



*The Current Status of Head Restraint  
Regulation in Korea*

*September 12-14, 2006  
KOREA MOCT/KATRI*

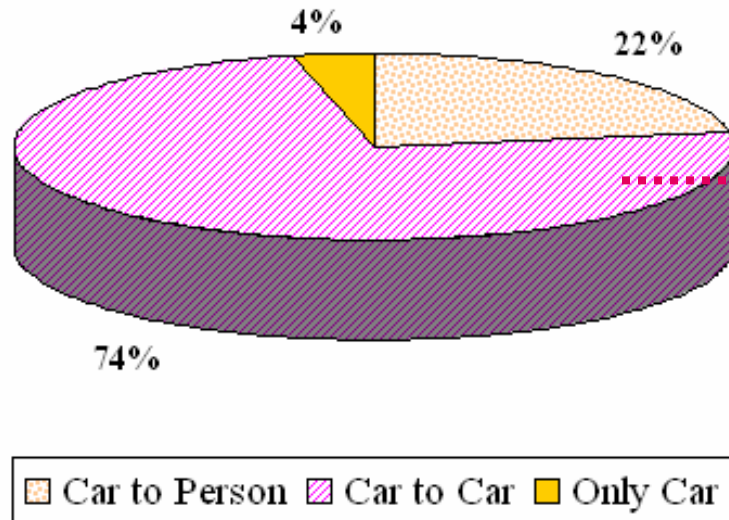
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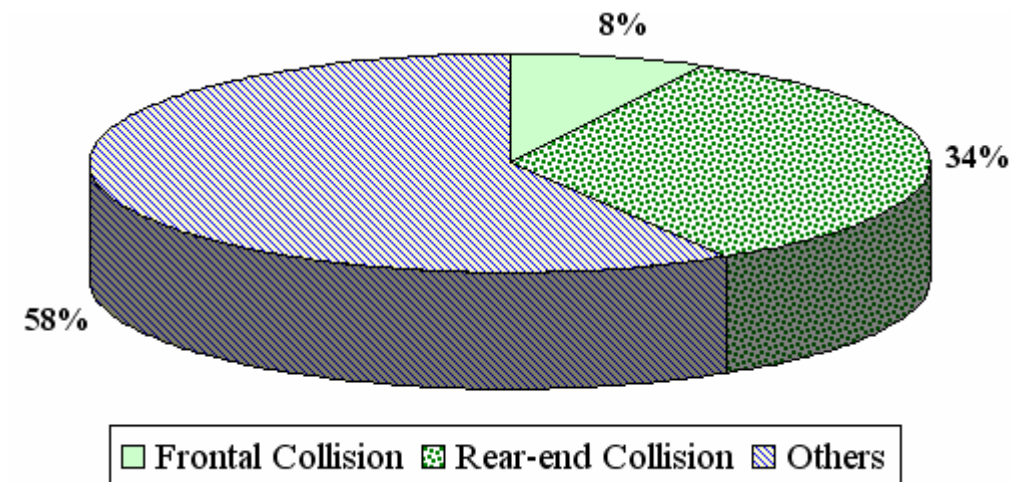
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# Type of Accident

## 2003 Police reported Vehicle involved accidents



## Patterns of car-to-car type accidents in 2003

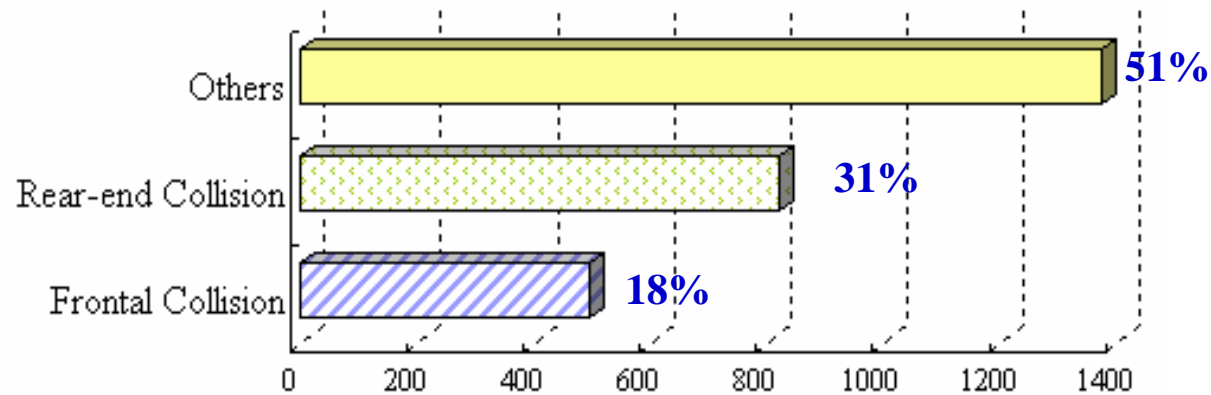


- Data from 2003, car-to-car type accidents was 74% of total accidents
- Rear-end collision was about 34 % and 4 times higher than front-end collision accidents

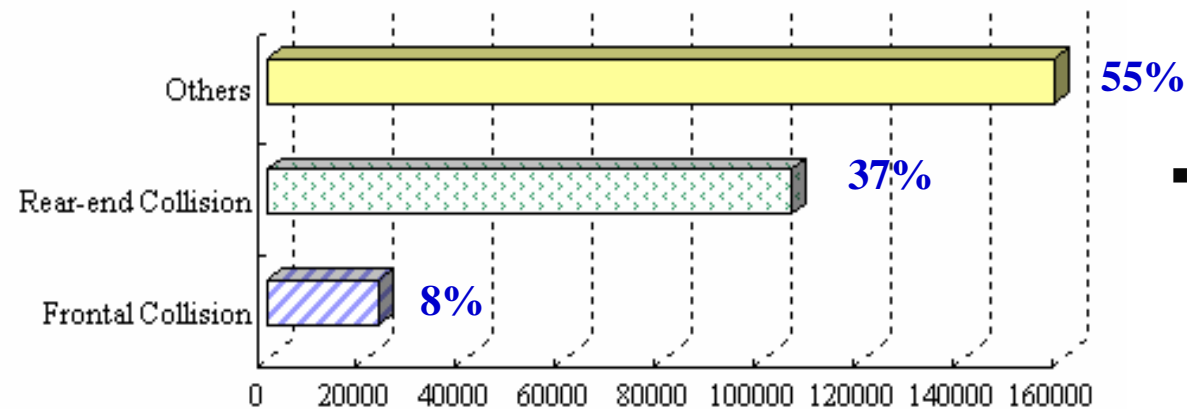
\*Source: Korean National Police Agency

# Type of Accident

Percentage of Fatality in Car-to-Car type accidents (2003)



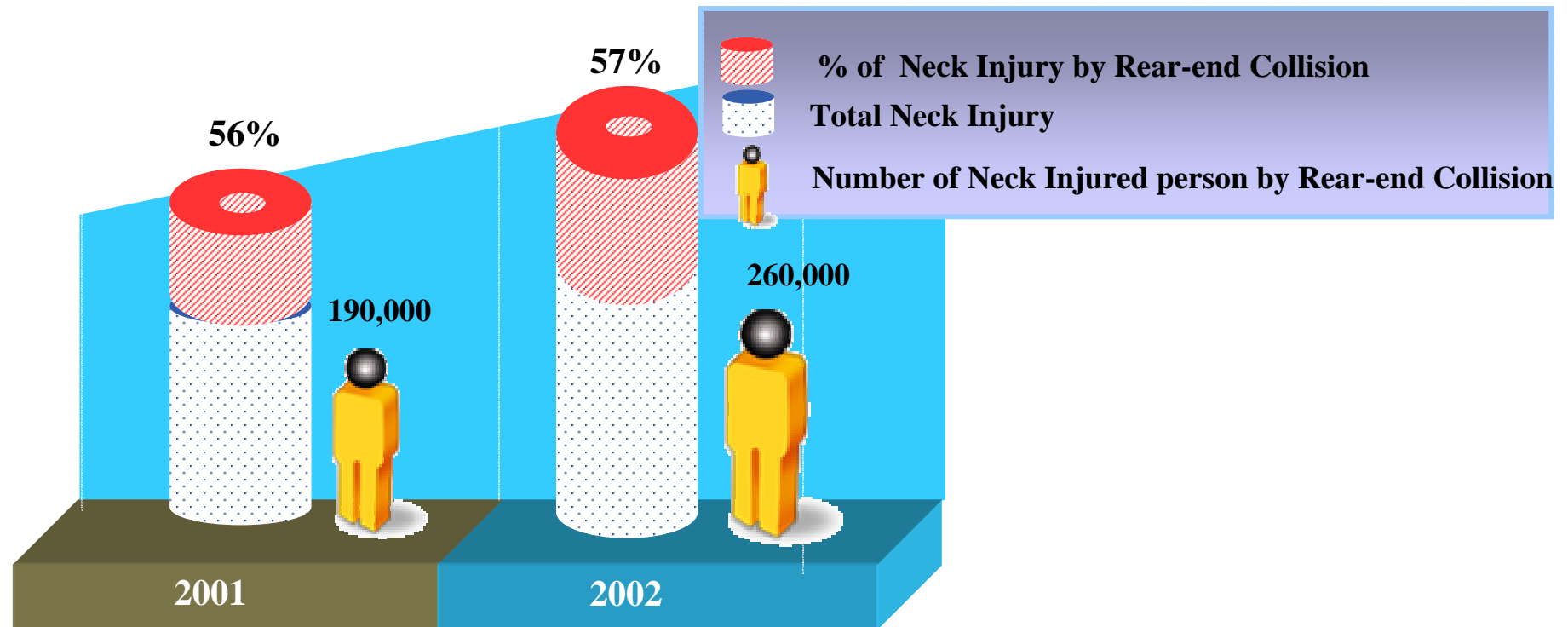
Percentage of Injured accidents in Car-to-Car type accidents (2003)



- Data from car-to-car accident of 2003, fatality was 31% and injury was 37% due to the rear-end collisions

\*Source: Korean National Police Agency

# Statistics of Neck Injuries



- In Korea, based on 2001-2002 neck injury data, the percentage of neck injury by the rear-end collision was more than 55% of the total neck injury

# Average Sitting Height

## <Netherlands>

Male(age:20-60)	
N=495	
%ile	Sitting Height
5	882
10	896
25	916
50	949
75	976
90	1001
95	1016

## <USA>

Male	
2000CY	
%ile	Sitting Height
5	862
10	---
25	---
50	928
75	---
90	---
95	994

## <Japan>

Male(age:18-29)	
N=217	
%ile	Sitting Height
5	873
10	887
25	903
50	926
75	945
90	969
95	985

## <Korea>

Male(age:20-60)	
N=2181	
%ile	Sitting Height
5	872
10	884
25	900
50	917
75	942
90	960
95	972

- Naturally, the sitting height of Korean males are shorter than those of Westerners, the head restraints with 800mm heights will cover all occupants

\*Source: HR-4-10 & Korean Agency for Technology and Standards

# History of Head Restraint Regulation



- **Head Restraints Rule: “Korea Safety Regulation for Road Vehicles Article 99: Head Restraints”** This regulation has been issued in Korea since 1995
- Article 99 is similar to FMVSS 202
- Now, Korea is trying to harmonize Article 99 with GTR of Head restraints

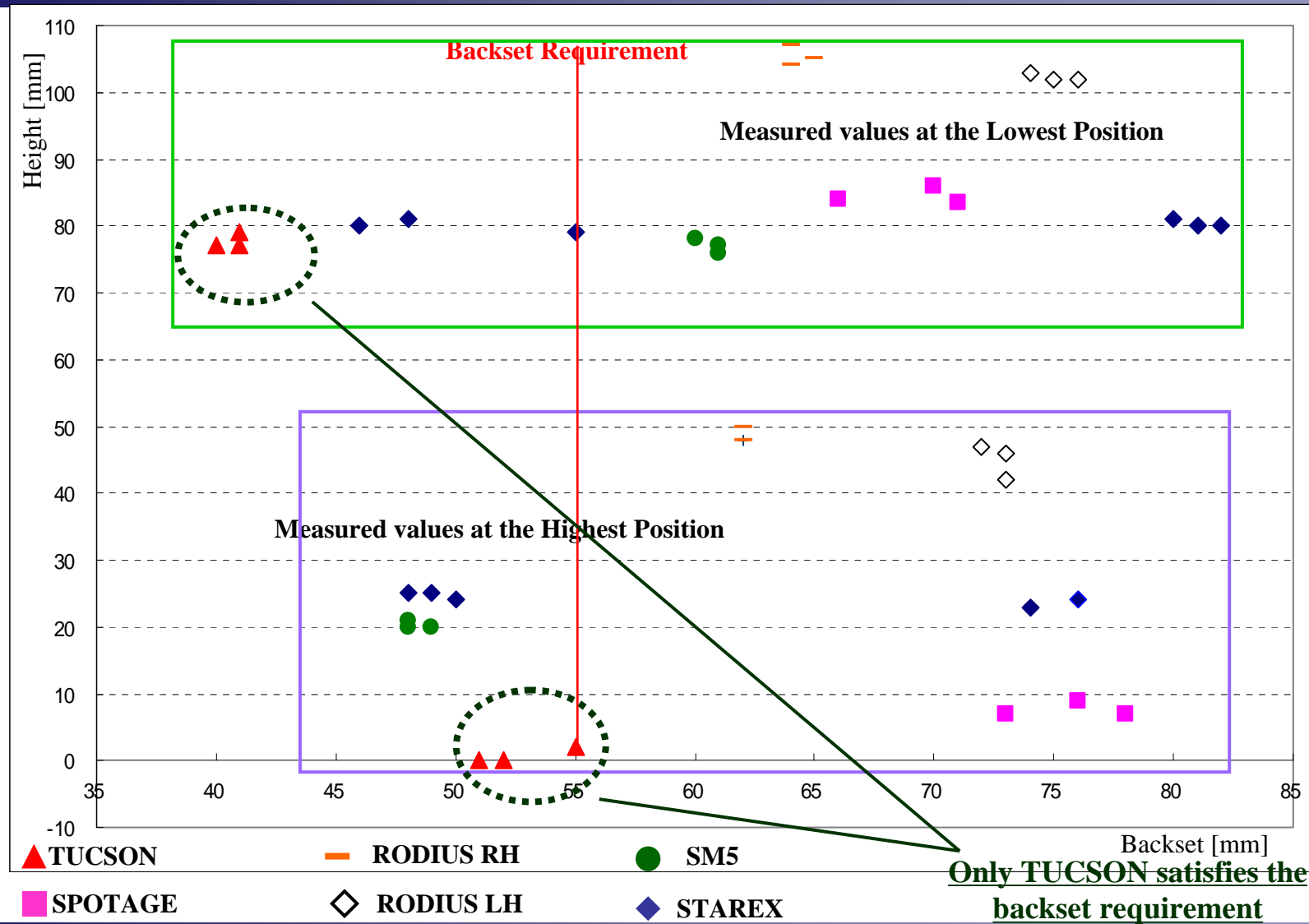
- **Head Restraints Geometry Test is now the part of KNCAP test program from 2005**
- **This is similar to IIHS Geometry Test in USA**
- **KNCAP expansion to Head restraints dynamic test is under discussion with the careful analysis of IIHS, Euro-NCAP tests**

## Results of Geometry Test: 2005 KNCAP

	Measured Value [cm]				Plotting Value
	Highest, Forward	Highest, Rearward	Lowest, Forward	Lowest, Rearward	
Hyundai, TUCSON	Height: 0.0 Backset: 5.2		Height: 7.5 Backset: 4.0		
KIA, SPOTAGE	Height: 0.5 Backset: <b>7.3</b>		Height: 8.2 Backset: <b>6.8</b>		
Renault-Samsung, SM5	Height: 2.0 Backset: 4.5		Height: 7.5 Backset: <b>6.0</b>		
Ssangyoung, RODIUS(LH)	Height: 4.3 Backset: <b>7.0</b>		Height: 10.0 Backset: <b>7.3</b>		
Ssangyoung, RODIUS(RH)	Height: 4.7 Backset: <b>6.0</b>		Height: 10.3 Backset: <b>6.2</b>		
Hyundai, STAREX	Height: 2.3 Backset: 4.7	Height: 2.3 Backset: <b>7.5</b>	Height: 8.0 Backset: 5.0	Height: 8.0 Backset: <b>8.0</b>	



# Results of Geometry Test: 2005 KNCAP

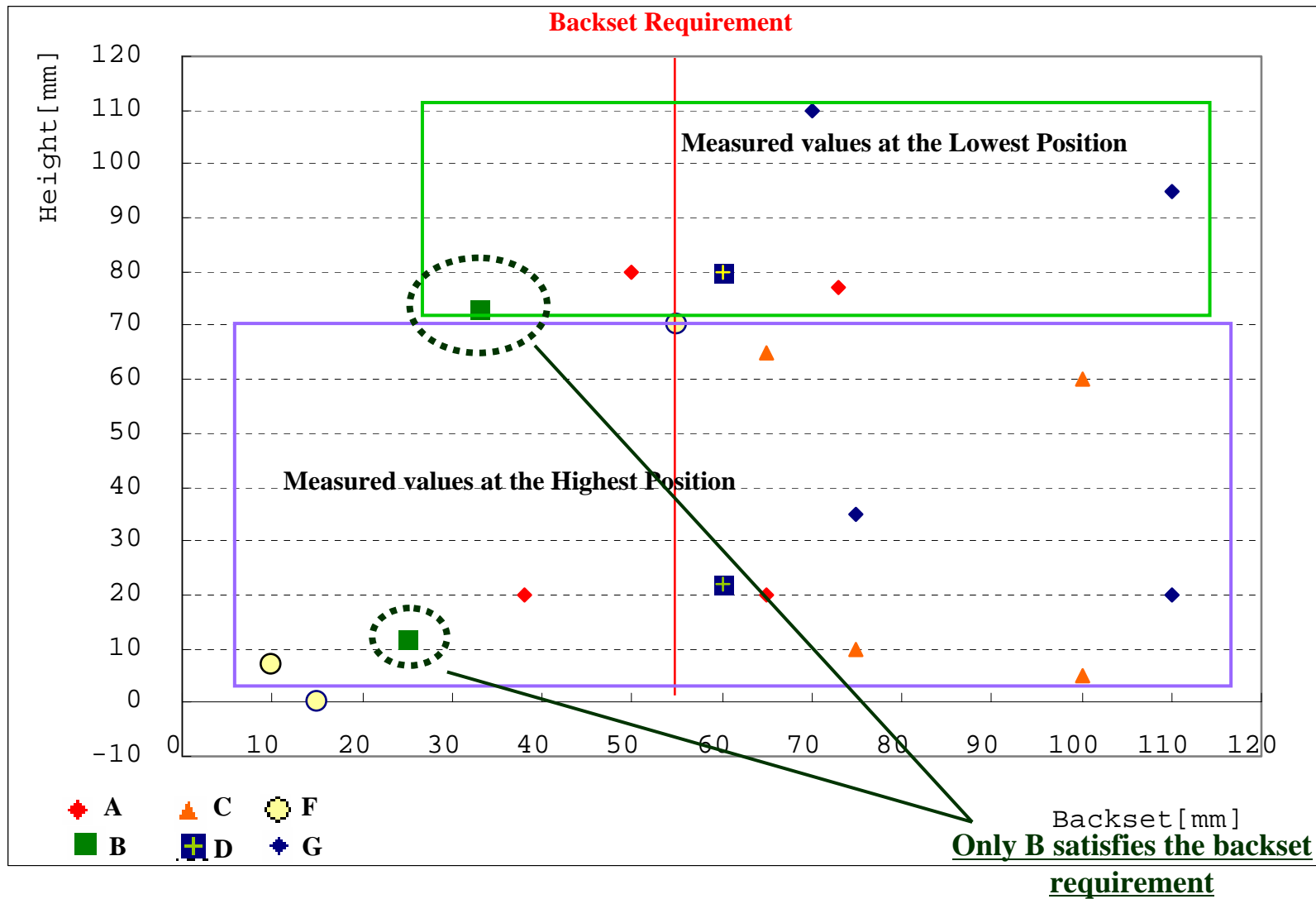


# Results of Geometry Test: 2006 KNCAP

	Measured Value [cm]				Plotting Value
	Highest, Forward	Highest, Rearward	Lowest, Forward	Lowest, Rearward	
Vehicle A	H: 2.0 B: 3.8	H: 2.0 B: <u>6.5</u>	H: 8.0 B: 5.0	H: 7.7 B: <u>7.3</u>	
Vehicle B	H: 1.2 B: 2.5		H: 7.3 B: 3.3		
Vehicle C	H: 1.0 B: <u>7.5</u>	H: 0.5 B: <u>10.0</u>	H: 6.5 B: <u>6.5</u>	H: 6.0 B: <u>10.0</u>	
Vehicle D	H: 2.2 B: <u>6.0</u>		H: 8.0 B: <u>6.0</u>		
Vehicle F	H: 0.7 B: 1.0	H: 7.0 B: 5.5	H: 0.0 B: 1.5	H: 8.0 B: <u>6.0</u>	
Vehicle G	H: 3.5 B: <u>7.5</u>	H: 2.0 B: <u>11.0</u>	H: 11.0 B: <u>7.0</u>	H: 9.5 B: <u>11.0</u>	

\*H: Height, B: Backset

# Results of Geometry Test: 2006 KNCAP

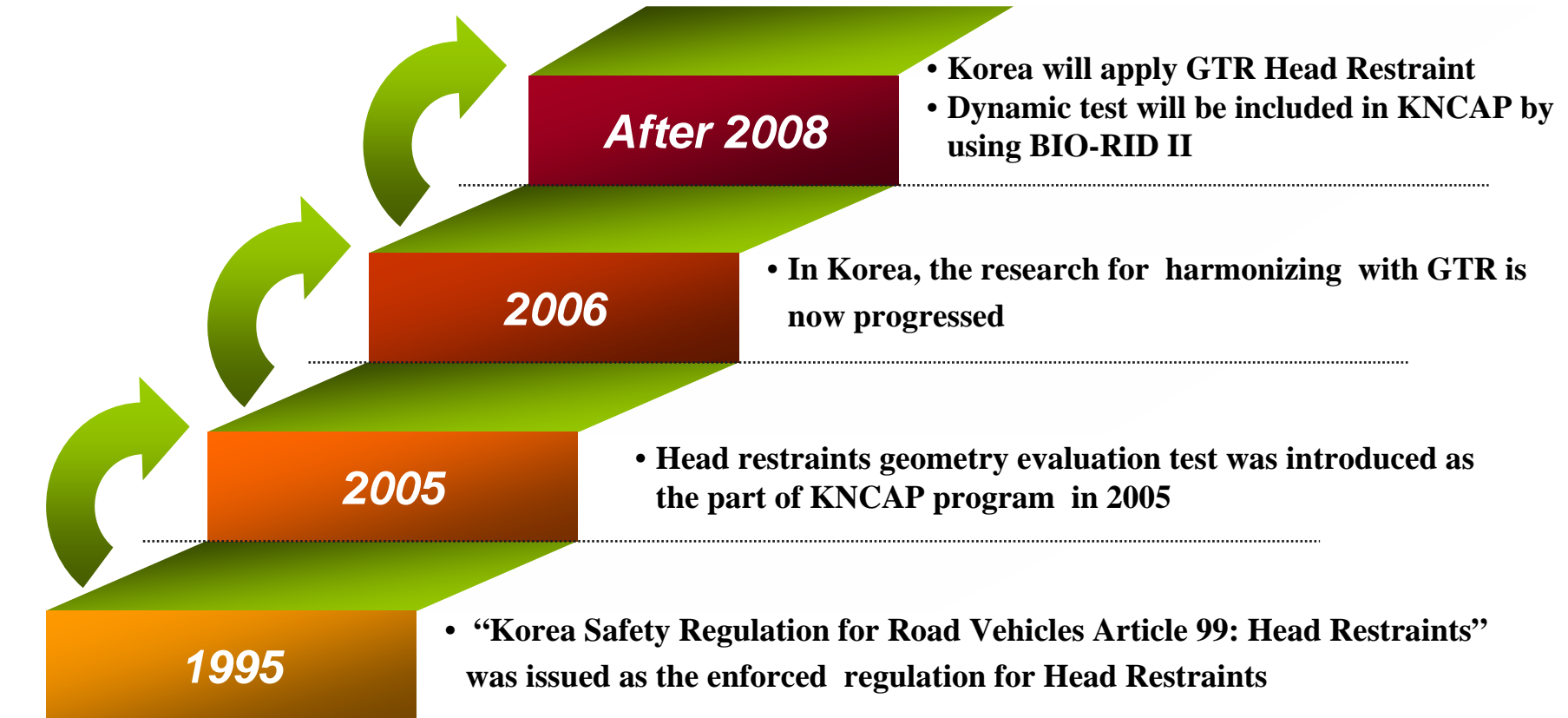


# Results of Geometry Test

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- **KNCAP 2006 results are much better than 2005.**
- **Results from KNCAP data analysis of two years (2005-2006), the only two seats among 12 tested vehicles was meets the proposed requirement of draft GTR backset**

# Time Table for Adoption of GTR



# Conclusions

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- **From Korea accident statistical data, the probability of rear-end collision is about 4 times of frontal collision's**
- **The sitting height of Korean males are shorter, therefore, the head restraints with 800 mm height will cover all occupants**
- **Results from KNCAP test from two years (2005-2006) data, only two seats (total 12 vehicles tested) meets the GTR proposal**
- **After 2008,**
  - **Korea will introduce Head Restraint GTR as the national rule**
  - **Dynamic test will be included in KNCAP by using BIO-RID II**