

# Injury Risk Curves for WorldSID 50<sup>th</sup> Male

GRSP Informal Meeting  
February 4, 2010

# ISO TC22/SC12/WG6 Task Group

- Performed detailed data quality check of existing PMHS side impact test data
- Scaled the test severity from PMHS size to mid-size male
- Scaled WorldSID test data to the same test severity as the PMHS
- Adjusted WorldSID test data from PMHS age to 45
- Paired WorldSID measures with PMHS injuries

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- Developed injury risk curves using the following methods:
  - Certainty
  - Mertz-Weber (Modified Median Rank)
  - Survival
  - Logistic
  - CTE
- Reference: Petitjean, et al. (2009) 53<sup>rd</sup> Stapp

# WorldSID 50<sup>th</sup> Injury Risk Curves Were Developed for:

- AIS  $\geq$  2 Shoulder Injury as Functions of:
  - Shoulder Rib Deflection
  - Shoulder Force  $F_y$
- AIS  $\geq$  3 Thoracic Skeletal Injury as Functions of:
  - Thorax Rib or Abdomen Rib Deflection
  - Thorax Rib or Abdomen Rib  $V^*C$
- AIS  $\geq$  4 Thoracic Skeletal Injury as Functions of:
  - Thorax Rib or Abdomen Rib Deflection
  - Thorax Rib or Abdomen Rib  $V^*C$

# WorldSID 50<sup>th</sup> Injury Risk Curves Were Developed for:

- AIS  $\geq$  2 Abdomen Injury as Functions of:
  - Abdomen Rib Deflection
  - Abdomen Rib  $V * C$
  - Lower Spine Acceleration (3 ms clip)
- AIS  $\geq$  3 Abdomen Injury as Functions of:
  - Abdomen Rib Deflection
  - Abdomen Rib  $V * C$
  - Lower Spine Acceleration (3 ms clip)

# WorldSID 50<sup>th</sup> Injury Risk Curves Were Developed for:

- AIS  $\geq$  2 Pelvis Injury as Functions of:
  - Pubic Force
  - Pelvis Acceleration (3 ms clip)
- AIS  $\geq$  3 Pelvis Injury as Functions of:
  - Pubic Force
  - Pelvis Acceleration (3 ms clip)

# Continuing Work of ISO TC22/SC12/WG6

- Technical Report on Injury Risk Curves for WorldSID 50<sup>th</sup> is being balloted at SC level
- Task Group is being formed to reach consensus on appropriate statistical methods to be used

# Additional Efforts to Consider

- Form a group of Technical Experts from GRSP Informal Group to :
  - Review work of ISO WG6 task group
  - Propose and review other methods
  - Reach agreement among technical experts
  - Develop a plan to conduct tests and generate risk curves for head and neck injuries



# Additional Work to Consider

- Review the PMHS test conditions that had sufficient data quality to be considered, but no WorldSID 50<sup>th</sup> tests were conducted
  - Conduct new WorldSID 50<sup>th</sup> tests that, when paired with PMHS injuries, would achieve a better balance between injured and un-injured for risk curve development

# Additional Work to Consider

- Review the velocity of WorldSID 50<sup>th</sup> tests and the velocity scaled from PMHS tests
  - Conduct new WorldSID 50<sup>th</sup> tests at velocities that correspond to
    - Lowest velocity scaled from non-injured PMHS
    - Highest velocity scaled from non-injured PMHS
    - Lowest velocity scaled from injured PMHS
    - Highest velocity scaled from injured PMHS
  - Is WorldSID linear across velocity range?



# ISO TC22/SC12/WG6

## Task Group on Statistical Methods

- First web meeting of WG6 Task Group will occur February 11, 2010 at 1PM (Paris time)
- All experts are invited to participate
- Please e-mail [Audrey.Petitjean@ceesar.asso.fr](mailto:Audrey.Petitjean@ceesar.asso.fr)