

*This was published as follows:*

Corbett, C. and Caramlau, I. (2006) 'Gender differences in responses to speed cameras: typology findings and implications for road safety'. *Criminology and Criminal Justice: An International Journal*. 6(4), 411-433. <http://crj.sagepub.com/cgi/reprint/6/4/411>

## **Gender differences in responses to speed cameras: typology findings and implications for road safety**

**February 2006**

Revised version

8360 words inclusive

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## **Gender differences in responses to speed cameras: typology findings and implications for road safety**

### **Abstract:**

Automated speed cameras in England and Wales have become a very common means of enforcement of speed limit breaches in most police force areas, but they are not without controversy despite the majority of public opinion behind them. Research in the mid-1990s showed that drivers responded to speed cameras in one of several key ways, and the typology of responses produced was linked with drivers' characteristics. Now that women comprise more than 4 out of 10 licensed drivers in England and Wales, it is timely to revisit the earlier research by considering the gender characteristics of the driver typology, and this paper contrasts the results longitudinally with those obtained from a 2003 survey that *inter alia* explored similar issues. The implications for road safety of the behavioural and attitudinal differences noted by gender (and age) are discussed, especially in the context of risk-based control policies and the term 'drivers'. This latter aspect is achieved by way of a brief analysis of national newspaper articles.

*Keywords: speed cameras; gender differences; age differences; driver typology.*

## **Current concerns in speed camera enforcement**

The emphasis of much road traffic research of the last decade has been on speeding behaviour – meaning both exceeding speed limits and driving inappropriately fast for the circumstances. Exceeding speed limits is regarded as a relatively minor traffic infraction by drivers compared to other traffic breaches (Brown and Copeman, 1975; Corbett and Simon, 1991) and this may be partly why the majority of drivers admit to it (e.g. RAC, 2005). Yet speeding is a major cause of injury and death on the road (e.g. Taylor et al, 2000; Farmer et al, 1999), despite recent arguments as to its importance as a crash determinant (see Broughton et al, 1998 and ABD, 2005a). Probably because drivers do not see it as dangerous when they do it (e.g. Corbett and Simon, 1992: 38-40) speeding is proving hard to control and harder to eradicate.

A combination of education and technological advances would seem to offer the most hope of control in the longer term, perhaps in the guise of more speed awareness programmes for detected speeding drivers (McKenna, 2004) and intelligent in-vehicle speed adaptation used in conjunction with satellite technology that would restrict maximum speeds to a predetermined level (e.g. Carsten and Comte, 2001), which system is ready for deployment when the social climate is deemed appropriate. However, in the meantime the traditional short-term measure of control is enforcement, where in the last decade speed cameras have become a very common means of detection of speed limit breaches in most police authority areas.<sup>1</sup>

Automated speed cameras are one of a range of new technologies introduced to help with traffic law enforcement that together are said to be part of a shift towards an actuarial style of risk-based policing. This ‘New Penology’, first identified by Feeley and Simon (1994: 173) ‘seeks to regulate groups as a strategy of managing danger’ by focusing on levels of risk and danger posed by discrete groups rather than by individuals. This means in the context of speed camera surveillance that the primary concern of a risk-based road safety agenda is to seek to reduce casualties by preventing the offence rather than to punish transgressors. A further aspect is to manage risk through the intelligence-led identification of particular groups of concern, e.g. high speeders, and to develop controls and interventions to reduce

offending among such groups. Yet because this latter approach draws upon the identification of offenders' behavioural and socio-demographic characteristics, its assumption that the focus on risk displaces concern for the causes of crime has been questioned, since such theories underpin the framework for the construction of actuarial assessments and tools (Metcalf and Stenson, 2003, 8-9).

Whatever the underpinning basis of roads policing, however, it seems natural in preventive campaigns to aim to target those drivers most at risk of crash involvement. It is well documented that high speeders tend to have more crashes (e.g. Stradling et al, 2003: ch.10), and that more people are killed on the road where inappropriate or excess speed is a contributory factor than are victims of homicide,<sup>2</sup> hence the relevance of this paper.

Automated speed cameras were introduced under s.23 of the Road Traffic Act 1991, and started operation in England and Wales in 1992. Since then, the rolling out of the speed camera programme has not been without incident and has often proved a controversial issue. Common discourses mentioned in conjunction with cameras include the following.<sup>3</sup>

*Are they effective?* Cameras were first introduced on West London trunk-roads (main arterial roads), and a comparison of accident data for two 36 month periods before and after their introduction showed a significant reduction of 9% in all accidents on this trunk-road network in the after period relative to control data (from comparable main roads in London boroughs outside those containing cameras) (LAAU, 2003: 3). The decrease was most pronounced for fatal and serious accidents (12% reduction directly attributable to the camera presence), and speed-related accidents directly attributable to cameras reduced by 56% relative to control (ibid). While total accidents of all severities reduced in the study area, of those remaining, a higher proportion was attributable to 'driving too close to the vehicle in front', although this was a London-wide rise over the 'after' period and not just specific to the study area (ibid: 20-21). Importantly, there was no evidence of accident transfer to non-trunk (local) roads as a result of the introduction of cameras (ibid: 4). Other research commissioned by the British government has shown that cameras in England

and Wales save over 100 lives overall and over 4,000 personal injury collisions a year (Gains et al, 2004: 6; 2005: 2).

However, groups lobbying for relaxation of the speed limits and reduced use of cameras have questioned the validity of statistics used to justify expansion of camera deployment (ABD, 2005b). Partly for this reason, a study to examine claims that casualty reductions around camera sites following installation represented a 'regression to the mean', was incorporated into the Gains et al (2005) research programme. This concluded that once regression-to-mean (RTM) effects were allowed for (suggesting a proportion of those casualties would have happened naturally rather than as a consequence of camera presence), casualty reduction figures claimed by the cameras were substantial though less impressive (ibid: 154-158). For instance, fixed site cameras achieved a fatal and serious injury reduction of 24% casualties with RTM effects taken into account, but 39% without this effect (ibid: 156). Nevertheless, research in other countries supports an overall beneficial effect of cameras (e.g. Chen et al, 2001; Elvik, 1997), and an independent systematic review of 14 studies on camera effectiveness concluded that all but one showed a reduction in collisions and casualties up to three years post-installation (Pilkington and Kinra, 2005).

*Do cameras have public support?* Despite occasional inflammatory newspaper headlines suggesting that unfavourable views are uppermost among drivers (e.g. *The Express*, 30.4.05: 4), support for speed cameras appears to have remained stable over more than the decade that they have been operational. Around three-quarters of drivers sampled tended to have a positive view of cameras then and now (Gains et al, 2004, 2005; Transport 2000, 2003; Corbett and Simon, 1999). Nevertheless, a key suspicion among some is that cameras are deployed as an easy 'money earner' or 'stealth tax' for government (e.g. *Daily Mail*, 4.7.05: 31; DFT, 2003: Safety or Cash, 1-8; Gains et al, 2005: 66-67). This view has arisen because of the long-held claims by some drivers that there are insufficient road signs erected indicating the permitted maximum speed so that much speeding is inadvertent (compare Corbett and Simon 1999: 50-51 and Institute of Advanced Motorists, 2005), and that the conspicuity of speed cameras is sometimes compromised so that they are hidden from the view of passing drivers (*The Times*, 23.6.05: 9).

The 'money earner' claim has become more strident since 2000 when a 'hypothecation' scheme was put in place in Britain, whereby a proportion of income from speed camera fixed penalty fines can be ploughed back into funding further cameras and their servicing at sites that meet certain criteria (Dept. for Transport, 2004a). Notwithstanding tight requirements for monitoring and auditing of the hypothecation scheme, claims have been made that speed cameras may be chosen as the favoured enforcement method by Safety Camera Partnerships and police in order to ensure a steady flow of income for them (*The Times*, op.cit; *Daily Mail*, 13.7.05). Thus the controversy continues.

*How do drivers react when passing cameras?* In earlier research it was found that drivers responded to fixed-site cameras in different ways (Corbett, 1995), but not all of these styles were beneficial to road safety. A typology of responses to cameras and their characteristics was produced and implications for road safety drawn up from the different response types (Corbett, 2000). It was concluded from the results that road safety would be improved if some drivers changed their typical mode of response to cameras (ibid: 324-326).

*An uncommon discourse:* Although discourses around women's and men's driving standards and styles in general are globally aired and discussed, it is rare to hear how the sexes differ in responding to speed cameras. This is mirrored by published research that has neither (to the authors' knowledge) examined drivers' behavioural responses to cameras by gender. This is an important omission since female drivers now comprise 44% of driver licence holders in England and Wales and the proportion of women drivers is growing faster than that of men (National Travel Survey Unit, 2005: 37). Moreover, women are more compliant with traffic laws than men (Stradling et al, 2003: 102; Corbett, in preparation) and seem to hold differing views on cameras to them (DFT, 2004c). For these reasons, this paper will amplify previous research undertaken by the first author in 1994-5 by considering a typology of drivers' responses to cameras identified in that study by gender. It will then compare those results with others obtained from a somewhat similar survey undertaken in late 2003 to give a longitudinal element.

Since age is also an important determinant of the extent of speeding and other unlawful driving behaviours (e.g. Waller et al, 2001), results from both studies will be broken down by age group. As well as behavioural responses to cameras, attitudinal ones will be adduced where appropriate. At the conclusion of these results, the propriety of persisting in the all-inclusive discourse of ‘drivers’ will be discussed given the implications of this for road safety.

Readers may have noticed that ‘speed cameras’ are sometimes referred to as ‘safety cameras’ in recent years, and the two have occasionally been used synonymously. In fact, ‘safety cameras’ is the umbrella term used to refer to speed, red-light and other traffic signal enforcement cameras that all have the aim to improve road safety. The latter term has come to prominence most notably via the National Safety Camera Partnership, whose membership has grown to encompass most British police force areas since its inception in 2000.

### **Details of the two studies**

#### *The 1994-5 speed camera study*

This study was commissioned in 1993 by the DETR to examine the effects and effectiveness of speed cameras in relation to different deployment strategies and to make recommendations for best practice and usage (Corbett and Simon, 1999). It used a quasi-experimental design and focused largely on self-report measures to assess drivers’ speed-choice behaviour and perceptions of the deployment strategies adopted for the study, and their attitudes and beliefs about cameras over time. The study also aimed to explore in some depth how different types of driver responded to cameras, with a view to improving understanding which could assist with subsequent interventions. This aim arose from earlier research in 1993 (Corbett, 1995) that had identified four main styles of response among drivers.

Either drivers:

- tended always to comply with speed limits keeping close to or under the limit so that cameras made no difference – termed ‘*conformers*’; or

- had reduced their speeds somewhat all along the camera-signed road to avoid being caught by camera – termed the ‘*deterred*’; or
- tended to slow down before a camera site and then accelerate away downstream – termed ‘*manipulators*’; or
- continued to drive well above the limit irrespective of the presence of cameras on the camera-signed road – termed ‘*defiers*’.

The 1994-5 speed camera study, comprised of 12 surveys and over 6,800 participants, devised a question that asked all participant drivers how the cameras were affecting their speed on [the survey road] and gave them six response options (Corbett and Simon, 1999: 28-29; Corbett, 2000: 311-312). These options defined the four driver style categories noted above.

For the study, seven fresh surveys were carried out with five subsequent follow-up surveys. For six of these surveys, drivers were sampled according to their observed speed recorded at one or two points by existing fixed-site cameras or by video equipment, and samples of cars who met certain criteria sufficient to place them into one of the four driver types were selected, and letters requesting participation sent to their registered owners (Corbett and Simon, 1999: 22-3). A subset of 100 drivers was subsequently interviewed partly to flesh out the pictures of the driver types that had been identified.

The survey and interview findings from the 1994-5 study confirmed the initial results from the first self-report study of cameras undertaken in 1993 and enlarged upon them. It showed that *Manipulators* were the type most calculating and sophisticated in their responses to cameras so they thought they knew where cameras were sited, how to avoid them and how they operated. This type tended to approve of them less. They tended to be among the least experienced and youngest, and along with defiers to have the highest accident rates. *Defiers* were like manipulators in preferring higher speeds generally and they reported most breaches of the speed limits and other traffic laws, but unlike manipulators they discounted the likelihood of being caught and



continued to drive as if unconcerned about the risk of detection. *Conformers*, by contrast, were the most law-abiding group on the road; they had the most driving experience and were most likely to acknowledge a link between their own and others' speeds in general and crash risk. They had had the fewest recent accidents and penalty points on their licences. The *Deterred* fell in between all the other types on these characteristics, except by having as many previous penalty points as defiers and manipulators.

Interestingly, gender did not significantly distinguish the proportions of driver types found in six of the fresh surveys. However, a difference in driver types by gender was found in the seventh survey of drivers caught speeding by camera and who had paid a fixed penalty. In that, self-reported manipulators were more likely to be male than conformers and the deterred.

Because comparisons of data from each of the fresh surveys showed that much the same picture of differences was presented of the four driver types, cases from four of the fresh surveys were combined (where experimental manipulations had not begun and which excluded those who had been caught speeding) to give a broader picture based on larger numbers. This gave typology data for a maximum number of 3,440 drivers (see Corbett, 2000). Table 1(a) below shows the proportions of the different driver types in the 1994-5 surveys broken down by gender and age group, and will be discussed shortly.<sup>4</sup>

#### *The 2003 speed camera study*

This study was commissioned by Transport for London and undertaken by the present authors in the Metropolitan police force area in England in late 2003 in order to survey drivers' behaviour, understanding, views and attitudes towards speed cameras to see how this linked with speed choice (Corbett and Caramlau, 2004). Altogether some 1,133 drivers took part who were invited to complete a short questionnaire inside the store after refuelling at a range of petrol stations situated by main arterial roads. A 40% response rate was achieved of those who were asked. The data were statistically adjusted to correct for the overrepresentation of male and middle-aged

drivers to reflect the age and gender distributions of the national driver licence population pertaining at that time.

As part of this study, drivers were requested to indicate their general style of driving on familiar roads with camera signs and were given a range of types indicative of the four class typology discussed above. Very similar questions were used in both studies. Table 1(b) below shows the proportions of the different driver types in the 2003 survey divided by gender and age group.

### **The driver typology considered by gender and age and over time**

#### ***Table 1 about here.***

##### *The 1994-5 study: behavioural responses to cameras: Table 1(a)*

Table 1(a) confirms that even with a large sample, a Chi-square test showed no significant difference by *gender* in regard to driver types in the mid 1990s surveys.<sup>5</sup> Almost half the drivers of both sexes described their driving styles either as ‘deterred’ (45% males, 48% females), with almost as many describing themselves as ‘conformers’ (44% males, 42% females). Few described themselves as ‘manipulators’ (7% males, 6% females) or ‘defiers’ (5% males, 4% females). It is fair to say that cameras and camera signs had not long been evident at any sampling location for the four surveys used for this Table. Thus it could be that many drivers irrespective of gender were still unsure of the cameras’ parameters and ‘efficiency’ at detection, and were playing it safe by continuing to comply or slowing down generally when on the camera-signed road.

However, significant *age* differences in behavioural responses to cameras did occur. Table 1(a) also shows that among male and female drivers separately and using Chi-square tests, the highest proportions of the deterred, manipulators and defiers were found in the youngest age groups (under 26 years) while the highest proportions of conformers were in the oldest age groups (over 45 years).<sup>6</sup> Conversely, the lowest proportions of the deterred, manipulators and defiers surfaced among the oldest driver groups, and the lowest proportion of conformers among the youngest groups. The surprise in this set of findings is that the youngest male and female drivers were more

likely than their older counterparts to class themselves as deterred. It could be that since the youngest drivers tend to prefer higher speeds than others (also found in these surveys), such drivers could have had most speed reduction to achieve in order to avoid detection while passing the camera sites. Hence at a time when their efficacy was still being tested by drivers and cameras were still relatively unfamiliar on the roads, more of the younger drivers than others were seemingly acting cautiously, declaring themselves as deterred in relation to speed choice when travelling past camera sites.

*The 2003 study: behavioural responses to cameras (Table 1(b))*

The first thing to note about Table 1(b) is that the distribution of driver types changed substantially in the 8-9 years that elapsed between the two survey periods. Sampling error could account for some of the pattern differences, because the data comprising Table 1(a) came from surveys that were not necessarily representative of the driver population at that time; moreover, a tiny number of drivers who had been caught by cameras were excluded from the analysis. Minor changes to the wording of the questions used (for contextualisation purposes) might also account for a small proportion of the differences. Yet these matters are unlikely to account for such a large shift among male and female drivers in the proportions expressing themselves as 'deterred' (45% and 48% respectively in the mid 1990s to 15% and 16% in 2003) to those saying they manipulate the cameras (7% and 6% respectively in the mid 1990s to 39% and 25% in 2003). This would suggest that earlier caution among drivers generally to slow down along camera signed roads was replaced by a greater willingness to decelerate before a fixed camera site and to accelerate away once past. This shift is especially apparent among male drivers.

Indeed, considering Table 1(b), a Chi-square test showed a significant statistical difference in driver types by *gender*. Not only was there a substantial difference among the sexes in proportions of manipulators (noted above), but also there was a similar-sized difference in those classing themselves as conformers.<sup>7</sup> Among women, 56% said they 'usually complied with the speed limits along camera signed roads keeping close to or under the limits and did so before cameras arrived, while 43% of men said the same. There were virtually no differences between the sexes in proportions of the deterred and defiers as found similarly in the earlier study.

To complete discussion of Table 1(b), it should be noted that a similar but not identical pattern of *age* effects was found among each sex by driver type. Thus among male and female drivers separately, as before the highest proportions of manipulators and defiers were found in the youngest age groups (under 25 years) while the highest proportions of conformers were found in the oldest age groups (over 44 years).<sup>8</sup> The reverse also held: that the lowest proportions of manipulators and defiers were found among the oldest driver groups, and the lowest proportion of conformers among the youngest groups. Older women were more likely to be deterred than their younger counterparts, though the age pattern for deterred men was less clear.

### **Drivers' attitudes to speed cameras by gender and age**

Drivers' attitudes to cameras were assessed in both studies in addition to their behavioural responses, although different kinds of question were asked in each. All items that produced statistically significant differences between men and women using Mann Witney U tests are shown in parts (a) and (b) of Table 2, and the data are also split by age group.

#### *The 1994-5 study: attitudes to cameras: Table 2(a)*

Table 2(a) shows that in 1994-5, men and women thought differently about cameras in certain respects.<sup>9</sup> The pattern shown (in bold font) derived from Mann-Witney U tests indicates that men were significantly more likely than women to believe speed cameras meant the government was gaining too much power over drivers, that they represented an easy way of making money out of motorists, that they were a new to harass drivers and that on roads with cameras the enjoyment was removed from driving.

Interestingly, when controlling for age group and using Mann-Witney U tests these gender difference patterns remained statistically significant, though not for the oldest group. Thus young and mid-age men held these views more firmly than women in the corresponding age groups (Mann-Witney U tests all significant at p .000). Moreover, when the file was split by gender, there was a marked age difference among men with

younger ones much more likely to agree with each statement than older men (all Kruskal-Wallis H tests significant at  $p < .000$ ), though age differences among women using the same statistical test were less dramatic although in the same direction. Thus among women drivers, the youngest group were most likely to believe that cameras were an easy way of making money from drivers<sup>10</sup> ( $p < .021$ ) and that they were a new way to harass them ( $p < .034$ ).

Overall, men were less favourable to cameras than women, which largely held within age groups. Among men and women separately, young drivers approved of cameras less than older ones.

*The 2003 study: attitudes to cameras: Table 2(b)*

Although a behavioural measure, the pattern shown in bold font in this table derived from Mann-Witney U tables shows that men were more likely than women to have been 'flashed' by cameras at least twice and were less likely than women 'never' to have been flashed, suggesting a preference for higher speeds (confirmed elsewhere in the survey).

***Table 2 about here.***

In regard to attitudes and again using Mann-Witney U tests, men were significantly less likely than women to believe that cameras made a 'little' or 'big' difference to accident reduction, and were less likely to want more cameras in the area where they lived. In accord with these sentiments, it is not surprising that men overall preferred the familiar name 'speed cameras' to the more recent term 'safety cameras'.

Interestingly, when the file was split by gender, the only statistically significant difference by age group in these views on cameras occurred in regard to this latter item for women only. It was that least support for the term 'safety cameras' was noted among the youngest female group with only 17% in favour compared with 44% of the mid-age and 35% of the older women.<sup>11</sup>

Survey respondents were asked about the official purposes of cameras and their importance. Over 85% overall thought the purpose of cameras was to save lives, encourage compliance with limits and to reduce accidents, while 44% thought the key

aim of government was to make 'easy money' from drivers. Examined by gender, Table 2(b) shows that women drivers were significantly more likely to perceive the road safety purposes of cameras as important. For instance, overall 93% women but only 80% men thought an important purpose of cameras was to reduce road accidents and only 36% women but 52% men thought an important purpose of cameras was to make 'easy money' from drivers. Statistical tests showed that controlling for age band, nearly all these differences by gender held among the mid and older age groups, though only a few gender differences remained significant among the younger group.<sup>12</sup>

Considering Table 2(b) as a whole and with few exceptions, women's attitudes to and views on safety cameras were significantly more positive and more 'road safety aware' than men's, and most of these differences within gender remained significant regardless of age group. But while there were strong differences by gender there were fewer differences in attitudes by age with no strong trend.

### **Summary of findings from the two studies**

Putting these results together it is seen that in the mid-1990s, women and men responded to speed cameras in much the same way in terms of the defined typology. This may have been because of the limited experience drivers had of cameras at that time creating behavioural uncertainty since attitudinally there were differences, with women drivers having more positive views of speed cameras than men. In terms of age, it was seen that conformers were more likely to be found among the oldest male and female age groups, and manipulators, defiers and the deterred among the youngest groups. Among men, the youngest tended to have the least positive attitudes towards cameras, and to some extent the youngest female drivers also had the least positive attitudes among their sex.

Moving on eight or nine years, the pattern of behavioural responses to cameras appeared to have changed with far fewer declaring themselves as 'deterred' and far more thinking of themselves as 'manipulators'. Within this general shift, women were more likely to class themselves as 'conformers', while more men than women favoured the manipulator style. Despite the elapse of time, there were similar

proportions of male and female defiers and deterred drivers. Attitudinally, men were still less enamoured of speed cameras than women drivers, in particular wanting fewer of them and thinking they were less effective at accident reduction than women did,<sup>13</sup> and these differences by gender largely held irrespective of age group. In general, younger drivers held the least positive views on cameras though the differences were less pronounced than in the earlier study.

These different profiles underline the strong likelihood that the causative factors in speed choice are likely to vary considerably for women and men, particularly when intersected by age. This again highlights the point made earlier that risk-based crime management policies may indeed focus on regulating the behaviour of large populations, e.g. drivers, yet within that there is a need to recognise individual differences for enhanced targeting of the groups most at risk of speed-related collisions.

### **Implications of the findings for road safety**

Although it is acknowledged that women drivers do not drive uniformly, it has been shown here that women in the 2003 survey indicated greater compliance towards cameras than men, observing the speed limit more frequently when passing them and manipulating the cameras less frequently than men. Women also indicated greater awareness of the road safety benefits of safety cameras – for instance, showing a greater preference for the term ‘safety cameras’ than men and believing them to have a bigger impact on accident reduction than men. Not discussed in this paper but well documented elsewhere is the fact that women tend to have fewer road accidents than men even when controlling for their lower distances travelled (e.g. Maycock et al, 1991) and to have fewer accidents connected with excess speed (e.g. McKenna et al, 1998: 11). Women also tend to rate traffic offences as more serious than men do (e.g. Corbett and Simon, 1991: 160 ; Stradling et al, 2003: 104). In view of their seeming greater awareness of road safety concerns than men as implied in the current findings and others (Shinar et al, 2001; *The Times Online*, 19.4.05; DfT, 2004c), it is not surprising either that women are less likely to be members of organisations that campaign to raise the speed limits.<sup>14</sup>

As noted in Table 1(b), the youngest male drivers in 2003 were considerably more likely to adopt a ‘manipulator’ style of driving than the oldest men (16% v 3%). Yet the proportion of them who said they had never been ‘flashed’ by cameras (43%) was the same as for older drivers (see Table 2(b)). Given that the oldest male group were more likely to class themselves as conformers than the youngest men (51% v 24%), this suggests that manipulating the cameras might have been as ‘successful’ in terms of avoiding detection as complying with them. If these results generalise, then the extent of the educational effort that may be needed to change some people’s – especially young men’s - behaviour to a safer style of driving is put into sharp relief.

#### *Implications for use of the term ‘drivers’*

Should these findings have wider application, there is an important implication. It is that it may not always be appropriate to refer to ‘drivers’ *en masse* as often seems to be the case in the news media when describing or stating what drivers feel, think, believe and perceive and how they behave on the road. This could be especially important if such thoughts of undefined ‘drivers’ imply a majority view on a road safety issue when in fact a minority view is held. Moreover, implied concordance of view among an undistinguished group of ‘drivers’ might help to encourage the behaviours and views of those preferring less judicious or riskier driving styles, which may not be in the long term benefit of road safety.

From the perspective of government and the other political parties, drivers are a highly valued constituency to have ‘onside’ as they now comprise a large proportion of the electorate, and it would therefore be politically injudicious to alienate them. Yet this paper suggests it could be valuable to consider the gender of drivers when estimating public support for any changes that might arise in consideration of traffic control policy, and not to assume a homogenous view or homogenous behaviour among drivers.

To check whether use of the term ‘drivers’ does in fact conflate the cognitions and behaviours of women and men drivers in the news media and amounts to more than just the impression of the authors, a brief exercise to examine specified newspaper articles was conducted. A search was carried out of the Lexis Nexis database of all



national UK newspaper articles in the previous 12 weeks from the date of writing that mentioned both 'speed limits' and 'drivers' and/or 'motorists'.

*Insert Figure 1 here*

From this sample of 300 items, only those were retained that referred to drivers' or motorists' cognitions or behaviour in relation to speed or speed limits. Excluding identical articles in several editions or 'sister' newspapers and letters to the editor, Figure 1 shows that this left 45 articles that were scanned for mention of gender distinctions or homogeneity. Only five (11 %) did distinguish between the sexes in their cognitions or behaviours in regard to speed or speed limits (two in broadsheets, the other three in tabloids), which left 40 (89%) that did not (these mostly in tabloid papers). Some examples of the latter noted in national newspapers in July 2005 were as follows:

“Two-thirds of drivers regularly break the speed limit, a survey has found. The majority knowingly flout rules of the road and don't fear being caught.”

“Almost 9 out of 10 drivers believe that every roadside speed camera should carry a sign showing the speed limit, according to a survey carried out for the Institute of Advanced Motorists.”

“Contrary to what some think, practically all motorists are sensible and drive at speeds appropriate to the road conditions at the time – often well UNDER the speed limit.”

This small exercise suggests that newspapers are largely failing to separate the views and actions of male and female drivers, which as we have seen may well be significantly different.

*Further implications of the findings*

The first concerns women drivers who, in the 2003 study, were significantly more likely than men to comply with speed limits on camera-signed roads through driving close to or under the speed limits (conformers), and significantly less likely than men to slow down before a camera site to avoid detection and then to increase their speeds

downstream (manipulators). Since manipulators and defiers in both studies had the highest accident rates and preferred higher speeds - and admitted most traffic offending when asked in the 1990s research - a main aim of cameras in terms of road safety is therefore for more drivers to join the ranks of the deterred and conformers. This means that educational publicity should most effectively be targeted at men more than women. Secondly, as the youngest males in both studies were least likely to be conformers and most likely to be manipulators, remedial efforts should be especially geared towards the youngest male drivers.

On the subject of the shift towards drivers of both sexes manipulating cameras and the shift away from classing themselves as deterred, it must be asked whether this is a worrying trend should the finding have wider application? It might be argued that it is better that drivers slow down on stretches of road where there is a previous history of speed-related-collisions<sup>15</sup> even if this is followed by some acceleration downstream from the camera than it is to drive past at inappropriate or excess speeds. Indeed, in support of this proposition is the endorsement and promotion of camera 'maps' by police and motoring organisations such as the Automobile Association,<sup>16</sup> aimed at increasing drivers' awareness of roads stretches sufficiently dangerous to have warranted the installation of cameras there. Nevertheless, it would be disappointing if there has been a real shift away from drivers slowing down generally on camera-signed roads to avoid detection towards a style of manipulating the cameras. This needs to be addressed further since it would seem to underline the frequent research observation that drivers do not think it dangerous to exceed limits when they do it (Corbett and Simon, 1992: 38-40; Corbett, 2000: 325-6). Although feared by motorists, the advent of new generation digital speed cameras (SPECS) - that measure average speed over distance for individual vehicles - is likely to obviate the practice of deceleration and acceleration around camera sites. Yet whether in that event the expected behavioural change among drivers would induce attitudinal change remains to be seen.

Thirdly, it is noted that the proportions of defiers by age and gender were very similar in Table 1(a) and 1(b) with, for example, 7% young males and 6% young females claiming defier status at both points in time. This reinforces the view that educational attention should be focused on the youngest drivers, but it does not indicate that there

has been a surge in non-compliant speed behaviour among young women as might be suggested by discourses of a 'ladette' sub-culture. This is where some young women are alleged to emulate masculine behaviours especially driving behaviours by, for example, drinking and driving more than normally found among female populations (e.g. *Daily Mail*, 17.3.05; *BBC News Magazine*, 11.1.05; *BBC News Scotland*, 26.1.04).

## **Conclusions**

Women in general drive more safely and think more safely about driving and road safety matters. This begs the question of why any substantial gender differences should be obscured, particularly if the purported and implied consensual view of 'drivers in general' could encourage or advocate more risky behaviour among some? Thus if particular groups advocate raising speed limits implying that this is the view of drivers in general it would be more appropriate to acknowledge that such a view is more frequently a male view, as would seem to be the case. Likewise, it has regularly been found that around three-quarters of those sampled in surveys broadly approve the operation and existence of safety cameras (e.g. Gains et al, 2004; 2005: 70-71; Corbett and Simon, 1999). Since we have found that positive support for cameras more often comes from women, perhaps it is time in light of their growing number for this to be more widely recognised.

In other words, it is male attitudes to speed and its control that present the biggest challenge, and it is there that educational efforts should best be targeted, especially those of young men. For instance, among educational enforcement initiatives has been a policy to offer speed awareness programmes to drivers caught travelling at speeds just above the limits, and early indications are that these courses offer positive results (e.g. McKenna, 2004). As it is men who tend to prefer the higher margins of excess speed (e.g. Corbett, 2003: 118-119; Stradling et al, 2003: 102), it is more likely to be men who are excluded from the benefits of these programmes. It is recommended therefore that those preferring the highest speeds, i.e. men, do not miss out on such educational opportunities.

In all, the foregoing points up the need to explore further the causes of compliance with speed limits and reasons for exceeding them by gender and age, and to highlight gender differences concealed within the category of 'drivers'. Failure to do so risks constructing speeders too broadly for adequate targeted risk-based management and control policies. Moreover, in view of women's increasing presence on the roads and the attitudinal differences to speed choice and road safety issues between the sexes, it could be important to bear this in mind when assessing public support for any changes to speed or traffic control policies, and not to assume undifferentiated views. Lastly, the value in investigating gendered explanations for speeding behaviour also underlines the fact that risk-based analyses do not remove the requirement for causal analysis, since these often rely on such theories and data for the development of actuarial assessment tools in the first place.

As a postscript, it should be noted that by emphasising the gender disparities in this paper, we are not trying to suggest that women are squeaky clean behind the driving wheel. It is clear in other work that women do breach traffic laws and sometimes quite frequently, though by and large self-report and conviction data show a strong male bias (e.g. Stradling and Parker, 2001; Waller et al, 2001). So while remedial attention could best be directed towards men, we emphasise that women may often benefit too.

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**Table 1: Driving style in response to speed cameras by gender and age: Two studies**

**(a) Combined sample from different urban and rural police force areas, 1994-5**

	<b>Males</b>				<b>Females</b>			
	<b>≤25</b>	<b>26-45</b>	<b>≥46</b>	<b>Total</b>	<b>≤25</b>	<b>26-45</b>	<b>≥46</b>	<b>Total</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Conformers	24	38	54	<b>44</b>	29	41	48	<b>42</b>
Deterred	53	48	40	<b>45</b>	52	48	46	<b>48</b>
Manipulators	16	9	3	<b>7</b>	14	6	3	<b>6</b>
Defiers	7	5	3	<b>5</b>	6	5	2	<b>4</b>
<b>%</b>	100	100	100	<b>100</b>	100	100	100	<b>100</b>
<b>Total N*</b>	<b>197</b>	<b>804</b>	<b>924</b>	<b>1925</b>	<b>178</b>	<b>671</b>	<b>415</b>	<b>1264</b>

\*Excludes drivers reporting they had been previously caught for speeding by camera

A Chi-Square test between driver type and gender n.s.

**(b) Driver sample from the Metropolitan Police force area, late 2003**

	<b>Males</b>				<b>Females</b>				<b>Overall</b>
	<b>≤24</b>	<b>25-44</b>	<b>≥45</b>	<b>Total</b>	<b>≤24</b>	<b>25-44</b>	<b>≥45</b>	<b>Total</b>	<b>Total</b>
	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
Conformers	24	35	51	<b>43</b>	42	47	66	<b>56</b>	<b>49</b>
Deterred	10	16	13	<b>15</b>	11	16	18	<b>16</b>	<b>15</b>
Manipulators	59	46	32	<b>39</b>	42	34	15	<b>25</b>	<b>33</b>
Defiers	7	4	4	<b>4</b>	6	4	1	<b>3</b>	<b>3</b>
<b>%</b>	100	100	100	100	<b>100</b>	100	100	100	<b>100</b>
<b>Total weighted N*</b>	<b>41</b>	<b>251</b>	<b>343</b>	<b>635</b>	<b>36</b>	<b>219</b>	<b>240</b>	<b>495</b>	<b>1130</b>

\*Weighted for gender and age to approximate 2003 driver licence population in England + Wales

A Chi-Square test between driver type and gender:  $X^2 = 27.9$ , df 3,  $p < .001$ .

**Table 2: Selected views on speed cameras by gender and age: Two studies**

**(a) Combined sample from different urban and rural police forces, 1994-5**

	Males				Females			
	$\leq 25$	26-45	$\geq 46$	Total*	$\leq 25$	26-45	$\geq 46$	Total*
	%	%	%	%	%	%	%	%
<b>Those who agree that:</b>								
Cameras mean that the government is gaining too power over drivers	** 33	23	19	<b>22</b>	12	13	13	<b>13</b>
Cameras are an easy way of making money out of motorists	** 43	42	29	<b>36</b>	**20	23	20	<b>22</b>
Cameras are a new way to harass drivers.	** 27	19	16	<b>18</b>	**13	12	10	<b>11</b>
On roads with cameras the enjoyment is taken out of driving	** 34	17	12	<b>16</b>	15	12	10	<b>12</b>
<b>Total N</b>	<b>261</b>	<b>1098</b>	<b>1251</b>	<b>2610</b>	<b>206</b>	<b>830</b>	<b>502</b>	<b>1538</b>

\* All findings by gender (in bold font) significantly different at  $p < .001$  using Mann-Witney U tests on ordinal level data.

\*\* \* Denotes a significant difference by age group within gender at  $p < .05$  using Krushkal-Wallis tests on ordinal level data.

**(b) Driver sample from Metropolitan Police force area, late 2003**

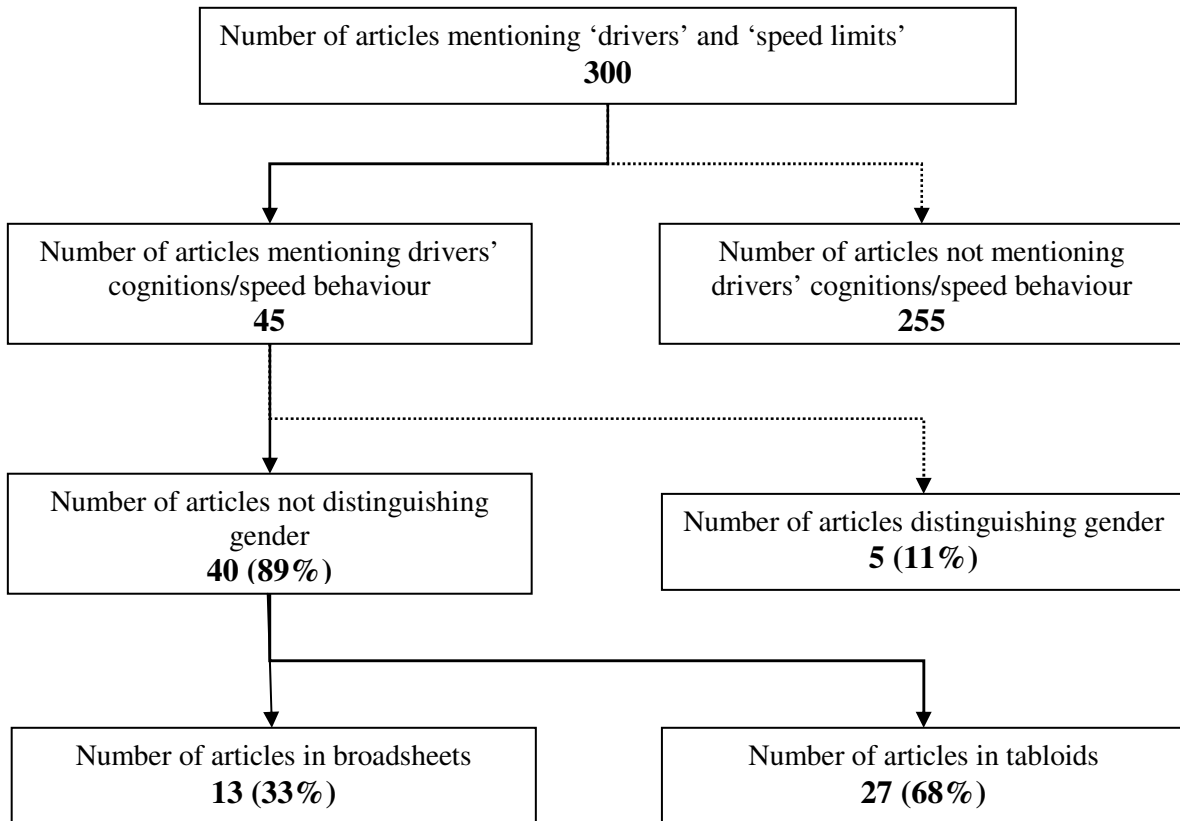
	Males				Females			
	$\leq 24$	25-44	$\geq 45$	Total*	$\leq 24$	25-44	$\geq 45$	Total*
	%	%	%	%	%	%	%	%
Never been flashed by camera	43	44	43	<b>44</b>	64	59	69	<b>64</b>
Flashed twice or more	33	34	32	<b>33</b>	11	19	10	<b>14</b>
Believe cameras make 'a little' or 'big' difference to accident reduction	76	74	75	<b>75</b>	83	79	88	<b>84</b>
Would prefer more cameras in area where they live	12	12	15	<b>13</b>	17	23	24	<b>24</b>

Prefer term 'safety cameras' to 'speed cameras'	17	23	23	<b>22</b>	**17	44	35	<b>38</b>
Perceive the cameras' purpose to save lives as 'important'	91	90	83	<b>86</b>	97	95	96	<b>96</b>
Perceive the cameras' purpose to make easy money from drivers as 'important'	51	47	55	<b>52</b>	36	34	37	<b>36</b>
Perceive the cameras' purpose to encourage speed limit compliance as 'important'	83	82	73	<b>78</b>	83	94	94	<b>93</b>
Perceive the cameras' purpose to reduce road accidents as 'important'	88	86	75	<b>80</b>	94	94	93	<b>93</b>
<b>Weighted N</b>	<b>41</b>	<b>251</b>	<b>343</b>	<b>635</b>	<b>36</b>	<b>219</b>	<b>240</b>	<b>495</b>

\* All findings by gender (in bold font) significantly different at  $p < .001$  using Mann-Witney U tests on ordinal level data.

\* \* Denotes a significant difference by age group within gender at  $p = .004$  (using Krushkal-Wallis test on ordinal level data).

**Figure 1: Analysis of national newspaper articles mentioning 'drivers/motorists' and 'speed limits' - Spring 2005**



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<sup>1</sup> For example, 30% of all speeding offences were detected by camera in 1995 compared with 79% in 2003. See Table D, Motoring Offences, Home Office 1996 and Table D, Motoring Offences and Breath Test Statistics, Home Office, 2005.

<sup>2</sup> 3,508 fatalities were recorded on British roads in 2004 (Table 8.1 TSGB (DfT 2004b) and 853 homicides were recorded (Dodd et al 2004: 78). As excess speed is typically attributed as a contributory factor in around a third of fatal collisions (e.g. Mosedale and Purdy, 2004), this implies that more are killed with speed involved than become homicide victims. See Taylor et al (2000) and DfT (2003: Why target speed: Q4).

<sup>3</sup> The discourse around speed camera deployment as a state surveillance technology is not pursued here, and readers are referred to Norris et al (1999) and McCahill (2002).

<sup>4</sup> Comparison of drivers' observed speeds with self-reported 'usual free-flow speed on [the survey road]' is discussed in Corbett and Simon (1999: 25-26). A low but statistically significant correlation coefficient (Kendall's tau b) emerged, supporting similar results obtained elsewhere (e.g. Aberg et al, 1997). A general and consistent bias was found whereby more understated than overstated their habitual speeds compared with the direct measure. This is considered further in Corbett (2001).

<sup>5</sup>  $X^2 = 3.3$ , df 3,  $p = .343$ .

<sup>6</sup> Chi-square tests for driver type x age group controlling for gender revealed for males  $X^2 = 116.7$ , df 6,  $p = .000$ , and for females  $X^2 = 39.1$ , df 6,  $p < .001$ .

<sup>7</sup> A Chi-square test for driver type x gender showed  $X^2 = 27.9$ , df 3,  $p < .001$ .

<sup>8</sup> Chi-square tests for driver type x age group controlling for gender revealed for males  $X^2 = 29.4$ , df 6,  $p = .000$ , and for females  $X^2 = 15.6$ , df 6,  $p = .016$ .

<sup>9</sup> More drivers are represented in Table 2(a) than in Table 1(a) though based on the same combined sample, as there were less missing data.

<sup>10</sup> This was so although the mean percentages shown in Table 2(a) (which collapsed response options) suggested this was not the case.

<sup>11</sup>  $P$  value = .004 using a Kruskal-Wallis  $H$  test by age group on file split by gender.

<sup>12</sup> Using Mann-Witney  $U$  tests on file split by age group.

<sup>13</sup> A 2003 survey of a representative sample of male and female drivers in England and Wales by the DfT (2004c) reinforces these attitudinal findings.

<sup>14</sup> Ben Webster, Times correspondent, personal communication May 2005, and The Times, 11.5.04.

<sup>15</sup> While guidance for safety camera deployment has always required a specific history of speed-related accidents at camera installation sites, these criteria have seemingly not always been met. See DfT (2003: Rules of the Safety Camera Funding Scheme, Q1 and 2).

<sup>16</sup> E.g. BBC News, 27 June 2005, 'Speed camera sites in new atlases'.

<http://news.bbc.co.uk/1/hi/uk/4625595.stm>