UN-R16 proposal by Japan
ECE/TRANS/WP.29/GRSP/2021/19

OICA discussion
Summary of technical analysis

• Findings by Japan show for booster seats secured by both seat belt and ISOFIX:
  • The seatbelt slipped upward toward the dummy's neck by a larger amount
  • The dummy's knee position was located further forward
  • The angle between the dummy's upper body and thigh was larger → submarining effect
  • Neck upper tension, chest acceleration, abdominal pressure are higher

• Main reason for higher loads is slack in the belt system due to double fixture by belt and ISOFIX

• Increased movement between cushion part of the booster seat and child/dummy in case of booster seats fixed by ISOFIX and booster seat not following the dummy when moving forward

• During IG Child Safety, 31st meeting, no safety benefit for booster seat with belt and ISOFIX was recognized, just slight higher dummy loadings
### Summary

- Installing booster seats with belt and ISOFIX could cause slack in the belt system which leads to increased dummy loadings.
- A change in UN R16 cannot guarantee that similar situation will not occur when booster seats with ISOFIX attachments are used as universal ECRS without checking them in the vehicle environment.
- There is no general safety benefit for booster seats with ISOFIX attachments.
- The problem (dummy loading, dummy movement…) is not occurring when the booster seat is installed using the vehicle safety belt.

### OICA proposal

- Booster seats with ISOFIX attachments should be homologated (UN R129) as “specific to vehicle” and not “universal” or “i-Size”.
- There are no other indications to change UN R16.
- Alternatively: add some requirement in UN R129, to ensure ISOFIX connectors in the booster seat shall not take any load during a dynamic test on the UN R129 test bench with smallest dummy.