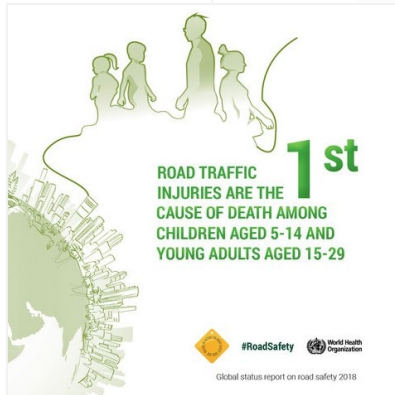


GUIDELINES FOR SAFE TRANSPORTATION OF PRIMARY SCHOOL STUDENTS

Road crashes are the leading cause of unintentional death for children in New Zealand. Child restraint use is a proven strategy for reducing death and injury in road crashes.



NEW ZEALAND STATISTICS

- › New Zealand is 18th out of 29 in the OECD per 100, 000 for children 0-14 years as car occupants (average rates) ¹
- › In 2016, there were 10 deaths & 550 children injured as a result of being passengers in a vehicle involved in a crash²
- › In 2019 there were 10 deaths
- › 310 hospitalisations, on average 26 a month as a result of being passengers in a vehicle involved in a crash²
- › Seatbelt booster seats reduce hospitalisations by 59% for 4 – 7-year-old children³

VEHICLE RESTRAINT SYSTEMS

The primary operation of a vehicle restraint 'seatbelt' is to lengthen the time over which the change in velocity occurs during a crash for the occupant. This is the sudden stop. The longer the time, the greater the chance of survival due to lower forces being felt. The webbing or belt portion provides the means of restraint and, in an impact, will elongate or stretch, absorbing energy from the occupant's forward motion.

The design of a modern diagonal lap belt is to distribute the crash forces across two of the body's strongest parts, the hips and sternum/ribs. The position of the lap portion of the belt is designed to sit in notches (sartorial notch) on the front of an adult pelvis, whilst the diagonal portion is intended to cover the breastbone area securely.

However, the vehicle seatbelt is designed to reduce the injuries and chances of occupant ejection for an adult, not a child

¹ Road Safety Annual Report 2015 © OECD/ITF 2015

² Ministry of Health -Latest information publicly released. In 2019 10 children lost their lives in vehicle related crashes

³ Dr E Segedin, Starship Hospital

CHILD PHYSIOLOGY

In crashes, children primarily suffer injuries to their neck, spinal regions and internal abdominal organs.

Child safety recommendations are based on two simple principles;

1. Vehicle Restraint Systems are designed for adults with a minimum height of 148cm
2. Children are not small adults

Until a child has a mature skeleton, the protection provided by a standard seatbelt is insufficient. The lack of skeletal development affects both the belt positioning and its inability to sustain the forces across these areas.

The hip bones do not fully develop in a child until the age of 12 to 13 years of age. Therefore, a seatbelt relies on the pointy angled area at the front of the hips to keep the belt low.

A child's hips are rounded and comparatively soft, resulting in the belt 'riding' up in a collision, even if the belt is fitted in the correct place. This movement increases the risk of injury to the internal organs in the abdominal area.⁴

The growth or development of the breastbone area in a child is more inconsistent, resulting in mature breastbone change from as early as 11 to as late as 17 years of age. This affects the ability of the diagonal portion of the vehicle restraint to spread the crash forces across this underdeveloped area.⁵

Additionally, a child's shorter torso length or sitting height can cause the diagonal portion of the vehicle restraint to dangerously cross over their neck. This shifts part of the crash forces or load across this fragile portion of the child's body.

In a harnessed child restraint, i.e. a 5 or 6-point harness, the forces exerted on the child's body are spread over a larger area, thus reducing the likelihood of injuries. The harness also reduces the twisting effect on a child's spine, a common injury sustained by children using only a vehicle seatbelt.

THE LAW

The rules for child restraint use are for one purpose – to stop children from being killed or seriously injured when travelling in vehicles. Any child's death or serious injury is a tragedy, and even more so when it can be prevented with the use of simple and widely available equipment like child restraints. The law in New Zealand is a **bare** minimum and does not meet international best practice that a child is safest until they reach a height of 148cm. This is the average height of an 11 year.⁶

The **Driver** Must; (It is the driver's responsibility by law, not the parent or caregiver)

1. Secure child in an approved child restraint until their 7th birthday
2. Secure child in an approved child restraint if one is available from their 7th until their 8th birthday
3. Ensure a child 8 to 14 years wear a seatbelt
4. A restraint must be fitted following the manufacturer's instructions

⁴ <https://www.kckidsdoc.com/kc-kids-doc/back-seat-until-13-why-your-pre-teen-should-get-the-back-seat/> Dr Natasha Burgert – Paediatrician

⁵ <https://www.kckidsdoc.com/kc-kids-doc/back-seat-until-13-why-your-pre-teen-should-get-the-back-seat/> Dr Natasha Burgert – Paediatrician

⁶ WHO Growth Charts

SEATBELT BOOSTERS

Booster seats raise the child, so your vehicle's safety belts are correctly aligned to the child's body and fit across the collarbone and thighs just as they would on an adult. In addition, high-backed boosters offer head and neck protection correctly proportioned for children and added side impact protection.

The major factor in whether a child can be safely restrained in a seatbelt booster is not just the child's height but their maturity and ability to sit upright and properly in the booster. A child that moves around and leans forward or sideways drastically reduces the ability of the booster and vehicle seatbelt to protect them.

It is recommended for a child to remain harnessed for as long as possible or until at least 6 years of age. However, several harnessed child restraints will harness most children until the age of eight years and beyond.



SEATBELT BOOSTER FIT CHECKS

1. The seat belt should be in the middle of their shoulder and away from the neck
2. The seat belt should fit snugly across the child's upper thighs & under the belt guides on both sides
3. The shoulder portion is snug across the chest
4. A half booster is really for a child older than 8 who still does not meet the 148cm recommendation but has outgrown a full backed booster.

YOUR CHILD IS READY TO COME OUT OF A SEATBELT BOOSTER WHEN THEY PASS THE 5 STEP TEST



Their back is against the vehicle seat



Their knees bend in front of the edge of the seat



The lap portion of the belt sitting low across their hips and touching their thighs, not across the stomach



The seatbelt sits across the middle of your child's shoulder and not against their neck



They can stay seated properly for the entire trip

SUMMARY

1. Child restraints are all about the height & not age
2. The international best practice is a child should ride in a child restraint until they are at least 148cm
3. Child restraints only work correctly when they are the;
 - a. Fitted correctly as per manufacturer instructions
 - b. The right size for both the child and the vehicle
 - c. The child is correctly positioned and strapped in
4. Children should remain in a harnessed restraint as long as possible
5. Attention should be drawn to whether vehicles are fitted with frontal airbags and the danger to children. Curtain airbags fitted to vehicles deploy differently, so are not an issue
6. The rear seat is the safest place for a child until at least 12 years of age
7. If a child must sit in the front seat with an airbag, they should be the oldest and the vehicle seat should be as far back as possible
8. The law is that the driver is solely responsible for the correct use of restraints and seat belts in a vehicle
9. However, for businesses, schools, and volunteer organisations, the Health & Safety Act applies.

WHO IS THE CAR SEAT DUDE?

Bruce was a trained crash analyst in the New Zealand Police with over 18 years of experience attending and investigating serious injury and fatal crashes. He instructed other police analysts in this subject in both theory and practical application of crash analysis. He is an accepted expert witness in New Zealand Courts as an independent forensic crash analyst. He has a mechanical and electrical engineering background from eight years in the Royal New Zealand Airforce. He is a NZ Certified Child Restraint Technician, Trainer & Assessor.

He brings an evidence-based, scientific/engineering perspective to the area of child restraints

For further information;

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