Road Crash Data Review and Reporting

Training on improvement to crash data management

Istanbul - 25-27 June 2024

Road Safety Framework

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Content

- Safe System Crash Analysis (activity)
- The Safe System Approach
- Why is Crash Data Important?
- Safe System Crash Data Collection Example

Safe System Analysis of a Crash

Activity 1

- Observe the crash in the video.

  Watch at least twice.

- Write down the major causes of death and injury.

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WAKA KOTAHI

Safe System Analysis of a Crash

Activity 2

- Observe the crash in the video once more.
- Write down what could have prevented the death and injury.

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WAKA KOTAHI

Safe System Analysis of a Crash

Discussion

- What caused the death and injury?

Safe System Analysis of a Crash

Discussion

- What caused the death and injury?

Pole intrusion into the driver's side of the vehicle

Impact of the body with the inside of the car

Sudden stopping of the head

Safe System Analysis of a Crash

Discussion

- What caused the death and injury?
- What caused the crash?

Safe System Analysis of a Crash

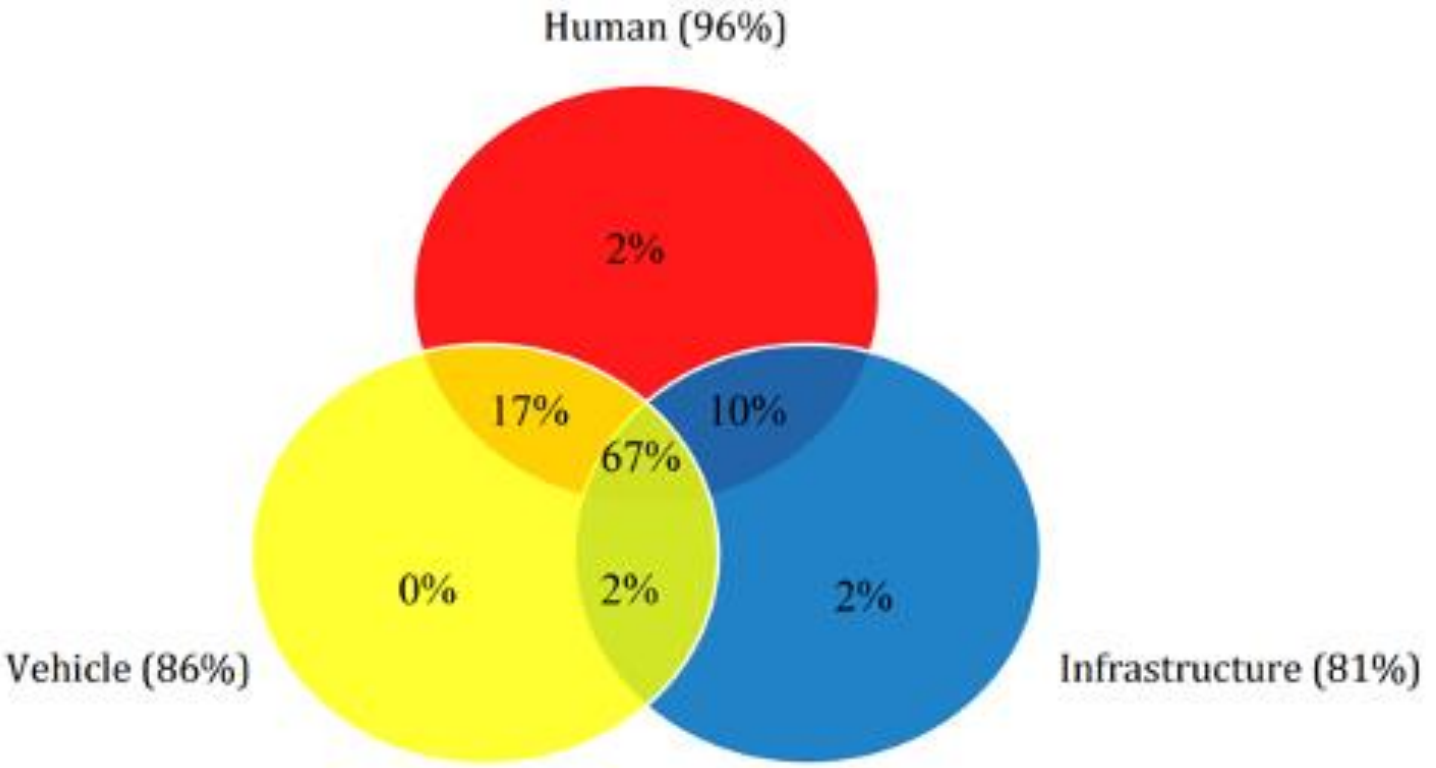


FIGURE 22: VENN DIAGRAM ANALYSIS FOR 125 CRASHES IN KOLKATA CITY

Source: JP Research Kolkata City Accident Study - 2018

Safe System Analysis of a Crash

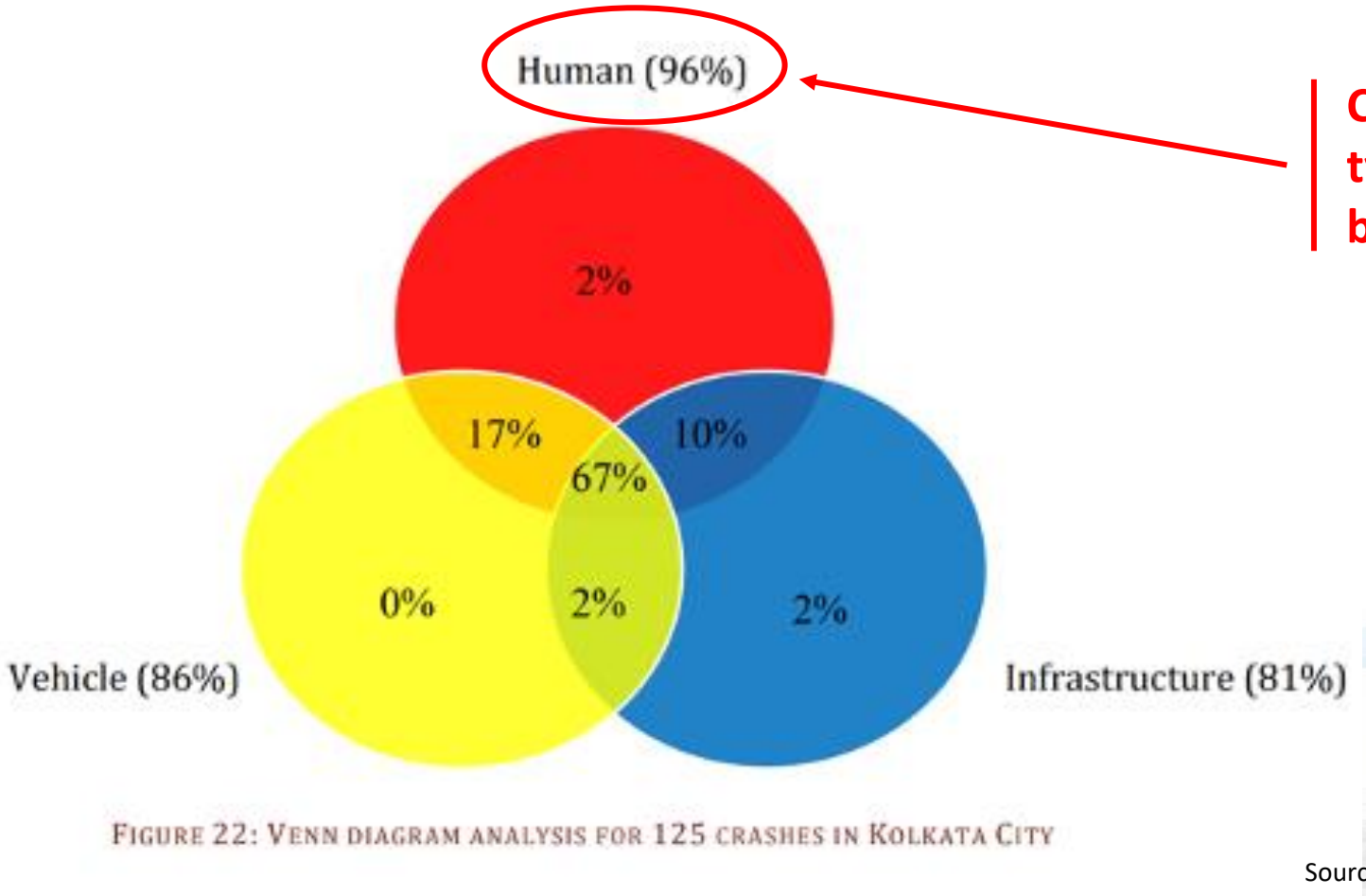


FIGURE 22: VENN DIAGRAM ANALYSIS FOR 125 CRASHES IN KOLKATA CITY

Crash reports typically blame the driver

Source: JP Research Kolkata City Accident Study - 2018

Safe System Analysis of a Crash

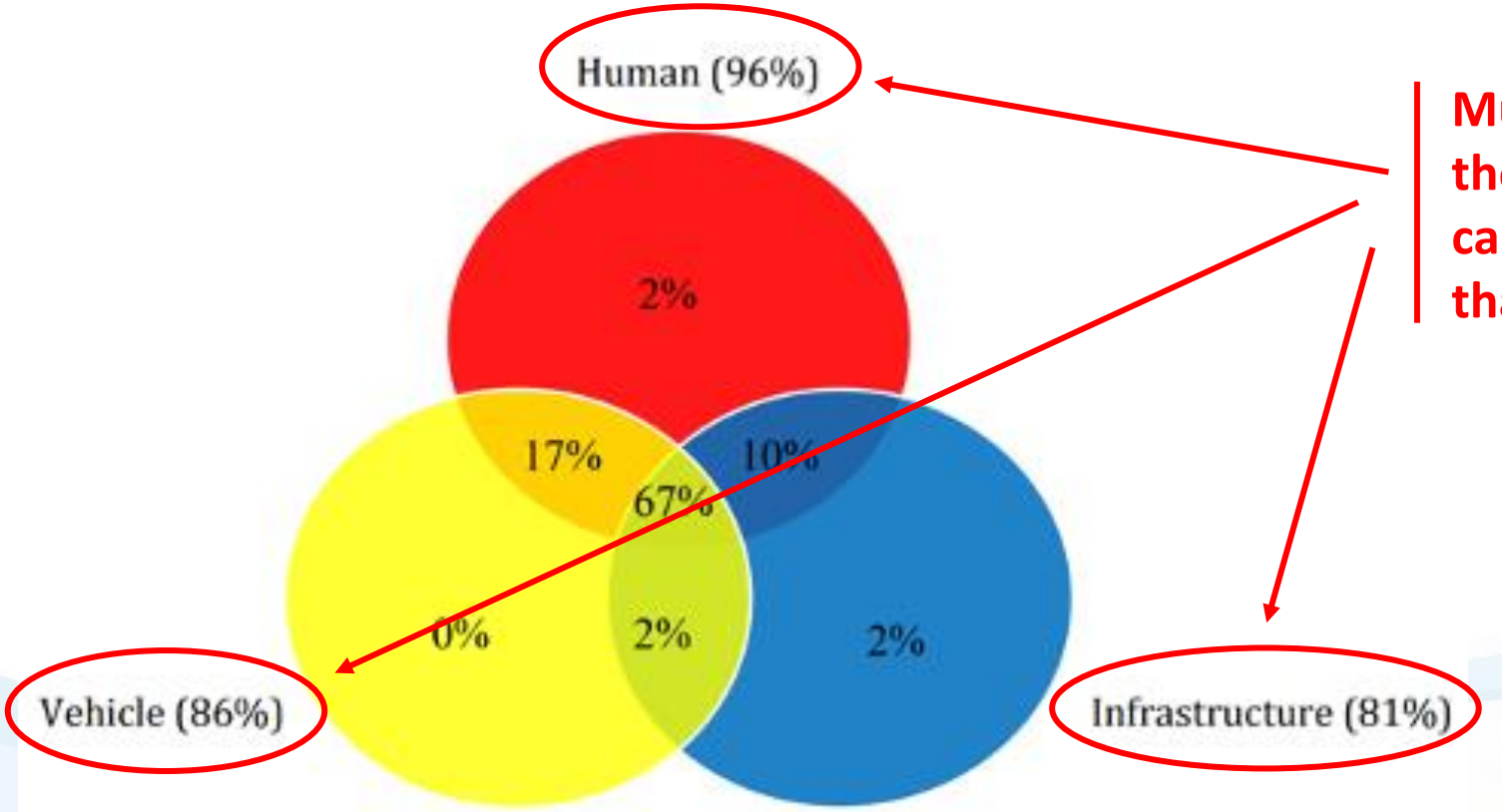


FIGURE 22: VENN DIAGRAM ANALYSIS FOR 125 CRASHES IN KOLKATA CITY

Multi-causal means the sum of all causes is greater than 100%

Source: JP Research Kolkata City Accident Study - 2018

Safe System Analysis of a Crash

Discussion

- What caused the death and injury?
- What caused the crash?
- What could have prevented the death and injury?

The Haddon Matrix

		FACTORS		
PHASES		HUMAN	VEHICLE	INFRASTRUCTURE
PRE-CRASH	Crash prevention	1 • Information • Attitudes • Impairment • Police enforcement	2 • Roadworthiness • Working lights • Good brakes • Handling • Speed control	3 • Road design and layout • Speed limits • Pedestrian Facilities
CRASH	Injury prevention during the crash	4 • Use of safety systems	5 • Crash worthiness • Crash protective design • Occupant restraints • Other Safety devices	6 • Crash protective roadside objects
POST-CRASH	Life Sustaining	7 • First-aid skill • Access to medics	8 • Ease of access • Fire risk	9 • Rescue facilities • Congestion

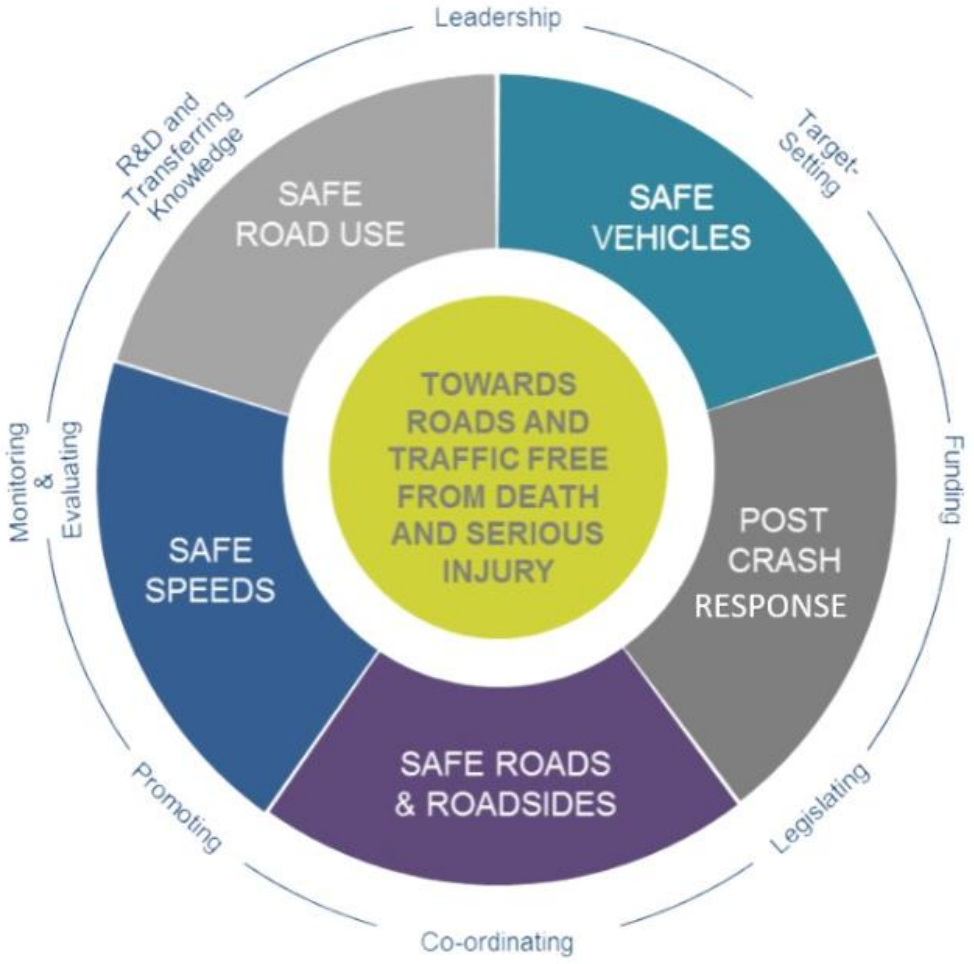
The Safe System Approach

⇒ People make mistakes that can lead to crashes

⇒ The human body has limited physical ability to tolerate crash forces before harm occurs

⇒ A shared responsibility exists amongst those who plan, design, build, and manage roads and vehicles and provide post-crash care to prevent crashes resulting in fatalities and serious injuries

⇒ All parts of the system need to be strengthened to multiply their effects and maintain protection



Source: Loughborough University

The Safe System Approach

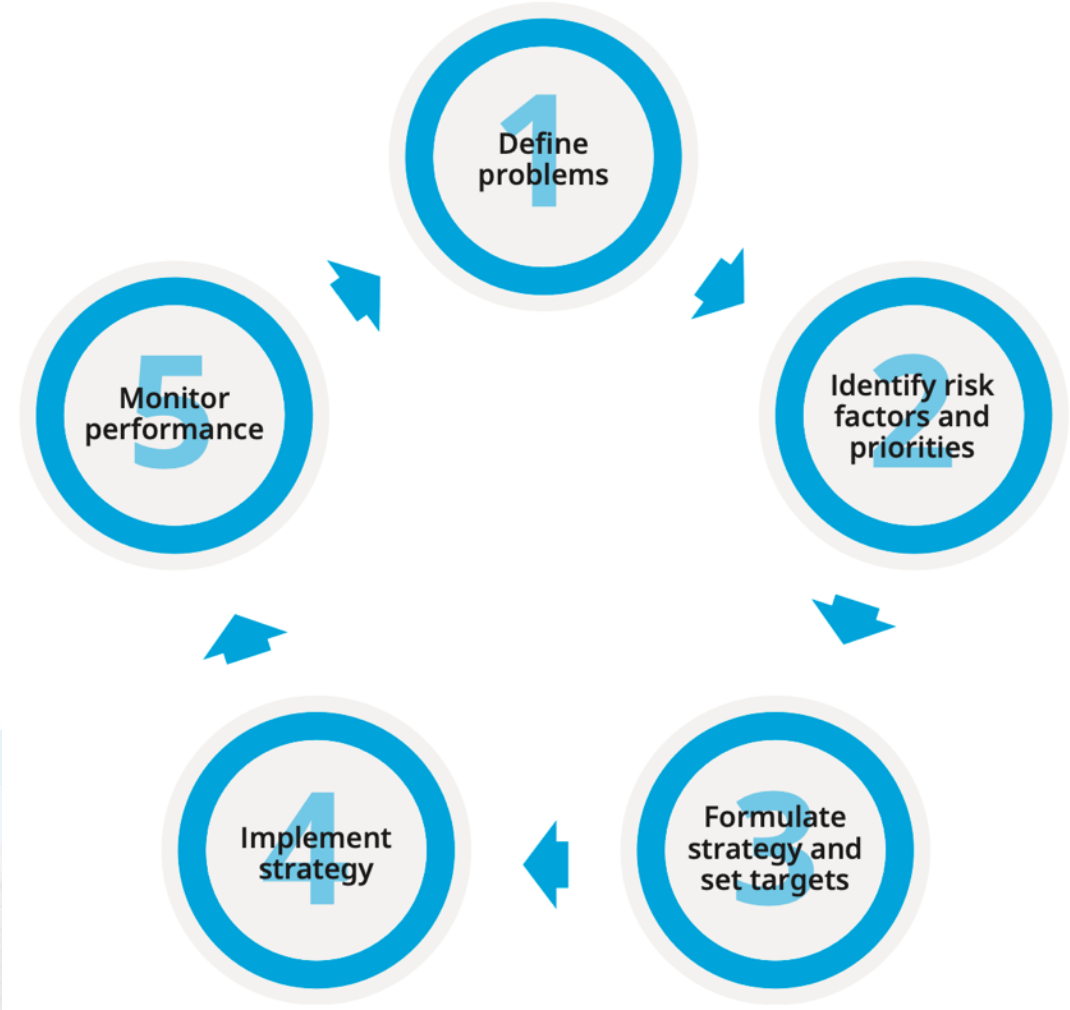
⇒ Focuses on reduction of death and injury

⇒ Integrates the multiple domains that determine the likelihood and severity of crashes

⇒ Includes cross-institutional and community collaboration and coordination

Source: Loughborough University

Why is Crash Data Important?

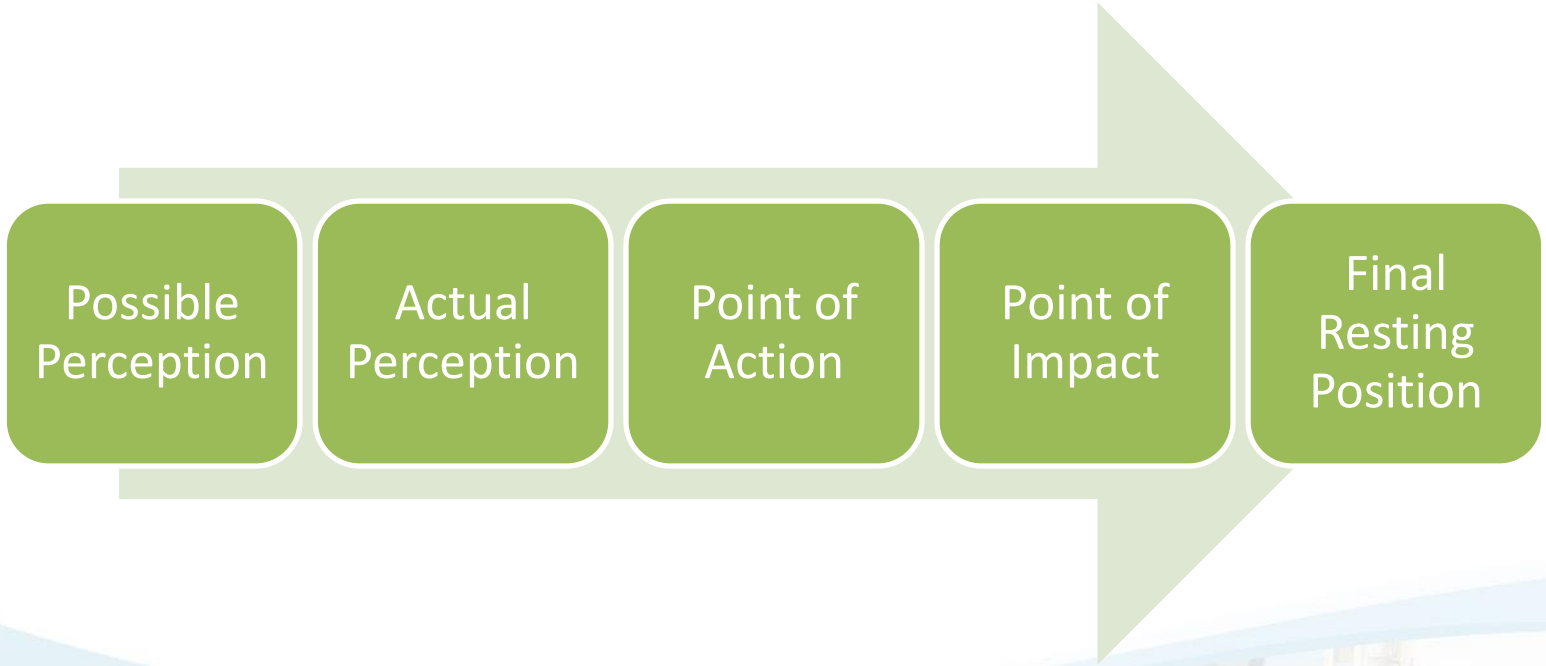


Source: World Bank

Safe System Crash Data Collection

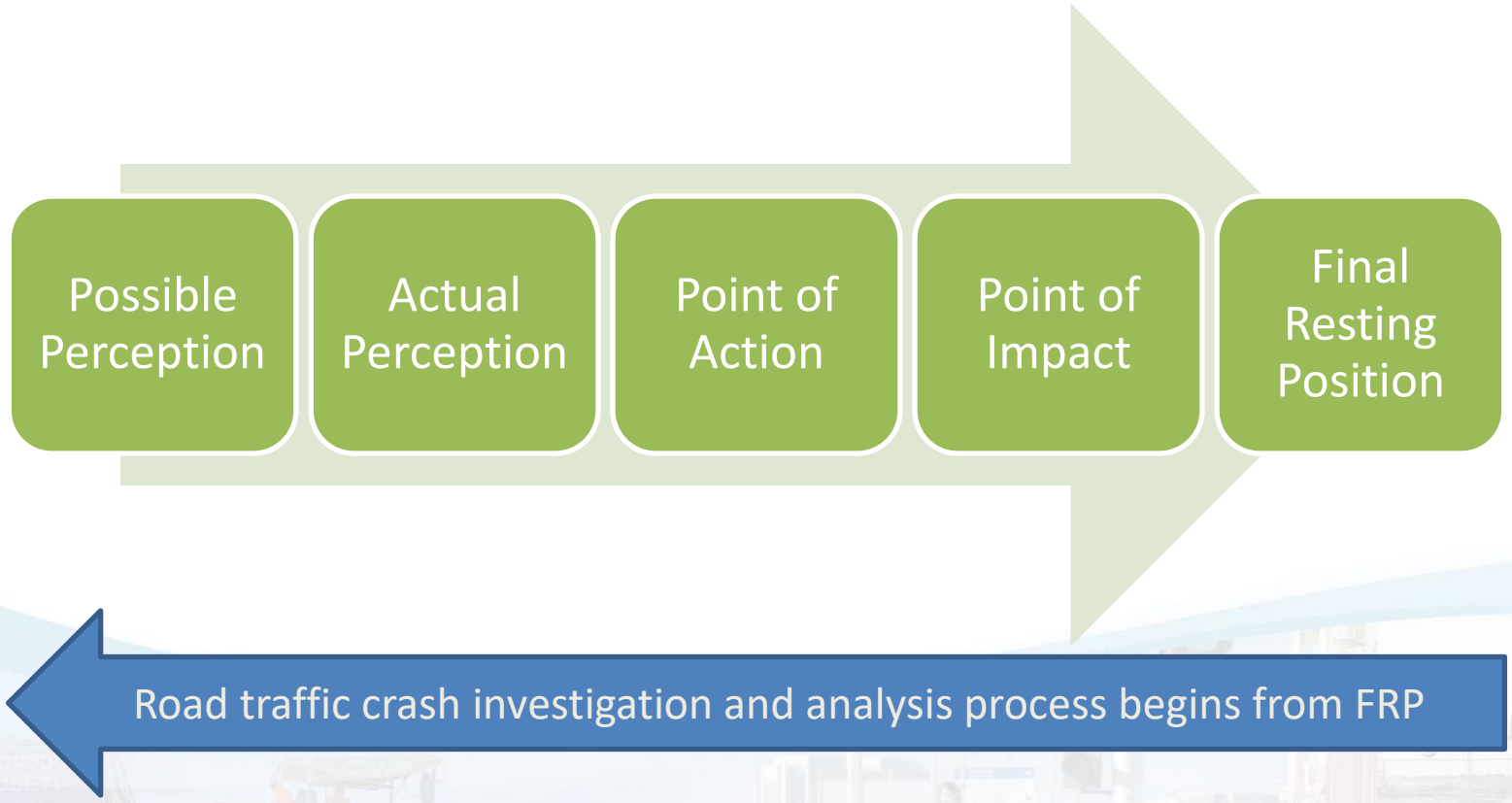
What does this look like in practice?

Phases of a Crash



Source: JP Research India

Phases of a Crash



Source: JP Research India

Phases of a Crash

Source: Transport Accident Commission

Phases of a Crash

Point of Actual Perception

Point of Action

Point of Impact

Final Resting Position

Source: Transport Accident Commission

Case Study: Collision with tree

Car with 4 occupants was travelling on a 2-lane undivided state highway. Unit 1 was travelling straight on the left lane of the road and the vehicle went off the roadway and collided with a tree.

3 occupants including driver of the unit 1 died on the spot and one occupant succumbed to death after 8 days of hospitalization.

Crash Time: 8:30 PM

Source: RASSi Database

Vehicle photography: 8-angle pictures





Collision damage mainly on the right side of vehicle.
Other damage related to extrication and towing.



Source: RASSi Database

Impact damage

Source: RASSi Database

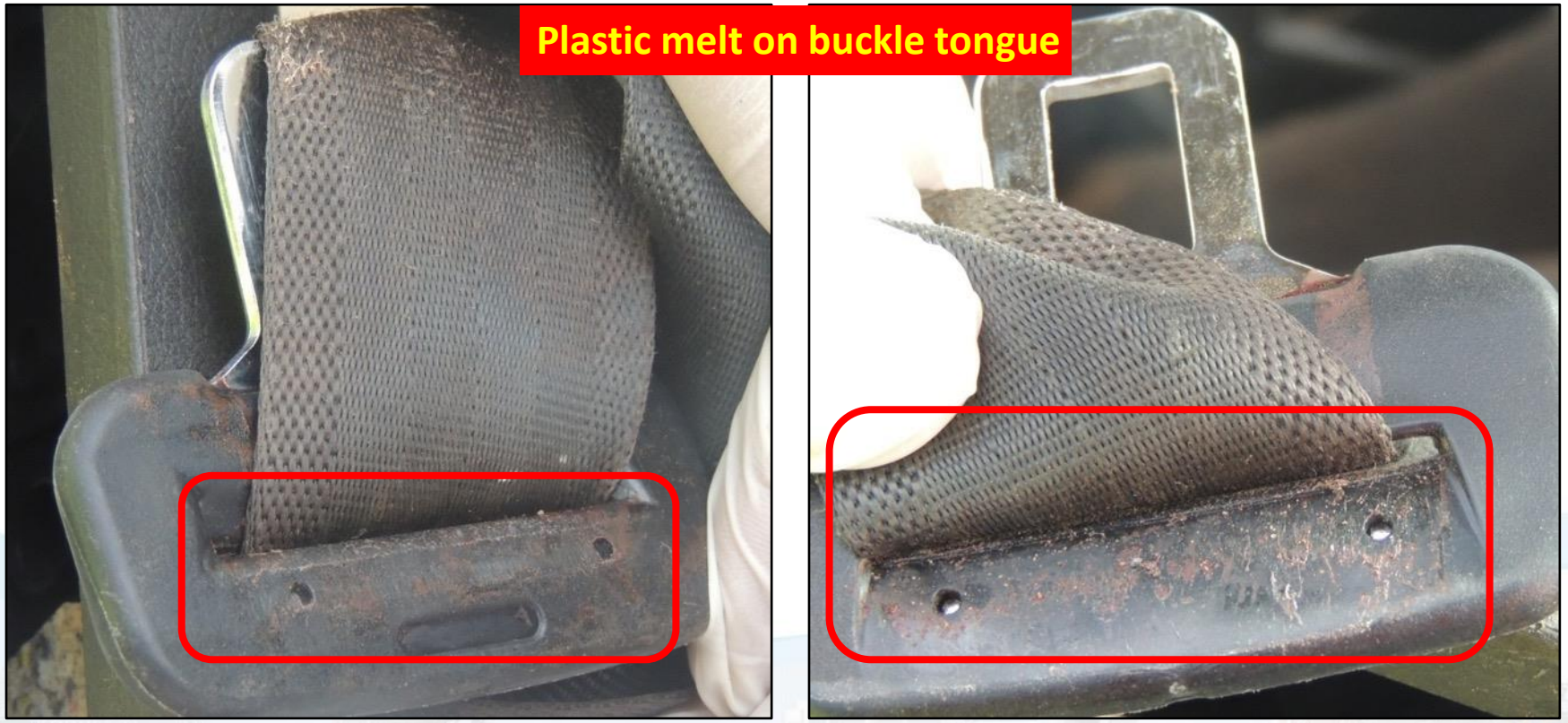
Impact damage direction

Source: RASSi Database

Occupant seating position and belt use

Source: RASSi Database

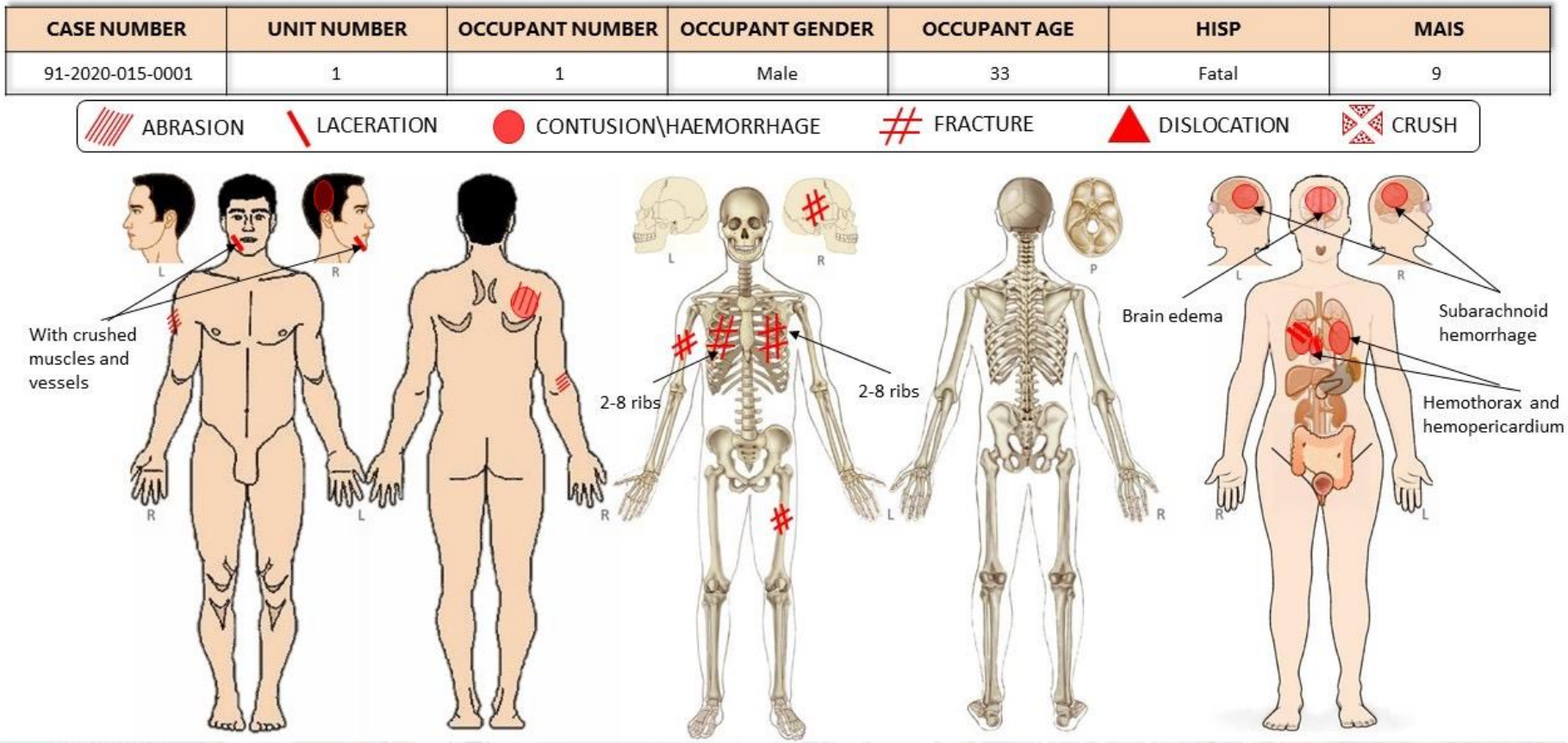
Seat belt inspection



Source: RASSi Database

Driver injuries

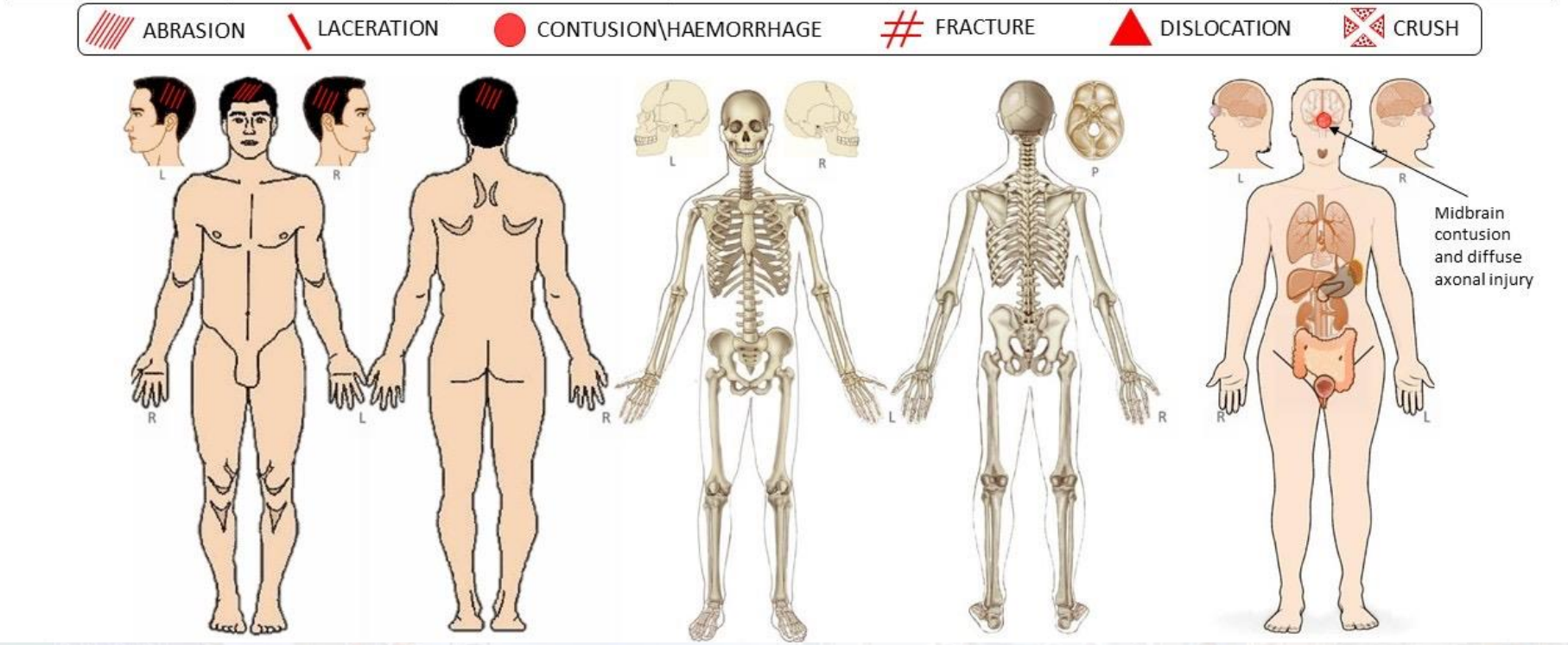
CASE NUMBER	UNIT NUMBER	OCCUPANT NUMBER	OCCUPANT GENDER	OCCUPANT AGE	HISP	MAIS
91-2020-015-0001	1	1	Male	33	Fatal	9



Source: RASSi Database

Co-passenger injuries

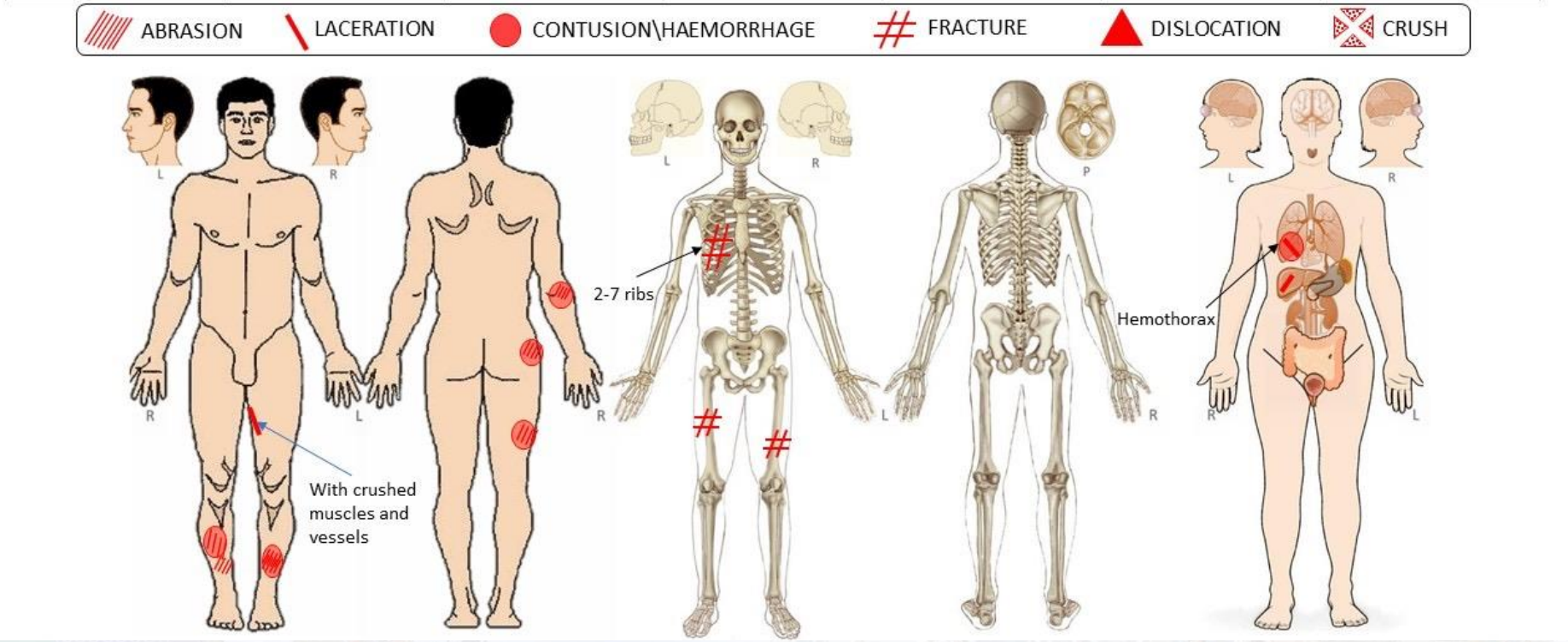
CASE NUMBER	UNIT NUMBER	OCCUPANT NUMBER	OCCUPANT GENDER	OCCUPANT AGE	HISP	MAIS
91-2020-015-0001	1	2	Male	31	Fatal	5



Source: RASSi Database

Right rear passenger injuries

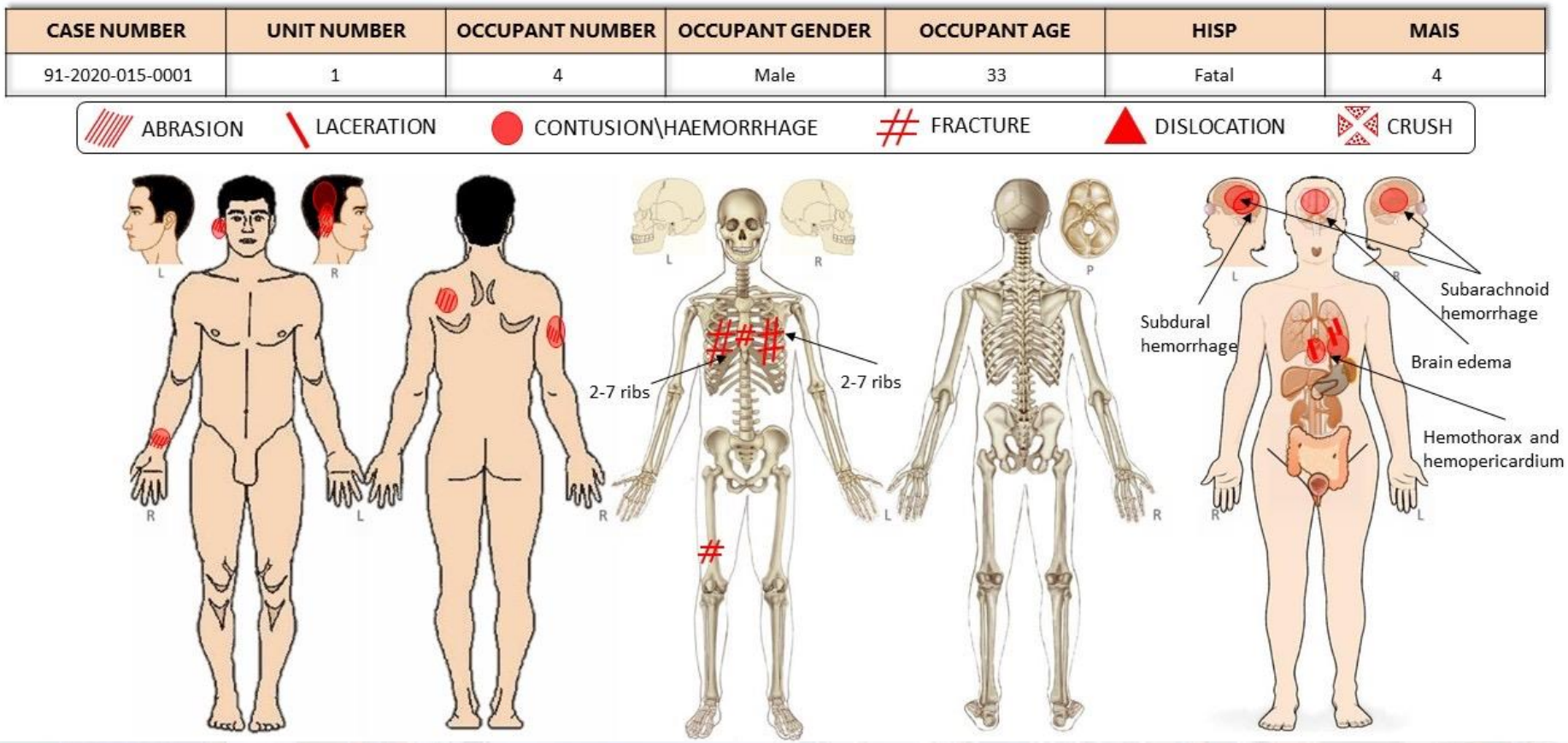
CASE NUMBER	UNIT NUMBER	OCCUPANT NUMBER	OCCUPANT GENDER	OCCUPANT AGE	HISP	MAIS
91-2020-015-0001	1	3	Male	29	Fatal	9



Source: RASSi Database

Left rear passenger injuries

CASE NUMBER	UNIT NUMBER	OCCUPANT NUMBER	OCCUPANT GENDER	OCCUPANT AGE	HISP	MAIS
91-2020-015-0001	1	4	Male	33	Fatal	4



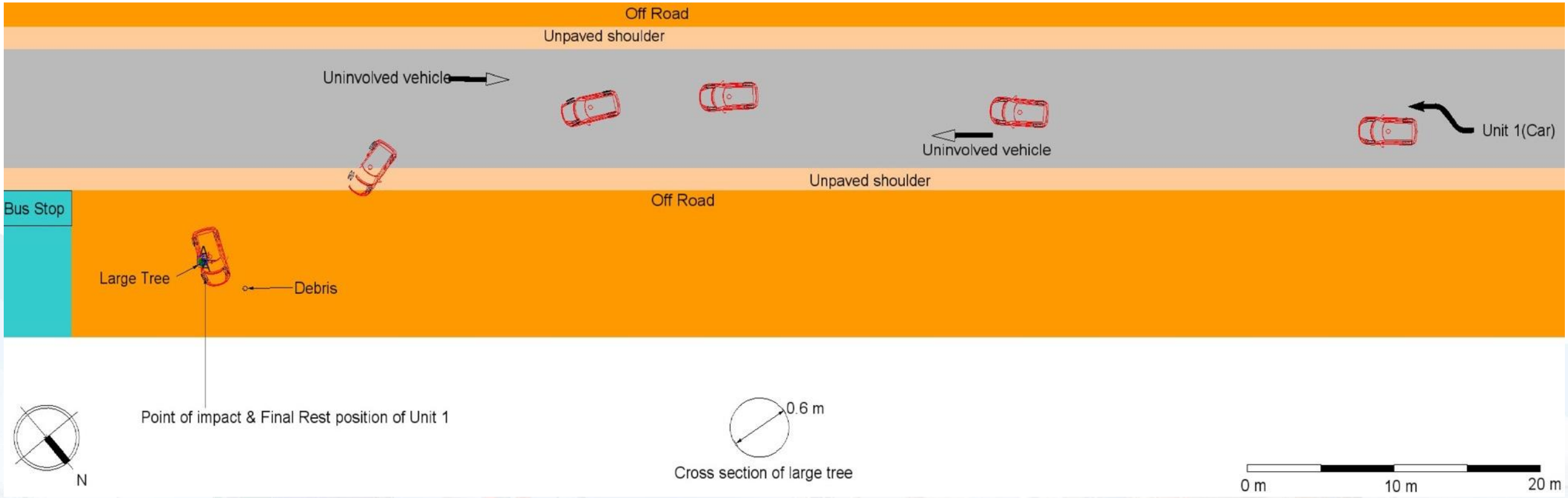
Source: RASSi Database

Scene examination - GPS: 21.21574, 78.94901

- Undivided 2-lane highway
- Poor road surface
- No road markings
- No speed limit signage
- Overtaking on oncoming lane
- Roadside trees
- Roadside shops/parking
- Roadside bus stops

Source: RASSi Database

Scene diagram – to scale



Source: RASSi Database

Crash reconstruction

Source: RASSi Database

Applying the Haddon Matrix

		FACTORS		
PHASES		**HUMAN**	**VEHICLE**	**INFRASTRUCTURE**
PRE-CRASH	**Crash prevention**	Car: Overtaking on undivided road Speeding???	None Found	Car: • Poor road surface • No marking/signage • Undivided road • No lighting
CRASH	**Injury prevention during the crash**	Car: Seatbelt not used	Car: Passenger Compartment Intrusion	Car: Impact with road side tree
POST-CRASH	**Life Sustaining**	None Found	Car: Occupant Entrapment	Car: Delay in extrication

Source: RASSi Database

Thank you

Any questions?

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Asian Development Bank