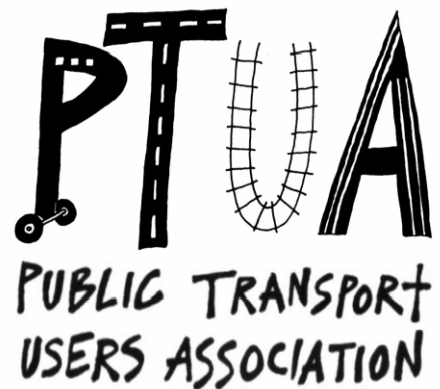


National Road Safety Strategy 2011-2020

Submission in response to Consultation Draft
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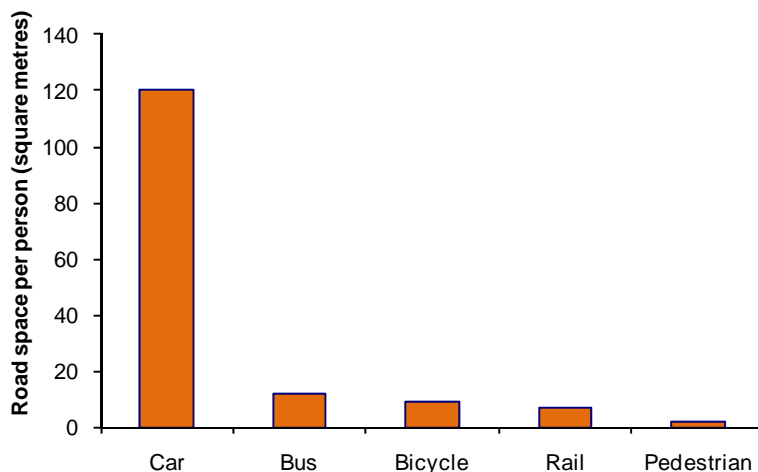
1 Introduction

The Public Transport Users Association (PTUA) is committed to a safe transport system and welcomes the opportunity to contribute to the *National Road Safety Strategy 2011-2020*. Public transport is typically safer than private transport (see section 3.1.1), hence modeshift from private cars to public transport is a logical component of a 'safe system' and must be a key tool in reducing the road toll. Such modeshift should be a central objective of transport policy at Commonwealth, state and local government levels.

Active transport (i.e. walking and cycling) is also an integral component of most public transport journeys, such as riding from home to the railway station or walking from the bus stop to the workplace. Active transport must not only be made safe, but also made appealing to fully realise the potential of public transport in reducing road trauma, congestion and pollution. Along with the enforcement of safe behaviour by all road users, greater priority and provision for pedestrians and cyclists in the built environment will be needed to reduce their over-representation in road trauma statistics.

As well as desirable, significant modeshift from private cars to public and active transport is eminently achievable. Less space is required for active and public transport journeys than is taken up by car journeys, allowing modeshift to be easily accommodated within the equivalent of the current transport infrastructure footprint (see Figure 1.1).

Figure 1.1: Road space requirements per person by mode of transport

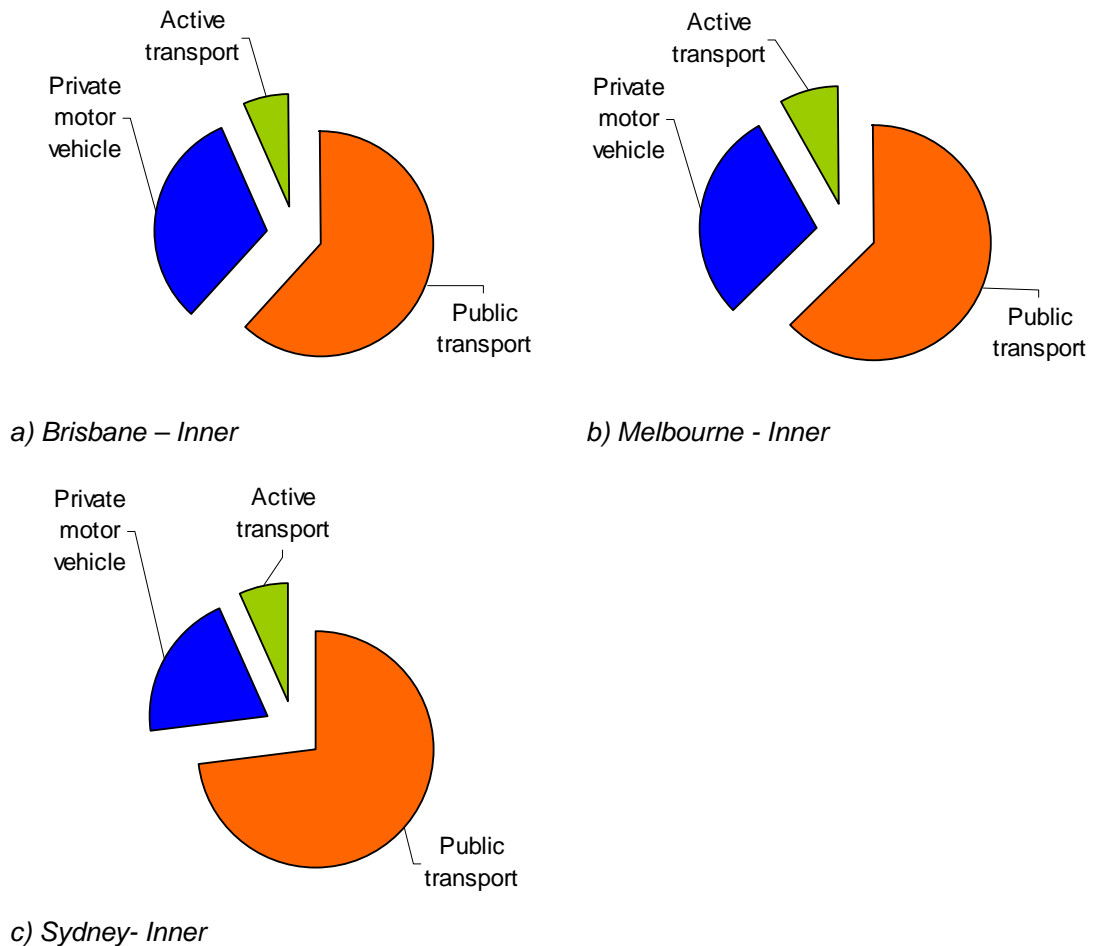


Source: Teufel 1989

Together with active transport, public transport infrastructure also carries the majority of journeys into the busiest parts of our largest cities, demonstrating substantial people-moving capacity (see Figure 1.2). This capacity is often under-utilised off-peak when the majority of road fatalities occur - and even during peak times for counter-peak journeys - providing substantial scope for patronage growth if service levels and integration are improved.

Without action to increase public transport and rail freight modeshare, any road safety strategy will fall short of a genuinely safe system approach.

Figure 1.2: Method of Journey to Work by Place of Employment in 2006 (Statistical Local Area)



The road safety agenda in Australia is also muted by the commercial and political clout of the car lobby. This is reflected principally in softly-softly enforcement measures and weak provisions in car design that relate to road user safety. 1,895 persons died on Victorian roads alone in the six year period 2005-2010. It is difficult to imagine such an outcome being tolerated in other areas of activity where an effective public policy response is required.

If federal state and territory governments exhibited even a modicum of the fortitude required to reduce Australia's poor road trauma record substantial inroads would be made immediately. The costs in human misery and monetary terms currently on display each year would be reduced accordingly.

The motor car is heavily advertised as a fashion item and one that purportedly achieves significant individual goals. However, under current circumstances being on a road is about the riskiest thing that most people in Australia do on a daily basis. Regrettably, this is not reflected in countervailing messages and program activity by the agencies responsible for road safety to the degree necessary to reduce the current unsatisfactory level of road trauma.

It is likely that the popular media and vehicle sales promotion of car driving in Australia as a highly individualistic and competitive activity has negative effects for road safety. The reality is for the most part drivers use shared road space which, for its optimum use and the maximisation of user benefits, calls for a high degree of co-operative behaviour.

However, there is too little evidence that a co-operative ethos amongst road users, and especially drivers, is promoted by Australian road safety agencies. There is also insufficient official attention paid to the deleterious safety effects of high powered vehicles and the subliminal industry-generated messages which encourage fast and reckless driving. This is notwithstanding the presence of a voluntary industry advertising code which purports to eschew the promotion of unsafe products and unsafe road user behaviour.

2 Risk Identification and Analysis

2.1 The challenge

About 1,500 people are killed and over 30,000 are hospitalised each year due to crashes on Australian roads (Henley & Harrison 2009). Many of these injuries leave life-long physical and mental scars such as spinal cord injuries or other permanent impairments. The social costs of these crashes - including medical costs, lost productivity, pain and suffering - are estimated to total about \$18 billion per annum, including \$4 billion for fatal crashes, \$10 billion for non-fatal crashes and \$4 billion of property damage (BITRE 2009a).

Although the scale of this carnage is still too large, many lives have been saved over the years through measures such as the introduction of mandatory seat belt rules and other vehicle safety standards, heavy vehicle speed limiters, enforcement measures including random breath testing and use of speed cameras.

Recent tragedies on the road highlight the need for a tougher approach to road safety. High-risk behaviour continues to put lives at risk and impose high human and financial costs on those left behind. Motor vehicle travel remains one of the riskiest activities undertaken on a daily basis, with vehicle crashes the leading cause of death among 15-24 year olds in Australia (ABS 2010).

2.2 Major causes of road trauma

Driver behaviour remains a key cause of road trauma in Australia, with many crashes being at least partly the fault of people who simply should not have been behind the wheel. In the region of 30 per cent of drivers killed on Victoria's roads each year are over the legal blood alcohol limit (ATC 2010, p.8). About 20 per cent of fatal crashes involve driver fatigue. Many recent tragedies have also been blamed on excessive speed or dangerous driving (AAP 2010a; AAP 2010b; Drummond 2010). This culture of dangerous driving must be a prime target of any serious attempt to cut the road toll.

Crashes at intersections are also a significant cause of road trauma (ATC 2010, p.7), highlighting the importance of compliance with traffic signals. The rising number of crashes at major outer metropolitan intersections indicates that these should be a priority for enforcement activity.

Although secondary to driver behaviour, there are also opportunities to provide wider margin for error on roads. The absence of road shoulders or edge linemarking are contributing factors in many rural crashes where the driver loses control after one or more wheels stray from the sealed road surface (Baldock *et al* 2008). Poor lanemarking can also be a factor in head-on crashes.

2.2.1 Enabling more evidence-based policy

Eleven OECD countries have road fatality rates lower than in Australia and there is significant disparity between Australian states and territories (ATC 2010, p.2). It is accepted that benchmarking or other comparisons can never be perfect but it is likely that there are lessons to be learned from understanding how other countries have reduced fatality rates faster than Australia in recent years.

2.2.1.1 Recommendation

It is recommended that international and inter-state and territory comparisons are made in an attempt to understand what good practices can be adopted in Australia.

3 Getting to the root of the problem

Road transport is inherently risky, so best-practice risk management concepts can be used to ensure the most effective safety measures are identified and taken.

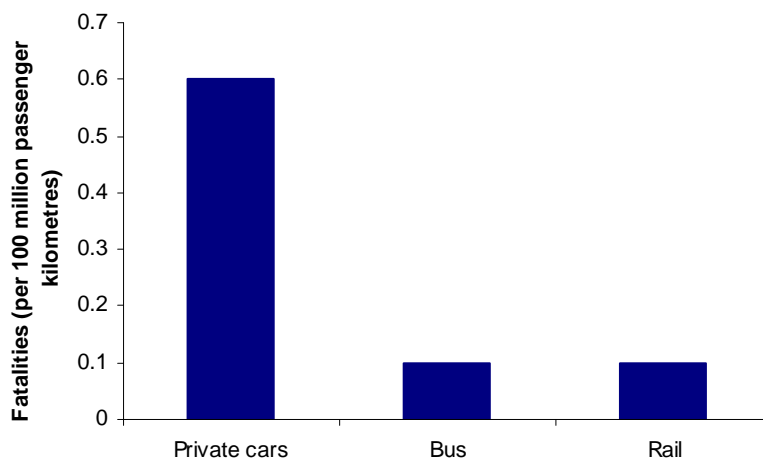
The international standard for risk management (ISO 31000) outlines a methodology for risk treatment. This paper discusses how this methodology could be applied to the *National Road Safety Strategy 2011-2020* and to road safety more generally.

3.1 Avoidance of the risk

3.1.1 Modeshift to public transport

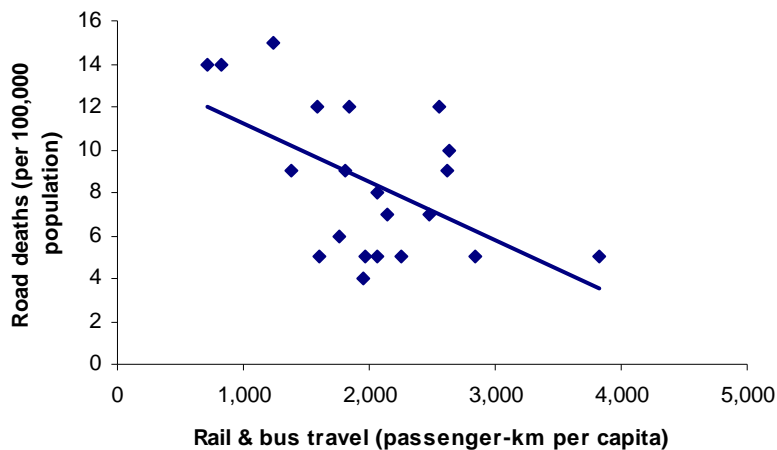
The surest way to minimise a risk is to avoid exposure to the risk. For good reason, the *National Road Safety Strategy 2001-2010* includes the encouragement of alternatives to motor vehicle use as a strategic objective. Public transport is many times safer than private transport, and traffic fatality rates tend to be much lower in countries where public transport is used for a large share of journeys (Litman 2010e, pp.5-9). Telecommuting and video-conferencing can be even safer.

Figure 3.1: Risk of fatality by transport mode



Source: Australian Transport Safety Bureau

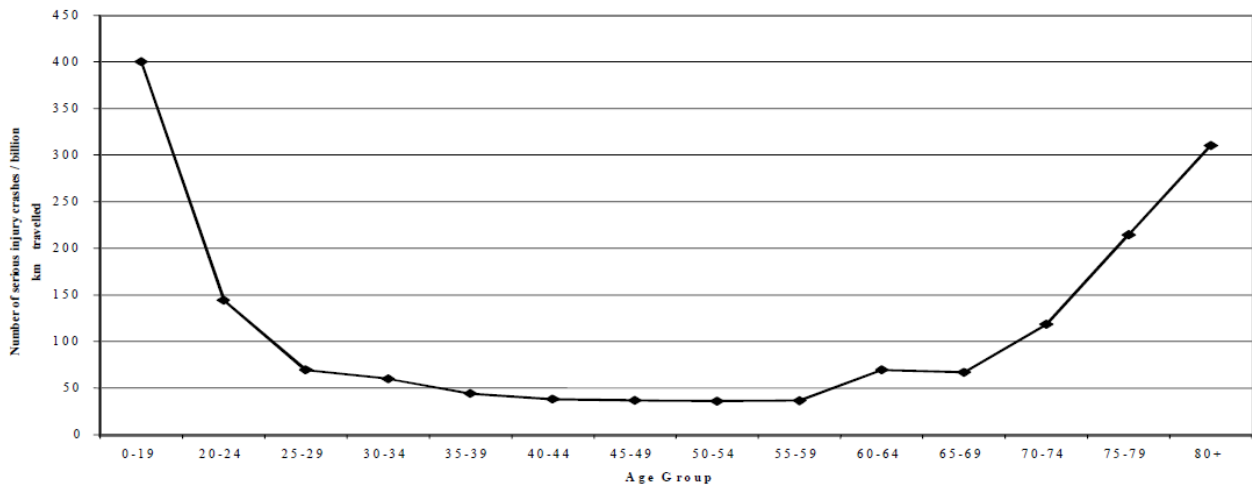
Figure 3.2: Road deaths and public transport use in OECD countries



Source: OECD in Figures. Note: Countries that rely on public transport for a greater share of their mobility needs tend to suffer from fewer traffic fatalities.

Public transport offers mobility for older people whose driving skills and confidence are declining (see Figure 3.3). This option will become increasingly important as the population ages and more people look for alternatives to driving. Public transport also offers an alternative to driving for people suffering from fatigue or who wish to enjoy a few drinks out with friends.

Figure 3.3: Age of driver and serious injury crashes per distance travelled, Australia, 1996



Source: Fildes et al. 2001 cited in Langford 2006

Clearly public transport will only be an option in these cases if it is available. This means that adequate services should be available outside of peak hours such as evenings and early mornings when fatigue is often at its worst and during the day when retired people may wish to travel.

Many areas of our major cities are without adequate public transport and the situation is worse in regional centres. New railway lines, bus routes and tram routes are needed.

For example, in Melbourne:

- New railway lines to Tullamarine Airport, Doncaster and Rowville have been promoted by the new state coalition government. New lines need funding and the political will to build them.
- Buses could provide good public transport in the many areas not served by trains or trams, especially in outer suburbs and regional centres.
- Tram route extensions are needed to fix missing links in the network and serve activity centres built after construction of tram lines ceased. Examples include routes to Chadstone shopping centre, Knox City and Doncaster.
- Off-peak train services and most bus services in Melbourne are not sufficiently frequent to provide a good service and are not operated at all on weekends on some routes. Service frequencies should be such that, every day, there is no necessity for people to consult a timetable; rather they should be able just go to the station or tram or bus stop confident that a service will be along soon. The PTUA advocates ten minute frequencies on all major routes, every day.

Trains, buses and trams that connect with one another create a much more extensive and useful public transport network than is possible by any one mode or route alone. Melbourne is notorious for poor connections between its transport modes (PTUA 2009a, pp.11-12; PTUA 2010b), resulting in the new coalition government's promise to implement a public transport coordinating body. Such coordination is recommended throughout Australia.

Regionally in Victoria, more frequent inter-regional public transport services are also needed. The success of the Victorian Regional Fast Rail (RFR) services, on which patronage continues to grow very strongly, necessitating more carriages being built, illustrates the impact that good services can have in shifting people from car to public transport. These services are quick and quite frequent but improved frequencies are inhibited by single track lines to Ballarat, Bendigo and Traralgon. Capacity on these lines needs to be enhanced by duplication where appropriate.

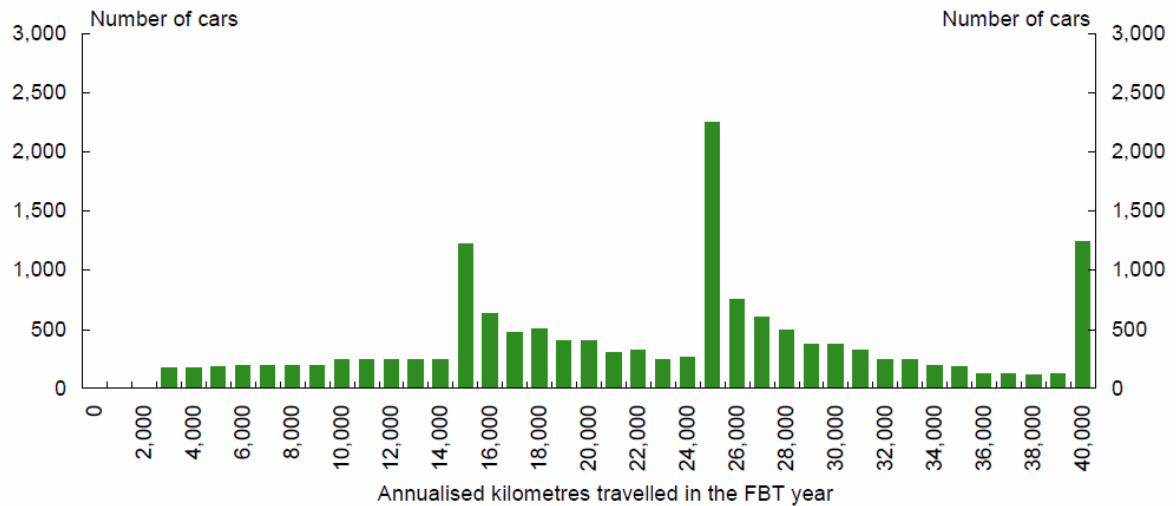
Train services to other regional Victorian centres off the RFR network are very poor, for example, only three per day to Warrnambool and Shepparton. These service frequencies need improving significantly, which not only requires more carriages but also more passing loops.

Travelling interstate to and from Victoria is even worse, with only two trains per day to Sydney and, more importantly, intermediate regional centres and three per week to Adelaide and intermediate regional centres. Travel times on these services are also slow. Straightening the line and upgrading the track for faster running (benefiting both passenger and freight traffic) would enable faster, more frequent services to be operated and encourage long distance travellers – who are often at greatest risk of fatigue - to use public transport.

Government policies which encourage the purchase and use of motor vehicles distort travel decisions and increase exposure to the risk of road trauma. Among the worst examples of these is the statutory method for valuing motor vehicle fringe benefits. This method grants larger tax concessions for company cars the further the vehicle is driven each year. In contrast to most tax

deductions, vehicle use for non-business purposes or for travel of a private or domestic nature is counted as part of the annual distance travelled. This creates an incentive to drive as much as possible instead of walking, cycling or using public transport, and is demonstrated by the number of vehicles that are driven beyond the various statutory formula thresholds (see Figure 3.4).

Figure 3.4: Number of vehicles using statutory method by kilometres travelled



Source: Henry Review 2009

The direct cost to government of the statutory method concession is rapidly growing beyond \$1 billion per annum (Treasury 2011, p.139), which does not count the costs of additional carbon emissions, congestion and business motor vehicle expenses resulting from the statutory incentive in favour of excessive driving. While there may be a case for offering a simple alternative to the cost basis, such an alternative should neither encourage additional driving nor result in such large tax expenditure. As recommended by numerous reports, inquiries and submissions, it is now time for the statutory method to be abolished in its current form. Any replacement method should encourage sustainable travel decisions and result in negligible tax expenditure. The savings from abolition of subsidies to the purchase and use of motor vehicles should be directed to improving transport alternatives that enable reduced exposure to the risk of road trauma.

3.1.1.1 Recommendations

Increasing public transport's share of passenger transport will improve road safety by reducing the number of cars on the road which transfers the transport task from an inherently more risky to a less risky mode of transport.

The following initiatives are recommended:

- Expanding public transport networks;
- More frequent public transport services;
- Better coordination of public transport;

- Abolish the statutory method for valuing motor vehicle fringe benefits and direct savings to public transport and active transport infrastructure.

3.1.2 Safe streets

Safe, "walkable"¹ streets are vital both to reach public transport and to walk to local destinations that avoid the need to drive to more distant destinations. Therefore, urban planning regulations must ensure generous footpaths are always provided and that these cater for people with restricted mobility and mobility aids. Street layouts - e.g. road widths, turning arcs, etc - must also accommodate public transport vehicles otherwise public transport services will be prevented and residents will be forced to use higher risk modes of transport (VTPI 2010a; Department of Transport 2008). Building and planning regulations can also help to make streets safer for pedestrians by ensuring building occupants and passers-by provide "passive surveillance" that deters anti-social activity (DSE 2005).

Many journeys that are currently made by car are short enough to be walked or cycled, while reaching public transport often involves walking or riding to and from railway stations and tram and bus stops. The health benefits of active transport are numerous and significant, including benefits for cardio-vascular systems, controlling weight and back problems (de Hartog *et al* 2010). Therefore, it is important that Australia's cities and towns have streets that are suitable for pedestrians and cyclists. Some traditional road treatments can actually worsen conditions for active transport and should be avoided. For example, roundabouts feature in a disproportionate number of cyclist injuries and can force pedestrians to deviate from their most direct path (Bicycle Victoria 2009).

Measures are required to improve safety for people boarding and alighting from trams, such as alerting motor vehicle drivers that they may have to stop. It is still common in Melbourne for cars to pass stopped trams while passengers are attempting to board or alight resulting, from time to time, in death and injury. Such measures could include signage, painted roads immediately before and at tram stops, flashing lights on trams initiated by tram drivers and on-board cameras to identify motorists who fail to give way as required.

3.1.2.1 Recommendations

- Strengthen safety and compliance measures at tram stops.
- National standards are required to mandate safe and accessible streets in Australia. The following are recommended:
 - **Safe footpaths and cycle paths.** Footpaths and cycle paths that are sufficiently wide on all urban roads are required to encourage walking and cycling. Those on busy roads should, ideally, have wide nature strips to separate pedestrians from

¹ "built environment [that] supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network" (Southworth 2005)

traffic. Where this is not possible, lower speed limits and traffic calming should be implemented.

- **Universal access.** Paths and crossings should cater for wheelchairs and other mobility aids, prams, etc.
- **Pedestrian priority at road crossings.** Jaywalking would be significantly reduced if pedestrian crossing lights were responsive to pedestrians, while vehicle journey times would not increase over the whole journey. This would follow standard practice in the UK and mainland Europe.
- **Location of pedestrian crossings.** Some pedestrian road crossings are not in safe locations, such as on roundabouts. National standards are required for locating pedestrian crossings to ensure convenience and safety. Crossings at roundabouts should feature speed humps and zebra crossings.
- **Best-practice urban design.** Urban planning schemes should ensure effective passive surveillance of pedestrian and cycle routes. Adequate street lighting can also help to make people feel safer and also assist motorists drive safely.

3.1.3 Freight transport

Just as public transport is safer for passenger travel, rail is safer for freight transport (MacKenzie 2010). Trucks are involved in a disproportionately high number of road deaths relative to the share of total traffic they represent (ATC 2010, p.7). Regional communities are rightly concerned about the movement of dangerous goods such as petroleum by road, and wish to see rail regain its role as preferred mode for goods transport (ABC 2009). However, getting a larger share of freight onto rail will require a reversal of the massive imbalance in spending that has seen massive expansion of major highways while rail infrastructure was left to decay (PTUA 2009a, pp.13-14).

Transferring as much freight as possible to rail, so reducing the number of trucks on Australia's roads, will therefore improve road safety disproportionately.

Straightening Australia's railway lines and improving the quality of the track and signalling to permit higher speeds are required. That trucks can travel between Brisbane, Sydney and Melbourne faster than freight trains, despite a lower (100km/h) permitted maximum speed than rail (115 km/h) indicates the poor state of the rail infrastructure.

In addition, rail freight is inhibited by different track gauges that either make rail uncompetitive or require trans-shipment of goods where none would otherwise be required. New South Wales, the Australian Capital Territory and the Northern Territory have the 'standard' (1435 mm) gauge, Queensland a narrow (1067 mm) gauge, Victoria and South Australia a mix of standard and broad (1600 mm) gauge and Western Australia has a mix of standard and narrow gauge. Standardising track gauges Australia-wide is necessary and would have major economic benefits (VFLC 2010, pp.50-60). India has standardised many kilometres of its track gauge over recent years. It is feasible in Australia too.

A number of studies have concluded that truck licence fees and fuel taxes do not even cover the cost of the damage to roads that trucks cause. Other attributable costs not paid for by trucks include the capital cost of having to build stronger roads to accommodate them, congestion, contribution to global warming (trucks are less fuel efficient than freight trains), noise and other social costs. These costs are in addition to the health care and trauma costs arising from road accidents involving trucks.

3.1.3.1 Recommendations

The following are recommended:

- Investment in rail infrastructure to enable faster journey times for freight trains and eliminate break-of-gauge inefficiencies.
- Trucks to pay their full track, environmental and social costs, charged on a distance-travelled basis.

3.1.4 Transport investment appraisal

The avoided costs of road trauma should be fully recognised in appraisal of public transport and rail freight investment decisions and measured using the willingness-to-pay method (ATC 2010). The tendency for road capacity expansion to induce additional traffic - and hence greater exposure to the risk of road trauma - should also be fully recognised in road investment appraisal (Pfleiderer *et al* 1995; Mogridge 1997; Kane & Behrens 2000; Noland 2002; PTUA 2008d, pp.15-19; Zeibots 2009; Odgers 2009; Litman 2010d; PTUA 2010).

3.1.4.1 Recommendation

When assessing the costs and benefits of rail projects, in order to arrive at optimal outcomes avoided costs should be factored in to decision making. Appraisal of road projects should include the impact of induced traffic.

3.2 Removing risk source

3.2.1 Dangerous driving

Dangerous driving is a major source of risk on the road (see Section 2.2). Strenuous efforts should be made to identify dangerous drivers and get them off the road. Road safety campaigns targeting speeding, driving under the influence and other high-risk activities have met with considerable success, however their deterrence effect is not as strong as it could be, particularly among younger drivers and in regional areas (Lucas 2010a; Sexton 2010).

More widespread use of speed and red light cameras would assist with identifying offenders and reducing crashes (Newstead & Cameron 2003; Pilkington & Kinra 2005; Gains *et al* 2005), while leaving police available for random drug and alcohol testing and license checking as well as the

important task of dealing with non-traffic offences. Recent moves by Victoria Police to impose tougher penalties on serious traffic offences and crackdown on roting of the demerit points system are also worthy of emulation by other jurisdictions (ABC 2010; Butler 2010).

Public education campaigns can be effective in raising awareness of road safety (Queensland Transport 2009), however they need to be backed up by enforcement activity to be fully effective in reducing high-risk behaviour (Haworth 2005). Recent research has demonstrated that the risk of being caught and penalised is a greater deterrent than the risk of injury or death (Fleiter 2010). This underlines the importance of comprehensive programs to identify and penalise high risk behaviour. It also casts serious doubt on the wisdom of publishing the location of mobile speed cameras.

Even where high-risk drivers have come to attention, processes for dealing with them are inadequate. For example, a driver in his 70s was able to retain his license despite being diagnosed with impaired vision following a stroke in 2003 and striking and injuring a cyclist in 2004. This licensed driver went on to strike and kill another cyclist in 2006 (Bicycle Victoria 2010). To minimise avoidable tragedies like this, mandatory reporting of unsafe drivers, as proposed by the Coroner in this case, should be considered in tandem with alternative mobility options for disqualified drivers such as scheduled public transport and community transport.

Unlicensed driving and unregistered vehicles represent particular challenges due to the lack of deterrence value of typical penalties such as demerit points. In addition to other initiatives in this area, the purchase of periodical public transport tickets could be mandated for unlicensed and/or suspended drivers where adequate public transport services are available. For example, offenders in Melbourne could be required to purchase and register a 365 day myki pass if their license is suspended or they are caught driving an unregistered vehicle. This would rebalance the relative costs of travel choices in favour of public transport instead of illegal road use.

Measures to discourage irresponsible road use will be more successful where alternative transport, such as public transport, is available and offers competitive journey times. Long operating spans and adequate staffing (for security) are needed to meet the needs of shift workers who are susceptible to fatigue or people who have enjoyed a few drinks after hours. Attractive regional and intercity public transport services are needed as an attractive alternative to long car trips, and greater investment in rail freight can reduce the risks associated with long-distance road freight.

There has been significant official complacency about the increase in the range of electronic devices, including mobile phones, which are permitted to be used in motor vehicles and which distract drivers and therefore cause increased road crashes (McEvoy *et al* 2005). This is reflected in the recent negative response by the Victorian Police Minister to a recommendation to ban the use of hands-free devices by drivers that it would disrupt "the way in which people live their lives". However, people now live their lives in this dangerous fashion because official negligence in recent years has created the conditions for social acceptance. The fact that this is now reinforced by a powerful commercial constituency which has a vested interest in the continuation of this behaviour should not influence future road safety measures. After all, drinking and driving was once regarded as an admirable duet.

Tougher laws are required so that vehicle drivers are held properly responsible for their own actions. There have been examples in Victoria in recent years of drivers acting inappropriately

and causing multiple deaths being found not guilty of any offence: 1) In Benalla, a truck drove into the side of a steam locomotive at a level crossing in broad daylight, causing the deaths of three people on the locomotive; 2) Near Kerang, a truck drove into the side of a passenger train at a level crossing in broad daylight killing eleven passengers on the train. Australian laws should be amended so that vehicle drivers can be and be seen to be brought to justice.

3.2.1.1 Recommendations

The following are recommended:

Compliance and enforcement

- **Laws be toughened and standardised** in States and Territories so that deaths and injuries caused while driving a motor vehicle can be more appropriately punished
- **Driving under the influence.** Stiffer penalties for are required for driving while under the influence of alcohol or drugs. Penalties should include licence cancellation and, after a determined period of time, offenders being allowed to take the appropriate driving tests again before regaining their licence. The appropriate driving test should test their awareness of and susceptibility to re-offending.
- **Controlling devices.** A device fitted to serious road offenders' cars that prevents the engine being started until a valid licence is inserted. These licences should be able to be disabled remotely after drivers are found guilty of committing an offence
- **Speeding.** Introducing more speed cameras, both permanent and mobile, would be a cost-effective way to discourage speeding. Speed cameras are most effective at discouraging dangerous driving if road users do not know their location. Unpaid fines should result in licence cancellation.
- **Running red lights.** Red light cameras at more intersections and faster cycle times for traffic lights would be effective in reducing red light offences.
- **Demerit point fraud.** Increased compliance measures to prevent demerit point fraud would strengthen the deterrence value, and hence effectiveness, of road safety measures such as speed and red light cameras.
- **Mobile phone use.** All mobile phone use and other hands free device use should be banned in vehicles. Increased penalties and enforcement activity, including the use of camera technology, and an ongoing public education program should be introduced to reduce the illegal use of mobile phones and other electronic devices.
- **Vehicle roadworthiness.** Enhanced roadworthiness compliance measures should be implemented, particularly in jurisdictions without mandatory annual testing.

Mandatory public transport passes for disqualified drivers

Where adequate public transport services exist, disqualified drivers should be required to purchase periodical public transport tickets for the duration of their disqualification.

Mandatory reporting of driver non-fitness

Mandatory reporting to the road licensing authorities of drivers who, for whatever reason, are unfit to drive is recommended. This should include reporting by doctors, psychologists and employers, and include support for identifying alternative mobility options.

3.3 Changing likelihood

3.3.1 Driver training

As discussed above, driver behaviour is a key cause of road crashes. Although driver training is sometimes proposed as a solution to high levels of road trauma, Australian and international evidence shows that such training may be ineffective at best and counter-productive at worst by encouraging early licensing of younger drivers (see Figure 3.3) and over-confidence (Langford 2006). This is particularly the case with “advanced” training which can encourage people to ignore the need to drive more cautiously in treacherous conditions. Rather, defensive driving techniques should be mandatory training for all drivers.

Much greater potential has been demonstrated by graduated licensing approaches that progressively expand the range of experience of novice drivers, particularly in the presence of experienced drivers, and that highlight driver limitations rather than encourage over-confidence (Langford 2006, pp.5-6). Lengthy periods of supervised training in all road conditions are considered the best preparation for learner drivers.

Many drivers who have held their licences for some time are unaware of some road rules, particularly those rules introduced since their licence was obtained (Rissel *et al* 2002). This lack of awareness can contribute to dangerous situations arising while driving. A number of jurisdictions around the world have introduced periodic retesting of licensed drivers, and such an approach could help to reduce death and injury on Australian roads.

In addition, drivers can acquire bad habits so periodic refresher training and testing would be beneficial, while older people lose their cognitive as well as their physical abilities.

Throughout driver training and subsequently, it should be emphasised that:

- Driving is a privilege, not a right, and that acquiring and maintaining an appropriate level of competence is necessary to acquire and retain that privilege.
- Holding a driving licence places responsibilities on its holder, reflected in tougher laws (see above).
- Almost all crashes are caused by poor driver behaviour of one sort or another.

3.3.1.1 Recommendations

Graduated licensing

Acquiring a driving license should require the acquisition and maintenance of a higher level of competence than is required currently and the competence level should reflect driving experience and the type of vehicle being driven.

Graduated licensing systems should be in place nationally based upon international best-practice and evidence incorporating:

- a minimum age which recognises emerging research on brain maturity and crash risk (*Ockham's Razor* 23 August 2009);
- comprehensive written testing on road rules, defensive driving and road safety;
- minimum driving experience under competent instruction;
- limits on engine power and peer passengers;
- further written and practical testing for heavy and commercial vehicles;
- periodic written and practical re-testing, particularly for older drivers and repeat offenders.

3.3.2 Bike education

While driver licensing involves theoretical and practical testing that develops understanding of road rules, the approach to cycling is necessarily less regulated. This means there is often no formal development of knowledge about road rules among young cyclists. Bike education programs can be effective in improving bike skills and knowledge of road rules (McLaughlin & Glang 2010). Given the large benefits offered by cycling (de Hartog *et al* 2010), all tiers of government should support bicycle education programs to improve bike skills and control as well as understanding of road rules & etiquette among cyclists.

3.3.2.1 Recommendation

Bicycle education should be provided at all schools to teach safe riding skills and practices, both on-road and off-road.

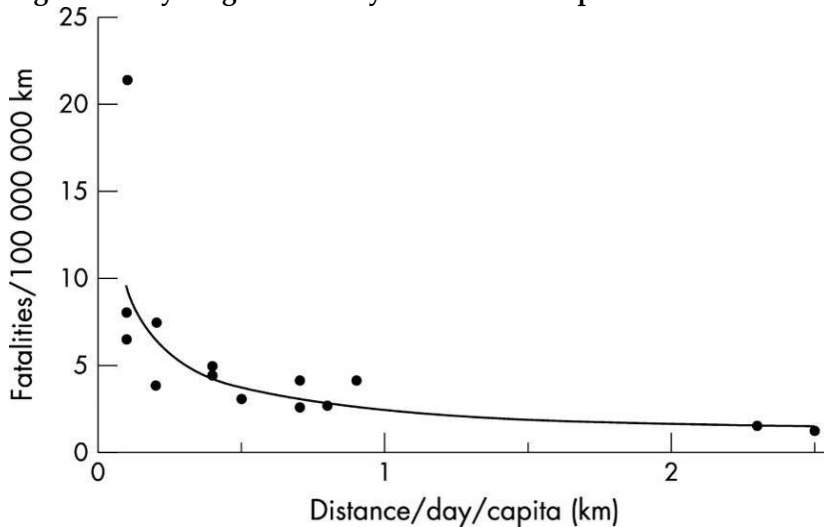
3.3.3 Catering for active transport

Inadequate separation of cyclists and motor vehicles also increases the likelihood of a crash. The rapid growth in cycling as a healthy, affordable and clean form of transport is putting pressure on existing cycling infrastructure and demonstrating the need for much greater investment in cycling infrastructure to support this mode shift and save lives. Such investment would strengthen the “virtuous circle” of higher rates of cycling leading to lower rates of cyclist deaths that has been witnessed around the world (Jacobsen 2003; Robinson 2005; Elvik 2009). The importance of

raising motorists' consciousness of cyclists is highlighted by recent research demonstrating that most incidents involving cyclists and motor vehicle are the fault of the vehicle driver (Johnson *et al* 2010). Increasing participation in cycling will be a key part of raising consciousness.

Higher rates of walking also contribute to lower rates of injuries to pedestrians (Leden 2002) as well as having cardio-vascular and other health benefits such as reducing obesity. This can be encouraged by lowering traffic speeds and breaking through the "barrier effect" that results from roads and traffic². Plentiful safe and attractive crossing opportunities (such as ground level pedestrian crossings with absolute priority or responsive signals) minimise the temptation to jaywalk, while lack of attractive crossing opportunities can encourage risk-taking by pedestrians.

Figure 3.5: Cycling and fatality rates in 14 European countries in 1998



Source: Jacobsen 2003.

Note: Cyclist and pedestrian fatality rates fall as the amount of cycling and walking increases.

3.3.3.1 Recommendation

Active transport infrastructure

Improved infrastructure to cater for and encourage walking and cycling is recommended, including:

- Cycle lanes that are physically separated from motor vehicles on roads, not just painted cycle lanes on roads
- More off-road cycle and walking paths
- Pedestrian crossings with zebra crossings or lights that are responsive to pedestrians.

² "The Barrier Effect (also called severance) refers to delays and discomfort that vehicle traffic imposes on nonmotorized modes (pedestrians and cyclists). Severance usually focuses on the impacts of new or wider highways, while the barrier effect takes into account the impacts of vehicle traffic." (VTPI 2009)

3.3.4 Safer roads

The strategy should have regard to changes in urban form currently under way as well as those that might be anticipated. It should also be recognised that some urban forms are safer for certain classes of road users than others. e.g. local roads where the default speed limit or lower speed limits apply and that are reasonably heavily trafficked may be less hazardous for pedestrians than less congested arterial roads, and especially rural roads, where higher speed limits apply. Prima facie this appears to be particularly the case with road crashes in rural areas where there is a high proportion of run-off road crashes.

Crash risk can be greatly reduced by guideposts and the maintenance of high visibility linemarking so the road alignment is clear to drivers and by sealing or widening road shoulders so there is greater margin for error (Baldock *et al* 2008). Safety measures such as these are also much more affordable than duplication of single carriage-way roads and would greatly expand the reach of road safety spending compared to duplication projects (ATC 2010, p.25). In contrast, measures that increase road capacity can encourage people to drive faster, further and with less care, resulting in increased fatalities and injuries (Noland 2002; Ewing *et al* 2003; PTUA 2010).

With many other public services - such as health and education - also deserving of funding, limited resources should not be used up on a relatively small number of duplication projects, but should instead benefit a larger number of more affordable improvements (such as shoulder widening) in a wider variety of locations. The expected peak in global oil production (Nashawi *et al* 2010; Owen *et al* 2010; Zhang *et al* 2010; Aleklett *et al* 2010; Munroe 2010) also casts major doubt on the wisdom of road construction and duplication when other modes of transport are likely to become increasingly important for mobility.

Road signs are not standardised in Australia and are, generally, poor compared with overseas best practice and sometimes non-existent, distracting and confusing drivers and potentially causing them to change lanes suddenly and dangerously. Consistent and legible road signs, including at and well in advance of roundabouts and intersections similar to those in the UK, would contribute significantly to safer roads.

3.3.4.1 Recommendations

- **Lane edge marking and barriers.** Clear delineation of road lanes that show drivers where they may drive are recommended to encourage the separation of motor vehicles from cyclists and pedestrians. Barriers to separate traffic flowing in opposite directions on major, multi-lane roads (dual carriageways) and to prevent vehicles running off the road are recommended.
- **Shoulder widening.** Widening and sealing road shoulders to allow a greater margin for error are recommended.
- **Road signs.** Legible signs to one common, national standard are recommended.

3.4 Changing consequences

3.4.1 Safer cars

Vehicle design is a major influence on the severity of injuries in the event of a crash. Safety features such as seatbelts and airbags have played a major role in reducing road trauma - turning impacts that once would have resulted in fatal or serious permanent injuries into less serious crashes. The Australian Design Rules (ADRs) specify a range of minimum standards, such as inertia reel seatbelts, that new cars must incorporate before they can be sold in Australia. Ensuring that the Australian Design Rules (ADR's) keep pace with international best practice in vehicle design will be a key part of reducing the severity of injuries suffered in the event of a crash.

A matter to which we wish to draw particular attention concerns the increased heterogeneity of the Australian motor passenger vehicle fleet, especially in relation to vehicle mass and power. An increased mix of smaller and larger vehicles is likely to make road use more dangerous for users of small vehicles, in particular. There is a growing list of environmental and other reasons why smaller passenger vehicle use should be encouraged in Australia over larger vehicles. Many of the larger vehicles now on the road originate from the inappropriate tax advantages provided by successive governments to four wheel drive vehicles which are used on-road. The consequence is that many of the larger vehicles now on Australian roads are more dangerous than is justified. As a class they have been more likely to roll in loss of control crashes and they also inflict greater damage when they impact other road users in smaller vehicles, primarily because of greater mass and power. They have typically very strong acceleration, often observed deployed at controlled intersections and which elevates the risk of a crash, quite uncharacteristic of their rural industry use predecessors.

It is not that uncommon to hear vehicle owners who have purchased a sports utility vehicle for the first time to say in effect that "if you can't beat 'em, you join 'em." The clear implication is that there is a palpable fear of SUV's amongst other road users. The notion that "might is right" is a very unsound basis for the improvement of the road safety record on Australian roads.

The increased incidence of heavily tinted windows and windscreens in motorcars in recent years is another instance of the triumph of fashion at the expense of road safety. Most seriously it denies an important visual cue, especially during the day, for other road users about the intention of the driver of the vehicle because the drivers face is hidden from view. For example, where a car with tinted windows is turning right at an intersection and pedestrians are crossing the vehicle's path it assists the pedestrians significantly if he is able to observe that the driver has seen him. Such circumstances are especially hazardous where there is a possibility that the driver may attempt to complete the turn hastily to beat on-coming traffic.

Tinted windows are also a major road safety concern in car parks where there is a mix of vehicular and pedestrian traffic sharing the same space in conditions of limited visibility which heightens the risks for pedestrians in particular. The problem is heightened by the increased heterogeneity of the passenger vehicle fleet in areas such as public car parks where there is a greater range of smaller and larger vehicles. It would be unsurprising if the crash record were to show relatively

few serious injury crashes in these situations (because of low vehicle speed) but, again, vulnerable road users and especially pedestrians are likely to be those most at risk in this situation.

Heavily tinted windows are also an issue for behaviour and enforcement because the identity of the driver and other vehicle occupants is unclear. Where the driver is comfortable he is not observed such activity as the illegal use of mobile telephones (which appears to be virtually untouched by enforcement activity) and other electronic devices is encouraged and enforcement is made more difficult.

The Australasian New Car Assessment Program (ANCAP) is well-known for conducting vehicle crash-testing in Australia and rating the "crash-worthiness" of vehicles on a scale of 1 to 5 stars. Although a high crash-worthiness score indicates a good level of protection for occupants, it does not mean the vehicle is safe from the perspective of other road users (Cameron *et al* 1999; Newstead *et al* 2000). In fact, the ADRs tend to focus exclusively on protection of vehicle occupants to the exclusion of other road users (Newstead *et al* 2004, p.18). The trend towards heavy four wheel drives and SUV's, which tend to cause greater damage to other road users than lighter cars (Newstead *et al* 2003), highlights the need to focus on other road users when setting safety standards.

Since around a quarter of motorists admit to near misses with pedestrians and cyclists (AAMI 2005), and about 18 per cent of people killed in road crashes are pedestrians, it is crucial that the ADRs also focus on minimising the severity of injuries to vulnerable road users. While ANCAP now includes a pedestrian impact test, it is unlikely that pedestrian impact will be a major consideration for car buyers. It is vital therefore that the ADRs mandate improved design features - such as adequate under-bonnet clearances - that minimise the severity of impact with pedestrians.

3.4.1.1 Recommendations

Maximum mass and power to weight ratios of licensed passenger vehicles

The increased heterogeneity of the Australian passenger vehicle fleet should be addressed as a major contributor to the rate of serious injury and fatality road crashes. Particular regard should be had for vehicles of larger mass and power with a view to implementing power and mass limits that do not impose upon reasonable on-road use and having full regard for the unreasonable costs currently imposed on other road users.

Eliminating tinted windows and windscreens to maximise visual acuity for all road users

Tinting of windscreens and windows of motor vehicles that reduces the ability of other road users and enforcement officers to clearly observe the occupants of motor vehicles should be banned.

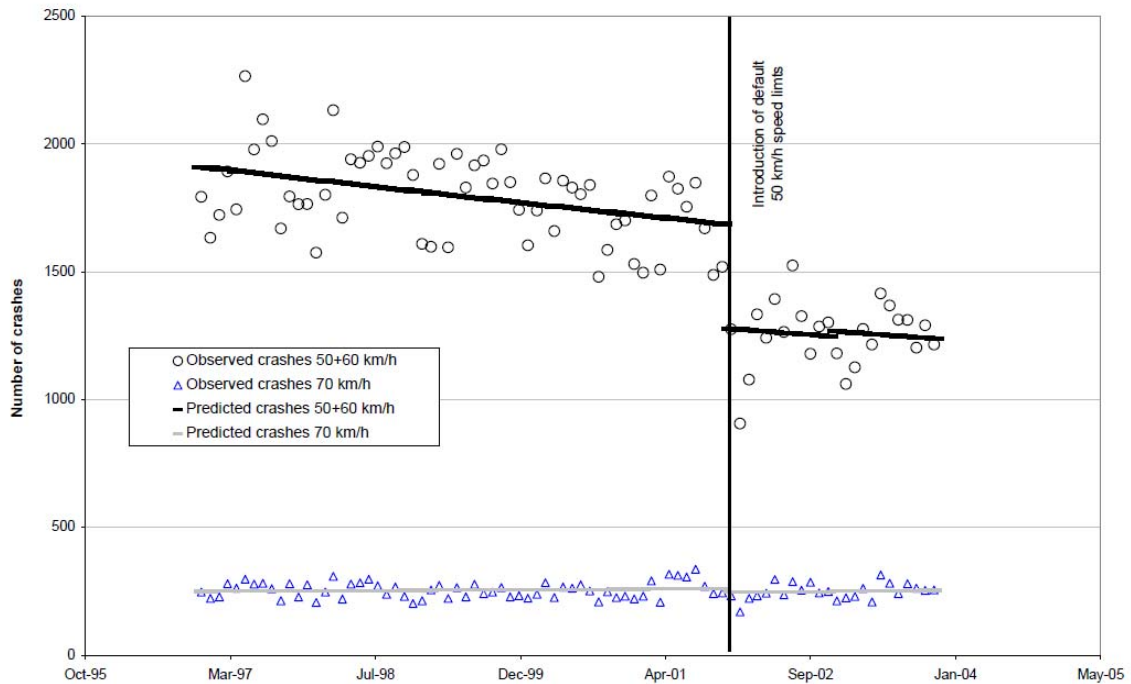
Australian Design Rules to include pedestrian impact

Designing vehicles to be as safe as possible for occupants in the event of impact is obviously worthwhile, but it is also important to consider vehicle impact on non-occupants i.e. pedestrians and cyclists. Features such as bull-bars that cause significant damage to the human body on

impact are not required for city and town driving and should be removable and only used when necessary, such as for off-road driving and driving on country roads at night.

3.4.2 Safe speeds

Figure 3.6: Monthly crash frequency in 50 and 60 km/h zones and 70 km/h speed zones in Perth

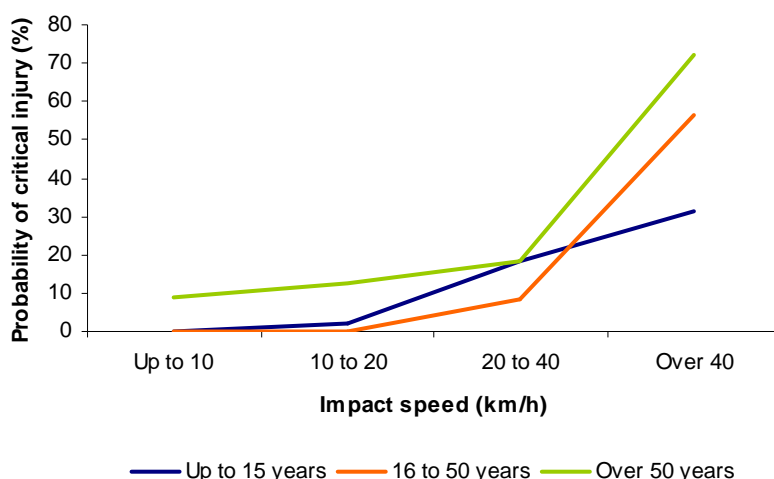


Source: Office of Road Safety 2004. Note: Crash frequency dropped significantly when the default urban speed limit in Western Australia was lowered from 60km/h to 50km/h.

The severity of injuries suffered by a pedestrian and the likelihood of a fatal impact can both be reduced dramatically by lowering impact speed as shown in Figure 3.7. For example, the reduction of default urban speed limits from 60 km/h to 50 km/h in Western Australia resulted in an immediate and significant reduction in the number of crashes, while the same speed limit reduction in Victoria resulted in a 25-40 per cent reduction in fatal and serious injury crashes involving pedestrians (O'Hare 2005; Hoareau *et al* 2006). Nevertheless, Australia still has among the highest speed limits in the world (Garrard 2008).

Even larger safety benefits can be obtained by lowering speeds limits to 30-40 km/h in areas where there are potential conflicts between pedestrians and cars such as activity centres, residential streets and near schools (Woolley & Dyson 2003).

Figure 3.7: Probability of critical injury by speed and victim age



Source: McClean et al. 1994

Note: The likelihood of serious injury, including death, increases dramatically from about 30-40km/h.

Traffic calming is also proven to reduce the risk of injury to pedestrians and should be a key part of making streets safer for young and old alike. Traffic calming measures and street design more generally must however apply "universal design" concepts to ensure attractive public transport services can be provided safely and efficiently and that walking and cycling are also safe and attractive (VTPI 2010a; Department of Transport 2008).

Active enforcement of the road rules, especially in relation to speeding, is a proven technique for reducing serious injury road crashes. The recent decision of the Victorian government to publicly advise the location of mobile speed cameras every week will significantly reduce the effectiveness of this important component of the Victoria Police road safety enforcement armoury and will contribute to an increase in crash rates. It is comparable to a security firm announcing to would-be burglars of the time when they intend to visit particular business premises on a "random" check.

3.4.2.1 Recommendations

- **Speed limits.** It is recommended that speed limits be reviewed throughout Australia and that new limits be set that recognise safety as a priority, especially in areas where people live or congregate, such as suburbs, city centres and around schools and aged care facilities.

Lower speed limits are recommended, for example:

- In suburban side streets and city and town centre roads – 40 km/h
- On main roads in built up areas – 50 km/h
- On main roads that have wide nature strips or similar separation from pedestrians and cyclists – 70 km/h

- On open roads, including freeways and tollways – 100 km/h.
- **Traffic calming.** Traffic calming measures in built up areas, approaching intersections and in other places where traffic must slow down, such as tight bends, are also recommended.
- **Enforcement of the road rules.** Highly active enforcement of the road rules in relation to speeding should be reinforced in the strategy including the unencumbered use of speed camera technologies.

3.4.3 Fostering responsible behaviour

Although the ADRs now mandate the provision of seatbelts and road safety laws mandate their use, about 30 per cent of car occupants killed in crashes are unrestrained, once again highlighting the importance of targeting road user behaviour in efforts to cut the road toll. Seatbelt enforcement should clearly feature in road safety campaigns.

In addition to official enforcement activities, parents can also help to ensure the safety of their children once they reach driving age. Parents start by setting an example behind the wheel that their children often unconsciously mimic when they get behind the wheel themselves (Lucas 2010a). Parents can also help by making the family car available to their children rather than forcing them to buy more affordable but often less safe cars of their own. Sharing a smaller number of (safer) cars instead of owning at least one car per driver can also slash the large sums of money that some households spend owning and operating motor vehicles.

3.4.3.1 Recommendation

It is recommended that enforcement of seatbelt rules be tightened and that this aspect of road safety be included in all driving tests.

Parents of young, learner drivers should be educated about teaching road safety to their children and setting a good example.

3.5 Sharing risk

3.5.1 Insurance

This risk treatment option is less relevant to road safety than some other risks, however insurance is still an important consideration in this context. Compulsory Third Party insurance schemes play a vital role in ensuring road trauma victims receive good quality medical care and rehabilitation. Governments should ensure that insurers provide adequate benefits for road trauma victims.

The Review of Australia's Future Tax System found that "compulsory third party insurance premiums are not charged on the basis of individual risk or driving behaviour" and recommended that CTP insurance schemes be improved to reflect individual risks (Henry 2009,

p.390). Distance-based insurance would recognise the fact that the likelihood of road trauma increases as the amount of travel increases, and could provide a stronger incentive for riskier drivers to reduce their travel while rewarding safer drivers (Litman 2009a).

3.5.1.1 Recommendations

- **Reform compulsory third party insurance to reflect risk.** As noted above, premiums for compulsory third party insurance do not reflect individual risk or driving behaviour. It is recommended that this be changed.
- **Distance-based insurance.** Distance-based vehicle insurance would reflect the increased risk of driving further and it is recommended that this is encouraged.

3.6 Retaining risk by informed decision

3.6.1 Awareness raising

The final option when dealing with risk is to accept the risk and proceed with the activity anyway. For legal activities, this is of course a legitimate option, however such a choice should be an informed decision based on knowledge of the relative risk of driving compared to other alternatives (see Section 3.1 above), the behaviours that exacerbate risk and the consequences of engaging in risky behaviour. Provided they are backed up with enforcement activities (Haworth 2005), public education campaigns such as those funded by the Amy Gillett Foundation and Victoria's Transport Accident Commission (TAC) serve an important role in raising such awareness, and road safety agencies should continue to seek effective and innovative ways to make sure travel decisions are informed decisions.

It is clear that many people do not perceive the risk of death or serious injury on Australia's roads and some even have a laissez faire attitude towards it. That there is resistance to measures designed to reduce death and injury is probably at least in part due to an ignorance of the statistics and in some people a belief that 'it will never happen to them' and that their driving habits are good when, in fact, they are not. Some people seem to think that driving is everybody's right, rather than a privilege to be enjoyed by those with the skills and aptitude for it. Many are ignorant of what safe, defensive driving techniques are, let alone practice them.

3.6.1.1 Recommendation

Education campaigns are recommended that, if necessary, are designed to shock or be blunt, such as the 'Drink, drive, bloody idiot' campaign in Victoria, and that incorporate "state of the art" behaviour change techniques. New drivers can be taught properly from the outset but those already driving need educating.

4 Summary of recommended actions

The road safety measures discussed above are recommended for inclusion in the *National Road Safety Strategy 2011-2020*. Table 4.1 outlines how these could be adopted within the context of the strategy initiatives discussed in the consultation draft of the *National Road Safety Strategy 2011-2020*.

Table 4.1: Applying risk management treatments to the National Road Safety Strategy

Risk treatments	Strategy Initiatives			
	Safe roads	Safe speeds	Safe vehicles	Safe people
Risk analysis				
Benchmark against international best practice road safety measures				
Avoidance of the risk				
Modeshift to public transport (expand and improve public transport networks; abolish FBT statutory method)			* Alternative to use of unroadworthy vehicles	* Alternative to driving under the influence or unlicensed
More walkable streets				
Modeshift to rail freight	* Reduced wear			* Reduced fatigue
Valuation of avoided road trauma costs in public transport and rail investment				
Removing risk source				
Compliance and enforcement				
- Driving under the influence				
- Controlling devices				
- Speeding				
- Running red light				
- Demerit point fraud				
- Mobile phone use				
- Vehicle roadworthiness				
Mandatory public transport passes for disqualified drivers			* offences with unregistered vehicles.	* Alternative to unlicensed driving
Mandatory reporting of driver non-fitness				
Changing likelihood				
Graduated licensing				
License retesting				
Bicycle education				
Active transport infrastructure				
Lane/edge marking and barriers				
Shoulder widening				
Consistent and legible road signs				

Changing consequences				
Tougher laws				
ADRs to include pedestrian impact				
Lowering speeds (e.g. lower limits and traffic calming)				
Centre-of-the-road tram stops				
Seatbelt enforcement				
Sharing safer car with young family members				
Sharing risk				
Reform CTP to reflect risk				
Distance-based insurance				
Retaining risk by informed decision				
Education campaigns				

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