HEAD RESTRAINT POSITION

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EXAMPLES OF FACTORS INFLUENCING AIS1 NECK INJURY RISKS IN REAR END IMPACTS

- Impact configuration
- Impact severity
- Car model
- Seat type and adjustment
- Seating position (driver vs passenger)
- Sitting posture
  - Rotated head
  - Backset
- Gender
- Stature
- Age
- ....

Ref. Jakobsson et al. AAP (32) 2000
Head rotated posture at impact

Distance between head and head restraint

Ref. Jakobsson et al. TIP (9) 2008
When separated by gender, there is an increased injury risk with increased stature. However, there is no evidence that drivers of very high stature (>190cm) are at a sign higher risk than drivers of shorter stature.
INFLUENCE OF STATURE, MORE RECENT VOLVO CARS

2350 Drivers in WHIPS seats (year models 1998- ->)

Ref. Volvo Cars Accident Database, not published
SUMMARY

Even support for whole back and head is beneficial.

- We support inclusion of backset in evaluation method

From real world data, no evidence of significant increased risk for the tallest drivers.

- The limit of 800 is sufficient and represent a good balance of seat and head restraint design for a large range of drivers.

99%-ile male
Stature: 199cm
Sitting height: 102cm

Approx. 50/50 mixed population male/females
Stature: 174cm
Sitting Height: 90cm

5%-ile female
Stature: 153cm
Sitting height: 82cm