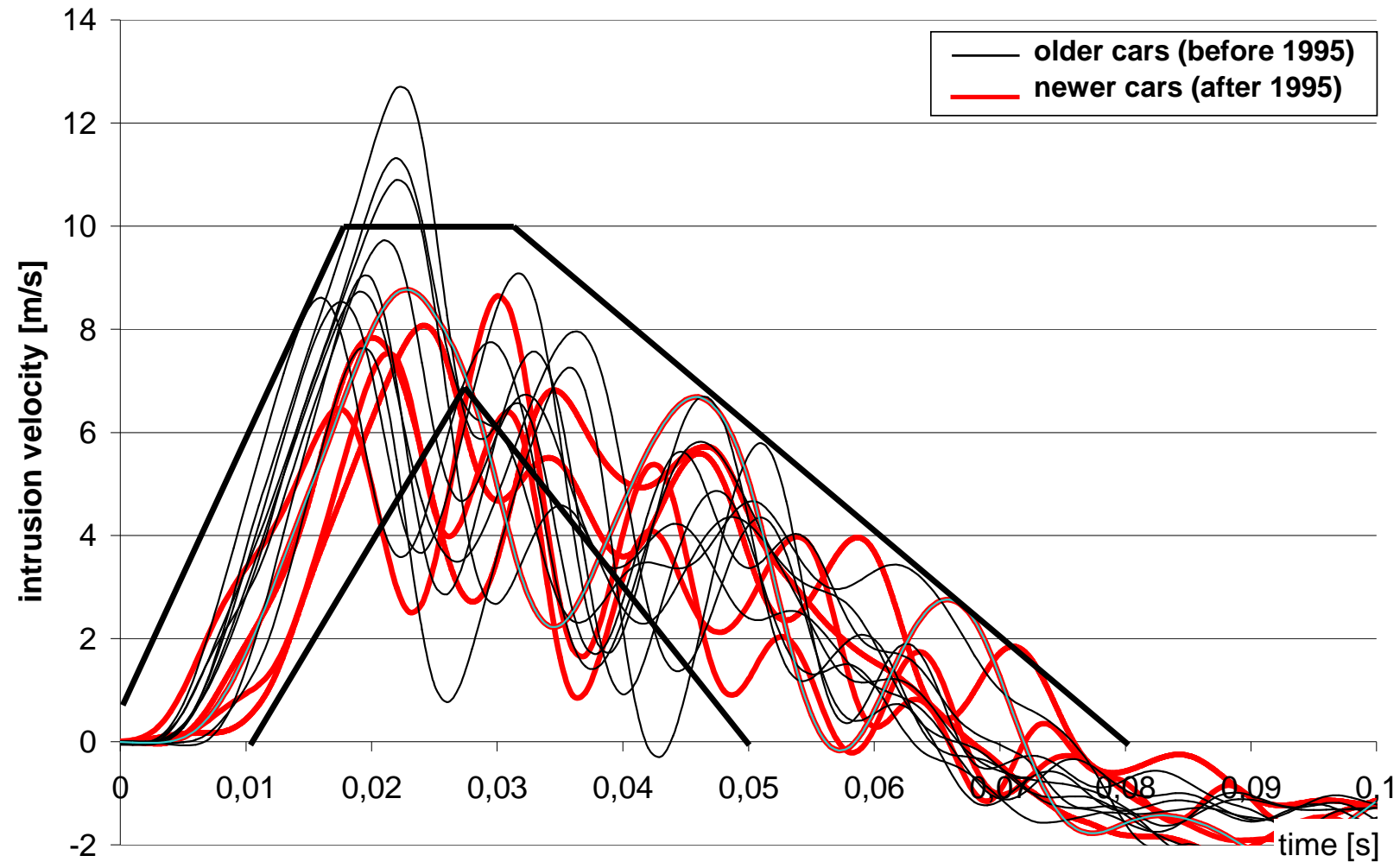


Recommendation Lateral Impact Test Procedure

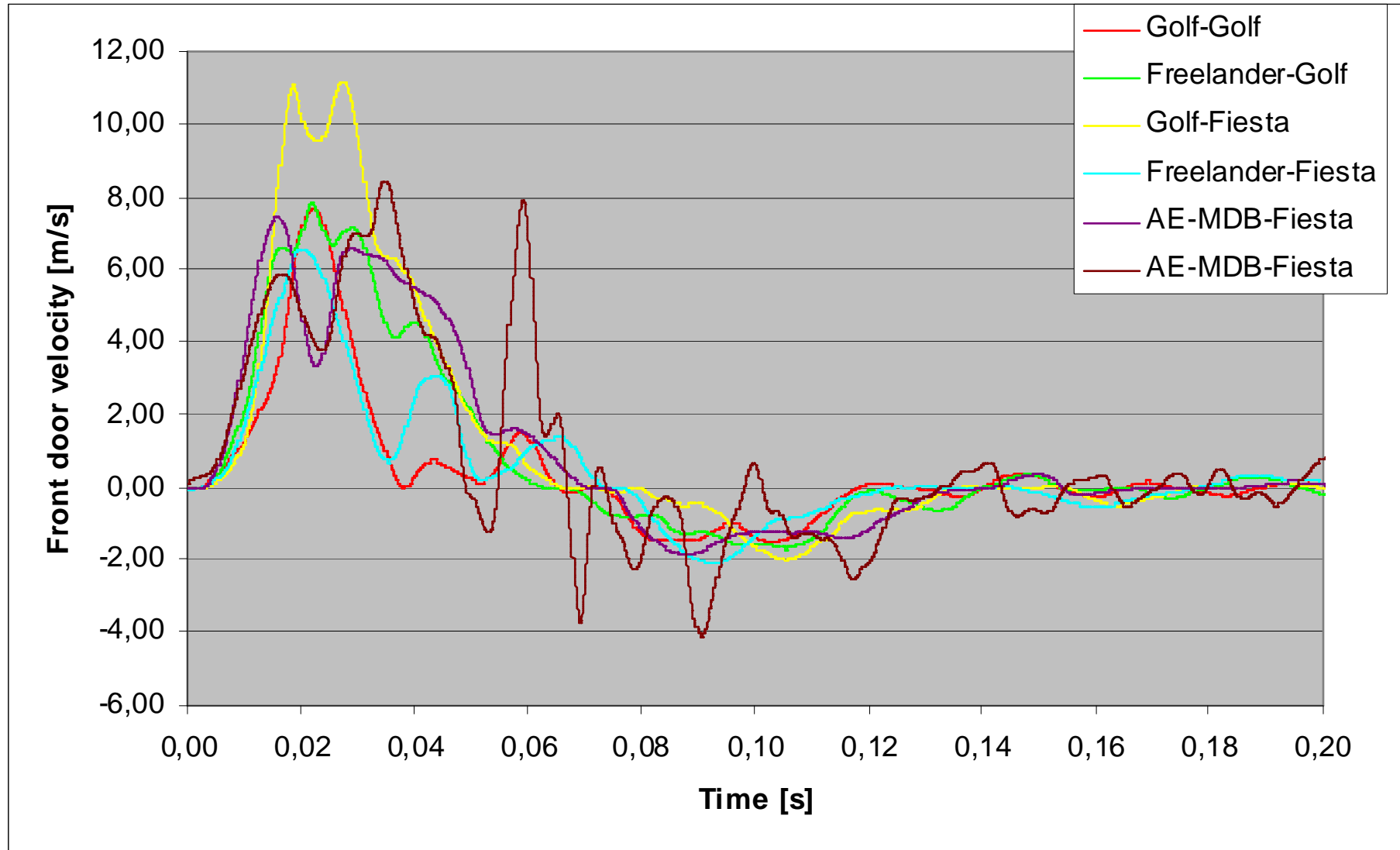
Mandate

- Review severity level and corridor in order to
 - address timing issues of ISO Corridor
 - address severity resulting from UTAC/LAB tests
 - address PU tube capabilities
- Review head containment plane
 - location
 - feasibility with booster seats

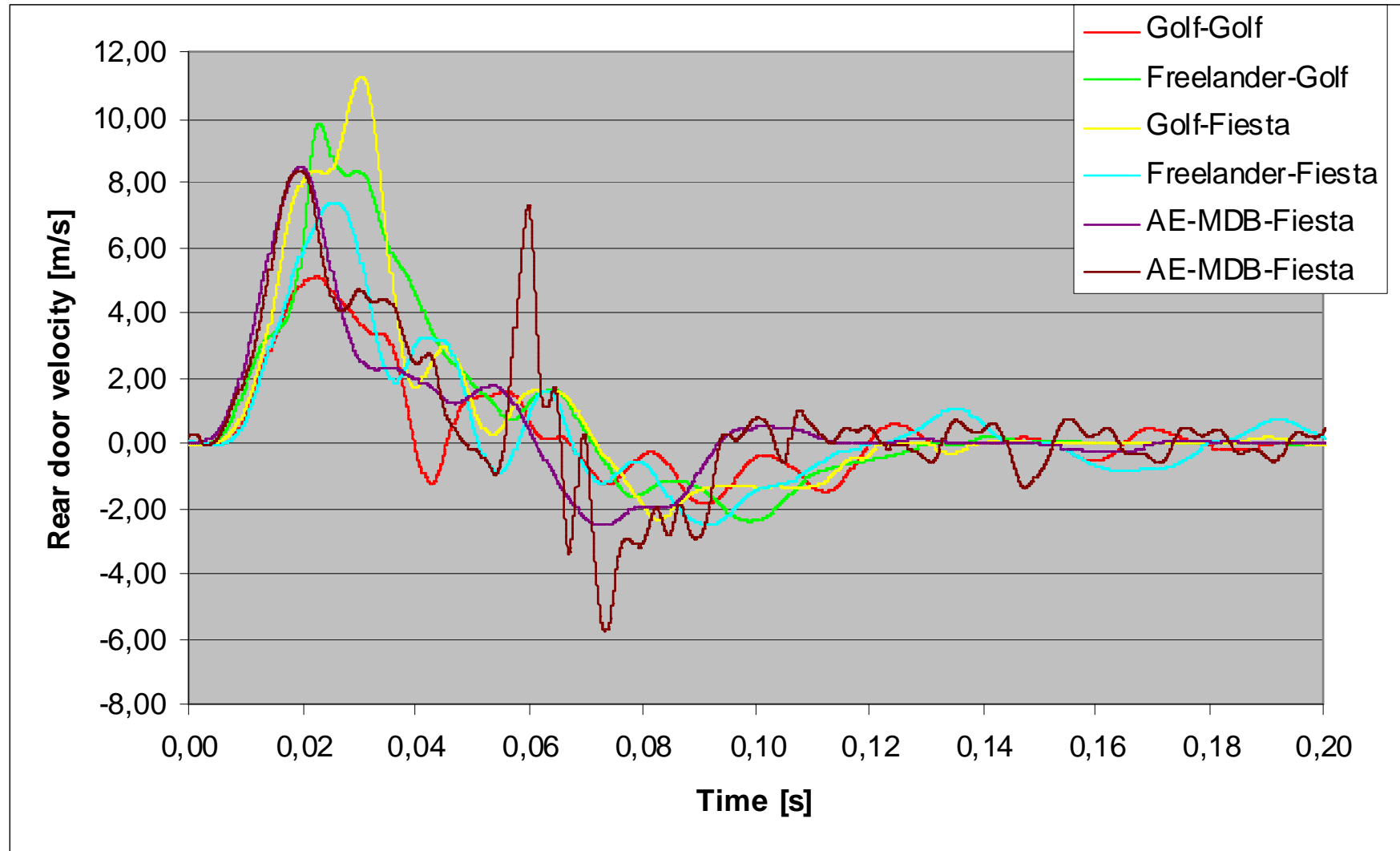
Intrusion Velocity from ISO PAS



Intrusion Velocity from Car-to-Car Tests



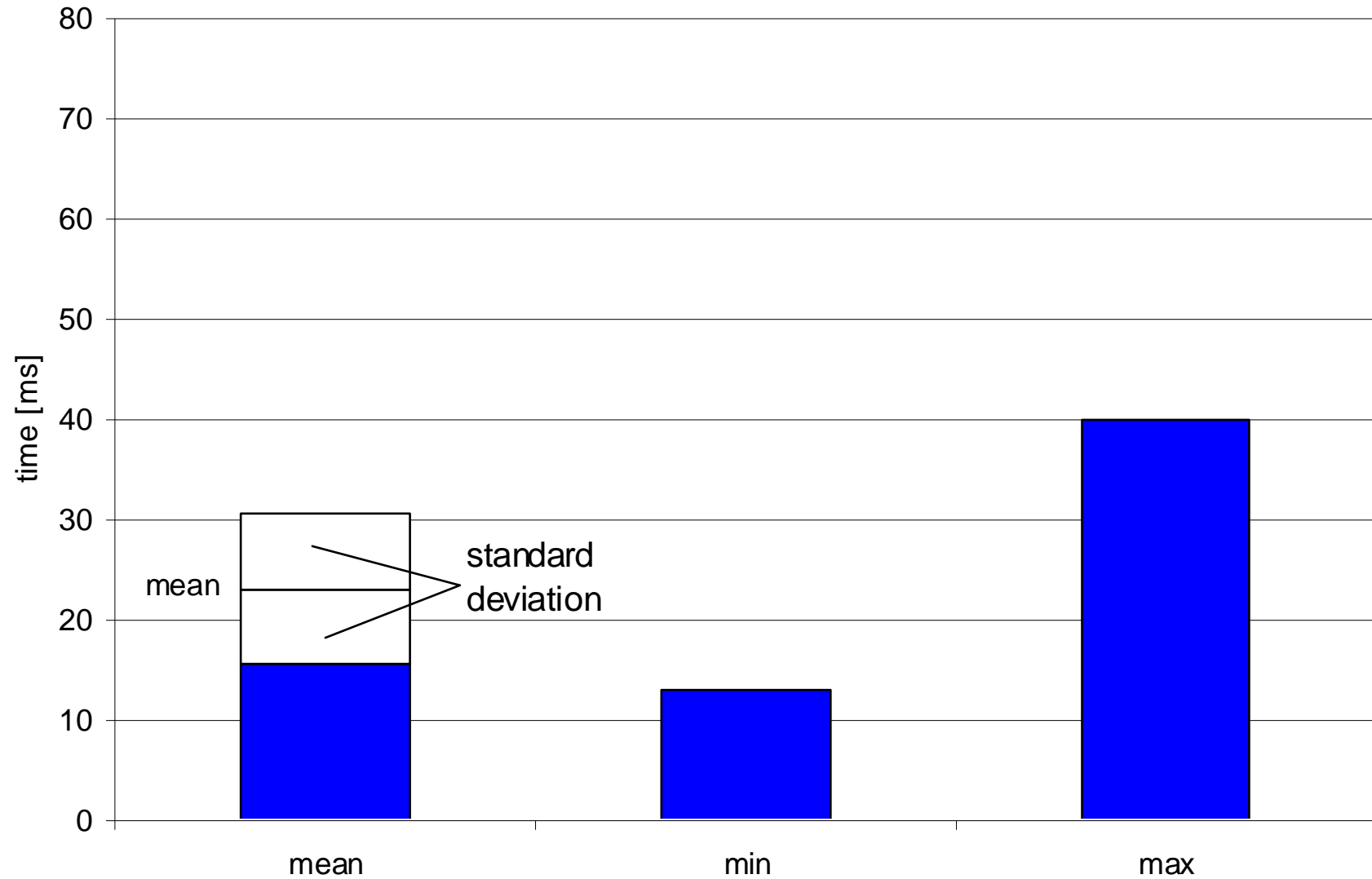
Intrusion Velocity from Car-to-Car Tests



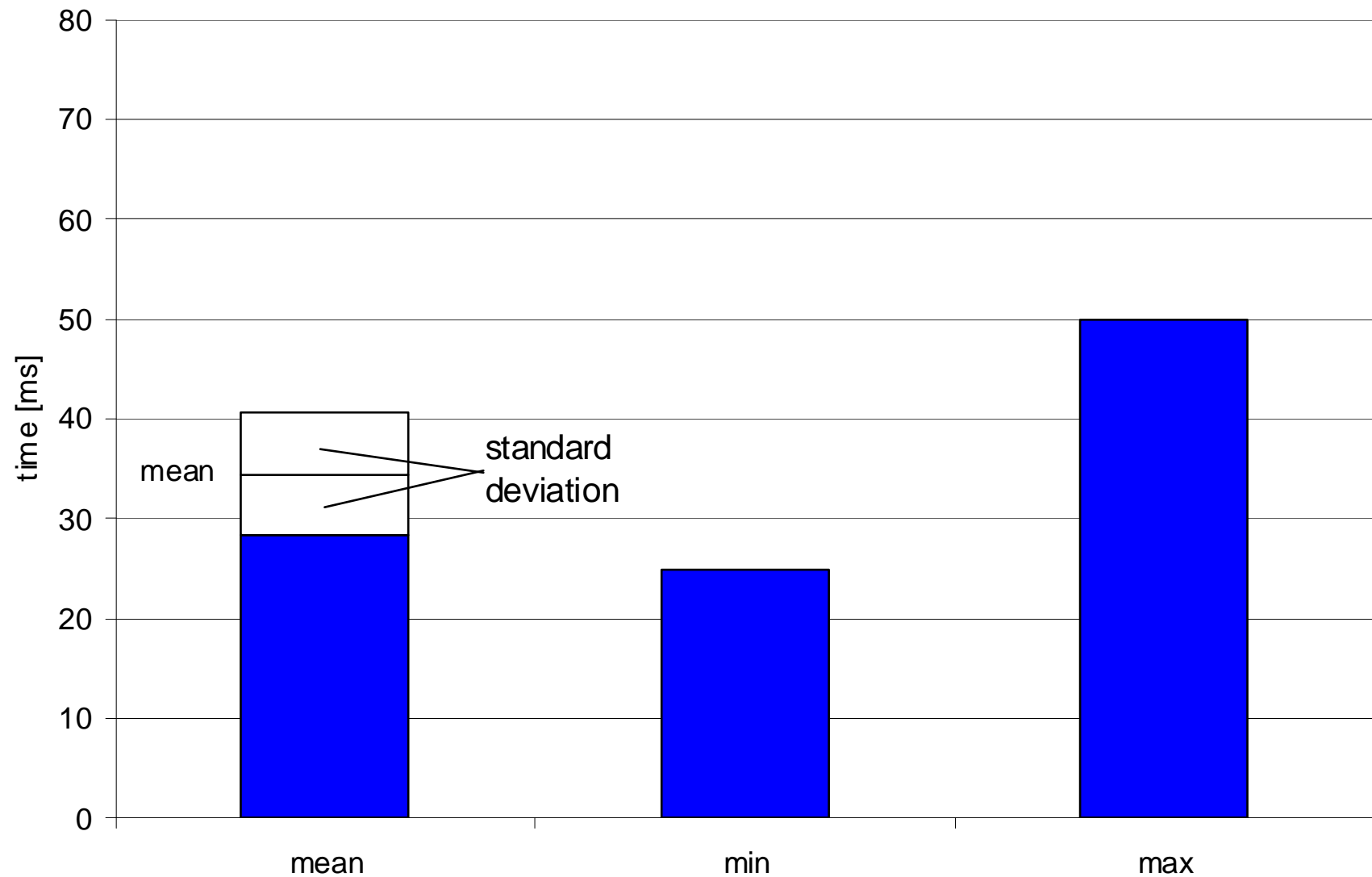
Relevant Timing for Lateral Impact Test Procedure

- Relevant points in time
 - Time of first contact between car and CRS
 - Time of start of dummy loading
 - Time of maximum dummy loading
- Analysis of timing in different cars (model years and sizes) and different CRS
 - Small, medium and large cars from manufacturing date between mid 90ies and mid 2000.
 - 6 different cars with 2 to 6 different CRS per car

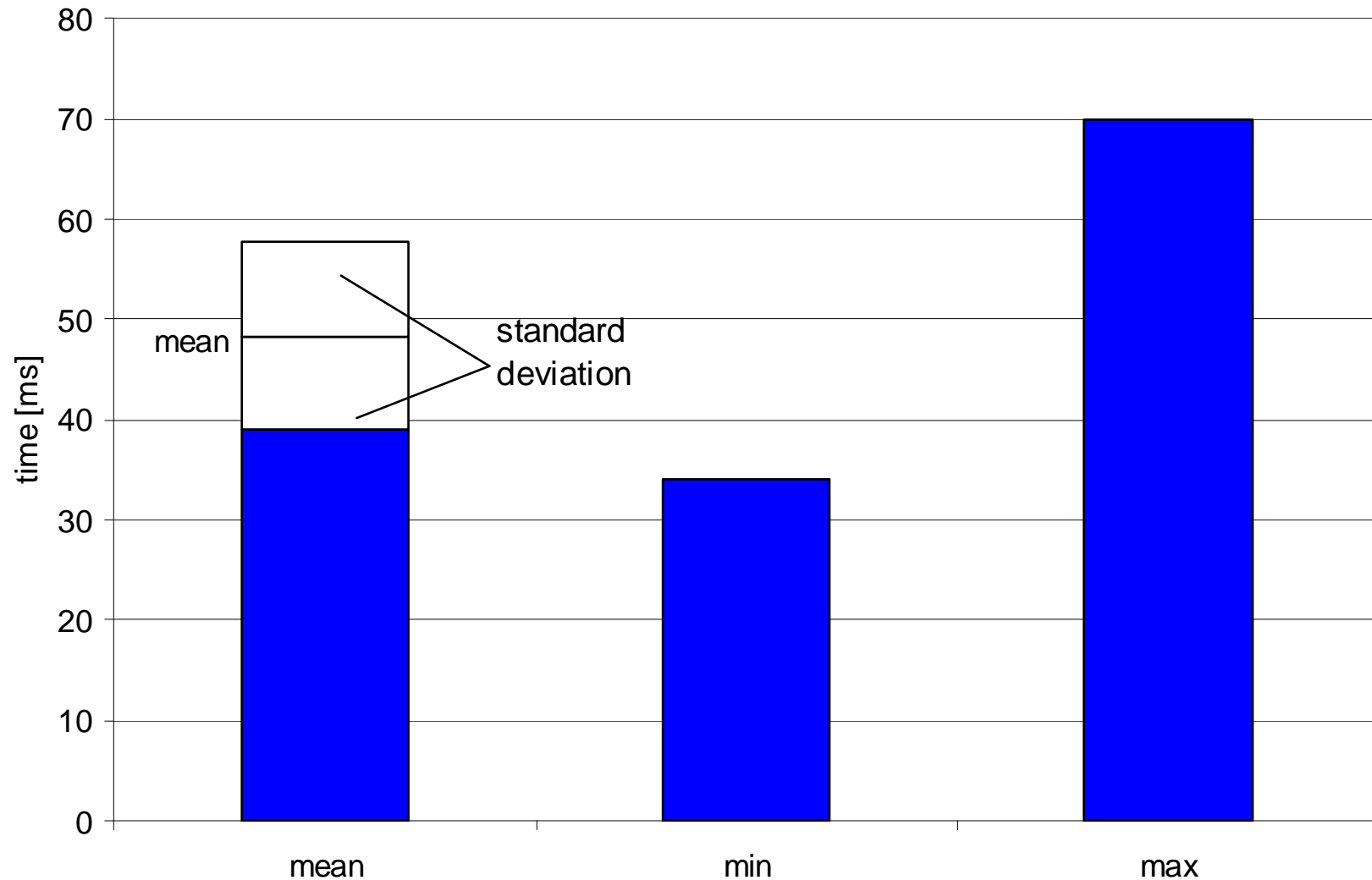
Analysis First Contact CRS-Door



Analysis Start of Head Loading from Intrusion



Analysis Timing Maximum Head Acceleration



Discussion of Corridor

- An optimal test method would represent
 - Car acceleration
 - Intrusion velocity profile
- The proposed test procedure is a simplified test method
- For the simplified test method it is important to represent car data at crucial point in time

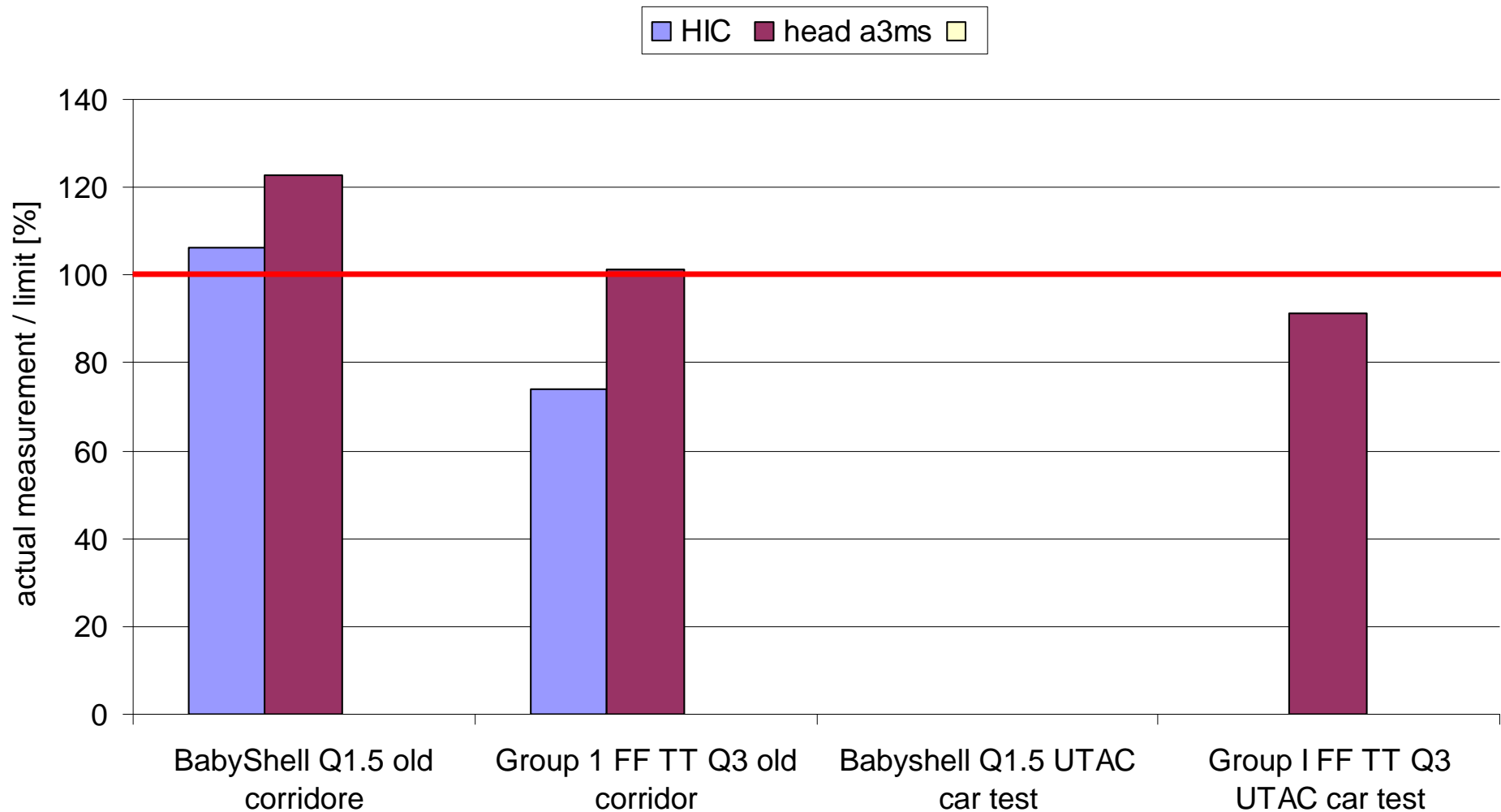
Discussion of Corridor

- It is felt that the period between start of dummy loading from intrusion and maximum dummy loading is most important
- Original corridor is representative with respect of intrusion velocity at time of first contact between CRS and car
- New corridor proposal is representative with respect to intrusion velocity at time of maximum head acceleration

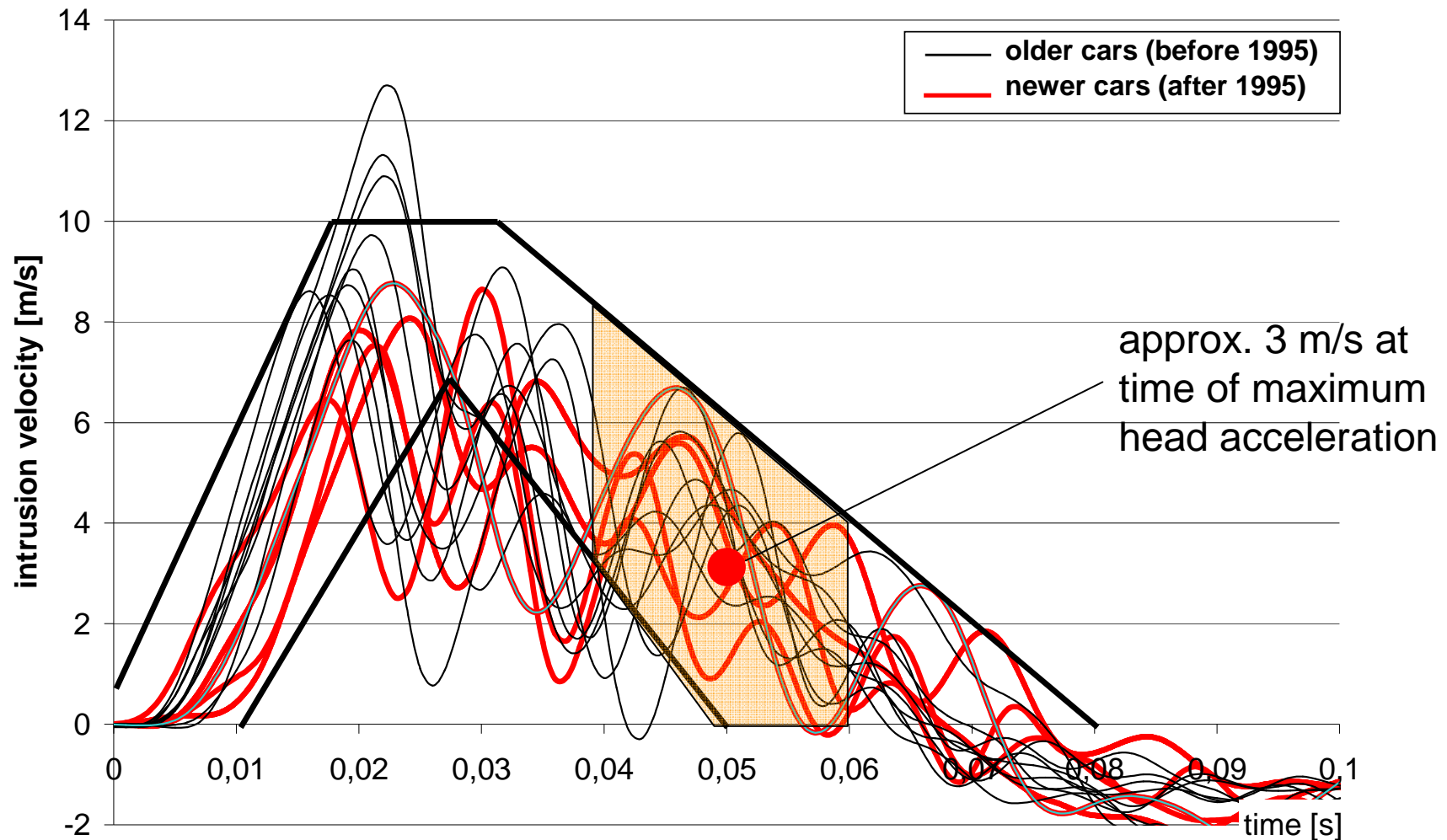
Proposed Criteria According to latest Draft Version of Standard

	Q0	Q1	Q1.5	Q3	Q6
HIC	600	600	600	800	800
a3ms head	75g	75g	75g	80g	80g

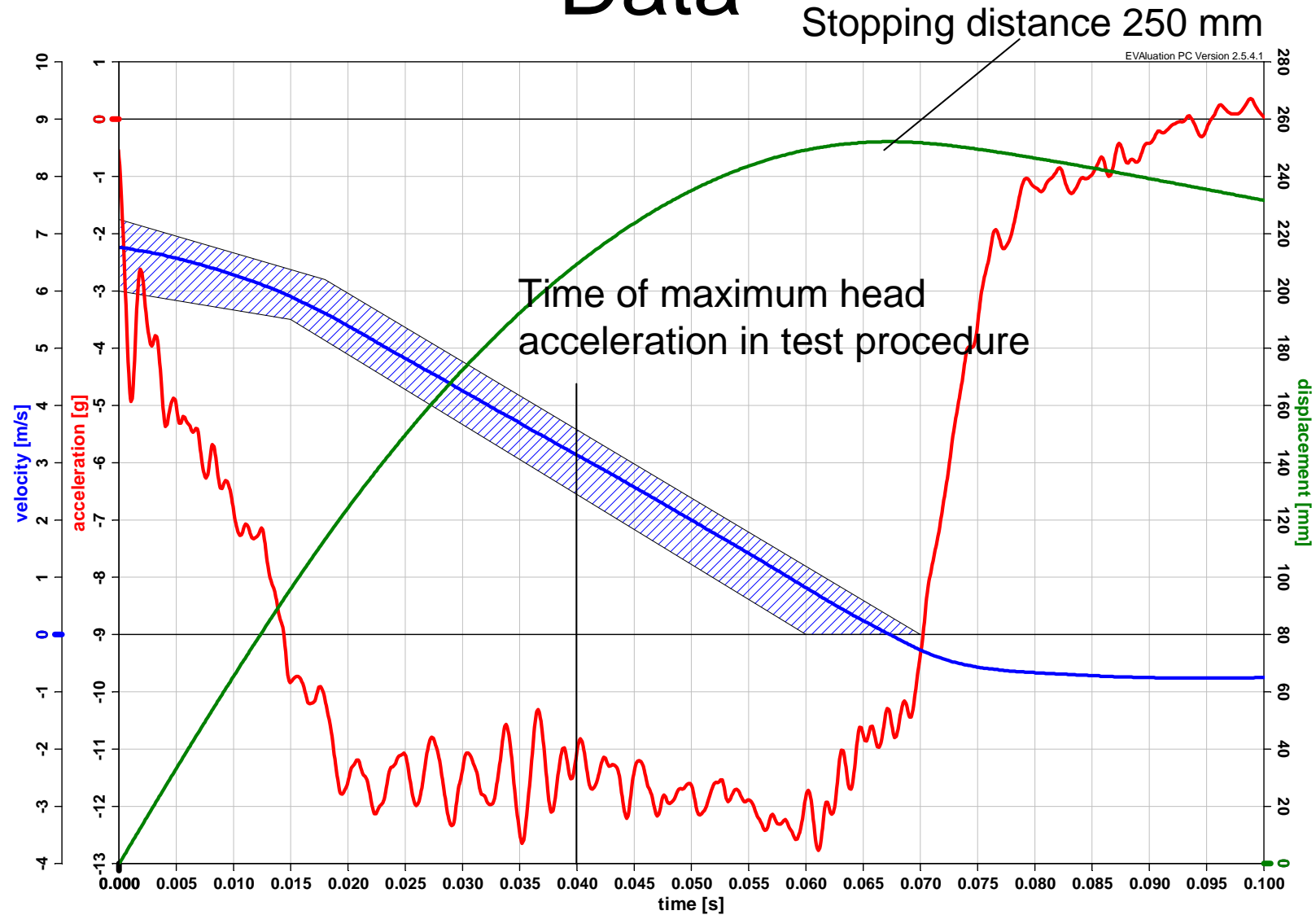
Comparison Sled old Corridor with UTAC/LAB Tests



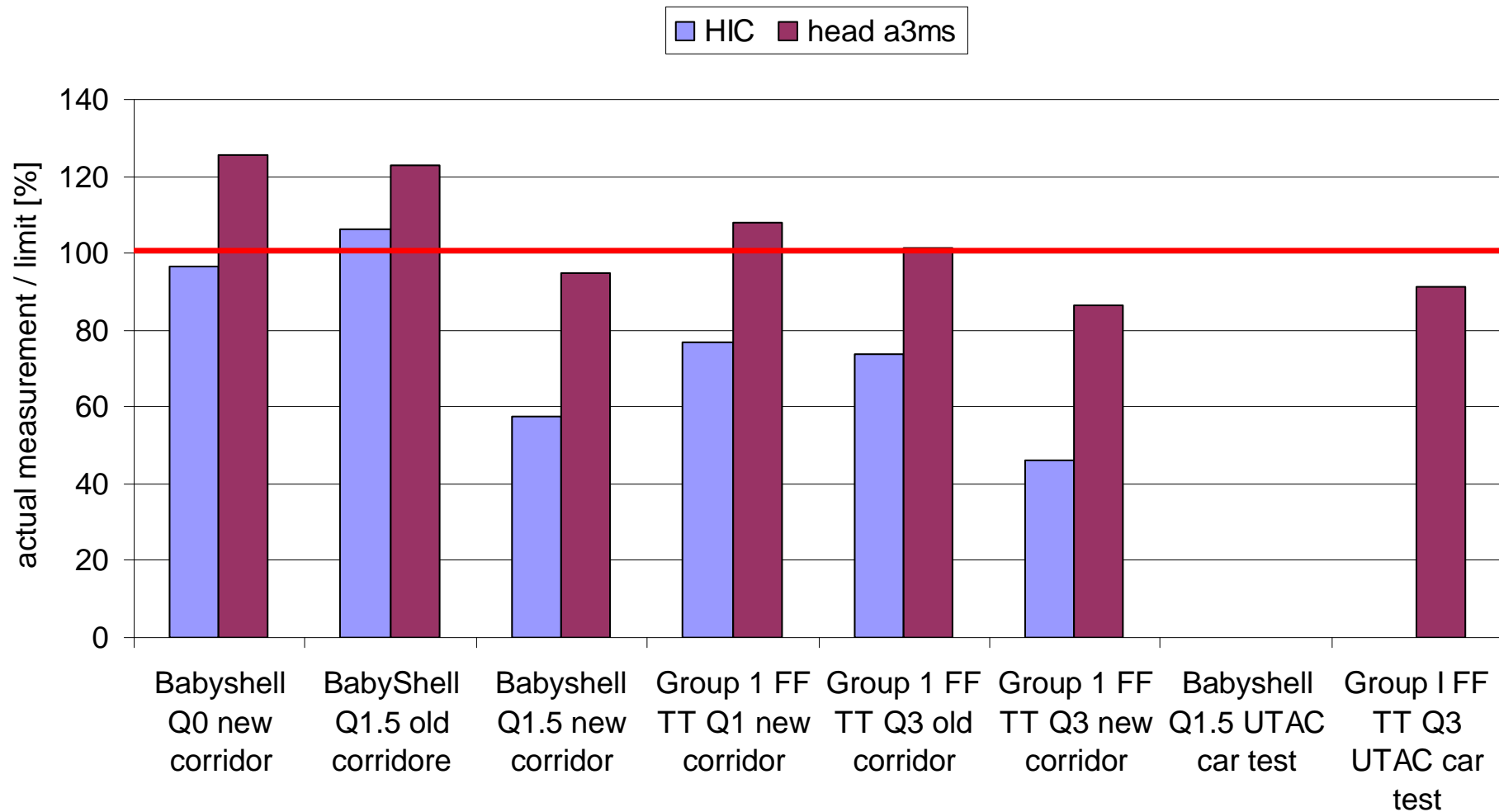
Consideration of Timing in Intrusion Velocity Corridor according to ISO PAS 13396



New Corridor Proposal with TUB Data



Comparison Sled new Corridor with UTAC/LAB Tests



Head Containment Plane

- Current position(s) of head containment plane:
 - 55 mm distance to contact surface of door panel
 - thickness 10 mm
- For a large no. of harness CRS no issue
- What about booster CRS?

Head Containment Plane

- Tests at conducted with Q6 and booster seats
- Approach for Q10?
 - Q10 could probably be available early 2011?
 - Q10 sitting height approx 150 mm more than Q6 -> Q6 adjustment reasonable?

Q6 Booster 1



Q6



Q3



Q6 NPACS

Q6 Booster 2



Q6



Q6 with additional bolster (100 mm)
(dummy sitting height lifted artificially by 100 mm)

Proposal for Head Containment Plane

- Location of the head containment plane has a distance of [55 mm] to the padding material (i.e, first contact surface of the CRS)
- Dummy's head must not cross this head containment plane

Next Steps

- Complete Validation Tests with new corridor
 - Babyshell SL Q1.5
 - Group 1 TT with Q3
 - Group 1 SL with Q1
 - Group I RF with Q3