



# FIMCAR: UK accident analysis headlines

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# Objectives

- Determine if previously identified compatibility issues still a problem in current vehicle fleet
  - Structural interaction
  - Frontal force matching
  - Compartment strength in particular for light cars
- Determine nature of injuries and injury mechanisms
  - Body regions injured
  - Injury mechanism
    - Contact with intrusion
    - Contact
    - Deceleration / restraint induced

Note: Current fleet means cars which have full EU type approval or have safety performance level sufficient to meet UNECE R94 requirements

# Approach

- Derive detailed accident (CCIS) data sample and determine relationship to national (STATS19) data to enable quantification of results
- High level analysis
  - Quantify magnitude of compartment strength issue
    - Estimate proportion of casualties for which there was significant compartment intrusion ( $> 10$  cm)
      - Relationship with impact configuration
  - Determine nature of injuries
    - Body regions injured
  - Determine injury mechanism and relationship with intrusion
- Detailed case analysis
  - Quantify nature and magnitude of structural interaction and frontal force matching problems

# Overall conclusions – Compatibility issues

- Compartment Strength still an issue for current fleet
  - Intrusion present for 50-60% of fatal occupants in dataset and 20-30% of MAIS2+ Survived occupants in dataset
  - When intrusion present, percentage of AIS2+ injuries in all body regions increases
  - In cases where intrusion present, 65% had an AIS2+ injury caused by contacting a part of the vehicle which had intruded
- Structural interaction issues observed in 31% of fatal car to car cases where intrusion present
  - Structural interaction issues may also have affected deceleration pulses in cases where no intrusion present, but these cannot be identified
- Frontal force mismatch observed for 1 out of 13 fatally injured occupants in car to car cases where intrusion present

# Overall conclusions – Nature of injuries

- AIS2+ injuries most prevalent for Thorax, Arms and Legs
- Over 80% fatally injured occupants sustained AIS2+ Thorax injuries
- Thorax injuries more prevalent for elderly occupants
- When intrusion present, percentage of AIS2+ injuries in all body regions increases
- Occupants more likely to sustain multiple AIS2+ injuries when intrusion present
- In cases where intrusion present, most predominant cause of AIS2+ injury is contact with intrusion

# Do You Have Any Questions?