

ACRS Policy Position Statement

Speed Management

Summary:

Speed management is a critical component of eliminating fatal and serious injuries on our roads. The objective of this Policy Position Statement is to describe a more holistic framework for speed management. Speed management is best achieved through a comprehensive scope such as the 8-step approach to speed management policy put forward by the OECD and European Ministers of Transport. The principal tenets of this approach are that: the nature and function of roads and speed limits must be consistent. This means that as far as possible roads should be designed to explain the safe and appropriate speed to road users and make the safe speed in that location more obvious and intuitive to drivers; speed limits and enforcement should be credible and realistic to drivers and other road users.

Key policy positions:

1. Apply the comprehensive 8-step OECD/European approach to speed management policy.
2. Design traffic environments based on the nature and function of roads that are credible and plausible to road users, then set speed limits appropriate to this section of road.
3. Use traffic calming and infrastructure changes to achieve lower speeds where road functions include movement of a mixture of motorised (drivers/riders) and non-motorised (pedestrians, bicyclists) road users and to moderate speeds on high-speed roads.
4. Make sure that road users know the speed limit and understand why this limit is applied.
5. Ensure speed limits are credible and believable in terms of the traffic environments in which they are applied, and enforcement of speed limits is led by general deterrence strategies.
6. Accelerate the adoption of vehicle technology with demonstrated effectiveness for reducing excessive speeds and crash risk.
7. Evaluate speed mitigation and enforcement strategies using valid and reliable speed measurement before and after their introduction and publish the results.

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Policy problem

Excessive vehicle speed is a major cause of casualty crashes. Excessive travel speeds (speeding) can be defined in two ways:

- Speeds that exceed legally permitted maximum limits, and
- Speeds that are unsafe for the road and traffic conditions but are within the speed limit.

There is good evidence that driving at high speeds increases the likelihood of more severe crashes and probably increases the risk of crashes.(1) Speeding is a major factor contributing to pedestrian, cyclist and motorcyclist crashes.(2-4) Poor speed management has contributed to the existing and unacceptably high road trauma results in Australia and New Zealand. Good speed management is needed to achieve our ambitious 2030 targets in both countries and is essential for our ultimate vision of eliminating fatal and serious injury on the road. The Global road safety performance targets set by the UN to underpin the Decade of Action for Road Safety 2021-2030 aim for halving the proportion of vehicles travelling over the posted speed limit and a reduction in speed related injuries and fatalities.(5)

There are three main problem areas for speed management. First, high speed roads where, if a crash occurs, impact speeds will invariably result in the most serious casualty outcomes. Second, multipurpose roads where potentially high-speed vehicles encounter more vulnerable non-motorised road users such as pedestrians and bicyclists. Third, motor vehicles being driven/ridden too fast for the conditions.

Much road safety engineering activity has focused on retrofitting high speed roads while retaining existing speed limits. Further, policy attention has focused on reducing speed limits as a response to persistent infrastructure safety issues, although the actual volume of speed limit reductions is extremely low. The greatest amount of policy attention and safety activity has focused on compliance with speed limits through enforcement and penalties for non-compliant motor vehicle drivers/riders.(6, 7) Enforcement is the last line of defence in speed management, but faces entrenched perceptions of revenue raising, and an enforcement-dominated speed management strategy is unlikely to help reach societal safety goals. A wider range of approaches to speed management exist which should be adopted including, in priority order: design and management of safe infrastructure; vehicle technologies to support safe use of the road; safe and appropriate speed limits; police enforcement of speed limits; and community engagement.(8)

Principles underpinning ACRS position

- It is never acceptable that people are killed or seriously injured in the road traffic system
- The road traffic system must be made safe for all road users
- The unacceptability of fatal and serious injuries means that safety and health are more important outcomes of the road traffic system than efficiency or cost
- Safe and legal speeds should be obvious to drivers/riders to reduce speed management errors
- Speed limits should be set to match the road function, characteristics and design
- Speed management strategies should be comprehensive in scope and not rely primarily on setting and enforcing speed limits,

Evidence base

Management of speeding involves two elements. Safe speeds that limit the likelihood of crashes and survivable speeds where the human threshold for sustaining serious or fatal injuries is not exceeded.(9) Speeding involves travelling at above the sign-posted speed limit, or faster than is appropriate for the conditions. The safe speed will vary according to factors such as the type and function of the road, weather conditions, light and visibility, type of vehicle driven and traffic including problems like large differentials in traffic flow. Higher speeds increase both the severity of a crash and probably the likelihood of crashing, and relatively small changes in travel speeds can result in substantial changes in death or serious injury in crashes.(10) The higher the speed, the greater the stopping distance, therefore the greater the chance of a crash, and the greater the kinetic energy which must be absorbed, resulting in a greater chance of serious or fatal injuries.(11) For example, for head on crashes, the risk of fatality increases substantially after 70km/hr and the risk of serious injuries increases from as low as 30 km/hr, and for pedestrian crashes, the risk of fatality increases substantially from around 37 km/hr and of serious injury from around 30km/hr.(12, 13) There are also wider negative impacts such as increased traffic noise, air pollution and fuel consumption.(14) However, roads can be designed to naturally or inherently encourage travel at safe speeds.(15)

While some may see speed management as a trade-off between mobility and safety, safety must always be the priority and primary focus.(16) An innovative and comprehensive approach for addressing the problem of speeding was put forward in a 2005 report for the Organisation for Economic Co-operation and Development (OECD) and European Transport Ministers.(14) It builds on ideas from the Dutch Sustainable Safety approach to speed management(17) which consider the two important components of safe speeds: the nature and function of the road and driver behaviour. The approach brings the two components together by ensuring that the design of the road network and road infrastructure is easy to understand and is predictable so for drivers, safe behaviour is intuitive and the most natural behaviour, and vehicles are easy and predictable to use. Appropriate design of the road system and vehicles makes them more usable by drivers and reduces the likelihood of error as well as its consequences.(18, 19) The approach includes the importance of adequately educating and informing road users and, where still necessary, applying rules and enforcement.

For speed management, this approach incorporates the concepts of self-explaining roads which through their design, immediately produce safe behaviour from road users that is consistent with safe speed at that location.(20) The Sustainable Safety approach also highlights the importance of setting speed limits that are credible and plausible to road users in order to enhance compliance.

The strategy proposes a set of eight interrelated steps, which include:

1. Determine the function of the road including the types of road users allowed. This includes road functions such as free flow roads where the purpose is efficient throughput of long-distance traffic and non-motorised traffic is not allowed, distributor roads where the purpose is to allow drivers to enter and exit urban or rural areas from free flow roads and non-motorised traffic may be located, and access roads which allow access to properties along the road and are most complex as they incorporate multiple intersections and different types of road users. The Movement and Place approach is also relevant here.(21)
2. Determine the safe and appropriate speed for road lengths and intersections. This is based on an evaluation of the road function, characteristics, and design. Where the road section has combined functions, the safe speed should apply to the lowest function (access).

3. Set a speed limit that reflects the safe and appropriate speed that is credible in terms of the nature and function of the traffic environment at that location. Since the intention of speed limits is to advise drivers/riders on safe and appropriate speeds, it is essential that the limits set in a particular context are plausible to drivers/riders. Where this is not the case, changes should be made to the characteristics of the road context, or to the speed limit including through variable speed limit approaches, or both.
4. Apply road engineering measures where low speeds are crucial for safety. This applies especially where motorised and non-motorised road users coincide. Maintaining low speeds is difficult for drivers especially where the characteristics of the road indicate higher speeds. To achieve low speeds, traffic calming engineering solutions are essential, so the road environment becomes self-explaining or intuitive to road users and any posted speed limits are credible and plausible to road users.
5. Make sure people know the speed limit in force. Knowledge of the speed limit is a prerequisite for compliance so information on the limit must be available to drivers/riders through consistent signage and road marking. New technologies can also display the applicable speed limit to the driver within the vehicle.
6. Inform and educate drivers about speed and speed management. To complement all preceding steps, road users should be provided information about speed and speeding and the rationale for the system of speed limits.
7. Police enforcement to control the speeder. Speeding by some individuals may still occur in some contexts, especially high-speed roads, so enforcement will still be needed to manage these sources of speeding. The need for enforcement however should be reduced if the preceding steps are implemented.
8. Incorporate vehicle technologies where appropriate and available. New technologies that assist drivers to manage speed to safe levels should be encouraged and implemented as they become available. These include providing access to accurate and reliable speed limit information to the public and Intelligent Speed Adaptation technologies.

This 8-step approach is ambitious, but its evidence-base justifies the effort required to implement it, especially in the light of the high cost to the community of speeding-related fatalities and injury. Well-established road systems such as we have in Australia and New Zealand, already incorporate several of the elements of this approach, but mostly from the enforcement end of the spectrum – the importance of matching road function and design and speed limits for example is often missing. Australia and New Zealand have many roads that have a mix of functions such as access and distributor or free flow roads which creates considerable complexity. Where this occurs, design interventions and speed limits should respond to the lower-level function (eg, access).

The Australasian College of Road Safety recognises that simply relying on enforcement of lower speed limits is not likely to achieve our ultimate elimination goal. A much more systemic response is required. The College has advocated mandating intelligent speed adaptation in new vehicles to support driver compliance. The College has also advocated for publication of infrastructure safety star ratings which can be expected to promote better community understanding of safety issues (including speed management) and better and more infrastructure safety investment. This investment is critical to better speed management, has been demonstrated to be cost-effective, and needs to focus on both reducing human error and increasing crash survivability.

Drivers find it difficult to manage conflicting information about apparent road function and legal speed.(15, 20) Temporary requirements for lower speeds on these roads such as for road works must be well signposted to inform and provide drivers enough time to slow down.

When speeding behaviours are unintentional, such as when speed limits and road function do not match, or road signage is limited or difficult to see amongst other roadside clutter, an appropriate response should focus on improvements to the system design.

Speed enforcement strategies should follow well-understood behavioural principles: enforcement penalties should be proportional to the risk imposed by the offence; and penalties should be imposed at, or close in time, to the offence.(22-24)

Narrow speed management strategies that emphasise speed limits, for example, or do not address road design inadequacies, or inhibit effective enforcement, can reduce credibility, negatively impact on the overall public acceptance of road safety measures, and weaken the credibility of overall road safety policies. The OECD report drew attention to the need to avoid such outcomes by working successively through each of the steps in implementing the suggested speed management.

Recommended policy actions:

1. Implement a comprehensive and holistic approach to speed management to match road function and intuitive and credible speed limits to manage speed.
 - a. The eight steps approach recommended by the OECD/ECMT report should be used for speed management in all new road developments.
 - b. In any reviews of existing roads, the eight steps approach should be used to set credible speed limits and identify where road engineering solutions are needed to achieve sustainable safety.
2. Rolling ten-year investment strategies should be developed which specify the activity and resources needed to match road infrastructure design and function to credible speeds for people to use safely.
3. Regulatory impact statements should be conducted on lowering default urban and rural speed limits and conducted in a manner which recognises the significant change leadership task required in speed management.
4. Regulations should match European vehicle safety standards which are requiring application of evidence based intelligent speed adaptation technology which restricts vehicle speed to legal limits.
5. Promote improved road user understanding of the effects of speeding and the reasons for safe speeds.

ACRS actions:

1. Advocate for the recommended policy actions
2. Advocate for a more comprehensive approach to speed management that is based on the eight steps approach recommended by the OECD and European Ministers of Transport.
3. Encourage adoption of policies on speed management that:
 - a. ensure consistency between the characteristics and function of the road and the speed limit applied and
 - b. include speed limits and enforcement that are credible and plausible to road users.
4. In the context of the first two actions, promote education for road users that explains the effects of speeding and the reasons for speed limits and enforcement.

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