



# ROAD SAFETY PANDEMIC : A SHARED RESPONSIBILITY



16 JULAI 2021



JABATAN KERJA RAYA MALAYSIA

*Disampaikan oleh:*

**Ir. MOHD SHAHROM BIN AHMAD SAMAN**  
Pengarah Pakar Kejuruteraan Jalan & Jambatan  
Cawangan Jalan







# 1

# OVERVIEW





Think about that statement:  
“According to the World Health Organization, about **1,350,000** people get killed on the roads around the world each year”





Approximately 3,700 people were killed each day on the roads around the world!



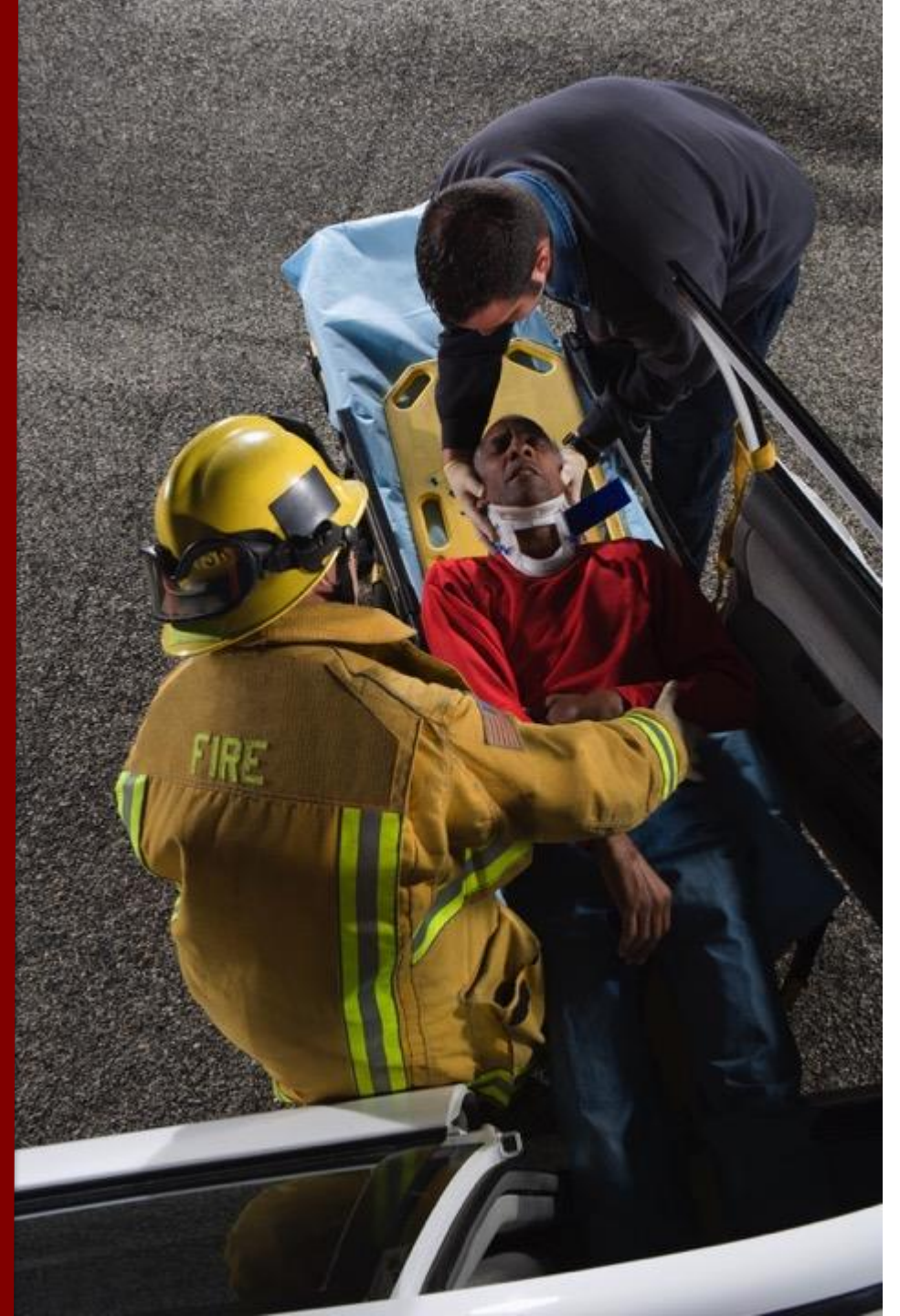


**This is the equivalent of about 13  
fully loaded Boeing 777 airplanes!**



NOT JUST DEATHS . .

20 TO 50 MILLION  
INJURIES  
EVERY YEAR





WHY IS THE



**World Health  
Organization**

INVOLVED?



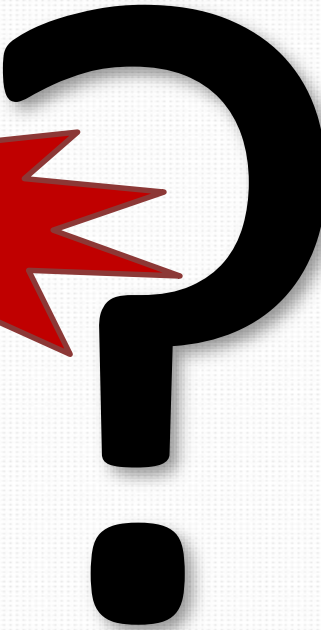


# The 10 Worst Epidemics In History

Rank	Epidemic	Period In History	Estimated Number of Deaths
1	Plague of Justinian	541-542	100,000,000
2	Black Plague	1346-1350	50,000,000
3	HIV/AIDS	1960-present	39,000,000
4	1918 Spanish Flu	1918-1920	20,000,000
5	Modern Plague	1894-1903	10,000,000
6	Asian Flu	1957-1958	2,000,000
7	6 <sup>th</sup> Cholera Pandemic	1899-1923	1,500,000
8	Russian Flu	1889-1890	1,000,000
9	Hong Kong Flu	1968-1969	1,000,000
10	5 <sup>th</sup> Cholera Pandemic	1881-1896	981,899



**Covid 19?**



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4	1918 Spanish Flu	1918-1920	20,000,000



Assuming 1,000,000 fatalities each year from 1960, this means approximately 61,000,000 people have died in car crashes, arguably making road crashes the **second worst** epidemic in history!







# If there were Vaccines

Would a country not  
have a moral  
responsibility to use  
these vaccine for its  
people ?



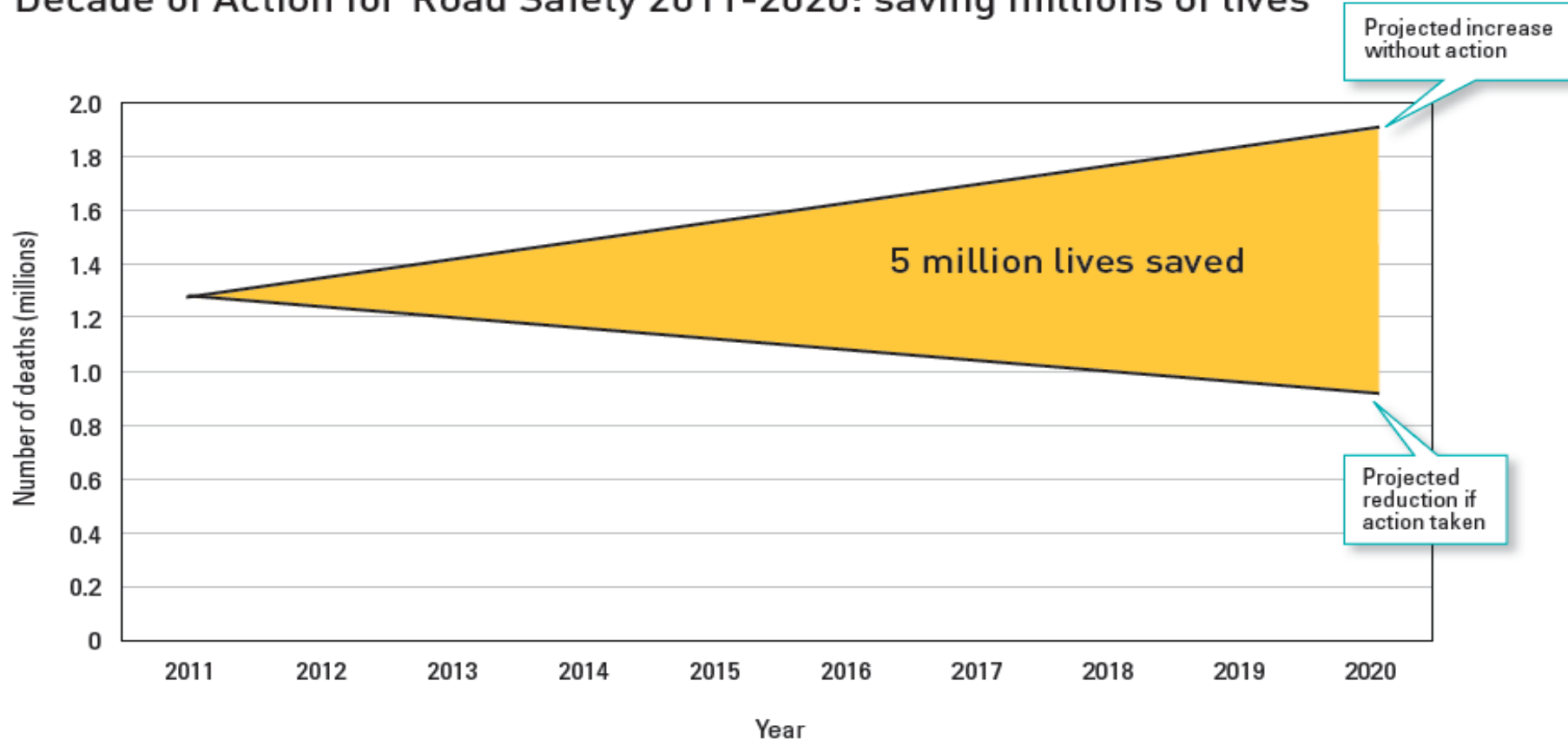
ON 11 MAY 2011,  
THE FIRST EVER  
**DECADE OF ACTION  
FOR ROAD SAFETY  
2011–2020**  
WAS LAUNCHED  
ACROSS THE WORLD.




# The Goal

The overall goal of the Decade is to stabilize and then reduce the forecast level of road traffic fatalities around the world by 2020

Decade of Action for Road Safety 2011-2020: saving millions of lives





A photograph of a heavily congested street in a developing country. The road is packed with various vehicles, including cars, motorcycles, and small commercial trucks. Many people are visible, some standing on the street and others inside the vehicles. The scene illustrates the high volume of road traffic in these regions. Overlaid on the image is a large black banner with white and blue text.

**LOW- AND MIDDLE- INCOME COUNTRIES  
HAVE JUST 54% OF THE WORLD'S  
VEHICLES — BUT 90% OF THE WORLD'S  
ROAD TRAFFIC DEATHS.**





**Accidents in Malaysia**  
**Approximately 7000 people were killed each year**  
**on the roads in Malaysia!**  
**Which is equal to 20 death each day**

### Bas bersepai, 27 terbunuh **Selekoh maut**

REMUK keadaan bas yang terbabat dalam nahas terduduk di atas jalan raya sebelum dibawa ke hospital.



> "Saya nampak beberapa penumpang tercampak keluar selain ada diseret bas yang menggelongsor lebih 50 meter" kata Monat Rahen, 19, antara saksi awal di lokasi nahas ngeri bas dua tingkat yang mengorbankan 27 nyawa, pagi semalam. Menurutnya, dia trauma melihat banyak mayat bergelimpangan dengan kepala beberapa mangsa pecah dan otak bertaburan atas jalan, lapor Kasdi Ali, Norhayati Abillah dan Ravale Savarinathan



Malaysia kelompok 10 negara paling tinggi berlaku kemalangan jalan raya

A...



### 6,000 korban nahas setahun

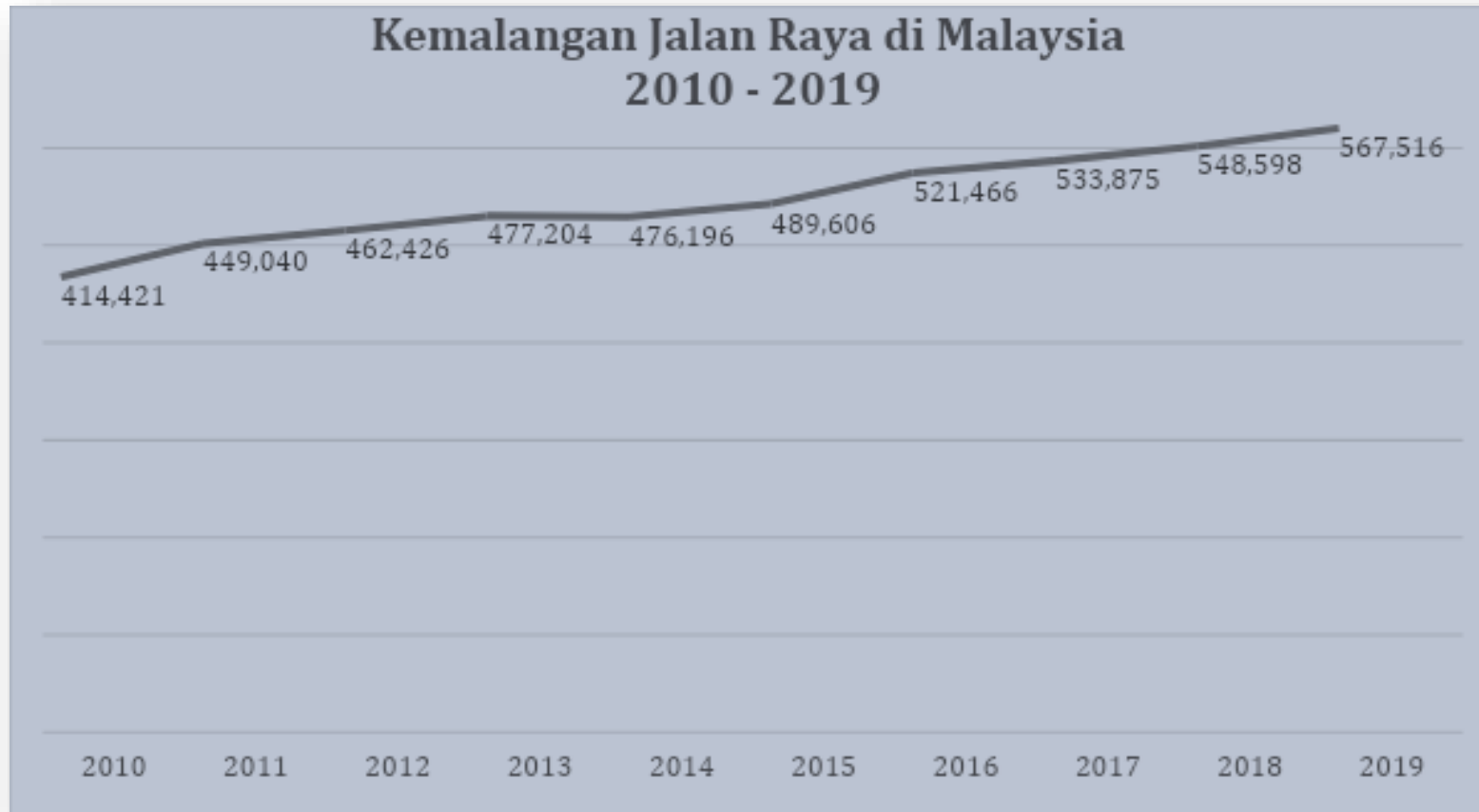


**Covid 19?**



# ROAD ACCIDENT STATISTIC

## ROAD ACCIDENT DATA (2010-2019)



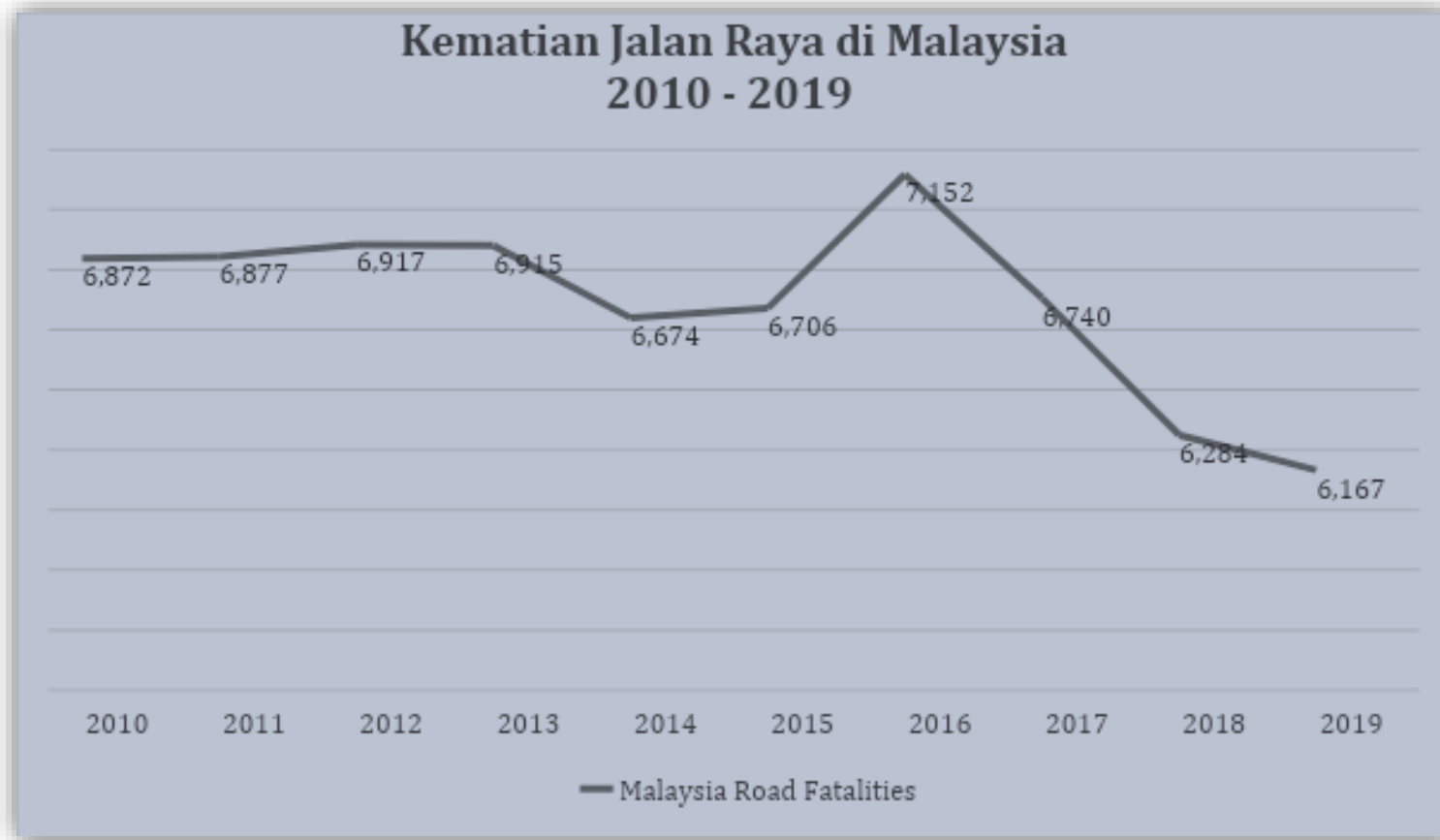
## ROAD ACCIDENT DATA (2020) (COVID -19)



Source: Kementerian Pengangkutan Malaysia

# ROAD FATALITIES STATISTIC

## MALAYSIA ROAD FATALITIES (2010-2019)



Source: Kementerian Pengangkutan Malaysia

## MALAYSIA ROAD FATALITIES (2020) (COVID -19)

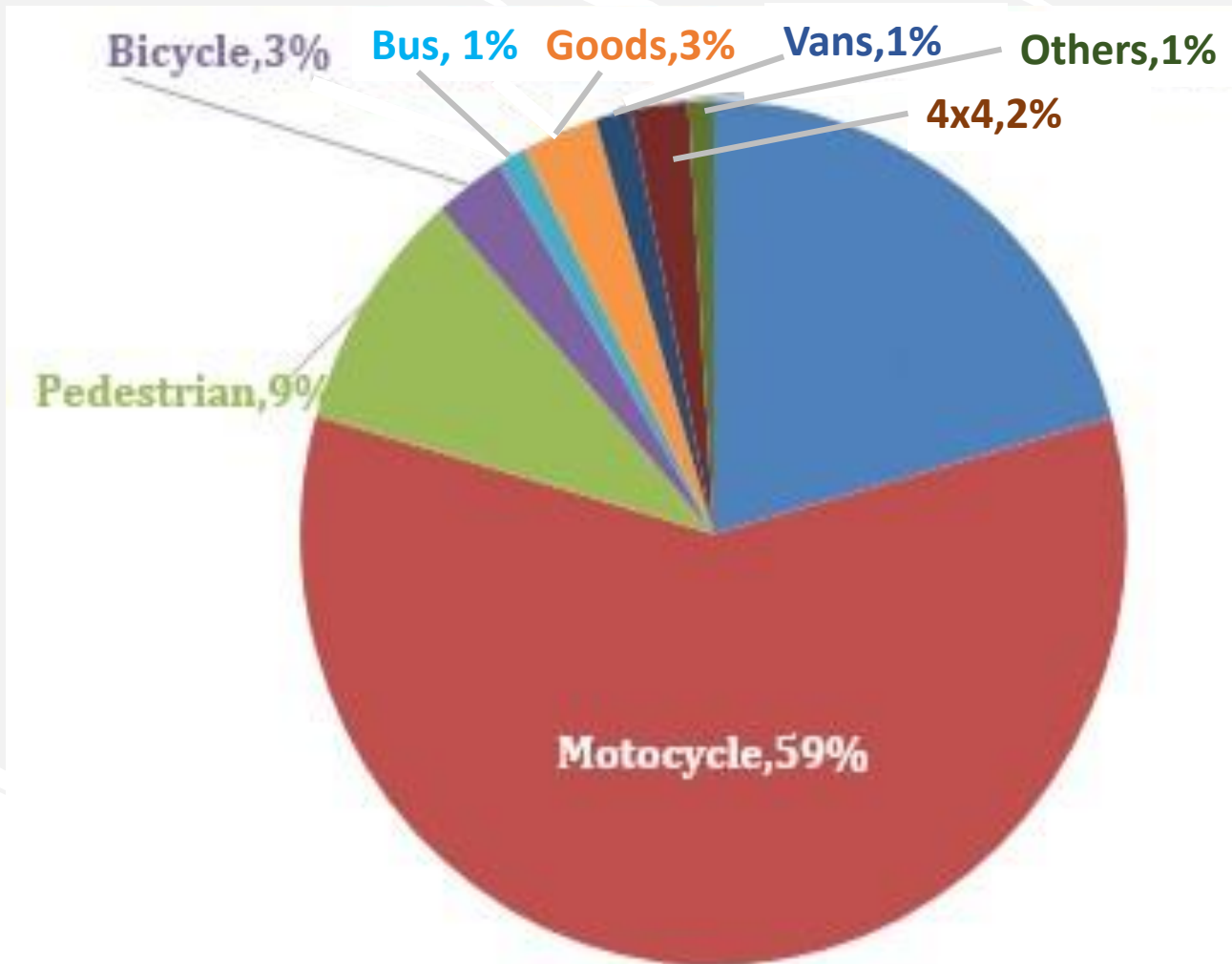


## AS OF 2<sup>nd</sup> JULY 2021 COVID -19 DEATH IN MALAYSIA



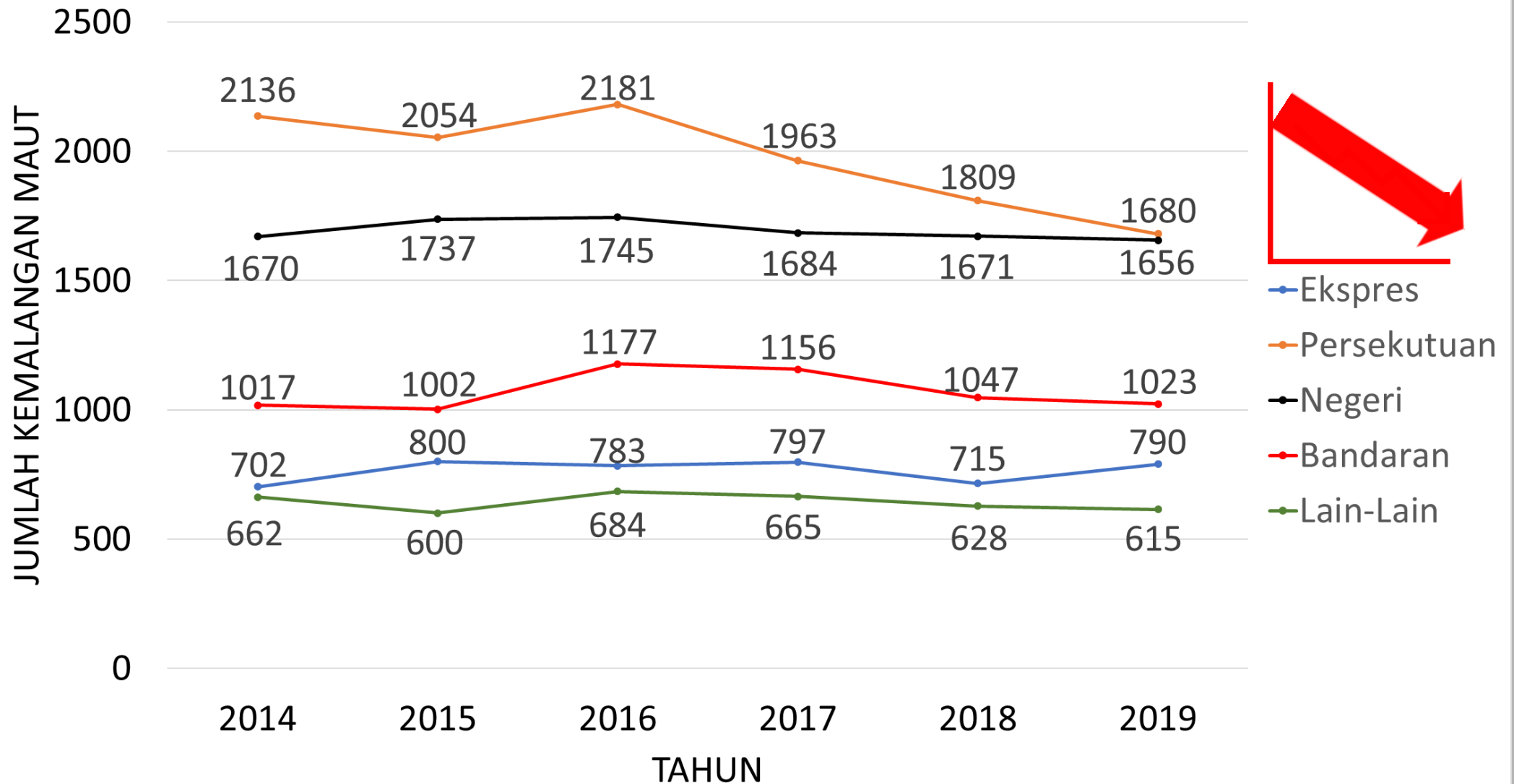


# KEMATIAN JALAN RAYA MENGIKUT MOD PENGANGKUTAN (2010 - 2019)



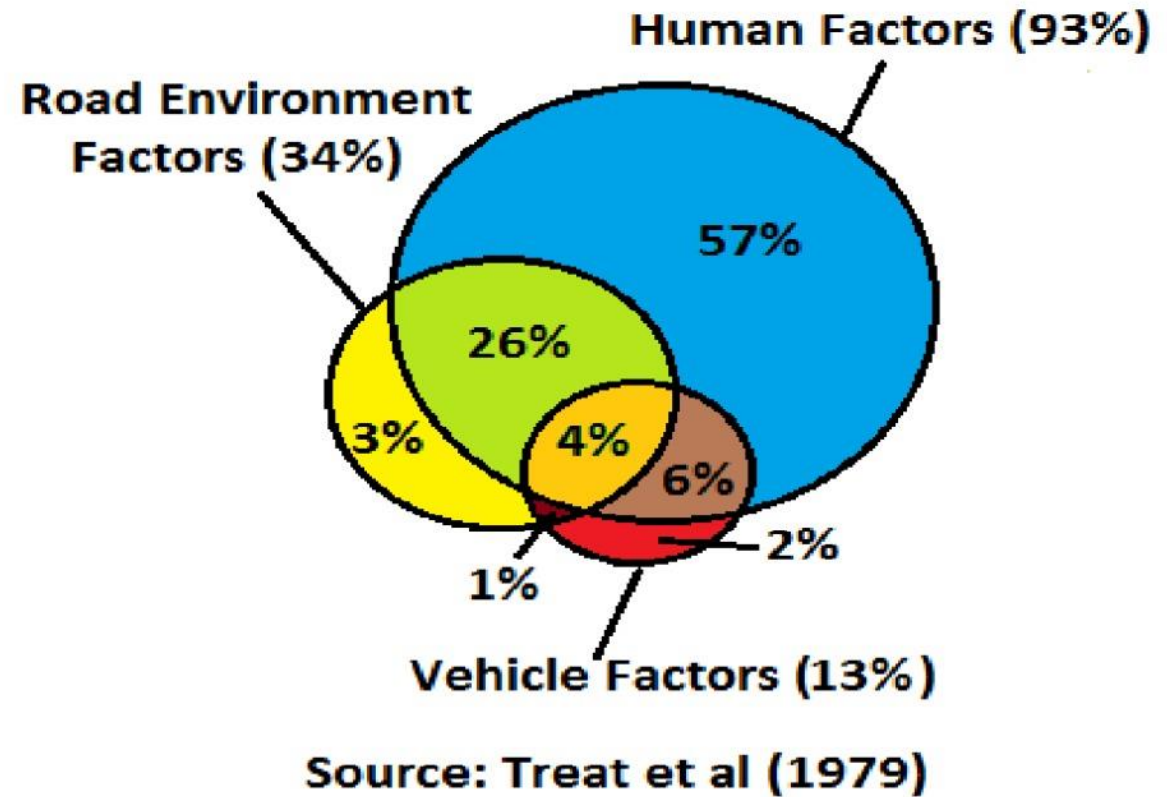
Sumber: Kementerian Pengangkutan Malaysia, 2020

## KEMALANGAN MAUT MENGIKUT JENIS JALAN DI MALAYSIA





# FACTORS CONTRIBUTING TO ROAD ACCIDENTS

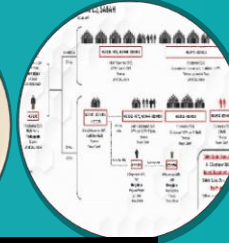


3

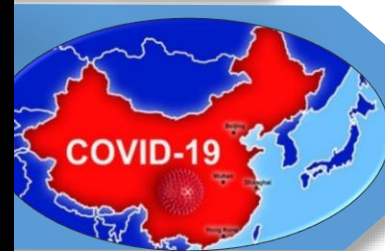
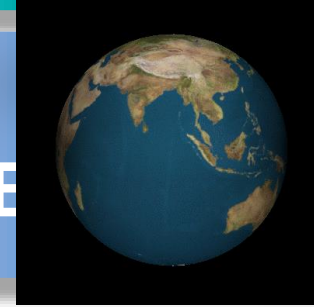
or

5

PATTERN



DIAGNOSE



INTERVENTION



EXPOSURE  
CONTROL



# Road Crash vs Covid-19



# SAFE SYSTEM APPROACH



**Road  
Safety  
Vaccine!!!**

2<sup>+</sup>

×  
**PERUBAHAN & TEKNOLOGI** ×





10 years ago, we did not have.....



shutterstock.com • 1279963171



10 year from now ...



# Evolution of Road Maintenance Practice



20 years ago



10 years ago



Today



# EVOLUTION OF WORK ZONES



20 years ago



10 years ago



Today

# If balcony rail is broken .....





# Is this sufficient???





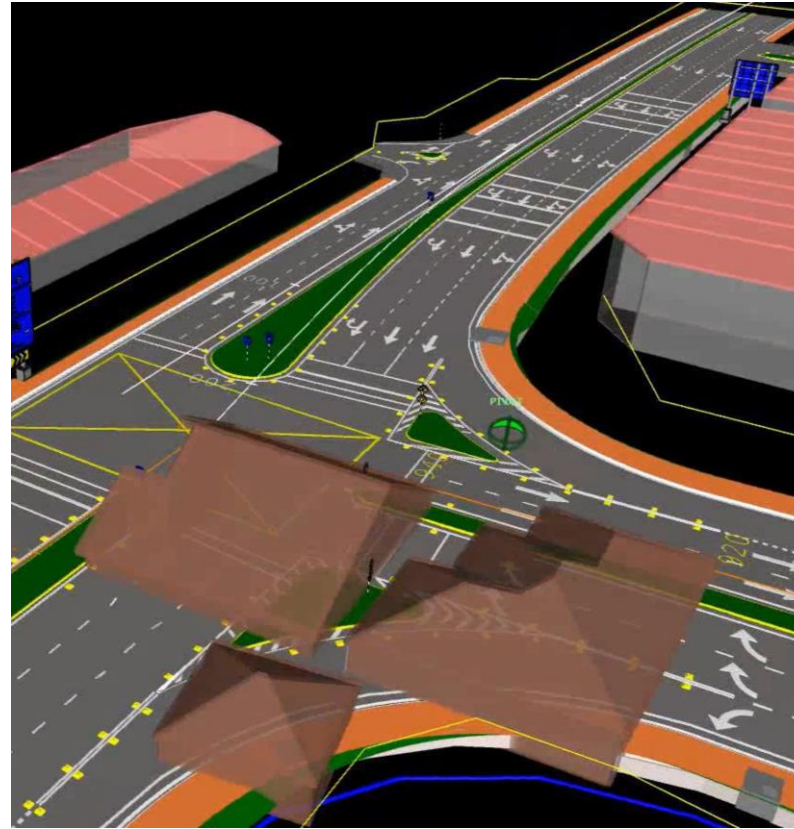
"The world is a dangerous place, not because of those who do evil, but because of those who look on and do nothing."

-ALBERT EINSTEIN





3D model



Sight Distance:  
At intersection



Cross Section:  
Location pole

# BIM in Road Safety

# INTERNATIONAL ROAD ASSESSMENT PROGRAMME, iRAP

To upgrade the safety of the road environment in low and middle income countries in order to reduce the global death toll



**Table 1** Distribution of star ratings by road network (Before intervention).

Network	Length* (km)	Proportion in each Star Rating				
		1-star	2-star	3-star	4-star	5-star
Kuala Lumpur – Bukit Kayu Hitam, E1	929.4	12.8%	50%	35.5%	1.7%	0%
Kuala Lumpur – Johor Bahru, E2	621.8	1.1%	50.3%	48.5%	0.1%	0%
Kuala Lumpur – Kuantan, E8 (LPT 1)	457.0	0.6%	37.8%	60.9%	0.7%	0%
Kuantan – Kuala Terengganu, E8 (LPT 2)	362.0	0%	13.6%	86.4%	0%	0%
<b>Total</b>	<b>2,370.2</b>	<b>5.4%</b>	<b>42.2%</b>	<b>51.6%</b>	<b>0.8%</b>	<b>0%</b>

\*Length for both directions of survey.  
Note: These results were generated using iRAP star rating model version 3.0.

**Table 2** Identified countermeasures to have significant influence on increasing star ratings.

No.	Countermeasure Description
1.	Treating unprotected safety barrier end (left side of the carriageway)
2.	Treating unprotected safety barrier end (right side of the carriageway)
3.	Provide crash barrier (left side of the carriageway)
4.	Provide crash barrier (right side of the carriageway)
5.	Provide crash barrier (both sides of the carriageway)



**Figure 2** Underground utility mapping.

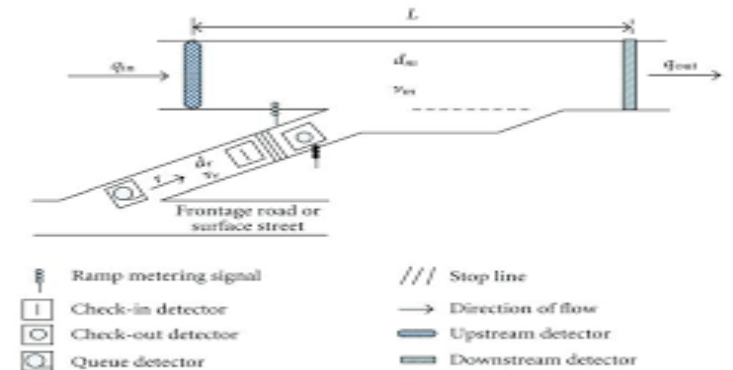
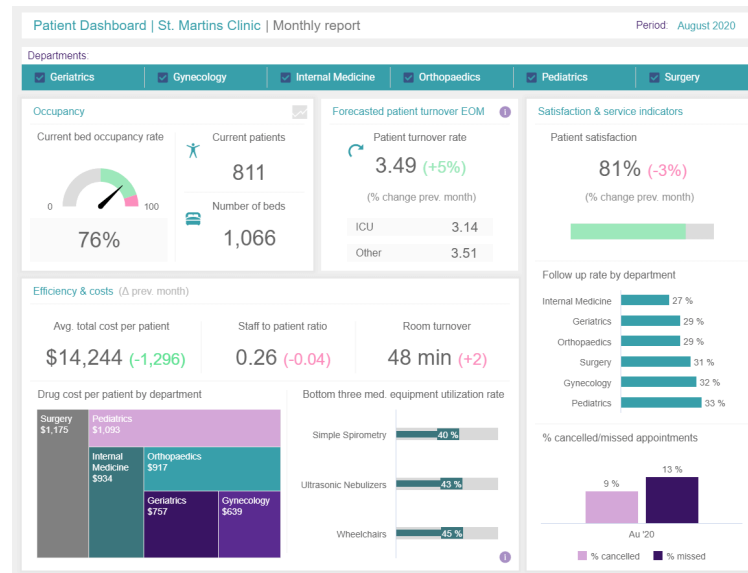


# TECHNOLOGY DRONE



An aerial photograph using a drone

# REAL TIME DATA



- ROAD BARRIERS
- REMOTE MGMT ROADSIDE ASSETS



3

# PELAN KESELAMATAN NEGARA





# MALAYSIA'S ROAD SAFETY PLAN

## 2014 - 2020

## ROAD SAFETY TARGETS

### Desired Outcomes

Institutional

Safer Roads  
and  
Mobility

Safer  
Vehicles

Safer Road  
Users

Post crash  
mgt

Safer Public  
Transport

ROAD SAFETY PROGRAMMES AND INTERVENTIONS



# JKR FOCUS

## Safer Roads and Mobility

- ✓ Improve safety-conscious planning, design, construction and operation of roads
- ✓ Assess regularly safety of roads
- ✓ Explore various forms of transport and safe infrastructure

Institutional

Safer Roads  
and  
Mobility

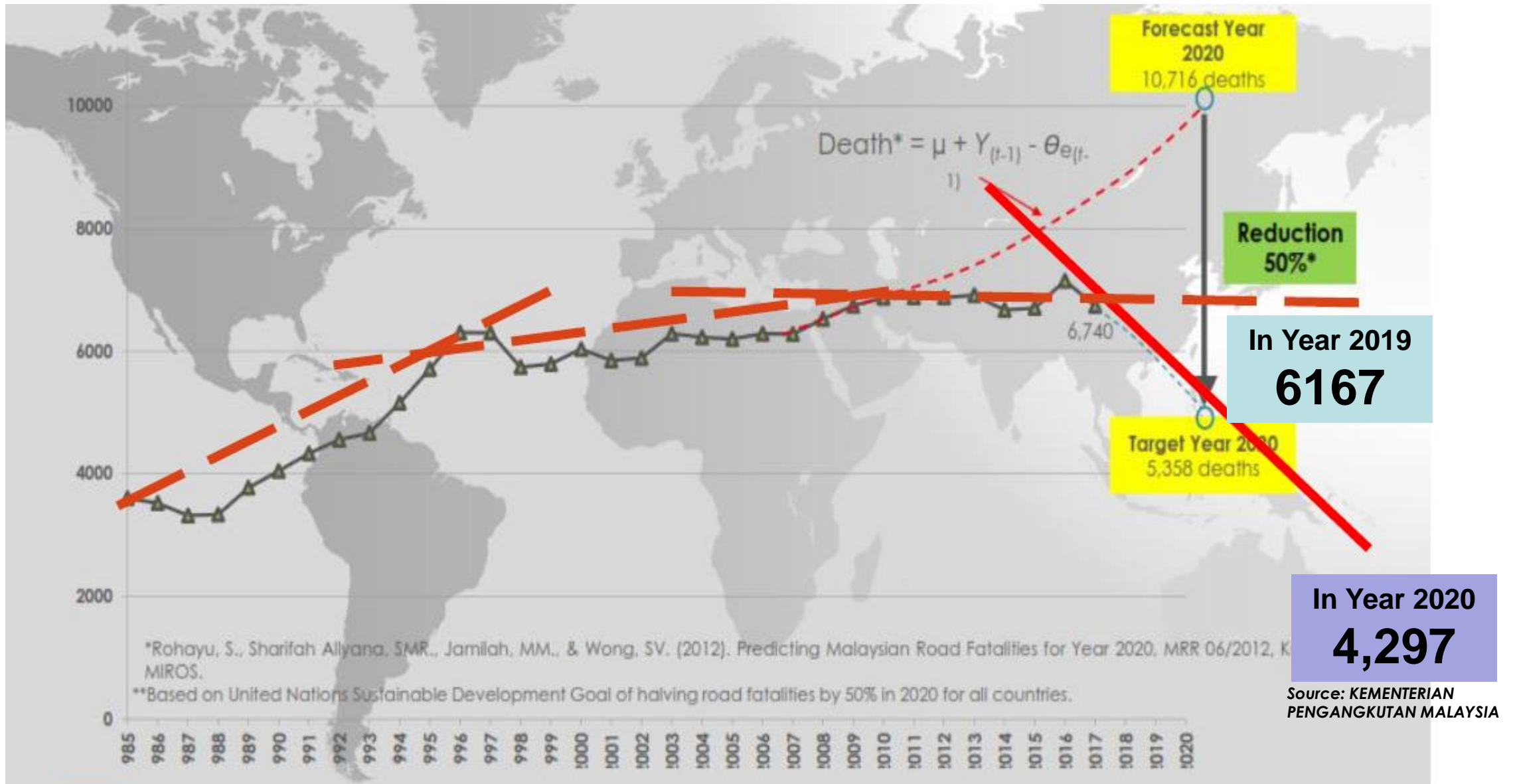
Safer  
Vehicles

Safer Road  
Users

Post crash  
mgt

Safer Public  
Transport

# TERCAPAI ATAU TIDAK?



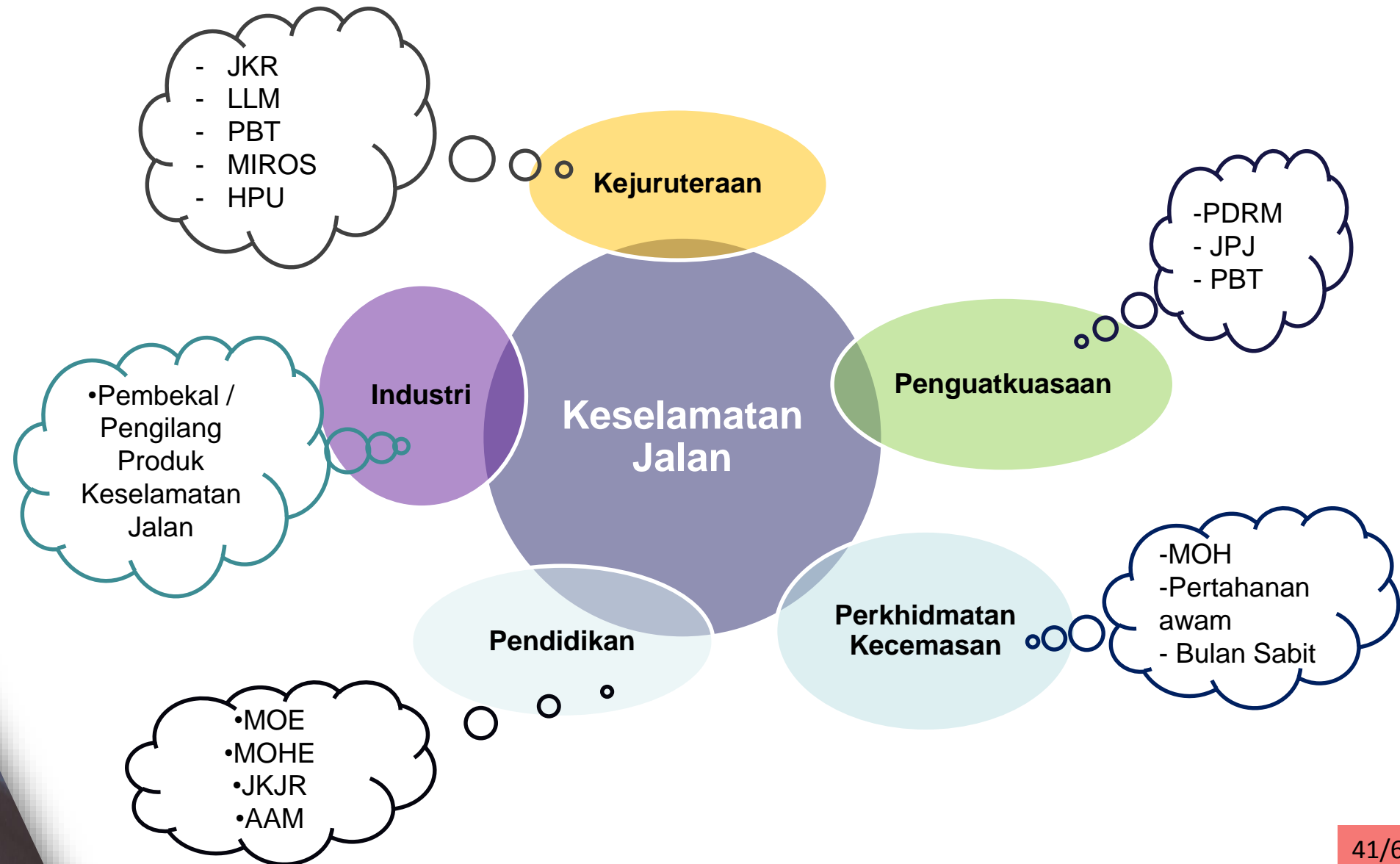




# 4

## PERANAN JKR

# ROAD SAFETY INITIATIVE





# OUR CORE BUSINESS IN ROAD SAFETY

## ROAD SAFETY APPROACHES



RSA 1-5  
RSD  
TMWZ

### ROAD SAFETY

#### Proactive Approach

Application of Road Safety Principal :

- Planning
- Design
- Construction
- Maintenance

Implementation of Road Safety Audits

#### Reactive Approach

Application of appropriate road engineering or traffic management schemes at at Hazardous Location :

- *Blackspot*
- *Mass Action Plan*
- *Route Action Plan*
- *Area-wide Scheme*



BLACKSPOT

JEJANTAS

LAMPU

ISYARAT

LAMPU

JALAN

LINTASAN

SEARAS

LORONG

MEMOTONG

LORONG

MOTOSIKAL

# OTHER INITIATIVES



## Road Safety Officer

Workshop Training – Every 2 years

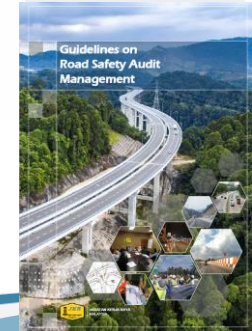


## Accreditation Road Safety Auditor

Certified Auditor – Every 3 years



## Traffic Management at Work Zone



## Guidelines on Road Safety Audit Management



# ROAD SAFETY OFFICER

PERINGKAT JKR NEGERI DAN JKR DAERAH



**190** ORANG PEGAWAI  
YANG TELAH DILANTIK

## Objectives



### ELIMINATE

- Silo mentality
- Centralisation
- Lackadaisical



### RAISE

- Visibility of JKR
- Innovation
- Efficiency
- Competency
- Training



### REDUCE

- Response time
- Bureaucracy



### CREATE

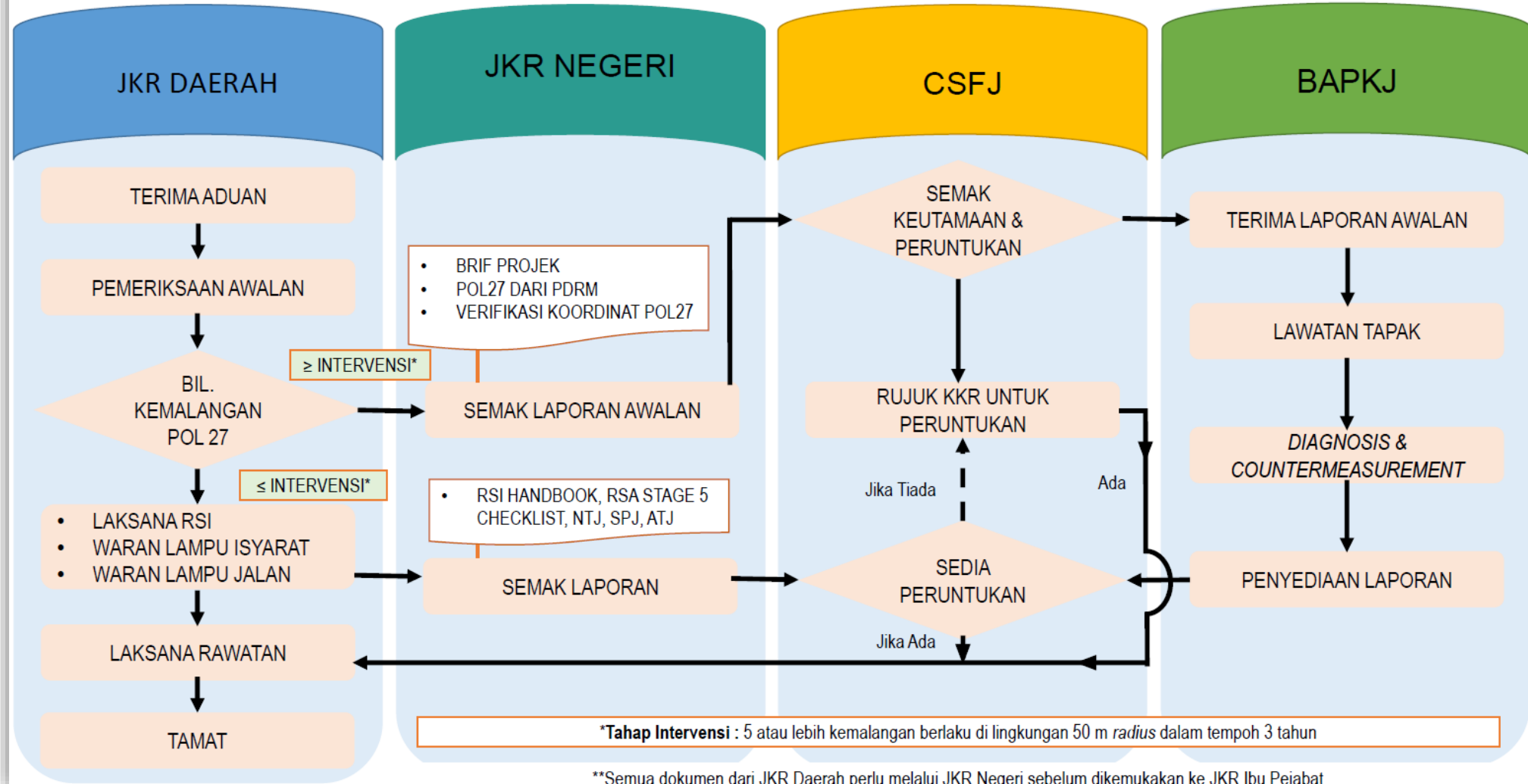
- Road Safety Culture
- RSO at district/state
- Higher Skill Level
- Collaboration



# ROAD SAFETY OFFICER

PERINGKAT JKR NEGERI DAN JKR DAERAH

## PENYIASATAN KEMALANGAN DI LOKASI BERBAHAYA JALAN PERSEKUTUAN







# 5

# SAFETY MEASURE

# RSA VS BLACKSPOT/RSI

## RSA

- Proactive
- New Road

## Road Safety Audit

(Proactive process) – implement the inspection measures during design stage on a new road project to prevent accidents.

## BLACKSPOT/RSI

- Reactive
- Existing Road

## Blackspot Investigation

(Reactive process) – Depending on accident recorded and aimed at reducing the frequency of accidents and/or severity at site with short term measures



# WHY WE CHOOSE **ACCIDENT INVESTIGATION** INSTEAD OF RSA?

REAL DATA

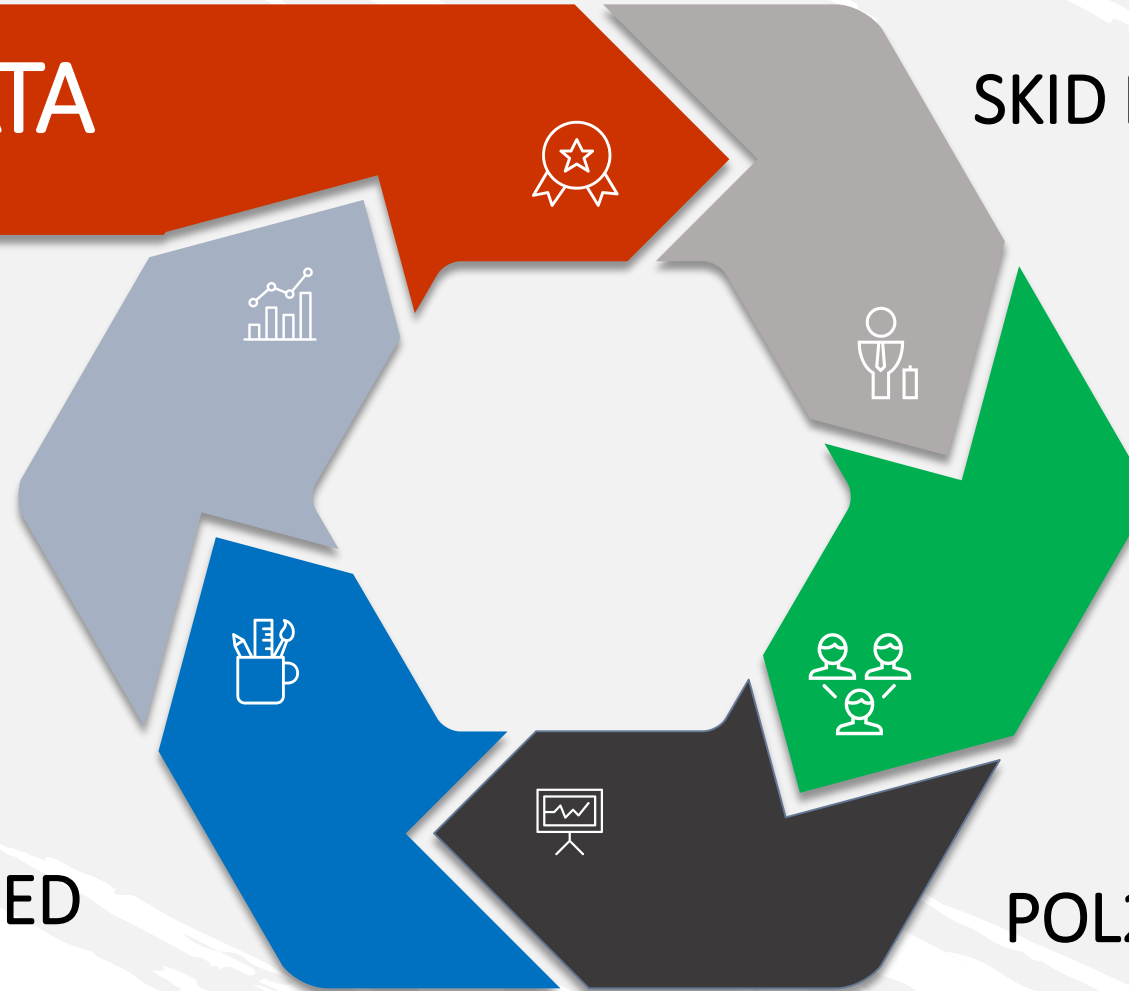
GEOMETRY

SPEED

SKID RESISTANCE

SIGHT  
DISTANCE

POL27



# WHAT IS A BLACKSPOT ?

REFERENCE : INTERIM GUIDE ON IDENTIFYING PRIORITISING AND TREATING HAZARDOUS LOCATION ON ROADS IN MALAYSIA

*THE OCCURENCE OF ACCIDENTS ALONG THE NETWORK TENDS TO BE LESS RANDOM AS ACCIDENTS ARE OFTEN CLUSTERED AT SO-CALLED "HAZARDOUS LOCATIONS" OR "BLACKSPOT"*

THE WAY TO IMPROVES ROAD SAFETY

**ACCIDENT REDUCTION APPROACHES**







# I X TINDAKAN JKR E BLACKSP





Program Memperelok Kawasan Berbahaya



Bilangan dan jenis kemalangan dalam tempoh 3 tahun terkini



*Low cost solution with high impact*



# INTERVENSI *BLACKSPOT*

5 atau lebih jenis  
kemalangan berlaku dalam  
lingkungan 50m radius  
dalam tempoh 3 tahun

ATAU

3 atau lebih kemalangan jenis  
yang sama berlaku dalam  
lingkungan 50m radius dalam  
tempoh 3 tahun



II



METADOLC



# METADOLOGI

PENGUMPULAN DATA KEMALANGAN



PENYEDIAAN *COLLISION DIAGRAM* AWALAN



LAWATAN TAPAK



PENYEDIAAN *COLLISION DIAGRAM* TERPERINCI



DIAGNOSIS KEMALANGAN



PENYEDIAAN CADANGAN PENAMBAHBAIKAN





III



CASE STUDY





**FEDERAL ROAD 3 (FT003),  
SECTION 212,  
JALAN KUANTAN - ENDAU,  
DAERAH ROMPIN, PAHANG**

# MACRO ANALYSIS DATA

ACCIDENTS DETAILS		CASES	PERCENT (%)
1	<b>TOTAL CASES</b>	6	
2	<b>INJURIES</b>		
	i. Death	3	50
	ii. Mild Injury	2	33
	iii. Vehicle Damage Only	1	17
	iv. Severe Injury	0	0
3	<b>TIME OF OCCURENCE</b>		
	i. Day	4	67
	ii. Night	2	33
4	<b>TYPES OF ACCIDENTS</b>		
	i. Over Turn on Roadway	3	50
	ii. Side Collision	2	33
	iii. Rear-end Collision	1	17
5	<b>MOTORCYCLE</b>		
	i. Accident Involving Motorcycle	1	17
	ii. Death Accident Involving Motorcycle	0	0



# ON SITE PHOTO OF FEDERAL ROAD 3 (FT003), SECTION 212, JALAN KUANTAN - ENDAU, DAERAH ROMPIN, PAHANG



# COLLISION DIAGRAM

## 6. REAR-END COLLISION



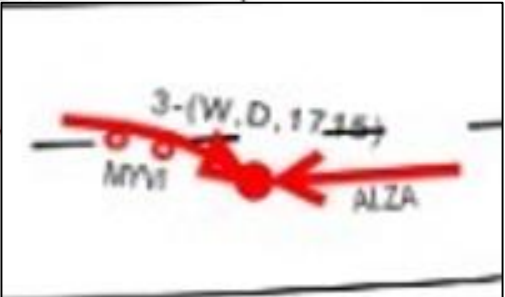
## 5. OVER-TURN ON ROADWAY



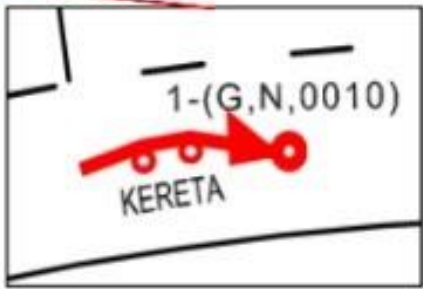
## 2. SIDE COLLISION



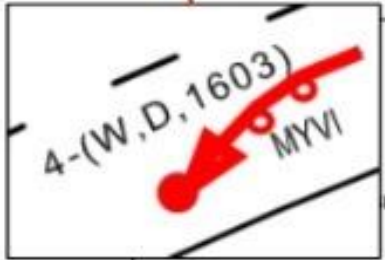
## 3. SIDE COLLISION



## 1. OVER-TURN ON ROADWAY



## 4. OVER-TURN ON ROADWAY



KE JOHOR  
BAHRU

KUANTAN

KUARTERS GURU  
SERI ROMPIN

- OVER TURN ON ROAD WAY
- HIT FIXED OBJECT
- HIT PARKED VEHICLE
- HIT PEDESTRIAN
- HIT RECYCLIST
- HIT ANIMAL

SEVERITY  
CODES  
FATALITY

### OTHER CODES

- G GOOD WEATHER
- D DAYTIME
- N NIGHT, NO LIGHTING
- NL NIGHT WITH LIGHTING
- W WET WEATHER
- MS MOTORCYCLE
- BUS BUS
- T TRUCK
- SENJA SENJA
- SURUM SURUM

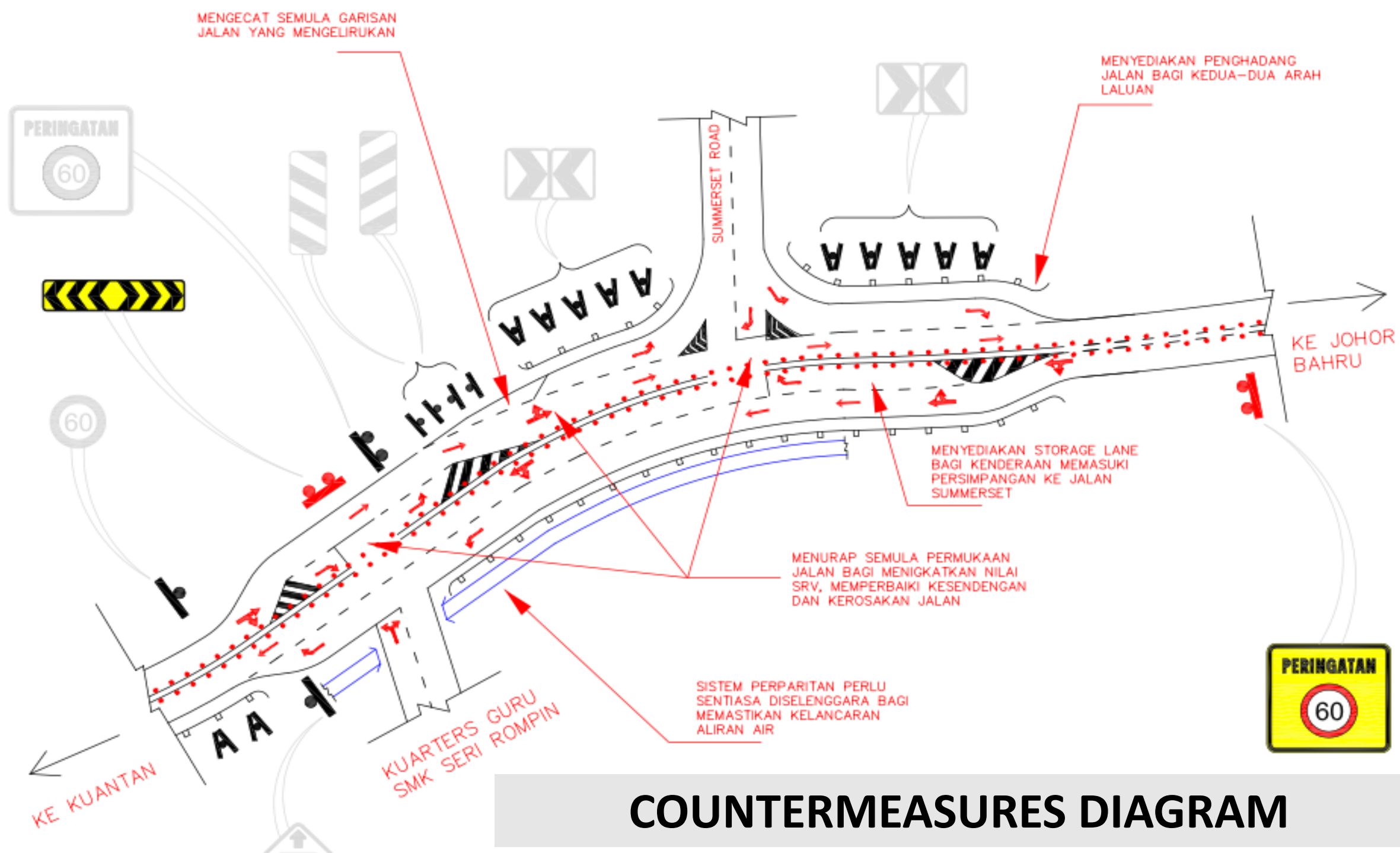
### OTHER LEGENDS

- DIRECTION
- STREET LIGHTING (SINGLE ARM)
- STREET LIGHTING (DOUBLE ARM)
- WET WEATHER
- PUBLIC PHONE
- BUS STOP
- SHOP / BUILDING



## DIAGNOSIS & SUGGESTION FOR IMPROVEMENT

DIAGNOSIS	SUGGESTION FOR IMPROVEMENT	
	SHORT TERM	LONG TERM
<ul style="list-style-type: none"> <li>i. Substandard curve with slippery road surface, Skid Number, SN = 24.47, (Medium Accident Risk Due To Skidding)</li> <li>ii. Poor lighting at corner.</li> <li>iii. Confusing roadline marking.</li> </ul>	<ul style="list-style-type: none"> <li>i. To pave the road surface to increase the value of SRV.</li> <li>ii. Replace all the RRPM that are broken.</li> <li>iii. Repaint road marking .</li> <li>iv. Replace WD39a and WD39b signboards.</li> <li>v. To add more warning signs.</li> </ul>	<ul style="list-style-type: none"> <li>i. Fix the geometry at the corner.</li> </ul>



## COUNTERMEASURES DIAGRAM

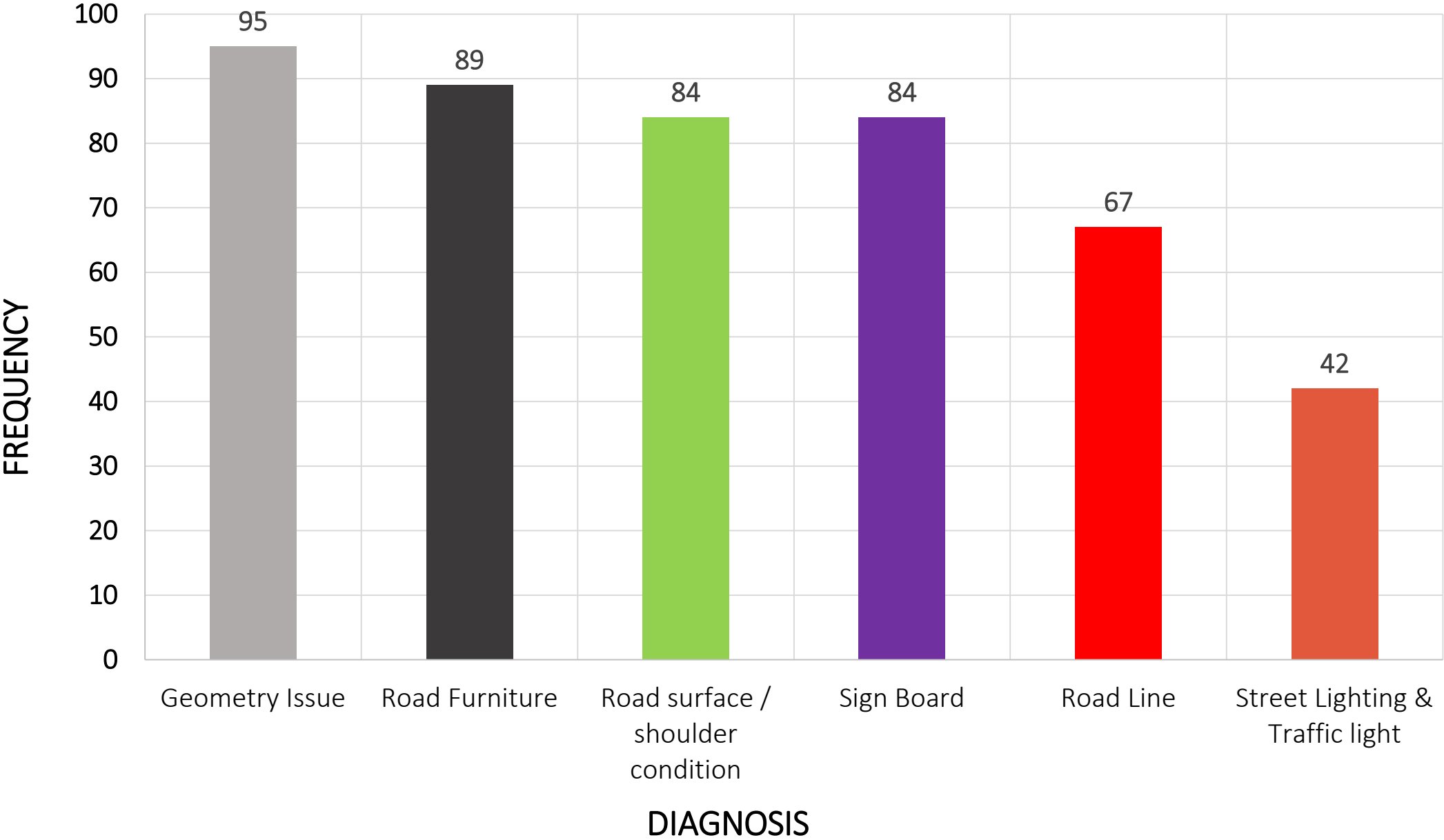




6

**LESSON LEARNT FROM  
RMK-11 PROJECTS**

# 6 COMMON DEFICIENCY CAUSE OF ACCIDENT





# WHY ACCIDENTS ARE OCCURRING?

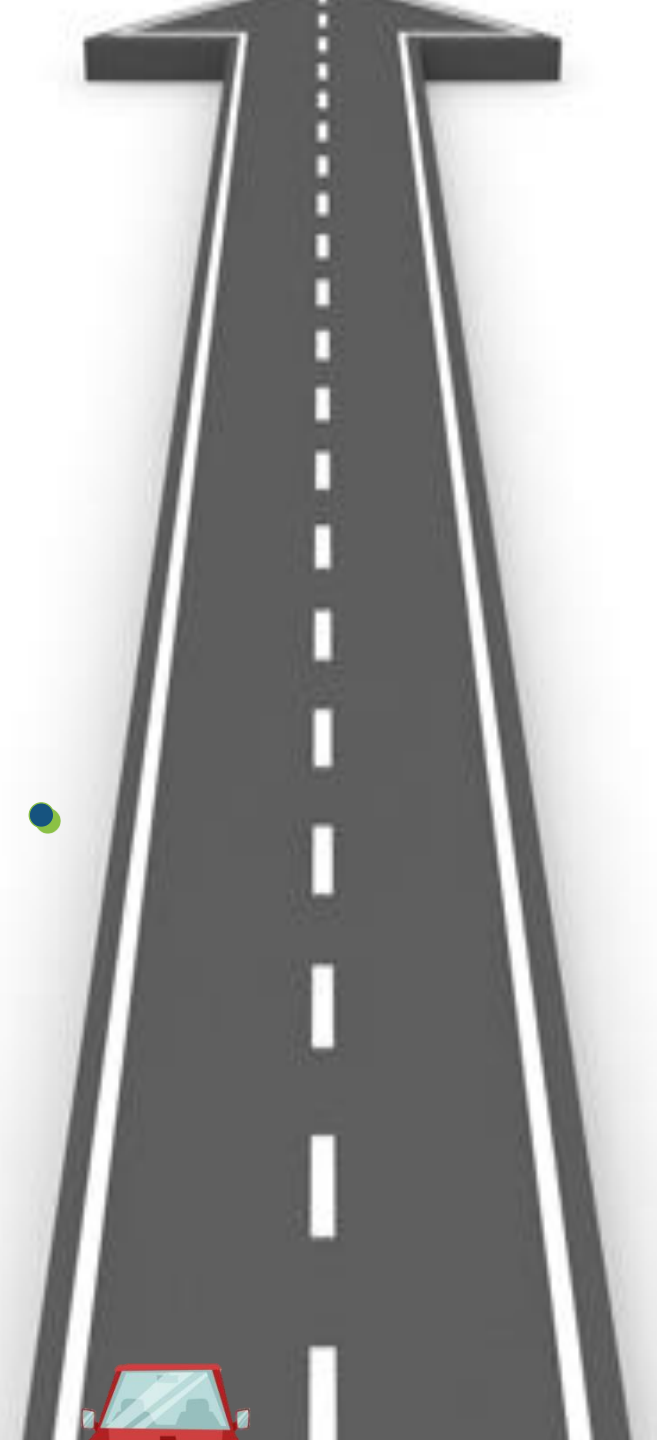
**Lack of maintenance due to inadequacies of maintenance fund**  
e.g.: broken guardrail, poor pavement condition etc.

**Poor understanding design principles**  
e.g.: signalised seagull intersection (pedestrian n side swipe accidents), trap lanes (rear ends) etc.

**Inadequate focus on vulnerable road users** e.g.: provision for pedestrian at schools, paved shoulder for motorcyclists (75% involve VRU) etc.

**Lack clarity on ownership of streetlights and traffic** e.g.: electrical engineers vs road engineers, LOS, integration with road environments, optimum cycle time, intergreen, all red, clear zone concept etc.

# S U M M A R Y . . . . .





# SUMMARY

1. Inculcate a **road safety culture** where it is a **shared responsibility**

2. Road safety measure **proactive & reactive**

3. Road safety issues should be address based on **facts** and **engineering judgement**

# HADITH

Dari Abi Hurairah RA dari Nabi SAW, baginda telah bersabda:

“Aku telah melihat seseorang yang bersenang-senang di dalam syurga kerana dia telah membuang kayu yang berjuntai di jalan dan kayu tersebut mengganggu orang yang lalu”

(HR Muslim No: 4745)

Status : Hadis Sahih



# **"SAFETY IS EVERYONE'S RESPONSIBILITY"**

## **#roadsafetyisasharedresponsibility**



# **THANK YOU**