ROAD TRAFFIC ACCIDENT DATA COLLECTION AND ANALYSIS WORKSHOP
COUNTRY: MONGOLIA

TA-6763 REG: Accelerating Innovation in Transport

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PART 3:

CRASH DATA ANALYSIS

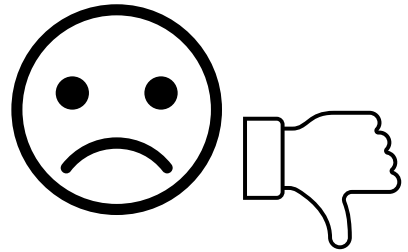
Breaking down each crash to identify the contributing factors using the Haddon Matrix

CRASH CAUSES IN MONGOLIA

- Crash causes in Mongolia are restricted to the following factors:
  - Driver fault
  - Pedestrian misconduct
  - Road condition
  - Technical failure

CRASH CAUSES IN MONGOLIA
CRASH ANALYSIS ISSUES

- Crashes are being analyzed for a single predominant factor and not for a combination of factors.



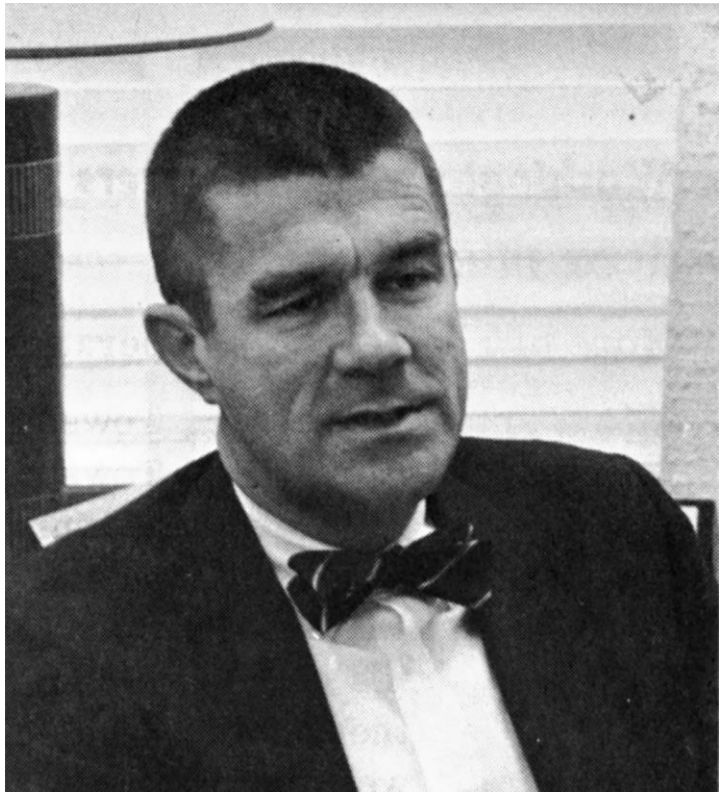
	Жолоочийн буруутай үйлдэл	Явган зорчигчийн буруутай үйлдэл	Замын нөхцөл	Техникийн гэмтэл
Year 2021	97.8%	2.0%	0.2%	0%

- Such an analysis predominantly holds drivers as responsible for crashes and impedes implementation of a safe system.

DR.WILLIAM HADDON JR. (1926-1985)

- Dr. William Haddon, Jr., had degrees from the Massachusetts Institute of Technology, Harvard Medical School, Harvard School of Public Health, and devoted his career to highway safety.
- Appointed as head of the National Traffic Safety Agency and the National Highway Safety Agency of USA, on September 9, 1966.
- Created the Haddon Matrix in 1970s for understanding how injuries occur and developing strategies for intervention.

Source: https://www.fhwa.dot.gov/highwayhistory/moment/highway_safety_breakthrough.cfm



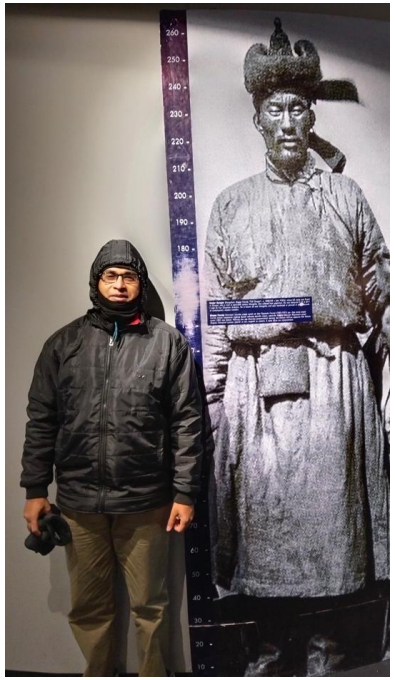
HADDON MATRIX APPROACH

To understand how injuries occur and develop strategies for intervention.

		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

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

3 FACTORS OF THE HADDON MATRIX



HUMAN

VEHICLE

INFRASTRUCTURE / ENVIRONMENT

ADB

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

CAREC
Central Asia Regional Economic Cooperation Program

3 PHASES OF THE HADDON MATRIX

PRE-CRASH

CRASH

POST-CRASH

Source :
1. https://www.facebook.com/Mongolia-like-share-302705686813290/videos/best-car-crash-accident-compilation-2017-idiot-driver-fails/303688233381702/
2. https://news.mn/wpcontent/uploads/2020/06/faa03f9105a4108321be098969ab260b_x3.jpg

ADB

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

CAREC
Central Asia Regional Economic Cooperation Program

CASE STUDY 1: CAR COLLISION WITH TREE

Source: RASSI Database

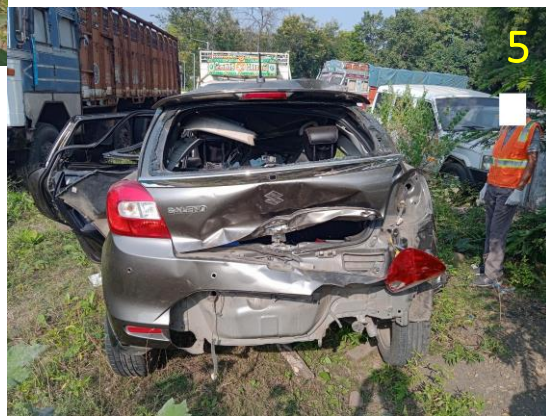
Car with 4 occupants was travelling on a 2-lane undivided state highway. Unit 1 was travelling straight on the left lane of the road and the vehicle went off the roadway and collided with a tree.

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

Accident Time: 8:30 PM

VEHICLE PHOTOGRAPHY
8-ANGLE PICTURES

Source: RASSI Database



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

IMPACT DAMAGE

Source: RASSI Database

IMPACT DAMAGE DIRECTION

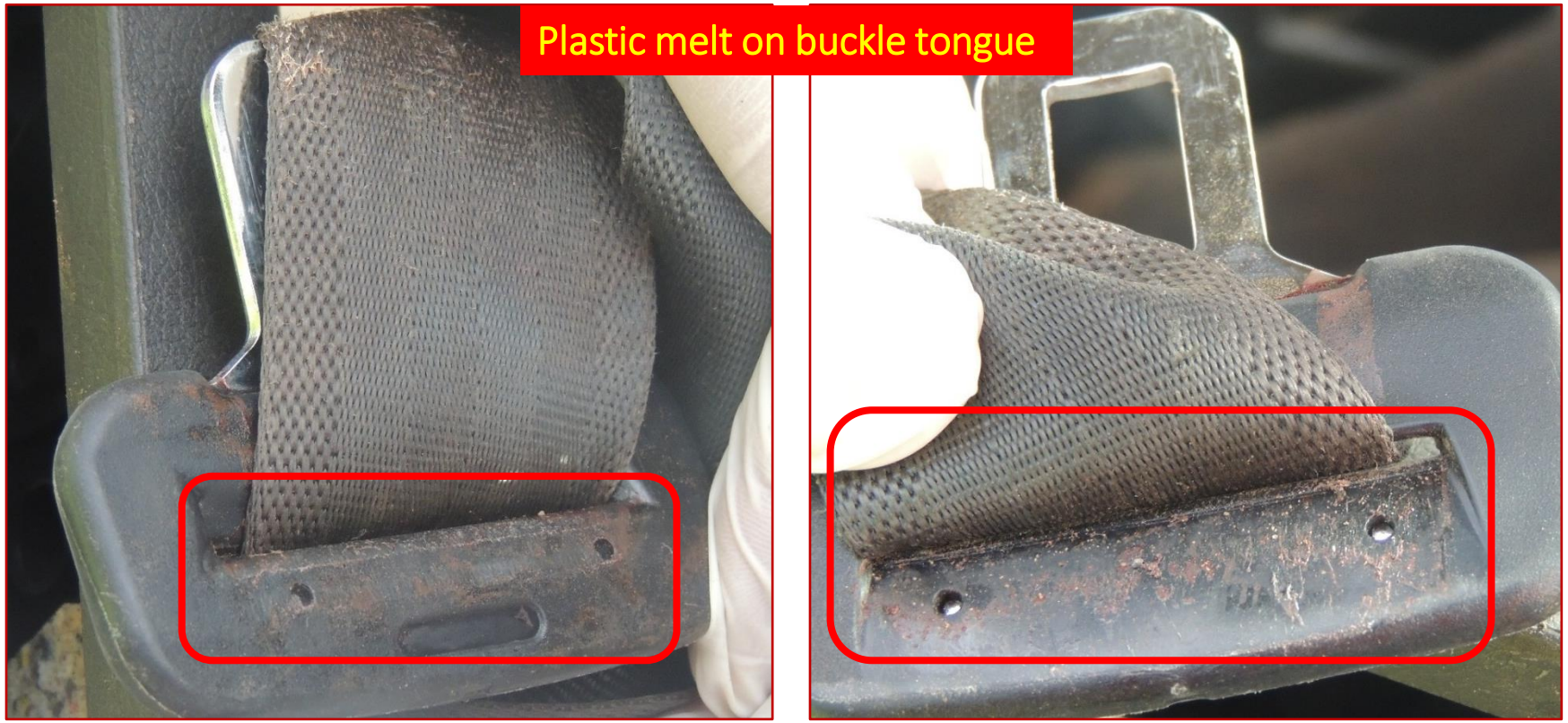
Source: RASSI Database

OCCUPANT SEATING POSITION AND BELT USE DETERMINATION

Source: RASSI Database

SEAT BELT INSPECTION

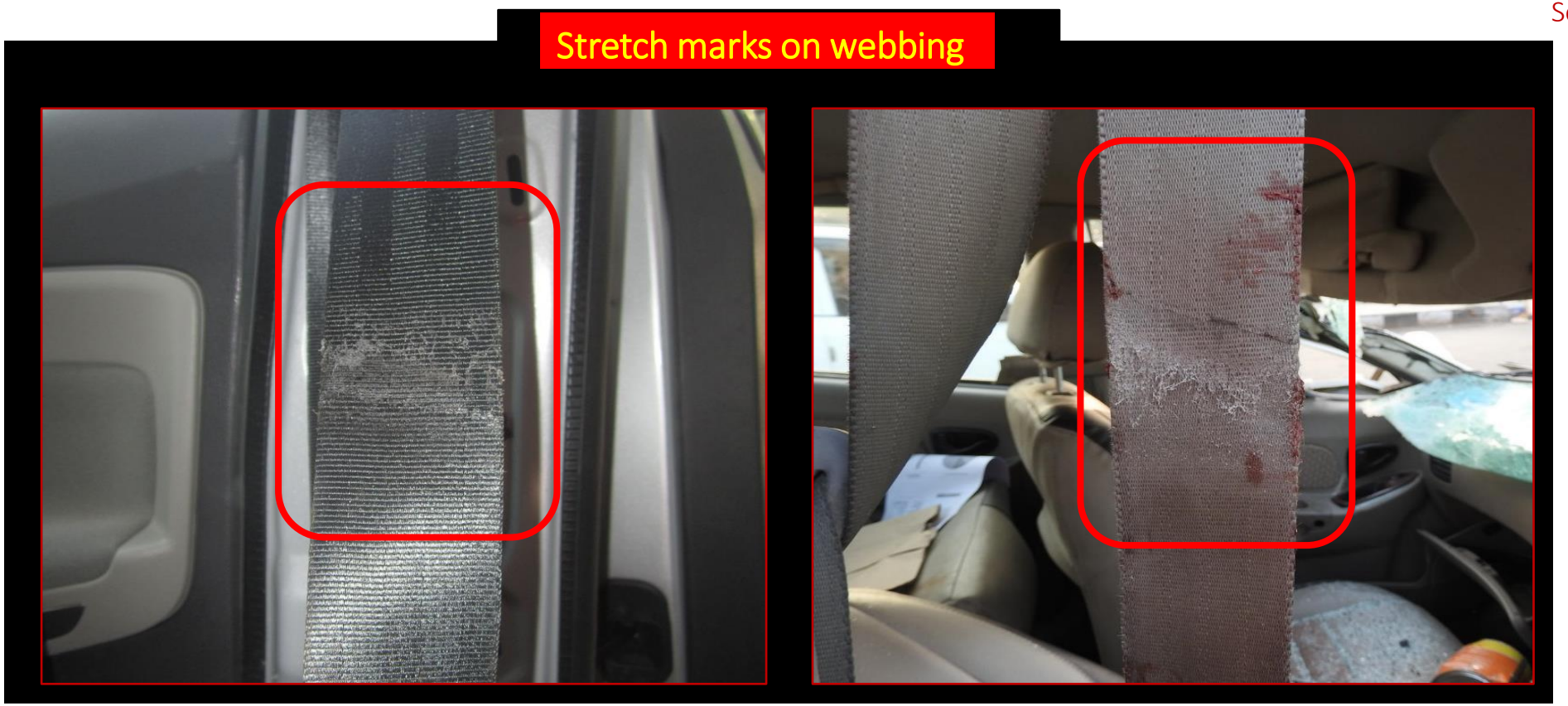
Source: RASSI Database



Source: RASSI Database

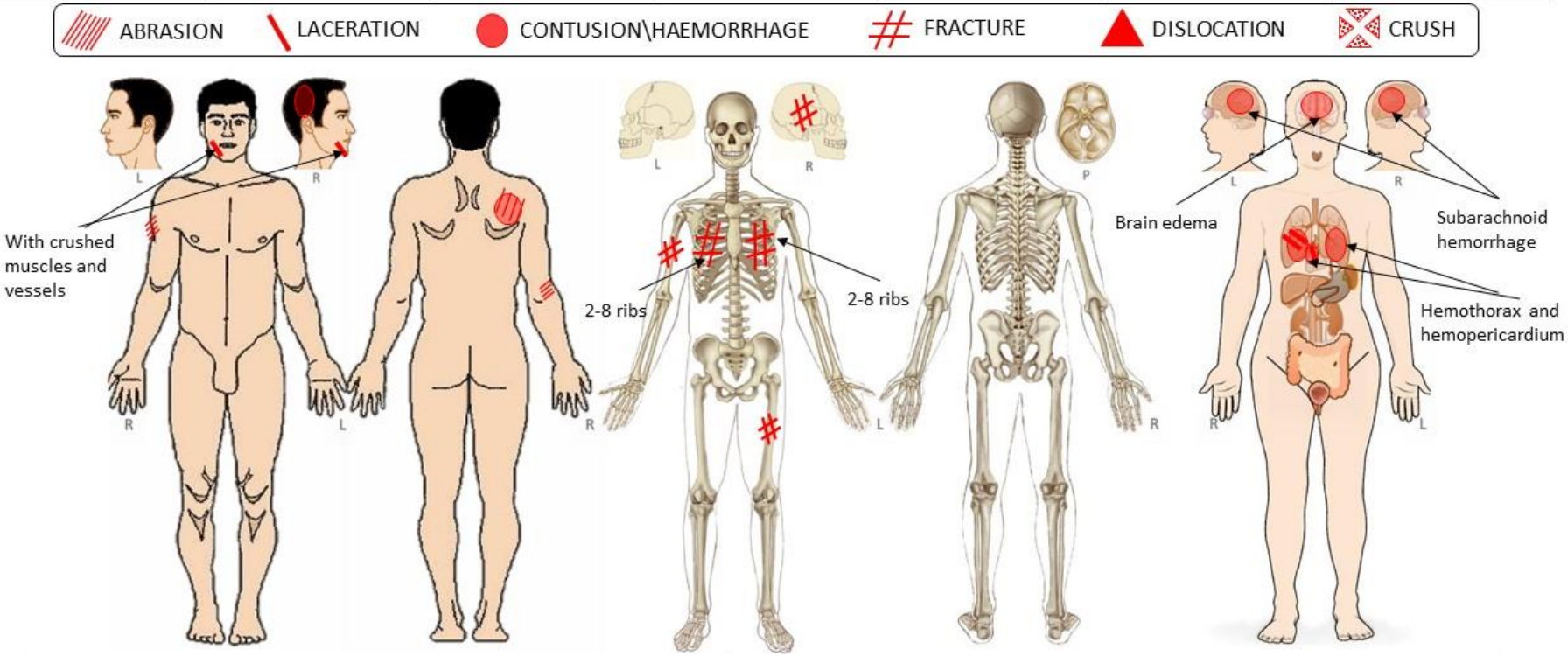
SEAT BELT INSPECTION

Source: RASSI Database



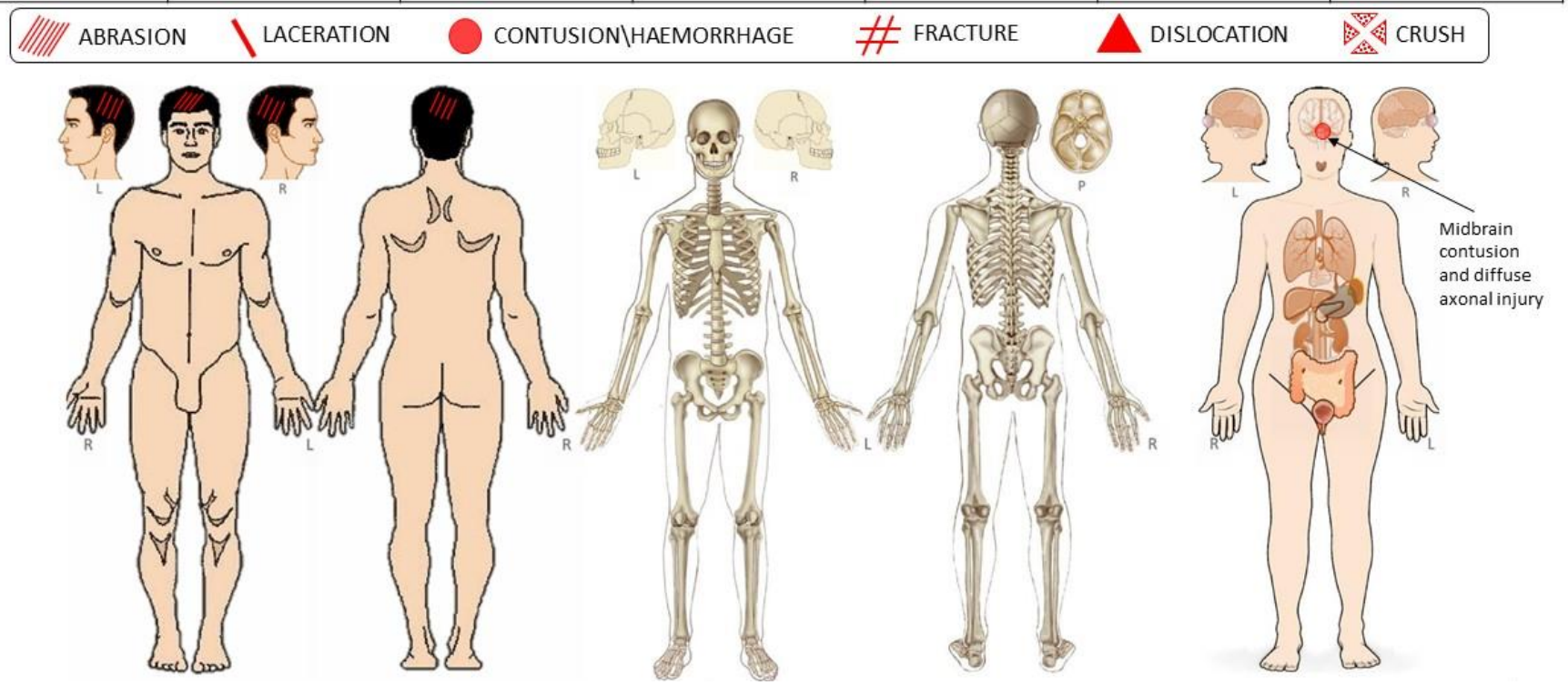
DRIVER INJURIES
INJURY SKETCH

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



CO-PASSENGER *INJURY SKETCH*

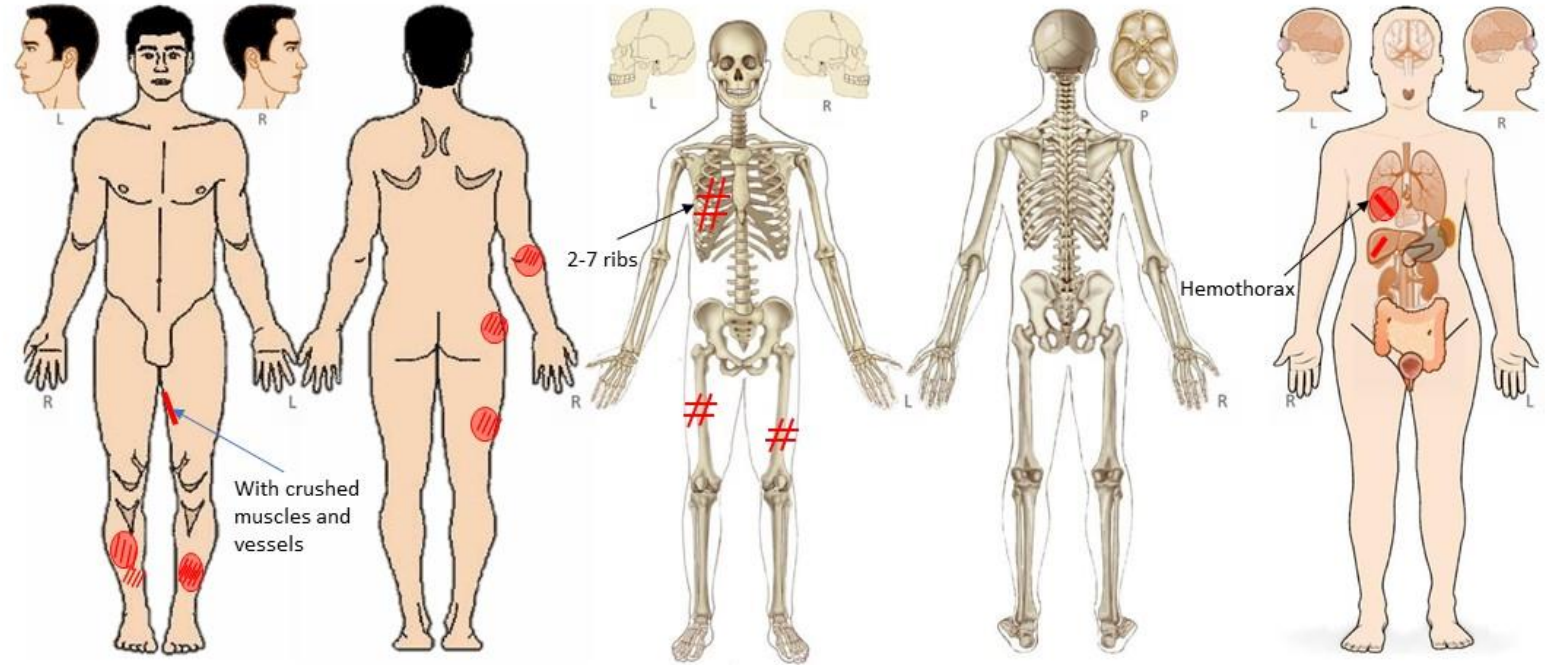
CASE NUMBER	UNIT NUMBER	OCCUPANT NUMBER	OCCUPANT GENDER	OCCUPANT AGE	HISP	MAIS
91-2020-015-0001	1	2	Male	31	Fatal	5



RIGHT REAR PASSENGER
INJURY SKETCH

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

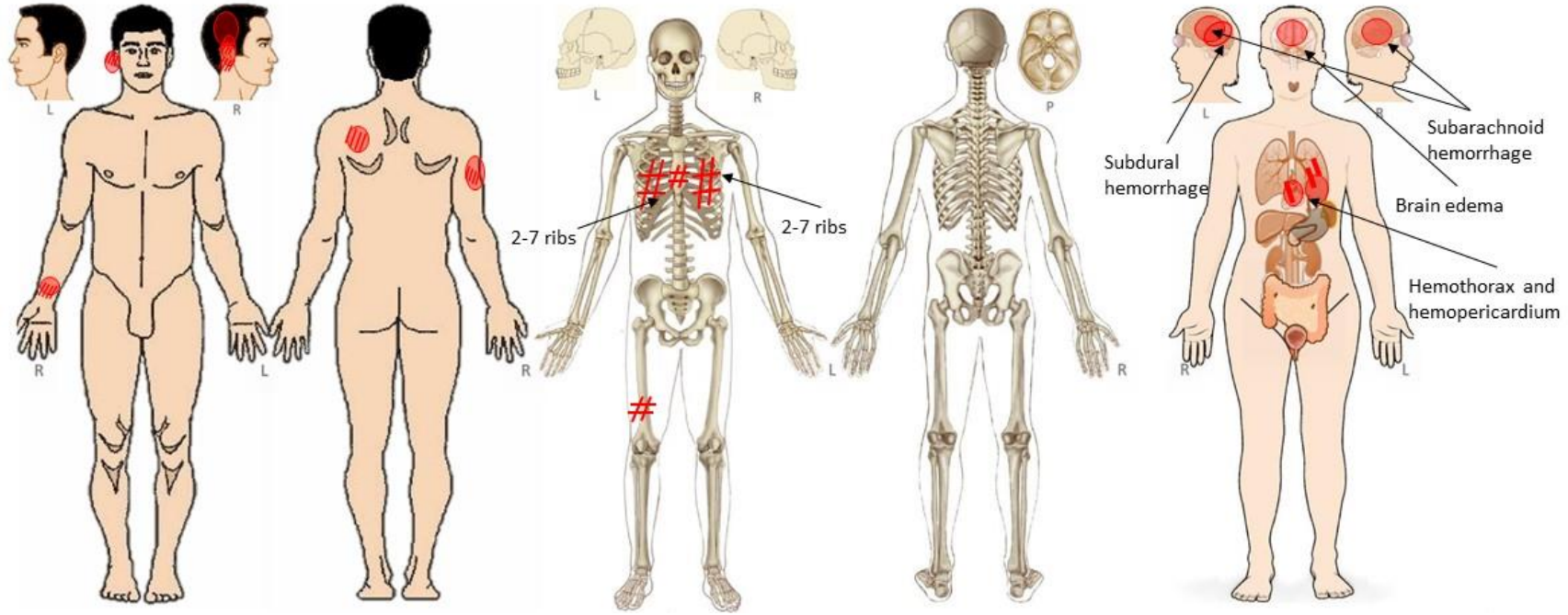
ABRASION LACERATION CONTUSION\HAEMORRHAGE FRACTURE DISLOCATION CRUSH



LEFT REAR PASSENGER
INJURY SKETCH

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

ABRASION LACERATION CONTUSION\HAEMORRHAGE FRACTURE DISLOCATION CRUSH



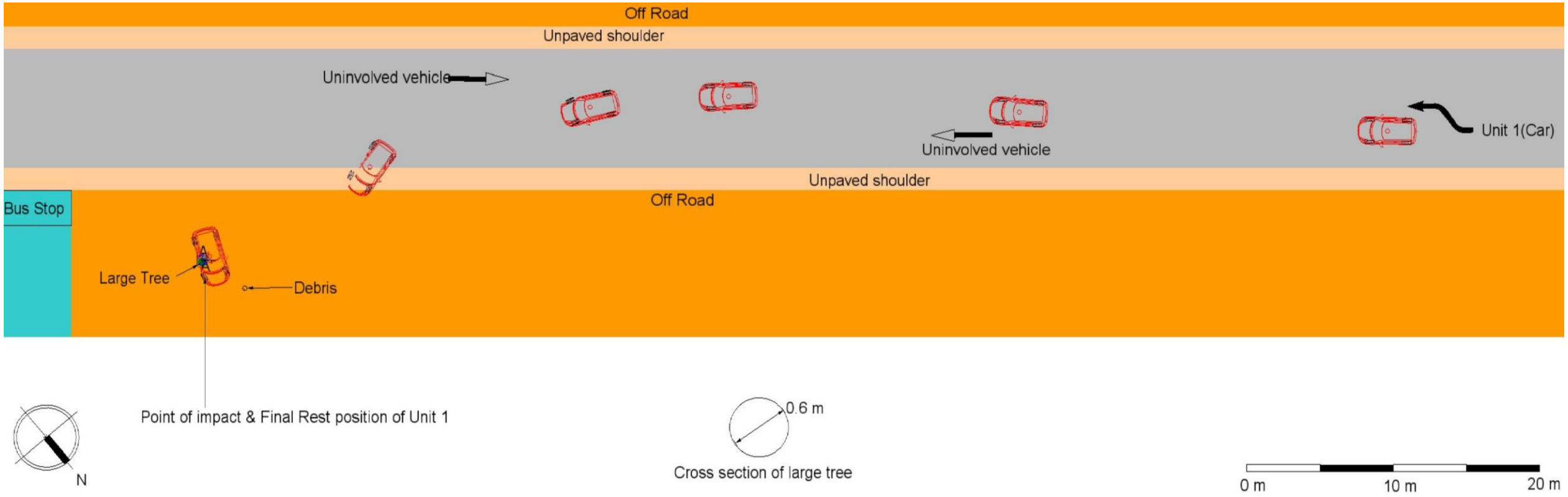
SCENE EXAMINATION
GPS: 21.21574, 78.94901

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

SCENE EXAMINATION

CRASH SCENE EXAMINATION

SCENE DIAGRAM



ACCIDENT RECONSTRUCTION
CAR SPEED 80 (±10) KPH

APPLYING HADDON MATRIX APPROACH

		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

PART 3:

CRASH DATA ANALYSIS

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