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NCAP

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Safer Cars for ASEAN Region

Child Safety in Car

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FIA Foundation
for the Automobile and Society



GLOBAL NCAP



AUTOMOBILE ASSOCIATION
OF SINGAPORE



Unrestraint Child In The Car

- video



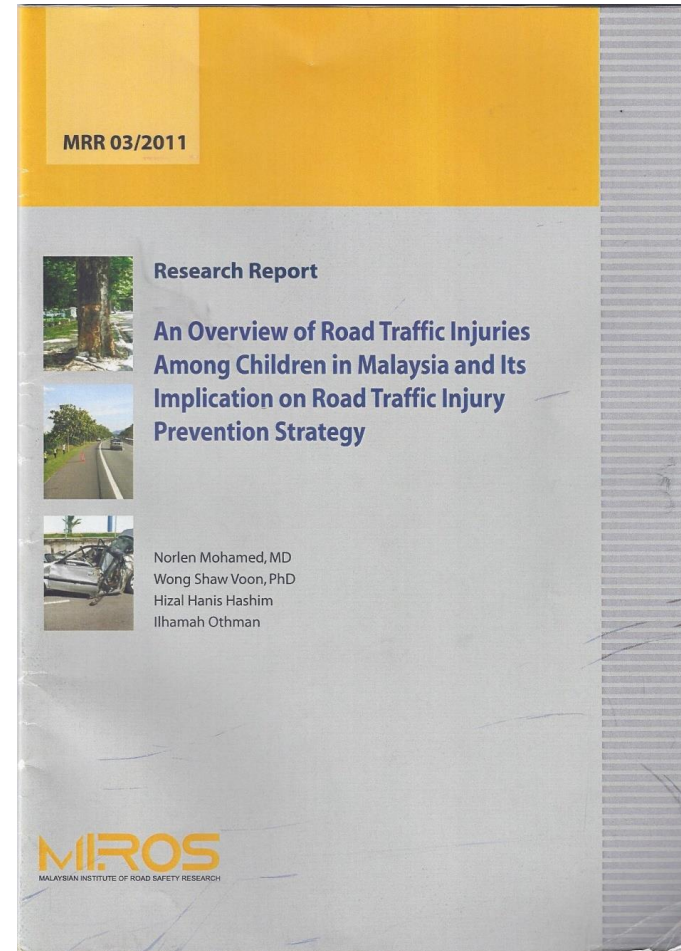
Introduction

5.1 Key Findings for Preventive Actions

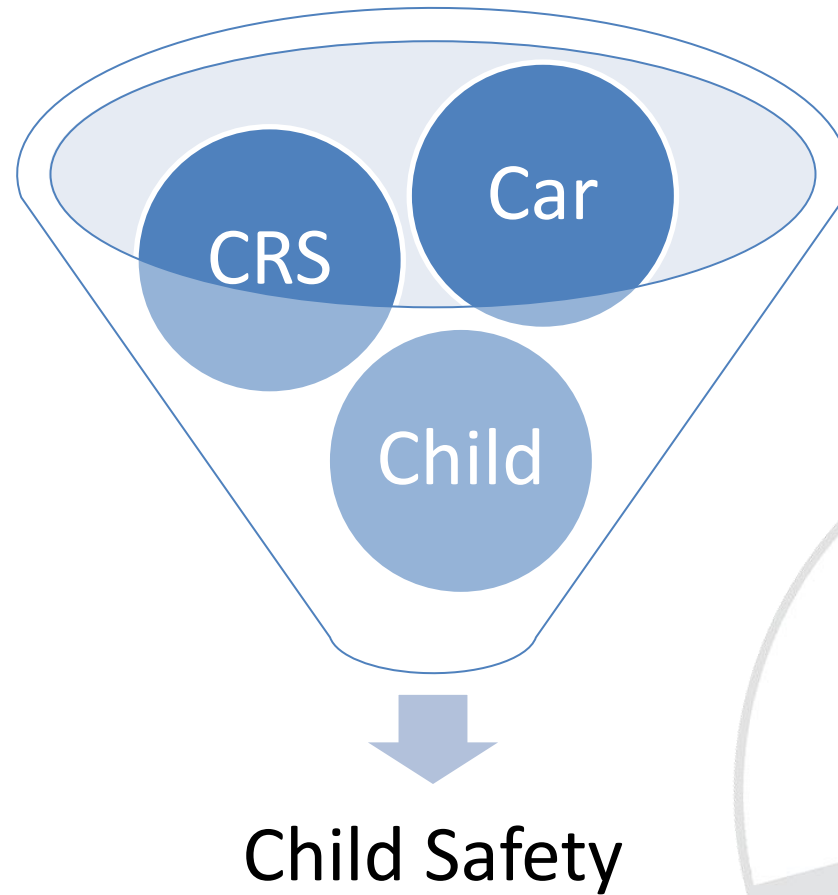
5.1.1 Children transported in private vehicles (car, van, 4WD) are the first and the second leading groups of casualties among children aged 1–4 years old (43.8%) and 5–9 years old (30.2%) respectively.

This finding highlights the need to implement child restraint systems as a priority for the counter measures in preventing road traffic injuries in this age group. Child restraint systems are effective at preventing fatalities, and are the most important safety measure for children (WHO 2008). In the event of a crash, if restraint systems are properly installed and used, they can;

- reduce deaths among infants by around 70% (Zaza *et. al* 2001; Anund *et. al* 2003);
- reduce deaths among children aged 1–4 years, by 54% (Zaza *et. al* 2001; Anund *et. al* 2003); and
- reduce the chances of sustaining clinical injuries by 59% among children aged 4–7 years who are strapped in booster seats.



Child Safety Concept



Car



Child in Front Seat



- video



ISOFix Interface







3 Point Seat Belt



Child



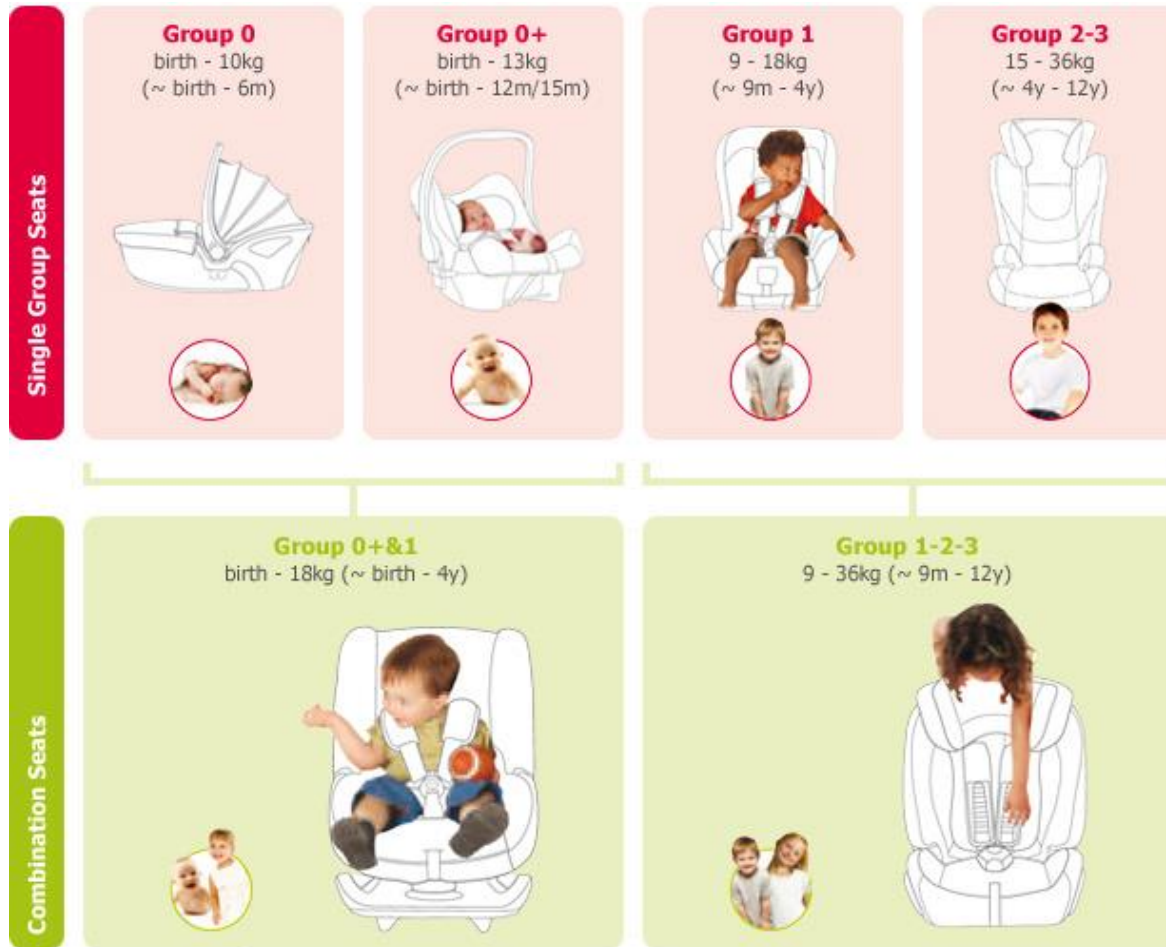


Child Restrain System (CRS)



1. shows for which category the child seat has been approved
2. approved for weight
3. "Y" shows that this child seat has a 5-point harness system with crotch strap.
4. European Approval indicator
5. indication for country in which the approval was obtained (1=Germany, 2=France, 3=Italy, 4=the Netherlands etc.)
6. **Approval number.** The first two numbers show to which version ECE R 44 the child seat has been approved (in this case ECE R 44/04)
7. current number

Age / Weight Group



Source : <http://www.britax.co.uk/safety-centre/safety-experts/how-to-choose>

ISOFIX With Top Tether

Top Tether



ISOFIX

ISOFIX with Support Leg

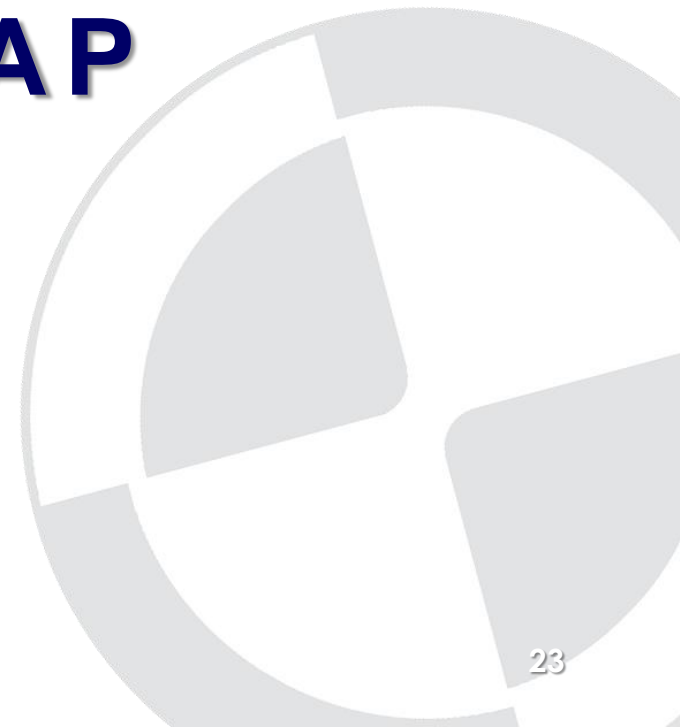




- video

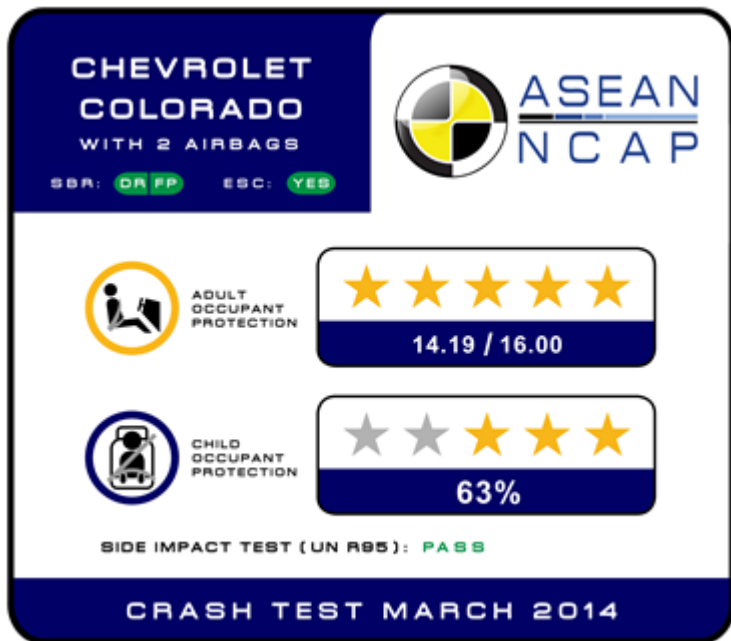


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Requirements	Score
<p>Dynamic Assessment</p> <p>Pre requisites - no partial or full ejection of child dummy out of CRS / CRS must not be partially or wholly unrestrained by any of the vehicle interfaces</p>	24
<p>CRS Based Assessment</p> <ul style="list-style-type: none"> •CRS marking - 8 points •CRS to Vehicle Interface - 4 points 	12
<p>Vehicle Based Assessment</p> <ul style="list-style-type: none"> •Use of CRS on the Front Seat - 5 points •Provision of three-points seat belts (Passengers) - 1 points •Gabarit assessment (outboard Rear) - 1 points •Gabarit assessment (other passenger seats) - 1 points •ISOFIX - 3 points •Integrated CRS - 2 points 	13
Total	49

Child Safety Rating System

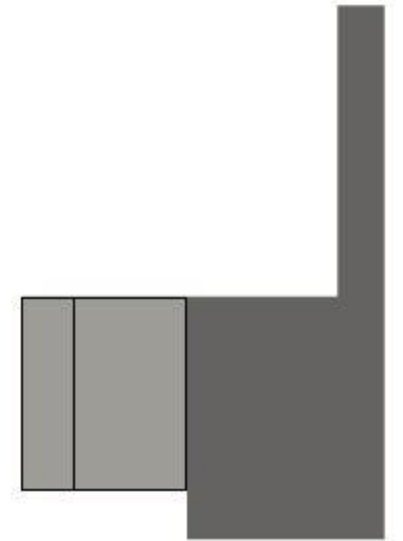
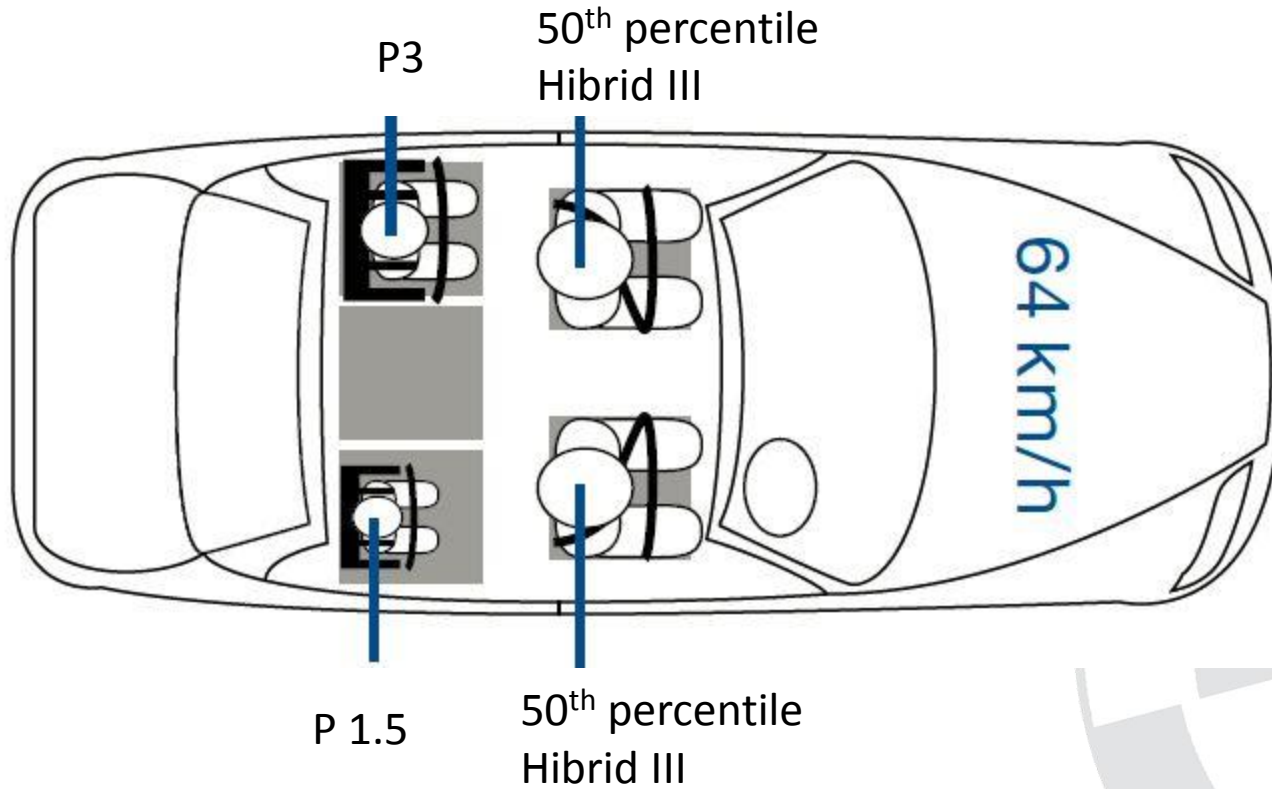


SCORE (Points)	Percentage (%)	Rating
43.00 – 49.00	88-100	★★★★★
34.00 – 42.99	69-87	★★★★
25.00 – 33.99	51-68	★★★
15.00 – 24.99	31-50	★★
0.01 – 14.99	0-30	★
0.00		

Agenda 3: Dynamic Assessment



Dynamic Assessment



- video

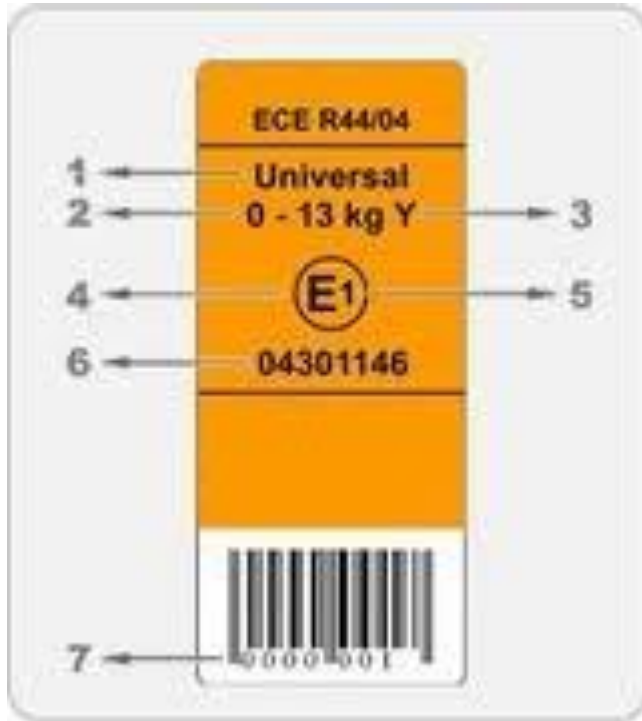


- video



Agenda 4: CRS Based Assessment





1. shows for which category the child seat has been approved
2. approved for weight
3. "Y" shows that this child seat has a 5-point harness system with crotch strap.
4. European Approval indicator
5. indication for country in which the approval was obtained (1=Germany, 2=France, 3=Italy, 4=the Netherlands etc.)
6. **Approval number.** The first two numbers show to which version ECE R 44 the child seat has been approved (in this case ECE R 44/04)
7. current number

ECE R44 Weight Group



Source : <http://www.britax.co.uk/safety-centre/safety-experts/how-to-choose>

ECE R44 Dynamic Test

Test	Restraint	FRONTAL IMPACT			REAR IMPACT		
		Speed (km/h)	Test pulse	Stopping distance during test (mm)	Speed (km/h)	Test pulse	Stopping distance during test (mm)
Trolley with test seat	Forward facing front and rear seats universal, semi-universal or restricted ⁽¹⁾	50 + 0 - 2	1	650 ± 50	—	—	—
	Rearward facing front and rear seats universal, semi-universal or restricted ⁽²⁾	50 + 0 - 2	1	650 ± 50	30 + 2 - 0	2	275 ± 25
Vehicle body on trolley	Forward facing ⁽¹⁾	50 + 0 - 2	1 or 3	650 ± 50	—	—	—
	Rearward facing ⁽¹⁾	50 + 2 - 2	1 or 3	650 ± 50	30 + 2 - 0	2 or 4	275 ± 25
Whole vehicle barrier test	Forward facing	50 + 0 - 2	3	not specified	—	—	—
	Rearward facing	50 + 0 - 2	3	not specified	30 + 2 - 0	4	not specified

ECE R44 Dynamic Test





Agenda 5: Vehicle Based Assessment



Child in Front Seat



Rear Seat



ISOFix Interface







3 Point Seat Belt



- Gabarit asesment for seat belt



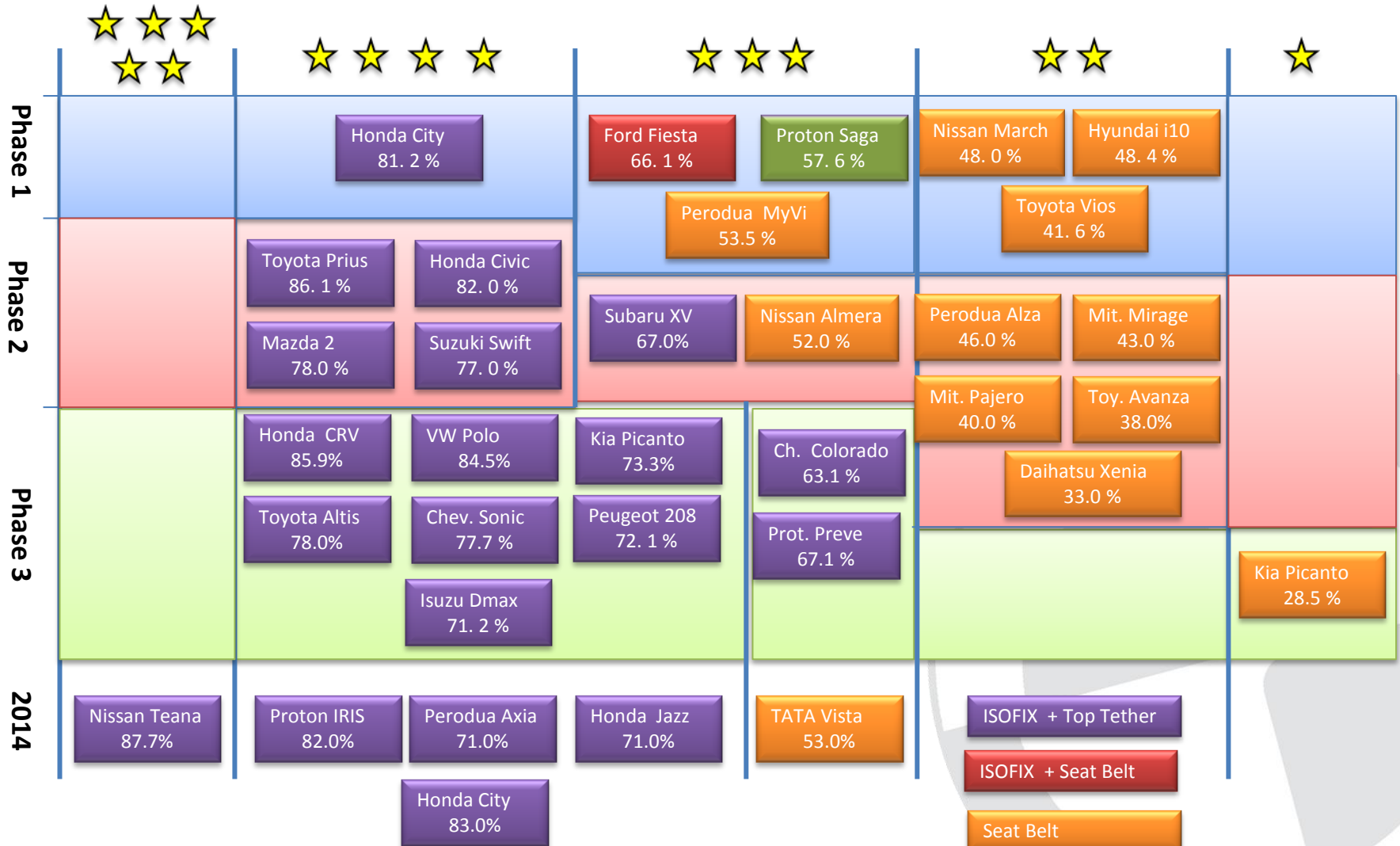
- Gabarit for larger CRS



Agenda 6: Result Compilation



Result Compilation



Child Occupant Performance							
Current Protocol				New Protocol			
Dynamic Assessment (24 Points)				Dynamic Assessment (24 Points)			
P series dummy				Q series dummy			
P1.5 P3				Q1.5 Q3			
Frontal Impact	Head	3	6	Frontal Impact	Head	4	4
	Chest	6	6		Chest	2	2
	Neck	3			Neck	2	2
Side Impact				Side Impact	Head	4	4
CRS Based Assessment (12 Points)				Installation assessment (12 Points)			
CRS Marking 4 points per CRS				References List Assessment 10 points			
CRS to Vehicle Interface 2 points per CRS				OEM Assessment 2 points			
Vehicle based assessment (13 Points)				Vehicle based assessment (13 Points)			
Use of CRS on the Front Seats 5 points				Provision of Three-point Seat Belts 1 point			
Provision of Three-Points Seat Belts 1 point				Gabarit Installation 2 points			
Gabarit Assessment 2 points				2 Simultaneous Use Seating Positions 2 points			
ISOFIX 3 points				ISOFIX Usability 2 points			
Integrated CRS 2 points				Two or more Largest ISOFIX Positions 1 points			
				Passenger Airbag Warning Marking and Disabling 5 points			

Highlights



Read The Instruction



Read The Instruction



Properly Buckle up



**Thank you for your
attention**

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