

FACTSHEET: CHILD QUAD BIKE INJURIES



The evidence is clear - adult sized quad bikes are potentially lethal for children and have the capacity to inflict significant harm. [1-6]

The New Zealand Transport Agency estimates that there are more than 100,000 quad bikes in New Zealand, mostly used on farms. [3]

All manufacturers of quad bikes sold in New Zealand state that children under the age of 16 years should not ride an adult sized quad bike (engine capacity exceeding 90cc). [3] However, every year around 30 children die or are hospitalised as a result of quad bike injuries, either as drivers or as passengers.

It is essential that anyone considering buying a quad bike or allowing a child to drive or ride on one understands that quad bikes are powerful machines with a high centre of gravity. The required mode of riding presents a challenge to adult riders, whereby they manoeuvre their body weight in a practice referred to as 'active riding' which requires a combination of adequate height, weight, cognitive capacity and dexterity. [7] The key factor in causing injury was the rolling or tipping of the quad bike. [7a]

For children with smaller bodies the challenges are even greater. [4, 5, 7]



Who is most at risk?

Children under the age of 16 years should not drive quad bikes, or ride on them as passengers, as they do not have the weight, the right skills, such as the ability to use active riding techniques to control the bike, nor the ability to make the right decisions about speed, terrain risk, and reaction times. [4, 5, 7, 8]

Most adult sized quad bikes are designed to carry one person and are not suitable for carrying passengers.

A study by Anson et al found that drivers under the age of 16 years are 2.5 times more likely to be injured on quad bikes than drivers aged 16–34 years, and 4.5 times more likely to be injured than drivers aged 35–54 years. The study also found that thirty percent of deaths associated with quad bike injuries occurred to those under the age of 16 years: [1]

- Of the confirmed New Zealand cases identified, each year at least 28 children aged 0-14 years will be hospitalised from a quad bike related injury. [9]
- Of all child quad bike injury hospitalisations, children in the 10-14 year age group accounted for over half (58%) of all hospitalisations (See Table 1). [9]
- Seventy per cent (100) of injuries occurred to male children (See Table 1). [9]

Hospitalisations – Patients who are admitted and stay in hospital past midnight.

Excludes: 'Day patients' who do not stay in hospital past midnight; patients readmitted to hospital for the same injury; patients seen in the emergency department and discharged without admission as an inpatient.

Table 1: Hospitalisations for quad bike-related injuries in children aged 0-14 years, by 5 year age group and gender, New Zealand, 2008-2012

Gender	Aged 00-04 years	Aged 05-09 years	Aged 10-14 years	Total
Female	7	8	27	42
Male	19	25	56	100
Total	26	33	83	142

Source: Injury Prevention Research Unit (IPRU), University of Otago.

- Overall, European children accounted for nearly two-thirds (63%) of all hospitalisations compared to other ethnic groups (see Table 2). [9]
- European children aged 10-14 years accounted for the highest number of quad bike injuries (39%), followed by Tamariki Maori aged 10-14 years (18%) and European children aged 5-9 years (16%).

Table 2: Hospitalisations for quad bike-related injuries in children aged 0-14 years, by 5 year age group and ethnicity, New Zealand, 2008-2012

Ethnicity	Aged 00-04 years	Aged 05-09 years	Aged 10-14 years	Total
Asian	*	0	*	*
European	13	22	55	90
Maori	10	11	26	47
Other	*	0	0	*
Pacific Island	*	0	*	*
Total	26	33	83	142

Source: Injury Prevention Research Unit (IPRU), University of Otago. Note: * ≤ 5

Causes & circumstances of injury

The high percentage of injuries to children in the 10-14 year age group correlates with research undertaken by Langley et al, which showed that children aged 12 – 15 years were most likely to operate quad bikes, followed by children aged 4 - 11 years. [10]

Overseas research shows that in more than half of quad bike injury cases involving children, the child was the driver of the vehicle. The most comprehensive study ever done in New Zealand on child quad bike injuries by Anson et al. (2009) also reflected international trends. The study found that in over half (53%) of child quad bike injury cases, a child was the driver. It also showed that in over a quarter (28%) of injury cases, the child was a passenger. [1] [11] change to [1,11]

There are two typical circumstances that cause quad bike injuries: firstly the quad bike collides with a fixed object; and secondly the driver loses control on hard uneven surfaces and the quad bike rolls over, throwing the driver or passenger off. [12]

Place of Injury

Child quad bike injuries account for one-third of all child workplace fatalities (including farms). [4]

Of the New Zealand cases where the environment of the injury was identified, 'farms' were the most common scene for quad bike related injuries (36%). [9] This is a difficult problem in the rural environment where mobility is essential to life.

Statistics from the Ministry of Business, Innovation and Employment show that each year on average 65 people (2009-1012) had suffered serious harm as a result of a work related quad bike injury (including farms). Of those injured, at least three were children aged 15 years and under. Although the numbers for children are small, the high number of adult injuries highlights the dangers of adult sized quad bikes. [13][14]

Others have suggested that the small number of child injuries could be attributed to education and messages about quad bike safety finally reaching parents who have either prevented their children from operating or riding as a passenger or have provided adequate protection measures around the safe use of quad bikes. [4]

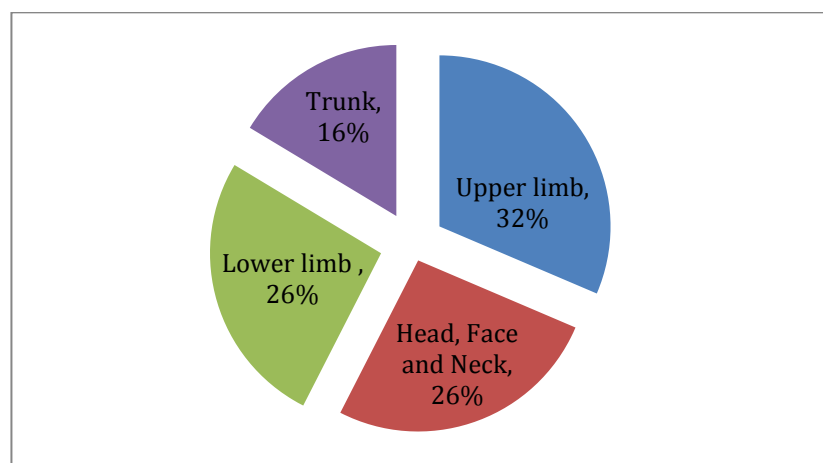
Helmet Use

A United States study of 512 children suffering from injuries related to quad bike use found that head and extremity injuries are the two most common injuries and that these are associated with long-term disability. [6]

The New Zealand Transport Agency claims that around a quarter of all injuries sustained in quad bike crashes are to the head, yet very few riders wear helmets. This is also reflected in the analysis of child quad bike hospitalisation statistics (26%) for New Zealand (see Figure 1).

According to the New Zealand Transport Agency wearing an approved helmet is deemed the best way to prevent serious head injury. [15]

Figure 1: Hospitalisations for quad bike-related injuries in children aged 0-14 years, by major body region injured, New Zealand, 2005-2009 .



Source: The Ministry of Health. Note: This data does not include emergency department, general practitioner or private hospital visits. Analysed by Safekids Aotearoa.

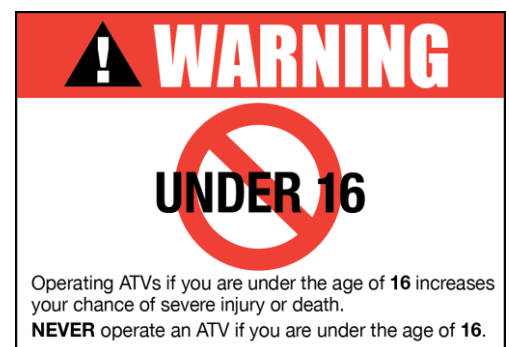
Safety regulations and warning information

Quad bikes are defined as vehicles designed for off-road use, with three or more wheels, an engine capacity exceeding 50cc and a gross weight of less than 1,000 kilograms. [15] Adult sized quad bikes are often defined by manufacturers as having an engine capacity exceeding 90cc and the weight of these vehicles range from about 180kgs to 400kgs. [7]

All new quad bikes sold in New Zealand have prominent warning labels attached where the manufacturers of quad bikes state that children under the age of 16 years should not ride an adult sized quad bike.

Manufacturers also warn riders never to carry passengers. [3, 15] According to the New Zealand Guidelines for the Safe Use of Quad Bikes:

“The hazard is the passenger’s added weight and movement on a quad bike designed for only one person. The majority of quad bike seats are not built for two, even though they may appear that way. The long seat allows the rider to move their weight forward or backwards when going up or down slopes. Carrying passengers increases the bike’s instability by raising the centre of gravity, and can restrict the rider from using active riding techniques. For these reasons, manufacturers prohibit the carriage of passengers on bikes that are designed for one person, and this is clearly marked on the bike itself with stickers”. [3]



Quad bike warning label.

A study in the United States found that dealers of quad bikes do review manufacturer recommendations and safety regulations with consumers. However, there are a growing number of quad bikes which are not being purchased through recognised dealers. The study concluded that there needs to be a shift in safety and educational focus to cater for this market. [16]

On and off road licensing

Quad bikes not used on a public road do not have to be registered or licensed. [15] Riders of quad bikes being used on a public road must by law wear an approved motorcycle helmet. There is no law requiring quad bike riders to wear helmets when riding off-road, although research and information from a number of government agencies highly recommend that a helmet be worn at all times. [2, 3, 15]

Emerging evidence suggests that crush protection systems may reduce crush injuries and fatalities. [17, 18]

International context

Overseas data has shown that children are more likely to be killed and injured than adults riding adult sized quad bikes [19, 20] and are also likely to be more severely injured. [21, 22] In the United States, as more quad bikes are sold and become larger in size, the number of children and adults being injured or killed continues to rise. [20]

Further research from the United States where quad bikes have been in use for much longer than in New Zealand shows that between 1997 (2.3 per 100,000) and 2006 (5.5 per 100,000), overall quad bike injury hospitalisation rates had risen by 139%.

Policies & Regulations

There is a growing trend to re-examine current policies and regulations around quad bike use to minimize the alarming rate of child quad bike injury hospitalisations. [23]

Australia has recently experienced high hospitalisation trends which has resulted in the current government (July 2014) considering an age ban for anyone under the age of 16 from operating or riding an adult sized quad bike. [24]

Internationally, legislation banning the use of quad bikes by children has had varied effectiveness on reducing injury, depending on legislative content and level of enforcement. [25, 26] Legislation is most effective when well enforced and when coupled with educational interventions. [27] An example of effective legislation is the car restraint rule.

Recommendations:

Safekids Aotearoa recommends:

- **That legislation be developed to prohibit children under the age of 16 years from operating an adult sized quad bike (engine capacity > 90cc).**
- **That children are prohibited from being passengers on all quad bikes which have been designed for one person only.**
- **That there must be greater emphasis on alternative rural transportation as a solution.**
- **The phasing out of the existing vehicles to the next generation of vehicle with greater safety features.**
- **Further evidence of the effectiveness of quad bike safety training and ongoing education.**

Some Good Practice Interventions: Quad Bike Safety

	Effective interventions	Intervention examples
Enforcement	<p>Legislation banning the use of quad bikes by children has had varied effectiveness on reducing injury, depending on legislative content and level of enforcement. [25, 26]</p>	<p>In the absence of legislation, several New Zealand factsheets and guidelines are available that outline why children aged less than 16 years should not ride quad bikes. [2, 15, 29] These factsheets and guidelines also state that helmets should be used if riding a quad bike.</p> <p>All new adult sized quad bikes sold in New Zealand carry warning labels from the manufacturer that children aged less than 16 years should not ride an adult sized quad bike. [15, 29] However, warning labels on their own are likely to be ineffective in preventing child use and injury. [30]</p> <p>Enforcement may be difficult in rural areas of New Zealand. [1]</p> <p>The American Academy of Paediatrics recommends prohibition of quad bike use for children aged less than 16 years. [31]</p> <p>The Australian government intends to ban children aged less than 16 years from riding adult sized quad bikes. [24]</p> <p>Emerging evidence suggests that crush protection systems may reduce crush injuries and fatalities. [17, 18]</p> <p>Legislation is most effective when well enforced and when coupled with educational interventions. [27]</p>
Encouragement, Enhanced Awareness and Education	<p>Community-based education programmes appear promising in improving knowledge of quad bikes risks, and have potential to reduce injury. [26, 32-35]</p>	<p>Evaluation of a New Zealand interactive safety programme for primary school students ‘Marlborough Clued Up Kids’ found improved child understanding of the risks of quad bike use, and knowledge that quad bikes should not be ridden until the age of 16 years. [36]</p> <p>New Zealand research recommends rural schools implement farm safety education programmes emphasising quad bike safety. [28]</p> <p>Involving children in the design of safety education interventions is key to success. Multi-agency collaboration and adoption of a broader community approach increases the effectiveness of safety education. [33]</p>

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