

## Changing the Culture of Speed on New Zealand Roads

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### **Abstract:**

In 1999 in New Zealand, 153 people died and 2095 were injured in motor vehicle crashes in which travelling too fast was a contributing factor. This makes speeding the major contributing factor in road trauma and consequently one of this country's major injury or public health issues. New Zealanders in general do not view speeding in the same light as drink driving and are less likely to embrace speed reduction messages.

Attitude surveys show that twice as many New Zealanders believe they can drive safely when speeding as believe they can drive safely after drinking. In the recent consultation for the New Zealand Road Safety Strategy to 2010 the one issue on which there was almost unanimous support was that the open road speed limit should not be reduced. This poses a tricky community development, public health and road safety question about what to do when the community is looking at the wrong issues. The Accident Compensation Corporation (ACC) has developed a speed education program in collaboration with the Land Transport Safety Authority to provide communities directly with information that allows them to see the local impact of excess and inappropriate speed.

This paper outlines the development of the ACC "Down With Speed" program and explores the issues relating to the implementation of injury reduction strategies when the community's culture is not supportive. How do you create an enhanced safety culture and reduce injury concurrently? The paper takes a strategic perspective and looks at issues for those developing injury prevention community based programs.

### **Background:**

The first attempt to control the speed of motor vehicles (or road locomotives) was in the United Kingdom in 1865 when the Red Flag Act was enacted. It specified that every road locomotive must be attended by at least three people. Everyone understands the need of a driver but early motor vehicles were steam powered. This required a second person to stoke or maintain the fire. The third person was required to walk ahead with a red flag to warn on-coming traffic and to help control resistant horses. The maximum allowed speed of a road locomotive was 2 mph in town and 4 mph in the country.

The McLean Motor-car Act 1898 allowed, for the first time, the use of motor vehicles on New Zealand roads. William McLean was a prominent businessman and Member of Parliament. He had imported two Benz cars into New Zealand in February 18, 1898. At that time motor vehicles were not allowed on the roads - indeed, there was considerable opposition to them because they frightened the horses. McLean prepared a private member's bill and after months of debate, division and alteration Lord Ranfurly put his name to the McLean Motor-car Act, 1898. It defined the motor-car as "any vehicle propelled by mechanical power, which unladen is under three tons in weight, so vehicle being so constructed that no smoke or visible vapour is emitted therefrom except from some temporary or accidental cause". The act imposed a maximum speed of 12mph and a fine of £10 for excessive speed.

Soon after the passing of the act, the Mayor of Wellington took one of McLean's cars for a ride. He got the car up to the break-neck speed of 16miles per hour. Unfortunately, in the process he crashed the car into the Basin Reserve fence, fell off and broke his nose, becoming the first person in New Zealand to suffer injury in a car crash and to do so in a speed related crash.

Since then speed has continued to be a major factor in motor vehicle crashes in New Zealand as it has throughout the world. Towards the end of the twentieth century speed surpassed alcohol as the major contributing factor in road trauma. In 2001 speed was the major contributing factor in 31% of fatal road crashes and 15% of all injury crashes. Nevertheless people continue to believe that they are not at risk when they travel at speeds in excess of the speed limit.

In a 1998 attitude survey, 38% of New Zealand drivers openly admitted they enjoy driving fast on the open road; 16% of drivers reported receiving a speeding ticket in the previous 12 months. Apart from the most excessive speeding behaviour, it appeared that the community tolerated speeding as an acceptable social behaviour, and had inadequate information about the impact of speed on its health and wellbeing. The total social cost of crashes in which a driver was travelling too fast for conditions in 2001 was \$770 million. ACC spent \$213 million in the last financial year helping New Zealanders who are suffering the effects of motor vehicle injuries.

ACC Injury Prevention's Down with Speed program challenges the acceptability of speeding in New Zealand's culture.

- 30 years ago intelligent, responsible New Zealanders denied that smoking caused lung cancer.
- 15 years ago intelligent, responsible New Zealanders thought they could drink what they want and drive home.
- Today, intelligent, responsible New Zealanders think they can drive above the speed limit, free of increased injury risk to themselves and other road users.

### **The Program – Phase One**

ACC Injury Prevention's Down with Speed program has been designed to address New Zealanders' deadly attitude to speeding. With the assistance of the Land Transport Safety Authority, ACC Injury Prevention developed an internationally peer-reviewed literature review and data analysis on the impact of speed. ACC Injury Prevention has been using this research literature to dispel some myths and provide new information about speeding that New Zealanders simply cannot afford to ignore. The literature review is now available on the ACC website in pdf format at [www.acc.co.nz](http://www.acc.co.nz).

The findings in the literature review were included in a presentation package entitled "We Can't Afford to Ignore the Impact of Speed." The presentation aimed to dispel some myths by outlining the 10 key points in the review. These are outlined in the presentation as follows:

1. Higher speeds result in more crashes. The faster a driver travels on a road the more likely they are to crash. As speed increases, the stopping distance increases, there is greater probability of exceeding the critical speed on a curve and there is greater chance other road users will misjudge how fast the speeding driver is travelling.
2. Higher speeds result in more severe injuries. The severity of injuries resulting from a crash is directly related to the pre-crash speed of the vehicle. When a vehicle crashes, it undergoes a rapid change of speed but the occupants keep moving at the vehicle's previous speed until stopped, either having been thrown from the vehicle and hitting an external object, having smashed into the vehicle interior, or having been restrained by a safety belt or airbag.
3. Speeding is just as dangerous as drink-driving. Research from Australia (Kloeden et al, 1997) shows there is a comparable relative risk for drink-driving crashes and for speeding crashes. A 5km/h increase in speed above 60km/h in a 60km/h zone increases the risk of a crash resulting in injury by about the same amount as an increase in the blood alcohol concentration of 50mg/100ml. There are large differences in penalties for drink-driving and speeding despite the similarity in a driver's risk of crashing and injuring or killing themselves or someone else.
4. Fewer New Zealanders would be killed and injured if we all slowed down. If we reduced average speed on New Zealand's open roads by just 4km/h it is estimated that 52 deaths, 133 serious injuries, and 257 minor injuries would be saved.
5. New Zealand's rural roads aren't generally built for speeds over 100km/h. A significant part of New Zealand's rural road network was constructed under an 80km/h open-road speed-limit regime. Where roads have been rebuilt, there design speeds have generally been increased to 100km/h. Similar networks in other developed countries often have speed limits of 80 or 90km/h.
6. Vehicle design can affect how fast we drive. Modern vehicle design has created less noise, less vibration, less tilting when taking corners, and more comfort. These design features insulate drivers from the perception of danger when speeding and influence speeding behaviour.
7. The roading environment can be altered to slow us down. How drivers perceive the road is a critical factor in speed choice. Roadside development tends to slow traffic down, so drivers will tend to travel faster on open rural roads and slower on built-up urban roads. Speed humps, road narrowing. And chicanes, as well as road markings, can help to reduce speed. To be effective, speed limits should be consistent with the design speed of the road and should be backed up by enforcement.
8. People can't beat the laws of physics. The faster a driver travels on the road, the greater the risk the driver has of missing critical hazard cues. Upon recognising the hazard at the faster speed, the driver will travel further before applying the brakes and will travel further once the brakes are applied.
9. Slowing down loses very little time, it saves money, and it is good for the environment. Reducing average speed from 90 to 85km/h on a 10 km trip adds just another 23 seconds to travel time. Fuel efficiency starts to reduce noticeably at

speeds above 90km/h. At high speeds and acceleration, the emission of several major pollutants rise due to increased power demands on the engine.

10. Enforcement protects us from speeding drivers. Rigorous enforcement of speed limits increases the perceived (and actual) risk of being caught. This deters speeding, reduces average speeds and saves lives.

### **Phase Two**

This presentation was delivered by ACC's network of Injury Prevention Consultants 382 times in the first half of 2000 to a range of community groups and interests. It was based on the literature review document and covered a wide range of issues including vehicle and road design, enforcement, and driver capability, as each of these impact on speeding as a safety issue. The presentations sought to increase the community's understanding of why speeding is such a critical road safety issue. A supporting brochure was distributed to audiences to reinforce the key points from the presentation. The audience response to the presentations was evaluated by a professional research company. The response was pleasing with over 75% claiming the information made them look at speed in a different light. One disappointing aspect of the evaluation was that the more negative comments came from the major organisations tasked with reducing speed related road trauma.

ACC Injury Prevention targeted the presentations to three sets of key influencers: road safety professionals (including police, roading engineers and community road safety coordinators), other road safety interests (including the Automobile Association and major transport operators), and community groups with a direct interest in local speeding issues. ACC believes that increased understanding of speed as a safety issue will lead to more action to reduce speeding, and to support speed reduction strategies. This initial program phase has been supported and will continue to be supported with local speed-related projects, developed and implemented in collaboration with our road safety partners in the community.

### **Phase Three**

As a direct result of the presentations 16 community programs were planned and conducted in the 2000-01 financial year. All of these programs were intersectoral and addressed specific roads or areas with identified speed crash blackspots. A budget of approximately \$15,000 was allocated to each program to be used for local advertising, public meetings, payment for speed surveys etc. The programs were supported at the national level with the development of advertising concepts that could be placed in local press and the development of brochures, bumper stickers and billboards that could be used by local Injury Prevention Consultants in any way they wished.

In the 2001-02 year the program was extended slightly and involved 19 communities. In the same year ACC purchased three laser speed guns and four electronic speed trailers to be used as tools in the programs. Research in Denmark and the United Kingdom had shown that making motorists aware of their speed and the fine they would attract if caught by the Police, was successful in reducing speeds through road works and school zones. We wanted to see if the same effect was produced in ordinary traffic situations. Initial indications are that this was successful so the program is being extended into 23 communities during 2002-03. A further 19 speed trailers have been ordered. This will reduce the wear and tear of transporting them between communities.

The Down With Speed programs follow a standard formula. This was developed by LTSA and produced in written form so that every Injury Prevention Consultant is aware of the requirements. The formula includes the following five steps:

1. Data collection. This includes traffic crash reports from LTSA and speed reports from the road controlling authority.
2. The data is analysed to identify problem areas. In some cases surveys are conducted where the official information is incomplete or contradictory to establish average speeds and determine whether these constitute an above average crash risk.
3. Plan activity. The project is planned with all relevant community interests. This includes official agencies such as the Police, LTSA and Public Health Authorities as well as ACC but it also includes community interest groups. These differ from program to program but have included schools, retailers, citizen's advocate groups, church groups and ethnic groups including representatives of Maori Iwi.
4. Implement plan. Activity in the program is in two phases. The first is an information phase which may include advertising, the use of the speed trailer and direct marketing. Direct marketing usually takes the form of a letter to drivers observed at trailer sites to be travelling too fast. They are informed of the speed they were travelling at and the consequences had they been stopped by Police. The social consequences of inappropriate speed are outlined and there is a request for speed moderation in future. In some communities a reward and punishment system has been set up. A sum of money is put aside for the schools in the community. This is held for six months. During that time the amount reduces by \$10 every time a speeding ticket is issued in the community. The community, especially the children apply pressure for drivers to conform. The education phase is always followed by an intensive enforcement phase. The view

is taken that the drivers have been adequately warned of the consequences of speed. Those that fail to heed the warning should suffer the legal if not the physical consequences of inappropriate speed.

5. Finally, an impact evaluation is conducted. The aim of the program is to lower speeds. It should follow that reduced speed equals reduced crashes and injuries. Speed surveys are conducted at the end of the program. These are normally conducted twice. The first survey is soon after the enforcement phase and the second several months later to see what level of relapse there has been.

### **Results**

The program evaluations have been mixed. Some have shown no change and a few have shown an increase in mean speed but the majority have successfully reduced speed. In a couple of communities this effect has been quite dramatic. In one rural Auckland community not only did average speed drop by just under 10km/h but there were no speed related crashes in the first six months of 2002. In the same period last year there were 17 speed-related crashes. In this case there was no other intervention that could account for the reduction.

Another urban Auckland project successfully lowered average speed on an urban feeder road notorious for excessive speed. The major strategy in this project was use of billboards that merely recorded the average speed of vehicles on this road. The average speed was measured every week and the billboard up-dated. As the advertised speed reduced so did the average speed. It appeared drivers did not want to appear to be outside the norm.

### **Future Strategies**

During this financial year a meta-analysis of all Down With Speed projects will be conducted. This will identify the strategies that have been most successful and those that have not worked. The community guide will be amended accordingly.

Police activities on State Highways have undoubtedly been the major contributor to speed reduction on those roads. The advent of the Highway Patrol and an insistence on rigid adherence by staff to policy guidelines and tolerances has resulted in a major drop in speed related crashes on State Highways. For this reason it may be beneficial for community road safety activity to concentrate on urban roads and rural roads off the state highway network.

Another area we have yet to influence is the workplace. Statistics on the number of road crashes that are work related are not reliable. Whether or not a crash is work related, however, the workplace is an important channel for ACC in getting across road safety messages. We have an ongoing relationship with all employers in New Zealand, particularly the top 2,500. We have revised the Down With Speed presentation and placed it on CD-ROM so that it is available for Occupational Health and Safety Managers to use in the workplace.

It is too early to say what impact the Down With Speed program has had on speed and speed-related crashes. It is not rocket science but we believe it has made a valuable contribution by dispelling the myths, providing road safety professionals with simple messages to take into their communities that are evidence based and stimulating debate on the speed issue.