

CHILDREN IN OLDER CARS



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Session 7



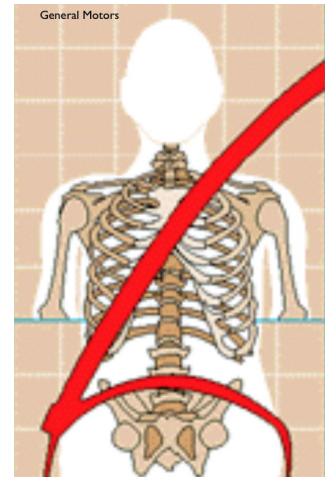
INTRODUCTION

- Modern child restraints are designed to be compatible with modern cars that have i-Size anchorages.
- This combination provides exceptional crash protection for child as well as minimising risks due to incorrect installation in vehicles.
- This presentation looks at ways to safely transport children in older vehicles that don't have the latest safety systems
- It is based, in part, on experience and crash studies in Australia in the 1990s, when many vehicles did not have 3 point seat belts in rear seats.

PRINCIPLES OF CHILD RESTRAINT

- The child should be retained within the vehicle;
- The child's head and torso should be prevented from hitting the interior of the car;
- The restraining systems *in forward-facing devices* should distribute the crash forces between the chest and pelvis, without heavy loading of other parts of the body

(Henderson 1994)



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CHILD RESTRAINT DESIGN

- For young children (~3 years old) these principles can be best met by using a child seat with built-in harness;
- The child seat needs to be securely anchored to the vehicle with a means to prevent it tipping forward;
- In older vehicles this can be achieved by using a seat belt to anchor the bottom of the child seat and a top tether to anchor the top of the child seat
- This configuration has been used in Australia since the mid-1970s and has been found to provide exceptional protection



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VEHICLE DESIGN



- This child seat configuration is suitable for vehicles with 2-point or 3-point seat belts in the rear seat;
- Most recent cars designed for international markets already have provision for top tether anchorages;
- Sedans with a parcel shelf can be easily retrofitted with top tether anchorages
- There are solutions for most other styles of vehicle
- This is an extract from Indian Automotive Industry Standard 72



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VEHICLE DESIGN - SEAT BELTS

- Floor-mounted non-retracting 2-point seat belts can also be readily fitted to the rear seats of vehicles
- The combination of a 2-point seat belt and a top tether anchorage means the vehicle is suitable for a child seat with an in-built harness *and a top tether*
- Children in these restraints (with harness & top tether) can survive very severe crashes without serious injury



FIGURE 8 - Collision with tree in country; child in restraint in centre rear position uninjured (13513)

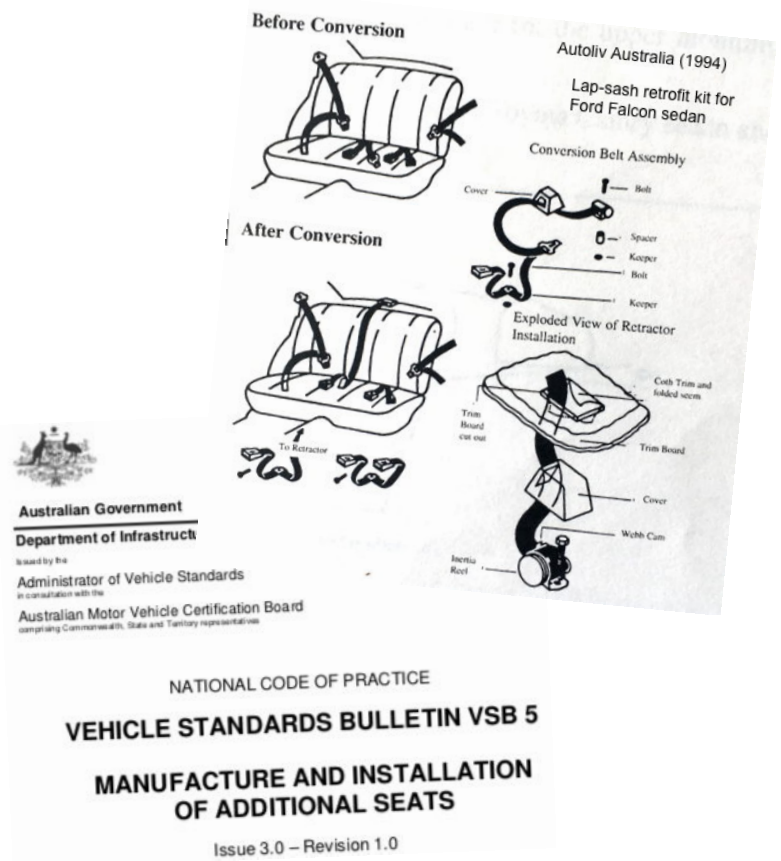


FIGURE 9 - Head-on collision with another car; eighteen-month-old girl in child restraint in left rear position uninjured (18613)

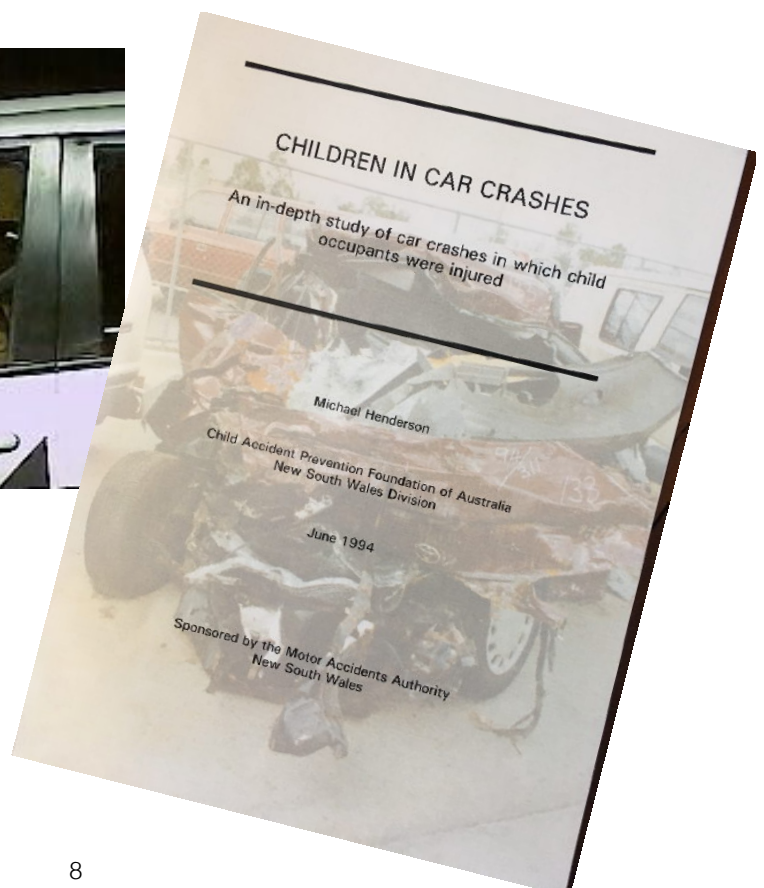
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VEHICLE DESIGN - SEAT BELTS

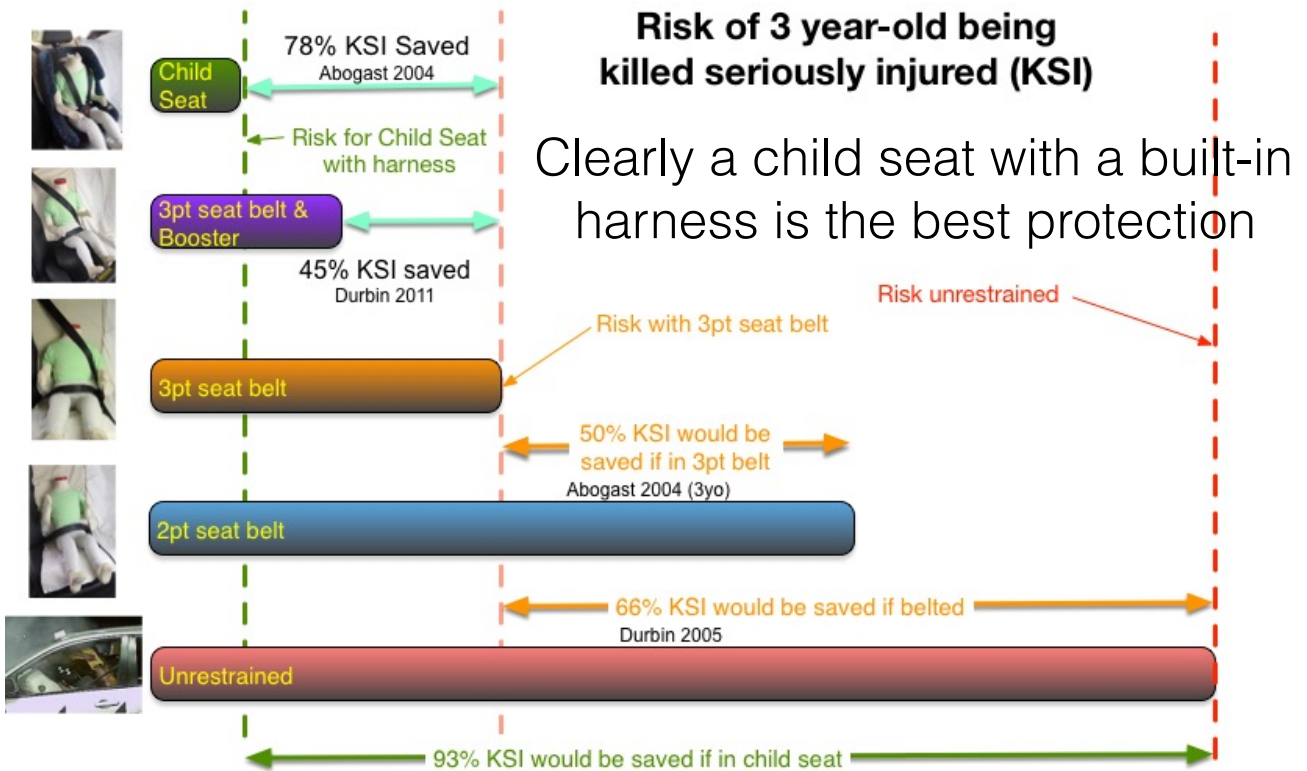
- What about older children who need a 3-point seat belt with or without a booster seat?
- Retrofit kits and design guidelines are available for retrofitting 3-point seat belts to rear seats



HOW MUCH SAFER?

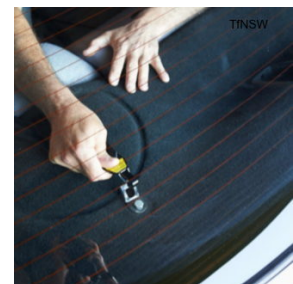


HOW MUCH SAFER?



RECOMMENDATIONS

- Where seat belts are fitted to rear seats, encourage the fitting of top tether anchorages to vehicles that do not have them



- Where seat belts are not fitted, encourage the fitting of 2 or 3-point seat belts and top tether anchorages



RECOMMENDATIONS

- Encourage schemes to support automotive repair shops and similar businesses to retrofit top tether anchorages and seat belts to older vehicles
- Publish guidelines for this purpose



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RECOMMENDATIONS

- Encourage the purchase of child restraints with top tethers for use in older vehicles
- Encourage the use of child restraints that are appropriate for the size of the child



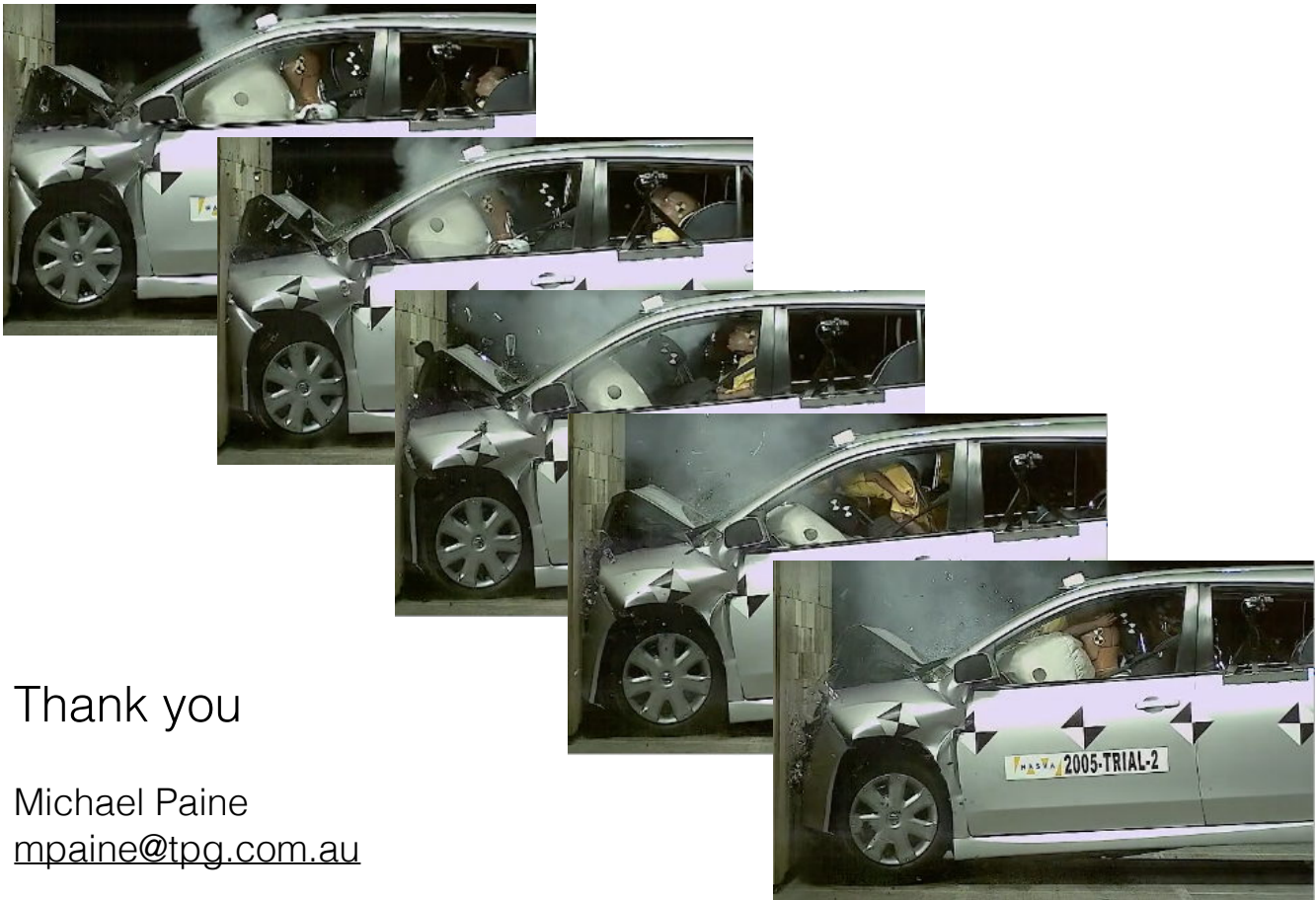
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RECOMMENDATIONS



- Consider supporting the production of simple, low-cost child restraints

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Thank you

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Extracts from a video by Japan NCAP/NASVA

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