

Development of Method for *“Evaluation Of Frontal Offset/Oblique Crash Test Conditions”*

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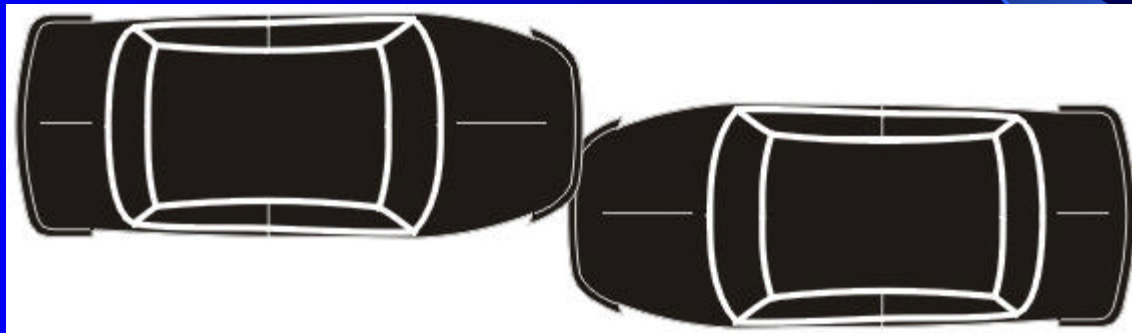
NASS CDS 1995-1999

- Frontal crashes
- Vehicle-to-vehicle
- Two vehicle
- Both vehicles inspected

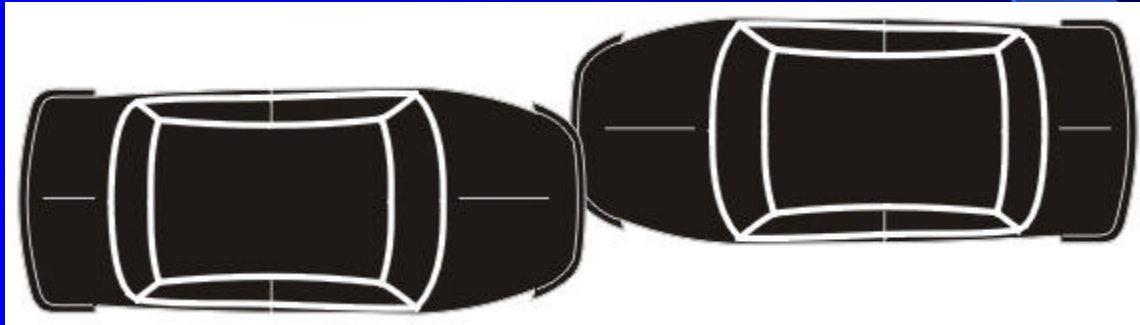
Parameters Examined

- Relative angle
- Overlap
- DVD
- Cmax

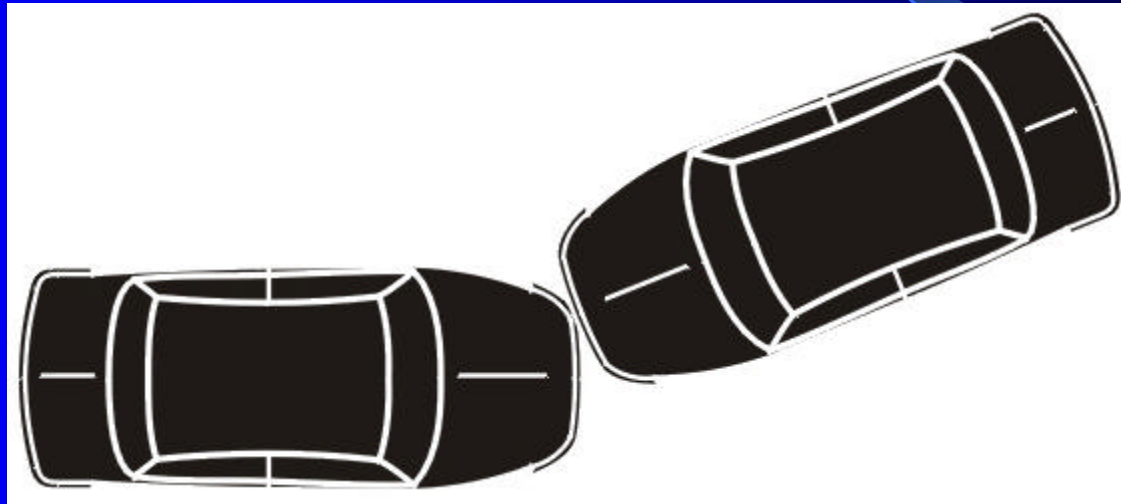
Case 1 – Right Offset



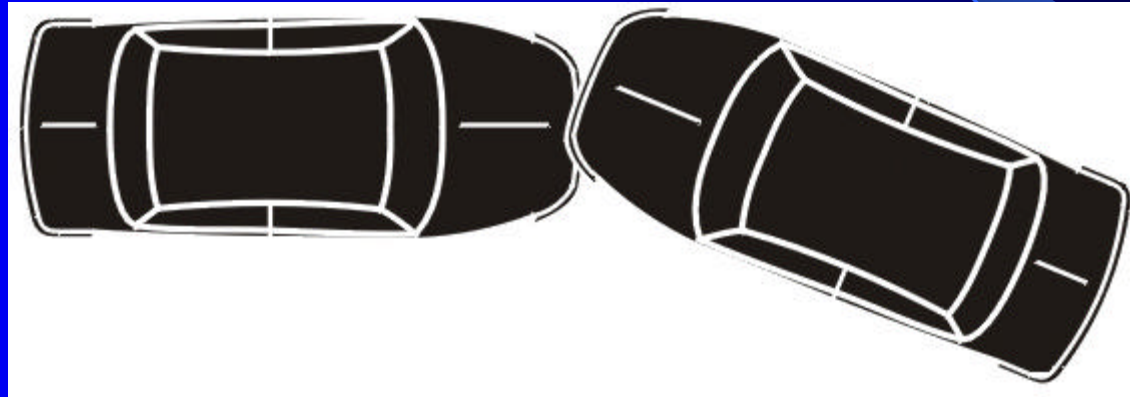
Case 2 – Left Offset



Case 3 – Left Offset Oblique



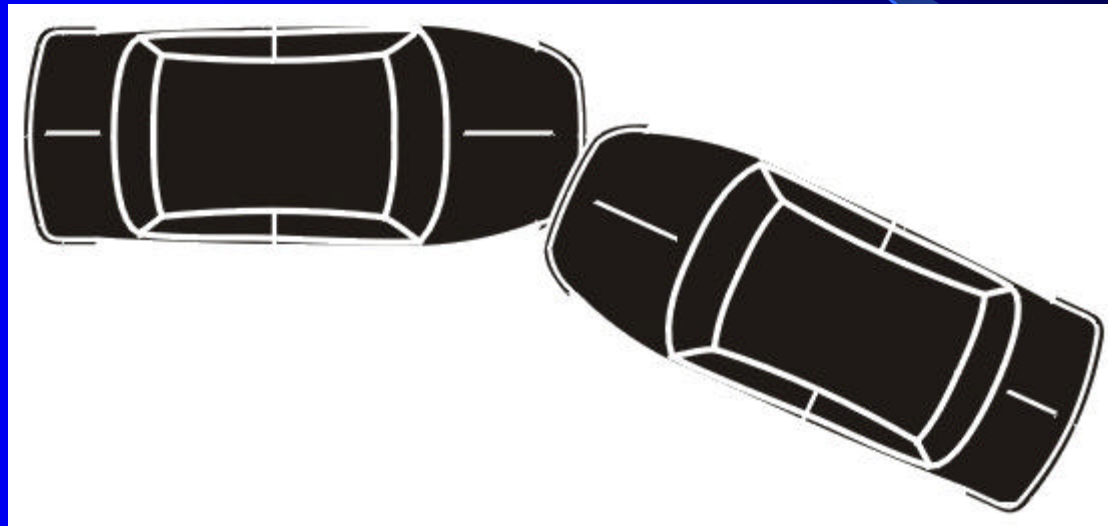
Case 4 – Center-to-left Offset Oblique



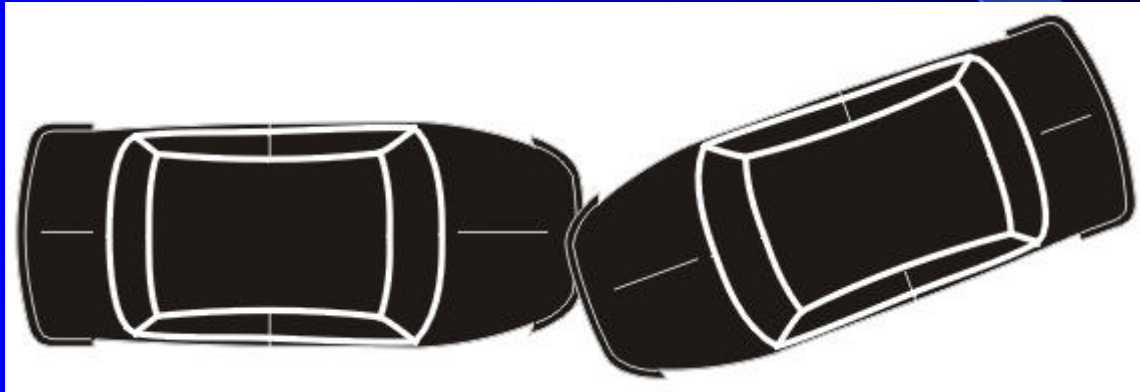
Case 5 – Full Frontal



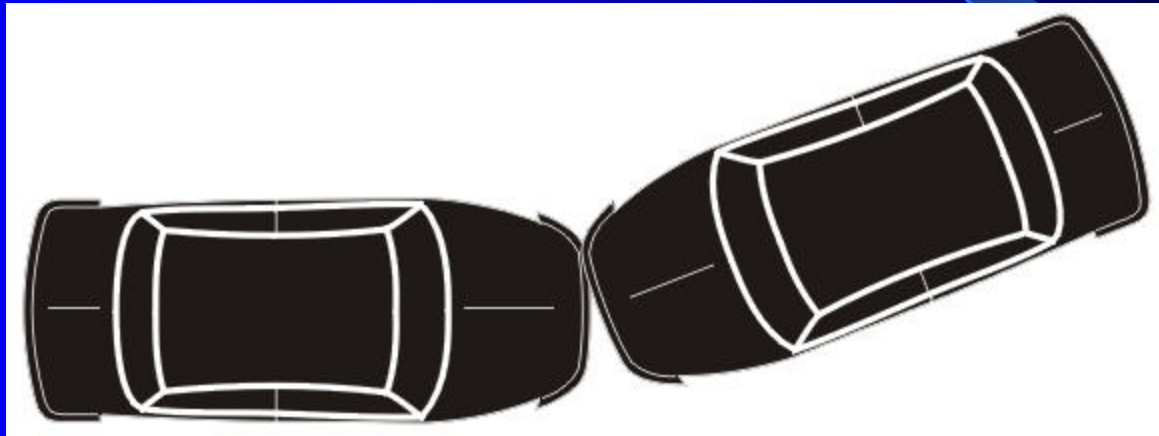
Case 6 – Right Offset Oblique



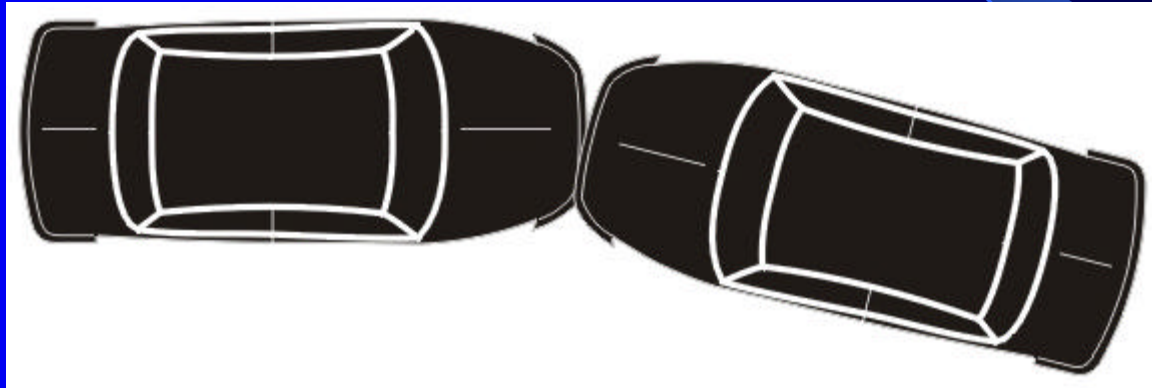
Case 7 – Center-to-right Offset Oblique



Case 8 – Left Full Oblique



Case 9 – Right Full Oblique



Example Logic for Case 3

$-90 < \text{ANGREL}_S < -10$ #AND#

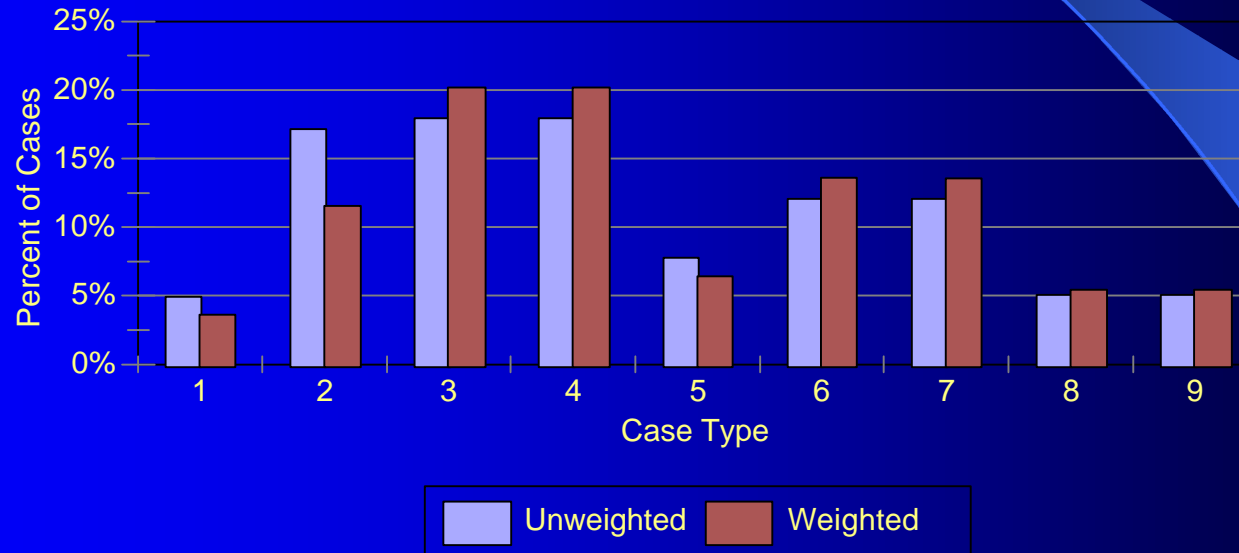
$\text{CMAX}_S = \text{C1}$ #OR# $\text{DVD}_S < 0$

#AND#

$\text{CMAX}_P = \text{C1}, \text{C2}, \text{C3}, \text{C4}, \text{OR C5}$

Percentage of NASS Two Vehicle Crashes

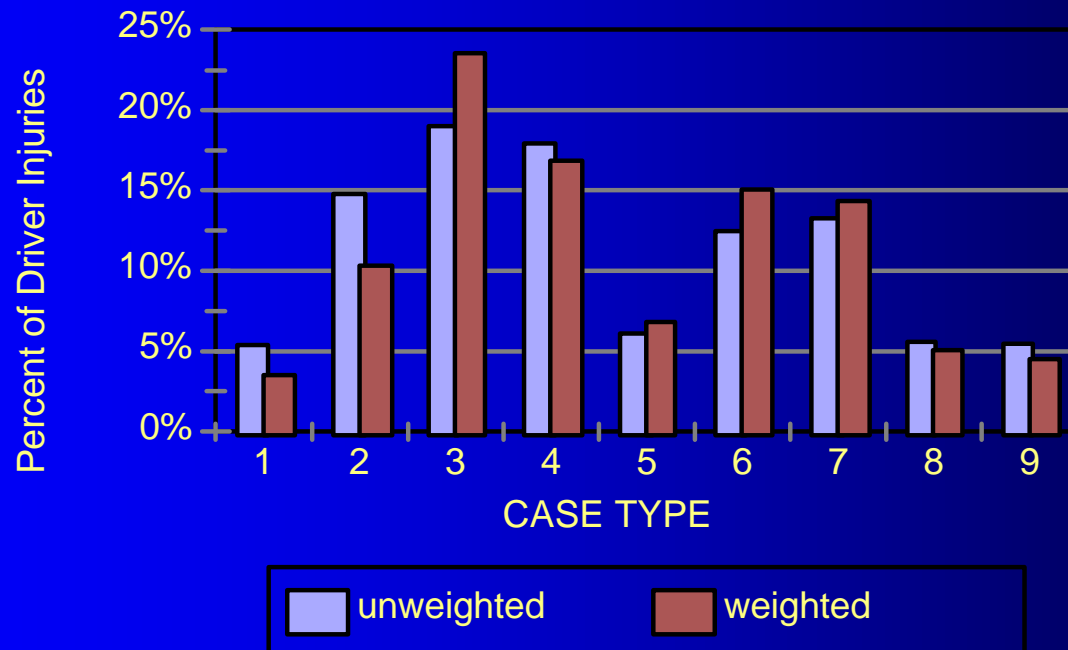
Vehicle Involvement by Case Type
Unweighted & Weighted Cases



Preliminary Data

Distribution of Minor and Moderate Injuries by Case

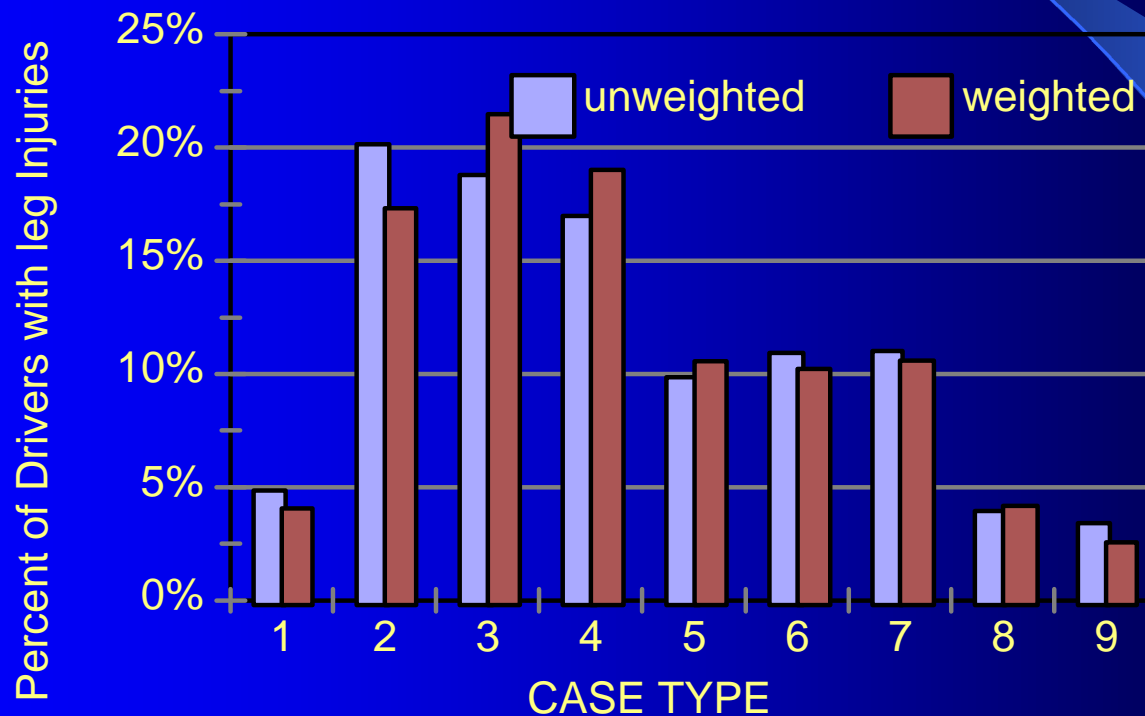
Distribution of AIS 1 and 2 Injuries
95-99 NASS



Preliminary Data

Distribution of Leg Injuries

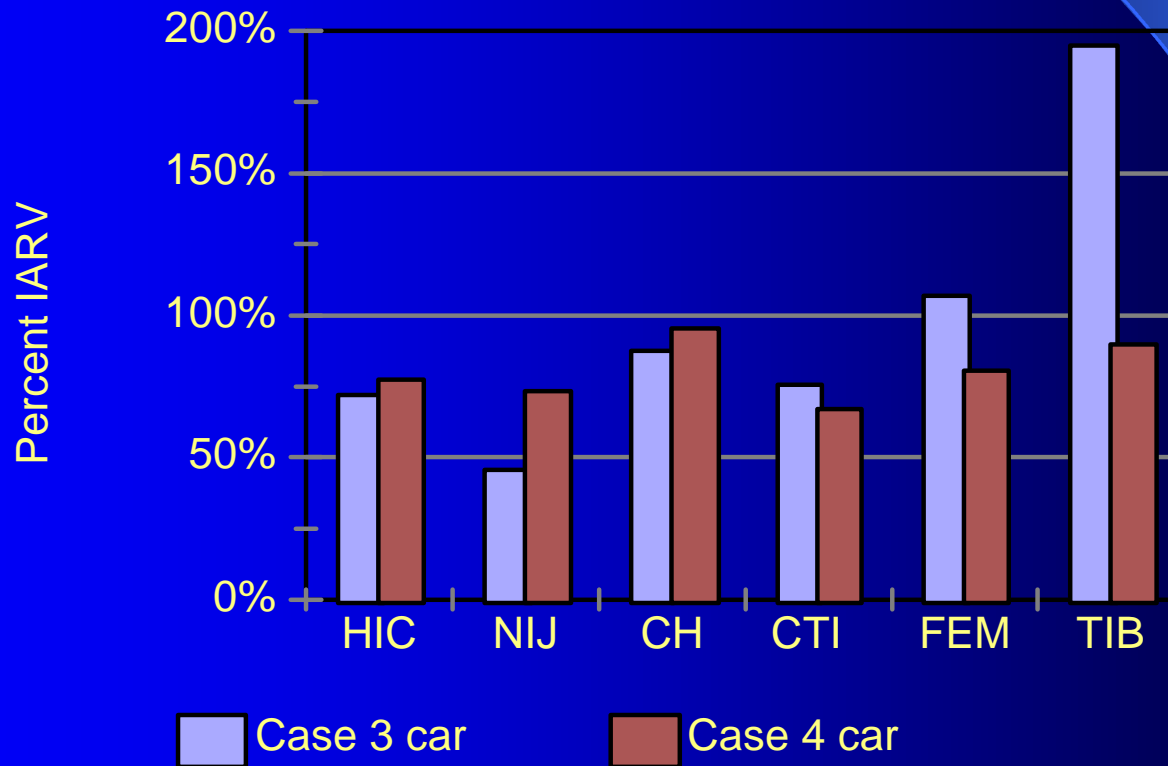
Distribution of AIS 1-3 Leg Injuries 95 - 99 NASS



Preliminary Data

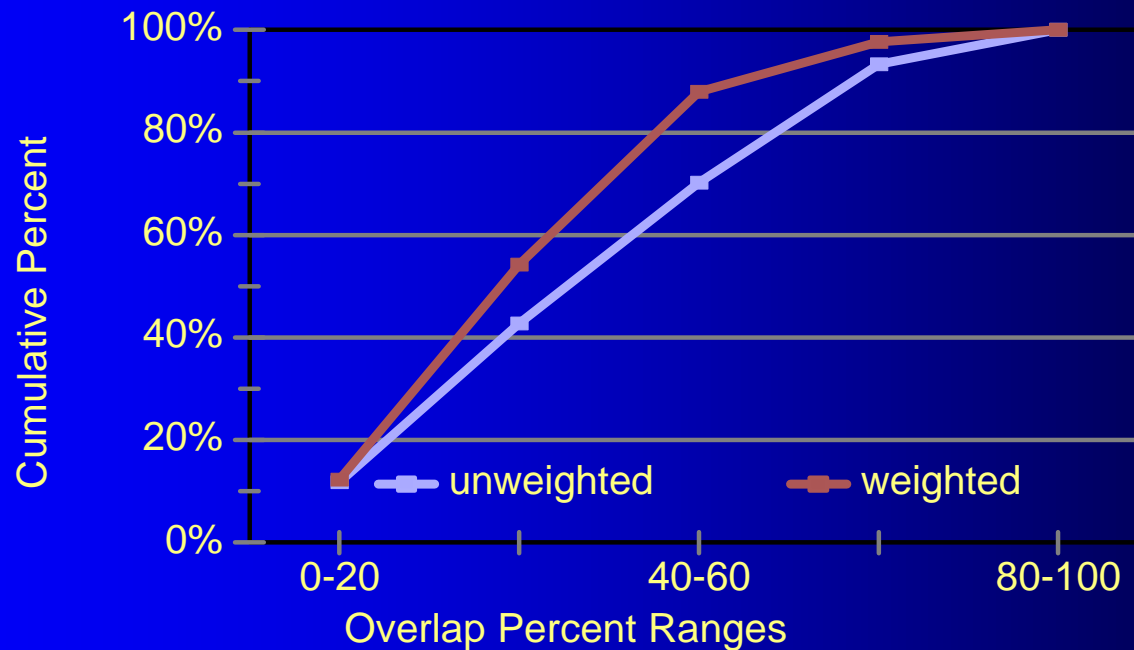
Case 3 and Case 4 Crash Test Results

Percent of Average IARV for 3 Crashes
(Injury Assessment Reference Value)



Distribution of Overlap Percent

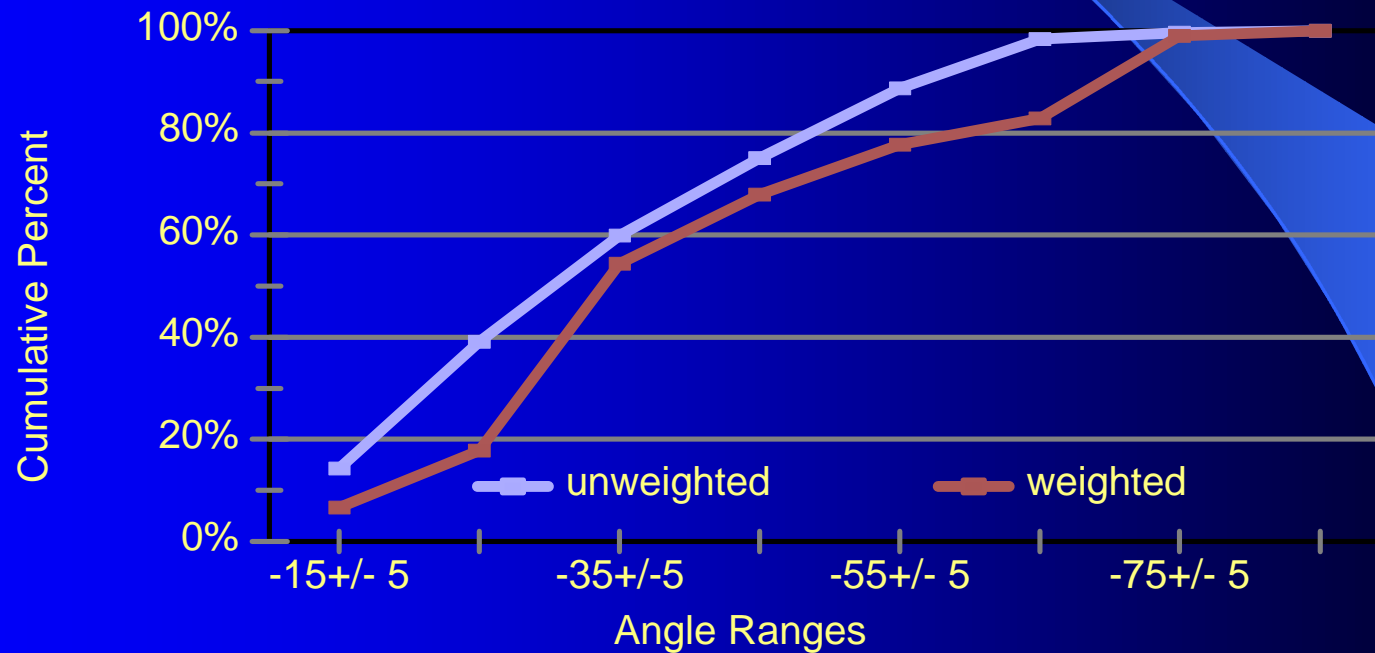
Percentage Distribution of Overlap %
For Case 3 Vehicles



Preliminary Data

Distribution of Angle

Percentage Distribution of Angle For Case 3 Vehicles



Preliminary Data

Summary

- **New methodology** to evaluate crash conditions
- **Preliminary data:**
 - Predominate crash is left oblique
 - More minor and moderate injuries in left oblique crashes
 - Most leg injuries in left-oblique, center-to-left corner, and left offset crashes