

SAFE SPEEDS



WHAT IS THE PROBLEM?

- In 2008, speed contributed to 34 percent of New Zealand's fatal crashes and 20 percent of serious injury crashes.
- In 2008, 127 people died, 569 were seriously injured and 2,060 received minor injuries in crashes where speed was a contributing factor. The social cost of these crashes was about \$875 million.
- There has been a drop in both mean speeds and the percentage of drivers exceeding the speed limit over the past decade. This has resulted in fewer fatal and serious injury crashes.
- However, recently progress has stalled. The majority of drivers, including heavy vehicle drivers, still routinely exceed the posted speed limit in urban areas.

Speed affects the likelihood and impact of all crashes. Small reductions in impact speeds greatly increase the chances of surviving a crash, particularly for pedestrians or cyclists (Table 4). This is why speed management is a key element of road safety strategies worldwide.

OUR 2020 GOALS

Our overall goal is to reduce the number of crashes and the severity of the crashes that do occur. Managing speed is crucial to this because the outcome of all crashes is strongly influenced by the impact speed.

A Safe System manages the forces of a crash to a level that the human body can tolerate without serious injury. The impact of a crash depends on the conditions of the road, the vehicle, the vulnerability of the road user and the travel speed. Small reductions in speeds greatly reduce the likelihood of a crash and increase the chances of surviving crashes that do occur. Our long-term goal is a significant reduction in speed-related crashes.

Table 4: Chance of death at different impact speeds

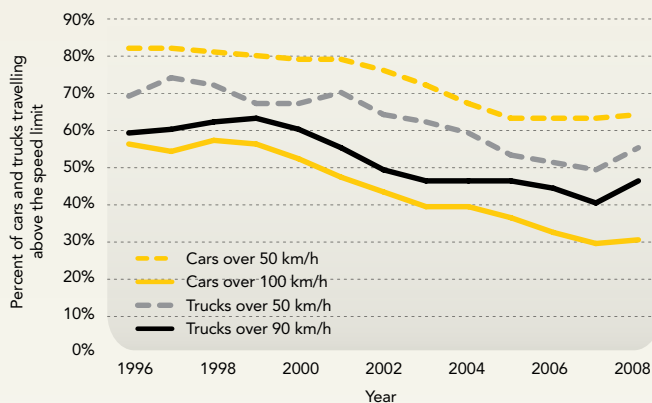
COLLISION TYPE	PROBABILITY OF DEATH		
	10%	30%	50%
Pedestrian struck by car	30 km/h	40 km/h	45 km/h
Car driver in side impact collision with another car	50 km/h	65 km/h	75 km/h
Car driver in frontal impact with another car	70 km/h	95 km/h	105 km/h

Over the past 10 years there has been a drop in both mean speeds and the percentage of drivers exceeding the speed limit. This resulted in fewer fatal and serious injury crashes.

However, recently these trends have begun to change (Figure 7). The majority of drivers, including those driving heavy vehicles, still routinely exceed the posted speed limit in urban areas. Many people still drive too fast for the conditions (eg in wet weather). This is partly due to poor understanding of how changing conditions can increase risk and partly due to the variable quality of our roads.

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Figure 7: Percent of cars and trucks travelling above the speed limit



WHAT SAFER JOURNEYS WILL ACHIEVE

Speed affects all crashes. We want to see a reduction in unsafe speeds; that is, both travelling too fast for the conditions and speeding. If we achieve this we will see a reduction in all crashes, not just speed-related ones.

The strategy will pursue this objective in two ways. First, it will help people to drive to the conditions, and second, it will encourage people to comply with the speed limits.

Improving our roads and roadsides will encourage people to travel at speeds that are safe for the conditions. Improving basic features such as road markings and signage will help road users to identify and understand the speed limit. The speed that is safe on a road under particular conditions (eg wet weather) should be obvious to the road user, but this is often not the case.

We want to better match speed limits to the safety features present on our roads and the mixture of road users. If a road does not have a high standard of safety features present, or if it is used frequently by pedestrians and cyclists, then its speed limit should reflect these conditions.

We will also strengthen our efforts to inform road users about the risks and consequences of speeding and driving too fast for the conditions. It is clear from the crash statistics that many people underestimate how changing conditions, such as wet weather, can increase road risk. Better communication about the proven benefits of travelling at safer speeds can increase support from road users.

Research shows that moderating both mean and excessive speeds could significantly reduce road deaths and serious injuries¹⁵. Our modelling suggests that:

- if open road mean speeds dropped by 5 km/h, 60 lives per year would be saved
- if urban mean speeds dropped by 5 km/h, 30 lives per year would be saved
- if all vehicles currently travelling above the speed limit were to travel at the limit, 60-70 lives would be saved per year
- if all drivers drove at speeds fit for the conditions lives would also be saved, although it is difficult to estimate how many.

Even if we safely engineer our roads, have sensible speed limits and improve understanding of speed, some drivers will still ignore the messages. These road users are a risk to themselves and to others, so enforcement is necessary. We will continue to strengthen enforcement, including tolerance (the minimum speed above the limit at which someone can be given a ticket), to reinforce the importance of complying with speed limits¹⁶.

WHAT ACTIONS CAN WE TAKE?

- Improve the cost-effectiveness of enforcement by increasing the use of speed cameras and red light cameras. This would free up Police to focus on high risk drivers.
- Investigate the use of point-to-point (section control) speed cameras.
- Change the penalty system to deter speeding (higher demerit points and lower fines).
- Apply demerit points to speed camera infringements.
- Help people understand the benefits of travelling at safer speeds.
- Create more speed zones on high risk rural roads to make roads more self-explaining and help establish the criteria for what roads with different speeds should look like.
- Increase the adoption of lower speed limits in urban areas.
- Investigate the requirements to support Intelligent Speed Assistance.
- Improve data on speed-related crashes.

¹⁵ If we did achieve these reductions there could be some impact on journey times, notably on the open road. However, fewer crashes also mean fewer delays (eg blocked lanes, diversions). A high level of safety improves the reliability of journey times on key routes that carry high volumes of people and freight.

¹⁶ The OECD notes: "Setting higher tolerance levels above speed limits gives a misleading signal to the drivers and makes the speed limit system less credible." OECD. 2006. *Speed Management*. OECD Publishing, Paris. The OECD recommends that tolerance levels should be set at the absolute minimum taking into account possible inaccuracies in measurement. If a driver receives a ticket at 61 km/h but not at 55 km/h, then they are more likely to think that 55 km/h is still a safe speed even though the speed limit is 50 km/h. Enforcement is more effective and speed limits are more credible if tolerance levels are low. In general a high tolerance level sends mixed messages to road users. Surveys have revealed that people believe it is safe to drive at speeds close to the tolerance level irrespective of the posted speed limit.

Improve the effectiveness of enforcement by increasing the use of cameras

Speed cameras

If the chance of being caught speeding and being penalised is high, most people will comply with the speed limit. Enforcement works best when it is highly visible and where drivers can expect speed limits to be strongly enforced on an 'anytime, anywhere' basis.

There are several proven methods that could be used to enforce speed limits. These include manual enforcement by police officers and automated enforcement by cameras. Technologies are now available to allow speed enforcement to be much more automated and efficient. The international trend is towards more automated enforcement.

International evidence shows that additional cameras can reduce the number of road deaths significantly and cost-effectively. They are expensive to install, but their effectiveness has been well demonstrated. Speed cameras are also more accurate than hand-held devices, so enforcement tolerance levels can be minimised.

Over time, making more use of speed cameras will free up Police resources so they can concentrate on enforcing other high risk behaviour.

CASE STUDY

In the early 2000s France installed over 1,500 fully-automated cameras to reduce speed-related fatalities. Subsequently, the average speed on French roads decreased by 5 km/h between 2002 and 2005. Road deaths fell by over 30 percent, three-quarters of which was credited to the new low-tolerance speed camera system.

In Australia, Victoria has taken a similar approach, introducing more speed cameras. Speeds are enforced at the lowest possible tolerance their equipment allows, which is 3 km/h over the limit.

The use of speed cameras would be prioritised where the greatest risk to safety exists. That is, places where monitoring shows a large proportion of people are driving at high risk speeds. Over the course of this strategy we would increase the use of speed cameras. Mobile and hand-held devices would continue to be part of enforcement.

Enforcement will also continue to include a random 'anytime, anywhere' element as this has been shown to effectively influence a driver's perception of being caught speeding.

Investigate the use of point-to-point speed cameras

Point-to-point control is an emerging speed management method. A driver's speed is measured by speed cameras at two points, typically 2 to 5 kilometres apart. The driver's average speed is then calculated based on the time it takes to travel between the two cameras. If this average exceeds the speed limit an infringement notice is generated.

Point-to-point speed management is already used in Australia and several European countries. Early results show a significant improvement in compliance with speed limits at point-to-point sites, and improved traffic flows. We intend to investigate the requirements to introduce point-to-point cameras in New Zealand and possibly undertake some trials.

Red light cameras

A high proportion of crashes occur at intersections. These are often due to poor decision making, such as running a red light. Red light cameras can discourage this risky behaviour. Red light cameras are relatively new to New Zealand although trials have been underway for some time.

CASE STUDY

Red light cameras are currently being trialled at a number of high risk locations in Auckland. Recent results show there has been, on average, a 43 percent drop in red light running at the six highest risk locations since the trial began.

We will continue to monitor these trials and work with local authorities to consider how we could best use and administer these cameras.

Change the penalty system to deter speeding (higher demerit points and lower fines)

Our current penalty system for speed enforcement is based more on fines than demerit points. This may be why some people believe speed enforcement is about revenue gathering.

Moreover, there is a high rate of non-payment of traffic fines, including those for speeding. Over 90 percent of all New Zealand's currently unpaid fines are for traffic offences. Moving towards a more demerit-based system would tackle these issues.

We intend to address this by reducing fines and increasing demerit points for speeding. This approach would also help to address repeat offending, because the potential for licence suspension resulting from an accumulation of demerit points is a stronger deterrent than a series of fines.

These changes would increase the effectiveness of speed management, ultimately make it more acceptable to the public, and be consistent with other countries.

Investigate applying demerit points to speed camera infringements and reducing fines

Demerit points and fines are currently applied when a police officer issues a ticket, but camera-detected offences attract only a fine. This gives the public mixed messages. More importantly, it also means that enforcement is less effective.

In New Zealand it has been estimated that introducing speed camera demerits would save five lives and prevent 170 serious injuries per year or \$53 million in social cost. There would be associated costs but overall the benefits are calculated to exceed the costs by at least 10 to 1. Adding demerit points to speed camera offences would be accompanied by reducing the fines that infringements attract.

A number of practical issues would need to be resolved before this action could be taken. These include identification (what if the driver cannot be clearly identified), liability (what happens if the driver is not the owner), and administrative and system costs. These issues have been addressed in countries that have demerits on speed camera offences, so we would look at how applicable these approaches would be in New Zealand.

Help people understand the benefits of travelling at safer speeds

People are more likely to travel at safe speeds if they understand how it benefits them and if they believe the rules are important.

The majority of road users broadly recognise the risks of speeding and support enforcement of the speed limit¹⁷. However, crash statistics show that many people are not putting their understanding of speed risk into practice.

We want to help people to understand why it is important to manage their speed safely and how they can do it. This means:

- raising awareness of the benefits of travelling at safer speeds (eg by explaining how small reductions in speed can greatly reduce risk)
- communicating the strong link between travel speeds and serious trauma. Travelling too fast means less time to react, less chance to avoid a collision, more chance of losing control, and more chance that the trauma will be severe in the event of a crash
- helping people to understand the importance of adjusting their speed as conditions change
- tackling the myth that low level speeding is not a safety issue by highlighting the severe impact that crashes can have on pedestrians, cyclists and motorcyclists¹⁸
- using technology such as variable speed limit signs to help increase understanding of driving to the conditions.

Achieving these objectives would help road users make informed and conscious decisions to travel at safe speeds. This supports the subconscious signals they receive from the design, layout and safety features present on the road.

In time, technology such as Intelligent Speed Assistance (ISA) and other intelligent transport systems will also help the driver by sending information directly to the vehicle, such as the prevailing speed limit and if the driver is exceeding the limit or going too fast for the conditions.

Over the course of the strategy we will continue to improve the ways we promote and reinforce these key messages on speed for road users through education, advertising, information technologies and other means of raising awareness.

Create more speed zones on high risk rural roads to help make roads more self-explaining and to establish the criteria for what roads with different speed limits should look like (eg 80 km/h, 90 km/h, 100 km/h)

Most of our rural roads were built before the concept of design speeds (where roads are designed to be safe at a particular speed to match the condition of the road) were introduced. Most are undivided and have a single lane in each direction.

Many people drive at speeds that are unsafe for the conditions of the road. This is because they respond to inaccurate design features and cues on that road, which suggest the road is safer than it really is.

Safety would be improved if we could reduce operating speeds to match the standard of the existing network. A more suitable speed limit for these roads would be one that more closely matches their design and safety features (or lack of them), rather than the general open road limit of 100 km/h. The ideal solution will also engineer the road environment to send the correct speed cues to the driver.

CASE STUDY SPEED ZONES

Several Australian states have conducted speed zone trials with good success. For example, in Queensland four high risk sections of road were recently treated with a 10 km/h reduction in the speed limit, supported with increased signage alerting motorists that it is a high risk area. There is also increased enforcement. Initial speed surveys revealed that mean speeds dropped by 7 to 10 km/h. This drop in mean speeds is expected to yield a reduction in speed-related crashes¹⁹.

17 Ministry of Transport. 2008. *Survey of public attitudes to road safety*. MoT, Wellington.

18 A cyclist/pedestrian hit at 30 km/h has a 90 percent chance of survival. If they are hit at 45 km/h their survival chance decreases to 50 percent. Once the impact speed reaches 70 km/h the survival chance is virtually zero.

19 This is a recent project so the impact on speed-related crashes is not yet known.

This initiative focuses on rural roads where speed-related crashes are a big problem and the 100 km/h limit is clearly unsafe. On these roads we intend to create a number of new speed zones. The medium-term focus could be on changing the speed limits to 80 km/h or 90 km/h. Where possible, these speed limits would be supported by signage, enforcement and engineering treatments that make the roads more self-explaining. In the longer term it may be necessary to review the system for setting speed limits.

Increase the adoption of lower speed limits in urban areas

Road safety experts worldwide have increasingly recognised that a 50 km/h speed limit is generally too high for residential neighbourhoods and busy town and city centres where there are many pedestrians.

This reflects a better understanding of the impact that speed has on the human body. Small reductions in impact speed greatly improve chances of survival in a crash. A pedestrian hit at 45 km/h has roughly a 50 percent chance of survival. At 30 km/h the chances of survival are 90 percent. Children and the elderly are more vulnerable.

In addition to the safety benefits, lower speeds create a better ambience and encourage more activity around retail centres and local neighbourhoods, which is important for economic development and social interaction.

CASE STUDY

Many countries are dropping their urban speed limits and some impressive results have been reported. For example, the City of Hull in England introduced a 20 mph (32 km/h) speed limit on over a quarter of its urban roads, which contributed to a 90 percent reduction in fatal and serious injury crashes.

In New Zealand, 30 km/h or 40 km/h speed zones are being increasingly used by local authorities. We would work with local authorities to ensure there are no unnecessary barriers to creating these speed zones where they are needed.

Investigate the requirements to support Intelligent Speed Assistance (ISA)

ISA is a type of Intelligent Transport System that limits the speed of a vehicle. ISA is an innovative and emerging technology that could significantly reduce the number of deaths and injuries on our roads. It is a technological solution primarily aimed at reducing driver error and reducing trauma should crashes occur.

There are three forms of ISA:

- **advisory**, where it tells the driver if they are speeding (eg via alarms or lights)
- **voluntary**, where the system is linked to the vehicle controls (eg by limiting fuel injection) but the driver can choose when to have the system enabled
- **mandatory**, where no override is possible (the system automatically makes sure the driver cannot speed).

Research from the United Kingdom has shown that ISA has significant safety benefits, with advisory ISA achieving an 18 percent reduction and mandatory ISA a 37 percent reduction in fatal crashes. In other European Union countries, it is predicted that up to 50 percent of traffic deaths could be avoided if all cars were equipped with mandatory ISA. As a result of such research a number of countries are now trialling ISA. The Department for Transport in the United Kingdom is taking a leading role in the development of a national speed limit database to support the implementation of ISA.

There are likely to be target markets for early implementation of ISA, including fleets, repeat speeding offenders and high risk groups, as well as heavy vehicles and eventually the wider community.

We will work with road controlling authorities and the motor vehicle industry to investigate the requirements for supporting ISA in New Zealand. This work could include a pilot project.

Improve data on speed-related crashes

Over the course of the strategy we will look to improve the way we collect and process information on speed-related crashes. Currently the speeds at which people were travelling just prior to crashing is only recorded for 43 percent of fatal crashes. We would like to record this information in all fatal crashes. Improving this data is important because it will give a better picture of the proportion of drivers who were exceeding the speed limit just before crashing, and by how much. It will also show the proportion who were travelling at, or under, the speed limit but going too fast for the conditions.