

Comparison of Difference of HIT (Head Impact Time) from Actual Value in HIT-WAD relationship

Intermediate Skype Meeting

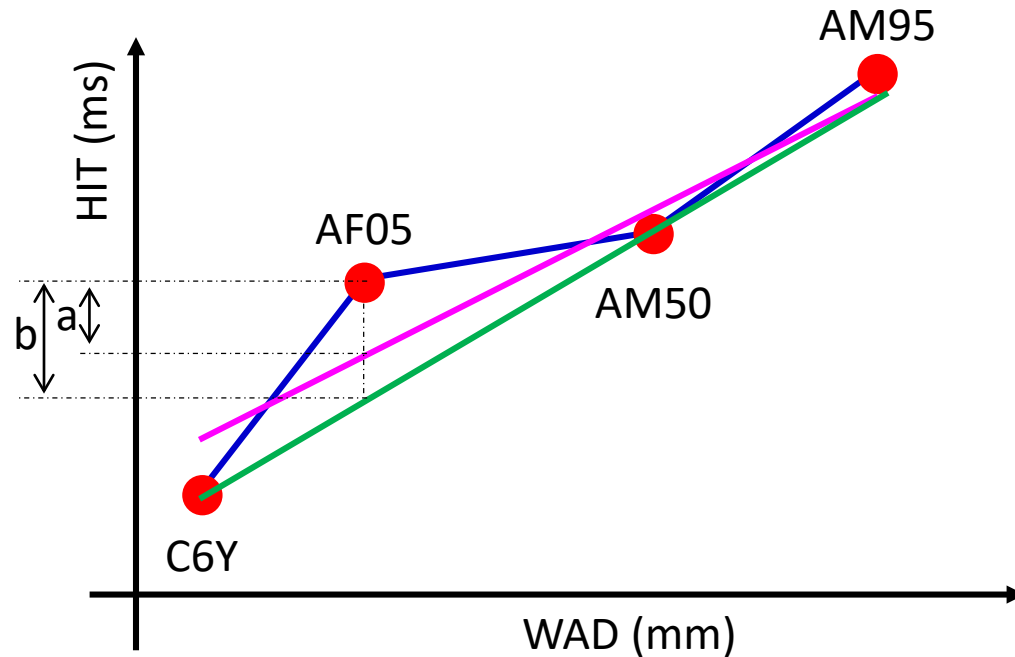
28th of November, 2019 9-11am (French time)



JAPAN AUTOMOBILE STANDARDS INTERNATIONALIZATION CENTER

Estimation Methods for HIT-WAD Relationship and Car Models

Estimation Methods for HIT WAD Relationship



- **Method1**: Polygonal line using all of plots (C6Y, AF05, AM50 and AM95) Japan Proposal
- **Method2**: Regression line using all of plots (C6Y, AF05, AM50 and AM95)
- **Method3**: Line using 2 plots (C6Y and AM50)

a: maximum difference of HIT for Method2
b: maximum difference of HIT for Method3

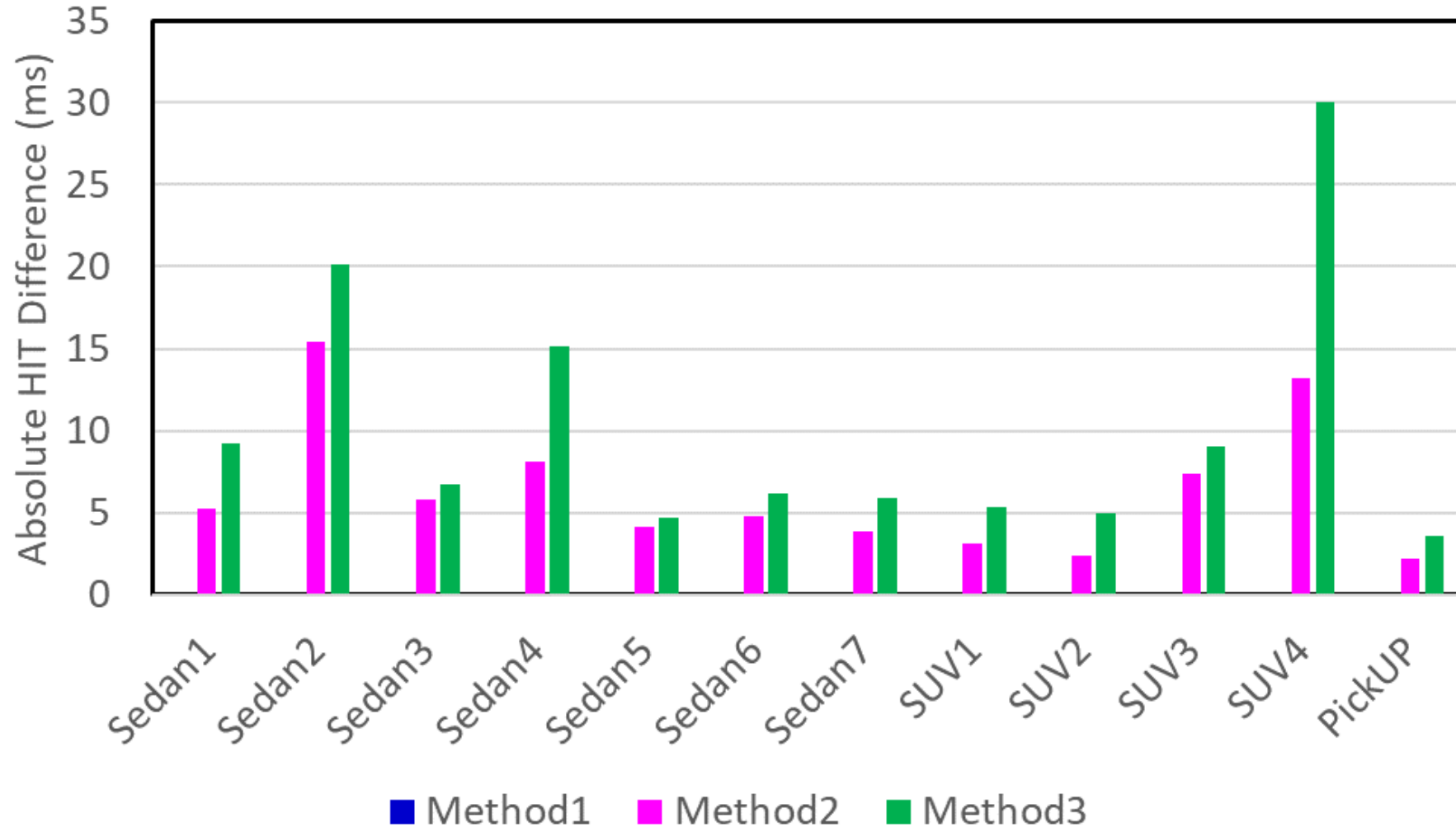
Car models used for Investigation of HIT-WAD Relationship

- Sedan: 7 cars
- SUV: 4 cars
- PickUP: 1 car

*HIT-WAD relationship was calculated by using the Euro NCAP or JNCAP protocol

Maximum difference of HIT from actual value of HIT calculated from simulation using HBMs (same as Method1) were compared in 12 car models

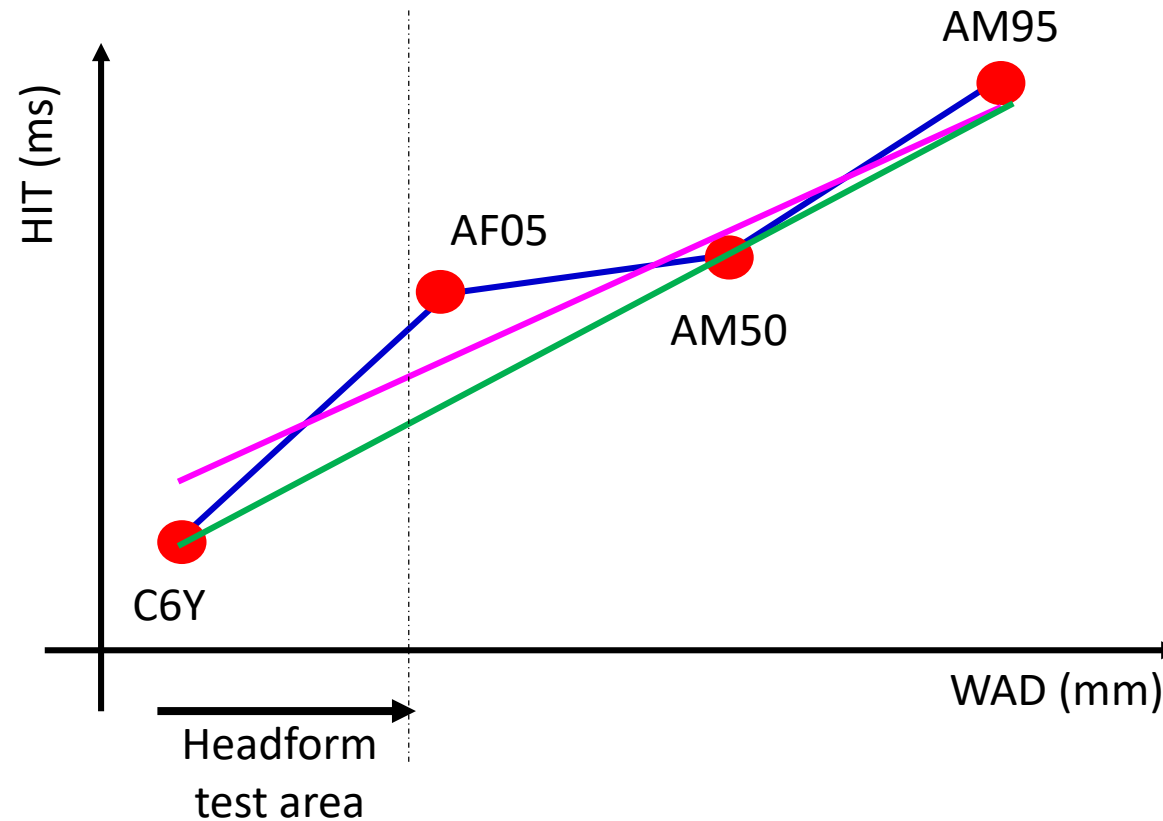
Maximum Difference from Actual Value



Method3 using only 2 points shows largest difference among the method (max. approx. 30ms)

Using polygonal line would be most appropriate method for HIT-WAD relationship

Another Advantage for Use of Method1 (Polygonal Line)



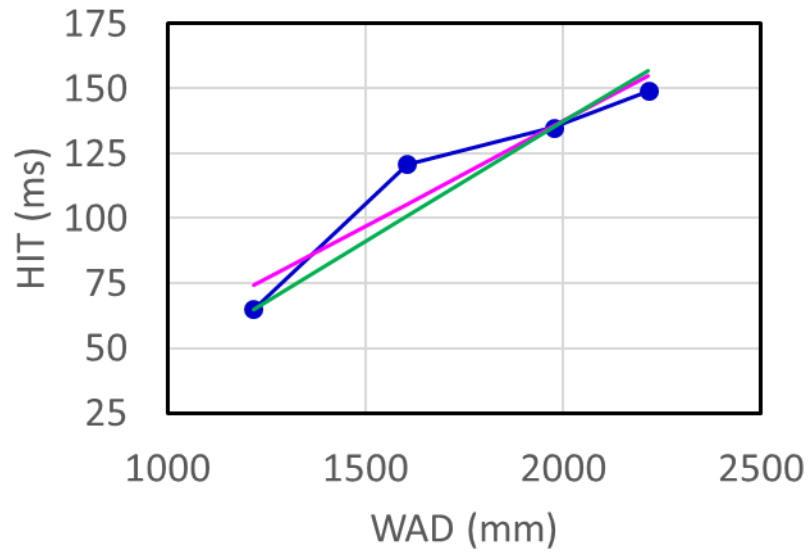
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- **Method1** can eliminate the points whose WAD are out of range of head form test area
- **Method2** and **Method3** need to use the points which is not appropriate for determination of HIT-WAD relationship in case WAD of rear end of headform test area is small

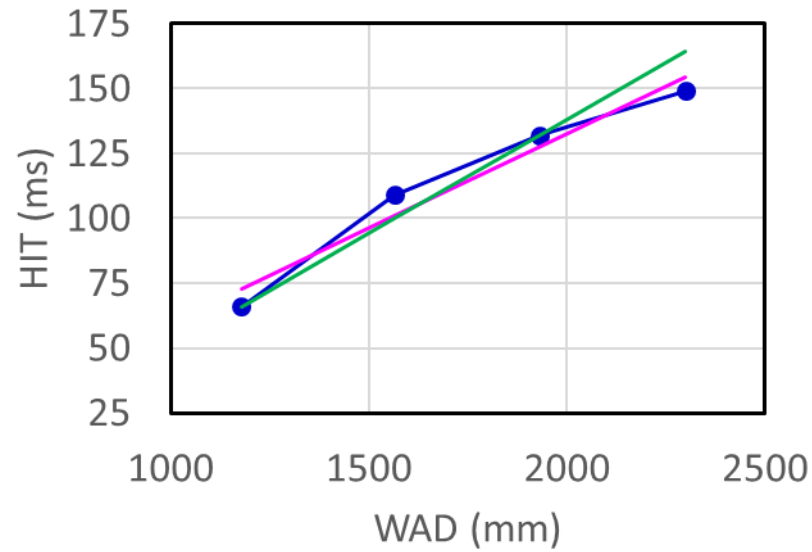
Appendix: HIT-WAD Relationship

Cars showing large difference of HIT from actual value (Sedan2, Sedan4 and SUV4)

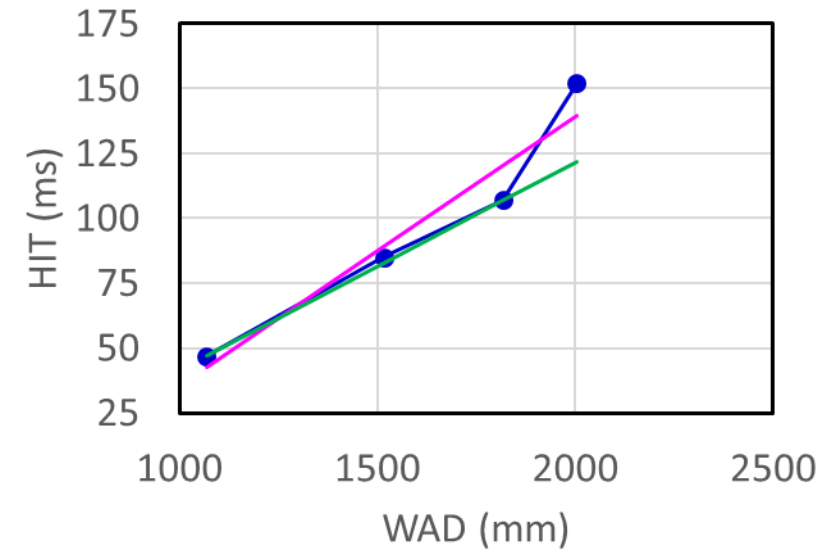
Sedan2



Sedan4



SUV4



Method1 Method2 Method3