Development of Guidelines for Improvement of Vehicle Safety Regarding Infant-Carrying Vehicles

Presentation material for 53rd session of GRSP & 104th session of GRSG
1. General Description of Infant-Carrying Vehicles

(1) What is an infant-carrying vehicle?
Motor vehicle that transports infants (of ages 3 to 6) between home and preschool/kindergarten

(2) Status of use of infant-carrying vehicles
- An infant-carrying vehicle carries 10 to 50 infants and 1 or 2 adults (preschool/kindergarten teachers, etc.) in addition to the driver.
- Transports infants from home to preschool/kindergarten and from preschool/kindergarten to home.
- Operated in early morning and early evening (hours with a relatively heavy traffic).
- Operated in the vicinity of the preschool/kindergarten.
- Operated at low speeds (motorways are not used).
- Infant passengers may sit with personal items on (school bag, water bottle, etc.).

(3) Number of infant-carrying vehicles owned
Number of infant-carrying vehicles owned in Japan: 17,800 (as of March 2009)
2. Standards Applicable to Infant-Carrying Vehicles

- Seat size requirement (*1)
- Prohibition of installation of folding seats
- Exemption from the seat belt installation requirement (*2)
- Mandatory gangway installation
- Gangway size requirement
- Prohibition of installation of areas for standing passengers
- Mandatory platform installation
- Requirement on platform size, etc.
- Emergency exit size, etc.
- Indication on the vehicle

(*1) Seat size: Depth 230 mm or more & 270 mm or less
(*2) Reasons for the exemption include:
* Infants not able to fasten/unfasten their own belts; difficult to exit in emergency situations.
* Infant body build depends on age; difficult to designate a specific configuration of the belt.
* Passengers accompanying infants (preschool/kindergarten teachers, etc.) would have to assist them with fastening/unfastening of belts, if installed.

- Mothers of infants, etc. requested that the installation of seat belts be mandatory for the infant-carrying vehicles.
- Discussion started after grasping the current status of accidents and the infant behaviors in collisions:
  - 2009: Current status of accidents involving infant-carrying vehicles grasped; A survey on accidents involving infant-carrying vehicles in other countries conducted at the 46th session of GRSP (Informal document No. GRSP-46-41, Dec. 2009);
  - 2010: Investigation on safety of infant-carrying vehicles (collision experiments) conducted;
  - 2011: A hearing survey to stakeholders conducted and the direction of the measures discussed;
  - 2012: WG on Infant-Carrying Vehicles established, and specific safety measures discussed (a total of 4 meetings held);
  - March 2013: The Guidelines developed.
- The members of the WG consist of academic experts, research institutes, automakers, auto parts makers, etc., and it is also attended, as observers, by preschools/kindergartens using infant-carrying vehicles.
4. Current Status of Accidents Involving Infant-Carrying Vehicles (1/2)

Using data on traffic accident statistics recorded during 6 years from 2003 to 2008, vehicle-to-vehicle accidents, single vehicle accidents and person-to-vehicle accidents involving buses/microbuses and minivans, etc. registered as infant-carrying vehicles that were carrying passengers age 6 and younger were analyzed.

◆ Collision Areas on Infant-Carrying Vehicles

<table>
<thead>
<tr>
<th>Collision Area</th>
<th>Front</th>
<th>Right front corner</th>
<th>Left front corner</th>
<th>Right side</th>
<th>Left side</th>
<th>Rear</th>
<th>Right rear corner</th>
<th>Left rear corner</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of vehicles involved in accidents</td>
<td>393 (29.7%)</td>
<td>229 (17.3%)</td>
<td>206 (15.6%)</td>
<td>125 (9.4%)</td>
<td>176 (13.3%)</td>
<td>109 (8.2%)</td>
<td>46 (3.5%)</td>
<td>39 (2.9%)</td>
</tr>
</tbody>
</table>

◆ Injured Body Parts of Injured Infants

![Injured Body Parts Chart]

- Death: 142
- Severe injury: 143
- Minor injury: 157

No. of casualties (persons) by body part:
- Head: 38
- Face: 6
- Neck: 5
- Chest: 1
- Abdomen: 26
- Back: 37
- Hip: 1
- Arms: 1
- Legs: 1
- Others: 1
4. Current Status of Accidents Involving Infant-Carrying Vehicles (2/2)

**Vehicle Structures Causing Injuries to Infants**

![Graph showing vehicle structures causing injuries to infants]

- **Results:**
  - Among the collision areas on infant-carrying vehicles, the frontal area (including the left and right front corners) accounted for the most, at about 60%.
  - As for the injured body parts, the “head”, “face” and “neck” accounted for 70-80% of all the body parts; and the “seat” accounted for the majority of the vehicle structures causing such injuries.
5. Guidelines on Safety Measures

◆ Events that need early improvement of safety
  ✓ Events in which the head, face, and/or neck is injured by the seat in front (minor injuries)

◆ The Guidelines request that motor vehicle manufacturers develop vehicles, by March 2015, in which the following safety measures are implemented with the accidents involving infant-carrying vehicles taken into account:
  ✓ Shock-absorbing material to be added to the rear of the seatback;
  ✓ Seatback height to be increased by about 100 mm
    (height from the seating surface to the top of the seatback to be about 470-490 mm).

Note: Installation of seat belts not to be required until those suitable for infant seats in infant-carrying vehicles are developed.
Thank you for your attention.

• Attachments:
  → Guidelines for Improvement of Vehicle Safety Regarding Infant-Carrying Vehicles