

- 24 Winston, Flaura K. Chen, Irene G. Elliott, Michael R. Arbogast, Kristy B. Durbin, Dennis R. Recent trends in child restraint practices in the United States. *Pediatrics*. 113(5):e458-64, 2004 May
- 25 Brown J and Bilston LE. High Back Boosters: In the field and in the laboratory. 50th Annual Conference American Association of Automotive Medicine, Chicago 2006.
- 26 *Pediatrics*, American Academy of. Car Safety Seats: A Guide for Families. 2005 [cited 2005 January 20th]; Available from: <http://www.aap.org/family/carseatguide.htm>
- 27 CDC. Clinical Growth Charts. 2000 [cited 2005 1st February]; Available from: http://www.cdc.gov/nchs/about/major/nhanes/growth_charts/clinical_charts.htm
- 28 Klinich K, Pritz H, Beebe M, Welty K. Survey of older children in automotive restraints. In: 38th Stapp Car Crash Conference; 1994; Fort Lauderdale, FL, USA: Society of Automotive Engineers; 1994; 245-264.

Research Study into the Speed Behaviour of Long and Short Haul Heavy Vehicle Drivers

by Daya Withaneachi. Roads and Traffic Authority of New South Wales

This paper was originally presented at the November 2005 Road Safety Research, Policing and Education Conference held in Wellington, New Zealand.

Abstract

In 2005, the Roads and Traffic Authority (RTA) commissioned AMR Interactive to conduct a speed knowledge, attitudes and self reported behaviour research study to identify the reasons why long and short haul heavy vehicle drivers' speed, evaluate the role of enforcement and the types of measures that would influence the drivers to keep within the speed limits.

The qualitative stage included 10 face to face interviews and the quantitative stage included a telephone survey of 376 heavy vehicle drivers.

The highest risk groups identified were younger short haul, younger long haul and older long haul heavy vehicle drivers. About one in ten drivers reported having been booked for speeding in the last 12 months and similar proportions reported that they would be willing to drive more than 10 km/h over the limit while 15% stated they failed to stay within the speed limit in built up areas.

About a quarter of drivers reported experiencing some pressure to speed to meet deadlines. Drivers reported that on-road police enforcement would have the greatest impact on their attitudes and behaviour.

Possible countermeasure strategies include development of an education strategy addressing attitudes to speeding, situational triggers, planning trips and rest breaks, encouraging companies to develop and implement anti-speeding policies and increasing visible, unavoidable police enforcement.

Introduction

Speeding continues to be a major road safety issue. In 2005 there were 70 fatal crashes involving a heavy truck, and of these 13 (19%) involved a speeding heavy truck. There were a total of 290 recorded crashes involving a speeding heavy truck - 13

were fatal crashes, 132 were injury crashes and 145 were tow away crashes. There were 171 casualties from the 290 speeding heavy truck crashes - 15 were killed and 156 were injured [1].

These figures are likely to be an underestimation of heavy vehicle speed involvement, given the high rate of speeding by heavy vehicles (see below) and the higher probability that the heavy vehicle driver will survive to tell his/her side of the story, compared with other road users.

Highway speed surveys conducted by the RTA shows that 52% of heavy vehicles were exceeding the speed limit. The survey found that a high proportion of articulated trucks (34%) and b-doubles (35%) were travelling between 1-5km/h over the limit and 13% of articulated trucks and b-doubles were travelling between 6-10km/h over the limit. Approximately 1% of articulated trucks and b-doubles were travelling 21km/h over the speed limit [2].

Method

The research study was conducted during May 2005 and consisted of a qualitative and quantitative stage. The qualitative stage included in-depth face-to-face interviews with 10 truck drivers (5 long & 5 short haul) to explore motivations/situations that lead to speeding as well as those that lead to staying within the speed limit for the development of the questionnaire for the quantitative stage.

The quantitative stage consisted of a telephone survey of 256 truck drivers and 120 face-to-face interviews with long haul drivers at a truck stop and a trucking terminal. The face-to-face interview component was included to ensure that long haul drivers were well represented in the survey. The quantitative stage examined components that influence behaviour: situational factors such as trip type, schedule, on

road hours, time of day and weather conditions, type of road, factors that motivate them to speed such as attitudes to speeding, perception of safety, responsibility and the consequences of speeding such as crashing, getting caught, as well as the incentives and disincentives.

Group comparisons

The drivers were grouped into a number of categories as shown in **Table 1**.

Table 1. Categories of drivers, number and proportion of drivers in each category.

| Grouping | Categories | Number | % of Sample |
|----------------------------------------|----------------------------------------|--------|-------------|
| Total | | 376 | 100% |
| Trips more than 100km from driver base | Short Haul (0-10%) | 163 | 43% |
| | Long Haul (11-100%) | 213 | 57% |
| Employment of driver* | Owner driver not working for a company | 72 | 19% |
| | Owner driver working for a company | 68 | 18% |
| | Company driver | 233 | 62% |
| Size of usual vehicle | 4.5 to 12 tonnes | 61 | 16% |
| | Over 12 to under 42 tonnes | 146 | 39% |
| | 42 tonnes and over | 169 | 45% |
| Age of Driver | Up to 39 years | 134 | 36% |
| | 40-49 years | 132 | 35% |
| | 50 years and over | 110 | 29% |

*Three drivers gave some other category of employment

General profile of drivers

The incidence of long haul trips increased substantially with the size of the vehicle driven, with drivers of vehicles up to 12 tonnes gross vehicle mass (gvm) the least likely to report at least 90% of their trips as long haul (7%), and drivers of vehicles of at least 42 tonnes gvm the most likely (56%). Drivers aged 40-49 years reported a higher proportion of their trips as long haul. The incidence of long haul trips increased with hours worked each week. The number of hours worked was higher for long haul drivers, company drivers, drivers of larger vehicles and younger drivers.

About 37% of drivers were ‘owner drivers’ with half of them working directly for a company. Overall 80% of drivers in the study worked for a company.

Input into schedules

Approximately 66% of drivers surveyed had input into their trip schedules and delivery times. Long haul drivers (43%) were more likely than short haul drivers (38%) to have input into the trip schedules on all of their trips. Owner drivers (71%) not working for a company were by far the most likely to have input into trip schedules on all of their trips, compared with either the owner driver working for the company (37%) or company drivers (32%).

Incidence of trips in which there is pressure to meet deadlines

About a quarter of drivers said that they felt pressure to drive over the speed limit because they had to meet a deadline. Drivers up to 39 years (29%) and 40-49 years (29%) were more likely to feel pressure to drive over the limit than drivers aged 50 years and over (14%). Short haul drivers (27%) were more likely than long haul drivers (21%) to feel pressure to drive over the speed limit.

General comments on speeding

The most common reason given by truck drivers for why they go over the speed limit was ‘pressure to make deadlines’ or ‘pressure from boss’. Approximately 76% of drivers nominated a reason associated with work, such as, the pressure to make deadlines/pressure from boss (65%), earn more money (6%) and get home/get the job over (5%) as the reasons for speeding. Work issues were more likely to be nominated by short haul drivers (86%) than long haul drivers (68%).

Agreement with statements about speeding

A very high percentage (83%) of drivers stated they don’t go over the speed limit in built up, urban areas. However, 31% of drivers agreed that it was acceptable to drive ‘up to 10 km/h over the speed limit’ on the open road if you are an experienced truck driver, while 26% agreed that they risk losing money if goods are not delivered on time.

Examination of group differences found drivers aged 50 years and over were less likely than younger drivers to agree that they ‘risk losing money if goods are not delivered on time’ (18% v an average of 29% in the younger age groups).

Consequences and situations influencing decisions about speeding

When drivers were presented with the consequences and situations that influence them to stay within the speed limit, the vast majority of drivers nominated loss of licence/points (87%) and the possibility of crashing (81%) as being very important. Other reasons given were the possibility of getting a fine (74%), having realistic deadlines (70%) and having a company policy against speeding (61%).

Owner drivers working for a company rated having a company policy against speeding as a very important influence not to speed compared to those drivers driving company vehicles (72% v 58%).

Influence of countermeasures to speeding

The strongest motivator to stay within the speed limit was on-road police enforcement (71%) nominated by drivers as definitely likely to discourage them from speeding, followed closely by realistic delivery times nominated by 66% of drivers.

RTA initiatives such as 3 Strikes Scheme (60%), fixed speed cameras (57%), point to point speed cameras (55%) and Safe T Cam (52%) were nominated by drivers as definitely likely to discourage them from driving over the speed limit. Similarly company policy (59%) and basing payment on hours worked (57%) was also nominated as definitely likely to discourage them from driving over the speed limit.

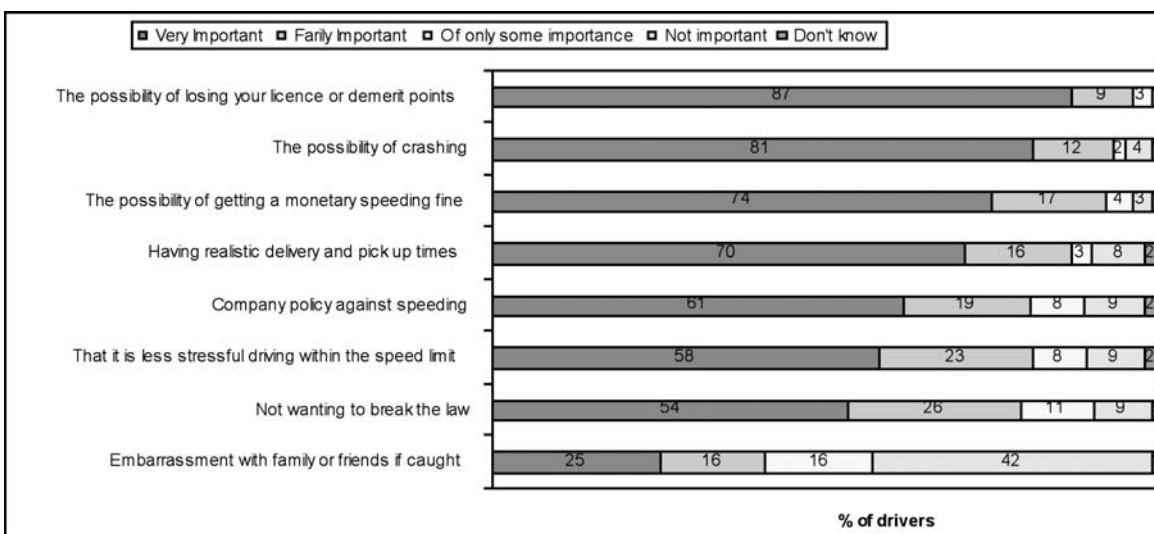


Figure 1. Level of importance of consequences and situations in influencing drivers to stay within the limit

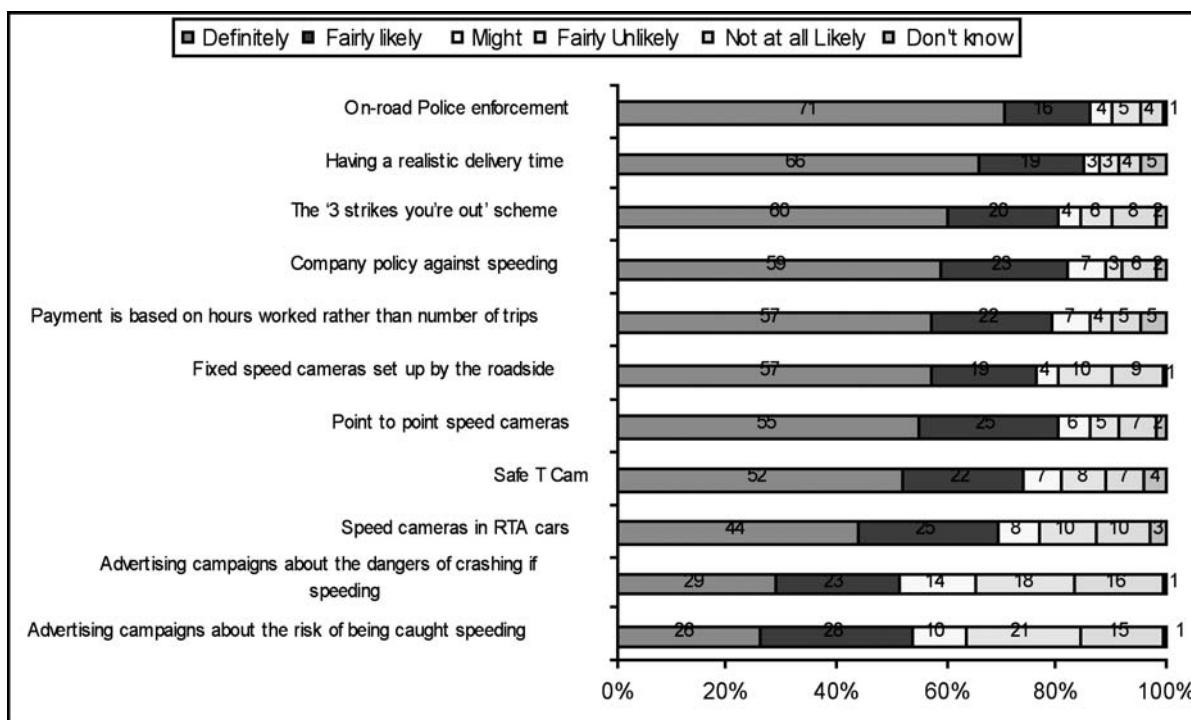


Figure 2. Likelihood of different types of countermeasures and situations discouraging from driving over the speed limit

On-road police enforcement had marginally more impact on drivers of trucks up to 12 tonnes gvm and among drivers aged 40-49 years; while fixed speed cameras and Safe T Cam had marginally more impact on drivers aged 50 years and over.

Drivers who said that they were unlikely to be discouraged by the particular countermeasure/situation were asked why they would not be discouraged. The reasons often related to a belief they could avoid the enforcement, with drivers indicating that they knew the locations of fixed speed cameras and warned each other about the locations (58%) and they speed between fixed speed cameras and slowed down at camera sites (33%).

Approximately 44% of drivers stated that their company did not apply pressure/have unrealistic deadlines and as such did not need to speed.

Experience of enforcement

About 64% of drivers reported seeing police enforcement on their last trip. Seventy-five percent of long haul drivers reported seeing enforcement compared to 49% of short haul drivers. This was also reflected in differences by vehicle type, with 73% of drivers of vehicles of at least 42 tonnes gvm more likely to report seeing enforcement compared to 52-58% of drivers of lighter vehicles

Likelihood of getting caught

About 55% of drivers considered it very likely or fairly likely to get caught when travelling up to 10km/h over the limit. This increased to 74% when travelling more than 10 km/h over the speed limit. The perception of 'very likely' to be caught increased with age in both situations. This perception was also marginally higher among owner drivers working for a company than for other drivers.

Company policy

Approximately fifty-three percent of drivers working for a company reported that their company promoted to drivers 'you must not speed'. Forty-two percent of drivers also said that their company promoted 'being on time for deliveries', and only 31% told drivers not to tamper with the speed limiter.

Short haul drivers were more likely than long haul drivers to be told not to speed and not to tamper with the speed limiter. Drivers of vehicles of at least 42 tonnes gvm were the most likely to be frequently told not to tamper with the speed limiter.

When asked what their companies would do if they were caught speeding, 19% said that they would lose their job and a further 10% said they would lose their job after repeat offences if they were caught speeding. Thirty percent said they would receive a formal warning with no penalties, while 15 % would have been fined or their pay deducted for speeding. Other drivers said that they could not speed as their trucks were speed limited (3%) and others stated (4%) that it was their responsibility to ensure that they did not speed. A further 10%

reported that nothing would happen and 7 % said that they did not know what would happen.

In relation to late deliveries, 26% of drivers said their company would not take any action while 35% would be asked reasons for the delay. A fifth (21%) said they would receive some type of formal warning and only relatively few (8%) would receive a formal penalty.

In terms of tampering with the speed limiter, 69% said they would lose their jobs instantly. About 7% said there would be some sort of warning/penalty/meeting, including some cases in which repeat offending would lead to dismissal.

Management systems

Forty-five percent of drivers working for a company reported that their company checks the vehicle management system of trucks. This was higher among long haul drivers (51%) compared with short haul drivers (36%), non owner drivers (50%) and those driving vehicles of at least 42 tonnes gvm (61%).

About half of drivers whose vehicle management system is checked reported that detection of speeding would be most likely to lead to only a warning or meeting. A more formal penalty would occur for a third of drivers (37%), including loss of job (20%), loss of job after several offences (9%) and financial penalty (8%).

Speeding fines

Four percent of drivers working for a company reported their company paid for fixed speed cameras fines, although a further 5% did not know. This incidence was higher amongst smaller companies: an average of 7% for companies employing 1-9 drivers compared with an average of 2% for companies employing 10 or more drivers. Where it was reported that the company paid the speeding fines, most drivers would still incur the demerit points.

Speeding behaviour

When drivers were asked to nominate the fastest they would consider driving in a 60 km/h speed zone with little traffic that has occasional intersections or traffic light, 79% said they would keep within the limit, 21% indicated they would exceed the limit, including 12% who nominated to driving more than 5 km/h over the limit.

When asked the fastest they would drive in a 100 km/hr speed zone, 45% said they would keep within the limit, 55% stated they would exceed the limit, including 34% who would speed by more than 5 km/h. About 9% stated they would exceed the speed limit by more than 10km/h.

When group differences were examined, drivers aged 50 years and over were the least likely to exceed the limit by 5 km/h or more (20%, compared with 36% of drivers aged up to 39 years and 42% of those aged 40-49 years). Furthermore, drivers of vehicles up to 12 tonnes were less likely than drivers of heavier

trucks to exceed the speed limit (56%, compared with 41% of drivers of vehicles of 12-41 tonnes and 45% of drivers of vehicles of at least 42 tonnes). In this case, the difference was made up by a higher propensity of drivers of heavier trucks to travel 1-5 km/h over the limit.

Booked for speeding

About 11% of drivers reported that they had been booked for speeding in the last 12 months. Strong differences were noted between the driver groups in the incidence of having been booked for speeding. There was a strong difference between short and long haul drivers with 4% of short haul drivers reporting having been caught, compared with 17% of long haul drivers. This was even greater for drivers who were more exclusively long haul, that is at least 90% of their trips more than 100 km from their base. Twenty-three percent of this group had been booked for speeding in the last 12 months.

The incidence of having been booked for speeding was also:

- higher among drivers working for a company (13%) compared with independent owner drivers (4%);
- higher among drivers who drove a vehicle of at least 42 tonnes gvm (18%, compared with 6% of drivers of lighter vehicles); and
- highest among drivers aged up to 39 years (16%) decreasing with age, to be only 5% among drivers aged 50 years and over.

Drivers who had been booked speeding in the last 12 months were more likely than other drivers to consider driving more than 10km/h over the limit on 60km/h and 100km/h roads.

Speed limiters

Twenty-seven percent of drivers said that they had driven a non-speed limited truck that should have been speed limited. One in ten (10%) of these drivers reported they had driven such a truck on at least 50% or more of trips.

When group differences were analysed, those who had driven a truck that was not speed limited, but was required to, was greater among:

- long haul drivers (30%) than short haul drivers (21%);
- company drivers (30%) than either owner drivers working for a company (22%) or owner drivers not working for a company (17%); and
- drivers aged up to 39 years (30%) and aged 30-49 years (32%) compared with those age 50 years and over (16%).

Willingness to speed in specific situations

When asked about their willingness to speed 'up to 10km/h' over the limit under certain circumstances, 51% said they would definitely, fairly likely or might consider speeding to keep up

with the general flow of traffic. Forty percent stated they would speed when driving down hill, followed by 33% who would speed where the speed limit is inappropriate, and 30% who would speed in light traffic conditions.

In the scenario of driving 'more than 10km/h' over the limit, about 16% stated they would consider doing this to keep up with the general flow of traffic. The study found that younger drivers were more likely to consider driving more than 10km/h over the limit when running late to meet a deadline, to finish a trip early, or to catch up after stopping to rest, and company drivers were marginally more likely than owner drivers to speed to finish a trip early.

Other comments

When given the opportunity to make any comment about this issue, twenty-five percent of drivers nominated external pressures as a reason to speed including unrealistic deadlines (13%) and unrealistic pay rates (7%). About a fifth of drivers were critical of truck drivers and stated there should be more enforcement (7%) and education (4%).

Conclusions

The two risk taking dimensions identified in the research were a general willingness to speed, associated with speeding on particular roads, to 'keep up with the traffic flow' and 'in light traffic conditions', and speeding resulting from work issues associated with the trips, particularly around meeting deadlines and fitting in more trips or deliveries.

There was a degree of reported risk taking, reflected in responses of willingness to drive over the limit and having been booked for speeding. About one in ten drivers reported to have been booked for speeding in the last 12 months and similar proportions reported that they would be willing to drive more than 10 km/h over the limit in a number of situations while 15% disagreed that they stayed within the speed limit in built up areas.

About a quarter of drivers reported that they experienced pressure to drive over the speed limit to meet deadlines on at least some trips particularly by long haul drivers, and drivers aged under 50 years of age.

The motivators associated with the two risk taking dimensions were an overall attitude that 'speeding is OK' and pressure to speed to meet deadlines. A further motivator associated with willingness to speed was a general 'likelihood of being detected speeding' and the impact of heavy vehicle enforcement countermeasures.

There was a higher risk of speeding in companies without policies for checking vehicle management systems and who don't promote that drivers don't speed and do promote that goods be delivered on time. There is therefore a clear role for companies to play in discouraging speeding by their drivers.

The group analysis identified the younger short haul drivers (the large majority aged under 40 years) as the highest risk

group, scoring higher on both risk dimensions. This group was also the most likely to report feeling pressure to speed to meet deadlines (36%); tended to be less likely to have input into trip schedules (39%); and was the least likely to have seen enforcement on their last trip (49%).

The younger long haul drivers scored higher on the general willingness to speed dimension, and were the most likely to have driven a truck without a speed limiter that should have been limited (33%), while older long haul drivers had a higher risk profile on work pressure to speed on trips. This group was the most likely to have been booked for speeding in the last 12 months (26%), and to have seen police enforcement on the last trip (81%).

While most drivers in the survey expressed strong compliance with the speed limits, a proportion of drivers expressed substantial pressure to speed to meet deadlines, and a proportion of drivers also considered that speeding is acceptable for 'experienced drivers'.

Only half of drivers considered that 'not wanting to break the law' was a very important influence in decisions to keep to the speed limit, so there is still some way to go before drivers are 'self-motivating' to stay within the law.

Demerit points leading to loss of licence was the consequence of most concern to drivers in the survey, implicating the potential role for enforcement in this context. Detailed knowledge of penalties, however, was low.

On-road Police enforcement was reported to have the greatest impact on attitudes and behaviour. The greater impact of Police enforcement activity may in part be related to the general application of the enforcement. Safe T Cam was also effective but was more restricted in application and hence deterrent threat because it is targeted at specific routes therefore targeting certain types of drivers and trips.

A trial of speed cameras in RTA cars had lower reported impact than the other forms of enforcement. When the trial was conducted no penalties were applied, and there would have been little exposure yet to this type of enforcement. The focus of comments was on the fact that the RTA does not currently enforce speeds, rather than specifically on a lack of deterrent value.

Many drivers not discouraged by enforcement considered they could avoid being caught. They commented that they could adapt their behaviour to the locations of speed cameras, Safe T Cam or point to point speed cameras while still speeding for other parts of the trip. This belief may reflect a lack of understanding about how the technology works or simply be an expression of resistance to countermeasures. While it may be possible to speed in between camera sites, or for part of a trip monitored by Safe T Cam or point to point speed cameras, the potential value to the driver of speeding is diminished because they can not speed for the entire length of the monitored section because these types of enforcement technology monitors speed over a distance.

Awareness of police enforcement on their most recent trip was relatively high, averaging 64% of drivers, although this was even greater among long haul drivers. This indication of greater exposure to enforcement by long haul drivers was reflected in a much higher incidence of being booked for speeding in the last 12 months in this group (17% v 4% of short haul drivers). This high level of enforcement, however, has not eliminated speeding as indicated by RTA speed surveys. While the research supports continued high levels of Police enforcement, it also highlights the need to explore and promote other forms of enforcement such as point to point speed cameras.

In considering the role of enforcement in deterring speeding, it is important to also consider the role of companies in monitoring behaviour and promoting safe behaviour. Workplace rules, policies and penalties were also found to be associated with risk taking.

Companies are implicated in pressure to speed to meet deadlines, including promoting to drivers that they should be on time for deliveries. They are also in a position to pass on penalties that drivers incur for speeding, which almost all appear to do, as well as impose their own penalties for unsafe behaviour such as loss of job.

Based on the findings of the research, a number of recommendations for an education strategy could be developed. The three target groups identified in the research include short haul drivers who have been identified as the highest risk group, younger long haul drivers who have a higher willingness to speed and the older long haul driver who speed because of work pressures. Employers are another target group.

The development of a communication strategy would have to address the general attitudes about the acceptability of speeding, specific situational triggers that lead to speeding such as in light traffic, appropriateness of speed limits and promote planning of trips and rest breaks. The strategy would also need to promote the risk of getting caught especially to younger drivers, increase awareness and knowledge about new anti speed technology, loss of points and licences as well as show a visible police presence on the roads.

Workplace communication strategies would include encouraging companies to implement anti-speeding policies and penalties for violations, encouraging companies (and clients) not to punish drivers for missing deadlines and encouraging companies to adopt payment systems that do not encourage speeding.

References

- 1 Heavy Vehicle Crash Data, NSW Roads and Traffic Authority (RTA), 2005
- 2 Heavy Vehicle Speed Survey, NSW Roads and Traffic Authority (RTA), 2006

Business Correspondence

Business correspondence regarding advertising rates, subscriptions, changes of address, back issues and guidelines for authors should be sent to the Managing Editor, PO Box 198, Mawson, ACT 2607, Australia or email: journaleditor@acrs.org.au.

Letters to the Editor

Letters intended for publication should be sent to the Managing Editor (see address details inside front cover). Published letters would normally show the name of the writer and state/territory of residence, unless anonymity is requested.

General Inquiries

Inquiries about membership and activities of the Australasian College of Road Safety should be directed to the ACRS, PO Box 198, Mawson ACT 2607, Australia or email: eo@acrs.org.au

Subscription

All issues of this Journal are mailed to personal members or corporate delegates of the Australasian College of Road Safety. Organisations and persons who are not members of the College may be subscribers to the Journal on payment of Aust. \$50 per annum (Australia) and Aust.\$60 per annum (overseas). These prices include airmail postage.

Guidelines for Authors

The ACRS Journal publishes articles in all facets of the study of traffic safety. Articles are accepted from a variety of disciplines, such as medicine, health studies, road and automotive engineering, education, law, behavioural sciences, history, urban and traffic planning, management, etc. Interdisciplinary approaches are particularly welcome.

Authors' guidelines may be downloaded from the College website at www.acrs.org.au/publications/journal.

Articles may be up to 5,000 words in length and should be submitted to the Managing Editor in Microsoft Word format as email attachments: email address: journaleditor@acrs.org.au The email message should state whether or not peer review is requested. It is assumed that articles submitted have not previously been published and are not under consideration by other publishers.

Office Contact Details

Staff: **Mr Geoff Horne**
Acting Executive Officer
Manager, ACRS Journal and Professional Register

Mrs Jacki Percival
Executive Assistant

Office hours: Monday 9.30-2.30
Tuesday 9.30-2.30
Wednesday 9.30-5.30
Thursday 9.30-5.30
Friday Closed

Messages can be left on Voice Mail when the office is unattended.