

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

Draft minutes of the 6th meeting held on February 13, 2023.

Digital meeting with 44 participants from Europe, North America, and Asia.

Welcome and introduction

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

Martin Koubek of the USDOT-NHTSA and chair of GRSP acknowledged the work and mentioned that the upcoming ESV conference will have a specific focus on equitable safety and will be attended by the NHTSA Administrator Ann Carlson who fully supports the efforts of the Ad hoc Group DEOP.

Adoption of the agenda

Agenda approved.

Minutes from previous meeting

Approved.

Presentations

Matthew Craig, the USDOT-NHTSA, presented:

1. The NHTSA Female Crash Safety Research Plan (with four core areas), which was published in November 2022:
 - Field Data Analysis. A first study was based on data from the Fatality Analysis Reporting System (FARS). Subsequent studies will be based on data from the National Automotive Sampling System Crashworthiness Data System (NASS CDS) and the Crash Investigation Sampling System (CISS).
 - Advanced Anthropomorphic Test Devices and Experimental Biomechanics. The experimental biomechanics of NHTSA include evaluation of both the THOR 5th female ATD and the WSID 5th female ATD, moreover studies of new seating positions and different postures.
 - Human Body Modelling. NHTSA is among other things supporting the development of a 50th female HBM, as a sponsor of the Global Human Body Models Consortium, [GHBMC](#).
 - Fleet Testing and Countermeasure Studies. One example is that the new ATD's, THOR 5th female and WSID 5th female, will be used in tests according

to FMVSS 208 and 214. The results will be compared with similar tests with the current ATD's.

2. The NHTSA study on female crash fatality risk relative to males for similar physical impacts, which was published in August 2022:
 - In this study, incremental risks for female front-row occupants (average of drivers and right-front passengers) were derived. Fatal crashes of older vehicle models were compared with newer vehicle models. The fatality risk is generally reduced with newer models, and the incremental female fatality risk estimates versus males are reduced in newer MY vehicles.

Subsequent discussion:

Did the study only consider fatalities? Yes, this study is based on FARS data and focus attention on fatality risk. The NHTSA will continue the field data analysis, as indicated in the research plan, with data from NASS-CDS and CISS, thus focus attention on all injuries.

What is the actual risk today? The estimated female relative fatality risk is found to be reduced in more recent vehicle models with current occupant protection technologies, such as airbags, pretensioners and load limiters, for belted occupants. The incremental female fatality risk relative to males has dropped to 2,9 percent for occupants in Model Year 2015-2020 vehicles. The number of new vehicle models is small, and the estimate is not significant.

Do we see the same trend in all crash types? Yes, similar trends, but it should be noted that frontal impact crashes provide for a robust data set, that is a large sample, whereas rollovers and far-sides are smaller samples, i.e., less robust. Side impact crashes are relatively robust. When considering the effect of crash impact types in vehicles with current occupant protection technologies, nearside crashes have the highest estimated female relative fatality risk. Breakdown in different crash types is important to get input to both physical testing and virtual simulation.

Do we see the same trend in different occupant age groups? The estimated fatality risk for females relative to males is highest in younger ages (highest for 16- to 24-year-olds) and decreases steadily until reaching its low for 65- to 96-year-olds. In the oldest age groups (65-96), female drivers have lower fatality risk than male drivers.

Links to the Research Plan and FARS study, respectively:

- <https://www.regulations.gov/document/NHTSA-2022-0091-0002>.
- <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813358>

Hans-Yngve Berg, the Swedish Transport Agency, presented:

1. How immediate outcomes of road traffic accidents differ from the long-term life outcomes.
 - Why is AIS1 and AIS2 important? They are much more frequent than near-fatal injuries and may lead to long-term consequences.
 - The long-term consequences can be both physiological and psychological, or a combination. Medical impairment due to physiological injuries may induce psychological stress, which may further restrict life and lead to isolation.
 - The AIS1 and AIS2 injuries are for these reasons important to address, not least in a global health perspective.
 - The overall quality of life was significantly reduced after a road traffic injury compared to the general population norms. Persons who are older, of female

gender, lower socioeconomic status, diagnosed with posttraumatic stress disorder, with more severe injuries or injuries to the lower limbs are more vulnerable to loss of QoL. WHO defines QoL as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.

- The risk of long-term consequences after AIS1 injury is higher for young women than men of the same age group.

Subsequent discussion:

How can quality of life be improved? Pain medication and physiological therapy. Practical support. Psychological therapy.

Do we see different types of injuries between men and woman or is it the long-term response such as psychological stress that differs? Difficult to answer, but if we speak about psychological disorders such as depression and anxiety, we should remember that the results regard groups not individuals. Remark: other studies show that for example lower limb injuries are more common among women than men.

Quality of life – how shall the diagram be understood? One or a small group of individuals' QoL may be improved after a crash, but it is common knowledge in research that QoL on group level will always decrease after crashes. See further a document, by Sweden, which will be presented in the next session of WP1: [Informal document No.6 \(unece.org\)](https://www.unece.org/documents/2023/03/informal-document-no-6)

Continuation of work

We discussed the preliminary draft Terms of Reference for a new IWG to continue the work that was endorsed by GRSP in December 2022. However, the IWG must be approved at the next WP29 session in early March 2023 before we start working according to the drafted plan.

Next step and meeting

We plan to hold an in-person meeting in conjunction with the ESV in Yokohama, on Thursday the 6th of April 2023 between 1 and 3 pm Japan Standard Time.