UNECE GRSP Ad-hoc Group Data on Equitable Occupant Protection (DEOP)

Minutes of the 2nd meeting held on March 31, 2022. Digital meeting with 43 participants.

Welcome and introduction
Pernilla Bremer of the Swedish Transportation Agency opened the meeting and welcomed all participants.

Adoption of the agenda
The agenda was approved with one change; Hans-Yngve Berg could not participate and will be invited to present the study "The risk of losing quality of life due to a road traffic injury - focus on less severe injuries" in a subsequent meeting.

Minutes from previous meeting
Approved.

Presentations

1. Jessica Jermakian (VP Vehicle Research, Insurance Institute for Highway Safety) presented "Differences in injury risk between male and female vehicle occupants" by Matthew Brumbelow and Jessica Jermakian (IIHS).
   The objective of the study was to evaluate the effect of occupant sex on injury risk in front and side crashes while controlling for vehicle and crash difference between men and women. Previous research indicates that women are more likely than men to suffer severe injuries in motor vehicle crashes, on a per-crash basis. In this study, after controlling for crash and vehicle differences, women and men have similar risk of serious non-extremity injuries in front crashes, but women remained at a higher risk of less severe injuries and especially extremity injury. Women are more likely than men to be driving the struck vehicle in side-impact and front-into-rear crashes. According to IIHS, there is a need for studies on the increased risk to females due to sex-based differences in crash exposure, more on the finding that females are at higher risk of extremity injuries, and finally more data is needed to understand injury risk in side impact crashes.
   Questions asked:
   What about the injuries to the extremities, legs in particular; are there different injury mechanisms? – We cannot yet explain the higher injury risk for women regarding extremities. There are speculations about different postures or positions, different footwear, different pelvis anatomy, etc.
   What about side and rear impacts? – Rear impacts were not included. Side impacts were included, but the conclusions were less definitive. Side impacts will be studied further.
   Only drivers? – Only belted drivers in the frontal impacts.
   Chest injuries? – Real-world chest injuries are not well predicted by current frontal impact crash testing.

Why then are chest injury in focus in the rating program? Why not lower extremity injury? – The difference has now been confirmed (higher injury risk for the female population), but we do not yet understand the injury mechanisms. When rating programs were started in the 1990's, we focused attention on life-threatening injuries. IIHS will now start to take a closer look at disabling injuries.
Why similar rating for a small car compared to a large? – A relevant question which will need more thoughts in the future. Remark: a broader discussion started and three statements were that 1) we should focus attention upon issues that are possible to address through the GRSP scope; 2) both men and women are fatally injured in highly severe crashes (from a certain level of crash severity) – the sweet spot seems to be less severe crashes where both men and women survive, but women are more likely to suffer from disabling injuries; 3) an overview of dummies (ATD's) mapped against population size would add value to the work. Thomas Kinsky offered to make a presentation on this in a subsequent meeting.

2. Mats Svensson (Professor Chalmers University) presented "Can a male size dummy represent the female population? – Experience from rear impact tests, including a female size prototype dummy" (by Mats Svensson, Chalmers, with Anna Carlsson, Chalmers and Anders Kullgren, Folksam).
   The research team discovered a difference between the Saab 9-3 and Saab 9-5 passenger cars. The seats looked similar, but the protection performance was different in a field analysis. Both seats protected men well, but the 9-3 seat resulted in a significant higher risk for women. A 50th percentile female dummy for rear-end impact testing was developed in addition to the existing BioRID 50th percentile male, and this female dummy was now used for evaluation of the 9-3 and 9-5 seats to better understand the difference. It turned out that the interior seat structures were somewhat geometrically different although the same protective mechanism was used. The headrest of the 9-3 was "too ambitious".
   Questions asked:
   Headrest height when testing the male dummy? It looks like it is in the lowest position, but it was positioned as had been observed in the field and as prescribed by the Euro NCAP test protocol. Due to the GTR and further development of the NCAP protocol we have now a higher headrest upper position. A comment was made that for the reactive system, the seatback geometry and force (push by the occupant) are as important as the headrest height. It was mentioned that the tests were made with the headrest at different height positions. Ines Levallois (Faurecia) said that she participated in the ADSEAT research project, together with Chalmers University among others, and would be interested in presenting further findings for the ad hoc group.

3. Michelle Parkouda (Ph.D., Research Manager, Standards Council of Canada) presented "Understanding Why Gender Matters in Standardization".
   Standards should reflect typical needs of both men and women, whether about instructions, grip strength, geometry, or voice recognition, but until now the standardization work has in many aspects focused attention on the needs of men and failed to account for women. The starting point should be that there are differences between the female and male population regarding physiological aspects. For this reason, the UNECE WP6 on Regulatory Cooperation and Standardization Policies has drafted the "Guidelines on Developing Gender-Responsive Standards", which provides practical advice for standards developers on how they can improve the gender-responsiveness of their standards. It is published as an advanced copy and is

intended to be officially presented in November 2022. It is possible to provide comment through May 2022. A link to the advanced copy is provided in the presentation.

Questions asked:

Are there any examples in addition to size (stature) and strength? –Yes, there are even certain low hanging fruits where aspects like size and physical strength matter and for this reason we must start each standardization work by recognizing the differences between females and males.

The majority of killed people in road traffic are after all men in most developed countries. The share of all road fatalities is often around two thirds for men, whereas the number of licensed drivers is split equally among men and women. How can we explain this?

– One explanation is that young men are more likely to be involved in impaired driving, speeding, and not using safety-belts. Those factors are also important to consider.

How can we bring this work to GRSP? – The starting point shall be that there are differences, which would change the current bias of attention. In practice, the work to gather data (DEOP) to get a better understanding is the start of a process. We see clear differences when it comes to the injury pattern for males and females and must ask ourselves whether this is reflected, or predicted, by the current crash tests. Bernd Lorentz mentioned that there are still many open questions (we need to know more before starting any regulatory development) and hopefully he will be able to present findings from Germany.

Potential further presentations in following meetings as per the meeting discussions

1. The risk of losing quality of life due to a road traffic injury - focus on less severe injuries – Hans-Yngve Berg
2. Additional findings from the EU research project ADSEAT – Ines Levallois.
3. Overview of ATD's (dummies) – Thomas Kinsky.
4. The German picture regarding DEOP – Bernd Lorentz.

Next meeting

Early June 2022; date to be decided through a poll/doodle.