UPDATE ON NHTSA'S OBLIQUE RESEARCH PROGRAM

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CURRENT RESEARCH OBJECTIVE

• QUESTION
  ▫ Is there a difference in vehicle response, occupant response, and injury risk between left-side and right-side impacts?

• APPROACH
  ▫ Test three pairs of vehicles that comply with FMVSS No. 226 side curtain and achieved an acceptable or better rating in the IIHS Small Overlap Impact test procedure in the NHTSA Oblique RMDB test procedure

<table>
<thead>
<tr>
<th>NHTSA TEST #</th>
<th>IMPACT SIDE</th>
<th>YEAR</th>
<th>MAKE</th>
<th>MODEL</th>
<th>TEST WEIGHT (KG)</th>
<th>VEHICLE CLASS</th>
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<tbody>
<tr>
<td>8789</td>
<td>Left</td>
<td>2014</td>
<td>Honda</td>
<td>Accord</td>
<td>1744</td>
<td>Mid</td>
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<td>Accord</td>
<td>1749</td>
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<td>Fit</td>
<td>1426</td>
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<td>3</td>
<td>1582</td>
<td>Small</td>
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<tr>
<td>8788</td>
<td>Left</td>
<td>2014</td>
<td>Mazda</td>
<td>CX-5</td>
<td>1769</td>
<td>Small SUV</td>
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<td>8998</td>
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<td>Mazda</td>
<td>CX-5</td>
<td>1777</td>
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<td>Forester</td>
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<td>Volvo</td>
<td>S60</td>
<td>1936</td>
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</table>
INTERIOR INTRUSION MEASUREMENTS

Floorboard
Toepan
Gas Pedal
Brake Pedal

Footrest
TP4
TP3
TP2
TP1

INBOARD

INBOARD

Driver
Passenger

A
B
C
D

1
2
3
4
5
HONDA ACCORD NEAR SIDE INTERIOR INTRUSIONS

Intrusion Points

Intrusion (mm)

TP 1  TP 2  TP 3  TP 4  Left IP  Right IP

Left  Right

Inboard
Accord Left Side Impact
Accord Right Side Impact
Mazda 3 Left Side Impact
Mazda 3 Right Side Impact
Mazda CX5 Left Side Impact
Mazda CX5 Right Side Impact
HONDA ACCORD INJURY NEAR SIDE OCCUPANT

Max IAV / Provisional IARV

- HIC15
- BrIC
- Neck Tension
- Multipoint Chest
- Abdomen
- Acetabulum
- Femur
- Lower Extremity

Left
Right
MAZDA 3 INJURY NEAR SIDE OCCUPANT

![Graph showing injury severities for various body parts and comparison between left and right sides.]

- HIC15
- BrIC
- Neck Tension
- Multipoint Chest
- Abdomen
- Acetabulum
- Femur
- Lower Extremity

Max IAV / Provisional IARV

- Left
- Right
MAZDA CX5 INJURY NEAR SIDE OCCUPANT

![Graph showing maximum IAV/Provisional IARV for various body parts and directions.](image)

- HIC15
- BrIC
- Neck Tension
- Multipoint Chest
- Abdomen
- Acetabulum
- Femur
- Lower Extremity

**Axes:**
- Y-axis: Max IAV / Provisional IARV
- X-axis: Body parts

**Legend:**
- Left
- Right
OBSERVATIONS

- Toepan intrusion trend was to have higher intrusions inboard
  - TP3 for right side impact had higher intrusions
- Near side THOR goes between the FMVSS No. 226 side curtain air bag and frontal air bag
- Far side THOR slides off the frontal air bag and comes out of the shoulder belt
FUTURE RESEARCH

• Request for proposals to develop restraint countermeasure
• Modelling study to determine structure countermeasures
• Additional Left and right oblique testing
• Conduct repeatability and reproducibility testing with multiple test facilities