Scope of GTR- Pole Side Impact

Exemption of Commercial Vehicles

Informal Group on Pole Side Impact
22 March 2012
London
Scope: Discussion during Seoul Meeting

Vehicles of category 1-2 and 2 involved in Pole Side Impact

a) Differences in the global vehicle fleet between US, Australia, EU and Japan:

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>Australia</th>
<th>EU</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Design of cat 2 vehicles</td>
<td>Pick-Up</td>
<td>UTE</td>
<td>Van</td>
<td>Mini Truck</td>
</tr>
<tr>
<td>Use of category 2 vehicle for private transport</td>
<td>Common</td>
<td>Common</td>
<td>Not common</td>
<td>Not common</td>
</tr>
<tr>
<td>Severe injuries in cat 2 vehicles caused by PSI</td>
<td>In statistic</td>
<td>?</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

b) Result of German Accident Analysis:

→ No significant number of severe or fatal injuries in Light CV caused by PSI
**Scope: Discussion during Seoul Meeting**

**OICA proposal for the Scope of the GTR-PSI**

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Include/Exclude</th>
<th>Justification</th>
</tr>
</thead>
</table>
| Van/Small Bus (cat 1-2)      | ✗               | **Justification:**  
- Only very limited cases in accident statistics  
- Very limited use for private transport |
| Mini Truck                   |                 |                                                                               |
| UTE                          | ✔               | **Justification:**  
- Larger number of cases in accident statistics in some regions  
- Common also for private transport in some regions |
| Pick-up                      |                 |                                                                               |

*To be excluded from the scope*

*To be included in the scope*
Scope: OICA Proposal

Definition of criteria to describe vehicle types

Using two criteria which can be used alternatively:

1) The distance between R-point and Front Axis \(( \geq 9 \) \)

2) The Interior Volume Index \(( \rightarrow \) US Federal Regulations, Title 40 Protection of Environment, Section 600.315-82 and SAE J1100 (Nov 2009))

Kei-Cars

Very small vehicles - typical for some regions - should be:

1) Totally exempted from provisions \((exemption of vehicles with a width of less than 1500 \text{ mm})\)

\textit{or}

2) Tested with a reduced impact speed \((26 \text{ km/h instead of 32 km/h})\)

\rightarrow Further discussion on the Kei-car-exemption is needed
This regulation shall apply to vehicles of:
• category 1-1 with a gross vehicle mass exceeding 500 kg [and a width exceeding 1500 mm]
  \textit{and}
• category 1-2 with a gross vehicle mass not exceeding 4500 kg [and a width exceeding 1500 mm]
  \textit{and}
• category 2 with a gross vehicle mass exceeding 500 kg but not exceeding 4500 kg [and a width exceeding 1500 mm].

However, power driven vehicles of category 1-2 and category 2 shall be exempted from the requirements of this regulation,

• where the distance, measured longitudinally on a horizontal plane, between the transverse centre line of the front axle and the R-point of the driver’s seat is less than 1100 mm, \textit{or}
• where the Interior Volume Index (IVI) as defined in SAE J1100-Nov2009 exceeds [5.0 ] m³.

A contracting party may further restrict application of the requirements in its domestic legislation if it decides that such restriction is appropriate.
Justification
OICA proposes to use both the R-point criteria and the IVI, because...

- The „R-point criteria alone will not exclude most of the delivery vans, if the 1100 mm value from gtr 9 will be maintained
- An extension of this 1100 mm value would lead to an exclusion of some UTE
- The Interior Volume Index alone would not exclude the Mini Trucks.

<table>
<thead>
<tr>
<th>Version</th>
<th>Distance R-point to front axis (only X-direction) [mm]</th>
<th>IVI [m³]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Vehicle (category 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Van (~2.8t)</td>
<td>&lt; 1265</td>
<td>&gt; 5,0</td>
</tr>
<tr>
<td>Van (~3.5t)</td>
<td>&lt; 1200</td>
<td>&gt; 7,0</td>
</tr>
<tr>
<td>UTE</td>
<td>1300 - 1450</td>
<td>2,7</td>
</tr>
<tr>
<td>Pick Up</td>
<td>1500 - 1600</td>
<td>~ 3,5</td>
</tr>
<tr>
<td>Mini truck</td>
<td>~ 200</td>
<td>~ 1,5</td>
</tr>
<tr>
<td>Passenger Cars (category 1-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini cars</td>
<td></td>
<td>1,7 to 2,8</td>
</tr>
<tr>
<td>Station Wagon</td>
<td></td>
<td>3,8 to 4,3</td>
</tr>
<tr>
<td>MPV</td>
<td></td>
<td>4,4 to 4,6</td>
</tr>
<tr>
<td>large SUV</td>
<td></td>
<td>4,0 to 4,4</td>
</tr>
<tr>
<td>Sport Car</td>
<td></td>
<td>1,6 to 2,9</td>
</tr>
</tbody>
</table>

*Typical data for R-point distance and IVI*
Further Questions?
Annex
Example: GIDAS data; number of pole side impact accidents

- **Accidents vehicles M1**
  - Side impact: 6647 = 30.1%
  - Pole impact: 326 = 1.5%

- **Accidents category N**
  - Side impact: 827 = 26.0%
  - Pole impact: 15 = 0.5%

- **Accidents category N up to 4.6tons**
  - Side impact: 320 = 25.5%
  - Pole impact: 11 = 0.9%

→ M1 vehicles involved in pole impacts about twice as much vehicles of category N
Example: GIDAS data; number of severe injuries and fatalities

- Percentage of occupants in pole side impacts with respect to the corresponding injury severity class
- In the GIDAS sample (10667 occupants of passenger cars or light utility vehicles) there is no fatally injured occupant of a light utility vehicle in a pole side impact, and only one severely injured occupant
IVI - Description

Current application
- Used by US EPA to classify vehicles for exhaust emission classes

Method
- The intention of IVI according SAE J 1100 is to provide reasonable estimations of the passenger compartment volume potential of a standard seating configuration, plus the cargo volume potential of the remaining space.

- The IVI does not represent the physical volume of the passenger compartment and the cargo volume. It is a theoretical value for a volume of a vehicle class.
Each IVI is calculated about the following values in each seat row:
- Effective head room
- Effective shoulder room
- Effective leg room
- The cargo volume will be determined over a standard luggage

Vehicle IVI = IVI of first seat row + IVI of second seat row + IVI of cargo volume

1 The open air cargo volume index is not included at pickups.