kalimantan, North Kalimantan, Papu

Pedestrian Flow Surrogate - Population Density



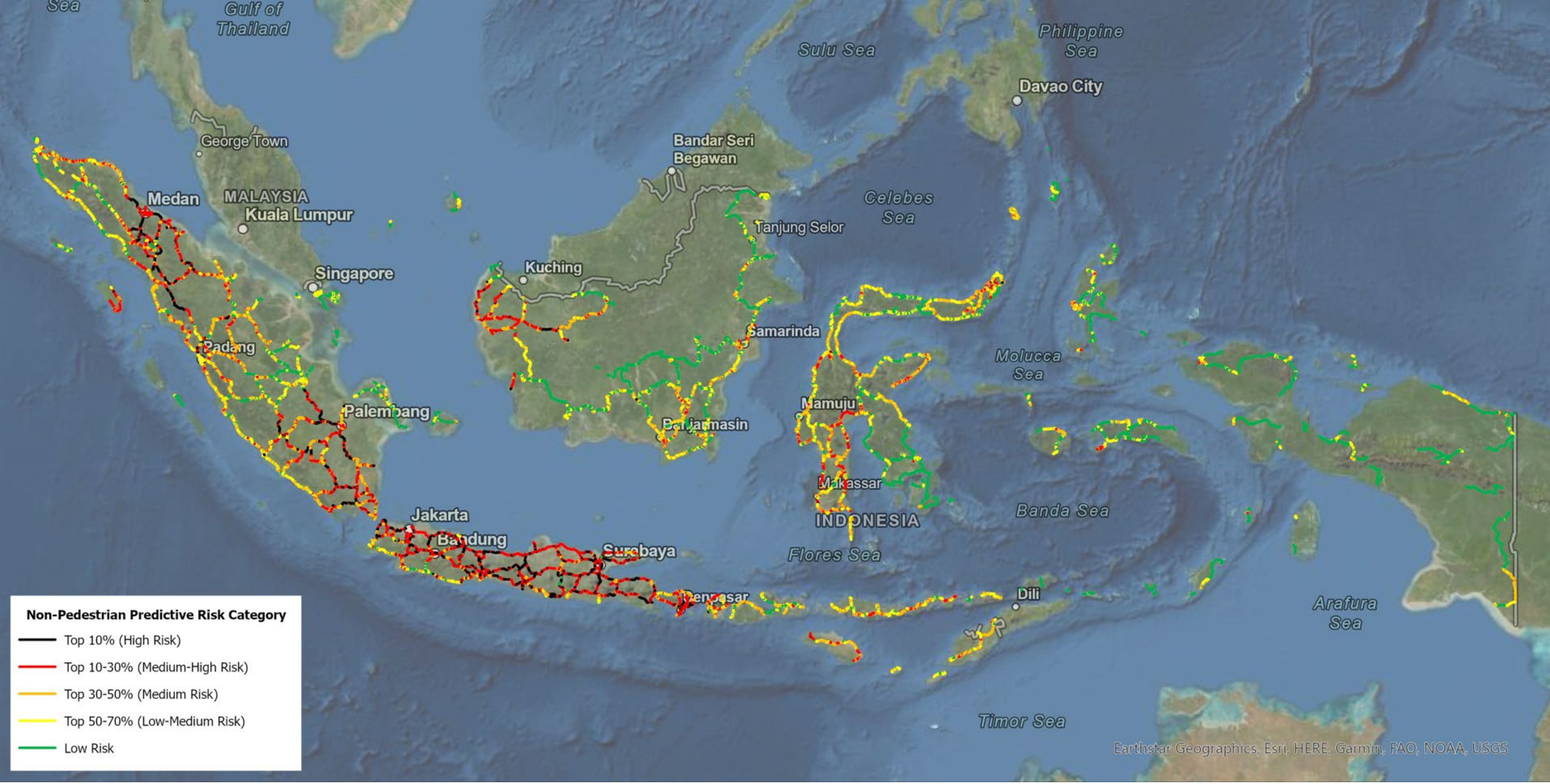


KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

abley

Kementerian PPN/ Bappenas

Australian Government


Gulf of Thailand
Sulu Sea
Philippine Sea
Davao City
George Town
Bandar Seri Begawan
Medan
MALAYSIA
Kuala Lumpur
Celebes Sea
Tanjung Selor
Singapore
Kuching
Samarinda
Padang
Molucca Sea
Palembang
Mamuju
Banjarmasin
Makassar
INDONESIA
Banda Sea
Jakarta
Bandung
Surabaya
Flores Sea
Denpasar
Dili
Arafura Sea
Timor Sea
Earthstar Geographics, Esri, HERE, Garmin, FAO, NOAA, USGS
Non-Pedestrian Predictive Risk Category
Top 10% (High Risk)
Top 10-30% (Medium-High Risk)
Top 30-50% (Medium Risk)
Top 50-70% (Low-Medium Risk)
Low Risk

High Risk Network- Vehicle

Non-Pedestrian Predictive Risk Category

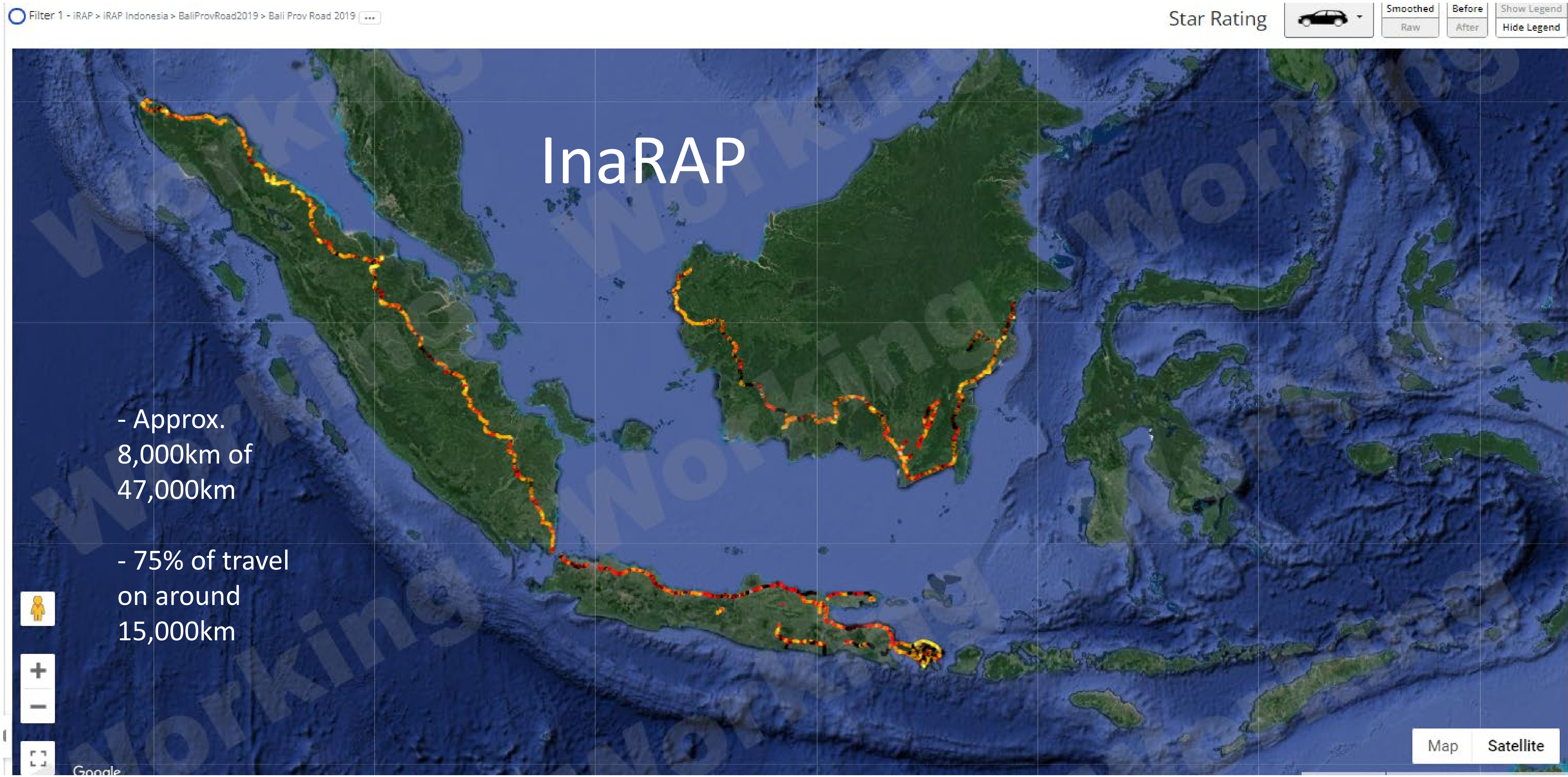
- Top 10% (High Risk)
- Top 10-30% (Medium-High Risk)
- Top 30-50% (Medium Risk)
- Top 50-70% (Low-Medium Risk)
- Low Risk

KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

ably

Kementerian PPN/ Bappenas

Australian Government



InaRAP

- Approx. 8,000km of 47,000km

- 75% of travel on around 15,000km

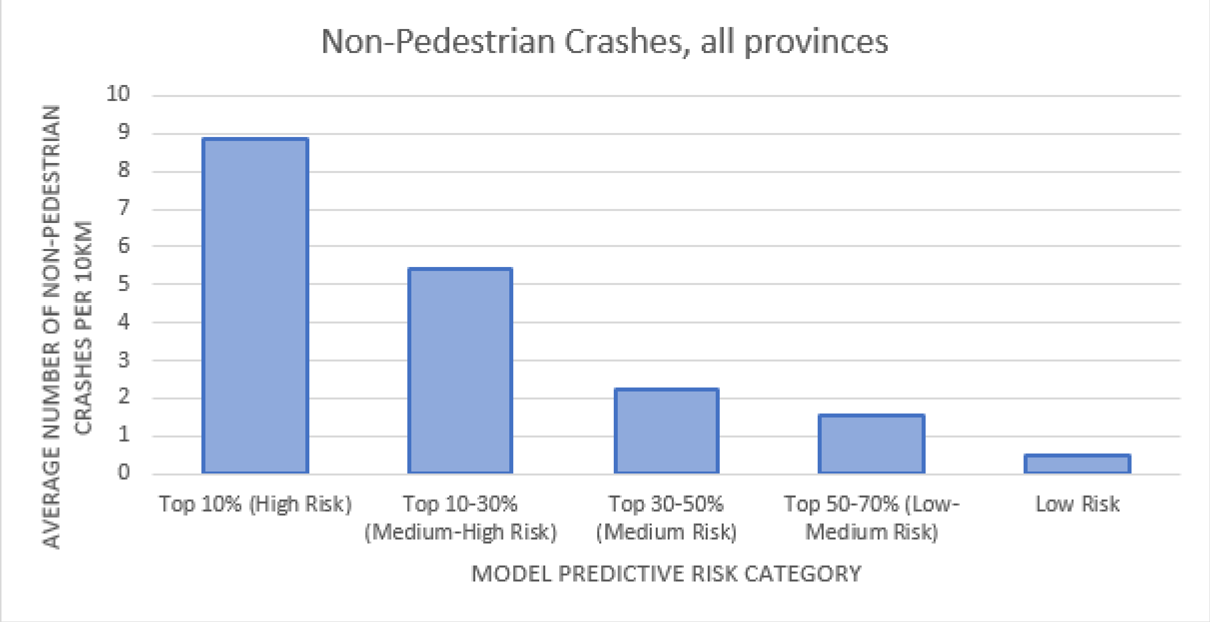
KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

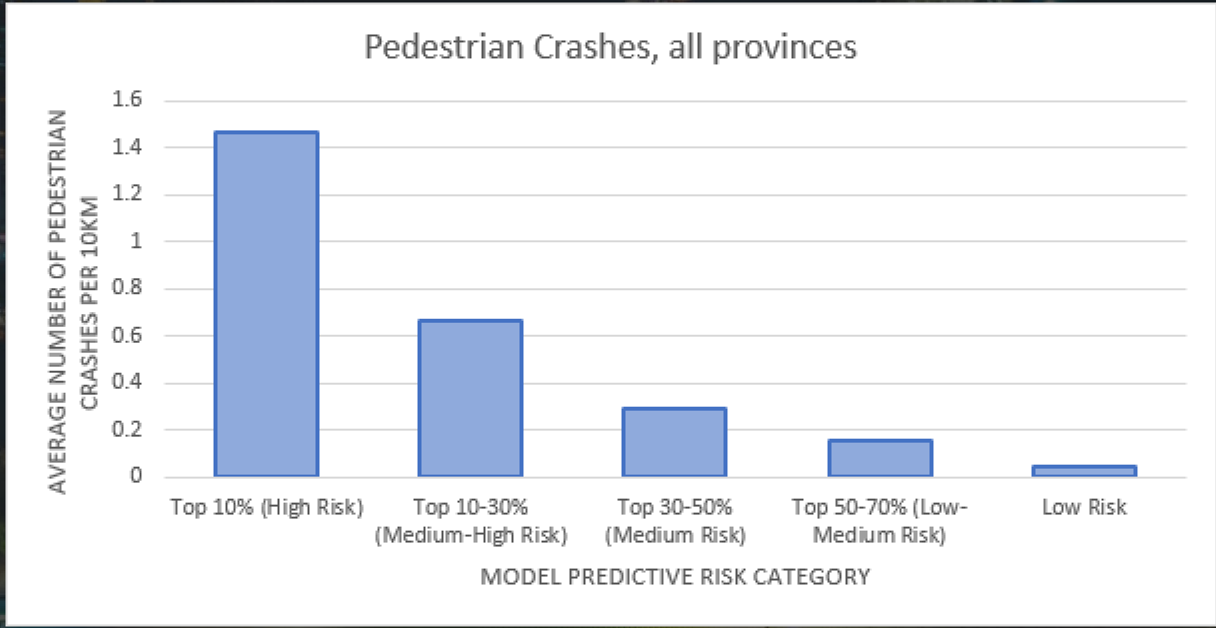
abley

Kementerian PPN/ Bappenas

Australian Government

Model Validation





KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

abley

Kementerian PPN/ Bappenas

Australian Government

Bali Case Study

KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

abley

Kementerian PPN/ Bappenas

Australian Government

Bali Case Study – LOSS & High Risk Network

KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

ably

Kementerian PPN/ Bappenas

Australian Government

Questions

Auckland
Level 1/70 Shortland Street
PO Box 613, Shortland Street
Auckland 1140
Aotearoa New Zealand

Wellington
Level 1/119-123
Featherston Street
Wellington 6011
Aotearoa New Zealand

Christchurch
Level 1/137 Victoria Street
PO Box 36446, Merivale
Christchurch 8146
Aotearoa New Zealand

Dr Shane Turner

Shane.turner@abley.com
+64 27 4955048
abley.com

KIAT KEMITRAAN INDONESIA AUSTRALIA UNTUK INFRASTRUKTUR

Kementerian PPN/ Bappenas

Australian Government

END


SPF Province Groups
Group
4
1
2
3
3
4
2
2
1
1
1
1
2
4
4
3
4
3
3
4
4
Powered by Bing
© GeoNames, Microsoft, TomTom