

Seat belts



- Failure to wear a seat belt is one of the leading causes of road crash death.
- Unrestrained drivers and passengers are 8 times more likely to be killed in a road crash.¹
- The widespread use of seatbelts following legislation in the 1970s is regarded as having had a large and significant impact on the road toll, helping reduce this from over 3,382 deaths in 1968 to around 2,887 deaths per year 20 years later.²

State of the Road A Fact Sheet of the Centre for Accident Research & Road Safety - Queensland (CARRS-Q)

THE FACTS

- Wearing a seat belt does not prevent a crash, but does affect injury. Wearing a properly adjusted seat belt reduces the risk of fatal or serious injury by up to 50%.³
- Head injury is the most common serious injury in a crash, and the most likely to result in death.
- In Australia, approximately 20% of drivers and passengers killed in crashes (where seat belt use is known) are not wearing seat belts.⁴ On average around 150 people die nationally per year from this cause.
- In Queensland:
 - In 2013, 35 fatalities and 155 hospitalised casualties were known to have been unrestrained.⁵
 - In fatal crashes in 2010 where restraint use could be determined, approximately 28% of those who were killed were not restrained.⁶
 - Analysis of 2003 data showed an alarming number of repeat offenders (reoffending within 12 months of their first offence) for non-seat belt wearing (15.8%).⁷
 - Approximately 30% of all infringements issued in 2003 related to unrestrained passengers.⁷
- Unbelted passengers can potentially kill other vehicle occupants on impact. Studies show that drivers and front-seat passengers are at a 5 times greater risk of dying in a car crash if the rear passengers are not wearing seat belts. This is particularly the case in head-on collisions.

The United States National Highway Administration reports that 3 out of every 5 people killed in vehicle crashes in the US - where seatbelt use is much lower than in Australia - would have survived their injuries had they been strapped in.⁸

Seat belts save lives. Wearing a properly adjusted seat belt reduces the risk of fatal or serious injury by up to 50%.³

Who is most at risk

- Seat belt wearing surveys show that the wearing rates during normal driving are high with over 95% of drivers and front seat passengers using them. Back seat passengers have lower wearing rates (around 90%). Despite this, neglect for seat belts is still claiming lives.⁴
- Who is most at risk:
 - Over the past 5 years, roughly twice as many males as females have been killed in road crashes due to their failure to wear a seat belt.⁹
 - Males aged 17 to 39 years make up the majority of fatalities.^{3,10}
 - Rural drivers.
 - A large number of people (50%) involved in fatal crashes where a seat belt is not worn have been drinking. Alcohol consumption affects a person's ability to accurately judge risks and their consequences.⁴

- Market research conducted in 2007⁴ showed the most common reasons non-wearers gave for not wearing seat belts all of the time were:
 - Forget to put it on (34%). Wearing a seat belt is predominantly a habitual behaviour.¹⁰
 - Only travelling a short distance (22%).
 - Can't be bothered (10%).
- Research suggests that whilst peer influence may be a significant factor on the seat belt use behaviour of younger rural males, the consequences of personal serious injury may be more relevant to those in older age brackets.¹⁰

Why seat belts are effective

- Stopping suddenly imposes a great deal of force on all objects in the vehicle. A seat belt distributes that force to some of the strongest parts of the human anatomy - the chest and pelvis. Crash survivors will often have seat belt "burns" and bruising, or in serious cases, internal injuries. However without a seat belt, the occupant (and his/her internal organs) would continue to move in the direction of the impact until brought to a stop by things like the windscreen, steering wheel, dashboard or front seat, with a high probability of being killed instantly.⁸
- Even at low speed, not wearing a seat belt can cause serious injury and death. A crash at 40km/h has the same force as falling from a two storey building onto concrete.¹⁰
- Seat belts also perform other safety roles. Unbuckled occupants become missiles that cause injury to other occupants should they collide with them.



Children aged under 7 years must use a child restraint suitable for their age. A child in an ill-fitting restraint is exposed to a greater risk of injury.

Airbags do not replace seat belts. Seat belts hold the occupant in the correct position to maximise airbag effectiveness and are intended to supplement the seat belt.

Queensland legislation¹¹

- Everyone who travels in a passenger vehicle in Queensland is required to wear a restraint unless he or she has an official exemption (e.g. on medical grounds - form must be completed. See Transport and Main Roads, Queensland website <http://www.tmr.qld.gov.au>).
- The driver of a vehicle is responsible for the proper restraint of all passengers under the age of 16. Children aged under 7 years must use a child restraint suitable for their age (see Transport and Main Roads, Queensland website <http://www.tmr.qld.gov.au/Safety/Driver-guide/Child-restraints.aspx> for further details. Different types of restraints are made to suit children of different ages and these provide better protection to a child who is smaller than an adult, than seat belts used alone (as these are designed to fit an adult-sized body). Once a child grows out of the booster seat (usually somewhere between ages 7-10 years), a seat belt can be used. New designs of child restraints are now available to suit older, taller children. It is safer for a child to be in a child restraint until he/she physically grows out of it, rather than moving the child to a seatbelt alone as soon as he/she turns 7 years old. Recently, the National Health and Medical Research Council endorsed national guidelines for children's restraints. A parent brochure can be downloaded from <http://www.neura.edu.au/crs-guidelines> (under 'Information for Parents and Carers')
- It is safer for children to be seated in the rear seat of a vehicle with a properly adjusted restraint. The law requires

children under 4 years to be seated in the rear seat, and children 4-7 years may only be seated in the front if the rear seat is already filled with other younger children.

- A bus driver is not responsible for ensuring passengers on the bus are wearing seat belts.
- A person driving a taxi is not required to wear a seatbelt while there are passengers in the taxi.

Penalties for failing to wear a seat belt

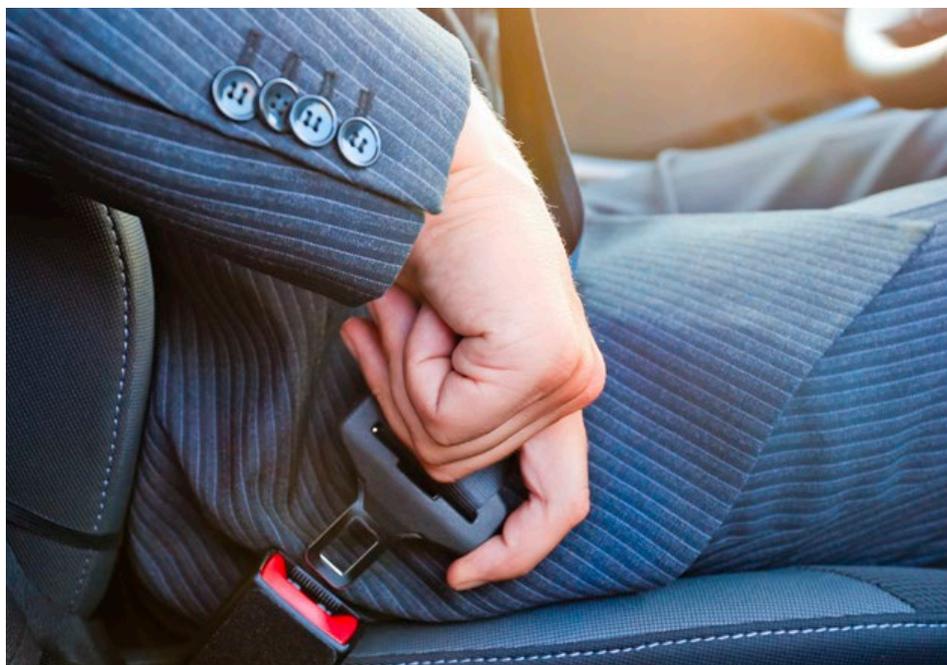
- Queensland penalties for failing to wear a seat belt (for motorists and passengers) are in effect.
- Driver failure to wear a seat belt when driving a vehicle fitted with one = 3 demerit points + \$365 fine.
- If you have a repeat offence within 12 months, the fine and demerit points are doubled.
- Passenger of at least 16 years failing to wear a seat belt in a vehicle fitted with one (fine for the passenger) = 3 demerit points + \$365 fine.
- Driver of a vehicle failing to ensure a passenger under 16 years wears an approved restraint or seat belt (without an exemption) = 3 demerit points + \$365 fine for each unrestrained passenger.
- For further information on the Queensland road rules and current traffic offence penalties, see Transport and Main Roads, Queensland website <http://www.tmr.qld.gov.au/Licensing/Licence-demerit-points.spx>

Seat belts distribute a crash's force to some of the strongest parts of the human anatomy - the chest and pelvis.

TIPS FOR STAYING SAFE

- Wear your seat belt at all times when travelling in a vehicle. It doesn't matter if you are only travelling a few kilometres - most road crashes happen close to home because this is where you drive most frequently.
- Ensure all occupants are safely restrained before moving.
- Seat belts and restraints will only work with maximum effectiveness if correctly fitted:
 - They should be Australian Standards approved (look for the AS/NZS sticker), the correct model for the age and size of the passenger and correctly installed. Research indicates that children are being moved to larger restraints or to using adult seat belts alone prematurely when this is not appropriate for their size.^{13,14} A child in an ill-fitting restraint is exposed to a greater risk of injury.¹⁵ Even babies must be in a restraint so never allow babies or children to travel on someone's lap or in someone's arms. In a sudden stop, the baby is likely to be flung forward into the windscreen or onto the road.
 - Wherever possible, lap and shoulder belts should be available in all seating positions in the vehicle.
 - The belt should fit snugly (not too tight or loose), positioned to pass over the hips and shoulder. The belt should not touch the wearer's head or neck and should be adjusted so that the buckle is at or below the hip. If a child is wearing a seat belt, it should fit this way - if not, a child restraint is needed.
 - Pregnant women must wear the seat belt with the lap part sitting over the thighs, across the pelvis and below the unborn child, and the sash above the stomach and between the breasts.
 - The belt should lie flat, not twisted.
 - It should be in good working order.
- Regularly inspect your seat belts to ensure they are safe and serviceable. A visual check and check of the belt's operation is all that is required. They should be:¹²
 - Clean (dirt may damage internal webbing fibres. Never use bleach or solvents to clean them. Warm soapy water is best.)
 - The webbing should not be frayed, damaged, nor sun-bleached.

- The webbing should be securely attached to its end fittings and anchorage points securely fastened and free from corrosion and damage.
- The belt should lie flat its entire length. Warping indicates that the belt has been stretched (often a sign that it has been worn in a crash or severe stop). A warped belt should be replaced immediately.
- The retracting mechanism should be tested by grasping the webbing and pulling it out suddenly. The belt should lock and then freely retract when released. When moved slowly the belt should pull out and retract fully without sticking.
- Should any of these danger signs be present, full assembly replacement is essential. Never buy used belts from a wrecking yard, as their history is completely unknown.
- The purchase of safer vehicles is encouraged - vehicles with an ANCAP safety rating of 4 or 5 stars and an advanced seat belt reminder system is recommended. Many new cars now provide seat belts with features that improve their effectiveness by overcoming belt slack, stretch and reel-out. Consider these seat belt features when next purchasing a car:
 - Pre-tensioners that pull the belt tight in a crash to remove excess slack before the occupant moves.
 - Webbing clamps that prevent more of the belt reeling out as it tightens on the spool.
 - Systems including load limiters (only in cars with airbags) that allow the belt to unreel in a controlled way so that the pressure on the occupant's chest area is reduced.



- Evaluating the effectiveness of the announcement and enforcement of the new child restraint legislation in regional areas. This project focussed on examining whether parents in regional areas are aware of the changes to the legislation and what impact the announcement as well as enforcement had on how they restrained their children. (<http://eprints.qut.edu.au/56087/>)
- Child seating positions in passenger vehicles¹⁵ - this project was concerned with examining where drivers seat children under 12 years in cars and other passenger vehicles. The rear seat has been shown to be safer for all passengers, but particularly for children aged 5-9 years. This is because children of this age are too big to use belt-positioning booster seats and may still be too small to fit into adult seat belts fully, making them especially vulnerable to injury in the event of a crash.
- The first study of its kind, the \$1.9million Rural and Remote Road Safety Study was undertaken by CARRS-Q and James Cook University's Rural Health Research Unit. Completed in 2008, the whole-of-government supported study examined the reasons behind the high prevalence of crashes in rural and remote Queensland and aimed to reduce their economic, medical and social costs. (<https://eprints.qut.edu.au/6910/>)
- The research and development of a brief intervention trial to reduce rural and remote road crashes arising from the "five fatal" lifestyle behaviours and attitudes (including seat belts). (<https://eprints.qut.edu.au/30372/>)
- Indigenous road safety literature review and licensing project - failure to wear a seat belt is one of the leading factors contributing to Indigenous road fatalities.

- Queensland School Transport Safety Taskforce - CARRS-Q was integrally involved in the taskforce and preparation of a final recommendations and analysis report looking at international, national and interstate policies and practices relating to school transport, including the use of seat belts on school buses.

FUTURE DIRECTIONS

The National Road Safety Strategy¹⁶ recognises the challenge of increasing seat belt use and is focussed on:

- All vehicle occupants being restrained.
- Encouraging safe, consistent and compliant behaviour through well-informed and educated road users.
- Improving safety regulations for new vehicles in relation to seat belt reminders (e.g. by mandating advanced seatbelt reminders for the driver's position).
- Exploring the greater use of intelligent transport solutions such as seat belt reminder systems for all seating positions in vehicles or seat belt interlock systems.
- Continued enforcement and education measures to target seatbelt wearing.
- Continued support for The Australasian New Car Assessment Program (ANCAP). The ANCAP Program gives consumers consistent information on the level of occupant protection provided by vehicles.
- Increased emphasis and training on correct fitting and use of child restraints.

When purchasing a car, consider its seat belt safety features and ensure the belts are in good operating condition.

CARRS-Q'S WORK IN THIS AREA

- Evaluation of the 2010 child passenger restraint legislation in Queensland - how effective is it and what barriers do parents identify for compliance? This project was conducted in 4 locations in Queensland and consisted of road side observations of child restraint wearing rates and a survey of parental knowledge, beliefs and behaviours in relation to restraining their children. (<http://eprints.qut.edu.au/48812/> and <http://eprints.qut.edu.au/53450/>)



Failure to wear a seat belt is one of the leading causes of road fatality and serious injury. **Buckle up! Your and your family's lives depend on it.**

REFERENCES

1. Department of Transport and Main Roads (2015). Figures are based on the crashes validated in the Queensland Road Crash Information System from 1 January 2007 –to 31 December 2011. Report reference number: rqc19729. Data extracted 23/02/15.
2. Department of Transport and Regional Services, Australian Transport Safety Bureau (2013). *Road crash data and rates Australian States and Territories 1925 to 2002*, pages 1-2. https://infrastructure.gov.au/roads/safety/publications/2003/Stats_Aust_9.aspx. Accessed 08/07/15.
3. Elvik, R. & Vaa, T. (Eds). (2004). *The handbook of road safety measures*. Elsevier.
4. Transport Accident Commission. (2009). *Seat belt safety*. <http://tac.vic.gov.au/road-safety/safe-driving/seatbelt-safety>
5. Department of Transport and Main Roads (2015). *Queensland road crash weekly report*, Report No: 887. Data extracted: 02/02/15. Pp 3 & 7. <http://www.tmr.qld.gov.au/Safety/Transport-and-road-statistics/Road-safety-statistics.aspx>. Accessed 06/02/15.
6. Transport and Main Roads, Queensland. (2011). *2010 Year in review road crash report*. <http://www.tmr.qld.gov.au/Safety/Transport-and-road-statistics/Road-safety-statistics.aspx>
7. Transport and Main Roads, Queensland. (2004). *Road traffic crashes in Queensland, 2003*. <http://www.tmr.qld.gov.au/Safety/Transport-and-road-statistics/Road-safety-statistics.aspx>
8. Australian Academy of Science. (2009). *Nova Science in the News: Death defying designs for car safety*. <http://www.science.org.au/nova/057/057key.htm>
9. Transport and Main Roads, Queensland. (2013). *Better buckle up campaign fact sheet 2013*. <http://www.tmr.qld.gov.au/Safety/Safety-campaigns.aspx>
10. Office of Road Safety. (2012). *Seat belts*. Western Australia. <http://ors.wa.gov.au/road-safety-topics/road-issues/seat-belts>
11. Queensland Parliament. (2013). *Transport Operations (Road Use Management Road Rules) Regulation 2009*. <https://www.legislation.qld.gov.au/LEGISLTN/CURRENT/T/TrantOpRURR09.pdf>
12. RACQ. (2009). *Seat belts*. http://www.racq.com.au/motoring/cars/safer_cars/safety_fact_sheets/seatbelts
13. Lennon, A. (2005). Where do children sit in Australian passenger vehicles? Results of an observational study. In *Australasian Road Safety Research, Policing and Education Conference, 25-27 November 2005*, Wellington NZ. (<http://eprints.qut.edu.au/9765/>)
14. Lennon, A. (2012). A cross sectional observational study of child restraint use in Queensland following changes in legislation. *Journal of the Australasian College of Road Safety*, 23(2), pp. 45-53. (<http://eprints.qut.edu.au/53450/>)
15. Lennon, A., Siskind, V., & Haworth, N. (2008) Rear seat safer: seating position, restraint use and injuries in children in traffic crashes in Victoria, Australia. *Accident Analysis & Prevention*, 40(2), pp. 829-834. (<http://eprints.qut.edu.au/11217/>)
16. Australian Transport Council, *National Road Safety Strategy 2011-2020*. <http://www.atcouncil.gov.au/documents/atcnrss.aspx> (<http://eprints.qut.edu.au/57761/>)

STATE OF THE ROAD is CARRS-Q's series of Fact Sheets on a range of road safety and injury prevention issues. They are provided as a community service and feature information drawn from CARRS-Q's research and external sources. See the reference list for content authors.

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