Distribution of Belt Anchorage Locations in the Second Row of Passenger Cars and Light Trucks

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Background

FMVSS 210 regulates the locations of belt anchorages

SAE J826 2D Template
Background

Belt anchorage locations affect belt fit.
Research Questions

1. What are the distributions of belt anchorage locations in outboard second-row seating positions?

2. How do these distributions compare to the FMVSS 210 zones?
Methods

SAE J826 H-point machine measurements with FARO Arm
Methods

Belt anchorage location measurements

>> caveats and unique situations
Results

Front View

- LTVs
- Mean
- Passenger Cars

Inboard
- H-point

Outboard
- H-point

Side View

- FMVSS 210 Zone

Passenger Cars

Mean

LTVs

FMVSS 210 Zone
Cumulative Distributions

Side-view Lap Belt Angle

Lap Anchorages re Centerline

Cumulative Probability

Cumulative Probability

Angle (Deg.)

Distance (mm)

Inboard

Outboard

Inboard

Outboard
Does Belt Anchorage Location Matter?

- Short Seat
  - Forward Belt Anchors

- Long Seat
  - Rearward Belt Anchors
Discussion

- Lack of a dynamic regulatory test in second row seats means that other considerations have a larger effect than in front seats.
- Static belt fit test requirement might result in improved rear-seat belt performance.
- Measurements for any particular vehicle are not definitive
- Dynamic belt performance depends on many other factors, particularly initial posture and seat stiffness
- Must optimize for a diverse occupant population
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