

**Submission  
No 44**

## **SPEED LIMITS AND ROAD SAFETY IN REGIONAL NSW**

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# Submission to Staysafe Committee

## Speed limits and road safety in regional NSW



Contact

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The National Motorists Association of Australia is a small group of people with a deep interest in road safety. We are not involved in insurance, road side breakdown assistance or any commercial function and are not associated with any other motoring organisations.

We are all of mature years with a very wide range of experience both here and overseas. Most have achieved a high standard of driver training and most are university educated.

Our concern with improving road safety gives rise to acute observations of safety measures and their impact on risk reduction. We are constantly evaluating how systems can be improved both in terms of improved road safety and the amenities of road use for commercial vehicles, cars and other road users.

Our experiences and evaluations have lead us to the conclusions that there are far better systems to improve road safety than are currently being used in systems design, regulation, construction, enforcement, research and training.

Our observation is that Australia has very low standards of training and testing compared with Europe; for example, very few Australian trained drivers would pass the German driving test without significant remedial training.

## **The Authors**

### **Michael Lane**

Some 2 million kilometres, 61 years driving experience, initially 5 years in the UK thence in Australia and in recent years a regular driver in most of Western Europe. He has been closely involved in teaching his two children to drive but having professional instructors to teach them to pass their test.

Much of his professional life involved assessment of Industrial Research and Development projects including the technology, scientific methodology, innovation, managerial abilities, Finance prospects and commercial prospects. Much of his work involved driving in Regional Australia.

Early professional life was at the steelworks in Port Kembla where working conditions were hazardous.

He completed an advanced diving course with BMW in 2009. He represents his local State MP (Jonathan O’Dea Davidson Electorate and Speaker of the MLA) on the Ku-ring-gai Council Traffic Committee.

He was appointed as National Spokesman for the NMAA in 2003.

### **Graham Pryor**

Graham has had a life-long strong interest in road safety and was the first person in Australia to pass the advanced driving test to the gold standard with Australian Driver Education. Subsequently, he became an Instructor for the Chapter of Advanced Motorists of the VMA from the age of 21 until the Chapter was dissolved.

He is a graduate engineer and a qualified mine manager. Also, he achieved a Master of Management degree with an award from the Australian Institute of Management for academic excellence.

Graham operated potentially dangerous underground mines in private industry for more than 35 years and was employed previously as a District Inspector of Coal Mines for the NSW Mines Department. He attributes the reduction in

fatalities in NSW mines to the “risk assessment” approach that is now required by legislation.

He was appointed to the Executive Committee of the NMAA in the year 2000 in the role of National Liaison Officer.

In this submission the principal discussion has been confined to cars because in general there has been much work done on truck safety. The matters raised here apply to all motorised road users except certain specific matters.

**a) The impact of speed limits and travel times on driver behaviour and safety.**

Driving slowly is not equivalent to driving safely.

A common justification statement by proponents of lower speed limits and traffic calming is that such measures will only add one or a few minutes to a journey time thus implying that such an increase is of minimal importance. To illustrate the inappropriateness of this phrase, consider that NSW has a population of some 8 million. If some 6 million do only one trip (two legs – one each way with a one-minute increase in time) per day that is 12 million minutes per day – 200,000 hours per day, 73 million hours per year (about 3million days per year, 58.5 thousand weeks per year) for each one minute lost per leg of each trip.

Advocates of low speed limits sometimes use secondary safety, i.e. that low speed impacts reduce injuries, as an argument in support of very low limits. e.g. proposals for a blanket 70 km/h speed limit on rural non-divided roads. The prime objective of a safety measure is to not have the crash but using the secondary safety argument there is an acceptance of a crash, not its prevention.

In regional areas distances between commercial areas are long and thus variations in speed limits mean much greater time variations of journeys. An example is the time between Narrandera and Hay on the Sturt Highway. The 130 kilometre distance is (or was) mostly limited to 110 km/h giving a journey time of approximately 1 hour and 15 minutes; if the limit were to be reduced to 70 km/h, as advocated by some “experts” the time taken would be approximately 1 hour

and 50 minutes – 35 minutes longer. It is noteworthy that when this road was laid out its design speed was 80 mph (130 km/h).

The problem with this extra time length of journey is that it is tiring and boring thus inducing sleep and/or frustration both of which give rise to higher crash probabilities.

Until 1976 the basic non-urban road speed limit was a *prima facie* 50 miles per hour (80 km/h) and, if driving over that speed, it was possible that the driver could face a charge of dangerous driving where there was a presumption of guilt with the driver having to prove that they were driving safely to obtain an acquittal. The advantage of this system was that the driver had to be aware that they may have to prove that they were driving safely and thus be conscious of their actions in detail. The police however complained that it was difficult to get a conviction in spite of the presumption of guilt.

In 1976, coincident with metrication, this was changed to an absolute limit of 100 km/h (60 MPH). Prior to this some major roads were “Speed zoned” - a 60 MPH limit was applied. It is not clear why this speed was selected – allegations at the time were that it came from old thoughts that “A mile a minute was fast enough for anybody”. It is not clear whether the change had any beneficial safety outcomes. Since that time some inland highways have had the limit increased to 110 km/h, The maximum permissible in NSW, and many others have had lower limits imposed.

There seems to be no comprehension of the work of Solomon who demonstrated that the least probability of a crash was when the vehicle was travelling at the 85<sup>th</sup> percentile speed i.e. the speed at which 85% of vehicles were driving at or under. Note that the 85th is not affected by very high speeds in the upper outliers nor slow speeds in the lower outliers. This work was published in 1964 and was very robust as there were a large number of cases examined. The theme of the work was discovery of information rather than proof of a theory. This study has not been refuted.

The effect on drivers of speed limits is wide ranging; there are those who believe that the limit is a strict dividing line between perfect safety below it and absolute danger above it, while more experienced drivers are aware that speed limits are mostly arbitrary. Where limits are regarded as being too low they are likely to

lead to boredom and inattention and, paradoxically, fatigue. Experience shows that the optimal speed is that which keeps the driver's mind active and thus gives full attention to driving. Unfortunately most open road limits are below this optimum.

There are also issues with overtaking. The safest way to overtake is to accelerate hard to a speed significantly faster than the vehicle being overtaken and then returning to the normal side of the road without braking when crossing the centre apex of the road and return to normal cruising speed. This minimises the time and distance on the wrong side of the road. Overtaking a semi-trailer with minimal speed difference can take over one kilometre requiring a sight distance of over two kilometres whereas a good overtake can be done safely in 300 metres or less.

Unfortunately suitable overtaking areas are easy places to detect speeding offences even though they are the safest places to do the maneuver. A police officer could use discretion but a speed camera has no such capability.

The Northern Territory, under an earlier Government, improved some major roads and had no speed limit on them. Drivers were however required to drive reasonably safely. A change of Government resulted in the imposition of a 130 km/h limit. The outcome of the imposition of a limit (mostly 130 km/h) resulted in a 73% increase in road fatalities in 2008 which was the second year following its introduction. This fact was reported to Staysafe in our submission in 2014, paragraph e) The operation of speed limits in other jurisdictions. Subsequently, with a change in Territory government, the speed limits were removed and road fatalities returned to normal.

This could not be considered in NSW as there is legislation preventing speed limits above 110 km/h. The reason for this legislation is not clear but it could be based on an ideological assumption.

The speed restrictions on learner drivers and P-plate licence holders create their own problems. It is impossible to legally teach a learner to drive at normal road speeds and to overtake safely, These new drivers cannot readily merge onto a motorway, they are a mobile roadblock forcing other drivers (including trucks) to

overtake them. P-platers eventually have to learn to drive at these higher speeds without supervision – unfortunately too often by accident with horrific consequences on human lives.

There are claims that point-to-point (P2P) speed cameras are beneficial in ensuring that trucks do not exceed their mechanically restricted speed limit. In order for trucks to do this the mechanism must be manipulated and this is best detected by police officers and transport inspectors who deal with the issues at the time of the offence. An offender may drive for as much as a further 10 to 15 thousand kilometres if it takes two weeks for the camera notification which is not acceptable given that the mass and controllability of trucks is vastly different from cars.

Note that some European countries permit an overspeed for the purpose of overtaking. The proposed GPS based speed control for new vehicles in Europe allows for a driver controlled overspeed when required.

It was an increase in fuel costs and a reduction in regional speed limits imposed by Paris based legislators and bureaucracy that created the “Gilet Jaunes” rebellions in France.

Excessively low limits, like many other inappropriate regulations, breed resentment and an inclination to disobey which carries over into other regulated areas, not just road rules. Frustration leads to errors of judgement.

The emphasis on speed limitation particularly on rural roads has a raft of unintended consequences undoing the benefits outlined in section b) below.

### **Recommendations**

- 1) That speed limits be set using the principle of the 85<sup>th</sup> percentile.
- 2) That an allowance be made for short term higher speeds for overtaking purposes.
- 3) The speed restrictions on learners and P-platers be abolished.
- 4) The legislated restriction on speed limits above 110 km/h be repealed.
- 5) That secondary safety NOT be accepted as a reason for speed control.
- 6) Speed cameras not be used on parts of roads suitable for overtaking.

## **b) The impact of improved vehicle technology and road infrastructure.**

The chief instructor at the BMW Advanced Driving School in 2009 stated that it was nearly impossible to crash a modern car unless the driver was doing something stupid. This was because of the important level of safety features in cars at that time – 13 years later there are many more, and more sophisticated features than earlier. Some of the technology relates to primary safety i.e. preventing or reducing the probability of a crash and some are secondary safety related i.e. reducing the probability or severity of injuries.

It is interesting and instructive to compare the cars of the 1960s and those of today. Driving a car of the 1960s on a regional road and then a car of today would be illuminating.

### **Primary safety.**

- Drum brakes have been replaced with discs, reducing stopping distance and minimising brake fade.
- Improved brake balance results in a straight line stop.
- Anti-lock braking systems maximise stopping ability, allowing a vehicle to be stopped in the shortest possible distance and enable direction change without loss of control.
- Tyre performance is vastly improved both on dry and wet roads together with reduced probability of a “blow out”, i.e. complete tyre failure, and run-flat tyres.
- Improvements in the design of suspension and steering systems means that the car is much more easily controlled.
- Adaptive cruise control keeps a steady speed and maintains separation from the vehicle in front.
- Head up display incorporating GPS Navigation. Minimal eyes down to instrument panel
- Automated Emergency Braking. Minimises delay in braking and applies maximum braking.
- External temperature measurement with potential ice warning.
- Improved seating. Driver comfort minimising fatigue



- Climate control. Driver comfort minimising distraction and inattention. No misting on internal windows.
- Improved lighting, headlights, rear lights, signals.
- Blind spot detection.
- Hands free telephony and control operation.
- Skid control system such as Electronic Stability Control (ESC).
- Lane keeping assist.
- Fatigue detection systems.
- Inadequate grip on steering wheel detection (fatigue indicator).
- Kerb illumination when turning.
- Wider track on cars – reduces risk of overturning (rollover).

Note that most of these are consumer demand fostered by engineers with high standards of driving skills.

There is no doubt that these measures have reduced the rate of crashes on regional roads – various estimates are made of the benefits but Monash University researchers suggest that autonomous emergency braking alone could save some 20 per cent of fatalities. It is reasonable to acknowledge that these improvements by vehicle manufacturers are responsible for a very significant portion of improvements in road safety compared with earlier statistics.

### **Secondary Safety**

- Padded steering wheel boss.
- Occupant restraints – seat belts, air bags, air curtains.
- Head and neck support.
- Elimination of projections in the dashboard.
- Elimination of fixed mascots on the bonnet.
- Crumple zones front and rear to reduce deceleration on occupants
- Sleek frontal design
- Side entry protection bars in doors.
- Soft shaped and breakaway external mirrors replacing hard design wing mounted mirrors.

- Roll over protection e.g. the increase in strength of the roof of cars from the top of the A pillar to the top of the C pillar strengthens the roof to prevent it caving in during a roll over.

These features reduce the effects of the impact on the human body in a crash but do not reduce the probability of a crash, however they do minimise injuries and deaths.

### **Road infrastructure.**

- There have been significant improvements in some highways passing through regional NSW. The outstanding examples are the Hume and Pacific Highways. While these are generally good there are examples of lack of foresight in that some critical intersections should have been grade separated during the original design and construction phase but up-grading these is now very expensive. Similarly the lack of impenetrable barriers between carriageways is a poor design choice. European freeway standard roads have steel barriers between the carriageways.
- Many regional roads have broken edges of the hard surface and a vehicle straying over the edge, through inattention, micro sleep etc, into the loose material may easily lose control. Provision of sidelines (marking) and effective maintenance are important counter measures.
- There is no standard for the minimum grip of a road surface. This is particularly important on wet roads as poor grip can lead to loss of control at relatively low speeds i.e below the speed limit.
- Smooth surfaces help with maintaining control, good drainage helps to avoid aquaplaning.

Improved road infrastructure clearly makes roads safer – the old Hume Highway was a high death rate road, but the current dual carriageway divided road has reduced crashes to a very low level and road fatalities were reduced by 80 per cent according to the NRMA.

These improvements in road infrastructure all contribute to minimising road fatalities and injuries either by reducing crashes or reducing impacts on the body.

These features are a most effective method in improving road safety with no adverse or unintended outcomes.

### **Recommendations**

- 1) That purchasers of cars be encouraged to buy those with high standards of primary safety features.
- 2) Designers of regional roads be encouraged to design for a higher standard of safety, instead of imposing lower speed limits on poorly designed roads.
- 3) That non-urban divided roads have impenetrable barriers between the (oncoming) carriageways as in Europe.

#### **c) The use of variable speed limits.**

Variable limits are used in school zones and some heavily trafficked areas in the Sydney region but, other than school zones, are not used in NSW regional areas. France has a basic rule on its Autoroutes that the speed limit is reduced from 130 km/h to 110 km/h when it is raining. This limit is not signed, as is normal in most of mainland Europe where limits are set by type of road rather than by signage. By observation French drivers consider that the lower limit applies only in heavy rain when the road is very wet. The UK uses variable limits on parts of the Motorway system which are liable to congestion and the so-called “Smart” Motorways. The changes in signage are set by operators and there are frequent complaints that the limits were set too low. Some years ago a motorist fought and won a case by proving that the operators had improperly lowered the speed limit for no safety reason.

Operation of such systems requires close observations of traffic issues over long stretches of road and frequent changeable signage not more than half a kilometre apart and preferably less. Inappropriate setting of excessively low limits or excessive distance between signage leads to contempt of the law.

The cost of both capital works and operation is high and it is improbable that the benefits would outweigh these in any regional area.

## Recommendation

- 1) That other than for school zones, variable speed limits not be used on regional roads.

### d) Any other related matters.

1 The impact of low airfares has had a significant impact on traffic between major ports particularly those traveling for recreation. Years ago, in the era of the two airlines policy (TAA and Ansett) domestic airfares were relatively high and families found it far less costly to drive to their holiday location than to fly there. While most trips were on the eastern seaboard there were still substantial trips across western NSW. These trips were undertaken by city dwellers often with limited regional road experience, often at the end of a working week and often at night or with an early hours start compounding inexperience and fatigue.

2 The standard of research into crash causes is very poor compared with the UK which has the English-speaking world's highest standards – akin to air crash methodology. For example, in the UK the criteria of exceeding a speed limit as a contributory cause is separated from “inappropriate speed for the conditions” whereas in NSW these are not separated. In addition, the definitions used in NSW are based on assumptions rather than forensic investigations. The outcome of this is that the UK figure for fatal crashes “speed in excess of the limit as a *contributory* factor” is about 13% whereas the NSW figure for “Speed caused” fatal crashes is quoted as more than 41%. This difference causes ineffective counter-measures in crash prevention because it concentrates most interest on a relatively small cause and minimizes attention to the other 87% of causes.

Former Deputy Prime Minister Mr. Anderson criticised the emphasis on speed in road safety campaigns and expressed concern it "may blind us to other causes". Sydney Morning Herald, 1/2/2003.

Note that in the attachment from the Centre for Road Safety's website there is a complete absence of crash causes determined by forensic evidence. The site assumes causes without analysis.

In NSW comparative crash statistics are quoted on a population basis e.g. crashes per 100,000 residents whereas the appropriate manner is on an exposure basis e.g. crashes per 100 million kilometres travelled. The method used in NSW disadvantages regional areas as residents have longer travel distances and non-resident people also drive long distances on regional roads. This means that the crash probability on regional roads is overstated on a population basis.

3 The standard of driver training in Australia is extremely poor. 12 months under the supervision of parents, who are often poor drivers themselves, followed by a low speed urban drive with compliance with regulations the only criteria does not produce a good driver. The P-plate system is effectively a substitute for real life driver training and it has been referred to as a “crash learning” process.

There is no formal driver training requirement for learners to experience regional road driving. What little experience city-based learner drivers can get is generally under the supervision of a family member whom themselves may have little experience or understanding of the nuances of country driving.

The special speed limits on Learner and Provisional licence holders make it difficult to teach learners country driving and illegal to teach them at normal speeds and to overtake. They learn these skills by themselves – often by accident.

Improved and advanced driver training is opposed by authorities in Australia because of claims that it makes drivers too confident of their abilities. The authorities seem unable to distinguish between Racecraft and Roadcraft advanced training. The latter was developed by the UK Police Hendon driver training establishment for General Duties drivers prior to further training for those who became specialist Traffic Officers. The crash rate was reduced by some 60%.

The NMAA strongly recommends that every member of the Staysafe Committee completes an advanced driver training course. It is appropriate that the Staysafe committee members have a thorough knowledge in the areas where they make decisions.

4 The rest and sustenance areas on most long roads are inadequate – a couple of trees for shade and a “long drop” toilet is not useful. The French Aires on their

Autoroutes are the peak standard. They are at regular intervals, have large parking areas for both trucks and cars, fuel supplies and good food.

### **Recommendations**

- 1) As noted in the recommendations in part a) the special speed limits on learners and P-platers should be abolished.
- 2) That a course of advanced roadcraft be successfully completed before progress from a provisional licence to a full licence.
- 3) The NSW Police adopt the standards of crash cause evaluation as the UK Police and publish annually the accumulated findings. Only fully investigated forensically findings should be considered for policy development.
- 4) The standard of driver training be raised to at least the level of the European standards.
- 5) High standard rest and refill (both cars and drivers) be established on rural highways

## OFFICIAL

# Criteria for determining speeding and fatigue involvement

### Speeding

The identification of speeding (excessive speed for the prevailing conditions) as a contributing factor in road crashes cannot always be determined directly from police reports of those crashes. Certain circumstances, however, suggest the involvement of speeding. The Centre for Road Safety has therefore drawn up criteria for determining whether or not a crash is to be considered as having involved speeding as a contributing factor.

Speeding is considered to have been a contributing factor to a road crash if that crash involved at least one *speeding* motor vehicle.

A motor vehicle is assessed as having been *speeding* if it satisfies the conditions described below under (a) or (b) or both.

- (a) The vehicle was described by police as travelling at excessive speed; or  
the stated speed of the vehicle was in excess of that permitted for the vehicle controller's licence class or the vehicle weight (introduced 1 January 2010); or  
the stated speed of the vehicle was in excess of the speed limit.
- (b) The vehicle was performing a manoeuvre characteristic of excessive speed, that is:  
while on a curve the vehicle jack-knifed, skidded, slid or the controller lost control; or  
the vehicle ran off the road while negotiating a bend or turning a corner and the controller was not distracted by something or disadvantaged by drowsiness or sudden illness and was not swerving to avoid another vehicle, animal or object and the vehicle did not suffer equipment failure.

### Fatigue

The identification of fatigue as a contributing factor in road crashes similarly cannot always be determined directly from police reports of those crashes and the following criteria are used to assess its involvement. Fatigue is considered to have been involved as a contributing factor to a road crash if that crash involved at least one *fatigued* motor vehicle controller.

A motor vehicle controller is assessed as having been *fatigued* if the conditions described under (c) or (d) are satisfied together or separately.

- (c) The vehicle's controller was described by police as being asleep, drowsy or fatigued.
- (d) The vehicle performed a manoeuvre which suggested loss of concentration of the controller due to fatigue, that is:  
the vehicle travelled onto the incorrect side of a straight road and was involved in a head-on collision (and was not overtaking another vehicle and no other relevant factor was identified); or  
the vehicle ran off a straight road or off the road to the outside of a curve and the vehicle was not directly identified as travelling at excessive speed and there was no other relevant factor identified for the manoeuvre.

The limitations on the amount of information that can be determined for crashes self-reported by involved parties to Police via the Police Assistance Line has meant that fatigue cannot be reliably determined for these crashes. Therefore, from 2015, these crashes are not subject to the above assessment for fatigue involvement.