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Accident Research Centre

ASSESSING COMMUNITY ATTITUDES TO SPEED LIMITS: FINAL REPORT

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Assessing Community Attitudes to Speed Limits: Final Report

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Abstract:
A collaborative research study was undertaken in four Australian states to investigate the community's attitudes towards speed limits and to try and uncover some of the underlying factors behind these attitudes. Relevant issues included the community's attitudes towards the current/lower speed limits and speeding in general, the norms and beliefs behind these attitudes, their level of understanding about the relation between speed limits and crash involvement, and their appreciation of the environment, amenity and travel time consequences. An online survey was conducted in each state, stratified for age (18-30, 31-55 and above 55), gender and area of residence (metropolitan/regional). There were 4100 responses from mainly licensed drivers, weighted by each state's residence, age group and gender populations. It was found that most respondents correctly identified the speed limit for local residential streets and major urban undivided roads. Most also believed that the current 50km/h and 60km/h speed limits for residential and urban arterial streets were about right, with 70% feeling that the reduced limits of 40km/h and 50km/h would be too low for these roads, according to the sample images shown. For two-lane undivided and gravel rural roads, however, the majority of respondents reported the current speed limits to be lower than what they actually are in the four states. For the example images presented, most thought that the current 100km/h speed limit for these rural roads was too high and believed that 90km/h for an undivided rural road and 80km/h for a rural gravel road would be about right at best, or even still too high. The majority of respondents reported driving at the speed limit most of the time, although many admitted to exceeding the limit by up to 5 km/h (i.e. many felt that driving a 'little' above the speed limit was not really speeding). The results also showed that many respondents still do not fully understand the consequences of speeding in relation to crash and injury risk, the environment, amenity and travel time. It is recommended that more work is done to improve community awareness of these issues, which will be a key to improving attitudes towards speed limits and speeding among motorists.

Key Words:
Speed limits, online survey, community attitudes, driving behaviour, road safety.

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Preface

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Contents

EXECUTIVE SUMMARY

A collaborative research study was undertaken in the Australian states of Victoria, South Australia, Western Australia and Tasmania to investigate the community's attitudes towards speed limits and speeding in general, and to try and understand some of the underlying factors behind these attitudes.

Relevant issues examined included: the community's attitudes towards current and lowered speed limits, and towards speeding in general; the norms and beliefs behind these attitudes; their level of understanding about the relation between speed limits and crash involvement; and their appreciation of the environment, amenity and travel time consequences.

Study Procedure

An online survey was conducted through a private contractor in each of the four states, stratified according to the size of the state, the area of residence (metropolitan/regional), age group (18-30, 31-55 and 55+ years) and gender. A total of 4100 responses were collected from mainly licensed drivers, weighted by each state's proportion across the area of residence, age group and gender.

Panellists 18 years of age or over were recruited and invited by email to complete the survey online. This email contained the URL link to the survey, their user ID and unique password. When panellists successfully entered these details, they were directed to a screen which contained the study's explanatory statement, and if they still wished to participate, were asked to indicate their area of residence, age and gender. If a panellist's cell quota had already been fulfilled, they were thanked for their interest in the study, but advised that their participation was not required at this time.

Most of the sample response targets were achieved over the same three-week period across all states. There were 4100 respondents in total, with Victoria contributing 1217 (29.7%) respondents, South Australia 1175 (28.6%), Western Australia 1135 (27.7%) and Tasmania 573 (14%). The distribution of the overall sample is shown in Table 1.

Table 1 Online survey: Overall sample

Gender		Area of residence		Total
	Age group	Metropolitan	Regional	
Male	18-30 years	318	257	575
	31-55 years	313	398	711
	56+ years	313	397	710
Female	18-30 years	323	384	707
	31-55 years	333	353	686
	56+ years	310	401	711
TOTAL		**1910**	**2190**	**4100**

Community attitudes towards current speed limits

Four road types were investigated in the study; a local street in a residential area (current limit of 50 km/h), a main undivided street in an urban area (current limit of 60 km/h), a two-lane undivided rural road (current limit of 100 km/h) and a rural gravel road (current limit of 100 km/h). Typical photographs were provided for the respondents, who were then asked to rate the extent to which they believed the current speed limits on these road types were appropriate. Only one image per road type was selected for the survey; an approach which was associated with some advantages, but limitations also (refer to Section 2.7).

The results indicated that respondents across the four states were, on the whole, quite satisfied with the current speed limits in residential and urban areas, according to the sample roads presented, with around 70% responding that the 50 km/h and 60 km/h limits for these road types were about right. For the two rural road types, though, many people believed that the current 100 km/h speed limit was too high, based on the example images shown. In particular, 88% of the respondents felt a 100 km/h limit was too high for rural gravel roads, as is shown in Figure 1 below.

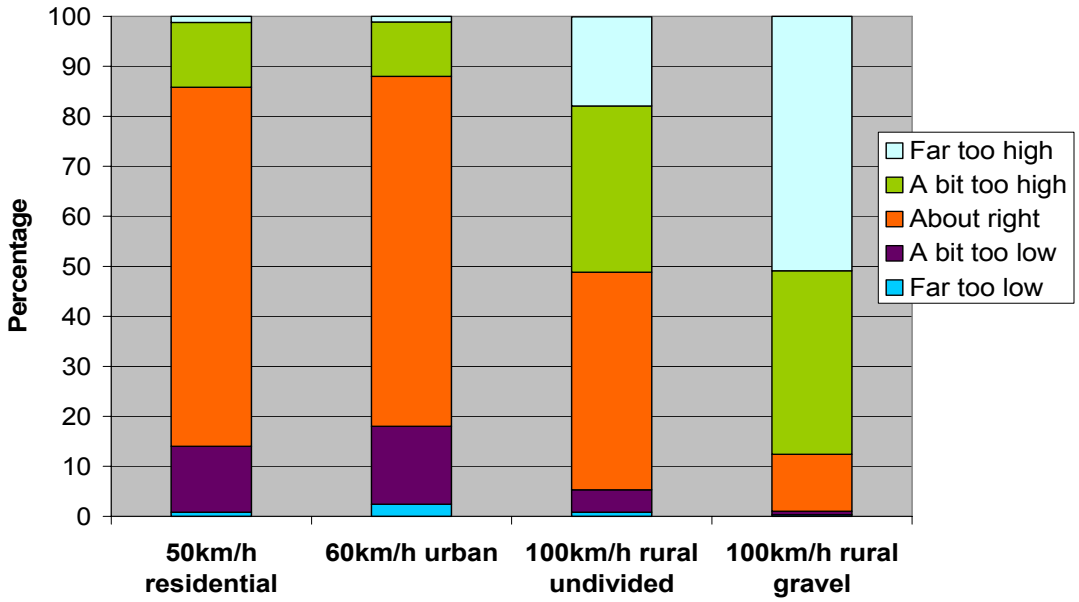

Fig 1: Extent to which current speed limit was judged to be too high, about right or too low across the four road types

Community attitudes towards lowered speed limits

Respondents were also asked to rate the extent to which they thought a lower speed limit would be appropriate on these four road types, with the image for each road type used as a reference. These included a 40 km/h limit in a local residential street, a 50 km/h limit for an undivided urban road, a 90 km/h limit on a two-lane undivided rural road and an 80 km/h limit on a rural gravel road. The results of this analysis are shown in Figure 2.

For a residential street, 70% of respondents believed 40 km/h was too low; 14% claimed it was far too low and 56% said it was a bit too low. Similarly, for undivided urban roads, 71% believed that 50 km/h was also too low (18% said far too low and 53% a bit too low).

A different pattern emerged, however, for rural roads. For an undivided rural roadway, three-quarters of respondents claimed that a lower speed limit of 90 km/h was either about

right or still too high. The approval level was even higher for rural gravel roads, with 44% claiming that an 80 km/h limit was about right and almost half (48%) claiming that an 80 km/h speed limit was still too high (i.e. only 8% said 80 km/h was too low).

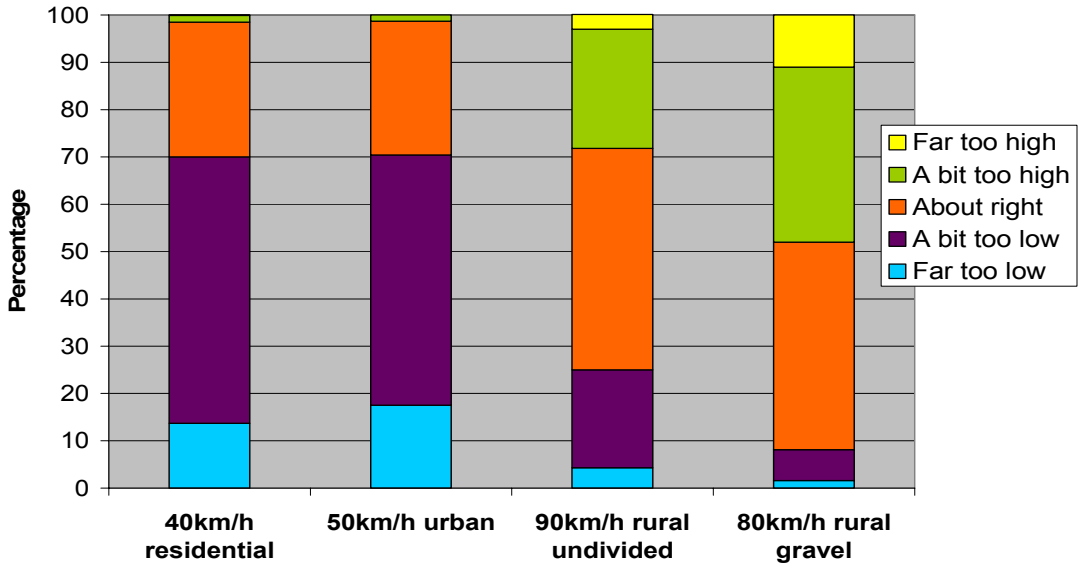

Fig 2: Extent to which lowered speed limit is too high, about right or too low for the four road types

These findings therefore suggested that there was strong support amongst the overall survey sample, consisting of respondents from Victoria, South Australia, Western Australia and Tasmania, for lowered speed limits on the two rural road types examined here (two-lane undivided and gravel roads), according to the sample images presented. For gravel roads in particular, respondents clearly saw an 80 km/h speed limit being more acceptable than the current limit of 100 km/h, and in many cases, still too high. While the level of support for speed limit reductions on residential and undivided urban roads were not as high, based on the exemplar images shown, with around 70% of respondents believing that the lowered limits of 40 km/h and 50 km/h were too low for these roads, the number of respondents who thought the lowered limits were 'far too low' were in the minority.

Community understanding about the relationship between speed limits and important outcomes

This research question was aimed at trying to understand the norms and beliefs that predominantly shaped people's attitudes towards speeding and the current and lowered speed limits. That is, why does the community have these particular attitudes towards speed limits and what are the underlying factors behind them? It was assumed that people's understanding of the relationship between speeding (i.e. exceeding the speed limit) and important outcomes such as crash and injury risk, the environment, liveability and travel time could influence their attitudes towards speed limits.

To address this initially, participants were asked to respond to a number of statements where they rated the extent to which they believed each statement to be true. Follow-up questions then were asked about the extent to which they would support speed limit reductions if these statements were true. In regards to these follow-up questions, it must be

noted that it may have been difficult for some respondents to assume the statements were true, if they did not initially believe them to be so.

As shown in Figure 3, the highest level of belief was associated with "lowering the speed limit would reduce the severity of injury when a crash occurs", where 80% of respondents believed or strongly believed this to be true. There were three other statements where the level of belief was above 50%, which were "lowering the current speed limits would make our roads safer for pedestrians and cyclists", "driving at 110km/h, your car uses up to 25% more fuel than it would travelling at 90km/h" and "the main reason police target speeding motorists is to make money for the government".

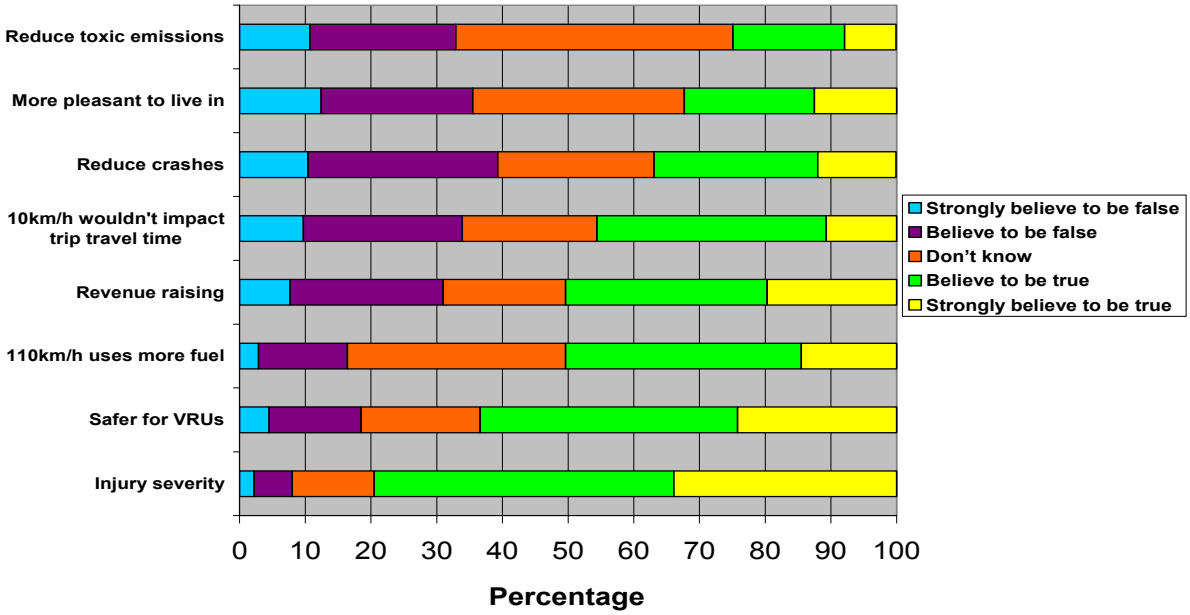

Fig 3: Frequencies of responses for the belief statements

When investigating the extent to which respondents would support speed limit reductions if the statements were assumed to be true, some interesting variations emerged. For some, the level of belief was higher than the extent to which speed limit reductions would be supported. Such a trend indicates that while a higher proportion of respondents may have believed the statement was true, it did not necessarily influence whether they would support speed limit reductions or not.

As shown in Figure 4, this trend was true for the three most highly rated belief statements, relating to (i) 'injury severity', (ii)' a higher level of safety for vulnerable road users' and (iii) 'using more fuel at 110km/h than 90 km/h'. It is important to note, however, that the former two statements still obtained the highest mean levels for supporting speed limit reductions if they were true. For other statements, the reverse was true, whereby the rating for 'if were true' was higher than for the level of belief. This included the statements:

- "Lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming";
- "Lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" and;
- "Lowering the current speed limits would reduce crashes on the roads".

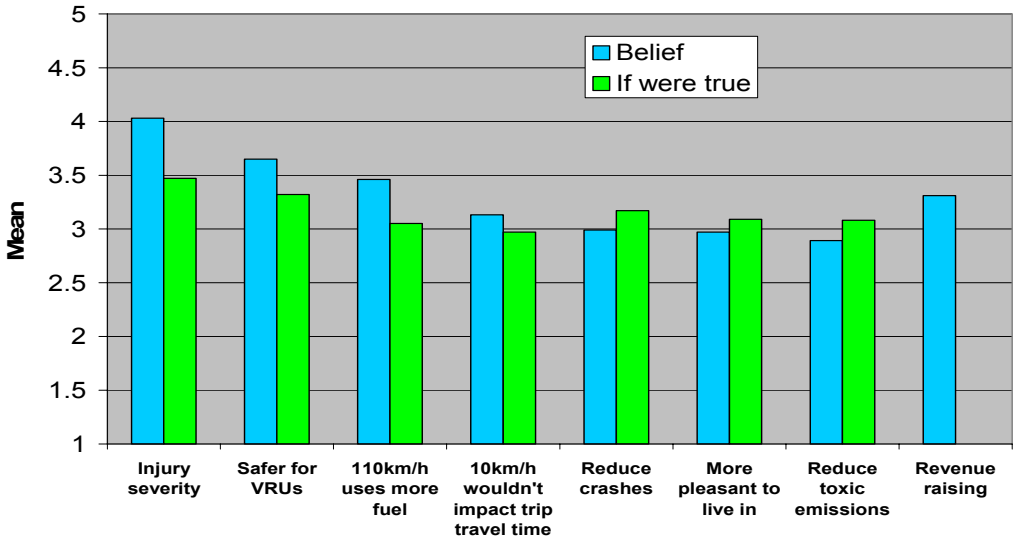

Fig 4: Means for belief and 'if were true' statements

Therefore, while a high proportion of respondents did not necessarily believe these statements to be true, they were still associated with a higher level of support for speed limit reductions (i.e. perceived as being relatively important) when they were assumed to be true.

A multiple regression was also conducted to investigate the extent to which the belief statements were significantly associated with respondents' support for the lowered speed limits. It was found that the following statements were all significant predictors of respondents' attitudes towards the lowered speed limits:

- "Lowering the current speed limits would reduce crashes on the roads";
- "A 10 km/h speed limit reduction in all urban and build-up areas would not significantly impact trip travel times";
- "Lowering the current speed limits would reduce the severity of injury when a crash occurs";
- "Lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" and;
- "Lowering the current speed limits would make our roads safer for pedestrians and cyclists".

More specifically, higher levels of belief for these statements were associated with higher levels of approval for the lowered limits. This result demonstrates that the community's knowledge of speed-related issues did have a significant impact on the extent to which they would support lower speed limits, and are therefore worthy of promotion to increase their understanding of these issues.

The community's attitudes towards speeding in general

Here, respondents were asked about the frequency with which they drove at, under or above the speed limit, in addition to the extent to which a number of statements were a reason for them to exceed the speed limit.

It was found that the majority of the population reported driving right on the speed limit on most occasions. The majority also admitted to exceeding the speed limit at least some of the time, although this only tended to be by up to 5 km/h or less (refer to Figure 5). The accuracy of respondents' self-reported driving speeds is unknown, however, with earlier research indicating that while most people admit to exceeding the speed limit from time-to-time, on average, they still generally report driving more slowly than others.

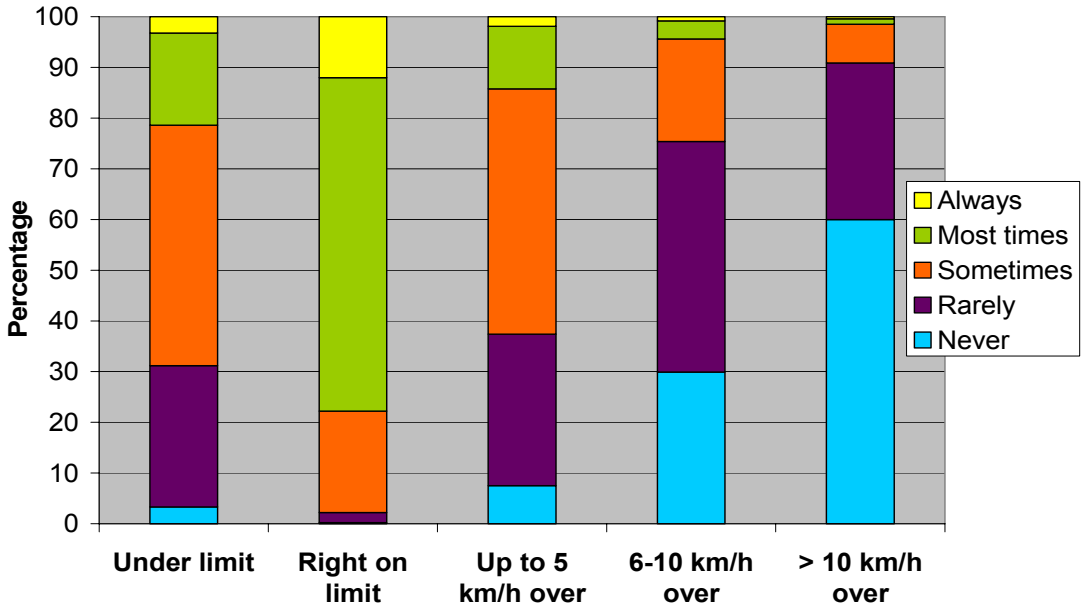

Fig 5: Frequencies for self-reported speed limit adherence

As can be seen in Figure 6, the most highly rated reason for exceeding the speed limit was the belief that driving up to 5 km/h over the speed limit is not speeding, followed by not paying enough attention to your driving speed, being in a hurry/running late, the speed limit being set too low and there being no other traffic on the road. This result is also in agreement with previous research, which suggests that many people do not believe that exceeding the speed limit by a 'small' amount (i.e. up to 5 km/h) is speeding, but instead define speeding as being a set amount over the speed limit on particular roads (e.g. 10 km/h over in a 80km/h speed zone), or based on variable factors such as the road surface, weather conditions and amount of traffic (EKOS Research Associates, 2007).

Conclusion/implications

Overall, there were some important findings to emerge from the online survey in regards to the community's attitudes towards speed limits, collectively across the four participating states of Victoria, South Australia, Western Australia and Tasmania.

Firstly, the results indicated that most of the surveyed population was in favour of reducing speed limits to the proposed levels, according to the exemplar images shown, for the two investigated rural road types: two-lane undivided rural roads, from 100km/h to 90km/h, and rural gravel roads, from 100km/h to 80km/h. This conclusion is based on the majority of respondents believing that the lowered speed limit was about right, or still even too high, for the two rural road types.

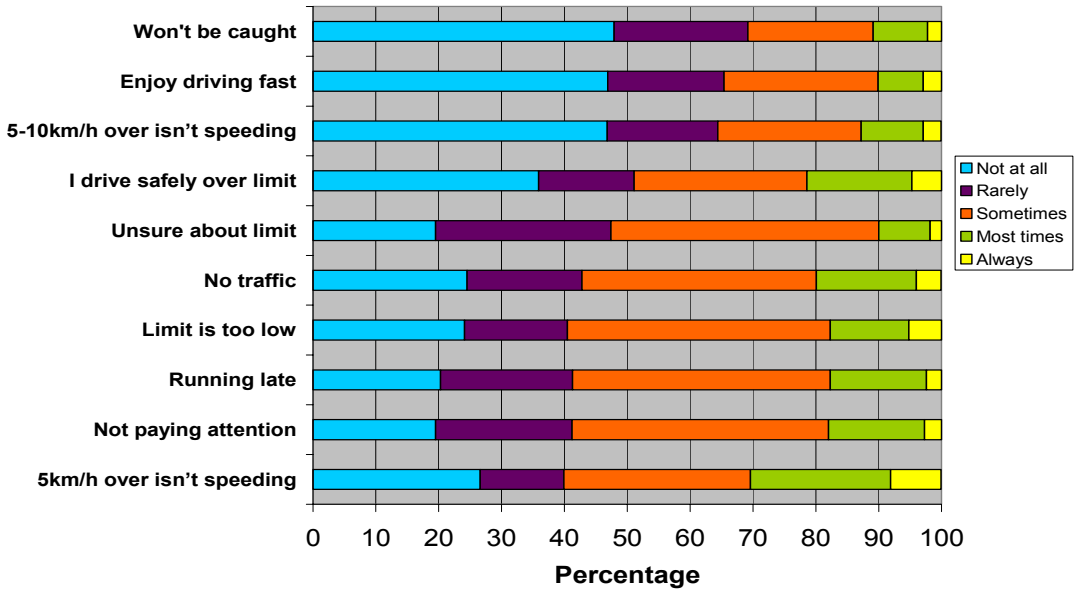

Fig 6: Frequencies for reasons for driving over the speed limit

The majority of respondents did not support the proposed lower speed limits on local residential streets and major undivided urban roads, based on the sample images presented, with around 70% of respondents believing that a 10 km/h reduction on these roads would make the limit too low. Approximately 30% percent of respondents did believe that the lower speed limits of 40 km/h and 50 km/h would be acceptable, however, and the vast majority of those who did not support the lower speed limits in urban areas believed that they were only a bit too low, rather than far too low. This could suggest that if these speed limits were to be put into effect, those who were fervently opposed these reductions may only be a minority (i.e. according to this survey, within the range of 14-18 percent of people). It was found that males aged 18-30 years were most likely to be in this category.

The results also indicated several gaps in knowledge regarding speed limits and their association with important factors, such as crash risk and environmental effects. Focussing publicity on areas where there was a lack of understanding could be a key in positively influencing people's attitudes towards lower speed limits. This is supported by the respondents' level of belief in many of these factors (e.g. the extent to which lower speed limits could reduce crashes) which were found to be related to their attitudes towards the lowered speed limits. Such an intervention may be particularly important for those who were not strongly opposed to the proposed lowered limits (i.e. who said they were 'a bit too low'), given that they could be responsive to such information and attitudinal change.

In addition, previous experience in lowering the Australian residential speed limits from 60 km/h to 50 km/h indicates that approval levels for lowered limits tend to increase over time, from prior to and following their implementation. Therefore, it is possible that the support for the 40 km/h and 50 km/h speed limits on residential and urban arterials roads could increase from the levels reported here, if they were to be introduced.

1. INTRODUCTION AND LITERATURE REVIEW

1.1. THE RELATIONSHIP BETWEEN SPEED AND CRASH/INJURY RISK

The association between driving speed and the risk of (a) being involved in a crash, and (b) being injured in a crash should one occur, is well-established within the traffic safety literature. Although the causal involvement of speeding in casualty crashes can be difficult to quantify, it has been proposed that exceeding the speed limit is the most frequent traffic offence and is responsible for many severe road accidents (De Pelsmacker & Janssens, 2007).

Some estimates have been made regarding the influence of speeding on crash rates, including the finding that speeding was a contributing factor in over 30 percent of fatal crashes in the U.S. (Lui, Chen, Subramanian, & Utter, 2005), with similar figures also obtained for Australia (RTA, 2005) and New Zealand (Oxley, 2006). Furthermore, a review of the empirical literature found that when driving speed increased there was a proportional increase in crash rate, which was applicable to both the individual vehicle and road section levels (Aarts & van Schagen, 2006). In addition, Cooper (1997) also reported that the probability and extent of injury in crashes was a direct function of initial impact speed (Cooper, 1997).

To this effect, it has been suggested that the 30 percent estimate reported above is likely to understate the full impact of speed on crashes and injury severity. That is, it could be argued that speed is involved in all casualty crashes, given that crashes and injuries only occur because the speed was too high to avoid a crash and the resultant death and/or injury (Oxley, 2006).

Speeding has also been identified as a major public health issue, with the OECD and ECMT reporting in 2006 that speeding is the number one road safety problem in most countries around the world. There have been several estimations made about the safety benefits that even relatively modest driving speed reductions could gain, with the 'Power Model' proposing that fatal crashes are related to the fourth power of the speed, and serious injury crashes to the third power. For example, as can be observed in Figure 1.1, a 5 percent reduction in average driving speed was predicted to result in a 20 percent reduction in fatal crashes, with 10 percent of all injury crashes also expected to be prevented (OECD/ECMT, 2006).

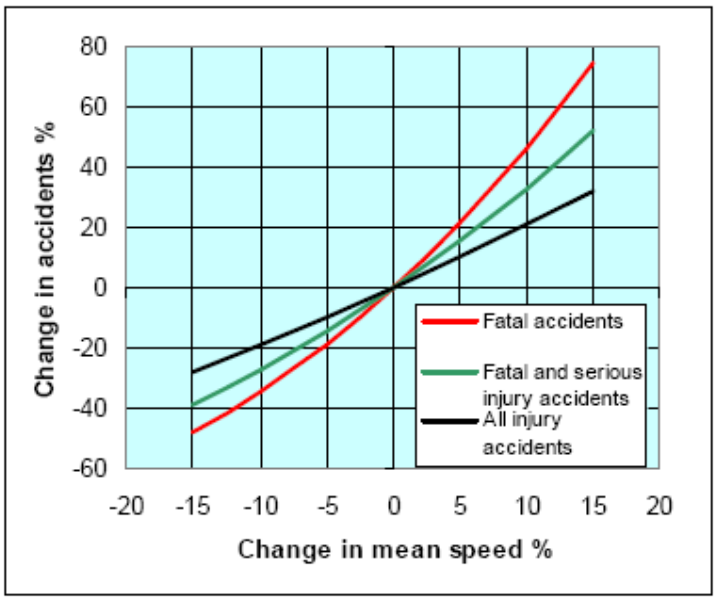

Figure 1.1
The Power Model: Relationship between change in mean speed and injury crashes (Source: OECD/ECMT, 2006)

Furthermore, a U.S. study also found that for every 1 mph reduction in average speed, collisions would be reduced by between 2 and 7 percent (Blincoe, Jones, Sauerzapf, & Haynes, 2006), whilst in Sweden, it has been estimated that one-fifth (i.e. 20 percent) of all people killed on the road would have survived if all drivers obeyed the speed limit (Warner & Aberg, 2008).

Clearly, as this empirical research demonstrates, driving speed has a highly influential effect on road safety outcomes (refer to the OECD [2006] Speed Management report for a more detailed review of this association), and speed limits have been used as a way of controlling drivers' speed choices. Speed limits have been identified as having two main purposes: (1) to enhance safety by reducing risks imposed by drivers' speed choices, with limits serving to reduce speed disparities and therefore the potential for vehicle conflicts; and (2) to provide the basis for enforcement for those who drive at excessive speeds and potentially endanger others (DOT, 2002). As the Swedish finding above suggests, however, level of compliance with the set speed limits is another key issue, and will be addressed later in Section 1.3.

1.2. SPEED LIMITS AND ROAD SAFETY STRATEGY IN AUSTRALIA

1.2.1. How Australian speed limits compare internationally

Australia has relatively high speed limits across much of its road network, compared to similar roads in other OECD countries. For example, a review of international speed limits indicated that Australasia had higher speed limits than those found in Europe, particularly within metropolitan areas (Austroads, 2005). Table 1.1 shows the typical speed limits for the Netherlands, as an example of a European nation, and Australia across a number of different speed limit zones.

Table 1.1 Speed limits set in the Netherlands and Australasia for various road types

Road type	Main speed limit (km/h)	
	Netherlands	Australasia
School areas	30	40
Residential areas	30	50-60
Built-up areas	50	70-80
Urban roads	50	80+
Rural roads	80	100
'Motor' roads	100	100
Motorways	120	110

Source: Austroads (2005)

1.2.2. The impact of speeding on the Australian road toll

Speeding on Australian roads is a major public health and safety issue and is believed to contribute to a substantial amount of the country's road toll. Estimating the exact percentage of fatality or casualty crashes that are directly due to speeding is complex, however, given the multi-determined nature of most crashes. Whilst in some crashes, speed can certainly be attributed as the primary cause, in other cases, speed may only play an indirect or secondary causal role, with other factors, such as driver fatigue or a lapse in concentration being the predominant contributor to the crash (Austroads, 2005).

As has also been found in the international research presented in Section 1.1, there are Australian studies which have indicated that even relatively small reductions in vehicle speeds can result in significant reductions in the number of road fatalities and serious injuries. Results from these studies indicate that speeds only 5 km/h above average in urban (60 km/h) areas and 10 km/h above average in rural (100 km/h) areas can double the risk of a casualty crash, which is roughly equivalent to the increased crash risk associated with a Blood Alcohol Concentration (BAC) level of 0.05.

Furthermore, it has also been found that speed reduction benefits could be derived from speed limit reductions, with a uniform 5 km/h reduction in Australian speed limits predicted to reduce serious casualty crashes by 27 percent, and a 10 km/h reduction resulting in a corresponding crash reduction of 40 percent (ATSB, 2004).

1.2.3. Road safety policy in Australia and the influence of Vision Zero

In regards to road safety policy, the Swedish 'Vision Zero' strategy clearly identified that driving speed is the single biggest factor impacting on road safety. This strategy recommended that the traffic system should operate so that the maximum tolerable impact speeds related to infrastructure are not exceeded, in order for serious casualties to be avoided. For example, in locations where there are possible conflicts between

pedestrians and cars, the maximum tolerable impact speed (in order to protect the pedestrian's life) is 30 km/h (refer to Table 1.2 for the type of infrastructure/traffic and the maximum possible travel speed). This approach was then a key impetus behind the introduction of 30 km/h default speed limits in some European cities (e.g. in Stockholm, Sweden) (Tingvall & Haworth, 1999).

Table 1.2 Maximum travel speeds related to the infrastructure, given best practice in vehicle design and 100% restraint use

Type of infrastructure and traffic	Maximum travel speed (km/h)
Locations with possible conflicts between pedestrians and cars	30
Intersections with possible side impacts	50
Roads with possible frontal impacts between cars	70
Roads with no possibility of a side or frontal impact (only impact with infrastructure)	100+

Source: Tingvall and Haworth (1999)

In many ways, road safety strategy in Australia has followed suit from Vision Zero, with the Safe System approach developing a conceptual framework for road safety management. Speed limits are a key component of this strategy, but similarly to Vision Zero, it proposes that the road system should be designed to protect its users and to ultimately reduce the number of casualties. As a consequence, the road environment should be designed to 'fit' the designated speed limit, with enforcement and road safety advertising campaigns also used to maximise the effectiveness of any existing or newly implemented limit reductions (Archer, Fotheringham, Symmons, & Corben, 2008). The relationship between the road environment and driving speed will be further discussed in Section 1.7.

1.3. THE EFFECTIVENESS OF SPEED LIMIT REDUCTIONS IN REDUCING DRIVING SPEEDS

As previously mentioned, speed limits are an important component of any speed management policy. They provide valuable information to the driver about the speed he/she can safely drive at in good conditions (e.g. fine weather, minimal traffic). Setting a speed limit does not automatically result in the desired speeding behaviour (i.e. driving at or below the limit), however, given that on all road types, exceeding the speed limit is relatively common, and many drivers have noted the speed limit being too low as a reason for them to speed (EKOS Research Associates, 2007; Goldenbeld & van Schagen, 2007). For example, it has been estimated that, in Europe, 40-50 percent of drivers frequently travel faster than the posted speed limit (OECD/ECMT, 2006), with a large-scale survey in Sweden revealing that 50-55 percent of drivers exceed the speed limit on 70 km/h and 90 km/h roads (Haglund & Aberg, 2002). Furthermore, driving behaviour surveys conducted in Australia and around the world have consistently found that the majority of drivers admit to exceeding the speed limit at least some of the time (e.g. 88 percent of drivers in an Australia-wide telephone survey conducted by AAMI) (AAMI, 2006).

A key component in regards to whether drivers obey the speed limit is believed to be its credibility. That is, drivers are less likely to exceed the speed limit if they believe that the limit for a particular road is logical or appropriate in light of its characteristics and immediate surroundings. Alternatively, if drivers consider a posted speed limit to

be inappropriate for a particular road, with there being a mismatch between its limit and characteristics, they may ignore the limit and form their own decision as to what speed is appropriate. Furthermore, if this is a regular occurrence for drivers, the speed limit system in general may be questioned by these road users (Goldenbeld & van Schagen, 2007).

This viewpoint therefore supports the argument that it is insufficient to attempt to achieve lower speeds (and therefore fewer crashes) simply by lowering the statutory speed limit, given that drivers will tend to respond poorly to such interventions when nothing is done to 'match' the road to its new limit (Morrison, Petticrew, & Thomson, 2003). In addition to road design and infrastructure, Austroads (2005) also proposed several strategies for improving speed limit compliance, particularly when a new limit is posted. These included increased speed enforcement; widespread education and advertising; and vehicle design measures, such as Intelligent Speed Adaptation (ISA) (Austroads, 2005).

Whilst there has been some debate about the legitimacy of speed limits in general and their reduction – for instance, it has been argued they impose an increased attentional load on drivers due to requiring frequent checking of the speedometer (Recarte & Nunes, 2002) - it appears that substantial road safety benefits can be gained, which far outweigh any possible negative effects.

For example, an empirical study concluded that, without the presence of a speed limit, drivers travelled an average of 11 km/h faster than when speed restrictions were in place, therefore increasing the crash and serious/fatal injury risks (Recarte & Nunes, 2002). In addition, speed limit reductions have been found to prevent the occurrence of collisions and significantly reduce the negative injury outcomes of the crashes that do occur (Aarts & van Schagen, 2006). This was demonstrated when the speed limit for residential roads in Victoria was reduced from 60 km/h to 50 km/h in 2001, which resulted in a 13 percent reduction in casualty crashes and a 46 percent decrease in serious pedestrian injuries (USLT, 2007).

Therefore, whilst issues such as credibility may contribute to the success of lowered speed limits, speed limit reductions have been shown to result in lower driving speeds and fewer crashes, without any road design/infrastructure changes. Therefore, speed limit reductions can still be introduced without any of these corresponding changes.

1.4. GOVERNMENT PERSPECTIVE ON REDUCING SPEED LIMITS

According to the National Road Safety Action Plan for 2005/2006 (ATSB, 2004), despite there being a strong case for speed reduction measures, including reducing limits, action to date has perhaps been less vigorous than expected. There has been some level of public scepticism about the legitimacy of speed management strategies (e.g. reducing speed limits and increased enforcement), due to a lack of understanding about speed-related issues, and this has put pressure on Governments to look for other road safety solutions aside from speed-related countermeasures.

This issue has been compounded by a number of misconceptions that have arisen from a sub-section of the community that is particularly opposed to speed reduction measures, including the following (ATSB, 2004):

- That 'moderate' speeding is not a road safety issue

- That speed management measures do not reduce road trauma
- That the main objective of speed enforcement activities is to raise revenue

However, given that Australian speed limits have traditionally been set at the speed that 85 percent of drivers would choose when driving along a particular road section, there is also an emerging view from jurisdictions that this criterion is becoming a barrier to achieving the road crash injury reduction targets posed by safety strategies. Therefore, there is also an alternative view that is beginning to emerge from government departments, that more must be done to reduce driving speeds in Australia, and reducing speeds limits may be a critical component in achieving this outcome (Austroads, 2005).

1.5. DRIVERS' SPEEDING BEHAVIOUR AND COMMUNITY ATTITUDES TOWARDS SPEED LIMITS

1.5.1. The prevalence of speeding behaviour

There have been findings, from both the empirical literature and previous speed-related surveys, which have provided an indication of motorists' attitudes towards speed limits and speeding in general.

As was also indicated in Section 1.3, research indicates that drivers tend to view exceeding the speed limit by a 'small' amount (e.g. 5 km/h) as acceptable behaviour, with most admitting to speeding at least some of the time. To this effect, drivers' attitudes towards speeding have been found to be more permissive than towards any other violation, with many viewing themselves and others to exceed the speed limit relatively frequently (Parker, Stradling, & Manstead, 1996). That is, it has been claimed that the culture of speed is so embedded, that 'speeding' (exceeding the speed limit) is perceived as normal, particularly on motorways (Blincoe et al., 2006).

The suggestion that exceeding the speed limit may be seen as more acceptable in rural areas than in more built-up urban areas has been supported by a study which asked drivers to assess three different driving scenarios; speeding in an urban area, dangerous overtaking and speeding on a major road. The results indicated that drivers usually found speeding to be acceptable, but that this was related to context, with exceeding the speed limit on a major (i.e. rural) road being viewed as more acceptable than on a minor (i.e. local) road (Forward, 2006).

In support of this view was a UK study, which revealed that speeding traffic was perceived as a large safety problem in local communities, with respondents showing strong support for enforcement on local roads and believing that travelling anywhere above the speed limit in residential areas was unacceptable (Poulter & McKenna, 2007).

According to the empirical literature, drivers' preferred speed tends to be approximately 10 percent higher than the posted limit, which is applicable to 60 km/h, 80 km/h and 100 km/h speed zones. To this effect, most drivers tend to prefer to drive around 5 km/h faster than the speed limit, as they consider themselves to be 'safe' drivers, and to assess their driving skills favourably in comparison to other drivers (Goldenbeld & van Schagen, 2007). This over-estimation of one's driving skills has been found among many Western industrialised countries, including Australia, Finland, Germany, Poland, Spain, Sweden, Great Britain, New Zealand and the U.S. (Lajunen, Corry, Summala, & Hartley, 1998). In addition, despite commonly admitting to speeding, most people tend to believe that other motorists drive faster and less 'safely' than themselves, with relatively few drivers reporting to drive

at 10 km/h or more over the posted limit (EKOS Research Associates, 2007; Estill & Associates, 2007; Mitchell-Taverner, Zipparo & Goldsworthy, 2003).

In summary, previous speed-related research indicates that, overall, the majority of drivers admit to exceeding the speed limit, at least from time-to-time, but they still believe that they drive more slowly than others on average. Furthermore, speeding has been typically more highly reported on rural roads/highways in comparison to residential/built-up areas. Finally, it also appears that there is a threshold of up to approximately 10 km/h that many people will admit to exceeding the limit by, with much fewer acknowledging breaking the limit by more than 10 km/h.

1.5.2. How do drivers define speeding?

From previous surveys conducted in the speed behaviour field, it is apparent that some drivers define speeding differently to others. For example, a speed-focussed telephone survey conducted on behalf of Transport Canada found that Canadians tended to define speeding in one of three ways (EKOS Research Associates, 2007):

- *Technical*: This definition stipulates that speeding occurs when a driver exceeds the speed limit by any amount (e.g. 101 km/h in a 100 km/h zone). This definition was articulated by relatively few participants, however;
- *Relative*: Many participants viewed speeding in relative terms, based on factors such as the road surface, weather conditions, traffic volume, vehicle type and the experience/skill of the driver. According to this definition, people believed that a driver could 'safely' exceed the speed limit (by up to 30% according to some) without affecting their crash risk;
- *Absolute*: Participants also commonly defined speeding in absolute terms, meaning that speeding involved driving a specific amount over the posted speed limit (i.e. driving at over 120 km/h in a 100 km/h zone was the most commonly identified example, with driving at 90 km/h in a 80 km/h zone also provided).

Therefore, it appeared that in this study, many drivers did not tend to associate driving over the speed limit as speeding per se, and also did not necessarily perceive speeding to be dangerous, given that many thought they could safely exceed the speed limit. This was also supported by the finding that 26 percent of respondents did not believe that speeding is a criminal offence (EKOS Research Associates, 2007).

These findings have also been supported by studies undertaken in Australia (Elliott, 2006), the UK (ORC International, 2006), New Zealand (Ministry of Transport, 2007) and the U.S. (NHTSA, 2004). In a focus group study commissioned by the TAC in Victoria, many drivers differentiated between 'being a bit over the speed limit' and 'speeding'. The former tended to be perceived as a technicality (i.e. they know they are exceeding the speed limit, but do not really see it as speeding because they are only a 'little bit' over), whilst the latter was viewed more seriously and as being somewhat reckless (Elliott, 2006). Furthermore, in a telephone survey conducted with residents of Lancashire in the UK, approximately one-third of respondents believed that driving 1 m/ph over any speed limit (i.e. in accordance with the technical definition) constituted speeding, but another third felt that drivers would have to exceed the 30 m/ph speed limit by at least 5 m/ph before it could be considered as speeding (ORC International, 2005).

Therefore, it appears that the majority of drivers do not consider a speed limit to be the maximum speed that should be driven on that road, but rather as a guideline of what speed they should drive, with many viewing driving at up to 5 km/h or 10 km/h over the limit as acceptable behaviour.

1.5.3. Attitudes towards current and lowered speed limits

The results from previous studies indicate mixed results in regards to people's attitudes toward both current speed limits and proposed limit reductions. On the positive side, the vast majority of drivers surveyed have appeared to be satisfied with the current speed limits and did not want them to be increased, particularly in urban areas. For example, the New Zealand Ministry of Transport (2007) study found that 87 percent of respondents believed that the speed limits on the roads they normally used were about right. In regards to the rural 100 km/h speed limit, however, 17 percent of people said it should be raised, whilst only 8 percent had this view for 50 km/h urban areas.

For all road types, only a small percentage of respondents have tended to support speed limit reductions. In an annual telephone survey undertaken by the Australian Transport Safety Bureau (2005), it was indicated that only 3 percent of respondents believed that a 50 km/h limit in residential areas was too high, and would therefore support reductions in these areas. The only real support that has been found for speed limit reductions in the past has been for 'high risk' areas, such as around shopping centres and schools. To this effect, almost 50 percent of respondents in a Western Australian study supported or strongly supported reduced speed limits near shopping centres, which was a higher level of support than any other investigated road type (Office of Road Safety, 2008).

In addition, previous studies investigating the impact of reducing Australian residential speed limits from 60 km/h to 50 km/h has indicated that the community's level of support tends to increase over time. For example, in Brisbane it was found that support for the 50 km/h speed limit increased from 61 percent prior to its implementation, to 78 percent after its implementation (Walsh & Smith, 1999).

Therefore, it is apparent that many people do not necessarily support reducing speed limits, and according to the research findings presented in Section 1.5.1, they often do not adhere to the current speed limits. The next Section, therefore, will address possible reasons as to why drivers do speed, and their level of knowledge regarding the risks associated with speeding.

1.6. DRIVERS' KNOWLEDGE OF THE RELATIONSHIP BETWEEN SPEED AND SAFETY & FACTORS UNDERPINNING THEIR SPEED SELECTION

1.6.1. Understanding of speed as a serious road safety issue

The results from past speed-related surveys indicate that the majority of people recognise that speeding is associated with an increased crash risk and/or more severe crash injury outcomes. However, there has consistently been a proportion of respondents who believe that this risk is only present if someone is driving more than 10 km/h or so over the speed limit, due to the belief that they can drive 'safely' over the limit as long as it is not 'too far' over. For example, in the survey conducted by NHTSA (2004), respondents were asked to compare the likelihood of being involved in a crash between a driver who was travelling at the speed limit and someone else who was travelling a certain amount over the limit. Only around one-third (35 percent) of respondents said that a crash was somewhat more likely or a lot more likely at 6-9 m/ph over the speed limit, whilst 55 percent were in agreement for

15 m/ph over the limit. In an Australian Transport Safety Bureau (2005) telephone survey there was a somewhat higher level of understanding of the risks associated with speeding, with 72 percent of respondents agreeing that you are more likely to be involved in a crash if your speed increases by 10 km/h, whilst 94 percent recognised that an accident at 70 km/h would be more severe than one at 60 km/h.

Furthermore, it also appears that most people identify speeding as a serious road safety concern. In Canada, approximately 50 percent of people identified speeding as one of their top two causes of traffic collisions on Canadian roads (EKOS Research Associates, 2007), whilst 75 percent of surveyed New Zealanders agreed or strongly agreed that enforcing the speed limit helps to reduce the road toll (Ministry of Transport, 2007).

Overall, it appears that whilst most people have some level of understanding of the risks of speeding, many do not consider the risks to be particularly substantial unless the speed limit is exceeded by more than a few kilometres (e.g. 10 km/h or more). This is a finding which is likely to be associated with how people define speeding (i.e. as was shown in Section 1.5.2, most do not consider driving at 1 km/h over the speed limit to constitute speeding), and also that many individuals believe they can drive 'safely' over the speed limit.

Exemplifying this point are the findings from a New South Wales study, which involved self-completion and telephone surveys. Whilst the majority of respondents (75 percent) said that their safety and the safety of their passengers (92 percent) and other road users (83 percent) were important factors in their choice of speed, 38 percent agreed that speeding can be safe in some circumstances, and 23 percent believed that speeding can be safe for a skilful driver. Furthermore, respondents also tended to believe that their chances of having a crash, if exceeding the speed limit by 15 km/h or more, were about the same or lower than average in comparison to another driver of the same age and gender, with only 13 percent believing that they were higher than average (Hatfield & Job, 2006).

1.6.2. Perceived advantages and disadvantages of speeding and reasons underlying speed selection

It has been proposed that drivers' choices about what speed to drive can be shaped by what they perceive the gains or losses from speeding or not speeding to be. To this effect, there have been a range of advantages and disadvantages associated with speeding that have been identified by drivers.

The most commonly identified benefit that is perceived to be associated with speeding is saving time or reaching your destination sooner. For example, it was found that more than one-third of Australians (36%) sometimes speed to arrive at work or home sooner (AAMI, 2006). In addition, there are also a proportion of motorists who enjoy and gain pleasure from driving at fast speeds (Forward, 2006; Moore, 2007).

In fact, previous research has also described a rationale for speeding that combines time-saving with the pleasure of driving fast. This scenario can involve driving to a destination that the driver is looking forward to arriving at, such as at a party or visiting a friend/loved one. Therefore, this type of speeding is more related to having fun during weekends and holidays. Ego-related reasons have also identified by some study participants, particularly amongst those who tend to drive more than 10 km/h over the limit and do not think they will get caught (Elliott, 2006). Furthermore, in a New Zealand study, more than one-third (35 percent) of those interviewed admitted to enjoying driving fast on an open road, with

the highest levels of agreement with this statement (at 65 percent) being amongst males aged 15-24 years (Ministry of Transport, 2007). This is similar to the 34 percent of drivers in a U.S. study who admitted that they enjoyed the feeling of driving fast (NHTSA, 2004).

Speeding is not always associated with enjoyment, however, with many personal examples of time-related speeding, which often occur when driving to work or as part of work (e.g. a professional driver), accompanied by feelings of stress and frustration (EKOS Research Associates, 2007). This is believed to be particularly the case if running behind schedule or late for an appointment (Stradling et al., 2003).

There are also some commonly cited disadvantages associated with exceeding the speed limit, with predominant ones being a higher collision and serious injury risk, and the possibility of being fined and/or losing demerit points (EKOS Research Associates, 2007; Mitchell-Taverner et al., 2003). Using more petrol has also been another, although less commonly identified, drawback of speeding (EKOS Research Associates, 2007).

Aside from the advantages and disadvantages associated with speeding, there have been several other reasons provided by drivers for exceeding the speed limit, such as not paying attention to their speed and not being aware of the speed limit (EKOS Research Associates, 2007). And of course, the posted speed limit and the speed in which drivers believe to be safe (which are not always at corresponding speeds) are also strong determinants of driving speed (NHTSA, 2004).

As can be concluded from the research findings provided thus far, an individual driver's speed choice can be influenced by a wide variety of factors, including individual, vehicle and road variables; the traffic and weather conditions; the perceived level of crash/injury risk; enforcement; the speed limit and education/promotion. Furthermore, the driver's attitudes towards speeding and speed limits, motivational factors and the person's level of confidence in their driving ability may further modify these perceptions (Oxley & Corben, 2002; cited in Austroads, 2005).

In order to further address some of these issues, the influence of both external and internal factors on driving speed and speed limit adherence will be discussed in Sections 1.7 and 1.8. Section 1.7 will address the relationship between road design and driving speed, as well as other external influences such as the weather and road conditions, enforcement and the environment, whilst Section 1.8 will focus on the theoretical underpinnings of drivers' speed choices and the individual factors that some of these differences can be attributed to.

1.7. INFLUENCE OF EXTERNAL FACTORS ON SPEED-RELATED CHOICES AND ATTITUDES

It has been proposed that the speed choice of drivers is often influenced by external factors, which can be either at a conscious or sub-conscious level. Though not intended to be a comprehensive review, several of the external factors that may influence a driver's speed choice will be outlined in this Section, namely; road countermeasures, roadside objects, traffic/weather conditions, enforcement, the concept of self-explaining roads (SER) and the environment.

1.7.1. Road countermeasures

A number of road countermeasures have been applied in an attempt to reduce driving speeds. These countermeasures have otherwise been referred to as 'traffic calming devices' (TCDs) which have been defined as "the combination of mainly physical measures that reduce the negative effects of motor-vehicle use, alter driver behaviour and improve conditions for non-motorized street users" (Lockwood, 1997). There are currently multiple TCDs which are being used around the world, with different examples being speed humps, rumble strips, speed cushions, road signs and chicanes. Whilst the effects of each have varied to some degree, it has been estimated that they can reduce speeds by up to 15 km/h in urban areas, though it has also been suggested that these effects can sometimes only be temporary (i.e. until drivers get 'used to' the TCD) (Sayer & Parry, 1998).

Other road characteristics which can potentially influence driving speed are centre medians and driving lane width. The research findings have been variable in regards to centre medians, with some results suggesting that they increase travel speed (due to creating a greater sense of security), whilst other results have indicated positive effects in reducing driving speeds and crashes (e.g. head-on impacts) (Dixon, Hibbard & Mroczka, 1999). Research findings have also been somewhat variable for driving lane width, with a number of studies indicating lane narrowing can reduce driving speed (e.g. by 11 km/h, according to Chinn & Elliott, 2002), but other studies claiming that narrower lanes are associated with higher crash rates (Griffin & Mak, 1987).

1.7.2. Roadside objects

Research has also indicated that roadside objects, including trees, buildings and other structures (e.g. statues) can influence driving speed. Generally, it has been found that trees and buildings lining the roadside can reduce speed, due to creating the illusion of travelling faster than what the actual speed is (Elliot, McColl & Kennedy, 2003). However, it must be noted that not all studies have found large speed effects for trees and buildings, and they can also be associated with other adverse effects (e.g. trees are dangerous striking objects for out-of-control vehicles, even when driving at a speed that is below the posted limit) (Elliott et al., 2003).

Furthermore, whilst 'road-side art' has been proposed as a potential distraction to drivers, it was not found to have any effect on driving speed by Chinn and Elliott (2002). It must also be noted, however, that even if, as was hypothesised, road-side art led to the sub-conscious reduction of driving speeds, these benefits would be abolished by the negative outcomes associated with driver distraction.

1.7.3. Traffic and weather conditions

Previous studies have indicated that traffic and weather conditions can have a large effect on drivers' speed choices, which, in some instances, is stronger than the influence of the speed limit (Mitchell-Taverner, 2003). For example, a Canadian-based survey indicated that over half (52 percent) of respondents believed that drivers should keep pace with the traffic regardless of the speed limit. In addition, some drivers have also reported feeling pressured to drive faster than they are comfortable doing so in order to avoid the wrath of aggressive drivers (EKOS Research Associates, 2007).

These findings were also supported by a Victorian study, which reported that, in general, motorists have learned to drive with the flow of the traffic and if the flow is exceeding the

limit, it increases their likelihood of doing the same. It was proposed that this behaviour is habitual for many drivers, although many are also aware of this behaviour and take the viewpoint that "if everyone else is doing it, then it must be OK for me to do it" (Elliott, 2006). In the UK, over 50 percent of respondents also believed that drivers had to break the limit to maintain the flow of the traffic (ORC International, 2005).
The weather conditions are also a highly influential factor on drivers' speed choices, with adverse weather often causing drivers to slow down. In a NHTSA study (2004), the most commonly reported factor affecting speed choice was the weather conditions (identified by 81-88 percent on respondents depending on the road type), with 80 percent of respondents in another study also agreeing that driving at a safe speed for the conditions is more important than staying under the speed limit (Mitchell-Taverner, 2003).

1.7.4. Enforcement

As has been previously reported, exceeding the speed limit is the most common traffic violation, with many motorists agreeing that the threat of a fine or losing demerit points influences their choice of speed and increases their vigilance in adhering to the speed limit (Mitchell-Taverner et al., 2003).

Whilst the vast majority of drivers will be careful not to exceed the speed limit if the threat of being caught is present, the extent to which speed limit enforcement has been effective in changing speed-related attitudes and behaviour is debatable. Whilst Jorgensen and Pedersen (2005) argued that increasing speed violation penalties would prompt drivers to drive cautiously and to comply with the speed limits to a greater extent (at least in a Norwegian context), other research has found that increasing speeding fines does not have a direct effect on driving speed, leading to the conclusion that it is the threat of punishment itself, more so than its severity, which influences drivers (Bjornskau & Elvik, 1992).

Furthermore, whilst law enforcement may have an immediate effect on reducing driving speeds, it does not necessarily change drivers' attitudes towards speeding and is viewed by many as an external variable that influences behaviour rather than teaching the correct speed behaviour (Martens, 1997). This is exemplified by the findings from a number of speed-related surveys, whereby a proportion of respondents have held the view that speed limit enforcement is "all about revenue raising" (Australian Transport Safety Bureau, 2005; EKOS Research Associates, 2007).

On the positive side, there is a significant part of the community that believes enforcement has an important role in increasing road safety. More specifically, there has typically been anywhere between 40 and 75 percent of survey respondents who have supported speed cameras on the basis of safety (AAMI, 2006; EKOS Research Associates, 2007; Ministry of Transport, 2007; Office of Road Safety, 2008). It must be noted, however, that for many people there is a discrepancy between detecting the 'worst' speeding offenders and those (such as themselves) who are only exceeding the speed limit by a 'small' amount. Hence, the community's attitude towards enforcement is much more positive when referring to the former, rather than the latter (EKOS Research Associates, 2007).

Previous research has also indicated that speed cameras can be effective in reducing fatal, hospital admission and medical treatment crashes, due to reduced driving speeds, with a Western Australian evaluation also demonstrating that the targeted installation of speed cameras can be highly cost-effective (Cameron, 2008). More specifically, point-to-point speed cameras, which are mounted at staged intervals along a particular route and measure

the average speed between two points, were found to have benefit-cost-ratios of 10 or more for 40 Western Australian road links. Furthermore, there was an estimated reduction of 23.2 percent in fatal crashes, with corresponding reductions of 13.8 percent and 11.2 percent in hospital admission and medical treatment crashes for these particular road links (Cameron, 2008).

1.7.5. Self-explaining roads

The concept of self-explaining roads (SERs) has been used to define a traffic environment which elicits safe behaviour, including speed limit adherence, by its design (Theeuwes & Godthelp, 1995). Therefore, with the application of this concept, drivers do not feel as if they are 'forced' to drive at a particular speed, but instead opt to drive at the lower speed on their own accord.

Consequently, by applying some of the road design principles mentioned above (e.g. use of traffic calming devices, adjusting lane width, etc.) roads can potentially be designed so that drivers will be less likely to exceed the speed limit, even if they are unaware of what the limit is, because they will be driving at a natural speed for what the design of the road commands (Weller, Schlag, Friedel & Rammin, 2008).

Despite the promise of this approach, there have been relatively few evaluations which have assessed the specific safety benefits that are attributable to the SER approach, and furthermore, there are some restrictions, most notably of a financial nature, for countries in terms of implementing this concept.

1.7.6. The environment

An issue which is continuously gaining greater prominence around the world is the environment and how it is impacted by road transportation. Whilst people are gradually becoming aware of the influence of various vehicle and fuel types on the environment (e.g. CO_2 emissions), there appears to be less awareness regarding the effect of travel speed on the environment.

As was reported by Archer and colleagues (2008), there are research findings indicating that driving speed influences a number of environmental outcomes, including energy efficiency, fuel use/vehicle operating costs, emissions (both air-pollutant emissions, such as carbon monoxide, nitrogen oxides, hydrocarbons and particulates, as well as greenhouse gases, primarily being CO_2) and noise. Whilst the relationship between driving speed and these outputs (e.g. gaseous and greenhouse emissions) is not linear, the data suggests that high driving speeds (i.e. in excess of 60 km/h) are associated with higher emissions (Archer et al., 2008).

There has been relatively little research assessing the community's knowledge of these issues, although in a Canadian-based study, only 6 percent of those surveyed identified environmental concerns as a disadvantage of speeding. However, despite not having a great deal of knowledge about the influence of speeding on the environment, 55 percent of these respondents said that they were extremely interested in being informed about how reducing driving speed could affect the environment (EKOS Research Associates, 2007).

1.7.7. Influence of external factors on speed-related choices and attitudes: Conclusion

Whilst this Section has identified the influence of a number of external factors on drivers' speed choices, it has also been proposed that there is a strong interplay between internal and external factors in determining individuals' speed-related attitudes and behaviour (European Transport Safety Council, 1995). Therefore, Section 1.8 will address some of the personal characteristics that can influence speed limit adherence.

1.8. INFLUENCE OF INTERNAL FACTORS ON SPEED-RELATED CHOICES AND ATTITUDES

1.8.1. Theoretical aspects

Most theoretical models which have attempted to explain driver behaviour have included three basic elements; the driver, the vehicle and the physical traffic environment (Aberg et al., 1997). The Theory of Planned Behaviour (TPB) (Ajzen, 1991) is a common approach, which has been applied to a number of driving-related studies in the past, including those relating to speeding and other 'risky' driving behaviours, such as drink driving and tailgating (e.g. Conner, Smith, & McMillan, 2003; Parker et al., 1996).

The TPB postulates that a particular behaviour is likely to be emitted if the outcome is believed to be positive, with the gain from performing the behaviour greater than the loss (e.g. people who speed believe that gains, such as enjoyment and reaching their destination sooner, outweigh the losses such as increasing the risk of a fine or crash) (Forward, 2006). Furthermore, when a person exceeds the speed limit the benefits are often immediate, whilst the risks are typically more removed in time from the behaviour (and typically occur less frequently), which is a reason why speeding may be a particularly common behaviour (Lawton, Conner, & Parker, 2007).

In the TPB, it is proposed that attitudes towards health-relevant behaviours (i.e. exceeding the speed limit) are key determinants of intentions to engage in the behaviour, whilst intentions, in turn, represent a person's motivation or conscious decision to perform the particular behaviour (Fernandes, Job, & Hatfield, 2007). Intentions are determined by four sets of variables (Warner & Aberg, 2008), although it must be noted that there are several variations of the TPB that have been applied to speeding behaviour (i.e. the variables included and the nature of their associations can differ). These four sets of variables are listed and defined as follows, with the model represented in Figure 1.2:

(1) *Attitudes*, which are based on a predisposition to respond either favourably or unfavourably to an object, person, institution or event;

(2) *Beliefs*, of which there are three types:

   a. *Behavioural beliefs*, which refer to the likely consequences of the behaviour
   b. *Normative beliefs*, which refer to what important others think of the behaviour
   c. *Control beliefs*, which refer to factors that may facilitate or impede performance of the behaviour

(3) *Subjective norms*, which are based on a person's motivation to comply with the beliefs of significant others;

(4) *Perceived behavioural control* (PBC), which is based on an individual's perception that performance or non-performance of the behaviour is under their volitional control.

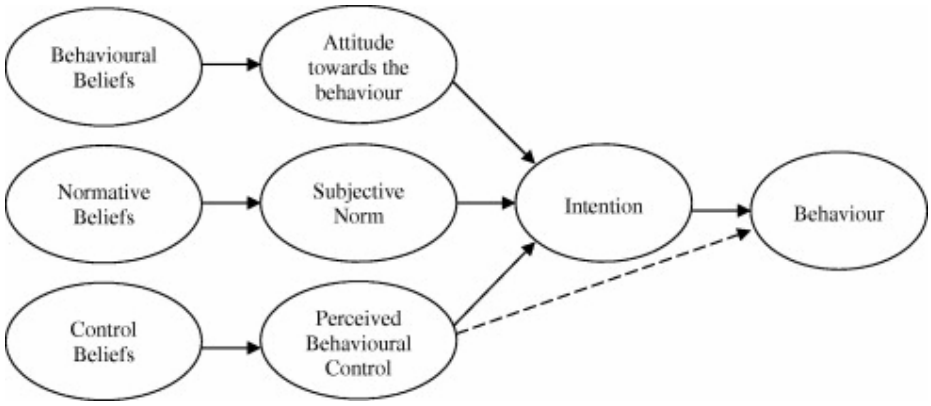

Figure 1.2
The Theory of Planned Behaviour, as proposed by Warner and Aberg (2008)

Whilst the TPB has been shown to be at least partially effective in explaining speeding behaviour (Conner et al., 2003; Parker, Manstead, Stradling, & Reason, 1992), it does not explicitly take into account the affective components of attitudes. That is, the 'attitude' factor in this model is determined by cognitive beliefs and the relative importance that is attached to them, but attitudes are generally defined as consisting of both cognitive and affective components. For example, whilst many people may rationally understand that speeding is dangerous, they may still speed for other reasons, such as simply enjoying it (De Pelsmacker & Janssens, 2007).

It is thought that 'habit formation' based on past behaviour may be one of the reasons behind this attitude-behaviour 'gap'. Therefore, it is believed that if people are used to exceeding the speed limit, and do so almost automatically, they are likely to continue to do so, even if they have otherwise decided that speeding is dangerous and they want to reduce their driving speeds. To this effect, it has been found that habit formation is at least as important as intentions in determining speeding behaviour, with intentions themselves being strongly influenced by habits (De Pelsmacker & Janssens, 2007). Although other studies have disagreed that people speed 'automatically', at the very least it has been acknowledged that the best predictor of future behaviour is past behaviour, so if people have sped in the past, they are likely to continue doing so in the future, unless there is a negative consequence that arises from speeding, or there is another external influence which changes their perception of the behaviour (Forward, 2006).

In regards to the relationship between speed-related intentions and behaviour, previous research has indicated a significant relation between drivers' reports of their speed and objectively measured speed. This implies that drivers, at least to some extent, are aware of their behaviour and that speeding is a result of their conscious decision making (Aberg et al., 1997).

As will also be outlined in Section 1.8.2, there are also a number of personal characteristics which can influence an individual's speed-related intentions and behaviour.

1.8.2. Individual differences that can affect speed-related attitudes and behaviours

Across a number of studies, there have been a number of personal characteristics which have been associated with those who are more likely to exceed the speed limit. This is not to say that these characteristics 'cause' an individual to speed, but are simply highlighting some trends which have been identified in previous research.

The characteristics of those who were most likely to admit to frequently exceeding the speed limit include: males, younger people (i.e. under 30 years-of-age); those who have had their licence for 10 years or less; drivers who travel a large number of kilometres (i.e. 20,000+ per annum); and motorcyclists and heavy vehicle licence holders (AAMI, 2006; Australian Transport Safety Bureau, 2005; EKOS Research Associates, 2007; Horswill & Helman, 2003).

In addition to these characteristics, the literature has also identified several other individual and situational factors which are associated with a greater likelihood of and/or a more positive attitude towards speeding, including personality traits such as sensation or thrill seeking and social deviance; being under time pressure; driver inattention; vehicle age, performance and engine size; vehicle occupancy; higher levels of interest in motor racing; and mood (e.g. anger has been associated with faster driving speeds) (Schmid Mast, Sieverding, Esslen, Graber, & Jancke, 2008; Mesken, Hagenzieker, Rothengatter, & de Waard, 2007; Stradling, 2007; Tranter & Warn, 2008; West & Hall, 1997; Williams, Kyrychenko, & Retting, 2006).

1.9. RESEARCH QUESTIONS FOR CURRENT STUDY

The aim of the current study was to further build upon previous speed-related studies that have been conducted, by providing a more comprehensive overview of the community's attitudes towards both current and reduced speed limits. This objective was to be achieved by considering the influence of other less-investigated factors, such as the environment and liveability, as well as investigating theoretical elements (predominantly based on the Theory of Planned Behaviour) and the public's knowledge of speed-related outcomes, to derive a better understanding of the factors that shape these attitudes.

More specifically, the research questions to be investigated in the study were as follows:

- Research Question 1: What are the community attitudes towards current speed limits?
- Research Question 2: What are the community attitudes towards reduced speed limits?
- Research Question 3: Which norms and beliefs predominantly shape these attitudes? That is, why does the community have these attitudes and what are the underlying factors behind them?
    i. What level of understanding does the community have about the relation between speed limits and crash involvement?
    ii. What level of understanding does the community have about the relation between speed limits and other outcomes (e.g. environment, liveability and travel time)?

- Research Question 4: What are the community's attitudes towards speeding in general?

In regards to the theoretical model investigated in the study, as mentioned above, the Theory of Planned Behaviour (TPB) was applied. A variation of the TPB model to that presented in Figure 1.2 was used (as is shown in Figure 1.3), with an emphasis placed on the norms and beliefs which shape the community's attitudes towards speed limits and, subsequently, their intention to comply with the speed limit. Other elements of the TPB, such as perceived behavioural control and the road/roadside characteristics, however, were not strongly emphasised within the survey, as is indicated by the grey font.

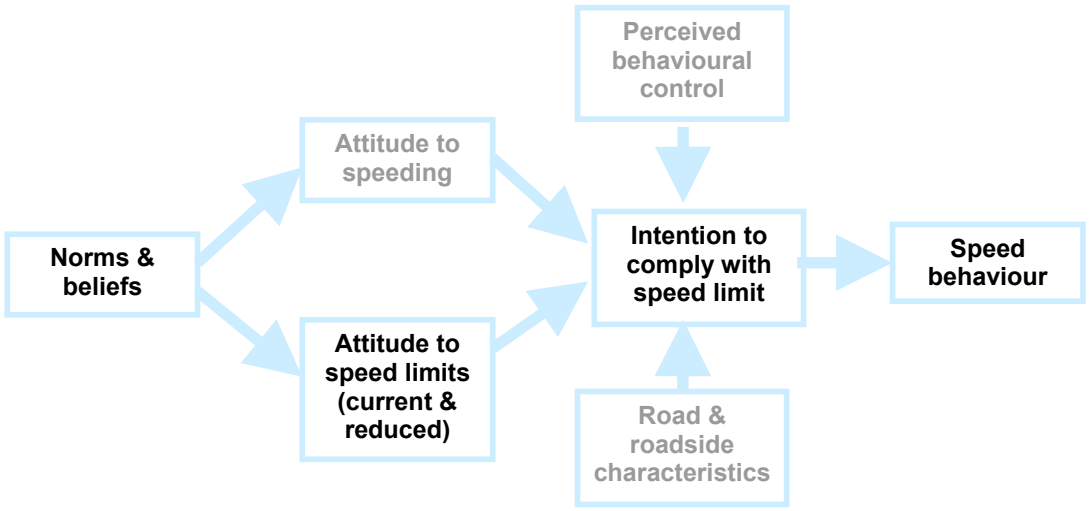

Figure 1.3
Proposed model to be investigated in the study, based on the Theory of Planned Behaviour

2. METHOD

2.1. SURVEY METHODS

In each of the four participating jurisdictions – Victoria, Tasmania, South Australia and Western Australia – an online survey was administered. A private contractor (Colmar Brunton) was used to carry out the fieldwork for this survey.

2.2. STRATIFICATION CRITERIA

In order to enable comparisons between different groups in the population, the respondent samples for each state were stratified according to three criteria: gender (male/female), age (18-30, 31-55 and 56+ years) and area of residence (urban/rural). Therefore, the quotas as displayed in Table 2.1 below were to be fulfilled by the private contractor, with the exception of Tasmania where the overall sample size was 600 (i.e. 50 persons in each cell instead of 100). As will be outlined in the following section ('Procedure' Section 2.3), the private contractor applied specific strategies to help ensure that the sample quota was achieved for each participating state.

Table 2.1 Stratification of survey respondents in each jurisdiction

Gender	Age groups	Target number of respondents		
		Area of residence		Total
		Urban	Rural	
Male	18-30 years	100	100	200
	31-55 years	100	100	200
	56+ years	100	100	200
Female	18-30 years	100	100	200
	31-55 years	100	100	200
	56+ years	100	100	200
TOTAL		600	600	1200

NOTE: N = 600 for Tasmania, with 50 participants recruited per cell; the overall sample size across the four states was therefore n = 4200 (i.e. 1200 * 3 + 600).

It is important to note that whilst in the survey, respondents were recruited according to an urban/rural definition (i.e. whether they lived in a mainly or totally urban/rural area), this variable was reclassified into metropolitan/regional, using the postcodes provided by respondents. This was believed to be a more accurate definition, and also accounted for some of the sample short-falls that occurred in rural areas (i.e. the urban/rural definition meant that some respondents in regional centres, such as Geelong, Bendigo or Ballarat in Victoria, classified themselves as living in an urban area, whilst according to the metropolitan/regional definition, those with postcodes that were outside of the Melbourne, Adelaide, Perth or Hobart metropolitan areas were classified as regional). It is important to note that these metropolitan/regional definitions were in line with those applied by the Australian Bureau of Statistics in the Australian Census (Australian Bureau of Statistics, 2009).

2.3. PARTICIPANT RECRUITMENT

As indicated in Table 2.1, a target of 1200 survey respondents was recruited in each of the states, with the exception of Tasmania, whereby 600 participants were surveyed. The

private contractor which administered the online survey in each of the four jurisdictions used its 'OpinionsPaid Panel' for participant recruitment, which contains over 140,000 members, the majority of which are online panellists.

Online panellists were sent an invitation email to complete the survey, with only those who met the inclusion criteria (i.e. at least 18 years of age) invited to participate. This email contained the URL link to the survey, their user ID and unique password. Respondents could only complete the survey once, with the ID and password both only able to be used on one occasion.

When panellists successfully entered their user ID and password they were directed to a screen which contained an explanatory statement of the study, and if they still wished to participate, were asked to indicate their age group, gender and whether they resided in an urban or rural area. If the cell quota for a particular panellist was filled (i.e. there were already 100/50 respondents), the panellist was thanked for their interest in the study, but advised that their participation was not required at this time.

The survey was conducted over a three-week period, with a second 'reminder' email sent out to panellists after two weeks to assist in fulfilling the sample quotas for each state.

Once this three-week period was complete, the data was checked and coded, and data files for each participating state were delivered to MUARC for analysis.

2.4. PARTICIPANTS

As can be viewed in Tables 2.2-2.6 below, whilst most of the sample targets were achieved for the states, according to the applied stratification criteria (as outlined in Section 2.2), there were short-falls in a number of cells. In particular, these were male respondents aged 18-30 years living in regional areas for both South Australia and Western Australia, and metropolitan respondents in Tasmania (it is important to note that the reclassification from urban/rural to metropolitan/regional affected the sample distribution in Tasmania greatly, which is predominantly due to the relatively low proportion of Tasmanians who live in the Hobart metropolitan area in comparison to other Australian capital cities). Every effort was made by the private contractor to fulfil these quotas, however, with the survey being re-launched in order to obtain extra numbers.

Table 2.2 Online survey: Overall sample

Gender		Area of residence		Total
	Age groups	Metropolitan	Regional	
Male	18-30 years	318	257	575
	31-55 years	313	398	711
	56+ years	313	397	710
Female	18-30 years	323	384	707
	31-55 years	333	353	686
	56+ years	310	401	711
TOTAL		**1910**	**2190**	**4100**

Table 2.3 Online survey: Victoria's sample

Gender		Area of residence		Total
	Age groups	Metropolitan	Regional	
Male	18-30 years	89	111	200
	31-55 years	91	113	204
	56+ years	100	104	204
Female	18-30 years	102	102	204
	31-55 years	92	111	203
	56+ years	87	115	202
TOTAL		**561**	**656**	**1217**

Table 2.4 Online survey: South Australia's sample

Gender		Area of residence		Total
	Age groups	Metropolitan	Regional	
Male	18-30 years	106	55	161
	31-55 years	92	109	201
	56+ years	102	101	203
Female	18-30 years	101	103	204
	31-55 years	98	106	204
	56+ years	94	108	202
TOTAL		**593**	**582**	**1175**

Table 2.5 Online survey: Western Australia's sample

Gender		Area of residence		Total
	Age groups	Metropolitan	Regional	
Male	18-30 years	98	47	145
	31-55 years	97	105	202
	56+ years	98	80	178
Female	18-30 years	83	121	204
	31-55 years	98	103	201
	56+ years	95	110	205
TOTAL		**569**	**566**	**1135**

Table 2.6 Online survey: Tasmania's sample

Gender		Area of residence		Total
	Age groups	Metropolitan	Regional	
Male	18-30 years	25	44	69
	31-55 years	33	70	103
	56+ years	33	68	101
Female	18-30 years	27	72	99
	31-55 years	25	64	99
	56+ years	34	68	102
TOTAL		**187**	**386**	**573**

2.5. QUESTIONNAIRE

The online survey for this study was predominantly developed by the research team, with feedback from each of the participating jurisdictions assisting in developing the final version. The research team used their past experience in developing speed-related surveys, as well as items from previous surveys conducted in Australia and overseas, to develop the survey content. Furthermore, the study's research questions (as specified in Section 1.9) and theoretical basis, as obtained from the literature review, were the basis for survey development.

Many of the items required the respondent to provide a rating on either a 3-point or 5-point scale, with others requiring the respondent to type in a number (e.g. "please indicate what the default speed limit is"). There was only one open-ended question included in the survey, which asked respondents to explain why or why not lowering speeds limits would reduce road crashes.

To see the full version of the online survey, please refer to Appendix A.

2.6. COMPARISON OF SURVEY METHODS

Similarly to all survey methods, the online survey is associated with several advantages and limitations. The online survey was chosen, however, for the following reasons:

- Cost-effectiveness
- Can reach a large number of people very quickly
- Fast turnaround times
- No interviewer effects
- Respondent can complete survey at their convenience and own pace
- 'User-friendly' interviewing format
- Ongoing monitoring of results possible
- Ability to show images/visual material

Despite these advantages of the online survey, there are a number of limitations that should be kept in mind with this method. Perhaps most importantly, the sample from online surveys can be biased towards those who have internet access and have joined online survey panels. Therefore, the quality and representativeness of the sample can be an issue, and respondents are also required to have a certain level of competence with technology (Barribeau et al., 2005).

The stratification criteria applied in this study has assisted in ensuring that the survey sample was relatively even according to key demographic criteria (i.e. age, gender and area of residence), but there are other criteria (e.g. socio-economic status) which were not controlled for in the sample. Therefore, this should be kept in mind when interpreting the study results.

2.7. SELECTION OF ROAD TYPE IMAGES IN THE SURVEY

A large component of the survey was the investigation of four road types; a local street in a residential area, a main undivided street in an urban area, a two-lane undivided rural road and a rural gravel road. For each of these road types, the survey respondents were asked about the speed that they typically travelled at, what they believed the speed limit was, their level of approval for a proposed lower speed limit and their level of approval for the

current speed limit (the results for which are shown in Sections 3.3 and 3.4). In order to assist the respondents, an image was chosen for each road type which was intended to be a representative indication of what the road type looked like (refer to Figures 3.1-3.4 to see the images chosen). The capacity to show these images was believed to be an advantage of the online survey method, with other survey methods (most notably telephone surveys) relying on verbal descriptions of the road type.

The process for selecting these particular images was as follows; a number of photos were taken of each of the four investigated road types, with the top three images for each road type (as deemed by MUARC researchers) emailed to each of the involved parties for their rating (i.e. from 1 to 3). The images for each of the road types that were the most popular overall (i.e. received the most number 1 ratings), were chosen to be used in the survey.

Despite the advantages of using the images in the survey, there were limitations associated with only using one image per road type. It is very unlikely that one picture can adequately represent what is 'typical' for a particular road type, given that there are variations within each of the surveyed states, as well as between the states, in what the four road types look like (e.g. due the presence or absence of trees and other roadside objects, the amount of windiness and the hilliness/gradient of the road). In addition, if more or different images were included in the survey, it is reasonably likely that different responses could have been elicited from respondents, which could therefore have implications for the obtained results across the investigated road types.

A predominant reason as to why only one image was selected per road type, however, was that it was recommended by the private contractor that using more than one image would: (a) make the survey too lengthy; and (b) confuse and frustrate some respondents, who would have to evaluate several images for each road type before being able to make their judgements for the corresponding items.

In addition, the images were introduced in the survey as being an example of the particular road type, and in the subsequent items respondents were asked about 'this type of road' rather than the specific road shown in the image. Therefore, respondents' ratings for the corresponding items could have also been partially based on their own image of what the road type looked like, and not fully on the image presented.

Therefore, whilst there were some limitations associated with using only one image per road type, this was determined by the MUARC research team and the private contractor to be the best option for the survey. Furthermore, the images used in the survey were judged across the four participating states to be the most representative of the four investigated road types, and were consequently as close to 'typical' as what could be achieved with one image.

3. RESULTS

3.1. BACKGROUND INFORMATION

3.1.1. Application of weights

In order to allow the study results to be generalised to the public at large across the four participating states of Victoria, South Australia, Western Australia and Tasmania, it was necessary to apply weights to the data so that it would be representative of the overall population, rather than the specific sample population. Therefore, the data was weighted in such a way that the distribution between the twelve cells was equal to the overall population, with some cells 'weighted down', and others 'weighted up'. The process of obtaining these weights is described as follows.

The first step was to obtain the population proportions for each state across the three stratification criteria (i.e. age, gender and metropolitan/regional). 2006 Australian Census data, accessed from the Australian Bureau of Statistics (ABS) (2009) website, was used for this purpose.

Once the proportions of males/females, those aged 18-30, 31-55 and 56+ years, and those living in metropolitan/rural areas within each state were established, these were then directly compared to the corresponding proportion that they represented within the sample. For example, in Victoria, 73 percent of adults (i.e. those aged 18 years or over) lived in metropolitan areas, whilst the remaining 27 percent lived in regional areas. Within the Victorian survey sample, however, 46 percent of respondents were from metropolitan areas, whilst 54 percent were from regional areas. Therefore, the Victorian metropolitan sample needed to be 'weighted up' and the regional sample needed to be 'weighted down' in order to be representative of the population, which was done by dividing the population proportion by the sample population (e.g. for metropolitan areas, this was 0.73/0.46, or a weight of 1.58).

To obtain the weights for each of the twelve 'cells' represented in the survey sample, the weights for the three categories which the cell was composed of were multiplied. For example, for females aged between 31-55 years living in a regional area, the weights for females, the 31-55 year age group and regional areas were multiplied to find the total weight for this particular cell.

Once this process was completed for each state, the weights were applied to the state's dataset within SPSS. For the overall dataset, however, an additional step was required to derive the weights. Again applying 2006 Australian Census data from the ABS (2009) website, the number of adults living in each of the participating states was found, and the proportion of this total population that each state represented was calculated. More specifically, it was found that Victoria had 3,780,062 persons aged over 18, with the total number of adults across the four states being 6,791,731. Therefore, Victoria contained 56 percent of the total adult population from the four participating states (i.e. Victoria, South Australia, Western Australia and Tasmania). Similarly to the process used for the within-state weights described above, this proportion then needed to be compared to the proportion of the sample that Victorian adults represented, in order to calculate the state weightings. Given that Victorian adults represented 30 percent of the sample, a state-weight of 1.9 was applied (i.e. 0.56/0.30). The corresponding weights for the other states were: South Australia – 0.60; Western Australia – 0.79; and Tasmania – 0.38.

The final step in the weightings process was then to take the twelve 'cell' weightings that were found for each state, and to multiply these by the overall state weight (e.g. 1.9 for Victoria). Therefore, in the overall SPSS dataset, there was a 'weight' variable whereby each respondent had a particular weight depending on their state of residence and their age, gender and area of residence (i.e. metropolitan or regional). This variable was then selected as a weight which was applied to the data, and all subsequent analyses were then applicable to the overall, rather than the sample, population.

It is important to note that weightings were only applied to the stratification criteria of age, gender and area of residence, and other important personal variables, such as socio-economic status (SES), were not controlled for. Section 3.2.3, however, indicates how SES variables, including employment status, level of education and income compared between the sample and the general population across the four states, according to Census data.

3.1.2. Statistical programs used

All of the analyses were conducted in SPSS (Statistical Package for the Social Sciences) with Excel also used to perform the calculations for the weights and to create charts for presentation in this report.

3.1.3. Focus of these results

It is important to note that the focus of this report is on the overall results, based on the combined sample from each of the four participating states. Detailed results for each of the jurisdictions (i.e. Victoria, South Australia, Western Australia and Tasmania) will be included in each state's individual report.

3.2. PART 1: SAMPLE DEMOGRAPHICS AND CHARACTERISTICS

For the overall sample of 4100 respondents, the distribution for state, gender, age group and area of residence is displayed in Table 3.1.

Table 3.1 Unweighted sample distribution for state, gender, age group and area of residence

	No. respondents	Proportion (%)
State		
Victoria	1217	29.7
South Australia	1175	28.7
Western Australia	1135	27.7
Tasmania	573	14.0
Gender		
Male	1996	48.7
Female	2104	51.3
Age group		
18-30 years	1282	31.3
31-55 years	1397	34.1
55+ years	1421	34.7
Area of residence		
Metropolitan	1910	46.6
Regional	2190	53.4

As can be observed in Table 3.1, Victoria, South Australia and Western Australia each contributed approximately 30 percent of the sample, whilst Tasmania contributed only 14 percent, given that its sample target that was half that of the three other states. Due to the stratification criteria whereby equal respondent numbers were targeted for each 'cell', just over half of respondents were female, whilst just over half also lived in a regional area. Respondents were relatively evenly divided across the age groups, with the 18-30 year-old age group containing slightly less respondents than the two older age groups. As was outlined in Section 3.1.1, these proportions were weighted for each state to represent its population distribution for each of these categories, and these weights were also multiplied by the state weights for the overall analyses.

The weighted sample distribution is now displayed in Table 3.2, with the number of Victorians, 31-55 year-olds and those living in metropolitan areas now proportionally greater, due to having a greater presence in the adult population across the four states. Gender was relatively unchanged, however, due to there being an approximately equal distribution of males and females in the general population.

Table 3.2 Weighted sample distribution for state, gender, age group and area of residence

	No. respondents	Proportion (%)
State		
Victoria	2282	55.6
South Australia	708	17.3
Western Australia	893	21.8
Tasmania	219	5.3
Gender		
Male	2033	49.6
Female	2069	50.4
Age group		
18-30 years	942	23.0
31-55 years	1899	46.3
55+ years	1260	30.7
Area of residence		
Metropolitan	2915	71.1
Regional	1187	29.9

3.2.1. Modes of transport used and licences held

Respondents were asked about whether or not they used various forms of transport in a typical week. The frequencies for these various forms of transport are shown in Table 3.3.

Table 3.3 indicates that driving for personal use was the most common form of transport used by respondents, with 89.6 percent using this form of transport in a typical week. The only other form of transport that had a frequency above 50 percent was walking, at 50.4 percent. Driving for personal use was also identified as the form of transport that was used *most often* (out of all of the forms of transport that they may use in a typical week) by 80.6 percent of respondents, with 91.3 percent of respondents reporting driving at least one type of motorised vehicle (i.e. car, truck, bus, motorcycle or scooter) on a weekly basis.

Table 3.3 Frequency of respondents who did and did not use various forms of transport in a typical week

Form of transport	Do you use this form of transport in a typical week?			
	Yes		No	
	Frequency	%	Frequency	%
Drive (for personal use)	3672	89.6	428	10.4
Drive (for work/job)	1039	25.3	3061	74.7
Car passenger	1609	39.2	2491	60.8
Walking	2068	50.4	2032	49.6
Bicycling	475	11.6	3627	88.4
Motorcycle/scooter	184	4.5	3916	95.5
Public transport	838	20.4	3262	79.6

The proportion of respondents who held various types of licences, and the status of these licences (i.e. Full, Probationary or Learner), is displayed in Table 3.4.

Table 3.4 Proportion of respondents who held various types of licences

Licence type	Is licence held?		Licence status					
	Yes		Full		Probationary		Learner	
	Freq	%	Freq	%	Freq	%	Freq	%
Car	3639	88.8	3422	83.5	179	4.4	38	0.9
Motorcycle	517	12.6	480	11.7	17	0.4	20	0.5
Heavy vehicle	492	12.0	487	11.9	3	0.1	2	0.0
Bus	179	4.4	176	4.3	2	0.0	1	0.0
No licence at all	19	0.5	-	-	-	-	-	-

As demonstrated in Table 3.4, the vast majority of respondents held full-car licences, with a much smaller proportion holding other licences, such as motorcycle, heavy vehicle and bus. There was also a small proportion of respondents who were not fully licensed (i.e. held probationary or learner licenses). Only 0.5 percent held no driving licence at all.

3.2.2. Distance driven and area usually driven in

From the 3725 (or 90.9 percent) respondents who reported driving some type of motorised vehicle at least once a week, there was the following distribution for the distance typically driven per week:

- Up to 50 km – 551 (14.7%)
- 51-100 km – 907 (24.2%)
- 101-200 km – 991 (26.5%)
- 201-300 km – 601 (16.1%)
- More than 300 km – 694 (18.5%)

Therefore, almost two-thirds (65.4 percent) of respondents reported travelling 200 km per week or less, with only 18.5 percent travelling over 300 km.

In regards to the area respondents usually drove in, 64.9 percent (or 2430 respondents) reported normally travelling in towns, built-up or urban areas, with the remaining 35.1 percent (or 1314 respondents) reporting that they usually drove in country or rural areas.

3.2.3. Socio-economic status

The frequency table for respondents' current employment status is shown in Table 3.5, with the corresponding tables for highest level of education achieved and gross annual household income displayed in Tables 3.6-3.7.

As can be observed in Table 3.5, being in full-time employment was the most commonly identified employment status by respondents, at 29.7 percent. This was followed by being self-employed (19.1 percent), retired (17.6 percent) and looking after the house full-time (10.0 percent). In comparison to ABS 2006 Census data, the number of people who were employed (either on a full-time, part-time or self-employed basis) was similar to that found in the survey sample, at 53 percent and 55 percent, respectively (Australian Bureau of Statistics, 2009).

Table 3.5 Frequency for respondents' current employment status

Employment status	Frequency	Percentage (%)
Employed full-time	1218	29.7
Employed part-time	263	6.4
Self-employed	783	19.1
Unemployed	197	4.8
Student	245	6.0
Beneficiary/welfare	106	2.6
Retired	720	17.6
Look after house full-time	412	10.0
Other	129	3.1
Refuse to answer	27	0.7
TOTAL	**4100**	**100.0**

Table 3.6 reveals that completing high school was the highest level of education achieved by 38.2 percent of respondents, with 23.5 percent of respondents completing a university degree (i.e. Bachelors only, or also a postgraduate). In addition, 17.3 and 15.6 percent of respondents, respectively, had obtained a trade certificate or diploma. In comparison to ABS 2006 Census data, those in the survey sample were more likely to be university educated (i.e. 24 percent for the sample versus 13 percent in the Census data) (Australian Bureau of Statistics, 2009).

Table 3.6 Frequency for respondents' highest level of education achieved

Employment status	Frequency	Percentage (%)
Still attending school	44	1.1
High school certificate	1565	38.2
Trade certificate	708	17.3
Diploma	638	15.6
Bachelors degree	691	16.9
Postgraduate degree	270	6.6
Other	184	4.5
TOTAL	**4100**	**100.0**

In regards to gross annual household income, it was found that almost three-quarters (73.9 percent) of respondents had an income of $80,000 or less, with 13.8 percent living in households that earned more than $100,000 per annum (Table 3.7). Although direct

comparisons to ABS 2006 Census data are not possible, given that income is measured at different increments to those used here, this data indicated that 73 percent of households had an annual income of $88,399 or less, with 19 percent earning $104,000 or more. From this information, it can be concluded that the survey sample was slightly less wealthy in comparison to the population at large (Australian Bureau of Statistics, 2009).

Table 3.7 Frequency for respondents' gross annual household income

Employment status	Frequency	Percentage (%)
Less than $20,000	563	13.7
$21,00-$40,000	1006	24.5
$41,00-$60,000	828	20.2
$61,00-$80,000	634	15.5
$81,00-$100,000	502	12.2
$101,00-$120,000	254	6.2
$121,00-$140,000	132	3.2
More than $140,000	181	4.4
TOTAL	**4100**	**100.0**

3.3. FOUR ROAD TYPES: TYPICAL TRAVEL SPEEDS AND KNOWLEDGE OF SPEED LIMIT

For the four investigated road types – a local street in a residential area (speed limit of 50 km/h), a main undivided street in an urban area (speed limit of 60 km/h), a two-lane undivided rural road (speed limit of 100 km/h) and a rural gravel road (speed limit of 100 km/h) – the survey respondents who currently reported driving a motorised vehicle were asked what speed they typically travelled at on each road type, when there was no traffic congestion. All respondents were then asked what they believed the speed limit for each road type was likely to be. An example image of each of the road types was shown to the respondents, in order to provide a visual representation of what the road type typically looked like. These images are displayed in Figures 3.1-3.4.

Figure 3.1
The image of a local street in a residential area used in the survey

Figure 3.2
The image of a main undivided street in an urban area used in the survey

Figure 3.3
The image of a two-lane undivided rural road used in the survey

Figure 3.4
The image of a rural gravel road used in the survey

3.3.1. Overall results

The means and standard deviations for respondents' self-reported typical travel speed and belief of what the speed limit was across the four road types, based on the sample roads presented, are shown in Table 3.8, whilst Table 3.9 displays the minimum and maximum values (at km/h) provided by respondents for each of these variables.

Table 3.8. Means and standard deviations for respondents' typical travel speed and belief of what the speed limit is for the four investigated road types

Variable	Road type							
	Residential		Urban arterial		Undivided rural		Rural gravel	
	M	SD	M	SD	M	SD	M	SD
Typical travel speed	50.35	4.94	61.09	7.76	85.52	14.12	66.97	16.12
What is speed limit?	49.78	4.73	60.63	8.23	86.20	14.89	72.41	18.41

Table 3.9. Minimum and maximum values provided by respondents for typical travel speed and belief of what the speed limit is for the four investigated road types

Variable	Road type							
	Residential		Urban arterial		Undivided rural		Rural gravel	
	Min	Max	Min	Max	Min	Max	Min	Max
Typical travel speed	15	80	20	110	40	140	10	130
What is speed limit?	10	80	20	110	25	130	10	130

As can also be viewed in Figure 3.5, respondents, on average, tended to report typically travelling at very close to the speed limit on the 50 km/h residential street and 60 km/h urban arterial street, and also tended to correctly identify these speed limits. For the undivided rural and rural gravel roads, however, many respondents reported typically driving at well below the 100 km/h speed limit, and also believed that the speed limit for these road types was less than 100 km/h (i.e. means of 86 km/h for undivided rural and 72 km/h for rural gravel). It is noteworthy that only 343 respondents (8.4 percent) correctly identified the current speed limits across all four roads. The distribution of results for each road type was as follows:

- Local street in residential area

- 86.4 percent of respondents reported typically travelling at 50 km/h or less on a local street in a residential area when there was no traffic congestion, with only 11.1 percent reporting travelling at 60 km/h or above on this road type.
- 83.8 percent correctly identified that the speed limit for this road type was 50 km/h.

- Main undivided street in an urban area

- 80.5 percent of respondents reported typically travelling at 60 km/h or less on a main undivided street in an urban area when there was no traffic congestion, but a further 17.1 percent reported usually travelling at 70 km/h or above on this road type.
- Two-thirds of respondents (65.5 percent) correctly identified that the speed limit for this road type was 60 km/h. A further 16.3 percent thought the speed limit was 50 km/h, whilst 9.4 percent and 5.9 percent believed it was 70 km/h and 80 km/h, respectively.

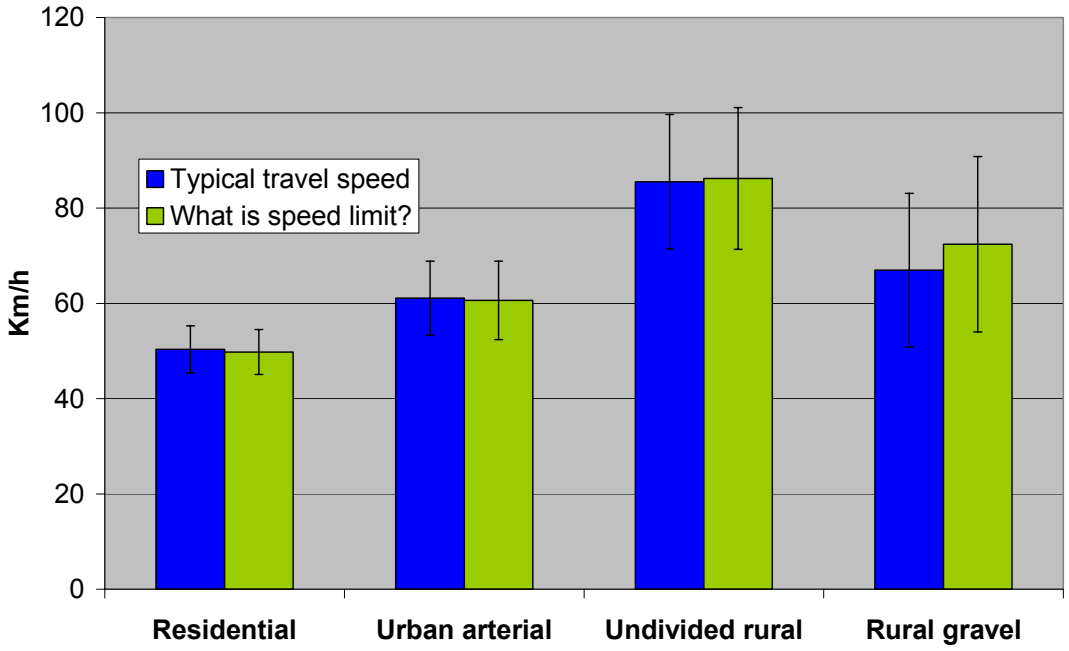

Figure 3.5
Mean typical travel speed and belief of what the speed limit is across the four road types

NOTE: The error bars indicate the standard deviation

- Two-lane undivided rural road

- Just over half of respondents (55.8 percent) reported typically travelling at 80 km/h or less on a two-lane undivided rural road when there was no traffic congestion, with a further 38.1 percent saying that they usually travelled 85-100 km/h. There were only 6.1 percent of respondents who reported travelling at more than 100 km/h on this type of road.
- Only one-third (33.0 percent) of respondents identified the speed limit for this road as being 100 km/h, with the same proportion (33.2 percent) identifying 80 km/h. In addition, 10.4 percent of respondents believed the speed limit was 70 km/h, with a further 7.6 percent and 6.9 percent, respectively, saying the limit was 60 km/h and 110 km/h.

- Rural gravel road

- Only 4.4 percent of respondents reported typically travelling at 100 km/h or more on a rural gravel road when there was no traffic congestion, with 30.2 percent saying that they would usually travel between 80-99 km/h. Approximately two-thirds of the sample (65.4 percent) reported travelling at 75 km/h or less on this road type.
- 38.2 percent of respondents thought the speed limit for this road type was 60 km/h or less, whilst 41.0 percent believed it was between 65 and 80 km/h. Only 16 percent of respondents thought the speed limit for this road type was 100 km/h or more.

3.4. FOUR ROAD TYPES: ATTITUDES TOWARDS CURRENT AND REDUCED SPEED LIMITS

This part of the survey was linked to the items for the four road types which questioned respondents about how fast they typically travel on these road types and what they believed the speed limit should be. Respondents were then asked whether they considered a speed limit of [lowered speed limit inserted here – e.g. 40 km/h for local street in residential area] appropriate for this type of road, followed by whether they considered a speed limit of [current speed limit inserted here – e.g. 50 km/h for local street in residential area] to be appropriate for this road type, by providing a rating of 1 ("Far too low") to 5 ("Far too high").

These items addressed Research Questions 1 and 2, which were: "What are the community attitudes towards current (Research Question 1) and reduced (Research Question 2) speed limits?"

3.4.1. Overall results

The proportion of respondents who believed that the proposed lowered and current speed limits were too low or too high across the four road types, according to the images shown, are displayed in Table 3.10. These relationships are also represented in Figures 3.6-3.7.

Table 3.10. Proportions for approval level of current and lowered speed limits across the four road types

Road type and speed limit	Approval level (%)				
	Far too low	A bit too low	About right	A bit too high	Far too high
Local street in a residential area					
40 km/h appropriate?	13.7	56.3	28.5	1.4	0.1
50 km/h appropriate?	0.8	13.2	71.8	13.0	1.2
Main undivided street in an urban area					
50 km/h appropriate?	17.5	52.9	28.3	1.3	0.1
60 km/h appropriate?	2.4	15.6	70.0	10.9	1.1
Two-lane undivided rural road					
90 km/h appropriate?	4.3	20.7	46.8	25.2	3.1
100 km/h appropriate?	0.8	4.5	43.5	33.3	17.8
Rural gravel road					
80 km/h appropriate?	1.6	6.5	43.9	37.0	11.0
100 km/h appropriate?	0.3	0.7	11.4	36.7	50.9

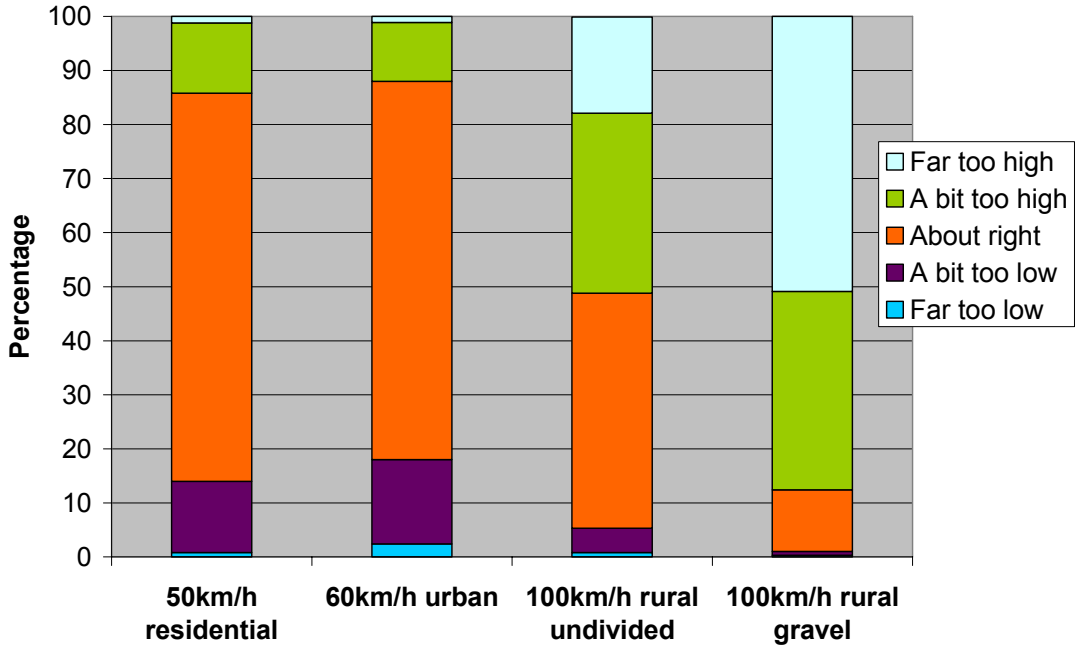

Figure 3.6
Extent to which current speed limit is too high, about right or too low for the four road types

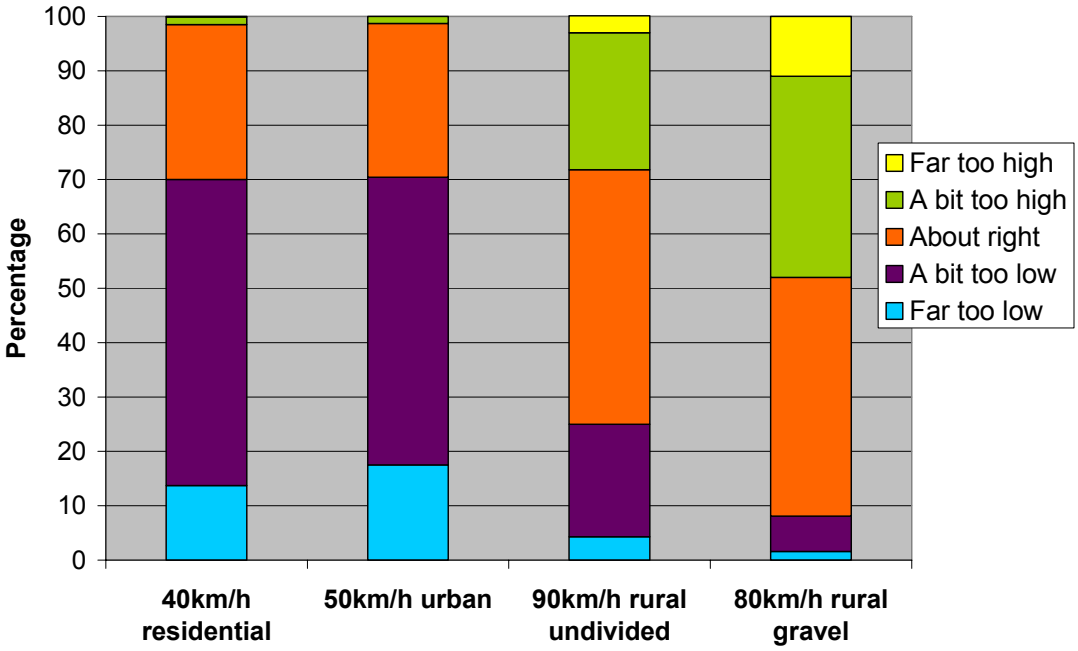

Figure 3.7
Extent to which lowered speed limit is too high, about right or too low for the four road types

As can be observed in Table 3.10 and Figures 3.6-3.7, it is evident that there was a clear difference between the two urban road types and the two rural road types in regards to respondents' views of the current and lowered speed limits. For both the residential and urban arterial streets, most respondents tended to believe that the current 50 km/h and 60 km/h speed limits were about right, according to the sample images presented, with the majority also thinking that the proposed lower limits of 40 km/h and 50 km/h were too low. For the rural roads, however, most thought that 100 km/h was too high, particularly for the rural gravel road, with many believing that a reduction to 90 km/h for the undivided rural road and 80 km/h for the rural gravel road would be about right or still too high, based on the exemplar images shown. More specifically, the distribution of results for the reduced and lowered speed limits was as follows, for the four investigated road types:

- Local street in residential area

- Almost three-quarters of respondents (71.8 percent) believed a speed limit of 50 km/h for a local street in a residential area was about right, with an equal number of respondents (14 percent) believing that it was either a bit/far too low or a bit/far too high.
- Whilst 70.0 percent thought a speed limit of 40 km/h would be a bit/far too low for this road type, 28.5 percent did believe it was about right.

- Main undivided street in an urban area

- 70.0 percent of respondents believed a speed limit of 60 km/h for a main undivided street in an urban area was about right. Additionally, there were 18.0 percent of respondents who believed that this limit was a bit/far too low, whilst 12.0 percent thought it was a bit/far too high.
- 70.4 percent of respondents thought a speed limit of 50 km/h for this road type was a bit/far too low, but 28.3 percent did believe it was about right.

- Two-lane undivided rural road

- 43.5 percent of respondents believed a speed limit of 100 km/h for a two-lane undivided rural road was about right, with just over half (51.1 percent) thinking it was a bit/far too high.
- Almost half of the respondents (46.8 percent) thought a speed limit of 90 km/h for this road type was about right, with a further 28.3 percent believing it was a bit/far too high. One-quarter (24.9 percent) of respondents, however, thought 90 km/h was a bit/far too low.

- Rural gravel road

- The vast majority of respondents (87.6 percent) believed a speed limit of 100 km/h for a rural gravel road was too high, with a further 11.4 percent considering it to be about right.
- Almost half of the respondents (48.0 percent) thought a speed limit of 80 km/h for this road type was still a bit/far too high, with a further 43.9 percent believing was about right. Only 8.1 percent of respondents thought 80 km/h was a bit/far too low.

3.5. BELIEF AND 'IF WERE TRUE' STATEMENTS

In this section of the online survey, respondents were presented with a range of statements regarding the relationship between lowered speed limits and a number of factors, including crash involvement, injury severity, environmental issues, liveability and travel time.

Respondents were asked to rate the extent to which they believed each statement to be true (1 = no, I strongly believe it to be false, to 5 = yes, I strongly believe it to be true), with each of these statements followed by a 'if were true' statement. These statements asked respondents to presume that the preceding statement was true (i.e. even if they did not know or did not believe that it were true), and then rate the extent to which they would then be likely to support speed limit reductions (i.e. from 1 = very unlikely to support speed limit reduction, to 5 = very likely to support speed limit reduction). In addition to these seven belief and 'if were true' statements, respondents were also asked about whether they believed that the main reason police target speeding motorists is to make money for the government.

In regards to the 'if were true' statements, it must be noted that it could have been difficult for some respondents to assume the statements were true, if they did not initially believe them to be so. Therefore, the results and conclusions based upon these statements should be treated with some caution.

These belief and 'if were true' statements addressed Research Question 3, which was: "Which norms and belief predominantly shape these attitudes (i.e. towards current/reduced speed limits)? That is, why does the community have these attitudes and what are the underlying factors behind them?" This Research Question involved investigating the level of understanding that the community had about the relation between speed limits and crash involvement, as well as other factors such as the environment, liveability and travel time. In turn, the extent to which respondents' understanding of these issues was related to their attitudes towards speed limits was also an important component of the Research Question, as well as the investigated theoretical model.

3.5.1. Overall results

The means, standard deviations and response proportions for the belief statements are displayed in Table 3.11, with the corresponding statistics for the 'if were true' statements shown in Table 3.12. These results are also graphically represented in Figures 3.8-3.10.

Table 3.11. Means, standard deviations and response proportions for belief statements

Belief statement	M	SD	Proportion (%)				
			Strongly believe to be false	Believe to be false	Don't know	Believe to be true	Strongly believe to be true
Lowering the limits would reduce injury severity in the event of a crash	4.03	0.95	2.2	5.8	12.5	45.6	33.9
Lowering the limits would make the roads safer for pedestrians and cyclists	3.65	1.12	4.5	14.0	18.1	39.2	24.2
Driving at 110 km/h uses up to 25% more fuel than at 90 km/h	3.46	0.99	2.9	13.5	33.2	35.9	14.5
The main reason police target speeding motorists is to make money for the government	3.31	1.24	7.7	23.3	18.6	30.7	19.7
A 10 km/h limit reduction in urban/ built-up areas would not significantly impact trip travel times	3.13	1.18	9.7	24.2	20.5	34.9	10.7
Lowering the limits would reduce crashes on the roads	2.99	1.20	10.4	28.9	23.8	24.9	11.9
Lowering the limits would create a more pleasant environment for you and your family to live in	2.97	1.19	12.4	23.1	32.2	19.8	12.5
Lowering the limits would reduce toxic emissions by cars, thereby improving air quality and reducing global warming	2.89	1.06	10.7	22.2	42.2	17.0	7.8

Table 3.12. Means, standard deviations and response proportions for 'if were true' statements

'If were true' statement	M	SD	Proportion (%)				
			Very unlikely to support	Somewhat unlikely to support	Neither likely or unlikely	Somewhat likely to support	Very likely to support
Lowering the limits would reduce injury severity in the event of a crash	3.64	1.24	8.0	10.6	20.7	30.3	30.4
Lowering the limits would make the roads safer for pedestrians and cyclists	3.43	1.27	10.2	13.9	22.2	29.8	23.8
Lowering the limits would reduce crashes on the roads	3.37	1.33	12.3	14.9	20.5	27.6	24.7
Lowering the limits would create a more pleasant environment for you and your family to live in	3.18	1.31	14.4	15.3	27.9	22.6	19.7
Driving at 110 km/h uses up to 25% more fuel than at 90 km/h	3.16	1.34	15.7	15.8	24.9	23.8	19.9
Lowering the limits would reduce toxic emissions by cars, thereby improving air quality and reducing global warming	3.14	1.29	14.9	14.4	30.2	22.9	17.7
A 10 km/h limit reduction in urban/ built-up areas would not significantly impact trip travel times	3.08	1.32	16.2	17.5	25.6	23.8	16.8

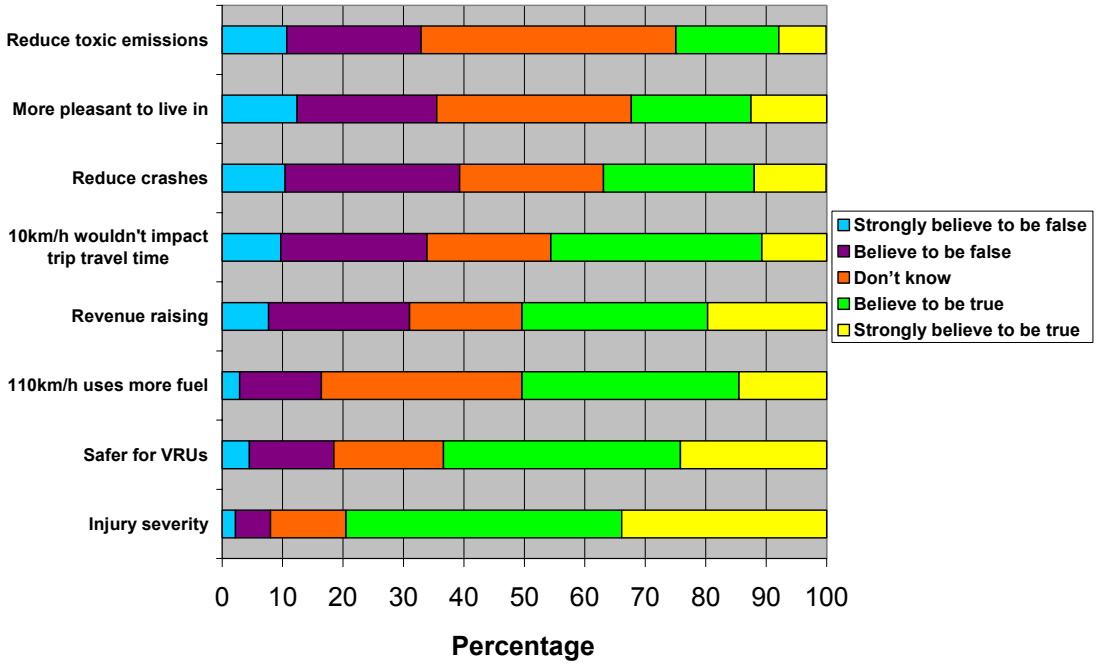

Figure 3.8
Response proportions for belief statements

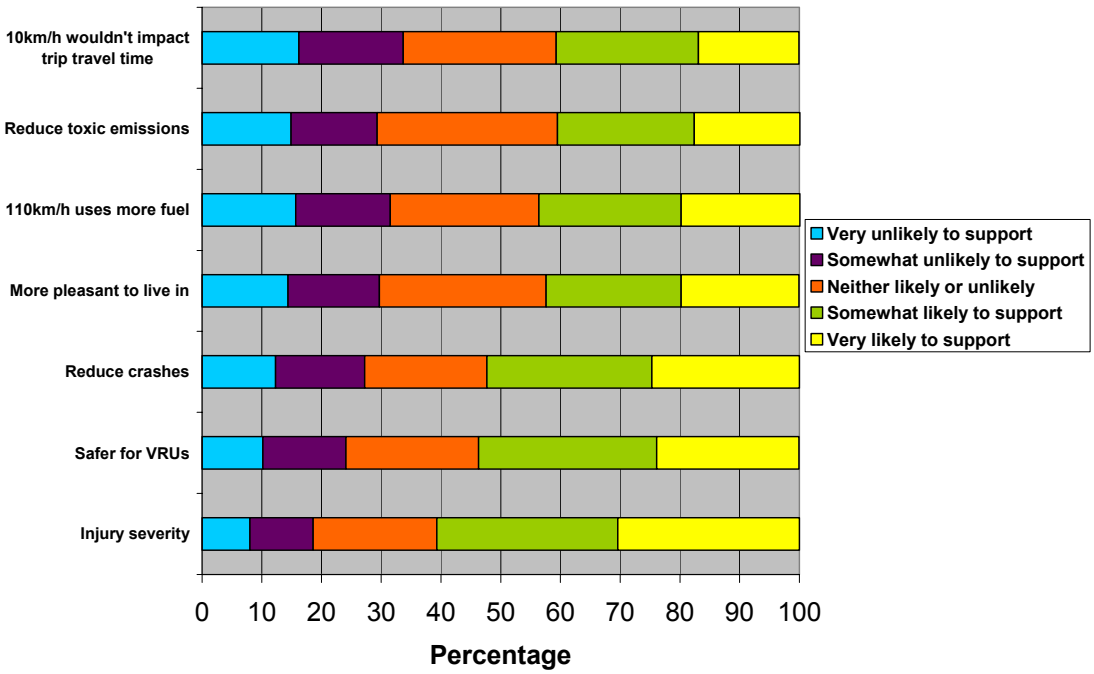

Figure 3.9
Response proportions for 'if were true' statements

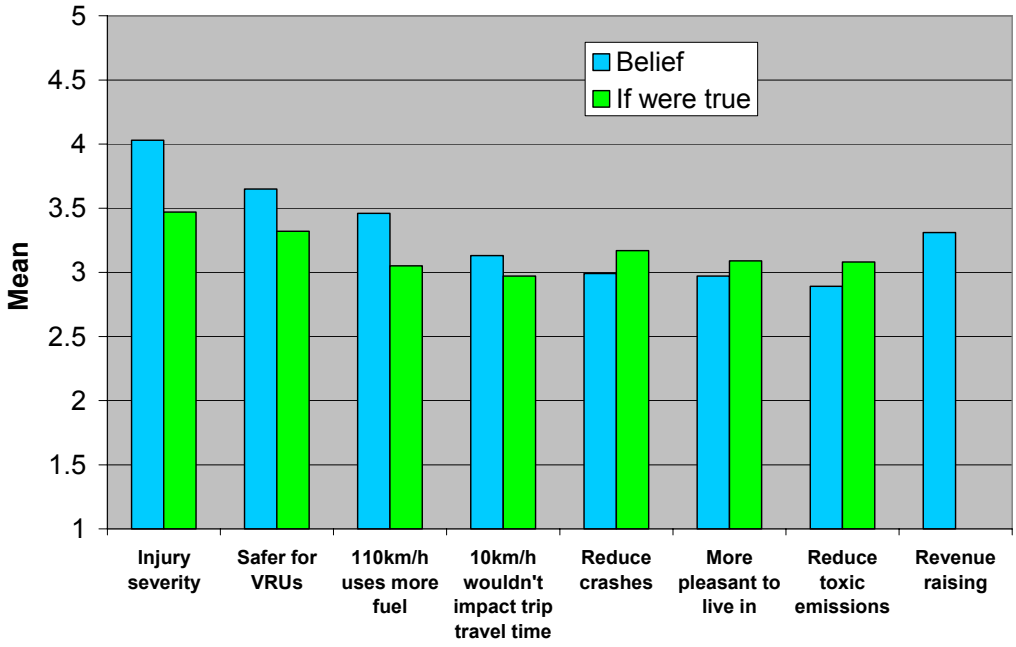

Figure 3.10
Means for belief and 'if were true' statements

As can be observed in Table 3.11 and Figure 3.8, on average, respondents had the highest level of belief for the statement that "lowering the current speed limits would reduce the severity of injury when a crash occurs", with 79.5 percent of respondents believing or strongly believing this statement. The other three statements whereby the level of belief was above 50 percent were "lowering the current speed limits would make our roads safer

for pedestrians and cyclists", "driving at 110 km/h your car uses up to 25 percent more fuel than it would travelling at 90 km/h" and "the main reason police target speeding motorists is to make money for the government". The lowest levels of belief were associated with the statements that "lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming" (24.8 percent) and "lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" (32.3 percent). From the other statements, 45.6 percent of respondents believed/strongly believed that "a 10 km/h speed limit reduction in all urban/built-up areas would not significantly impact on trip travel times", whilst "lowering the current speed limit would reduce crashes on the road" was believed by 35.8 percent of respondents. It is also important to note the high proportion of respondents who indicated that they did not know whether the statement was true for several of the items. For example, 42.2 percent of respondents said that they did not know whether reducing the speed limits would reduce toxic emissions by cars, suggesting that there is a relatively low awareness amongst the four participating states of such environmental issues.

Table 3.12 and Figure 3.9 indicate that the association between these statements changed to a certain extent when investigating the extent to which respondents would support speed limit reductions, if the statements were assumed to be true. Whilst the 'injury severity', 'safer for vulnerable road users' and 'reduce crashes' statements were associated with the highest level of support for speed limit reductions (i.e. 60.7, 53.6 and 52.3 percent of respondents, respectively, reported that the were very or somewhat likely to support speed limit reductions if these statements were true), the other four statements were all associated with support levels of just above 40 percent (i.e. ranging from 40.6-43.7 percent).

As is shown in Figure 3.10, some statements were associated with a higher mean level of belief than they were for likelihood of supporting speed limit reductions (e.g. 'injury severity'), whilst the opposite was true for other statements (e.g. 'reduce crashes'). Therefore, whilst respondents did not necessarily have a high level of belief that lowering speed limits would reduce crashes, create a more pleasant environment to live in and reduce toxic emissions, they did indicate a higher level of support for reducing speed limits if these statements were in fact true.

Now that the level of belief for the statements, as well as the extent to which they would influence the level of support for speed limit reductions if they were true, have been outlined, a further part of Research Question 3 involved examining the extent to which these factors were predictive of respondents' speed limit attitudes. A multiple regression was conducted, whereby the belief statements were the independent variables, and the sum of ratings provided for the lower speed limits across the four road types (i.e. lowered limit total) was the dependent variable. This model was found to be significant (*Adjusted* r^2 = 0.30; F [7, 4101] = 248.07, $p < .001$), with all of the belief statements, aside from "driving at 110 km/h your car uses up to 25 percent more fuel than it would travelling at 90 km/h" and "lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming" ($p > .05$). The adjusted r^2 value of 0.30 indicated that the belief statements accounted for 30 percent of the variance in the overall rating for the lowered speed limits across the four road types.

Therefore, "lowering the current speed limits would reduce crashes on the roads (β = 0.17), "a 10 km/h speed limit reduction in all urban and build-up areas would not significantly impact travel times" (β = 0.10), "lowering the current speed limits would reduce the severity of injury when a crash occurs" (β = 0.06), "lowering the current speed

limits would create a more enjoyable and healthier environment for you and your family to live in" (β = 0.26) and "lowering the current speed limits would make our roads safer for pedestrians and cyclists" (β = 0.10) were significant predictors of respondents' attitudes towards the lowered speed limits, with higher levels of belief for these statements associated with higher levels of approval for the proposed lower speed limits.

From these above Beta (β) values, "lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" was shown to be the strongest predictor of the lowered limit total, with every increase of one unit in the level of belief for this statement associated with an increase of 0.26 units in the lowered limit total score.

3.6. SPEED LIMIT ADHERENCE AND REASONS FOR EXCEEDING THE SPEED LIMIT

In this section of the survey, respondents who were self-reported drivers were asked about how often (i.e. 1 = always, to 5 = never), in the past three months, they have driven at: under the speed limit; right on the speed limit; up to 5 km/h over the speed limit; 6-10 km/h over the speed limit; and more than 10 km/h over the speed limit. Respondents who admitted to exceeding the speed limit at least some of the time were also asked to rate the extent (from 1 = not a reason at all, to 5 = always a reason) to which ten statements were a reason for them to drive over the speed limit. Whilst self-reported speeding behaviour is not necessarily a completely accurate indication of their actual speeding behaviour, based on previous studies' findings (e.g. Aberg et al., 1997) it was assumed there was a strong association between the two.

These items addressed Research Question 4, which is "What are the community's attitudes towards speeding in general?"

3.6.1. Overall results

The proportion of respondents who reported driving under, right on and over the speed limit (i.e. by up to 5 km/h, 6-10 km/h and over 10 km/h) is displayed in Table 3.13, and also graphically in Figure 3.11.

Table 3.13. Proportions for self-reported speed limit adherence

	Self-reported speed limit adherence				
Driving speed	**Never**	**Rarely**	**Sometimes**	**Most times**	**Always**
Under speed limit	3.3	27.9	47.4	18.2	3.2
Right on limit	0.2	2.0	20.0	65.8	12.0
Up to 5 km/h over	7.5	29.9	48.4	12.3	1.9
6-10 km/h over	29.9	45.5	20.2	3.6	0.8
More than 10 km/h over	60.0	30.9	7.6	1.1	0.4

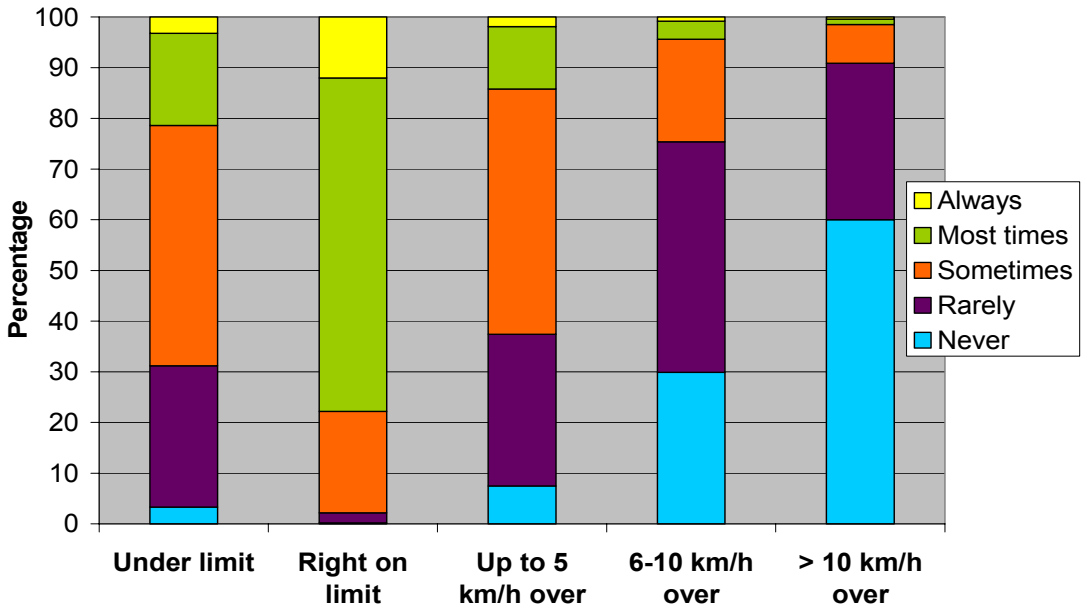

Figure 3.11
Proportions for self-reported speed limit adherence

As can be observed in both Table 3.13 and Figure 3.11, almost 50 percent of respondents (47.4 percent) reported driving under the speed limit some of the time, with a further 21.4 percent saying that they drove below the limit most of the time or always. Two-thirds of respondents also reported driving right on the speed limit most of the time, whilst 12.0 percent said that they always did. In regards to exceeding the speed limit, 62.6 percent of respondents reported driving up to 5 km/h over the limit at least some of the time, whilst this was the case for a quarter (24.6 percent) of respondents at 6-10 km/h over the limit. Finally, 60.0 percent of respondents said that they never exceeded the speed limit by more than 10 km/h, although 9.1 percent reported doing so at least some of the time.

The means, standard deviations and response proportions for reasons for driving over the speed limit are displayed in Table 3.14, with these proportions also graphically displayed in Figure 3.12.

Table 3.14. Means, standard deviations and response proportions for reasons for driving over the speed limit

Reason	M	SD	Proportion (%)				
			Not at all	Rarely	Sometimes	Most times	Always
Driving up to 5 km/h over limit isn't speeding	2.72	1.29	26.6	13.3	29.7	22.3	8.0
Haven't paid enough attention to driving speed	2.60	1.05	19.5	21.7	40.8	15.3	2.7
I'm in a hurry or running late	2.58	1.05	20.3	21.0	41.0	15.3	2.4
Speed limit is too low	2.58	1.14	24.1	16.4	41.8	12.5	5.2
No traffic/other vehicles on the road	2.56	1.14	24.5	18.3	37.3	15.9	3.9
Not sure what speed limit is	2.45	0.95	19.5	27.9	42.6	8.2	1.8
Can drive safety over the limit	2.39	1.26	35.9	15.2	27.5	16.7	4.7
Driving 5-10 km/h over limit isn't speeding	2.04	1.16	46.8	17.6	22.8	9.9	2.8
I enjoy driving fast	2.01	1.13	46.9	18.5	24.5	7.2	2.9
I don't think I'll be caught	1.96	1.11	47.9	21.3	19.9	8.7	2.2

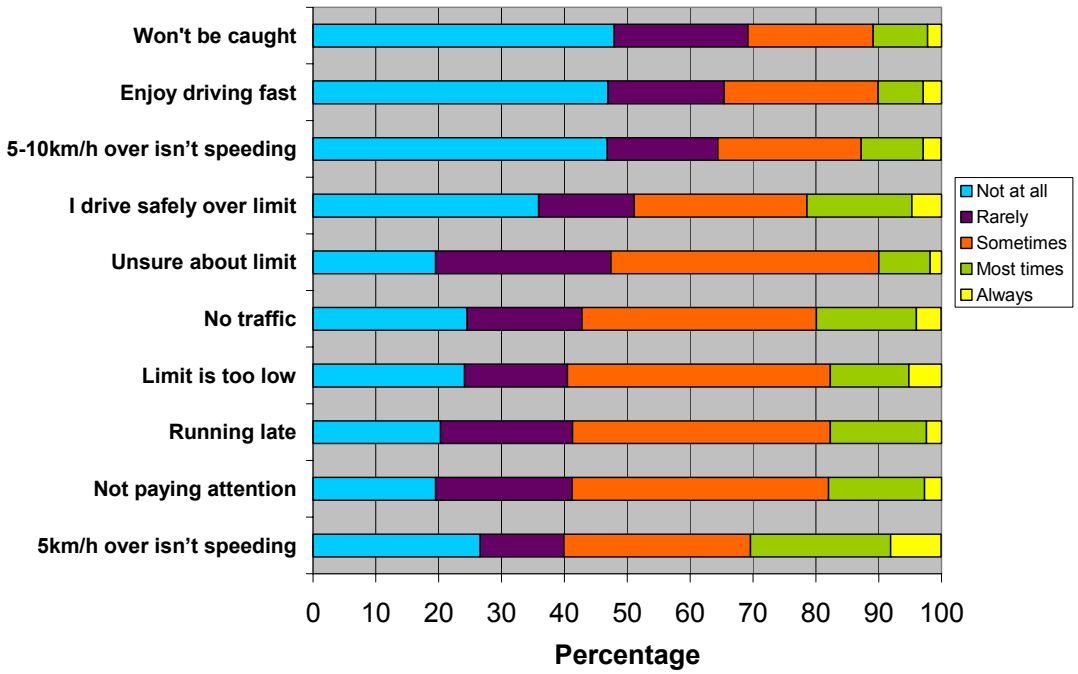

Figure 3.12
Response proportions for reasons for driving over the speed limit

As is indicated in Table 3.14 and Figure 3.12, not believing that driving up to 5 km/h over the speed limit is speeding was the most highly rated reason for exceeding the speed limit, with 60.0 percent of respondents saying that this was a reason at least some of the time. Not paying enough attention to their driving speed, being in a hurry or running late, the speed limit being set too low, and there being no traffic/other vehicles on the road were also relatively highly rated reasons by respondents for driving over the speed limit. The least highly rated reason for exceeding the speed limit was not thinking that they will be caught, with 69.2 percent of respondents saying this was not at all or rarely a reason for speeding. Enjoying driving fast and believing that driving 5-10 km/h over the speed limit is not speeding were also not highly rated reasons for exceeding the speed limit.

3.7. FURTHER ANALYSES: GROUP COMPARISONS FOR LOWERED SPEED LIMITS AND INVESTIGATING THE THEORETICAL MODEL

Some further analyses were also conducted, which investigated the differences between groups, across the metropolitan/regional, age and gender categories, in regards to their attitude towards the lowered speed limits for the four road types (as was presented at an overall level in Section 3.4). The proposed theoretical model (as displayed in Figure 1.3) was also investigated, with an emphasis placed on the relationship between respondents' attitudes towards the current and reduced speed limits, and their speed limit intentions/ behaviour.

3.7.1. Attitudes towards reduced speed limits: Metropolitan and regional

The proportion of metropolitan and regional residents who believed that the proposed lower speed limits were too low, about right or too high across the four road types is shown in Table 3.15, with these results also presented in Figure 3.13.

Table 3.15. Proportions for approval level of lowered speed limits across the four road types, between metropolitan and regional respondents

Road type and speed limit	Approval level (%)				
	Far too low	A bit too low	About right	A bit too high	Far too high
Local street in a residential area (40 km/h)					
Metropolitan	14.3	57.4	26.6	1.5	0.2
Regional	12.3	53.6	33.0	1.1	0.0
Main undivided street in an urban area (50 km/h)					
Metropolitan	19.0	53.0	26.6	1.3	0.1
Regional	13.9	52.5	32.5	1.1	0.0
Two-lane undivided rural road (90 km/h)					
Metropolitan	3.4	16.1	47.8	28.9	3.8
Regional	6.3	32.0	44.3	16.1	1.4
Rural gravel road (80 km/h)					
Metropolitan	1.5	5.3	40.8	40.3	12.1
Regional	2.1	9.4	51.4	29.0	8.1

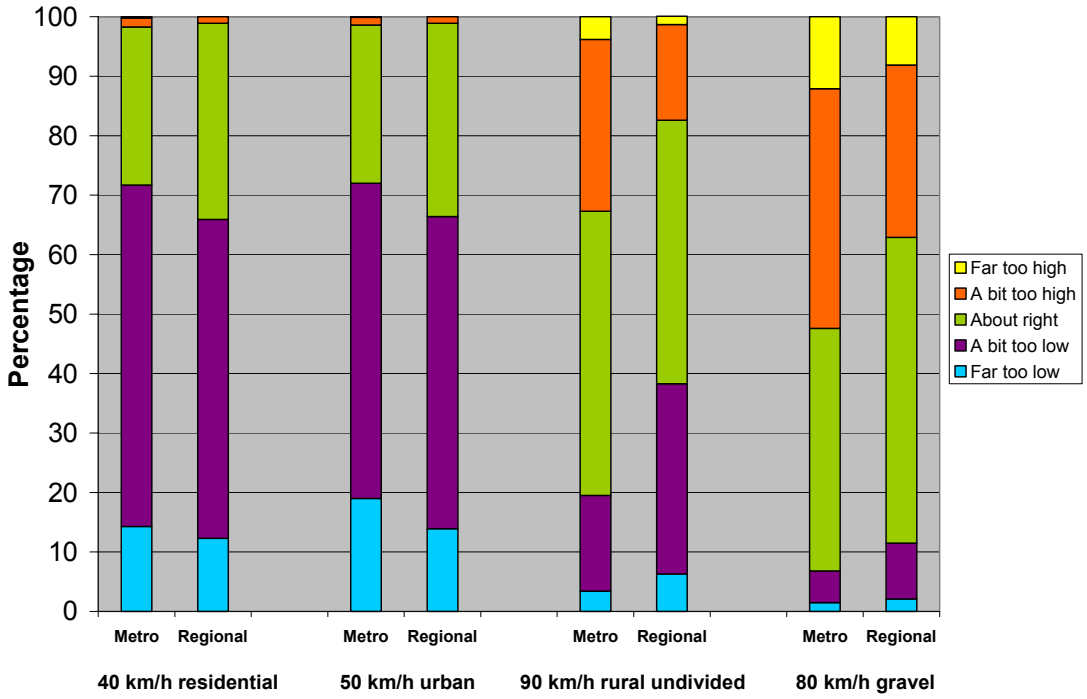

Figure 3.13
Approval level for lowered speed limits between metropolitan and regional respondents across the four road types

As can be observed in Table 3.15 and Figure 3.13, there were some differences between metropolitan and regional residents in regards to their approval levels for the proposed lower speed limits, according to the sample images shown. Assuming that a rating of 'about right' or above constituted approval of the lowered speed limit (i.e. that they believe it is about right or should be even lower), for a local street in a residential area and a main undivided street in an urban area, there tended to be higher levels of approval for the lowered limits (i.e. of 40 km/h and 50 km/h) from those residing in regional areas, in comparison to those living in metropolitan areas. More specifically, 34.1 percent of regional respondents believed a residential speed limit of 40 km/h was about right or a bit/far too high, whilst this was the case for 28.3 percent of metropolitan respondents. For

the 50 km/h urban limit, 33.6 percent of regional residents believed this was about right or a bit/far too high, with 28.0 percent of metropolitan respondents approving of this speed limit. For the two rural roads, however, the approval level for the lowered speed limit was higher amongst metropolitan respondents than regional ones. Whilst 80.5 percent of metropolitan residents thought that 90 km/h was about right or a bit/far too high for a two-lane undivided rural road, there were 61.8 percent of regional residents with the same viewpoint. For the 80 km/h rural gravel road limit, 93.2 percent of metropolitan respondents believed this lowered speed limit was either about right or a bit/far too high, whilst this was the case for 88.5 regional respondents. On the basis of these results, it therefore appears that respondents were more likely to approve of the lowered limits for the road types which they drove on *less* frequently.

These findings were further supported by one-way ANOVAs, which compared the mean scores for each of the lowered speed limits between metropolitan and regional residents, based on the exemplar images presented. These means and standard deviations are shown in Table 3.16, with the means also displayed in Figure 3.14.

Table 3.16. Means and standard deviations for approval level of lowered speed limits for metropolitan and regional residents

Area of residence	40 km/h appropriate?		50 km/h appropriate?		90 km/h appropriate?		80 km/h appropriate?	
	M	SD	M	SD	M	SD	M	SD
Metropolitan	2.16*	0.68	2.10*	0.71	3.14*	0.85	3.56*	0.83
Regional	2.23*	0.67	2.21*	0.68	2.74*	0.85	3.32*	0.83

NOTE: Asterisk indicates a significant difference between the means for metropolitan and regional residents ($p < .05$)

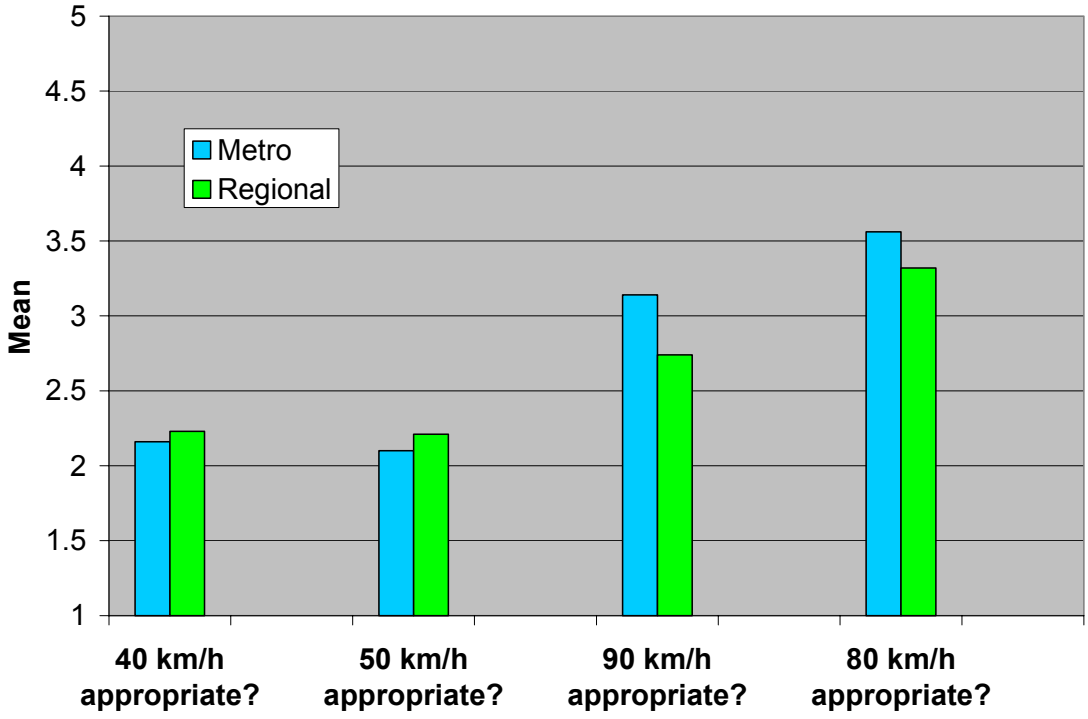

Figure 3.14
Means for approval level of the lowered speed limits for metropolitan and regional respondents

As can be observed in Table 3.14 and Figure 3.16, for the 40 km/h residential and 50 km/h urban arterial speed limits, the mean approval level was significantly higher amongst regional respondents than metropolitan ones. For both the 90 km/h rural undivided limit and the 80 km/h rural gravel limit, it was found that metropolitan residents obtained higher mean approval levels for the lowered speed limits than regional residents.

A corresponding analysis was conducted for the area in which respondents normally drove in (i.e. towns, built-up/urban areas or country/rural areas), with the same results as above obtained. That is, whilst those who normally drove in country/rural areas had significantly higher mean approval levels of the 40 km/h residential and 50 km/h urban arterial speed limits than those who normally drove in towns or built-up/urban areas, the reverse was true for the 90 km/h rural undivided and 80 km/h rural gravel speed limits.

3.7.2. Attitudes towards reduced speed limits: Males and females

The proportion of males and females who believed that the lowered speed limits were too low, about right or too high across the four road types is shown in Table 3.17, with these results also displayed in Figure 3.15.

Table 3.17. Proportions for approval level of lowered speed limits across the four road types, between male and female respondents

Road type and speed limit	Approval level (%)				
	Far too low	A bit too low	About right	A bit too high	Far too high
Local street in a residential area (40 km/h)					
Male	15.6	54.8	28.6	0.9	0.2
Female	11.9	57.8	28.4	1.8	0.1
Main undivided street in an urban area (50 km/h)					
Male	21.4	50.7	27.0	0.9	0.0
Female	13.7	55.0	29.6	1.6	0.1
Two-lane undivided rural road (90 km/h)					
Male	6.1	25.9	46.2	19.1	2.6
Female	2.5	15.5	47.3	31.2	3.5
Rural gravel road (80 km/h)					
Male	2.5	8.7	48.7	31.5	8.6
Female	0.8	4.2	39.2	42.5	13.3

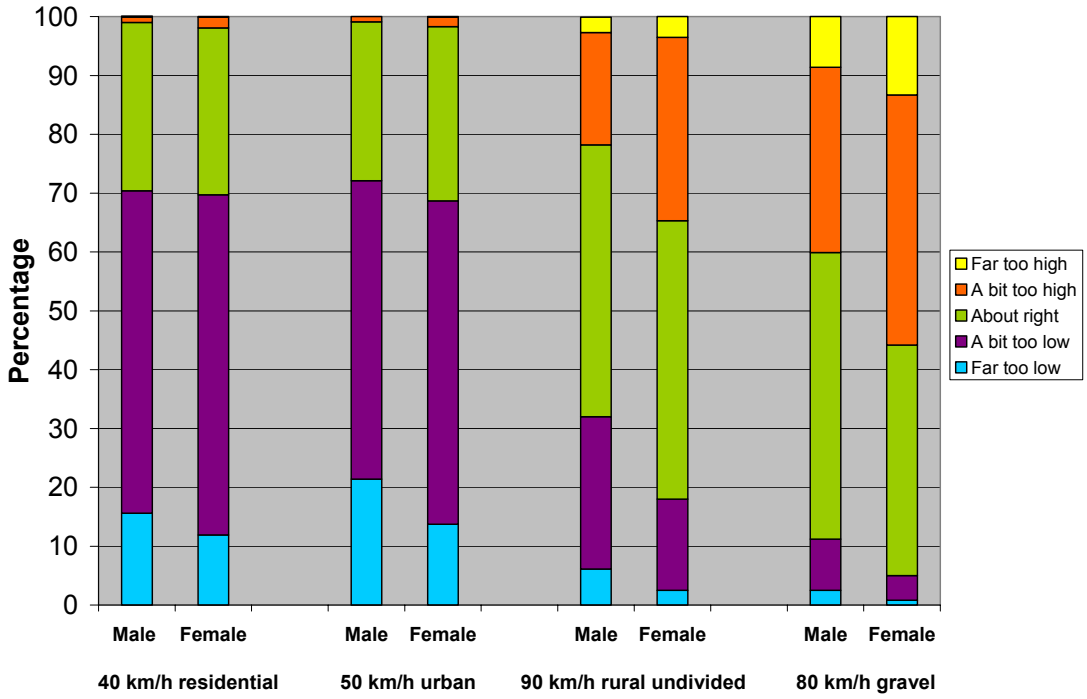

Figure 3.15
Approval level for lowered speed limits between male and female respondents across the four road types

As can be observed in Table 3.17 and Figure 3.15, there were some differences between male and female respondents in regards to their approval levels for the proposed lower speed limits, according to the sample images shown. Assuming that a rating of 'about right' or above constituted approval of the lowered speed limit (i.e. that they believe it is about right or should be even lower), females tended to have higher approval levels for the lowered limits than what males did, with these differences appearing to be more pronounced for the two rural roads, rather than the two urban roads. More specifically, for a two-lane undivided rural road, 82.0 percent of females believed a speed limit of 90 km/h was either about right or a bit/far too high, whilst this was the case for 67.9 percent of males. In addition, for a rural gravel road, 95.0 percent of females thought an 80 km/h speed limit was about right or a bit/far too high, with 88.8 percent of males also sharing this viewpoint. In regards to the urban roads, 30.3 percent of females believed that a 40 km/h limit for a local street in a residential area was about right or a bit/far too high, which compared closely to males at 29.7 percent. Finally, for a main undivided street in an urban area, 31.3 percent of females thought a 50 km/h speed limit was about right or a bit/far too high, with the corresponding approval level for males being 27.9 percent.

To investigate these gender differences further, one-way ANOVAs which compared the mean scores for each of the lowered speed limits between males and females were conducted, based on the exemplar images presented. These means and standard deviations are shown in Table 3.18, with the means also displayed in Figure 3.16.

Table 3.18. Means and standard deviations for approval level of lowered speed limits for male and female respondents

	40 km/h appropriate?		50 km/h appropriate?		90 km/h appropriate?		80 km/h appropriate?	
Gender	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Male	2.15*	0.69	2.07*	0.72	2.86*	0.88	3.35*	0.85
Female	2.20*	0.67	2.19*	0.68	3.18*	0.82	3.63*	0.80

NOTE: Asterisk indicates a significant difference between the means for male and female respondents ($p < .05$)

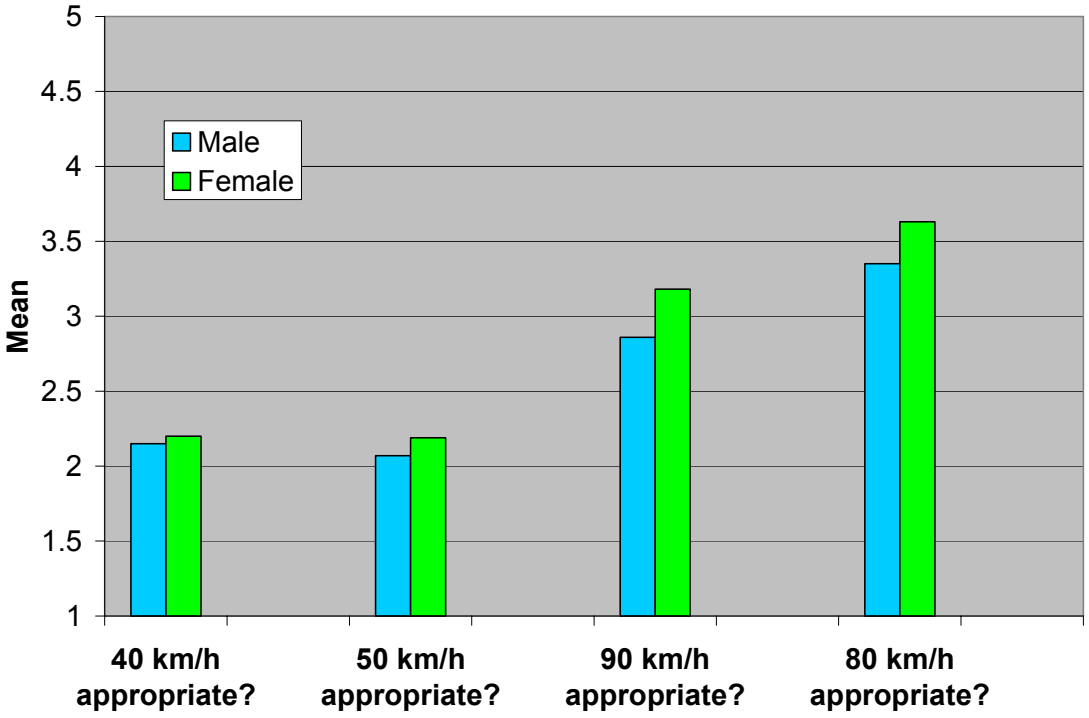

Figure 3.16
Means for approval level of the lowered speed limits for male and female respondents

As can be observed in Table 3.18 and Figure 3.16, for each of the four road types there was a significant difference between male and female respondents in their mean level of approval for the lowered speed limits. More specifically, females had significantly higher approval levels than males for the 40 km/h limit on residential streets, the 50 km/h limit on urban arterials, the 90 km/h limit on undivided rural roads and the 80 km/h limit on rural gravel roads.

3.7.3. Attitudes towards reduced speed limits: Age groups

The proportion of respondents aged 19-30, 31-55 and 56+ years who believed that the lowered speed limits were too low, about right or too high across the four road types is shown in Table 3.19, with these results are also presented in Figure 3.17.

Table 3.19. Proportions for approval level of lowered speed limits across the four road types, between the 18-30, 31-55 and 56+ year age groups

Road type and speed limit	Approval level (%)				
	Far too low	A bit too low	About right	A bit too high	Far too high
Local street in a residential area (40 km/h)					
18-30 years	15.6	54.3	28.2	1.6	0.3
31-55 years	13.4	55.0	30.3	1.2	0.1
55+ years	12.9	59.8	25.8	1.4	0.2
Main undivided street in an urban area (50 km/h)					
18-30 years	22.6	53.3	23.9	0.2	0.1
31-55 years	17.3	52.3	28.9	1.5	0.1
55+ years	14.2	53.4	30.6	1.8	0.0
Two-lane undivided rural road (90 km/h)					
18-30 years	3.9	17.0	55.7	21.5	1.9
31-55 years	5.2	21.4	45.6	24.7	3.1
55+ years	3.1	22.3	41.9	28.8	3.8
Rural gravel road (80 km/h)					
18-30 years	1.5	5.4	50.5	33.8	8.8
31-55 years	1.2	7.0	44.3	37.8	9.7
55+ years	2.4	6.4	38.3	38.4	14.6

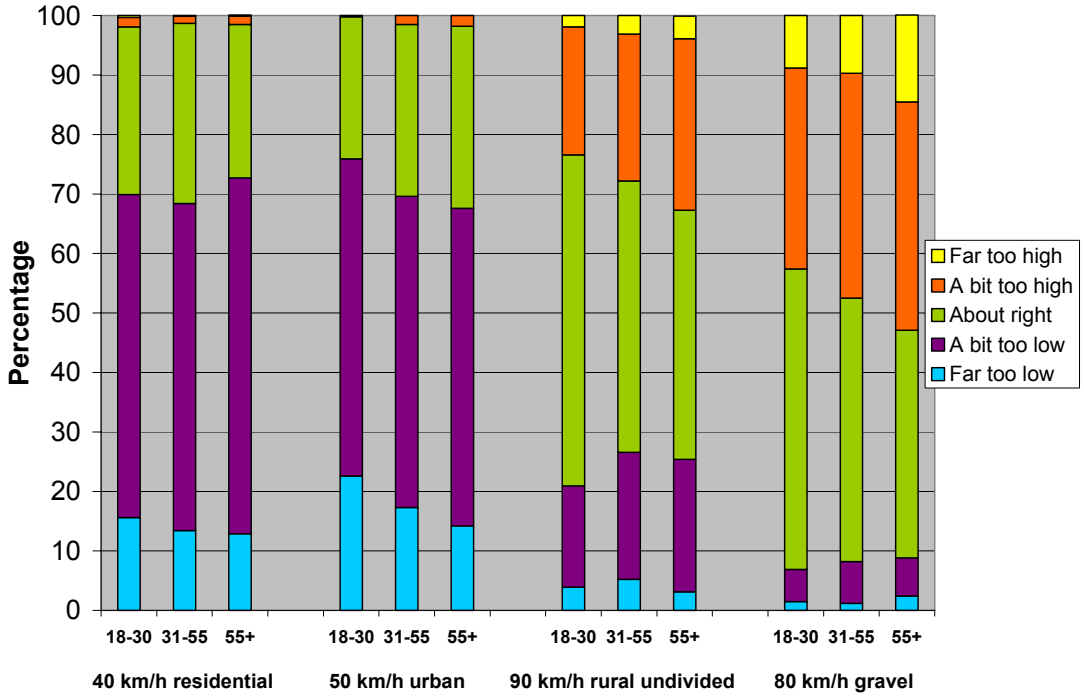

Figure 3.17
Approval level for lowered speed limits between the 18-30, 31-55 and 56+ year age groups across the four road types

As can be observed in Table 3.19 and Figure 3.17, there was some variability between the three age groups in regards to their approval levels for the proposed lower speed limits, according to the sample images shown. Assuming that a rating of 'about right' or above constituted approval of the lowered speed limit (i.e. that they believe it is about right or should be even lower), for a local street in a residential area, respondents aged 56+ years had a lower approval level of the 40 km/h limit (at 27.4 percent), than those aged 18-30 (at 30.1 percent) and 31-55 years (at 31.6 percent). For a main undivided street in an urban

area, the approval level for a 50 km/h limit was lowest in the 18-30 age group (at 24.2 percent), which was in comparison to 30.5 percent for 31-55 year-olds and 32.4 percent for those aged 56+ years. In regards to the 90 km/h limit for a two-lane undivided rural road, the highest approval level was for 18-30 year-olds, with 79.1 percent believing that this speed limit was about right or a bit/far too high, whilst this was the case for 73.4 percent of 31-55 year-olds and 74.5 percent of those aged over 55. For a rural gravel road, there was a similar proportion of respondents across each age group who thought a speed limit of 80 km/h was either about right or a bit/far too high, with 93.1 percent of 18-30 year-olds, 91.8 percent of 31-55 year-olds and 91.3 percent of those aged 56+ years approving of this limit.

To investigate these age group differences further, one-way ANOVAs and post-hoc SNK tests were conducted, with the means and standard deviations shown in Table 3.20, and the means also displayed in Figure 3.18.

Table 3.20. Means and standard deviations for approval level of lowered speed limits for respondents aged 18-30, 31-55 and 56+ years

	40 km/h appropriate?		50 km/h appropriate?		90 km/h appropriate?		80 km/h appropriate?	
Age group	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
18-30	2.17	0.71	2.02*	0.69	3.00*	0.79	3.43*	0.79
31-55	2.20	0.68	2.15*	0.71	2.99*	0.89	3.48*	0.81
56+	2.16	0.66	2.20*	0.69	3.08*	0.89	3.56*	0.90

NOTE: Asterisk indicates there was a significant difference between the three age groups ($p < .05$)

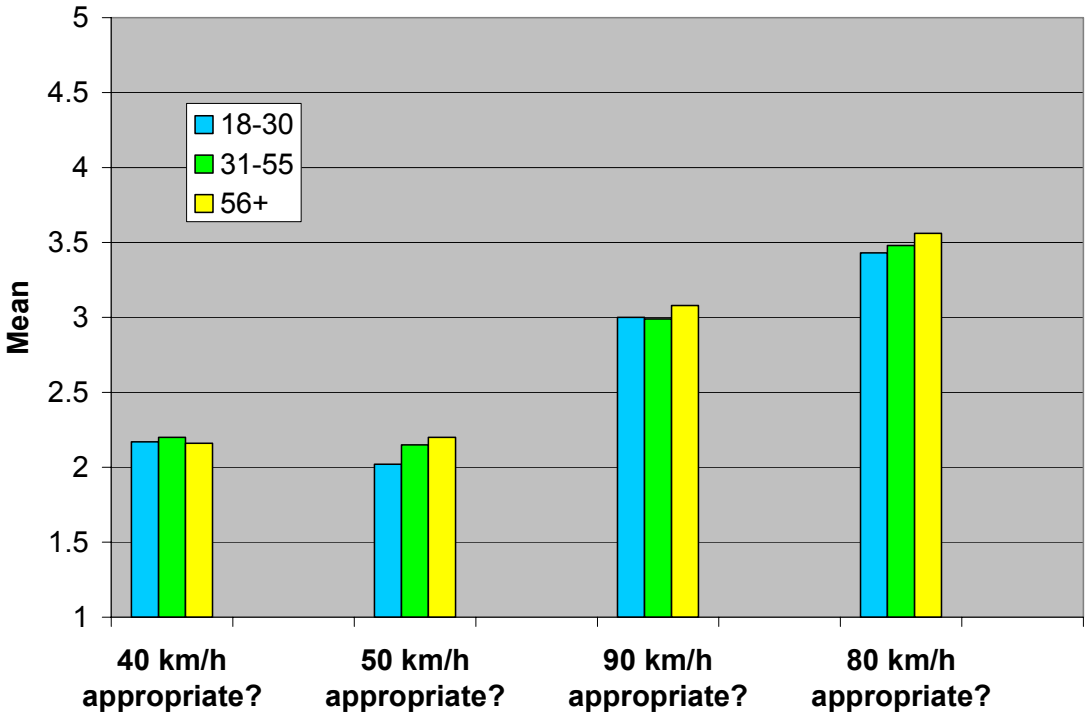

Figure 3.18
Means for approval level of the lowered speed limits for respondents aged 18-30, 31-55 and 56+ years

The results presented in Table 3.20 and Figure 3.18 produced slightly different results to what was expected on the basis of the approval percentages reported above. This was due to a higher proportion of respondents aged 56+ years tending to report 'a bit too high' 'or far too high', rather than 'about right', for the lowered speed limits in comparison to the other two age groups, particularly 18-30 year-olds (i.e. ratings of a 'bit/far too high' boost the mean more than ratings of 'about right'). This meant that, for some road types, the mean was higher for the 56+ age group, even though there was a higher approval rating (according to the frequencies) in the 18-30 year age group, based on the exemplar images provided.

For the 40 km/h residential speed limit, there were no significant differences in the mean approval level between the age groups. For the 50 km/h urban limit, however, it was found that respondents aged 18-30 years had a significantly lower mean approval level than those aged 31-55 and 56+ years. Despite not having the highest approval percentage according to the frequencies reported above, it was found that respondents aged 56+ years had a significantly higher mean approval rating of the 90 km/h rural undivided speed limit in comparison to those aged 31-55 and 18-30 years. A similar finding was also obtained for the 80 km/h rural gravel speed limit, with a significantly higher mean approval rating found for respondents aged over 55 years, than those aged 18-30 and 31-55 years.

3.7.4. The theoretical model

As was shown in Section 1.9, a model based on the Theory of Planned Behaviour (TPB) was to be investigated in the study, with the proposed model again displayed in Figure 3.19. It was proposed that the main relationship of interest in this study was that between respondents' attitudes to both the current and reduced speed limits, and the extent to which this predicted drivers' intention to comply with the speed limit and their speed behaviour. The extent to which norms and beliefs initially influenced speed limit attitudes was also of high interest, with this relationship previously investigated in Section 3.5, where it was found that a number of the belief statements were significant predictors of respondents' attitudes towards the lowered speed limits.

In order to investigate this relationship, a multiple regression was conducted which used the following three variables:

- Travel speed total – the sum of the typical travel speeds that respondents nominated for the four investigated road types (i.e. Items 3a, 4a, 5a and 6a in the questionnaire). This was the dependent variable.

- Lowered limit total – the sum of the ratings provided by respondents for the extent to which they agreed with the lowered speed limit for each of the four road types (i.e. Items 3c, 4c, 5c and 6c). This was the first independent variable.

- Current limit total - the sum of the ratings provided by respondents for the extent to which they agreed with the current speed limit for each of the four road types (i.e. Items 3d, 4d, 5d and 6d). This was the second independent variable.

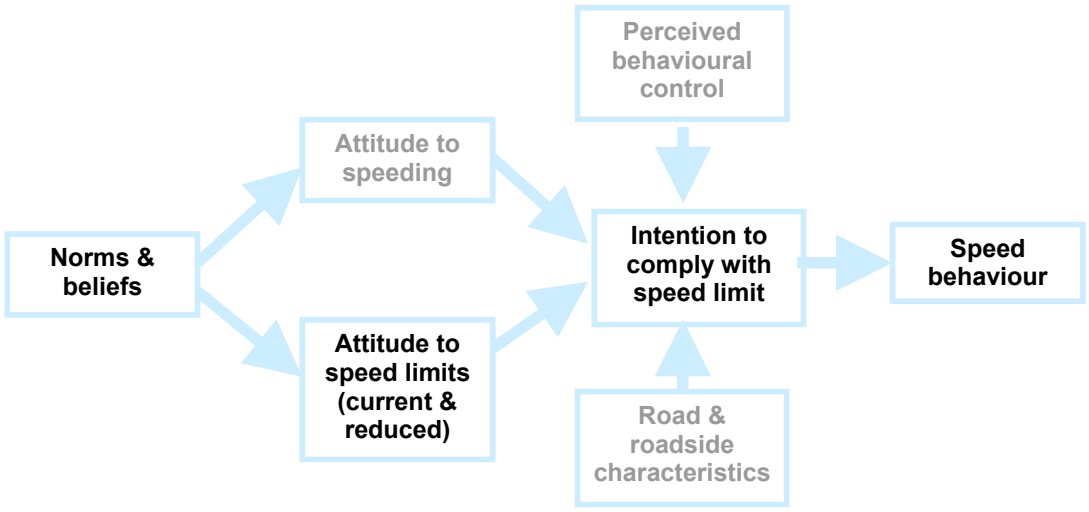

Figure 3.19
Proposed model to be investigated in the study, based on the Theory of Planned Behaviour

This regression indicated that both the lowered limit total (β = -0.56, p < .001) and the current limit total (β = -0.15, p < .001) were significant predictors of travel speed total (*Adjusted* r^2 = 0.46; F [2, 3510] = 1506.73, p < .001), with these two predictors accounting for 46 percent of the variance in total travel speed.

Due to having a higher Beta (i.e. *β)* value, the lowered limit total was the stronger predictor of the two, with the negative nature of these two Beta values indicating that higher scores for lowered limit total and current limit total (i.e. higher levels of support for the lowered and current speed limits) were significantly associated with lower self-reported driving speeds. More specifically, the Beta value of -0.56 for lowered limit total indicates that for every one unit increase in this score, travel speed total would be expected to decrease by 0.56 units. Likewise, it is anticipated that for every unit increase in current limit total, travel speed total would decrease by 0.15 units.

Whilst not all elements of the Theory of Planned Behaviour were investigated in this analysis, the results for the tested constructs were supportive of the proposed model. That is, these results indicated that more positive attitudes towards both the lowered and current speed limits were significantly associated with speed behaviour, in the form of slower driving speeds.

3.8. CLUSTER ANALYSIS: FURTHER INVESTIGATING CHARACTERISTICS OF THOSE WITH VARYING ATTITUDES TOWARDS SPEED LIMITS

3.8.1. Intention of and types of analyses performed

The objective of this analysis was to identify clusters amongst the respondents that could assist in understanding attitudes towards speeding and speed limits, and the characteristics of respondents whose attitudes varied.

The analysis was conducted in two stages. Firstly, a clustering procedure was used to identify groups of people within the sample who were relatively distinguishable according to their attitudes to speeding and to speed limits. Second, discriminant analysis was used to describe these clusters. The SAS program was employed for these analyses, with the FASTCLUS and PROC CANDISC procedures applied.

3.8.2. Analysis output

Table 3.21 shows the raw canonical coefficients for each of the variables used to discriminate the clusters for the first two canonical variables. Coefficients greater than 0.15 have been highlighted to show the variables weighted most highly. It is these variables that play the greatest role in discriminating between the clusters. These results show that Can1 is the dimension for supporting *speed limit reductions*, whereas Can2 is the dimension for supporting *reasons to exceed the speed limit*.

Table 3.21. Raw canonical coefficients for each of the variables used to discriminate the clusters for the first two canonical variables (Can1 and Can2)

Variable	Can1	Can2
Q3C speed limit of 40km/h appropriate for this road (1=far too low; 5=far too high)	0.03	0.24
Q3D speed limit of 50km/h appropriate for this road	0.10	-0.09
Q4C speed limit of 60km/h appropriate for this road	0.00	-0.11
Q4D speed limit of 50km/h appropriate for this road	0.09	-0.05
Q5C speed limit of 90km/h appropriate for this road	0.08	0.04
Q5D speed limit of 100km/h appropriate for this road	0.09	0.07
Q6C speed limit of 80km/h appropriate for this road	0.06	-0.08
Q6D speed limit of 100km/h appropriate for this road	0.01	-0.02
Q8_1 I haven't paid enough attention to my driving speed (1=not a reason at all for speeding; 5=always a reason)	-0.05	0.10
Q8_2 I don't think driving up to 5km over the speed limit is speeding	-0.08	0.29
Q8_3 If I'm in a hurry or running late	-0.04	0.07
Q8_4 There was no traffic/other vehicles on the road	-0.11	0.18
Q8_5 I don't think 5-10km over the speed limit is speeding	-0.05	0.21
Q8_6 I'm not sure what the speed limit is	0.07	0.01
Q8_7 The speed limit is set too low	-0.11	0.13
Q8_8 I can drive safely over the speed limit	-0.01	0.18
Q8_9 I don't think I'll be caught	-0.05	0.34
Q8_10 I enjoy driving fast	-0.07	0.18
Q10A Lowering the current speed limits would reduce crashes on the roads (1=strongly believe to be false, 5=strongly believe to be true)	0.11	0.06
Q10B If (10A) was true, how likely are you to support a reduction in speed limits? (1=very unlikely; 5=very likely)	0.21	0.06
Q11A Driving at 110 km/h your car uses up to 25% more fuel than it would travelling at 90 km/h	0.07	-0.06
Q11B If (11A) was true, how likely are you to support a reduction in speed limits?	0.16	0.15
Q12A A 10 km/h speed limit reduction in all urban and built-up areas would not significantly impact trip travel times	0.04	0.03
Q12B If (12A) was true, how likely are you to support a reduction in speed limits?	0.15	-0.02
Q13A Lowering the current speed limits would reduce the severity of injury when a crash occurs	0.07	-0.04
Q13B If (13A) was true, how likely are you to support a reduction in speed limits?	0.23	0.17
Q14A Lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in	0.23	0.02
Q14B If (14A) was true, how likely are you to support a reduction in speed limits?	0.20	0.09
Q15A Lowering the current speed limits would make our roads safer for pedestrians and cyclists	0.13	0.01
Q15B If (15A) was true, how likely are you to support a reduction in speed limits?	0.19	0.04
Q16A Lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming	0.07	0.06
Q16B If (16A) was true, how likely are you to support a reduction in speed limits?	0.20	0.02
Q18 Some people believe the main reason police target speeding motorists is to make money for the government	-0.07	0.07

Figure 3.20 shows a plot for all the respondents who had complete data for the variables used to form the clusters, with the axes being the canonical variables of Can1 (*x* axis; representing *speed limit reductions*) and Can2 (*y* axis; representing *reasons to exceed the speed limit*). Observations further to the right therefore show stronger support for speed limit reductions and observations higher up show stronger support for reasons to exceed the speed limit. This indicates that Cluster 1 can be defined generally as "against any speed limit reductions"; Cluster 2 is "do not condone reasons for speeding but ambivalent about speed limit reductions"; Cluster 3 is "support speed limit reductions" and Cluster 4 is "agree with reasons to speed but ambivalent about speed limit reductions".

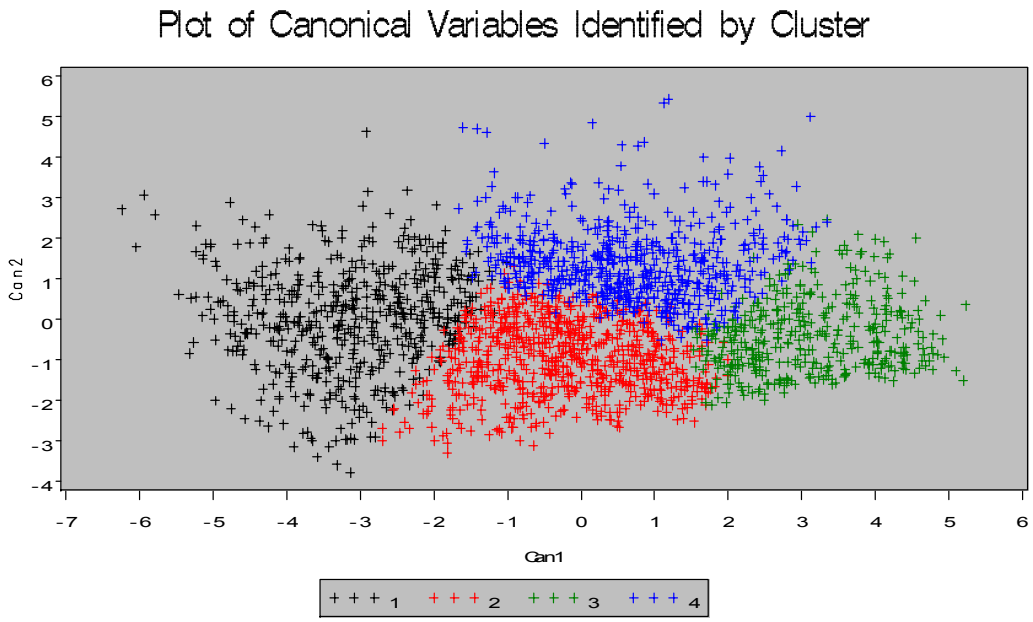

Figure 3.20
Plot of cluster membership against canonical variables

These clusters are also shown in Table 3.22, which indicates the likelihood of reporting to drive under, at or above the speed limit (as per Q7_1 to Q7_5), based on respondents' cluster membership.

Table 3.22. "How often do you drive at these speeds" (1= never; 5=always), averaged over cluster membership

Cluster	n	Under the limit	Right on the limit	Up to 5 km/h over the limit	6 to 10 km/h over the limit	More than 10 km/h over the limit
1 Against speed limit reductions	788	2.6	3.8	3.0	2.3	1.8
2 Don't condone reasons for speeding; ambivalent about speed limit	1192	2.8	3.9	2.7	1.9	1.4
3 Support speed limit reductions	1046	3.2	3.9	2.3	1.6	1.3
4 Agree with reasons to speed; ambivalent about speed limit	1122	3.0	3.8	2.8	2.1	1.7

As can be observed in Table 3.22, the reported driving behaviours of the clusters generally conformed to their reported attitudes to speed limits and to speeding. Cluster 1, most opposed to speed limit reductions, most frequently reported exceeding the speed limit,

followed closely by Cluster 4, who were the group showing most consistent support for the various reasons to speed. Those most supportive of the speed limit reductions (Cluster 3) reported the lowest degree of speeding, followed by Cluster 2, who were most against the reasons for speeding.

In order to better define the characteristics of these clusters, their membership, according to various demographic variables, was investigated. These findings are displayed in Table 3.23.

Table 3.23. Describing the clusters: Percentage with specified characteristics

Cluster	Income	Distance driven per wk	Area driven	Work status		Highest qualification		Gender	Age	Residence
	>$80K	>200km	Mainly rural	Full-time	Retired/ homemaker	High school	Uni	Female	56+	Rural
1 Against limit reductions	34%	49%	39%	49%	22%	34%	24%	36%	29%	51%
2 Don't condone reasons for speeding	25%	34%	36%	36%	27%	38%	22%	54%	32%	49%
3 Support speed limit reductions	20%	25%	33%	27%	36%	44%	20%	64%	45%	45%
4 Agree with reasons to speed	27%	32%	32%	36%	24%	36%	28%	52%	30%	45%

Table 3.23 shows that Cluster 3, the group of respondents who were most supportive of lowering speed limits, differed in a number of ways from the other clusters. They were proportionately less wealthy (only 20 percent with income over $80,000), drove relatively little, consisted of a larger proportion of retired/looking after house occupations, had relatively low levels of education and were predominantly female, with a large proportion aged over 55. As mentioned above, they also reported the lowest degree of speeding behaviour.

The group who were most opposed to speed limit reductions was Cluster 1. They were proportionately wealthier than the other clusters and drove greater weekly distances. They were composed of a considerably higher proportion that were full-time employed, a higher proportion of younger people and males. As indicated above, they were more likely on average than the other clusters to report driving over the speed limit. They were also relatively well educated, with a low proportion reporting high school as their highest level of qualification.

4. DISCUSSION

The online survey conducted in Victoria, South Australia, Western Australia and Tasmania has revealed several important findings in regards to the overall population's views about speed limits, and their speed-related attitudes and behaviour. It is important to note that as the data was weighted according to the metropolitan/regional, age and gender characteristics of each participating state, as well as the proportion of the total population that each state represented, these findings are relevant to the population as a whole for these four states, rather than being restricted to the sample population.

The study, which involved 4100 respondents in total, investigated four research questions, which will be addressed here in turn, by summarising the key findings and discussing their implications relating to speed limits in Australia.

4.1. RESEARCH QUESTION 1: WHAT ARE THE COMMUNITY ATTITUDES TOWARDS CURRENT SPEED LIMITS?

For the current speed limits, there were different results obtained amongst the investigated road types, particularly between the two urban and two rural roads, based on the sample images shown. For a local street in a residential area, almost three-quarters of respondents (72 percent) believed the current limit of 50 km/h was about right, with approximately 14 percent of respondents believing that it was too low, and another 14 percent thinking it was too high. Very similar results were also found for the current speed limit of 60 km/h for a main undivided street in an urban area, with 70 percent of respondents agreeing that this limit was about right, and 12 percent believing that it was too high. For the two rural roads, however, there were a much higher proportion of respondents who believed that the current speed limits were too high. Just over half (51 percent) of respondents thought that the current 100 km/h speed limit for a two-lane undivided rural road was too high, with a further 44 percent believing that this limit was about right. For a rural gravel road, the vast majority of respondents (88 percent) were of the opinion that the current 100 km/h limit was too high, with only 11 percent considering it to be about right.

These results therefore indicate that the overall survey population including Victoria, South Australia, Western Australia and Tasmania was, on the whole, quite satisfied with the current speed limits in residential and urban areas, on the basis of the sample images shown in the survey. However, in regards to rural undivided and gravel roads, most people believed that the speed limits were too high at the current 100 km/h level.

4.2. RESEARCH QUESTION 2: WHAT ARE THE COMMUNITY ATTITUDES TOWARDS REDUCED SPEED LIMITS?

For the proposed lowered speed limits, there were again differing results obtained between the four investigated road types, with a similar trend to the current speed limits emerging. That is, there were higher approval levels for the proposed lower limits for the two rural roads, in comparison to the two urban roads, according to the exemplar images presented. For the lowered speed limit of 40 km/h for a local street in a residential area, 70 percent of respondents believed this was too low (comprising of 14 percent who said it was far too low and 56 percent who said it was a bit too low), with the remaining 30 percent approving of the lowered limit by reporting that it was about right (29 percent) or a bit/far too high (2 percent). This was almost identical to the result for the lowered speed limit of 50 km/h for

a main undivided street in an urban area, with 70 percent believing that this was too low (18 percent far too low and 53 percent a bit too low) and 28 percent saying it was about right. Whilst the majority of respondents therefore believed that the 40 km/h and 50 km/h speed limits were too low for these two road types, many more people reported 'a bit too low' rather than 'far too low', indicating that they were not as vehemently opposed to these lowered speed limits than the smaller proportion who said they were far too low.

For the two rural roads, the majority of respondents were supportive of the proposed lower speed limits, by reporting them to be either about right or a bit/far too high. For a two-lane undivided rural road, three-quarters (75 percent) of respondents approved of a 90 km/h speed limit, with 47 percent believing that this limit was about right, and a further 28 percent believing that it was a bit/far too high. Therefore, only one-quarter (25 percent) of respondents thought 90 km/h was too low, with few respondents reporting 'far too low' (4 percent). The support was even higher for the rural gravel road, with almost half of the respondents (48 percent) believing that an 80 km/h speed limit was still too high, and a further 44 percent believing that this limit was about right (i.e. 92 percent approval in total, with only 8 percent reporting that 80 km/h was a bit/far too low).

These findings demonstrate that there is collective support across the four participating states of Victoria, South Australia, Western Australia and Tasmania for lowered speed limits on the two investigated rural road types, being two-lane undivided and gravel roads, on the basis of the presented images. For the rural gravel road in particular, respondents clearly saw an 80 km/h speed limit as being more acceptable than the current limit of 100 km/h, and in many cases, still too high. Whilst the level of support for limit reductions on residential and undivided urban roads was not near as high, there were around 30 percent of respondents who thought the lowered speed limits on these roads were about right, and those who thought the lowered limits were far too low were in the minority.

4.3. RESEARCH QUESTION 3: WHAT LEVEL OF UNDERSTANDING DOES THE COMMUNITY HAVE ABOUT THE RELATION BETWEEN SPEED LIMITS AND IMPORTANT OUTCOMES?

The purpose of this research question was to gain an understanding about the norms and beliefs which predominantly shaped people's attitudes towards the current and lowered speed limits. That is, why does the community have these particular attitudes towards speed limits and what are the underlying factors behind them? Therefore, it was proposed that people's understanding of the relationship between speeding (i.e. exceeding the speed limit) and important outcomes such as crash/injury risk, the environment, liveability and travel time could influence their attitudes towards speed limits.

Initially, this research question was investigated through several statements, whereby respondents were required to rate the extent to which they believed each statement to be true, followed by the extent to which they would support speed limit reductions if the statement were true. Given that the extent to which survey respondents could (or would be willing to) assume the statements were true if they did not initially believe them to be so was unknown, however, the results and conclusions based on these particular statements should be treated with some caution.

It was found that the highest level of belief was associated with "lowering the speed limit would reduce the severity of injury when a crash occurs", with 80 percent of respondents believing or strongly believing this statement. There were three other statements whereby

the level of belief was above 50 percent, which were "lowering the current speed limits would make our roads safer for pedestrians and cyclists", "driving at 110 km/h, your car uses up to 25 percent more fuel than it would travelling at 90 km/h" and "the main reason police target speeding motorists is to make money for the government". Less than 50 percent of respondents therefore believed or strongly believed the five other investigated statements, which were: "lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming" (25 percent of respondents believed), "lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" (32 percent), "lowering the current speed limit would reduce crashes on the road" (36 percent), and "a 10 km/h speed limit reduction in all urban/built-up areas would not significantly impact on trip travel times" (46 percent).

When investigating the extent to which respondents would support speed limit reductions if the statements were assumed to be true, some variations emerged. That is, for some statements, the level of belief was higher than the extent to which speed limit reductions would be supported. Such a trend indicates that whilst a higher proportion of respondents may have believed the statement was true, it was not necessarily as influential a factor in regards to whether or not they would decide to support speed limit reductions. This trend was true for the three most highly rated belief statements, relating to 'injury severity', 'a higher level of safety for vulnerable road users' and 'using more fuel at 110 km/h than 90 km/h'. It is important to note, however, that the former two statements still obtained the highest mean levels for supporting speed limit reductions if they were true. For some other statements, the reverse was true, whereby the rating for 'if were true' was higher than for the level of belief. This included the 'reducing toxic emissions', 'a healthier environment to live in' and 'reducing crashes' statements, suggesting that whilst a high proportion of respondents did not necessarily believe these statements were true, they were associated with a higher level of support for speed limit reductions (i.e. perceived as being relatively important) when they were assumed to be true.

The investigated statements were grouped into a number of categories, relating to the main topics of interest and their association with driving speed/speed limits. That is, the 'injury severity', 'safer for vulnerable road users' and 'reducing crashes' statements all referred to crash/injury severity; the 'using more fuel at 110 km/h than at 90 km/h' and 'reducing toxic emissions' statements investigated environmental issues; a 'healthier environment to live in' addressed liveability; and finally, a '10 km/h reduction not impacting on trip travel times' clearly related to travel time.

The crash/injury severity statements were the three most highly rated statements for supporting speed limit reductions if they were true. This indicates that people from the four participating states viewed these as most important issues, and may be willing to accept lower speed limits if they believed that less people would be killed or severely injured on the roads. In regards to lower speed limits resulting in fewer crashes, however, there was quite a low level of belief for this statement. This therefore suggests that the relationship between speeding and crash risk is not widely understood within the population and there is the capacity for improving community awareness about this association.

For the two environment-focussed statements, there was a higher level of belief about higher speeds using more fuel than there was about lower limits reducing toxic emissions, and they were both relatively lowly rated in regards to the extent that they could contribute towards supporting speed limit reductions. Whilst it would not necessarily be expected that

environmental issues would be a reason to support speed limit reductions to the extent that safety-related factors would, it was apparent from the ratings for the level of belief that the community did have quite a poor understanding of the association between speed and the environment. More specifically, one-third (33 percent) of respondents said that they did not know about whether driving at 110 km/h would use up to 25 percent more fuel than travelling at 90 km/h, whilst this was at 42 percent for lower limits reducing toxic emissions. Hence, it is quite likely that sectors of the Australian population are much less aware about these environmental issues than in other parts of the world, such as Europe.

For the liveability statement, there was a relatively low belief that lowering the speed limits would create a healthier environment to live in, but there was a slightly higher level obtained for supporting lower speed limits if this were true. This indicates that the sample population did view this as a relatively important issue, but do not fully comprehend how lower limits would affect their liveability in their area of residence. Finally, the extent to which a 10 km/h speed limit reduction would impact trip travel times was 'middle of the road' in regards to the extent to which respondents believed that this was true and how likely they would be to support limit reductions if it were true. What can be taken as a positive in some regards for this statement, however, is that almost 50 percent of the survey population believed that this was true, whilst there was a further 21 percent who did not know if this was true. Therefore, only approximately one-third of respondents (34 percent) thought that 10 km/h speed limit reductions in all urban and built-up areas would significantly impact their trip travel times, which is a relatively favourable result in relation to community support of speed limit reductions in these areas.

A multiple regression was also conducted to investigate the extent to which the belief statements were significantly associated with support of the lowered speed limits, as investigated across the four road types. It was found that "lowering the current speed limits would reduce crashes on the roads, "a 10 km/h speed limit reduction in all urban and build-up areas would not significantly impact travel times", "lowering the current speed limits would reduce the severity of injury when a crash occurs", "lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in" and "lowering the current speed limits would make our roads safer for pedestrians and cyclists" were all significant predictors of respondents' attitudes towards the lowered speed limits, with higher levels of belief for these statements associated with higher levels of approval for the lower limits.

This result demonstrates that the community's knowledge of speed-related issues is likely to have a significant impact on the extent to which they support lower speed limits, and are therefore worthy of promotion to increase their understanding of these issues. It is also noteworthy that only 8 percent of respondents correctly identified the current speed limit across each of the four investigated road types. This suggests that there is also a relatively low awareness of what the current speed limits are, particularly in rural areas, and if the community does not have a clear understanding of what the current speed limits are on all road types, this could also affect their attitudes towards, and ability to comply with, the speed limits.

4.4. RESEARCH QUESTION 4: WHAT ARE THE COMMUNITY'S ATTITUDES TOWARDS SPEEDING IN GENERAL?

As part of this Research Question, respondents were asked about the frequency with which they drive at, under and above the speed limit, in addition to the extent to which a number

of statements were a reason for them to exceed the speed limit. It was found that 69 percent of respondents reported driving under the speed limit at least some of the time, whilst two-thirds (66 percent) said that they drove right on the speed limit most of the time. In regards to exceeding the speed limit, almost two-thirds (63 percent) reported driving up to 5 km/h over at least some of the time, but only one-quarter (25 percent) reported the same for 6-10 km/h over the speed limit. Only 9 percent of respondents said that they drove more than 10 km/h over the speed limit at least some of the time, with 60 percent reporting never doing so.

Therefore, according to these results, the majority of the population reported driving right on the speed limit on the majority of the occasions, with most admitting to exceeding the speed limit at least some of the time, although this only tended to be by 5 km/h or less. Of course, the accuracy of respondents' self-reported driving speeds is unknown, with earlier research (as presented in Section 1.5) indicating that whilst most people will admit to exceeding the speed limit from time-to-time, on average, they still report driving more slowly than others.

The most highly rated reason for exceeding the speed limit by respondents was the belief that driving up to 5 km/h over the speed limit is not speeding, which was followed by not paying enough attention to their driving speed, being in a hurry/running late, the speed limit being set too low and there being no other traffic on the road. This result is also in agreement with previous research, which suggests that many people do not believe that exceeding the speed limit by a 'small' amount (i.e. up to 5 km/h) is speeding, but instead define speeding as being a set amount over the speed limit on particular roads (e.g. 90 km/h in a 80 km/h speed zone), or in relative terms, based on variable factors such as the road surface, weather conditions and amount of traffic (EKOS Research Associates, 2007). This conclusion is supported by "driving 5-10 km/h over the speed limit is not speeding" being much more lowly rated as a reason for speeding than what 'up to 5 km/h over' was; that is, there appeared to be a threshold at 5 km/h, where travelling at up to this amount over the limit was viewed as acceptable by most, but above this, the level of acceptability reduced quite significantly. More specifically, whilst 60 percent of respondents identified driving up to 5 km/h over the speed limit as a reason for exceeding the limit at least some of the time, this was true for only 36 percent of respondents at 5-10 km/h over.

Also relevant to the community's attitudes to speeding were the items for the four road types which asked respondents how fast they typically drove on each road type. Similarly to the results discussed above, many respondents reported travelling right on the speed limit or less on a local street in a residential area and a main undivided street in an urban area. However, there were 11 percent of drivers who reported travelling at least 10 km/h over the 50 km/h speed limit on a residential street, with 17 percent doing so on an urban arterial street where the speed limit was 60 km/h. For both of the investigated rural roads, the majority of respondents reported driving below the speed limit, with only 6 and 4 percent of respondents, respectively, saying that they typically drove above the 100 km/h speed limit on a two-lane undivided rural road and a rural gravel road.

Therefore, from these results it can be concluded that, on the basis of respondents' self-reported driving behaviour, most of the population does try to stick to the speed limit on the majority of occasions, and when they do exceed the speed limit, it is typically by no more than 5 km/h. Furthermore, many drivers do not appear to necessarily view exceeding the speed limit by up to 5 km/h as speeding, and when they do travel over the speed limit,

it can often be due to situational factors such as not paying attention or being in a hurry to get to their destination.

4.5. INVESTIGATION OF THE THEORETICAL MODEL

The investigation of the proposed theoretical model for this study, which was based on the Theory of Planned Behaviour (TPB), initially found that a number of the belief statements were significant (and positive) predictors of respondents' attitudes towards the lowered speed limits, and could be viewed as important underlying factors behind peoples' attitudes towards speed limits. In turn, it was also found that respondents' attitudes towards both the current and lowered speed limits were significant predictors of their self-reported driving speeds on the four road types, with attitudes towards the lowered limits being the stronger predictor of the two. The association between speed limit attitude and driving speed was negative, meaning that higher levels of approval for the current and reduced speed limits were related to lower average driving speeds, and vice-versa.

4.6. SUMMARY OF KEY FINDINGS

Prior to summarising some of the key findings to emerge from this study, it is important to indicate some of its potential limitations that should be kept in mind when interpreting the results. Firstly, the selection of images used to demonstrate the four investigated road types, and the use of only one image per road type, is significant, given that the results regarding the proposed lower and current speed limits could have potentially been different if other or more images were used (please refer to Section 2.7 on page 22 for more detail). In addition, this study relied on an online survey methodology, which can lead to several sample biases due to potential respondents requiring internet access (refer to Section 2.6 on page 22).

Despite these important considerations, key findings of the study are as follows:

- Across the overall survey sample (involving the four participating states of Victoria, South Australia, Western Australia and Tasmania), high levels of support were indicated for the lowered speed limits of 90 km/h on a two-lane undivided rural road and 80 km/h on a rural gravel, on the basis of the sample images shown;

- The levels of support for the lowered speed limits were not as high for the two other investigated road types; a local street in a residential area and a main undivided street in an urban area, with 70 percent of respondents believing that the respective lowered limits of 40 km/h and 50 km/h were a bit/far too low. It was only 14 and 18 percent of respondents, however, who said that these lowered limits were 'far too low' with a much higher proportion believing that they were only 'a bit too low'. A much higher proportion of respondents believed that the current speed limits, of 50 km/h for a residential street and 60 km/h for an urban arterial street, were more appropriate;

- There were several important knowledge gaps in the surveyed states regarding their understanding of the association between speed limits and important factors such as crash risk and environmental issues. This indicates that there is the capacity for improving community awareness of the impact of lowered speed limits, particularly given that the level of belief for many of these speed-related issues (especially for the road safety benefits associated with lower limits) was related to people's level of support for the proposed lower speed limits;

- Therefore, the community's knowledge of important speed-related issues did have a significant impact on the extent to which they would support lower speed limits, and are worthy of promotion to increase their understanding of these issues;

- In turn, it was also found that attitudes towards the lowered limits were also associated with people's self-reported driving speeds, with more positive attitudes towards lower speed limits associated with slower driving speeds;

- Many respondents indicated that they would support speed limit reductions, if it were true that they would reduce the severity of injury when a crash occurs, reduce crashes on the road and make our roads safer for pedestrians and cyclists;

- Only 8 percent of respondents correctly identified the current speed limit across the four investigated road types, suggesting that there was a relatively low awareness of the current speed limits, particularly in rural areas. This lack of understanding could also affect their attitudes towards speed limits in general;

- Many respondents reported travelling right on the speed limit at least most of the time, although many also reported exceeding the limit by up to 5 km/h on some occasions. In addition, "driving up to 5 km/h over the speed limit is not speeding" was the most highly rated reason for exceeding the speed limit, indicating that most people think it is OK to speed as long as you are 'only a little bit over'.

- Males and younger respondents tended to have more negative views of the lowered speed limits than their female and older (over 30) counterparts. In addition, whilst those residing in metropolitan areas tended to have higher approval levels for lower limits on rural roads, those residing in regional areas had higher approval levels for lower limits in built-up areas (i.e. residential and urban arterial roads). It is important to note, however, that although the level of support for the lowered speed limits on the two rural road types were lower amongst regional than metropolitan residents, the majority of respondents living in regional areas were still in favour of the 90 km/h and 80 km/h limits for rural undivided and gravel roads, respectively.

- The cluster analyses performed also identified some important characteristics of those who were more or less likely to support speed limit reductions. Those belonging to the cluster that was most supportive of speed limit reductions tended to be of a lower socio-economic status (i.e. less wealthy and more likely to have high school as highest education level and to be retired or looking after the house), drive relatively low weekly distances, be over 55 years-of-age and female. This cluster also reported the lowest degree of speeding behaviour.

- The cluster that was the least supportive of speed limit reductions, however, tended to have very different characteristics. They were of a higher socio-economic status (i.e. proportionately wealthier, more likely to be employed full-time and less likely to report high school as highest education level), drove greater weekly distances, and were more likely to be younger and male. This cluster also more commonly reported driving over the speed limit.

4.7. CONCLUSION

Overall, there have been some important findings to emerge from the online survey in regards to the community's attitudes towards speed limits, across the overall population of the four participating states of Victoria, South Australia, Western Australia and Tasmania. Firstly, the results have indicated that the majority of the surveyed population may have favourable views towards reducing speed limits on the two investigated rural road types, according to the roads shown in the exemplar images, which would be a 90 km/h speed limit for a two-lane undivided rural road and an 80 km/h speed limit for a rural gravel road. Whilst the support for the lowered limits were not as great for a local street in a residential area and a main undivided street in an urban area, with the majority of respondents supporting the current speed limits, there were approximately 30 percent of respondents for each road type who did believe that the respective speed limits of 40 km/h and 50 km/h were about right. Furthermore, the vast majority of those who said that these lowered limits were too low only said that they were a bit too low, rather than far too low. Therefore, if these speed limits were to be put into effect, there is the possibility that there may only be a minority (i.e. according to this survey, within the range of 14-18 percent of people) who would be strongly opposed to such an intervention, based on the sample images shown.

This survey also indicated that there are some gaps in the community's knowledge regarding speed limits and their association with several important factors, such as crash risk and environmental effects. In addition, the population's knowledge of the speed limits themselves, particularly for the rural roads investigated, was relatively poor. This suggests that focussing on these 'knowledge gaps' could be a key in positively influencing peoples' attitudes towards speed limits, given that respondents' level of belief in many of these factors (e.g. the extent to which lower speed limits could reduce crashes) was found to directly influence their attitudes towards the lowered speed limits. Given that speed limit attitudes were also found to influence self-reported driving speed, this makes promoting positive views towards speed limits, by emphasising these knowledge gaps, all the more important. The results of further analyses also revealed some of the characteristics of those who were most likely to be opposed to speed limit reductions, thereby providing some valuable information about possible groups in the population who could be the target of such interventions.

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6. APPENDICES

6.1. APPENDIX A: THE ONLINE SURVEY

QMS QUANT ONLINE FIELD REQUIREMENTS [FIELD BRIEFING NOTES, QUESTIONNAIRE & DATA CAPTURE SPECIFICATIONS]	
Project No.:50628	**Project Name**: Monash Speed
Main Client Service Contact: [redacted]	
Client Service Project Leader: [redacted]	
Other Client Service Team Members: [redacted]	
Your Source Representative (CRM): [redacted]	
DA Representative:	
Issue Date:03.02.09	

QMS ONLINE FIELD BRIEFING NOTES	
Project No.:50628	**Project Name**: Monash Speed

1. Background Information

Monash University Accident and Research Centre (MUARC) is working with a few government and research organisations to obtain some findings about public attitudes towards speed limits on roads across Australia.

2. Schedule/Timing

Final Questionnaire sent to Your Source CRM: Wednesday 11 March
Pilot Commences (mail out): Friday 13 – Monday 16 March /Monday 16 March – Tuesday 17 March
Pilot Concludes (ready to download): Monday 16 March / Tuesday 16 March
Fieldwork Commences (mail out): Wednesday 18th March / Friday 20th March
Fieldwork Concludes (ready to download): Friday 3rd April
Data file due to client: Wednesday 12th April

3. Sample Size

		n=	For each of Victoria, SA, and WA			For Tasmania		
			Metro	Rural	Total	Metro	Rural	Total
Male	18–30 years		100	100	**200**	50	50	**100**
	31-55 years		100	100	**200**	50	50	**100**
	56+ years		100	100	**200**	50	50	**100**
Female	18–30 years		100	100	**200**	50	50	**100**
	31-55 years		100	100	**200**	50	50	**100**
	56+ years		100	100	**200**	50	50	**100**
Total per state			600	600	**1200**	300	300	**600**
TOTAL for four states			**(3 x 1200) + 600 = 4200**					

4. Sample/Recruiting Specification

General Sample

5. Quota Instructions/Codes

Age and Gender within State (Metro/Rural).
Interlocked (see above)

6. Incidence Rate/s

100%

7. Interview Length

12mins

8. Incentive/Thank-You

None

9. Questionnaire Instructions – Dealing With Overall Project Questions From Respondent

- Protocol for answering questions pertaining to **CLIENT IDENTITY**:

TBC

- Protocol for answering questions pertaining to **RESEARCH SUBJECT**:

Driving behaviour & speed limits on roads

- Protocol for answering questions pertaining to **SOURCE OF RESEARCH SAMPLE**:

E.g. "You have been contacted by Your Source from a respondent database."

10. General Questionnaire Instructions

QMS ONLINE QUESTIONNAIRE	
Project No.:50628	**Project Name**: Monash Speed

INTRODUCTION

Dear [respondent name]

We are conducting a new survey and you are invited to participate. If you choose to participate, please be assured that the information and opinions you provide will be used only for research purposes. In particular, no individual responses will be given to the organization sponsoring this research; they will be combined with those from other participants of this research.

We are conducting a survey to get your views towards speed limits in your state. This information will then be used to improve our understanding of issues associated with speed limits. . Your answers will remain anonymous and your personal details will not be passed on to anyone else. Please answer the questions as truthfully as possible, as your responses will help in tackling this important issue.

The survey will take approximately 12mins to complete and you will need to complete the survey by 12 noon [insert date] to earn [insert number of zoints].

Q1 INTRO
Q1. Are you interested in participating?

1. Yes
2. No

Thank you for agreeing to complete our new survey.
Please make sure you fill out all the questions on each page.
You can view all terms and conditions at http://www.opinionspaid.com

[NEXT SCREEN]
ASK ALL
S1. Are you...

Please select one
1. Male
2. Female

[NEXT SCREEN]
ASK ALL
S2. Please indicate your age group?

Please select one
1. 18-20 years
2. 21 to 25 years
3. 26 to 30 years
4. 31 to 55 years
5. 56 to 75 years
6. Over 75 years

[NEXT SCREEN]
ASK ALL
S3a.Which of the following areas do you live in?

Please select one
1. Brisbane
2. Queensland other than Brisbane
3. Sydney
4. NSW other than Sydney, including ACT
5. Melbourne
6. Victoria other than Melbourne
7. Adelaide
8. South Australia other than Adelaide
9. Perth
10. Western Australia other than Perth
11. Hobart
12. Tasmania other than Hobart
13. Darwin
14. Northern Territory other than Darwin

IF CODES ARE FOR QLD, NSW OR NT, TERMINATE (CODES 1, 2, 3, 4, 13, 14)

[NEXT SCREEN]
ASK ALL

S3b. And how would you describe the area in which you are living?
Please select one
1. Mainly or totally rural
2. Mainly or totally urban

CHECK QUOTAS:

		n=	For each of Victoria, SA, and WA			For Tasmania		
			Metro	Rural	Total	Metro	Rural	Total
Male	18–30 years		100	100	**200**	50	50	**100**
	31-55 years		100	100	**200**	50	50	**100**
	56+ years		100	100	**200**	50	50	**100**
Female	18–30 years		100	100	**200**	50	50	**100**
	31-55 years		100	100	**200**	50	50	**100**
	56+ years		100	100	**200**	50	50	**100**
Total per state			600	600	**1200**	300	300	**600**
TOTAL for four states			**(3 x 1200) + 600 = 4200**					

IF DOES NOT QUALIFY: NON QUALIFICATION SPEIL.

[NEXT SCREEN]
IF QUALIFIES:

The next few questions are about your ideas and your opinions about the current speed limits on the road in the state you live.

Your answers will remain anonymous and your personal details will not be passed on to anyone else.

Please answer the questions as truthfully as possible, as your responses will help in tackling this important issue.

Please remember that we are after your honest opinion and there are no right or wrong answers.

[NEXT SCREEN]
ASK ALL

Q1. How often do you travel on the road in the following ways?

		Daily	4-5 days a week	2-3 days a week	Weekly	Monthly	Rarely / Never
1	Drive (for personal use)	1	2	3	4	5	9
2	Drive for work/ job (e.g. truck, bus, taxi)	1	2	3	4	5	9
3	As a passenger in a car	1	2	3	4	5	9
4	Walk	1	2	3	4	5	9
5	Cycle (Bike)	1	2	3	4	5	9
6	Motorcycle/ Scooter	1	2	3	4	5	9
7	By Public transport (Tram, Train, Taxi)	1	2	3	4	5	9

[DA TO RECODE IN SPSS DATA FILE
DAILY = 7
4-5 days a week = 4.5
2-3 days a week = 2.5
Weekly = 1
Monthly = .25
Rarely/Never = 0]

DRIVER = Q1=1/2/6
NON DRIVER = IF CODES 1/2/6 NOT CODED IN Q1

[NEXT SCREEN]

MAIN MODE OF TRANSPORT:

DA: IF CODES 1/2/6, TAKE MOST FREQUENT USED MODE AND AUTOCODE AS Q1A.

ASK IF MORE THAN ONE 1/2/6 CODED THE SAME FREQUENCY

Q1A. And which of these do you mainly use for transport?

Please select one response

SHOW CODES SELECTED FROM Q1 [1/2/6 ONLY]

1. Driving (for personal use)
2. Driving for work/job (e.g. truck, bus, taxi)
3. Riding a Motorcycle/ Scooter

[NEXT SCREEN]
SHOW IF DRIVER:
For the following questions, please think about when you are [INSERT ANSWER FROM Q1A].

[NEXT SCREEN]
SHOW ALL
Here is an example of a **local street in a residential area**. The next few questions will be about driving and speed limits on this type of road.

SHOW IMAGE A: LOCAL STREET

[NEXT SCREEN]
ASK IF DRIVER
Q3a. What speed do you typically travel at on this type of road when there is no traffic congestion?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL

Q3b. What do you think the speed limit for this type of road is likely to be?
Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]

ASK ALL

Q3c. Do you consider a speed limit of 40km/h appropriate for this type of road?
Please select one

1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

"Click to view example of road"

[NEXT SCREEN]
ASK ALL

Q3d. And do you consider a speed limit of 50km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

[NEXT SCREEN]
SHOW ALL

Here is an example of a **main undivided street in an urban area**. The next few questions will be about driving and speed limits on this type of road.

SHOW IMAGE B: MAIN URBAN STREET

[NEXT SCREEN]
ASK IF DRIVER

Q4a. What speed do you typically travel at on this type of road when there is no traffic congestion?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q4b. What do you think the speed limit for this type of road is likely to be?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q4c. Do you consider a speed limit of 50km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q4d. And do you consider a speed limit of 60km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

[NEXT SCREEN]
SHOW ALL

Here is an example of a **two-lane undivided rural road**. The next few questions will be about driving and speed limits on this type of road.

SHOW IMAGE C: TWO-LANE RURAL ROAD

[NEXT SCREEN]
ASK IF DRIVER

Q5a. What speed do you typically travel at on this type of road when there is no traffic congestion?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q5b. What do you think the speed limit for this type of road is likely to be?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q5c. Do you consider a speed limit of 90km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high

5. Far too high

"Click to view example of road"

[NEXT SCREEN]
ASK ALL

Q5d. And do you consider a speed limit of 100km/h appropriate for this type of road?

Please select one

1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

[NEXT SCREEN]
SHOW ALL

Here is an example of a **rural gravel road**. The next few questions will be about driving and speed limits on this type of road.

SHOW IMAGE D: RURAL GRAVEL ROAD

[NEXT SCREEN]
ASK IF DRIVER

Q6a. What speed do you typically travel at on this type of road when there is no traffic congestion?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]

98. I've never driven on this type of road
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q6b. What do you think the speed limit for this type of road is likely to be?

Please type in your response

_ _ _ km/hr
[DA: ALLOW MAX 3 NUMERICAL DIGITS]
"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q6c. Do you consider a speed limit of 80km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

"Click to view example of road"

[NEXT SCREEN]
ASK ALL
Q6d. And do you consider a speed limit of 100km/h appropriate for this type of road?

Please select one
1. Far too low
2. A bit too low
3. About right
4. A bit too high
5. Far too high

[NEXT SCREEN]
ASK ALL
We are now seeking your opinion on a range of issues related to speed limits and speeding. Please be assured that your answers will remain anonymous and will not be seen by anyone other than the research team.

Please answer the following questions only in regard to those times when there is no traffic congestion

[NEXT SCREEN]
ASK IF DRIVER

Q7. Thinking about your driving in the last 3 months, how often do you drive at the following speeds?

		Always	Most times	Some-times	Rarely	Never
1	o Under the speed limit	1	2	3	4	5
2	o Right on the speed limit	1	2	3	4	5
3	o Up to 5 km/h over the speed limit	1	2	3	4	5
4	o 6 to 10 km/h over the speed limit	1	2	3	4	5
5	o More than 10 km/h over the speed limit	1	2	3	4	5

[NEXT SCREEN]
ASK IF EVER SPEEDS (CODES 1-3 IN Q7_3/Q7_4/Q7_5)
Q8. There are many reasons why someone might drive over the speed limit. How often are the following, reasons for you to drive over the speed limit?

Please select one for each statement.

RANDOMISE ORDER OF STATEMENTS

		Always a reason	Most times	Some-times	Rarely	Not at all a reason
1	I haven't paid enough attention to my driving speed	1	2	3	4	9
2	I don't think driving up to 5km over the speed limit is speeding	1	2	3	4	9
3	If I am in a hurry or running late	1	2	3	4	9
4	There was no traffic /other vehicles on the road	1	2	3	4	9
5	I don't think 5-10km over the speed limit is speeding	1	2	3	4	9
6	I am not sure what the speed limit is	1	2	3	4	9
7	The speed limit is set too low	1	2	3	4	9
8	I can drive safely over the speed limit	1	2	3	4	9
9	I don't think I'll be caught	1	2	3	4	9
10	I enjoy driving fast	1	2	3	4	9

Spare Q9

[NEXT SCREEN]
ASK ALL

"Lowering the current speed limits would reduce crashes on the roads"

Q10a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

[NEXT SCREEN]
ASK IF Q9a =1/2/4/5
SHOW IF Q9a=1/2

Q10c. And why do you believe that current speed limits would reduce crashes on the road?

SHOW IF Q9a=4/5

Q10c. And why don't you believe that current speed limits would reduce crashes on the road?

Please type in your response

[NEXT SCREEN]
ASK ALL

"Lowering the current speed limits would reduce crashes on the roads"

Q10b. If the above statement was true, how likely are you to support a reduction in speed limits?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

[NEXT SCREEN – Q11a &Q11b on the same screen]
ASK ALL

"Driving at 110km/h your car uses up to 25% more fuel than it would travelling at 90km/h"

Q11a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false

5. No, I strongly believe it to be false

ASK ALL
Q11b. If this was true, how likely are you to support speed limit reductions in high speed zones?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

[NEXT SCREEN – Q12a &Q12b on the same screen]
ASK ALL

"A 10km/h speed limit reduction in all urban and built up areas would not significantly impact trip travel times"

Q12a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

ASK ALL
Q12b. If this was true, how likely are you to support a reduction in speed limits?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

[NEXT SCREEN – Q13a &Q13b on the same screen]
ASK ALL

"Lowering the current speed limits would reduce the severity of injury when a crash occurs"

Q13a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

ASK ALL
Q13b. If this was true, how likely are you to support a reduction in speed limits?

Please select one

1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

[NEXT SCREEN – Q14a &Q14b on the same screen]
ASK ALL

"Lowering the current speed limits would create a more enjoyable and healthier environment for you and your family to live in"

Q14a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

ASK ALL
Q14b. If this was true, how likely are you to support a reduction in speed limits?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

[NEXT SCREEN – Q15a &Q15b on the same screen]
ASK ALL

"Lowering the current speed limits would make our roads safer for pedestrians and cyclists"

Q15a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

ASK ALL
Q15b. If this was true, how likely are you to support a reduction in speed limits?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely

5. Very unlikely

[NEXT SCREEN – Q16a &Q16b on the same screen]
ASK ALL

"Lowering the current speed limits would reduce toxic emissions by cars and therefore improve air quality and reduce global warming"

Q16a. Do you believe this is true?

Please select one
1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

ASK ALL
Q16b. If this was true, how likely are you to support a reduction in speed limits?

Please select one
1. Very likely to support speed limit reduction
2. Somewhat likely to support
3. Neither likely nor unlikely
4. Somewhat unlikely
5. Very unlikely

ASK IF MORE THAN ONE CODED 1 (Very likely to support) IN Q10B, Q11B, Q12B, Q13B, Q14B, Q15B OR Q16 B.

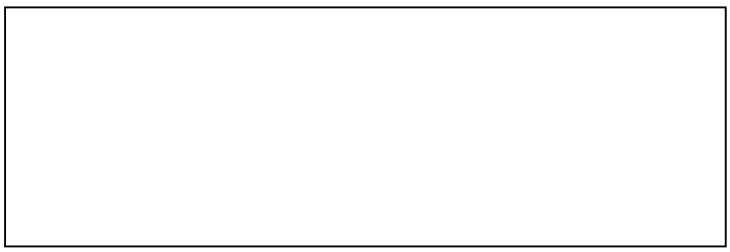
[NEXT SCREEN]
Q17. Here are the claims which you indicated might be a reason for supporting reduced speed limits if true. Please rank them in order of importance to you if you were to support a reduction in speed limits.

Please assume they are true when you are ranking them.

Drag each statement into the box below in order of importance. The first statement would be the 'most important', the next the '2nd most important' and so on.

SHOW ALL STATEMENTS CODED 1 FROM Q10B, Q11B, Q12B, Q13B, Q14B, Q15B OR Q16 B

Q11B STATEMENT
Q12B STATEMENT
Q13B STATEMENT
Q14B STATEMENT
Q15B STATEMENT
Q16B STATEMENT



Q18 SPARE

[Next screen]
Q18. Some people believe that the main reason police target speeding motorists is to make money for the government. Do you believe this is true?

1. Yes, I strongly believe it to be true
2. Yes, I believe it to be true
3. I do not know whether it is true
4. No, I believe it to be false
5. No, I strongly believe it to be false

[NEXT SCREEN]
And lastly there are a few questions about you for analysis purposes only.

[NEXT SCREEN]
ASK IF DRIVER
Q19A. Which of the following types of driving license, if any, do you currently hold?

Please select all that apply
1. Car
2. Motorcycle
3. Heavy vehicle
4. Bus
5. Other, please specify ……
6. I don't hold any type of driving licence

[NEXT SCREEN]
ASK IFCODED ANY LICENSE (Q19A = CODE 1-5)
Q19B. And what type of license is that...?

SHOW ALL SELECTED IN Q19A

Please select one for each license you hold

1	Car license	1	2	3
2	Motorcycle license	1	2	3
3	Heavy vehicle license	1	2	3
4	Bus license	1	2	3
5	Other, please specify ……	1	2	3

[NEXT SCREEN]
ASK IF DRIVER
Q19. On average, how far would you normally drive in a week?

Please select one
1. Up to 50 km
2. 51-100 km
3. 101-200 km
4. 201-300 km
5. More than 300 km

[NEXT SCREEN]
ASK IF DRIVER
Q20. In which of the following areas, do you usually drive?

Please select one

1. Towns, built-up or urban areas
2. Country/rural areas

[NEXT SCREEN]
ASK ALL
Q21. What best describes your occupational status?

Please select one
1. Employed, working Full-time (more than 35 hours a week)
2. Self Employed, working Full-time (more than 35 ours a week)
3. Employed, working Part-time (less than 35 hours a week)
4. Unemployed, looking for Full-time work
5. Unemployed, looking for Part-time work
6. Not Employed and not looking for work
7. Student
8. Beneficiary/Welfare
9. Retired
10. Look after the house full time
11. Other please specify
12. Refuse to answer

[NEXT SCREEN]
ASK ALL
Q22. What is the highest level of education you have achieved?

Please select one
1. Still attending school
2. High school certificate
3. Trade certificate
4. Diploma
5. Bachelor's degree
6. Postgraduate degree
7. Other, please specify ……

[NEXT SCREEN]
ASK ALL
Q23. Please indicate your approximate gross annual household income

Please select one
1. Less than $20,000
2. $21,000 - $40,000
3. $41,000 - $60,000
4. $61,000 - $80,000
5. $81,000 - $100,000
6. $101,000 - $120,000
7. $121,000 - $140,000
8. More than $140,000

[NEXT SCREEN]
ASK ALL
Q24. And finally, what is your postcode?

Please type in your response
_ _ _ _ [ALLOW MAX 4 DIGITS]

THANK AND CLOSING SPEIL