MIROS
MALAYSIAN INSTITUTE OF ROAD SAFETY RESEARCH

CHILD SAFETY RESEARCH IN MALAYSIA, 2013

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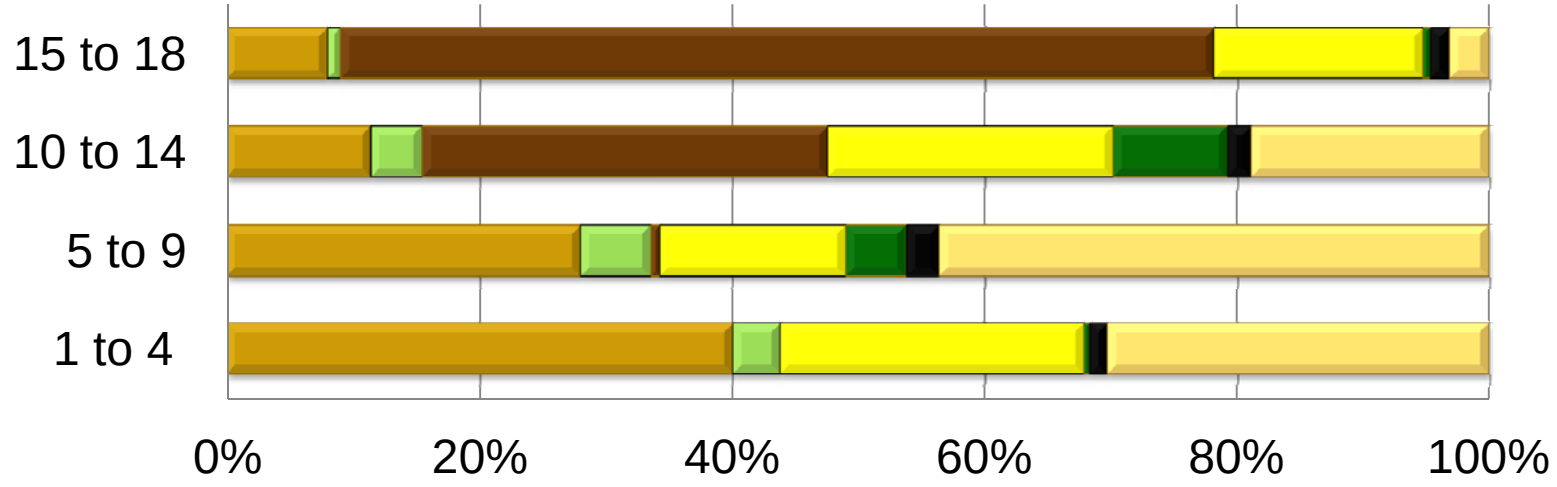
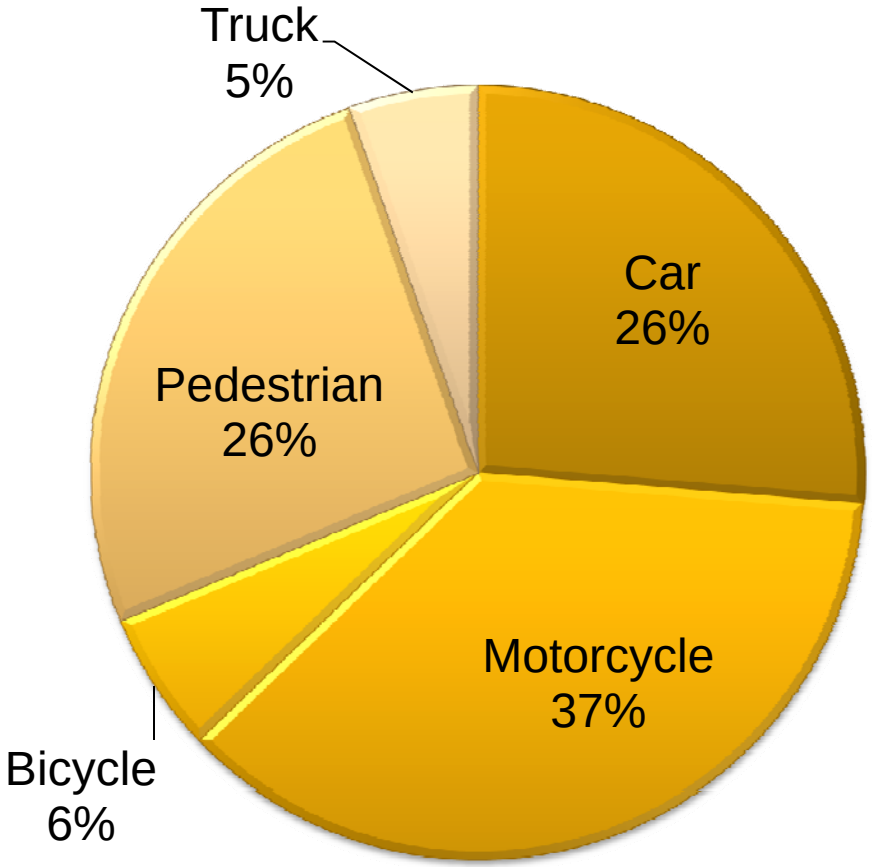
CHILD SAFETY IN ROAD TRAFFIC ACCIDENT SCENARIO

Proportion of fatal child traffic injuries by road user and age group, 2007- 2009

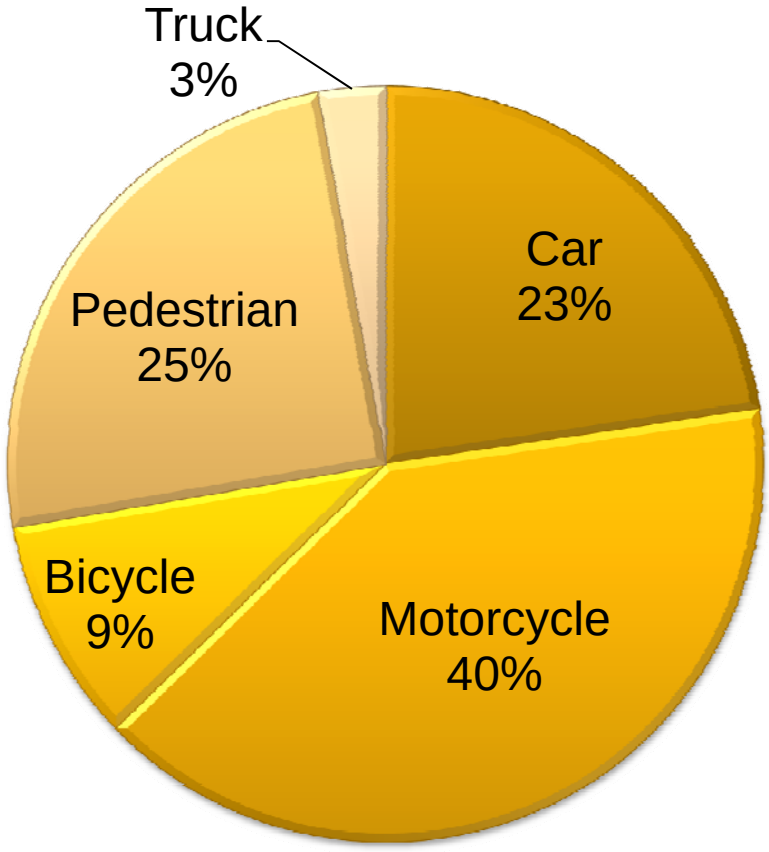


	1 to 4	5 to 9	10 to 14	15 to 18
Car	85	76	48	126
Van	8	15	17	16
Rider	0	2	135	1089
Pillion	51	40	95	261
Bicycle	1	13	38	9
H/CV	3	7	8	24
Pedestrian	64	118	79	49

Traffic fatalities by vehicle type involving children aged 0-14 years-old



Traffic non-fatalities by vehicle type involving children aged 0-14 years-old



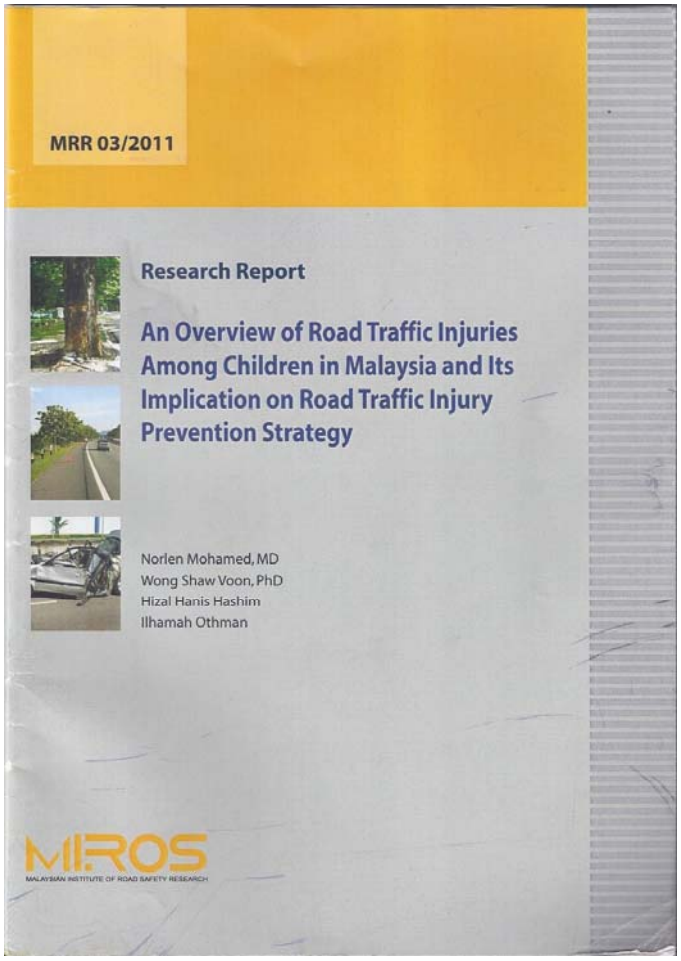
RTA AMONG CHILDREN IN MALAYSIA

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.



MOTORCYCLE SAFETY

CHILD PILLION RIDER

COMPARISON OF MOTORCYCLE PILLION RIDER REGULATIONS

Country	No of pillion	Pillion age limit	Helmet requirement
Malaysia	Only 1 pillion allowed	No requirement	Yes
Vietnam	No requirement	No requirement	Yes
US, 4 states	No requirement	Varies from >5 or >8	Yes
UK	Only 1 pillion allowed	Sit astride and should keep both feet on the footpeg	Yes
Australia	No requirement	>8 years	Yes

RIDER HELMET USE IN RELATION TO PILLION PASSENGER USE

- Safety helmet compliance rate among children is only 14.7%

Variables	No (%) of pillion rider wearing helmet	No. observed
Rider wearing	108(18.5)	584
Rider not wearing	2 (0.01)	327

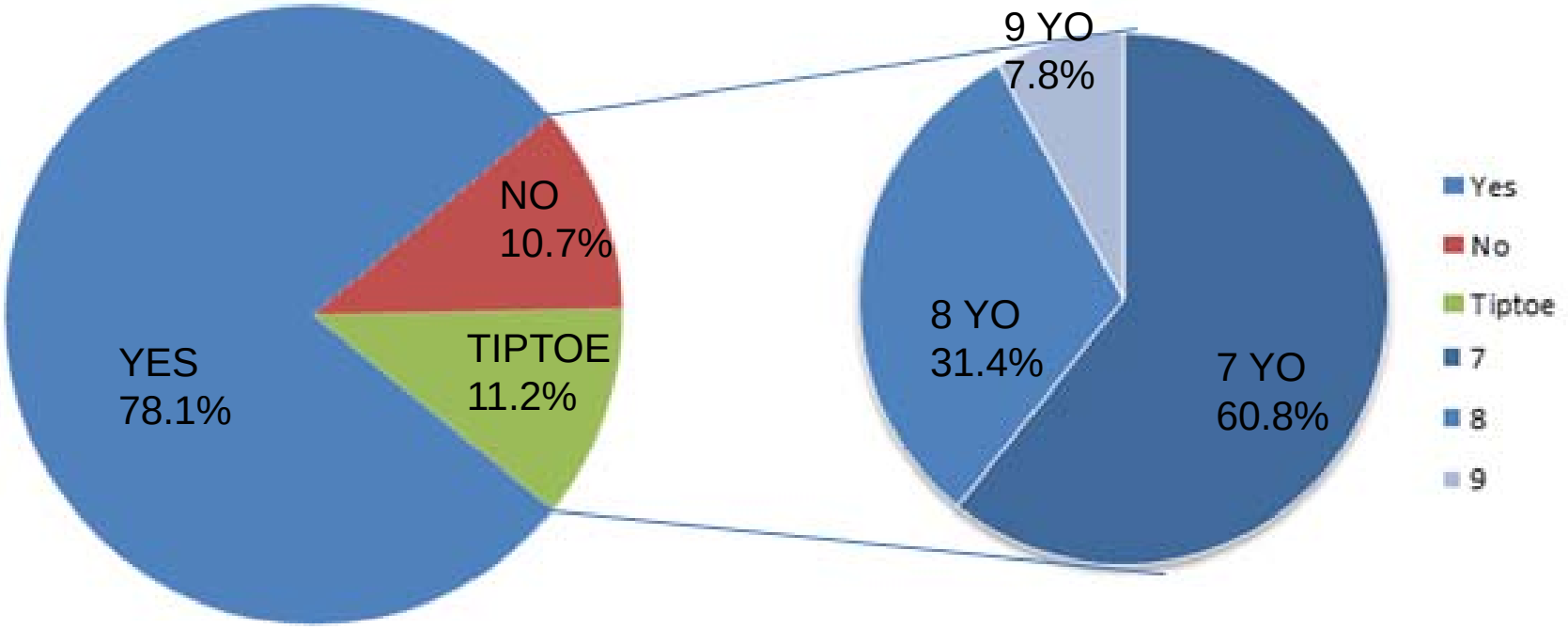
MULTIPLE PILLION PASSENGERS

- 30% of the rider carrying more than 1 pillion

Variable	Frequency	Percentage (%)
Multiple pillions		
2 pillions	179	25.5
3 pillions	19	2.7
4 pillions	1	0.1

FOOT PEG REACHABILITY BY AGE

- 35 % of the pillion riders could not reach the foot peg due or the foot peg had been occupied by other pillion



The maximum height of students who were not able to reach foot peg was 1263mm with the mean of 1137mm ≅ age 7 years old (mean=1160mm)

PASSENGER CAR SAFETY

CHILD CAR OCCUPANT: CHILD RESTRAINT SYSTEM

REGULATION

- The Motorcar (Seat Belts) Rules 1978: the driver and passengers in a motorcar must use the seatbelts
- Road transport Act- Motor Vehicles(Seat Belts) Rules 2008-children are not exempted from wearing seat belts
- There is no mention of specific use of CRS for children according to their age, height or weight.
- Only three ASEAN countries have specific laws requiring the use of CRS; Brunei, Cambodia and Singapore
- Implementation of ECE R44 (WP 29 agreement) in Malaysia (JPJ Plan 2012), in 2015

CHILD RESTRAINT SYSTEM (CRS) USE RATE

- **Observation study:**
  - 537 children aged 6 and below
  - 345 vehicles
  - 25 childcare

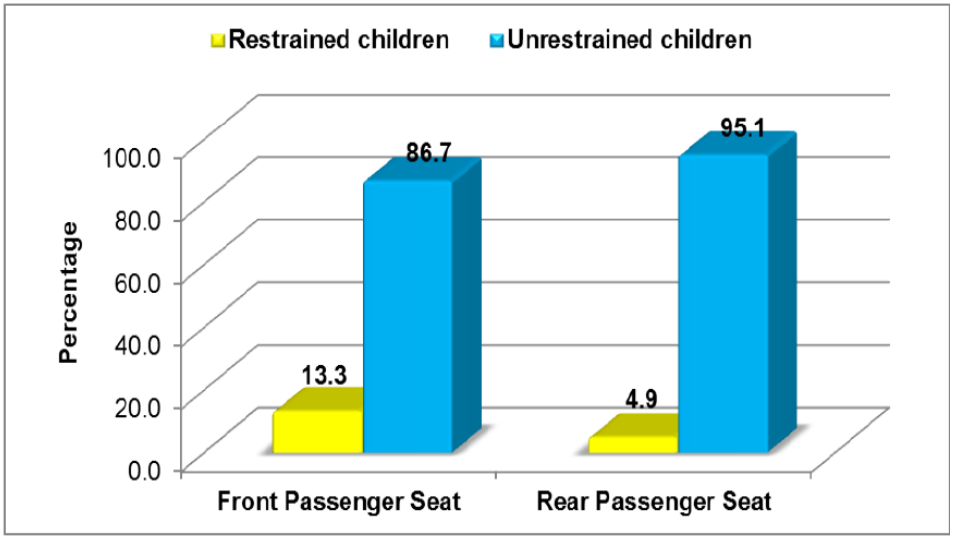


Figure 1 Child Restraint Use by Seating Position

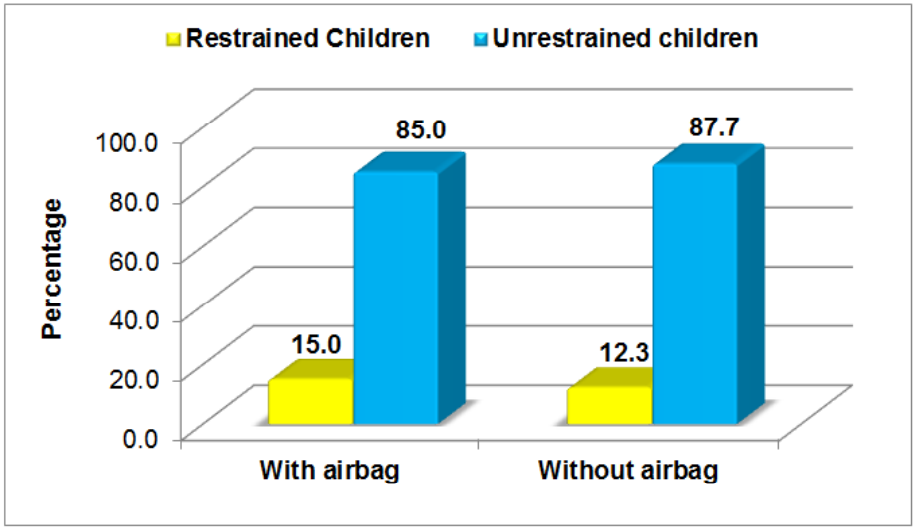


Figure 6 Child restraint use in front seats according to presence of airbag

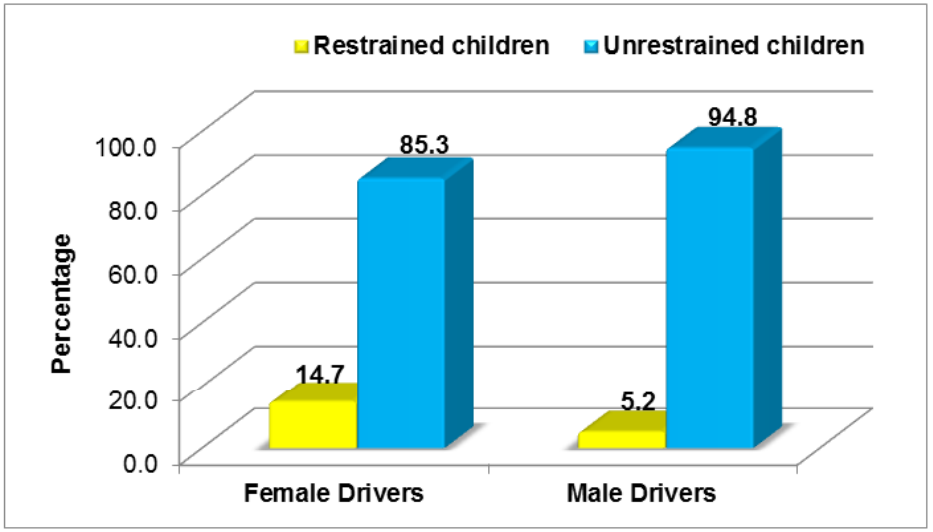


Figure 7 Child restraint use according to driver gender

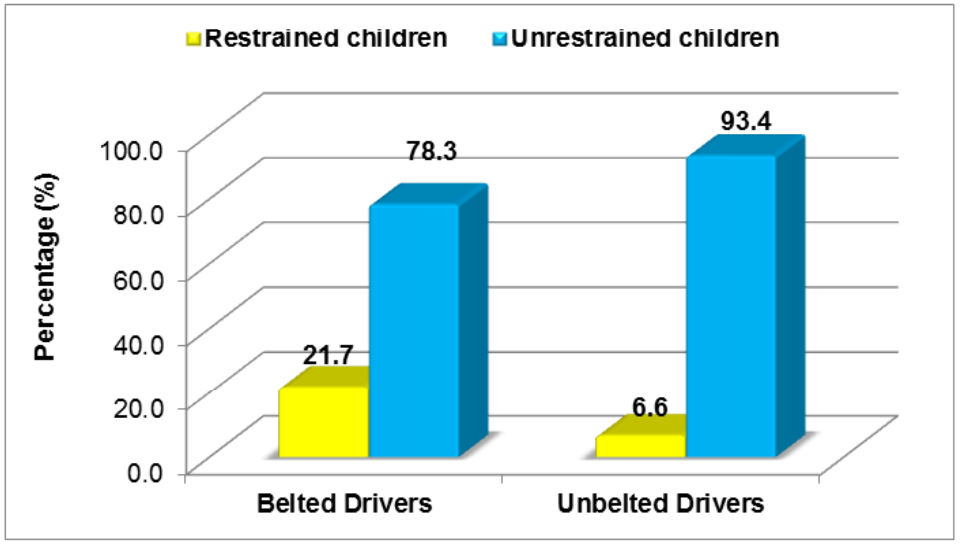


Figure 8 Child Restraint Use according to driver seatbelt use

Driver carried children on their lap while driving

AVAILABLE OF CRS IN MALAYSIAN MARKET

CRS Type	No.	ECE R44	Fitment type
Baby cot	116	59.5%	Seatbelt
Baby cot with sill	1	-	Seatbelt
Booster	45	48.9%	Seatbelt
Booster + back support	92	73.9%	Seatbelt
Convertible	212	35.4%	Seatbelt (94.3%) Seatbelt +Latch+Top Tether (4.3%) ISOFIX (1.4%)
Forward facing	90	34.4%	Seatbelt
Strap-on car seat	1	-	Seatbelt

CRS?

Reliability of the manufacturer claim on the safety level of child restraint system

Manufacturer's Claimed

- One of the best car seat's sold in Europe
- Much safer compared to traditional baby car seats
- Easy to install, wash and carry

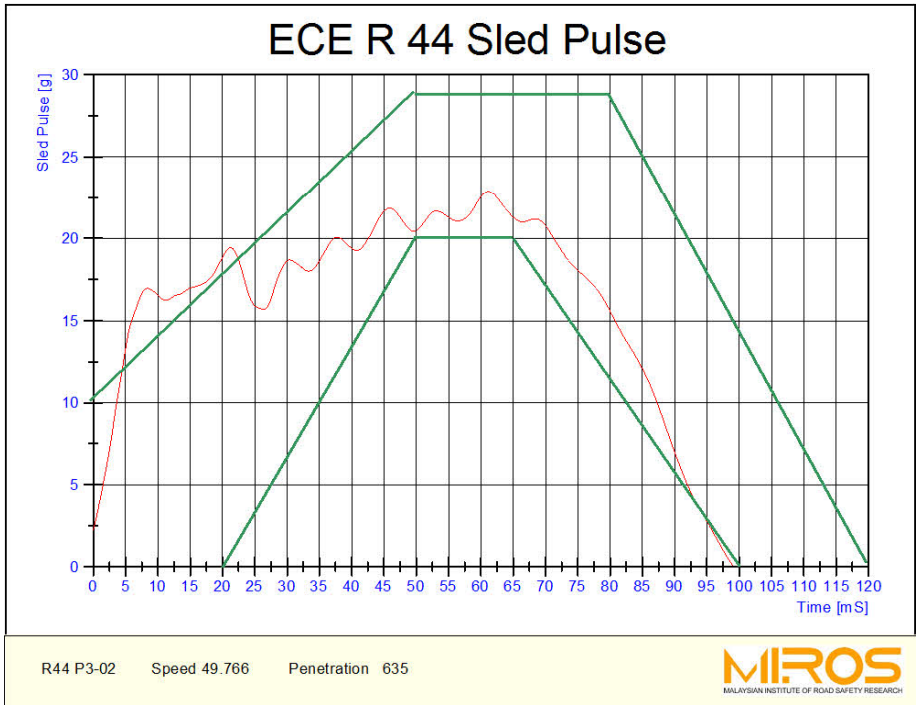
TEST VIDEO

MIROS EFFORT

DESIGN AND DEVELOPMENT OF ECE R44 TEST METHOD

RESEARCH OBJECTIVES

- To develop ECE-R44 test bench for child seat
- To determine suitable test method for child seat in Malaysian market
  - Seat bench on the sled for dynamic test



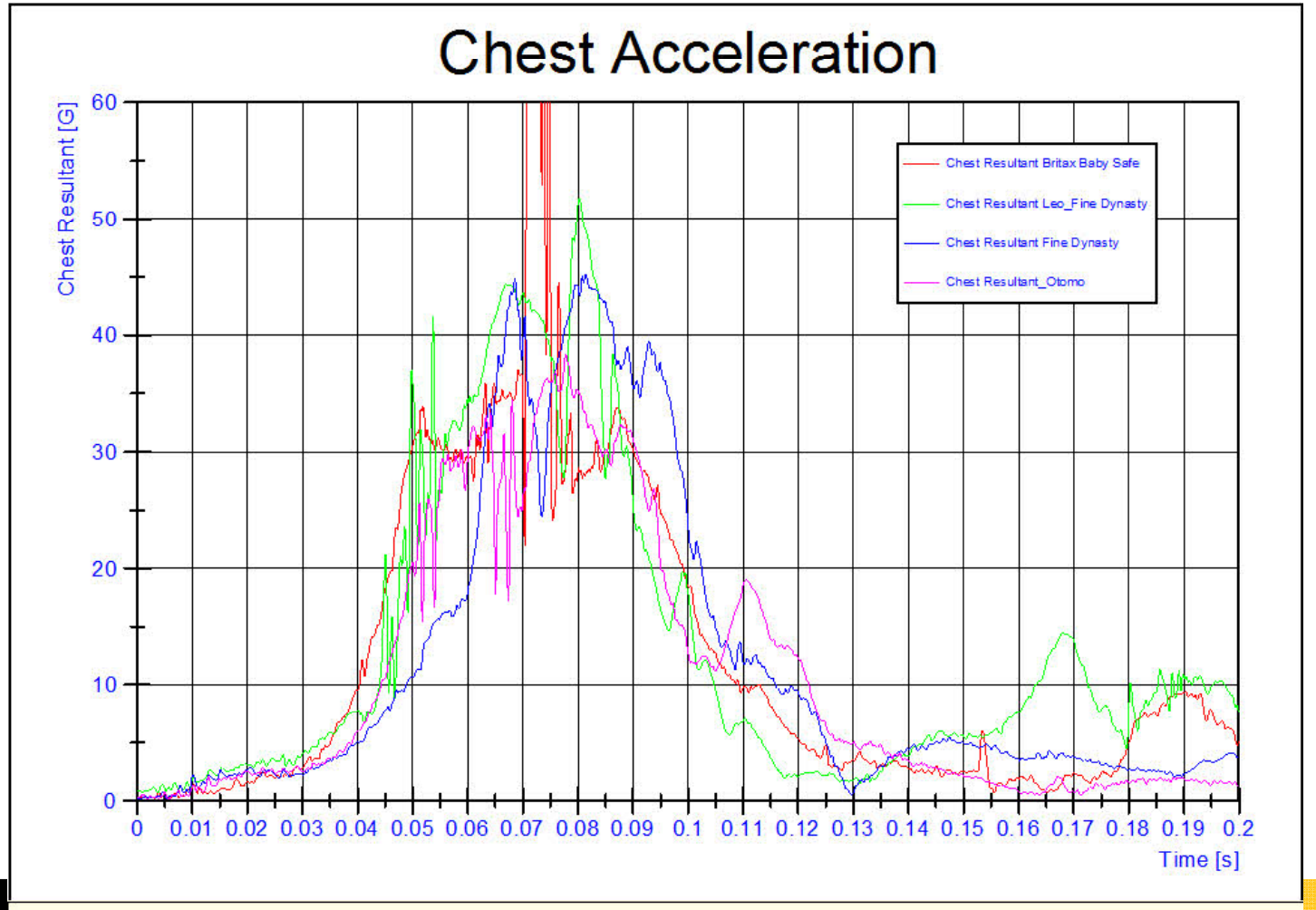
PILOT TEST

Only conducted with P3

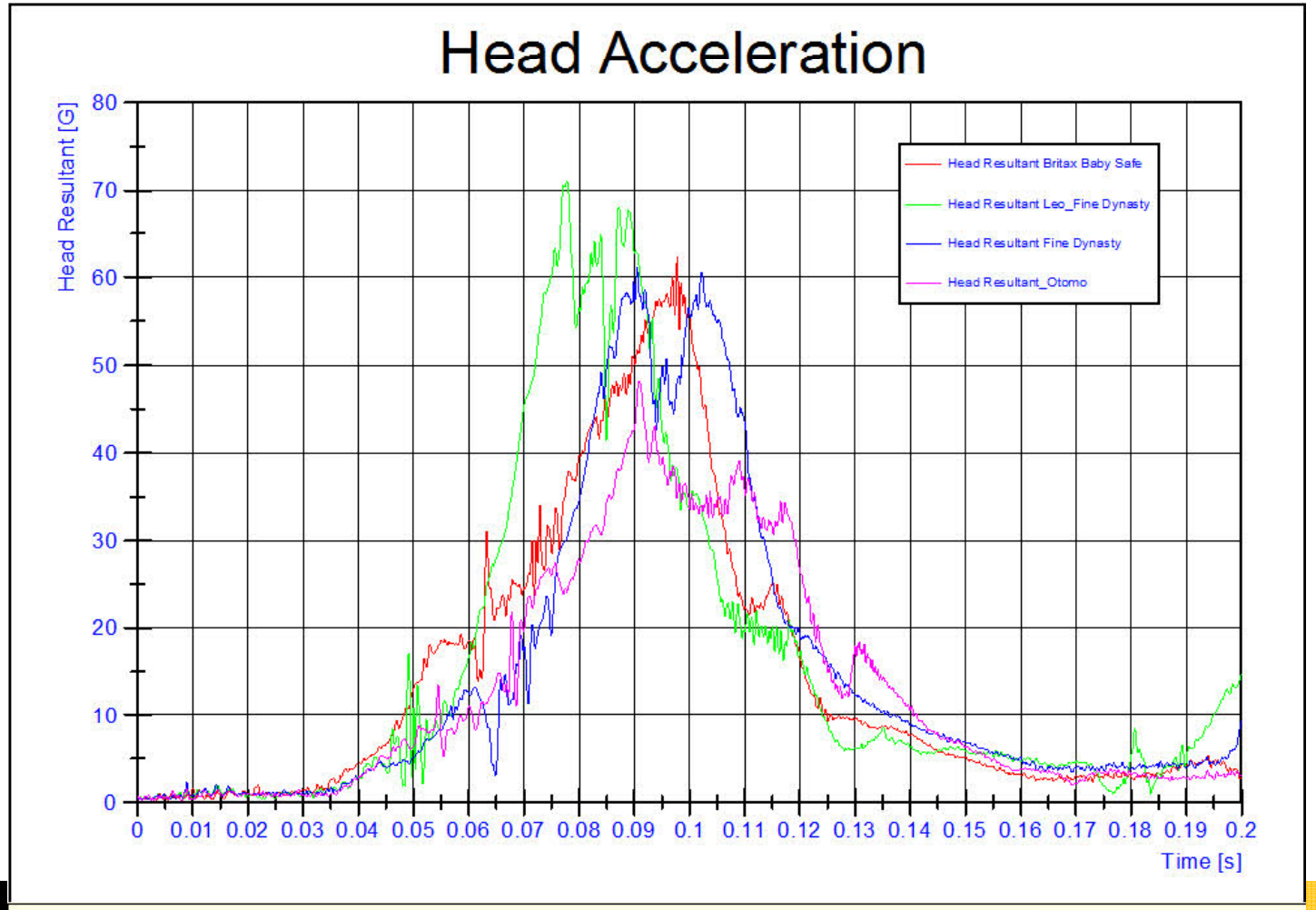
- P1.5 neck has broken during the first test

1. **Britax Baby Safe – Establish brand conform to ECE R 44-High End**
   - No breakage
2. **Fine Dynasty Leo Seat – Malaysia manufacturer**
   - No Breakage
3. **Fine Dynasty Forward Facing – Malaysia Manufacturer**
   - No Breakage
4. **Otomo Forward Facing – can be bought at supermarket (Tesco, Giant)-Lower end**
   - Breakage (not on important part)

PILOT TEST

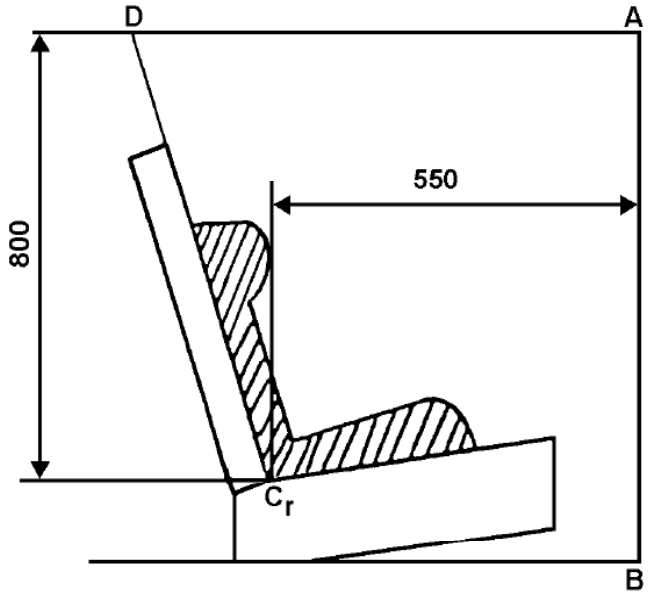

Chest Acceleration
Chest Resultant [G]
60
50
40
30
20
10
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.2
Time [s]
Chest Resultant Britax Baby Safe
Chest Resultant Leo_Fine Dynasty
Chest Resultant Fine Dynasty
Chest Resultant_Otomo

PILOT TEST


Head Acceleration
Head Resultant [G]
80
70
60
50
40
30
20
10
0
0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.2
Time [s]
Head Resultant Britax Baby Safe
Head Resultant Leo_Fine Dynasty
Head Resultant Fine Dynasty
Head Resultant_Otomo

PILOT TEST

Head Excursion



Dimensions in mm

CRS Model	Pass/Fail
Britax Baby Safe	Pass
Fine Dynasty Leo	Pass
Fine Dynasty FF	Fail
Otomo FF	Fail

FUTURE DIRECTION OF THE RESEARCH

- **To continue with the CRS rating program**
  - Installation method
  - Integration with the vehicle
  - Crash performance

THANK YOU