| Manuscript Information | |
|---|---|
| Journal Acronym | TERG |
| Volume and issue | |
| Author name | |
| Manuscript No. (if applicable) | _A_231767 |

Ergonomics

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*Ergonomics*
Vol. 00, No. 0, Month 2007, 1–13

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# Car driver speed choice in Scotland

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Drivers who commit driving violations, such as speeding, crash more. Driving violations reduce safety margins amplifying the impact of driver errors. Speed is placed in the context of car use and its attractions. It is argued that speed choice results from the interaction of opportunities, obligations and inclinations. Data from large-scale surveys of Scottish car drivers support this and show that many drivers in Scotland prefer to drive at or below the speed limit and that many say they are currently cutting their normal driving speed. Suggestions for promoting safer and more sustainable speed choices are made.

*Keywords*: Speed; Speeding; Car drivers; Road traffic accident involvement; Driving violations; Driver speed choice

## 1. Speeding and crashing

Worldwide over one million people lose their lives every year from vehicle impact, almost 3000 every day, and many millions more are injured (World Health Organization 2004). Speed affects both the risk and severity of a crash (Elvik *et al*. 2004) and collision damage is proportional to the square of the speed at impact ($E_k = (1/2)\ mv2$; Aarts and van Shagen 2006).

Recent reviews (e.g. Lancaster and Ward 2002, Stradling *et al*. 2003) have summarized research showing that for car drivers in highly motorized societies levels of speeding behaviour vary systematically with demographic variables such as driver gender (e.g. Brook 1987, Waterton 1992, French *et al*. 1993, Buchanan 1996, Meadows and Stradling 2000, Shinar *et al*. 2001), and driver age (e.g. Parker *et al*. 1992, Quimby *et al*. 1999, Stradling *et al*. 2000, Ingram *et al*. 2001, Shinar *et al*. 2001, Boyce and Geller 2002). Speeding behaviour also varies with opportunity variables such as reported annual mileage (e.g. Stradling *et al*. 2003), vehicle performance and engine size (e.g. Evans and Herman 1976, Wasielewski and Evans 1985, Horswill and Coster 2002, Stradling 2005), with obligation variables such as trip purpose and time pressure (e.g. Rietveld and Shefer 1998, Silcock *et al*. 2000) and with inclination variables such as indices of driver personality (e.g. Elander *et al*. 1993, Lajunen 1997, Rimmo and Aberg 1999, Stradling and Meadows 2000, Ulleberg 2002, Sumer 2003).

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*Ergonomics*
ISSN 0014-0139 print/ISSN 1366-5847 online © 2007 Taylor & Francis
http://www.tandf.co.uk/journals
DOI: 10.1080/00140130701318681

Recent research has also shown that involvement in a road traffic accident is associated with having been detected speeding for both car drivers (Cooper 1997, Rajalin 1994, Stradling *et al.* 2000, 2003, Gebers and Peck 2003) and powered two wheeler riders (Ormston *et al.* 2003, Stradling and Ormston 2003) and, for car drivers, with excessive speed (Stradling *et al.* 2003).

(1) Ever since the ground-breaking accident investigations by Barbara Sabey at TRL (Sabey and Taylor 1980), road-safety countermeasure policy and design have been driven by her much quoted finding that 65% of automobile accidents are wholly as a result and up to 95% of automobile accidents are at least partly as a result of human error. This suggests that the situation may be improved by reducing opportunity for driver error: typically by concentrating on and improving the skills component of initial driver training and of any subsequent remedial re-training and by cosseting the driver with in-car decision aids to reduce task demand. However, as Waller (1997) noted: '... there is little evidence that a skills test can screen out unsafe drivers (West and Hall 1997)... Some skill is essential, but the relationship between skill and driving performance is not linear'.

Work using the Manchester Driver Behaviour Questionnaire showed that self-reports of aberrant driving behaviours invariably grouped into three basic types (Reason *et al.* 1990, Meadows 1994, Blockley and Hartley 1995, Parker *et al.* 1995a,b, Aberg and Rimmo 1998, Rimmo and Aberg 1999, Xie *et al.* 2001, Kontogiannis *et al.* 2002, Ozkan and Lajunen 2005): lapses, e.g. selecting the wrong gear to pull away from traffic lights; errors, e.g. not noticing pedestrians when turning, misjudging an overtaking gap; and violations, e.g. speeding, running red lights, close following, drink driving.

Comparing mean item scores across the Manchester studies shows that exceeding the speed limit was by far the most frequently committed driving violation. In the Manchester studies it was those drivers who scored high on violations, not those who scored high on errors or lapses, who were statistically more likely to have been accident-involved in the past (Reason *et al.* 1990, Meadows 1994, Parker *et al.* 1995a) and to be accident-involved, again, in the future (Parker *et al.* 1995b).

Identifying a class of drivers who are 'crash magnets' (Stradling 1997), a greater risk both to themselves and to others on the roads, focuses remedial action by targeting a particular segment of the driving population whose characteristics may be reasonably well specified and as Underwood *et al.* (1997) noted '... the finding that violations and not errors are associated with increased accident liability [is of importance because] it demonstrates that safety campaigns as well as targeting unsafe driving practices should also tackle the unsafe driving attitudes underlying those practices'.

### 1.1. *Person and system influences on crash involvement*

Figure 1 (adapted from initial work by Lajunen 1997) provides a descriptive framework summarizing the various routes of influence from demographic differences through person characteristics and domain specific attitudes and orientations to crash involvement. The model distinguishes a 'violation route' and an 'error route' to crash involvement.

The model suggests that committing violations while driving directly influences safety margins and that reduced safety margins will be vulnerable to the interposition of an error by any of the parties in a situation where trajectories may intersect or motion control be lost unless remedial action such as braking or steering is taken.

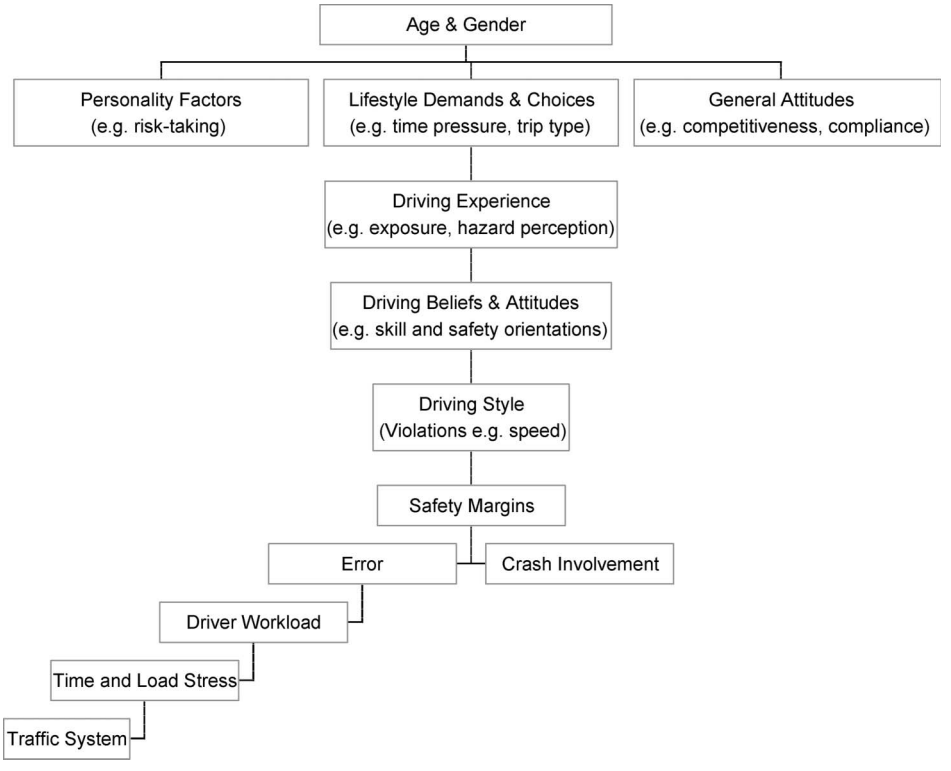


Figure 1. A model of person and system influences on crash involvement.

## 2. Car use: the context of driver speed choice

Future historians may well characterize the 20th century as the century of the petroleum-powered car, during which around one billion cars were manufactured (Urry 1999) of which over half a billion (500 million; Shove 1998) currently occupy the streets, garages, car parks and grass verges of the planet. In Scotland, car ownership and use varies with, *inter alia*, gender, location and income. The Scottish Social Attitudes survey of 2002 found 73% of adult males and 54% of adult females holding a driving licence (Anderson and Stradling 2004). Scottish Household Survey figures for 2004 showed two-thirds (67%) of Scottish households with access to a car, ranging from 99% of those from households in the top annual household income quintile and living in accessible rural areas enjoying car access, to 26% of those from the lowest quintile households and living in large urban areas (Stradling 2006).

In 1964, Russian archaeologists found the remains of a wooden ski preserved in the acid soil of a Siberian peat bog, which they dated to around 6000 BCE (Woods and Woods 2000). A 4500-year-old rock carving in Norway shows a skier using a single pole for propulsion on skis probably 3 m long. Wooden skis for faster transport are thus probably the earliest example of technological innovation being used to amplify the speed and distance of individualized land-based travel.

It was the potters of Mesopotamia who are thought to have invented the wheel, 'wooden discs spun in a horizontal position used to shape lumps of clay into vessels'

(Woods and Woods 2002) at least 5000 years ago. There is evidence of the wheel being rotated from horizontal to vertical and used on sledges to facilitate freight transport by the Sumerians and also in India and China soon after 3500 BCE and in Egypt by 2500 BCE. By 1400 BCE, Egyptian craftsmen were making 'strong, light wheels with separate rims, spokes and hubs' (Woods and Woods 2002), which were being used on fast chariots by elite soldiers and wealthy civilians. Thus, around 3400 years ago technological innovation was driving specialization of form and function and access to fast-wheeled vehicles was serving as a marker and amplifier of status differentials.

A number of studies attest to the car as a symbolic object (e.g. Sachs 1984, Maxwell 2001) and to the importance of affective motivation in choosing car over other transport modes (e.g. Tertoolen *et al*. 1998, Jensen 1999, Bamberg and Schmidt 2003, Ellaway *et al*. 2003, Abrahamse *et al*. 2004, Gatersleben 2004, Reid *et al*. 2004, Steg 2004) and in influencing driving style (e.g. Lajunen *et al*. 1998, Stradling *et al*. 2003).

One core component apparent from studies of the attractions of the car is the sense of autonomy, feeling in control. Many car drivers appreciate the autonomy as well as the mobility that the automobile conveys – 'I just like driving . . . I only go places when I can drive'; 'One of the reasons I like driving is because I'm in control' (Stradling 2007); 'What do you enjoy most about driving?' 'I suppose it would just have to be the independence, the feeling of freedom it gives and just the actual feeling of driving yourself, the speed, the cornering . . . I just like the feeling of being able to control a vehicle in a competent manner' (Stradling *et al*. 1998). Pre-drivers aspire to the perceived benefits of car driving: 'Like you're in control of loads of speed, aren't you?' [Boy, 14] (Step Beyond 2006).

The promise of autonomy implicit in the nomenclature 'automobile' resolves into two dimensions labelled identity and independence (Stradling *et al*. 2001) with the young and the poor scoring highest on the identity factor. High-loading items on this factor include: 'Driving a car . . .' is a way of projecting a particular image of myself; Gives me a feeling of pride in myself; Gives me the chance to express myself by driving the way I want to; Gives me a feeling of power; Gives me the feeling of being in control; Gives me a feeling of self-confidence; Gives me a sense of personal safety. What you drive and how you drive it forms part of the expressive component of driving.

Driving today in Scotland is not, though, an unalloyed source of pleasure. Dudleston *et al*. (2005) found that while 84% of a large sample of Scottish car drivers agreed that 'I like travelling in a car', 45% agreed that 'I find travelling by car can be stressful sometimes', 43% that 'I am trying to use the car less' and 57% that 'I would like to reduce my car use but there are no practical alternatives'. However 29% of a separate sample of 800 Scottish car drivers (GfK NOP 2006, Stradling 2006) think that 'Driving to me isn't just a way of getting from A to B'.

There is thus a continuum of car users in Scotland from those who enjoy driving to those who do not. Dudleston *et al*. (2005), using attitudes to car use and its environmental consequences, identified four driver types: die-hard drivers enjoy driving, would not consider other transport modes and support more road building as the solution to congestion; car complacents just reach for their car keys when there is a journey to be made; malcontented motorists find driving stressful in current conditions but complain there are no practical alternatives to meet their travel demands; aspiring environmentalists are cutting their car use, conscious of the planetary degradation to which they are contributing (Stradling 2007 and Stradling and Anable 2007 give fuller descriptions and correlates of these driver types.)

## 3. The driving task

Driving may be viewed as a skill-based, socially regulated, expressive activity. The skill-based component involves balancing capability and task difficulty to avoid loss of control (Fuller 2005). The socially regulated component involves real time negotiation with co-present transient others with whom the driver is presently sharing the public highway to avoid intersecting trajectories. The expressive component involves maintaining or enhancing the driver's self-image and sense of subjective well-being.

In the task-capability interface model (Fuller 2005), speed is varied to manipulate perceived task difficulty and maintain a situation where the driver's competence continually exceeds the cognitive demands of the situation in order to avoid loss of control of the vehicle.

Travel behaviour in general varies with person characteristics, such as age, gender, ability and disability, with household characteristics, such as income, location and transport availability, with journey purpose and with attitude/value clusters. It has been suggested (Stradling 2003, 2007) that all individual travel and transport decisions vary with obligation (What journeys do I have to make?), opportunity (How can I make these journeys?) and inclination (How would I like to make these journeys?). This formulation may also be applied to car driver speed choice: How fast can I go here? (opportunity); How fast should I go here? (obligation); and How fast would I like to go here? (inclination).

## 4. Why speed?

Empirical support for this tri-partite differentiation into situational opportunities, perceived obligations and individual inclinations towards or away from speeding is shown here by combining data from two studies (Campbell and Stradling 2003, Stradling *et al.* 2003), in which car drivers in Scotland were asked to indicate whether they would drive faster, slower or the same as usual in a number of circumstances. Respondents rated 18 scenarios 'Compared to how I normally drive on my own . . .' on a 7-point scale from much slower through much the same as usual to much faster.

Half of the drivers (55%) said they would speed up when late (but thus nearly half would not go any faster than normal, despite being late) and 30% would speed up if the traffic around them was moving faster than they normally drive. Almost all drivers would slow down when driving in fog (98%) and heavy rain (96%). Many drivers indicated they would make no change in their speed choice in many of the circumstances.

Three factors were extracted using principal components analysis (KMO measure of sampling adequacy = 0.760, Bartlett's test of sphericity significant at $p = 0.000$) with scree test. Table 1 shows the items loading at $>0.30$ on the three factors and the percentage of drivers who said they would drive faster and slower in each situation. Of the sample, 39% (50% of the male drivers and 26% of the female drivers) had been stopped by the police for speeding or had been flashed by a speed camera in the past 3 years. Table 2 shows on which items there were statistically significant ($p < 0.10$) differences between these 'speeders' and those who had not been detected speeding. Of the sample, 16% (18% of the male drivers and 14% of the female drivers) reported having been involved in one or more road traffic accidents as a driver within the previous 3 years. The final column of table 2 shows the speeding behaviours on which those who had and those who had not been recently collision-involved differed significantly.

The three factors are labelled: adverse driving conditions; responsibilities to others; and arousal.

Table 1. Three factor structure of self-reported situational influences on car driver speed choices.

| Situational influence on driver speed of Scottish car drivers (n = 1638) | %Drive faster (F) | %Drive slower (S) | Speeder vs. Non-speeder | Collision involved vs. Not collision involved |
|---|---|---|---|---|
| Factor 1 | | | | |
| Driving in fog | 0 | 98 | | |
| Driving in heavy rain | 0 | 96 | | |
| On unfamiliar roads | 1 | 88 | S: 86:89*** | |
| Traffic slower than you normally drive | 4 | 69 | F: 6:3** | F: 7:4** |
| Driving in the dark | 1 | 66 | | |
| Driving in light rain | 0 | 43 | | |
| Driving under streetlights | 1 | 35 | | |
| Factor 2 | | | | |
| You spot a speed camera | 0 | 65 | S: 74:59*** | S: 72:64** |
| You see speed camera warnings | 0 | 59 | S: 63:56** | |
| With children in the car | 0 | 57 | | |
| With older people in the car | 0 | 38 | S: 44:34*** | |
| Late for meeting or appointment | 55 | 1 | F: 64:49*** | F: 66:53*** |
| Factor 3 | | | | |
| Traffic faster than you normally drive | 30 | 3 | F: 35:26** | |
| Feeling stressed | 20 | 23 | | F: 28:19* |
| Someone is driving close behind you | 12 | 34 | S: 38:33** | F: 14:12** |
| Listening to music | 8 | 4 | | F: 15:7*** |
| Driving when weather is hot | 6 | 9 | F 8:5* | F: 8:5* |
| People your own age in the car | 4 | 6 | | |

*$p < 0.10$; **$p < 0.01$; ***$p < 0.001$ on chi-square test.

Factor 1 involved variables that have adverse driving conditions as a common link, with driving in heavy and light rain, fog, in the dark and under streetlights and driving on an unfamiliar road loading on this factor. All the variables in this factor tended to make respondents report they would drive more slowly than their usual speed. These situations may be seen as constraining the opportunity to speed and drivers may be seen as reducing their speed in order to maintain task difficulty within manageable bounds to obviate loss of control (Fuller 2005).

Running behind schedule loads negatively on factor 2, responsibilities to others, consistent with the suggestion that the connection between the variables loading on this factor is changing speed according to feelings of duty or obligation, whether towards vulnerable present others (children, old people in the car), enforcement authorities or to distant others at one's destination to whom explicit or implicit undertakings have been made about time of arrival.

The variables that load positively on factor 3 were driving while listening to music, running late, having people of the driver's age in the car, feeling stressed, driving when the weather is hot and when the traffic ahead is faster than the respondent's usual speed, all situations in which feelings of arousal, stimulation or agitation are likely to be present. Arousal state, emotional state, fatigue state and motivational state may all undermine the current level of driver competence (Fuller and Santos 2002, Fuller *et al*. 2006). This factor differs from the first two as it consists solely of variables tending to make respondents drive faster than their usual speed and thereby tending to increase task difficulty

Table 2. Scottish car drivers' nominated normal and preferred speeds for seven road types showing percentage for whom normal and preferred speeds exceeded or were at or below speed limit.

| n = 973–1068* | 3-lane motorway | 2-lane dual carriageway | Single carriage-way rural A road | Wide suburban street | Main road in town | Wide residential | Narrow residential |
|---|---|---|---|---|---|---|---|
| Speed limit | 70 mph | 70 mph | 60 mph | 40 mph | 30 mph | 30 mph | 30 mph |
| % with normal speed above limit | 37 | 19 | 11 | 31 | 31 | 33 | 19 |
| % with preferred speed above limit | 46 | 25 | 12 | 38 | 31 | 31 | 20 |
| % with preferred speed 10 mph+ above limit | 15 | 5 | 3 | 13 | 4 | 2 | 1 |
| % with preferred speed at or under limit | 54 | 75 | 88 | 62 | 69 | 68 | 80 |
| % with preferred speed at or under own estimate of limit | 52 | 55 | 76 | 53 | 65 | 64 | 65 |

*Drivers who 'never' drove on each road type were omitted.

(Fuller 2005). 'Late for meeting or appointment' and 'traffic ahead moving faster than you normally drive' loaded significantly on both factors 2 and 3, suggesting that both invoke feelings of both obligation and arousal/anxiety.

Those who had been detected speeding were more likely to slow down for speed cameras and camera warning signs, when being tailgated and with older passengers and less likely to slow down on unfamiliar roads but to drive faster when late for a meeting or appointment, if the traffic around them was moving faster or slower than they normally drove or when the weather was hot.

More drivers who reported they had been collision-involved as a driver in the previous 3 years indicated they would slow down for a speed camera, and more said they would drive faster when late, when feeling stressed, when listening to music, when close followed, when the weather was hot and when the traffic ahead was going slower than they normally drove.

Thus, three different types of reasons to speed were identified and speed choices in particular situations shown to be associated with being a less safe driver, a detected speeder or recently collision-involved. Aspects of opportunity, obligation and inclination all distinguished between speeders and non-speeders and between those who had and had not been recently collision-involved.

### 4.1. *A special case of obligation to speed: driving as part of your work*

Work-related road accidents account for around 25–33% of all road fatalities in Britain and 250 serious injuries per week (Health & Safety Executive 2003). Studies show that

those who drive for work have a higher accident risk than the general driving population even when their greater exposure is factored out (Lynn and Lockwood 1998, Dimmer and Parker 1999, Chapman *et al*. 2000, Kweon and Kockelman 2003). This elevated risk has been attributed to the extra motives (Naatanen and Summala 1976) of these drivers, such as time pressures, stress of work, fatigue and use of mobile phones (Salminen and Lahdeniemi 2002). Time pressures are recognized by stressed drivers as having an impact on safety; '[I dislike] being in a rush because of work and conscious that as a result I am not driving as safely as I could.' (Male aged 40 commenting on driving as part of work; O'Dolan and Stradling 2006).

## 5. Inclinations towards and away from speeding

Scottish car drivers (Stradling *et al*. 2003) viewed photographs of seven different road types, from a three-lane motorway to a narrow residential street, all showing roads with no or free-flowing traffic, in clear daylight and with no visible police enforcement and thus with opportunity to speed, if desired. Respondents indicated, *inter alia*, how often they drove on roads of each type, what they thought the speed limit would be, the speed at which they would normally drive and the speed at which they would prefer to drive on roads of that type under those conditions. Table 2 summarizes some of the results from this study.

The figures show between 11% (single carriageway rural A road) and 37% (three-lane motorway) whose nominated normal speed would exceed the speed limit on each road type. For the motorway, dual carriageway and wide suburban 40 mph road, the proportion of drivers who would prefer to drive above the speed limit exceeded the proportion who said they normally do, suggesting that some, but only some, drivers are restraining their speed on those types of roads, with their normal speed below their preferred speed.

Between 1% (narrow residential street) and 15% (three-lane motorway) indicated a preferred speed 10 mph or more above the speed limit. They would like to travel at excessive speed. The number of roads on which their nominated normal speed exceeded the speed limit was counted for each respondent. Overall, above a third (37%) indicated complete compliance, with none of their nominated normal speeds exceeding the posted limits. Only 10% of drivers nominated a normal speed in excess of the speed limit on five or more of the roads and 2% on all seven roads. A study of car drivers in the Lothian and Borders police area (GfK NOP 2006, Stradling 2006) found around one in 10 car drivers agreed that 'I feel more comfortable driving fast than slow' (11%), 'My passengers sometimes ask me to drive more slowly' (10%) and 'I think that speeding will always be a problem for me' (8%). A total of 15% of males and 6% of females were 'problem speeders', agreeing with these and similar items, with the figure highest for 17–20 year old males, of whom a third (32%) fell into this category. There is thus a continuum of car users in Scotland from those who never (37%) to those who frequently (around 10%) say they exceed the speed limit.

However, as table 2 shows, there are also substantial proportions on all road types of Scottish drivers whose preferred speed is below the speed limit, whether contrasted with the actual speed limit for each road or with each respondent's estimate of the speed limit. Around half would prefer to drive at or below 70 mph (56%) or at or below their own estimate of the speed limit (52%) on a free-flowing motorway in broad daylight with no visible police enforcement. Further analysis shows that 22% would prefer to drive at 60 mph or below on motorways, 41% would prefer to drive at 60 mph or less on dual

carriageways, 19% at under 30 mph on the wide suburban 40 mph road and half (54%) indicated that their preferred speed on the winding, single carriageway rural A road was 50 mph or below. There was little evidence in this data for popular support amongst Scottish car drivers for raising speed limits, on motorways or elsewhere.

### 5.1. *Slowing down in town?*

There is also evidence that car drivers are starting to slow down. The GfK NOP (2006) study found 51% of 800 car drivers agreeing with 'At the moment I am making an effort to reduce my driving speed', 46% agreeing with 'I am trying to speed less often than I used to' and 34% with 'I have recently reduced my usual driving speed', although 33% agreed that 'I like to put my foot down on open roads and motorways'.

While the latest figures on vehicle speeds in Great Britain (Department for Transport 2006) show no change on roads in non-built-up areas, 'the proportion of cars exceeding the speed limit on 30 mph roads decreased from 66 per cent in 2000 to 50 per cent in 2005' and the proportion exceeding the 30 mph limit by 5 mph fell from a third (32%) to a fifth (21%) (table 3) suggesting a gradual slowing down in town by a substantial number of British car drivers. What is not currently clear is to what extent this phenomenon is the result of re-engineering of road space, congestion, fuel price, publicity or enforcement: whether it is opportunities, obligations or inclinations that have changed. Further research is needed here.

## 6. Conclusions

There is a long history of differential access to technological developments to accelerate the rate of land-based travel beyond human natural capacity. Many enjoy the sense of mastery and feeling in control that they obtain from driving, but when task demand exceeds current competence they may lose control. Many attest to driving being sometimes stressful, perhaps when task difficulty and felt risk rise (Fuller *et al*. 2006). Influences on driver speed choices factor into three major groupings: those influencing by constraining the opportunity to speed; those influencing obligation to refrain from speeding; and those varying the inclination to speed, consistent with the claim that speed choices are driven by the interaction of opportunity ('How fast can I go?'), obligation ('How fast do I need to go?') and inclination ('How fast do I want to go?').

Driving violations, such as speeding, may reduce driver safety margins such that the likelihood of error by any party in the situation causing loss of control or intersecting trajectories is amplified. The extent to which drivers' normal and preferred speeds exceed the speed limit varies substantially with road type, but many drivers, at least in Scotland, prefer speeds at or below the speed limit on all road types and both observation and survey data seemingly tell of a current slowing down in town.

Table 3. Percentage of cars exceeding speed limit and exceeding speed limit by 5 mph at 30 mph sites in Great Britain.*

| 30 mph sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|
| % exceeding limit | 66 | 65 | 59 | 58 | 53 | 50 |
| % exceeding limit by 5 mph | 32 | 32 | 25 | 25 | 22 | 21 |

*From Department for Transport (2006).

Attempts to reduce speed or speeding must vary obligation, opportunity or inclination. Employers should not oblige their employees to speed, either at work or to work. They have a responsibility to their driving work force and to others with whom their employees share the road. Opportunities to speed could be constrained by car manufacturers capping top speeds: 'It's easy to do in modern cars because you're under the perception that you're well protected with SIP, seatbelt. Modern cars, better brakes, better control . . . you know, you just have better control of the vehicle. They're quieter. You don't realise you are speeding a lot of the time. (Step Beyond 2006). Asked what was the fastest they would drive on the motorway and still feel safe, focus groups of Scottish car drivers (Stradling *et al*. 2003) gave speeds well above the current motorway speed limit of 70 mph, ranging from 80 to 100 mph. Felt risk while 'carcooned' is low. A number of luxury car manufacturers have voluntarily capped top speeds at 155 mph. This is 2.214 times the current maximum permitted velocity on UK roads, a rather larger margin than the 10% normally allowed for speedometer error.

Strength of inclination amongst drivers to refrain from speeding might be enhanced by propagating two views. First, if you have no particular inclination to drive above the speed limit you are not alone, indeed you are in the majority, as indicated by the figures in table 1 (45% say they do not speed up when late), table 2 (54–88% report a preferred speed at or below the speed limit across seven road types) and table 3 (79% observed below, at or no more than 5 mph above the speed limit in built-up areas). Second, that slowing down will help save the planet: Anable *et al*. (2006) calculate that a properly enforced 70 mph speed limit would cut carbon emissions from road transport by nearly one million tonnes of carbon (MtC) per annum, and that a 60 mph UK top speed limit would nearly double this reduction, reducing emissions by an average 1.88 MtC per year, giving 15% or 29% of the total savings expected from the transport sector by 2010, as required in the 2006 Climate Change Programme Review (DEFRA 2006).

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