

Safekids Aotearoa Position Paper: BOOSTER SEATS

1

Suggested Citation

Safekids Aotearoa (2013) Safekids Aotearoa Position Paper: Booster Seats. Auckland: Safekids Aotearoa.

If you use information from this publication please acknowledge Safekids Aotearoa as the source.

Safekids Aotearoa 5th Floor, Cornwall Complex, 40 Claude Road, Epsom, Auckland 1023 PO Box 26488, Epsom, Auckland 1344 New Zealand Phone: +64 9 630 9955 Fax: +64 9 630 9961

Published 2013

If you have further queries, call the Safekids Aotearoa Information & Resource Centre on +64 9 631 0724 or email us at Infocentre@safekids.org.nz.

This document is available on the Safekids Aotearoa website at www.safekids.org.nz



Photo credit: Patrick Bellett

NE

5

Qir

Contents

Suggested Citation 2
Summary 5
Safekids Key Safety Messages:6
Introduction
Child motor vehicle passenger injuries in New Zealand 10
Child motor vehicle passenger injury deaths 2005-2009
Child motor vehicle passenger injury hospitalisations 2002-2011
Types of Injury 12
International Comparison 12
Preventing child motor vehicle passenger injuries
Adult Seatbelts – not suitable for children 14
Effective child restraints
What is a (Belt Positioning) Booster Seat? 14
Effectiveness of Belt Positioning Booster Seats 15
Advantages of using a booster seat 15
Seat Positioning and Airbags
Why do so few New Zealand families use booster seats? 17
What are the best ways to achieve booster seat use? 17
Education
Regulation
New Child Restraint laws 22
Table six: Changes to New Zealand's child restraint rules - 01 November 2013
Will families be able to get assistance with buying child restraints?
Car restraint Standards
Taxis
Enforcement Officer Vehicle
Are booster seat costs justified? 24
How long do children need to use a booster seat? 24
When does a child need a booster seat? 25
What is the safest way for a child to ride in a car? 25
The 5-Step Test
Conclusion 27
Appendices
References:
About Safekids Aotearoa

Summary

New Zealand was once regarded as a 'world leader' in child restraint requirements in 1994 when the Government introduced a requirement for child passengers aged o to 2 years to use child restraints at all times. This was extended in 1995 to include all children up to their 5th birthday.

Since the inception of New Zealand's child restraint requirements for the road rule change in 1994 there have been significant developments internationally around child restraint requirements for older or taller children. New Zealand's child restraint laws were viewed to be lagging behind countries in the OECD (Organisation for Economic Development).

In response, on 1 November 2013 New Zealand amended its child restraint laws requiring the mandatory use of child restraints to be extended to passengers travelling in a motor vehicle until their seventh birthday. The requirement for children aged seven to be restrained in an appropriate child restraint if one is available will remain. 'If one is available' means if a suitable child restraint is in the vehicle your child must use it [1].

The Government's decision to use age rather than height continues to be debated, yet it is seen by many stakeholders as a step in the right direction [2]. There is still plenty of work to be done to ensure that New Zealand aligns with similar countries who have adopted a 'best practice' stance by ensuring that children are restrained in an approved child restraint until they are at least 148cm tall before graduating to an adult seatbelt. It is encouraging to know that the Government's transport advisors acknowledge this with regards to New Zealand's child restraint laws. The Government however, has decided to take a more pragmatic approach to child restraint laws in New Zealand by trying to "balance road safety outcomes and the additional burden on parents and caregivers" – Hon. Michael Woodhouse [3].

A booster seat is used in conjunction with an adult safety belt. They are simple to use, lightweight and can be inexpensive. Using a booster seat with a safety belt instead of using a safety belt alone for a child between the ages of 4 and 7 reduces the risk of injury by 59 percent [4]. Many countries such as Australia, the United Kingdom, Canada, Japan, Germany and various states in the United States recommend and have regulated the use of booster seats beyond the age of five [5].

Child motor vehicle passenger injuries are the second leading cause of unintentional injury related death for children in New Zealand.

- In the five year period 2005-2009 a total of 88 children died as a result of motor vehicle passenger related injuries; accounting for an average of 18 child deaths per year (9.9 deaths per 100,000 children).
- Tamariki Māori were over represented in all motor vehicle passenger related deaths, accounting for half (44) of all child deaths [6].

Motor vehicle passenger related injuries account for 17.3 percent of unintentional injury related hospitalisations for children in New Zealand. In the five year period 2007-2011 a total of 770 child motor vehicle passengers aged 0-14 years were injured severely enough to be admitted to hospital, an average of almost 3 hospitalisations per week.

- Children in the 10-14 years age group (21.8 per 100,000 children) had a higher hospitalisation rate than children in the 0-4 years (14.6 per 100,000 children) and 5-9 years (15.4 per 100,000 children) age groups.
- Hospital admissions for child passenger injuries in New Zealand were significantly higher for Tamariki Māori than any other major ethnic group.
- This injury cause was also significantly higher for male children and those from more deprived (NZDep decile 9–10) areas [6].

Safekids Aotearoa recommends that the following interventions are supported to reduce the risk of injury to child motor vehicle passengers.

- The New Zealand Government's approach to child restraint legislation to be based on international best practice where children remain in an appropriately fitted child restraint until they attain a height of 148cm.
- Continued evaluation into the need for children to remain in booster seats until they are at least 148cm tall.
- Initiate a public education programme on the benefits of correctly fitting child car restraints and booster seats for children.
- Fund booster seat provision within existing child car restraint distribution programmes. Access to low cost seats may facilitate adoption of best practice use in families with low incomes.
- Provide specific education strategies targeted at ethnic minority groups as they demonstrate different patterns in accessing information.

- Compulsory regulation requires an enhanced enforcement programme. Carry out routine monitoring and reporting of child car restraints and booster seat use rates and correct installation.
- All taxis to be required to ensure that all children travelling in the vehicle, who are less than 148cm tall, are properly restrained by an appropriately fitting approved child restraint.
- All taxis to be required to carry and/or provide child seats, including restraints and booster seats. If an appropriate child restraint is not available, all taxis must ensure that children are seated in a single seat in the rear of the vehicle, and use a seat belt.
- Children travelling in an enforcement officer vehicle during routine situations are restrained in an appropriately fitted and approved child restraint.
- Exemption from use of a child passenger restraint in an enforcement officer vehicle applies only to emergency situations, or where the child is in imminent danger if not transported immediately.
- Where there are two or more rows of seats a child under the age of 13 years must not be permitted to sit in the front row of a vehicle unless the other rows are occupied by younger children in an approved child restraint.

Safekids Key Safety Messages:

- ✓ Always use the correct child restraint and booster seat for your child's height and age.
- ✓ Follow the manufacturers' instructions for sizing and installation of your child restraint.
- ✓ Remember all child car seats being used in New Zealand must meet the accepted Safety Standards at all times.
- ✓ Make sure your child restraint or booster seat correctly fits your vehicle.
- ✓ Get help installing your child restraint or booster. Contact a NZTA-certified child restraint technician for support and to get help to correctly install a child restraint.
- ✓ The back seat is safest for kids.
- ✓ It's safer to wait till you're one-forty-eight (148cm)



'EXTENDING THE MANDATORY RESTRAINT REQUIREMENTS IS AN IMPORTANT STEP UP'

At the 11th World Conference on Injury Prevention and Safety Promotion, Associate Minister of Transport Simon Bridges announced a new rule that raises the upper limit for the mandatory use of child restraints.

Under the new rule, children must be in an appropriate child restraint until their 7th birthday.

Reducing New Zealand's high child road fatality and injury rate was the rationale for the new law. "International and local research shows that in the event of a crash, young school age passengers are at considerable risk if they are only restrained by an adult seatbelt. Injury risk can be significantly reduced by having child passengers use age-appropriate restraints, such as booster seats. Extending the mandatory restraint requirements is an important step up," Minister Bridges said.

The Minister acknowledged Safekids Aotearoa's work in influencing the new law.

"Today I proudly announce an increase in the mandatory age for vehicle child restraints, and acknowledge Safekids – Ann and the team – for their great work."



A Safekids submission on the Government's road safety strategy to 2020 (Safer Journeys) discussion document was supported by community groups, the NZ Paediatric Society, Plunket, TRAFINZ, Rural Women, Office of the Children's Commissioner and many others.

Of the 1,500 Safer Journeys submissions received in 2009, over a third supported updating the child restraint law.

– Safekids News December 2012



Introduction

Road traffic injuries are a significant burden of harm for New Zealand, and are a leading cause of death and hospitalisation for children aged 0-14 years.

Child passenger related injuries are the second largest cause of unintentional injury related deaths of children in New Zealand. In the five year period 2005-2009 a total of 88 children died as a result of motor vehicle passenger related injuries; accounting for an average of 18 child deaths per year (2.0 deaths per 100,000 children). Children in the 0-4 year's age group had a slightly higher mortality rate than children in the 5-9 and 10-14 years age groups.

In the five year period 2007-2011 a total of 770 children were hospitalised as a result of motor vehicle passenger related injuries (17.3 hospitalisations per 100,000 children). Children aged 10-14 years were at greatest risk of being injured when a passenger in a motor vehicle, compared to younger children [6].

New Zealand has one of the highest rates of child road fatalities in the OECD, and it is recognized that this is due in part to the lack of, or incorrect use of, appropriate child restraints [7]. While seat belts offer some protection in the event of a crash, they are designed to fit the anatomical structure of an adult that is at least 150cm tall. Child car restraints, along with booster seats, are essential because they offer the protection necessary for the unique body structure of a child [8, 9, 10].

On 1 November 2013 New Zealand amended its child restraint laws requiring the mandatory use of child restraints to be extended to passengers travelling in a motor vehicle until their seventh birthday. The requirement for children aged seven to be restrained in an appropriate child restraint if one is available will remain. 'If one is available' means if a suitable child restraint is in the vehicle your child must use it [1].

The Government's decision to use age rather than height continues to be debated, yet it is seen by many stakeholders as a step in the right direction [2]. There is still plenty of work to be done to ensure that New Zealand aligns with similar countries who have adopted a 'best practice' stance by ensuring that children are restrained in an approved child restraint until they are at least 148cm tall before graduating to an adult seatbelt. It is encouraging to know that the Government's transport advisors acknowledge this with regards to New Zealand's child restraint laws. The Government however, has decided to take a more pragmatic approach to child restraint laws in New Zealand by trying to "balance road safety outcomes and the additional burden on parents and caregivers" - Hon. Michael Woodhouse [3].

The term 'child car restraints' refers to the range of products used to provide additional protection for child passengers. These include products such as 'baby capsules' for newborns and infants, rear facing seats and forward facing restraints for older toddlers or preschool children [11].

Booster seats are designed to provide protection for primary school aged children. Existing literature demonstrates the inadequacy of adult seat belt dimensions for primary school aged children. In the event of a crash they require booster seats for adequate protection. [8, 10, 11, 12]

A booster seat is used in conjunction with an adult safety belt. They are simple to use, lightweight and can be inexpensive. Using a booster seat with a safety belt instead of using a safety belt alone for a child between the ages of 4 and 7 reduces the risk of injury by 59 percent [4]. Many countries such as Australia, Canada, Japan, Germany and various states in the United States recommend and have regulated the use of booster seats beyond the age of five [5]. For example, in September 2006, the United Kingdom introduced a new law requiring children under the age of twelve to use some form of child car seat, unless they are taller than 135cm (4ft 5in) [13, 14]. Compared to other similar jurisdictions, booster seat use rates in New Zealand are low [5, 7, 9, 15].

As part of a national campaign to reduce motor vehicle passenger injuries among New Zealand children, Safekids Aotearoa has developed the current position paper to:

- Describe the epidemiology of child motor vehicle passenger injuries in New Zealand among children 0-14 years
- Outline New Zealand road transport legislative requirements and expectations about child motor vehicle passengers
- Identify opportunities and interventions to reduce the number of motor vehicle passenger injuries among children in New Zealand.
- Summarise New Zealand's new child restraint laws.



Child motor vehicle passenger injuries in New Zealand

Child motor vehicle passenger injury deaths 2005-2009 [6]

Child passenger related injuries are the second largest cause of unintentional injury related deaths of children in New Zealand. In the five year period 2005-2009 a total of 88 children died as a result of motor vehicle passenger related injuries. That is equivalent to a rate of 2.0 deaths per 100,000 children.

The rate of fatality by five year age groups showed that children in the o-4 year age group (2.1 per 100,000 aged o-4 years) had a slightly higher death rate than children in the 5-9 years (1.9 per 100,000 aged 5-9 years) and 10-14 years (1.9 per 100,000 aged 10-14 years) age groups. (See Figure one)

Over a ten year period a linear trend suggests a slight downward trend for child motor vehicle passenger injury deaths. Deaths were highest in the year 2000 (24 deaths, 2.7 per 100,000 children) and lowest in the year 2006 (12 deaths, 1.4 per 100,000). (See Figure Two)

Figure one: Child Motor Vehicle Passenger Fatalities, by five year age groups, 2005-2009.



Source: NIQs, IPRU, University of Otago. Accessed in June 2013. Analysis by Safekids Aotearoa

Child motor vehicle passenger injury hospitalisations 2002-2011 [6]

Analysis of child motor vehicle passenger injury hospitalisations include children who have been admitted to hospital and have stayed past midnight.

In the five year period 2007-2011 a total of 770 children were hospitalised as a result of motor vehicle passenger related injuries, with a rate of 17.3 hospitalisations per 100,000 children.

Analysis by age group showed that over a five year period (2007-2011) children in the 10-14 years age group (21.8 per 100,000 children) had a higher hospitalisation rate than children in the 0-4 (14.6 per 100,000 children) and 5-9 (15.4 per 100,000 children) years age groups.

Between 2002 and 2011 the rate of child motor vehicle passenger hospitalisations has continued to decline from a rate of 21.1 per 100,000 children in 2002 to a rate of 13.0 per 100,000 children in 2011.

Hospital admissions for child passenger injuries in New Zealand were significantly higher for Tamariki Māori than any other major ethnic group. Second to Māori, hospitalisation rates for Pacific children were significantly higher than their European and Asian/ Indian counterparts. This injury cause was also significantly higher for male children and those from more deprived (NZDep decile 9–10) areas.

According to ethnic hospitalisation data by 5 year age groups, Māori and European children were the most commonly injured ethnic group. Hospitalisations were most common in the 10-14 years age group for all major ethnic groups apart from the Asian ethnic group.

For the European and 'Other' ethnic groups almost half of their total child passenger hospitalisations were experienced by children aged 10-14 years.

Figure two: Child Motor Vehicle Passenger Fatalities, Aged 0-14 years, 2000-2009.Child motor vehicle passenger injury hospitalisations 2002-2011 [6]



Figure three: Child Motor Vehicle Passenger Hospitalisations, Aged 0-14 years, 2007-2011.



Source: NIQs, IPRU, University of Otago. Accessed in June 2013. Analysis by Safekids Aotearoa.

Figure four: Rate of child motor vehicle passenger hospitalisations, 2002-2011.



Source: NIQs, IPRU, University of Otago. Accessed in June 2013. Analysis by Safekids Aotearoa.

Table one: Percentage of child motor vehicle passenger deaths by ethnic group and by 5 year age group, 2005-2009.

Ethnic Group	o-4 years	5-9 years	10-14 years	Total
Asian	0%	63%	38%	100%
European	27%	27%	47%	100%
Māori	48%	32%	20%	100%
Pacific Island	33%	17%	50%	100%

Source: NIQs, IPRU, University of Otago. Accessed in June 2013. Analysis by Safekids Aotearoa

Table two: Hospital Admissions for Child Motor Vehicle Passenger Injuries in Children 0–14 Years by Gender, Ethnicity and NZ Deprivation Index Decile, New Zealand 2006–2010 [16].

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
	NEW ZEALAND						
	Vehicle Occupant Injuries 0-14 Years						
NZ	NZ Deprivation Index Decile			NZ Depivation Index Quintile			e
Decile 1	12.9	1.00		Decile 1-2	13.1	1.00	
Decile 2	13.3	1.03	0.71-1.49	Decile 3-4	16.8	1.28	1.00-1.64
Decile 3	15.3	1.18	0.83-1.70	Decile 5-6	23.8	1.82	1.45-2.30
Decile 4	18.1	1.41	1.00-1.98	Decile 7-8	27.4	2.10	1.68-2.62
Decile 5	21.5	1.67	1.19-2.34	Decile 9-10	43.9	3.36	2.73-4.13
Decile 6	25.9	2.01	1.46-2.76		Prioritised	Ethnicity	
Decile 7	27.8	2.15	1.57-2.96	European	20.2	1.00	
Decile 8	27.1	2.10	1.54-2.87	Maori	45.2	2.24	1.98-2.54
Decile 9	43.9	3.40	2.54-4.56	Pacific	25.5	1.26	1.03-1.56
Decile 10	44.0	3.41	2.56-4.55	Asian/Indian	12.7	0.63	0.48-0.83
	Gender						
Female	24.1	1.00					
Male	28.7	1.19	1.06-1.33				

Source: Numerator: national Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population. Note: Rate is per 100,000; Ethnicity is Level 1 Prioritised: Decile is NZDep2001.

Table three: Child motor vehicle passenger hospitalisations by ethnic group and by 5 year age group, 2007-2011.

Ethnic Group	o-4 years	5-9 years	10-14 years	Total
Asian	6	20	18	44
European	86	94	157	337
Māori	99	74	111	284
Other	6	3	8	17
Pacific Island	26	31	31	88
Total	223	222	325	770

Source: NIQs, IPRU, University of Otago. Accessed in June 2013. Analysis by Safekids Aotearoa.

Types of Injury

The New Zealand Ministry of Transport's Government Regulatory Impact Statement on Child Car restraints (2012), analysed data from the Auckland-based Starship Children's Hospital on admissions to the Intensive Care Unit for child passengers aged 4 to 12 years. Over a 7 year period (2005-2011), the analysis showed that there were 42 admissions in total, including seven post-admission deaths. The majority of child admissions had severe spinal and/or head injuries, and a small number were discharged with permanent disabilities. Two cases were identified where children had used a booster seat but were seated in the front seat of the vehicle rather than applying 'best practice' measures of placing the booster seat in the rear seat [5]. (Note: The information provided does not give a full picture of the problem. It does not include children who were treated at other hospitals around the country. Children who died instantly in the crash are not included)

The premature and inadequate use of adult seat and lap belts to restrain children in vehicles also contributes to this injury picture. [18, 19, 20, 21, 22]

Shepherd et al reviewed children who were admitted to Starship Children's Hospital with lap belt injures over a seven year period (1996-2003). The study which only included children aged 14 years and under described the types of injuries caused by incorrectly fitting seat and lap belts. In total 19 subjects were identified over the 7 year period, 16 of whom were aged between five and fourteen years. [19]

These injuries included severe head injury, spinal fractures, bowel transection, severe liver and spleen damage, and paraplegia. Overseas studies also describe similar injuries resulting from incorrect use of age appropriate restraints. [19, 21, 23]

International Comparison

New Zealand was once regarded as a 'world leader' in child restraint requirements in 1994 when the Government introduced a requirement for child passengers aged o to 2 years to use child restraints at all times. This was extended in 1995 to include all children up to their 5th birthday.

Since the inception of New Zealand's child restraint requirements for the road rule change in 1994 there have been significant developments internationally around child restraint requirements for older or taller children. New Zealand's child restraint laws are now lagging behind the rest of the OECD. (see Table four)

The majority of European countries have followed the European Union (Directive 2003/20/EC), which recommends that members require children less than 150 centimetres tall and aged less than 12 years to use a booster seat when travelling in motor vehicles [24].

New Zealand's child passenger fatality rate for 10-14 year old children ranks poorly against equivalent overseas

countries including the United Kingdom, Norway and the USA (see Figure five).

Analysis of traffic fatalities by Christie et al across a sample of OECD countries (New Zealand, USA, Germany, Switzerland, the UK, Norway and Sweden) for children aged 10–14 years demonstrated that New Zealand children are particularly vulnerable road users. New Zealand had the highest fatality rate per 100,000 population aged 10-14 years. In terms of fatality rates per unit of exposure (fatality rate divided by average kilometres travelled) New Zealand once again had the highest rate compared to a sample of OECD countries. [25]

Table four: Mandatory requirements used by other OECD countries [5]

Country	/	Height Requirement	Age requirement*
*	Australia	No height requirement	0-7 years
	Belgium	No height requirement	0-12 years
•	Canada	Alberta: No height requirement Quebec: 63cm seated height British Columbia: 145 centimetres	Alberta: 0-7 years Quebec: No age requirement British Columbia: 0-10 years
	Germany	0-150 centimetres	0-12 years
	Hungary	0-150 centimetres	0-12 years
	Japan	No height requirements	0-7 years
+	Switzerland	0-150 centimetres	0-12 years
*	New Zealand	No height requirement	o-7 years
<u>.</u>	Spain	0-150 centimetres	0-12 years
	United Kingdom	0-135 centimetres	0-12 years
	United States	Varies by State	Varies by State, generally 0-9 years

* The are requirements are up to the age stated.

Figure five: Car occupants aged 10–14 years: population-based fatality rates for a sample of Organisation for Economic Cooperation and Development (OECD) countries.

(A) Car occupants aged 10-14 years: population-based fatality rates for a sample of OECD countries.

(B) Car occupants aged 10-14 years: population-based fatality rates expressed per unit of exposure for a sample of OECD countries.



13

Preventing child motor vehicle passenger injuries

Adult Seatbelts – not suitable for children

There is a general lack of knowledge in the community regarding the fact that motor vehicle seat belts are specifically designed for adult bodies [9, 10, 26, 27]. At least half of all children do not reach the minimum proportions (150cm) required to correctly fit an adult seat belt until at they are at least nine years old, often older. [22, 28, 29, 30]

Seat belts are designed to keep people from hitting the inside of the vehicle or being ejected in a crash. In order to hold the person in place, a seat belt must be able to disperse a great deal of force across, or through, the body. The belt is designed to cross over the bones of the shoulder, chest and hips. This is because these bones can absorb the energy of the crash with less injury to the passenger than the softer more vulnerable parts of the body. [30]

When a child is too small for a seat belt, the belt rests across the wrong places, such as the child's neck and abdomen. Children have difficulty sitting up straight in a seat belt when they are small. This is because their legs are too short to comfortably reach across the edge of the seat. They 'slouch' to become comfortable and this causes the lap belt to rise further up the abdomen (see Figure six).

In a crash a child sitting in the 'slouch' position (image (B) of Figure six) may suffer internal injuries to their liver, kidneys, bladder, spleen and intestines. [20, 21, 22, 23, 30]

Children are also at increased risk when they tuck the shoulder belt under their arm or behind their back, or fall asleep and fall out of the sash belt. These situations are more likely to happen when the seat belt is touching the child's neck or face. In a crash children sitting in this way

are likely to 'jack knife' forward – fold in half – over the lap belt. Their spinal cords may be severely injured, and their internal organs crushed and ruptured. Their heads are likely to hit the inside of the vehicle, causing head, brain or facial injuries [20, 21, 22, 23, 30].

Effective child restraints

Child transport experts have long been aware that booster seats are required to provide protection for children until they are the correct proportion to fit adult seat belts.

Research conducted in 1994 by Klinich et al for the USA National Highway Traffic Safety Administration (NHTSA), demonstrated the value of booster seats for improving the fit of the seat belt for older children. It found that the minimum size for a child who should use a three point belt alone had a sitting height of 74cm, standing height of 148cm and a weight of 37 kg. [12]

What is a (Belt Positioning) Booster Seat?

A booster seat is a rigid, fabric covered structure that is placed on top of a normal car seat. While there are many styles and models, it is most frequently used in conjunction with the seat belt. The booster seat positions the child and guides the seat belt across the child's thighs and hips to provide a better fit than if the child was seated on the seat restrained only by the car seat belt.

The booster raises the child higher in the car seat, so that the car's diagonal safety belt fits properly across the child's shoulder and breast bone, and the lap belt is positioned correctly across the top of the legs. This means that during a crash the forces are directed through the solid bony parts of the child's anatomy.



Source: Klinich (1994) Study of Older Child Restraint/Booster Seat Fit and NASS Injury Analysis)

Figure six: The Slouch Factor (1994) [12]

Effectiveness of Belt Positioning Booster Seats

Research has proven that belt positioning booster seats are effective for children ages 4 through to at least 8 years. [4]

- A study in 2004 showed that when compared with restraint by seat belts alone, the use of a booster seat results in 59% fewer injuries. [31, 32] (Figure seven)
- The booster seat corrects the fit of the safety belt on the child, reducing the risk of injuries.
- A safety belt that does not fit properly can cause severe head, spine and abdominal injuries in a crash.

Advantages of using a booster seat

Booster seats are for children who, because of their height and physical proportions, will not receive full protection from an adult safety belt. They have many advantages. These include:

- Safer travel: Children seated in a booster seat are less likely to be seriously injured or killed in the event of a crash.
- More comfortable: Booster seats make the car seat more comfortable for your child to use. Children who are too small for the adult car seat wriggle forward so that their legs are comfortable, and "slouch" rather than sitting up straight. This is one of the reasons they become susceptible to injury.
- Better viewing: Booster seats raise your child in the car seat and they are more easily able to see out of the car window.
- Easy to use: Eighty-nine percent of NZ children, who were using booster seats, were found to be using them correctly.
- Reasonable cost: Booster seats can be relatively inexpensive and simple to fit and use.
- Overseas countries require boosters: When travelling overseas, many countries now require booster seats.
- Side wings for additional protection: Some booster seats have 'side wings' that provide lateral support and side impact protection. [9]

Figure seven: [4] Effectiveness of Belt-positioning Booster Seats in Preventing Injuries to 4 to 8 year olds



Seat Positioning:

'Serious consideration should be given to mandating rear seating for children....' This is the recommendation from the Centre for Accident Research and Road Safety - Queensland (CARRS-Q), who analysed over 30,000 Victorian (Australia) crash records from 1993-1998 and 1999-2004. Analysis of the crash records was used to calculate relative risk of death or serious injury for children. The analyses concluded that in the event of a traffic crash, the risk of fatality for children aged 0-12 years, seated in the front seat more than doubled than if they had been seated in the rear seat. If unrestrained this increased the fatality risk four-fold [59].

Airbags:

Never place a rear-facing restraint in the front passenger seat of a vehicle with an airbag. For infants in a rear-facing restraint, if an airbag is activated the restraint will be forced up against the vehicle seat and the baby could be seriously injured or killed. Side airbags do not put children at risk of injury, provided they stay within the confines of the restraint shell [60].

Research from the America Academy of Paediatricians (AAP) reinforces the importance of having children under 13 years of age sit in the rear seat. All passengers aged 13 years and older need to wear a lap and shoulder belt when riding in the front seat. Air bags are designed to work with the lap and shoulder belt to protect the occupant in the event of a crash. To keep your older child (age 13 and older) safe in the front seat:

- Move the front seat as far back as possible from the dashboard
- Teach your child not to lean forward to change the radio dial or to insert CDs
- Insist that your child sit upright against the seatback, with the seat belt snug at all times [61]





Why do so few New Zealand families use booster seats?

Seat belts and child car restraints are now accepted as a normal part of life by most New Zealanders, and their use is widespread. Booster seats are, however, substantially less commonly used. A 2006 New Zealand study by Cameron et al showed that 60 percent of children who required a booster seat were found not to be using one. [9]

Cameron et al's findings also showed that subjects were not using a booster seat because:



The 2006 study also found that booster seat usage rates tended to be high up until a child was 4 years old in line

with New Zealand's child restraint laws. Once the child turned 5 years old the usage rate rapidly declined with increasing age. By the age of 9 to 12 years very few child passengers were using booster seats. [9]

Similarly, a 2011 Ministry of Transport survey of booster seat usage among children aged 5 to 9 years indicated that booster seat usage for this group was as low as 23 percent [15]. This is of concern since the majority of children in this age range would need a booster seat in order to be optimally restrained. Other results showed that 72 percent of the children were restrained only by a seatbelt and five percent were unrestrained [15].

Other studies identify factors such as: the cost, child acceptance, parental misinformation and uncertainty about when to move their child into an adult seat belt. Some studies identified an inverse relationship between the likelihood children would use a booster seat and the number of children in the car. Associations between parental income, the age and make of the car and the likelihood children would be using a booster seat have also been observed. Lower income families, in older model cars, were found to be less likely to use booster seats [26, 33, 34]

.

What are the best ways to achieve booster seat use?

Research suggests that the main ways to increase booster seat use is through education and regulation – coupled with distribution or incentive programmes, especially for families experiencing medium to high levels of deprivation. Promoting the correct use of age appropriate child restraints for younger children through these types of mechanisms has been accepted as the way to reduce child passenger death and injury. [9, 10, 32]

The New Zealand Government has required and enforced the compulsory use of child restraints for children under the age of five since 1995. In previous years the Government funded a technician training programme called Safe2Go. The Safe2go programme has now been replaced with a competency based certification process for Child Restraint Technicians that is part of the National Qualifications Framework. Certificated Child Restraint Technicians are available across the country and can provide face to face, informed advice about the correct fitting and use of child restraints. [35]

Internationally the need for booster seats for older children is being increasingly recognised.

As highlighted throughout this paper, legislation requiring booster seat use is being systematically implemented (in conjunction with education programmes) in, for example, the United Kingdom, the USA, Canada and the European Union. [29, 36]

A direct effect of education and regulation – coupled with distribution or incentive programmes is an increase in the demand for, and supply of, booster seat products. This will enable companies to invest in developing a greater product range and a reduction in price.



Education

Community based social marketing programmes coupled with distribution or incentive projects have been shown to be effective for increasing the use of booster seats.

A systematic review of 5 studies involving over 3,070 subjects demonstrated that education paired with distribution programmes produced more consistent results than "education only" interventions. While education only programmes provided more inconsistent results overall, more intensive education programmes were associated with more positive results. [37, 38, 39]

A comprehensive education plan that incorporates risk communication and maximum parental participation is likely to achieve improved results for New Zealand families. This should include three essential components:

- 1. Marketing to increase community understanding of the need for booster seats.
- 2. Identifying the best, most effective locations for families to access expert advice about booster seats and a range of booster seat products.
- 3. Making these locations well known to the public. [40]

However, not all groups and cohorts respond equally to educational programmes. In the USA low socio-economic and demographic characteristics have been associated with lower use of restraints for children. The importance of identifying poverty as a predictor of lower use of child car restraints emphasises the need for adequate booster seat disbursement projects, along with education programmes and regulation. [20, 41, 42]

It is also important to note that specific education programmes need to reach groups who exhibit different patterns in accessing information. For example, in New Zealand booster seat information is likely to be required in a range of various ethnic languages that can be accessed through ethnic-specific media or through their ethnic specific community groups or gatherings. [43]

Regulation

Within New Zealand, education programmes alone, without legislation, would heighten existing disparities in health outcomes. This is because better educated, higher income families will respond more quickly to child safety messages and more easily secure improved booster seat protection for their children.

To achieve more effective booster seat use within New Zealand, Safekids Aotearoa recommends a public education programme, robust distribution and a supply project combined with regulatory action and enforcement. Legislation has been shown to have a dramatically positive effect on children's restraint wearing rates by removing parental uncertainty about when to move their child into a seatbelt [33, 44].

There will be concerns expressed about increased costs to individual families. However a primary function of government is to mitigate costs to individuals where the imposition of those costs is justified by a demonstrable improvement for the public good. Because of their proven cost benefit outcomes, child car restraints and booster seats fall into this category. [45]

New rules for child car restraints from 1 Nov



Children up to seven years old will be required to use an approved child restraint when travelling in motor vehicles from 1 November this year, says Associate Transport Minister Michael Woodhouse.

Mr Woodhouse has signed a new Land Transport (Road User) Rule that will increase the age for mandatory child restraints from the current

age of five years old, up until a child's seventh birthday. Children aged between seven and eight will also need to use a restraint if one is available in the vehicle.

"These changes, agreed by Cabinet last year, will improve the safety of child passengers and are designed to reduce injuries and save young lives," Mr Woodhouse says.

"Increasing the age from five to seven aligns New Zealand with the rules in Australia and Japan. Children can be particularly vulnerable in crashes due to seat belts being designed for larger bodies, and it's important that they are restrained appropriately." It remains the driver's responsibility to ensure that any child under the age of 15 years travelling in their vehicle is correctly restrained, either in an appropriate child restraint (up to seven years of age) or a seatbelt.

As the new requirement will come into force on 1 November, parents and caregivers have over four months to purchase appropriate child restraints, such as booster seats, for children who may have stopped using them or who have outgrown their current seat.

"I would like to thank Safekids for their advocacy on this issue, and all the organisations and individuals who made submissions on the Rule. What we have achieved is a pragmatic balance between road safety outcomes and the additional burden on parents and caregivers."

The NZ Transport Agency will be working with its child safety partners to promote the changes to parents and caregivers. For more information about the rule change visit: www.nzta.govt.nz.

- http://www.beehive.govt.nz/release/new-rules-child-carrestraints-1-nov





Preventing Child Passenger Injuries: How does a Booster Seat Work?

148cm

An adult seat belt may not protect a child properly until they're 148cm tall. So be on the safe side and keep primary school-age kids in a booster seat until they are 148cm tall.



20

THE NUMBERS: Child motor vehicle passenger injuries in New Zealand



2nd **LEADING CAUSE** of unintentional injury related death for children in NZ



18 CHILDREN DIE in vehicle crashes every year; half of them are tamariki Māori



3 CHILDREN are hospitalised every week as a result of vehicle crashes



HOSPITALISATION BY ETHNICITY AND FIVE YEAR AGE GROUP



Safekids Aotearoa Infographic *Preventing Child Passenger Injuries: How a Booster Seat Work?* Download at http://www.safekids.org.nz/index.php/page/27

New Child Restraint laws

Despite the wealth of evidence in support of mandatory restraint of children up to 148cm in height or up to 11 years of age – also the Ministry of Transport's preferred option; the present government has chosen to increase the mandatory restraint of children from the age of 5 years (current law) to 7 years. [5]

Land Transport (Road User) Amendment Rule (No 2) 2013 makes changes to the child restraint requirements in the Land Transport (Road User) Rule 2004. The overall objective of the changes is to reduce preventable deaths and serious injuries to child passengers travelling in a motor vehicle on New Zealand's roads.

The changes according to the NZTA are part of the "Government's action towards meeting its goal of bringing New Zealand's child restraint laws in line with international best practice – as outlined in the Safer Journeys to 2020 road safety strategy" [7].

On 1 November 2013 the mandatory use of child restraints was extended to passengers travelling in a motor vehicle until their seventh birthday. The requirement for children aged seven to be restrained in an appropriate child restraint if one is available will remain. 'If one is available' means if a suitable child restraint is in the vehicle your child must use it [1].

The Government's decision to use age rather than height continues to be debated, yet it is seen by many stakeholders as a step in the right direction [2]. There is still plenty of work to be done to ensure that New Zealand aligns with similar countries who have adopted a 'best practice' stance by ensuring that children are restrained in an approved child restraint until they are at least 148cm tall before graduating to an adult seatbelt. It is encouraging to know that the Government's transport advisors acknowledge this with regards to New Zealand's child restraint laws. The Government however, has decided to take a more pragmatic approach to child restraint laws in New Zealand by trying to "balance road safety outcomes and the additional burden on parents and caregivers" - Hon. Michael Woodhouse [3].

The other major changes to the child restraint requirements in the Land Transport (Road User) Rule 2004 include a provision that allows an older child not to use a child restraint for medical reasons (by obtaining a certificate from a medical practitioner), will be extended to include children of any age. This provision currently applies only to children over the age of five years old [1].

The amendment Rule also removes the provision that currently allows the driver of a goods vehicle that has an unladen weight exceeding 2,000 kg, in which seat belts are not available, to carry a passenger under five years without the passenger being properly restrained by an approved child restraint appropriate for the child's age and size [1]. (see Table six)

Requirement	Pre 01 November 2013	From 01 November 2013 onwards
Child must be restrained in an appropriate approved child restraint	Until their 5th birthday	Until their ⁊th birthday
Child must be restrained in an appropriate approved child restraint or seatbelt i f one is available	From their 5th birthday until their 8th birthday	From their 7th birthday until their 8th birthday
Child must use any child restraint or seatbelt that is available. If not available, they must travel in the back seat	Children aged eight to 14	Children aged eight to 14 – no change
Exception from using a child restraint	If a current medical certificate is provided certifying that use of a restraint is impracticable or undesirable for medical reasons, then the child does not have to be restrained in a child restraint or seatbelt. Applies to any person from age five and over	Exemption extended to include children under the age of five (previous medical certificate exemptions only available to children aged five or over)
	If the vehicle is a goods vehicle (with an unladen weight exceeding 2000 kg) in which seatbelts are not available, then a child under five years of age is not required to be restrained	This exception has been removed and so children must now be appropriately restrained if travelling in these vehicles

Table six: Changes to New Zealand's child restraint rules - 01 November 2013 [1]

Other changes relate to how the new rules apply to vehicles defined as 'Passenger Service Vehicles'. According to the New Zealand Transport Agency, 'organisations running a passenger service will have applied for a transport service licence, meaning that they have to meet certain legal standards and requirements to get a licence and operate a passenger service' [1]. For further information on how the new rules will apply to vehicles defined as Passenger Service Vehicles'. (see Appendix four).

Will families be able to get assistance with buying child restraints? [1]

The New Zealand Government's Ministry of Social Development provides recoverable financial assistance for approved child restraints under two schemes:

- Advanced Payment of Benefits, for beneficiaries
- Recoverable Assistance Payments, for nonbeneficiaries.

The proposed schemes above would be amended to cover the extended use of child restraints. People applying for financial assistance under either of these regimes will need to meet the Ministry of Social Development's eligibility criteria.

Car restraint Standards [46]

The current approved standards in New Zealand are as follows:

• A child restraint must meet an approved standard. Child restraints certified for use in New Zealand will show an 'S' mark (New Zealand Standard NZS 1754), or a tick (Australian Standard AS 1754), or an 'E' mark (European Standard ECE 44).



 Restraints that comply with the United States Standard (FMVSS 213) must, in addition to any other markings, display the New Zealand Standard 'S' mark, to show they have been certified for use in New Zealand.



- With the addition of the Japanese Technical Standard, all in-built child restraints in a car that has been certified for use on New Zealand roads will meet one of the standards. Other Japanese child restraints are still excluded from use in New Zealand.
- Restraint attachments: The requirements for how certain restraints are attached using connectors called LATCH (Lower Anchors and Tethers for Children) in the United States or ISOFIX in Europe (For further information see Appendix three.)

Taxis

Clause 7.11(3)(c) (See Appendix two) Safekids Aotearoa contends that best practice for child restraint use should be applied whenever a child is travelling in a vehicle on the road, irrespective of whether the child is travelling in a car, taxi or mini-van. Taxis are currently exempt from clause 7.7 to 7.10 of the Land Transport (Road User) Rule 2004 (See Appendix two). Safekids Aotearoa suggests that this is incongruent with several OECD countries such as the UK, countries within the European Union, States in Australia, and States within the United States. Legislation across these jurisdictions requires the use of a child restraint if one is available, the use of seat belts and the rear positioning of children in taxis [47, 48, 49, 50, 51]. For instance, child restraint legislation in New South Wales (NSW) Australia requires taxi drivers to ensure children aged less than 12 months are secured in an appropriately fitted child restraint [52], and ten percent of the NSW taxi fleet are required to carry baby capsules [53].

Enforcement Officer Vehicle

Clause 7.11(3) (e) and Clause 7.11(5) (e) (See Appendix two)

In some emergency situations involving the transportation of a child in an enforcement officer vehicle, the use of a child restraint may be impractical. However, in all other routine situations, enforcement officers should be required to apply best practice by securing children in an appropriately fitted child restraint within an enforcement officer vehicle.



Are booster seat costs justified?

Booster seats, and the regulations mandating their use, have been tested in cost outcome terms and show net resource cost savings against child injury, which places them in the top tier of preventative interventions. [45]

An Australian government report assessed child car passenger injuries to children in the four to seven year age group. The treatment costs of injuries received from not providing booster seats (and relying only on adult seat belts) was measured against the combined cost of creating and enforcing the regulation and the direct cost of the booster seats. [45] The results, based on a total booster seat cost of \$US197.00, showed a return on investment of 9.4 to 1; providing a saving of \$US 1,854.00 per seat. Even lower bound estimates in sensitivity analysis indicated a social benefit. Booster seat laws alone are shown to offer a return of 8.6 to 1. [45] Benefit cost analysis was also conducted by the New Zealand Ministry of Transport through their Regulatory Impact Statement paper on Child restraints (2012) to Cabinet. The government paper showed that introducing legislation in New Zealand requiring all child passengers up to 148 cm in height or aged up to 11 years to use child restraints is expected to produce safety benefits. The paper assumed that an 80 percent compliance rate would prevent an estimated 8 deaths, 48 serious injuries and 528 other injuries over the first 10 years with a net safety benefit (benefits over and above costs) of around \$43.8 million. The paper gave an estimated benefit cost ratio of 3.2. [5]

How long do children need to use a booster seat?

It's all about the child's height – and how well they fit a safety belt. Height is the best guide for knowing when to graduate a child from a booster seat into a safety belt. Experts advise that children should use a booster seat while they are shorter than 148 cms in height [9, 12].

The 148 cm message has also been endorsed by New Zealand's Ministry of Transport and the New Zealand Transport Agency (NZTA). [5, 7, 54]

Almost all children need to use a booster seat at five years old [9], and the majority of children still need to use a booster seat at eight years of age [9]. A few children might still benefit from using a booster seat aged twelve years [9]. Standardised age, height and weight charts show the majority of New Zealand children do not reach ideal dimensions for adult seat belts until they are approximately twelve years of age [9]. (see Table five)

Some manufacturers mention weight as a guide. Weight is an indicator of a child's physical size and is part of the understanding of how a child restraint or safety belt might fit. [12] However, the most important consideration is that the child can fit their safety belt correctly. [55]

Table 5

HALF OF ALL NEW ZEALAND CHILDREN STILL NEED TO USE A BOOSTER SEAT AT 10 YEARS OF AGEImage: Children with the properties of the p

When does a child need a booster seat?

As children grow taller they no longer fit their forward facing child car restraint. While some authorities refer to age as the determining factor, there are various guides as to when children should graduate from one type of restraint to another. [56] One suggestion is that in order for a child to graduate onto the next type of seat their head should be taller than the back of their restraint. [11, 56]

The new Australia/ New Zealand standard on child restraints (AS/NZS 1754:2013) includes shoulder line indicators marked on the restraint [57] (see Figure ten). This provides consumers with a better indication of when a child is the right height for a particular child restraint and when the child should graduate onto the next type of restraint. This initiative also provides consumers with the flexibility of investing in a child restraint that can be utilised for a prolonged period of time [57]. Figure ten: Child restraint shoulder line indicators.



Source: Child restraint systems for use in motor vehicles. AS/NZS 1754 (2013)

What is the safest way for a child to ride in a car?

Children are safest when seated in an appropriate and approved restraint or booster seat, in a rear seat of the car. Avoid the use of lap belts only and never use a booster with a lap belt alone. Figure eleven demonstrates how the safety belt is incorrectly positioned on the child when they are not in a booster seat.

The 5-Step Test

There are five key tests that can be used to check if a child is safe just with a safety belt or requires a booster seat.



when your child sits on the				
vehicle seat:				
	YES	NO		
 Do they sit all the way against the car seat? 				
2. Do their knees bend comfortably at the edge of the car seat ?				
Does the safety belt cross the shoulder between the neck and arm?				
4. Is the lap belt as low as possible, touching the thighs?				
5. Can they stay seated like this for the whole trip?				
If you answered "no" to any of these questions, your child needs a booster seat to keep them safe.				

Figure eleven: Demonstrates how the safety belt is incorrectly positioned on the child when they are not in a booster seat [58].







25



Conclusion

Safekids Aotearoa strongly advocates that the use of correctly fitting child car restraints is one of the most convincingly effective interventions for the prevention of transport related injury to children, and that the following interventions are supported to reduce the risk of injury and death to children in New Zealand.

- The New Zealand Government's approach to child restraint legislation to be based on international best practice where children remain in an appropriately fitted child restraint until they attain a height of 148cm.
- Continued evaluation into the need for children to remain in booster seats until they are at least 148cm tall.
- Initiate a public education programme on the benefits of correctly fitting child car restraints and booster seats for children.
- Fund booster seat provision within existing child car restraint distribution programmes. Access to low cost seats may facilitate adoption of best practice use in families with low incomes.
- Provide specific education strategies targeted at ethnic minority groups as they demonstrate different patterns in accessing information.

- Compulsory regulation requires an enhanced enforcement programme. Carry out routine monitoring and reporting of child car restraints and booster seat use rates and correct installation.
- All taxis to be required to ensure that all children travelling in the vehicle, who are less than 148cm tall, are properly restrained by an appropriately fitting approved child restraint.
- All taxis to be required to carry and/or provide child seats, including restraints and booster seats. If an appropriate child restraint is not available, all taxis must ensure that children are seated in a single seat in the rear of the vehicle, and use a seat belt.
- Children travelling in an enforcement officer vehicle during routine situations are restrained in an appropriately fitted and approved child restraint.
- Exemption from use of a child passenger restraint in an enforcement officer vehicle applies only to emergency situations, or where the child is in imminent danger if not transported immediately.
- Where there are two or more rows of seats a child under the age of 13 years must not be permitted to sit in the front row of a vehicle unless the other rows are fully occupied by younger children in an approved child restraint.

Safekids Key Safety Messages:

- Always use the correct child restraint and booster seat for your child's height and age.
- Follow the manufacturers' instructions for sizing and installation of your child restraint.
- Remember all child car seats being used in New Zealand must meet the accepted Safety Standards at all times.
- Make sure your child restraint or booster seat correctly fits your vehicle.
- Get help installing your child restraint or booster. Contact a NZTA-certified child restraint technician for support and to get help to correctly install a child restraint.
- The back seat is safest for kids.
- It's safer to wait till you're one-forty-eight (148cm)

Appendices

Appendix one:

Position Paper Literature Review Methods

A search of electronic databases was undertaken by the Safekids Information Specialist. Combinations of the following search terms were used to identify relevant materials: Child; children; child restraint; child passenger; booster seat; motor vehicle traffic crash; injury; injuries.

The following data bases were included in the search:

Medline; Cochrane; SafetyLit and the Safekids Aotearoa inhouse Information Centre.

The criteria for inclusion in the position paper were documents published from 2005 onwards, as well as seminal references published earlier. The review was limited to information published in English.

The initial search generated over 500 documents which were assessed against the following concepts:

- Currency how the document could build on and support existing information held by Safekids Aotearoa;
- Source potential sources of information were identified and prioritised, including academic data bases and sources of unpublished literature (e.g., conference proceedings);
- Reliability and validity all materials collected were critically reviewed, ensuring they were obtained from

credible sources and were appropriate to the project's purpose; and

 Coverage and relevance – relevance was ensured by assessing that materials included in the review were appropriate to the project's purpose.

Documents were excluded if they did not include children in the study population. Priority was given to evidence from countries with similar transport environments and policy contexts to New Zealand, such as Australia, Canada, UK and the USA.

Reference lists of relevant papers were also searched to identify additional documents which were assessed for suitability to be included in the position paper. This approach was particularly useful to identify reports and other documents which did not appear in initial searches of peer reviewed data bases.

Data analysis methods

Motor vehicle passenger related hospitalisation data for the period 2007-2011, and mortality data for the period 2005-2009 for children aged 0-14 were sourced from the Ministry of Health data collections by the Injury Prevention Research Unit (IPRU), University of Otago [9], and analysed by Safekids Aotearoa.

Mortality	Hospitalisation
Mortality data were filtered as follows:	Hospitalisation data were filtered as follows:
 Includes: Deaths on the NZ Coronial Register Deaths that were registered between 2005 and 2009 With an Unintentional intent o to 14 year olds Occupants in Motor Vehicle Traffic Crashes 	 Includes Where the principle diagnosis is an injury With an Unintentional intent o to 14 year olds Occupants in Motor Vehicle Traffic Crashes Excludes: Readmissions for the same incident Patients discharged dead Day patients

Other demographic variables sought included, gender, ethnicity and external cause of injury.

Appendix two:

Reprint as at 1 November 2013 Land Transport (Road User) Rule 2004 (SR 2004/427)



Pursuant to sections 152, 153, and 157 of the Land Transport Act 1998, the Minister for Transport Safety makes the following ordinary rule.

Part 7 Driver responsibility and occupant protection

7.6 Driver must ensure passengers under 7 years use child restraint

A driver must ensure that, while the vehicle is in motion on a road, every passenger under the age of 7 years is properly

7.7 Driver must ensure passengers aged 7 use child restraint or seat belt

A driver must ensure that, while the motor vehicle is in motion on a road, every passenger aged 7-

(a) is properly restrained by an approved child restraint appropriate for that passenger, if such a restraint is available in the vehicle; or

(b) if such a restraint is not available in the vehicle, is restrained as securely as practicable in the circumstances using any child restraint or seat belt that is available (whether or not that child restraint or seat belt is approved).

7.8 Driver must ensure passengers of 8 to 14 years wear seat belts

(1) Subclause (2) applies when a person-

(a) is a passenger in a motor vehicle; and

(b) occupies a seat fitted with a seat belt, whether or not the seat belt is an approved seat belt; and

(c) is aged from 8 to 14 years.

(2) The driver of the vehicle must ensure that, while the vehicle is in motion on the road, the person—

(a) wears the seat belt correctly so that he or she is properly restrained; and

(b) keeps the seat belt securely fastened.

7.9 Driver must not permit passengers under 15 years to sit in front seat without child restraint or seat belt

A driver must not, while the motor vehicle is in motion on a road, permit a passenger under the age of 15 years who is not properly restrained by an approved child restraint or seat belt appropriate for that passenger to be alongside the driver unless—

(a) the vehicle is not provided with sitting positions behind the driver's seat; or

(b) all the sitting positions behind the driver's seat are occupied by passengers under the age of 15 years.

7.10 Persons of or over 15 years must wear seat belts and keep them fastened

(1) Subclause (2) applies when a person-

(a) is in a motor vehicle; and

(b) is occupying a seat fitted with a seat belt, whether or not the seat belt is an approved seat belt; and

(c) is aged 15 years or more.

(2) While the vehicle is in motion on the road, the person must—

(a) wear the seat belt correctly so that he or she is properly restrained; and

(b) keep the seat belt securely fastened.

7.11 Exceptions to application of requirements relating to use of child restraints and seat belts

(1) The requirements of clauses 7.6 to 7.10 do not apply to a driver (whether imposed in respect of himself or herself or any child), or to a passenger in any motor vehicle, if the driver or passenger produces to an enforcement officer, whenever required to do so by that officer, a certificate from a registered medical practitioner certifying that the restraining of the person who would otherwise be required by those provisions to be restrained by a child restraint or seat belt is impracticable or undesirable for medical reasons.

(2) A driver or passenger who is required to produce a certificate to an enforcement officer under subclause (1) has 7 days, after the day on which the requirement is imposed, to

do so.

(2A) If the certificate produced to the enforcement officer was issued on or after 1 October 2011,—

(a) the certificate must specify the date on which it was issued and its expiry date; and

(b) the expiry date must be on or after the day on which the certificate was required to be produced.

(3) The requirements of clauses 7.7 to 7.10 do not apply to a driver (whether imposed in respect of himself or herself or any child), or to a passenger in any vehicle, if the person who would otherwise be required by those provisions to be restrained by a child restraint or seat belt—

(a) is the driver and, while complying with the requirements of those clauses, could not reasonably operate effectively any of the following items of equipment:

(i) footbrake or handbrake controls:

(ii) headlamp or foglamp:

(iii) direction-indicator control:

(iv) horn:

(v) windscreen-wiper control:

(vi) choke:

(vii) driver's sun visor; or

(b) is the driver of a vehicle that is travelling in reverse, and would not be able to reverse the vehicle in a safe manner if the driver were to comply with the requirements of those clauses; or

(c) is the driver of a taxi plying for hire; or

(d) is a person who-

(i) is engaged in the course of his or her employment in the delivery or collection of mail or newspapers or other goods, or the servicing of the vehicle, or meter reading or other similar duties, or spraying or other similar duties from the vehicle; and

(ii) for that purpose is required to alight from and reenter the vehicle at frequent intervals, so long as the vehicle is travelling at a speed not exceeding 50 km per hour; or

(e) is an enforcement officer or prison officer travelling with another person who is not an enforcement officer or prison officer in circumstances in which it is impracticable or undesirable to wear a seat belt.

(4) Clauses 7.6, 7.7, 7.8, and 7.10 do not apply to the driver of a bus.

(5) The requirements of clause 7.6 do not apply to a driver (whether imposed in respect of himself or herself or any child), or to a passenger in any vehicle, if the driver—

(a) is driving a passenger service vehicle in which no appropriate child restraints are available; or

(b) [Revoked]

(c) is driving a motor vehicle first registered before 1 January 1955 in which no seat belts are available; or

(d) is driving a motorcycle; or

(e) is driving a motor vehicle that is being used by an enforcement officer in the execution of the officer's duty.

Appendix Three [1]

For further information with regards to restraint requirements using LATCH (Lower Anchors and Tethers for Children) in the United States or ISOFIX in Europe refer to link below.

29

http://www.childrestraints.co.nz/isofix-latch.php

Appendix Four [1]

The New Zealand Transport Agency (NZTA) definition of a Passenger Service Vehicle.

The following in <u>not</u> a Passenger Service Vehicle:

What type of vehicle is it?	From 1 November what are the new requirements for children under 7 (ie, before their 7 th birthday)?	From 1 November what are the requirements for children aged 7 (ie, between their 7 th and 8 th birthdays)?	Comments	What legislation applies?
Light vehicle with 12 or fewer seats (including the driver's seat) <u>not</u> <u>used for hire or</u> <u>reward</u>	Approved child restraint use is mandatory until age 7.	Approved child restraint use is mandatory - if they are available in the vehicle (and if not, a child should be restrained in any child restraint or safety belt that is available)	The type of child restraint used depends on the age and size of the child.	Land Transport (Road User) Rule clause 7.6 for children under 7. Road User Rule clause 7.7 for child aged 7.

Passenger service vehicles (PSVs) include:

- vehicles used in a passenger service for hire or reward (no matter how many seating positions they might have)

- vehicles with more than 12 seating positions (whether they're used for hire or reward or not)

- heavy motor vehicles with more than nine seating positions- for vehicle design and standards purposes (whether they're used for hire or reward or not).

Types of Passenger Service Vehicles and how the rules apply:

What type of vehicle is it?	From 1 November what are the new requirements for children under 7 (ie, before their 7 th birthday)?	From 1 November what are the requirements for children aged 7 (ie, between their 7 th and 8 th birthdavs)?	Comments	What legislation applies?
Taxis with 9 or fewer seats (including the driver's seat)	Approved child restraint use is mandatory - if they are available in the vehicle.	Approved child restraint use is mandatory - if they are available in the vehicle	While child restraint use is mandatory only if an appropriate restraint is available, it is not recommended to transport a child under seven years old in such a vehicle without a child restraint. Advice is to wait until a suitably equipped vehicle is available or provide your own restraint. In practice, this may not always be an option and a child under 7 may have to travel in the vehicle (emergency, etc). In such a case, the driver should seat the child in the back seat and restrain him/her as securely as practicable in the circumstances using any restraint that is available.	Land Transport (Road User) Rule: For children under 7: Clause 7.6 of the Road User Rule would otherwise apply but: clause 7.11(5) provides an exception if no child restraints are available. and clause 7.7 for 7 year old child.
What type of vehicle is it?	From 1 November what are the new requirements for children under 7 (ie, before their 7 th birthday)?	From 1 November what are the requirements for children aged 7 (ie, between their 7 th and 8 th birthdays)?	Comments	What part of legislation is this related to?
Light vehicle with 9 or fewer seats (including the driver's seat) used for hire or reward	Approved child restraint use is mandatory - if they are available in the vehicle.	Approved child restraint use is mandatory - if they are available in the vehicle.	 If a school wants child restraints to be used by the under 8 year olds in this type of vehicle they could: check that the vehicle has them or provide them and check in advance that there are no compatibility problems with fitting them into the vehicle, such as provision for top tether strap securement. In this type of vehicle the driver would be responsible for ensuring they are used. 	Land Transport (Road User) Rule: For children under 7: Clause 7.6 of the Road User Rule would otherwise apply but: clause 7.11(5) provides an exception if restraints are not available. and clause 7.7 for 7 year old children does apply

Light vehicle with 10,11, or 12 seats (including the driver's seat) used for hire or reward	Approved child restraint use is discretionary - whether they are available in the vehicle or not.	Approved child restraint use is discretionary - whether they are available in the vehicle or not.	Even though child restraint use is discretionary, if a school wants child restraints to be used by the under 8 year olds in this type of vehicle they could: • check that the vehicle has them or • provide them and check in advance that there are no compatibility problems with fitting them into the vehicle, such as provision for top tether strap securement. In this size vehicle, if child restraints are used an adult (other than the driver) would need to travel with the children to ensure they're used.	If the vehicle has more than 9 and up to and including 12 seats (including the driver's seat) and is a light vehicle, used in a passenger service, then it is classed as a bus under the Road User Rule. For children under 7: Clause 7.6 of the Road User Rule would otherwise apply but: clause 7.11(4) provides an exception for buses. and clause 7.7 for 7 year old children would otherwise apply but clause 7.11(4) provides an exception for buses.
What type of vehicle is it?	From 1 November what are the new requirements for children under 7 (ie, before their 7 th birthday)?	From 1 November what are the requirements for children aged 7 (ie, between their 7th and 8th birthdays)?	Comments	What part of legislation is this related to?
Light or heavy vehicle with more than 12 seats (including the driver's seat)	Approved child restraint use is discretionary - whether they are available in the vehicle or not.	Approved child restraint use is discretionary - whether they are available in the vehicle or not.	 Even though child restraint use is discretionary, if a school wants child restraints to be used by the under 8 year olds in this type of vehicle they could: check that the vehicle has them OR provide them and check in advance that there are no compatibility problems with fitting them into the vehicle, such as provision for top tether strap securement. In this size vehicle, if child restraints are used an adult (other than the driver) would need to travel with the children to ensure they're used. 	This vehicle meets the definition of 'bus' for the purposes of the Road User Rule. Land Transport (Road User) Rule: Clause 7.11(4) provides an exception for buses. Clause 7.6 for under 7 year olds and clause 7.7 if the child is aged 7 would otherwise apply.



References:

1 Agency, New Zealand Transport, *Changes to child restraint laws: Questions and Answers*, August 2013.

2 Zealand, Safekids New, Extending the Mandatory Restraint Requirements is an Important Step Up, Safekids News Dec 2012.

3 Woodhouse, Honourable Michael, *New rules for child car restraints from 1 Nov*, 2013.

4 Institute, The Children's Hospital of Philadelphia Research, *Three steps to optimizing child passenger safety laws*, 2009.

5 Mclaren, Rachael, *Safer Journeys - Child Restraints: Regulatory Impact Statement, September* 2012.

6 Injury Prevention Research Unit, University of Otago., "Unpublished Child Unintentional Injury Statistics" 2012,

7 Transport, Ministry of, *New Zealand's Road Safety Strategy* 2010–2020, 28, March 2010.

8 Appleton, Ian, YOUNG CHILDREN AND ADULT SEAT BELTS-IS IT A GOOD IDEA TO PUT CHILDREN IN ADULT BELTS 1983.

9 Cameron, Leanne, Segedin, Elizabeth, Nuthall, Gabrielle and Thompson, John, "Safe restraint of the child passenger" *Journal of paediatrics and child health*, 2006, 42: 752-757.

10 Simpson, JC, Wren, J, Chalmers, DJ and Stephenson, SCR, "Examining child restraint use and barriers to their use: lessons from a pilot study" *Injury Prevention*, 2003, 9: 326-331.

11 B, Fredrickson, Sitting Safely? *Child Restraints Report.*, Consumer 24-27, August, 2006.

12 Klinich, Kathleen DeSantis, *Study of older child restraint/ booster seat fit and NASS injury analysis* National Highway Traffic Safety Administration: 1994.

13 Zealand, Safekids New, Factsheet: *Child Motor Vehicle Passenger Injuries - Effectiveness of Belt Positioning Booster Seats*, Auckland, April 2010.

14 Government, The United Kingdom, Child car seats: the law,

15 Transport, Ministry of, *Child restraint use by children aged* 5–9 years: Results of a national survey 2011, 2012.

16 NZCYES, The Health Status of Young people and Children, IN THE NORTHERN DISTRICT HEALTH BOARDS

18 Ryoichi, Yoshida, Hiroshi, Okada, Mitsunori, Nomura, Koji, Mizuno, Yoshinori, Tanaka and Naruyuki, Hosokawa, "Head impact mechanisms of a child occupant seated in a child restraint system as determined by impact testing" *Stapp Car Crash Journal*, 2011, 55: 117-139.

19 Byard, Roger William and Noblett, H, "Child booster seats and lethal seat belt injury" *Journal of paediatrics and child health*, 2004, 40: 639-641.

20 Krahn, D, Barker, R, Hockey, R, Spinks, D and Pitt, R, "Children as passengers in motor vehicle crashes" *Queensland Injury Surveillance Unit Brisbane*, 2007,

21 Shepherd, Michael, Hamill, James and Segedin, Elizabeth, "Paediatric lap-belt injury: A 7 year experience" *Emergency Medicine Australasia*, 2006, 18: 57-63.

22 Winston, Flaura K, Durbin, Dennis R, Kallan, Michael J and Moll, Elisa K, "The danger of premature graduation to seat belts for young children" *Pediatrics*, 2000, 105: 1179-1183.

23 Kortchinsky, Talna, Meyer, Philippe, Blanot, Stéphane, Orliaguet, Gilles, Puget, Stéphanie and Carli, Pierre, "Misuse of an adult seat belt in a 7-year-old child: a source of dramatic injuries and a plea for booster seat use" *Pediatric Emergency Care*, 2008, 24: 161-163.

24 Council, European Parliament, Directive 2003/20/EC of the European Parliament and of the Council of 8 April 2003 amending Council Directive 91/671/EEC on the approximation of the laws of the Member States relating to compulsory use of safety belts in vehicles of less than 3,5 tonnes., 2003.

25 Christie, N., Cairns, S., Towner, E. and Ward, H., "How exposure information can enhance our understanding of child traffic "death leagues" *Injury Prevention*, 2007, 13: 125-129.

26 Howard, Andrew, Snowdon, Anne and MacArthur, Colin, "Removing barriers to booster seat use in Canada" *Paediatrics & child health*, 2004, 9: 309.

27 Simpson, Edith M, Moll, Elisa K, Kassam-Adams, Nancy, Miller, Gwenyth J and Winston, Flaura K, "Barriers to booster seat use and strategies to increase their use" *Pediatrics*, 2002, 110: 729-736.

28 NZTA, Factsheet 07: Child Restraints, May 2012.

29 Administration, United States. National Highway Traffic Safety, *A Parent's Guide to Buying and Using Booster Seats*, 2002.

30 Canada, Safekids, *Booster Seat Use in Canada: A National Challenge*, 2004.

31 Arbogast, Kristy B, Kallan, Michael J and Durbin, Dennis R, Effectiveness of high back and backless belt-positioning booster seats in side impact crashes, Annual Proceedings/Association for the Advancement of Automotive Medicine, 49, 201, 2005.

32 Durbin, Dennis R, Elliott, Michael R and Winston, Flaura K, "Belt-positioning booster seats and reduction in risk of injury among children in vehicle crashes" *JAMA: the journal of the American Medical Association*, 2003, 289: 2835-2840.

33 Koppel, Sjaanie, Charlton, Judith L, Fitzharris, Michael, Congiu, Melinda and Fildes, Brian, "Factors associated with the premature graduation of children into seatbelts" *Accident Analysis & Prevention*, 2008, 40: 657-666.

34 Howard, A, Beben, N, Rothman, L, Fiissel, D and MacArthur, C, "Evaluation of Safe Kids Week 2004: Age 4 to 9? It's Booster Seat Time!" *Injury Prevention*, 2006, 12: 316-319.

35 NZTA, Become a child restraint technician,

36 Durbin, Dennis R, Chen, Irene, Smith, Rebecca, Elliott, Michael R and Winston, Flaura K, "Effects of seating position and appropriate restraint use on the risk of injury to children in motor vehicle crashes" *Pediatrics*, 2005, 115: e305-e309.

37 Snowdon, Anne W, Hussein, Abdul, High, Lisa, Stamler, Lynnette, Millar-Polgar, Jan, Patrick, Linda and Ahmed, Ejaz, "The effectiveness of a multimedia intervention on parents' knowledge and use of vehicle safety systems for children" *Journal of pediatric nursing*, 2008, 23: 126-139.

38 Towner, E, Dowswell, T, Mackereth, C and Jarvis, S, *What* works in preventing unintentional injuries in children and young adolescents? An updated systematic review, Newcastle, National Health Service: 2006.

39 Turner, Cathy, McClure, Rod, Nixon, Jim and Spinks, Anneliese, "Community-based programs to promote car seat restraints in children 0-16 years-a systematic review" *Accident Analysis & Prevention*, 2005, 37: 77-83.

40 Will, Kelli England and Geller, E Scott, "Increasing the safety of children's vehicle travel: from effective risk communication to behavior change" *Journal of Safety Research*, 2004, 35: 263-274.

41 Winston, Flaura K, Chen, Irene G, Smith, Rebecca and Elliott, Michael R, "Parent driver characteristics associated with suboptimal restraint of child passengers" *Traffic injury prevention*, 2006, 7: 373-380.

42 Gunn, Veronica L, Phillippi, Rhonda M and Cooper, William O, "Improvement in booster seat use in Tennessee" *Pediatrics*, 2007, 119: e131-e136.

43 Johnston, Brian D, Bennett, Elizabeth, Quan, Linda, Gonzalez-Walker, Denise, Crispin, Beth and Ebel, Beth, "Factors influencing booster seat use in a multiethnic community: lessons for program implementation" *Health promotion practice*, 2009, 10: 411-418.

44 Koppel, S, Charlton, JL and Rudin-Brown, CM, "The impact of new legislation on child restraint system (CRS) misuse and inappropriate use in Australia" *Traffic injury prevention*, 2013, 14: 387-396.

45 Miller, T.R., Zaloshnja, E. and Hendrie, D., "Cost-outcome analysis of booster seats for auto occupants aged 4 to 7 years" *Pediatrics*, 2006, 118: 1994.

46 New Zealand Government, Land Transport (Road User) Rule, in (SR 2004/427). SR 2004/427, 2004.

47 The Royal Society for the Prevention of Accidents and Think! Road Safety, The law on child car seats, http://www. childcarseats.org.uk/law/index.htm March 18 2013. 2013.

48 GOV.UK, Child car seats:the law, https://www.gov.uk/childcar-seats-the-rules/overview March 18 2013. 2013.

49 European Parliament Council, *Directive 2003/20/EC of the European Parliament and of the Council of 8 April 2003 amending Council Directive 91/671/EEC on the approximation of the laws of the Member States relating to compulsory use of safety belts in vehicles of less than 3,5 tonnes*, European Parliament Council: 2003.

50 South Australia Government, South Australia's child restraint laws, http://www.sa.gov.au/subject/ Transport,+travel+and+motoring/Road+safety/ Seatbelts+and+child+restraints/South+Australia's+child+restra int+laws March 18 2013. 2011.

51 Massachusetts, The Commonwealth of, *Chapter 90. Motor vehicles and aircraft, General Laws*, Massachusetts, USA, The Commonwealth of Massachusetts: n.d.

52 New South Wales Government Transport Roads & Maritime Services, New child restraint laws - frequently asked questions, http://www.rta.nsw.gov.au/roadsafety/children/ childrestraints/childrestraintlaws_faqs.html March 18 2013. 2012.

53 NSW Taxi Council Ltd, Frequently asked questions, http://www.nswtaxi.org.au/faq.php March 18 2013. 2013.

54 New Zealand Transport Agency, *Child Restraints. Factsheet 07.* , Wellington, New Zealand, New Zealand Transport Agency: 2012.

55 Safekids New Zealand, *Factsheet: Child motor vehicle* passenger injuries. Effectiveness of belt positioning booster seats, Auckland, New Zealand, Safekids New Zealand: 2010.

56 Commission, National Transport, *Australian Road Rules 7th Amendment Package 2007; Regulatory Impact Assessment.*, 2007.

57 Standards Australia, Standards New Zealand, *Child restraint* systems for use in motor vehicles, DR AS/NZS 1754 (Rev), DR AS/NZS 1754 (Rev), 2012.

58 Milne, Rebecca, Seatbelt horrors bring booster-seat demand, Herald on Sunday, 2008.

59 Lennon, Alexia, Siskind, Vic and Haworth, Narelle, "Rear seat safer: seating position, restraint use and injuries in children in traffic crashes in Victoria, Australia" *Accident Analysis & Prevention*, 2008, 40: 829-834.

60 Agency, New Zealand Transport, *Safe2go Technicians Manual*, 5, 2008.

61 Philadelphia, The Children's Hospital of, About Air bags, *Car Seat Safety for Kids*, 2013.



About Safekids Aotearoa

Safekids Aotearoa is the child injury prevention service of Starship Children's Health, established in the early 1990s to help reduce the high rates of preventable injury to children in New Zealand.

Our mission: To reduce the incidence and severity of unintentional injuries to children aged 0 to 14 years.

Our vision: Children in New Zealand are free to enjoy their childhood without being adversely affected by unintentional injuries.

In Partnership With

The Safekids Aotearoa Child Passenger Safety Programme was made possible thanks to funding from the Starship Foundation.



Safekids Aotearoa is also a member of Safe Kids Worldwide, a network of countries that share evidencebased programmes and information on new ways to prevent injuries to children.

The Safekids 'Safe T Sam' 148cm booster seat height chart. To request this resource email campaign@safekids.org.nz.

A Member Of





seats

save

can look out window if i're in a ooster seat

Britax

second



Booster

seats

lt's safer to wait till you're 48cm

You can

look ou

the

window if you're in a booster seat

> Safekids Aotearoa would like to thank Nga Iwi School and their wonderful students for helping us with the photography for this position paper.



Safekids Aotearoa

PO Box 26-488 Epsom, Auckland 1344 New Zealand

> Ph: +64 9 630 9955 Fx: +64 9 630 9961

www.safekids.org.nz