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Research to inform future speed policy

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Context

The First Three Year Review of the Government's road safety strategy and targets for 2010 indicates that progress towards meeting the targets is good.

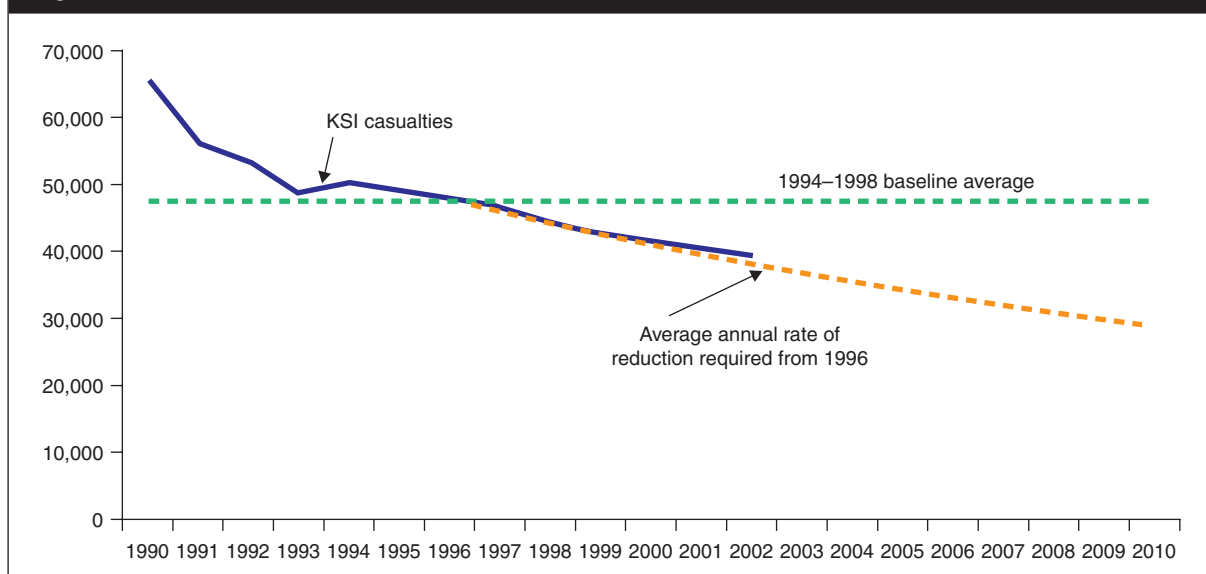
Figure 1 shows progress for killed or seriously injured casualties against the KSI notional trajectory and the baseline average for 1994–1998. As can be seen, the KSI casualties are on a downward trend where the average annual reduction in the number of KSIs over the last five years has been 3.3 per cent. Despite this, the number of casualties is still slightly above the line which represents the notional trajectory. It has been estimated that the reduction in KSI casualties is currently 2.4 per cent less than that needed to coincide with the trajectory. This means that on the one hand more time will be needed for existing measures to bear fruit but also that more work and new initiatives will be needed by all partners in road safety for the target to be comfortably achieved by 2010.

However, this aggregate assessment on progress needs to be considered against the different trends in casualties of different severities and road user groups because progress is not uniformly downward. Attention needs to be focussed on areas in which progress is slower than forecast by the statistical models used to set the targets.

One such area is fatal casualties. The statistics indicate that there has been a continuing decline (about 18 per cent below the baseline) in the number of people seriously injured. However, since 1998 the annual reduction in fatalities has stalled with the trend levelling off at about four percent below baseline. This means that the historic picture of fatality trends following those of serious injuries is no longer occurring because deaths are failing to fall (see paras. 30 et. seq. Three Year Review). Part of this diversion in trends may be an artefact of reporting and recording of serious casualties in STATS19 and research is in progress to address this issue.

There are indications that pedestrian and cyclist fatalities are broadly in line with their KSI trends. The excess deaths are coming from car occupants and

Figure 1 Killed or seriously injured casualties: 1990–2002 (Source DfT 2004)



motorcyclists with occupant fatalities at one per cent below baseline and motorcycle casualties 30 per cent above baseline. However, early indications from work by Broughton (2004) show that motorcycle fatalities are following exposure whilst car occupant fatalities are back to the baseline level and the fatality rate has fallen only gradually, and may have levelled off. Indeed, for older cars the fatality rate is rising. There are disproportionately many deaths amongst young male drivers (peaking at age 20–24 years) with 41 per cent of all dead drivers being in the 16–29 age group.

The predominant road type for driver fatalities is A class non built-up roads, where half of them occur but the fastest increases have occurred on built-up roads and motorways.

Development of research questions

Speed management is one of the ten central themes in the Government's road safety strategy and is at its most effective with input from education, training and publicity, engineering, and enforcement. Safety cameras have an important part to play in speed management strategies and have been found to be effective at the locations they operate.

The three year review, the three year evaluation report of operation of safety cameras (Gains et al., 2004), and that of trends in fatal accidents (Broughton, 2004) have brought together sufficient information on fatal and serious accidents to provide the Department with a number of questions that would benefit from being answered by a structured programme of research into speed management.

The Department commissioned a set of short thinkpieces from leading academics in the road safety field and these were presented and discussed at a workshop held in

London on 13 October 2004 comprising the group of academics, key stakeholders, and policy makers.

Through the thinkpieces and workshop, the Department was seeking clarity on what should be the research questions and objectives for such a research programme together with a brief and broad specification for work which might be part of this programme.

Some of the questions it was hoped would be addressed by the thinkpieces and the workshop were as follows:

- Is the strategy of focusing on speed enforcement in urban areas the right one, or, because of the poor performance of rural roads, should effort be focused here? If so what form should it take?
- How can inappropriate speed on rural roads be tackled?
- Are there cost effective engineering solutions?
- What strategies do drivers adopt around cameras?
- What do we know of casualties and speeds away from safety camera sites?
- Do drivers think it is safe to speed where there are no cameras?
- Are downstream speeds at camera sites faster than speeds before camera installation at that site?
- Is there evidence of migration of accidents from camera sites?
- What are the most effective strategies for changing driver attitudes and modifying behaviour and how can speed awareness courses contribute to this?
- How can drivers be made aware of the relationship between speed and accident risk?
- What are the relative roles of enforcement and education/publicity?

A research programme to inform speed management

The research identified as needed falls into five main categories:

- Understanding the mechanisms of change in accident occurrence and speed behaviour brought about by speed enforcement by cameras;
- The role of the road environment;

- The role of the media and others in raising awareness of the relationship between speed and accident risk, and how to influence this risk?
- The role of education and enforcement; and
- Research to support safety camera partnerships.

In each of these areas the role of research into individual differences in driver behaviour is recognised.

To move forward, a multi-disciplinary research programme has been developed which is affordable and delivers answers within an appropriate timescale to some of the fundamental questions that are needed to inform effective and acceptable speed management programmes.

Prioritising the research needs is difficult but in terms of the Department's immediate and medium term needs. Projects described under the following headings have been identified to provide information to fill currently identified gaps.

Under the mechanisms of change in accident occurrence and speed behaviour brought about by speed enforcement by cameras

Perhaps the most fundamental of the research needs is that which can clarify the questions of

- is there evidence of migration of accidents from camera sites,
- what do we know of casualties and speeds away from camera sites, and
- how can the contribution of regression to the mean (RTM) to observed reductions in casualties at camera sites be estimated.

Interaction between speed choice and the road environment

More work is needed in understanding how drivers interact with the road environment, including its surface, markings, and geometric characteristics, in terms of speed choice in both urban and rural areas.

Research is needed which investigates the circumstances in which the speeds chosen by different kinds of driver and rider on different kinds of road contribute to accident occurrence in order to inform the development of ways of encouraging them to moderate their speed whilst continuing to enjoy their use of their vehicles. This could

lead to identification of features of the road and roadside which could be modified affordably to encourage choice of appropriate speeds and reduce the severity of injury in those speed-related accidents which nevertheless still happen.

Relationship between penalties for speed offences and driver behaviour

Although there has been an increase in the number of speed offences, there is no discernable upward trend in disqualifications arising from totting up of points on drivers licences. The implications are potentially important as it could be a marker for a real change in drivers' speed behaviour.

It would be useful to investigate the **distribution of the penalty points** resulting from camera operation among those licence-holders who have acquired them, and the distributions of the time intervals between changes in numbers of points on the licences of those who acquire points on more than one occasion, and of the time elapsed since the last acquisition of points.

Improved driver information on speed and accident risk

There appears to be a mismatch between the actual level of risk from inappropriate or excessive speed and driver perception of the risk. The public needs to be better informed about the role of speed in accidents as a prerequisite for the acceptance of message that speed reduction is important everywhere and not just at camera sites. More effective strategies are needed which inform the public of the basis for speed management and enforcement policy in order to modify driver behaviour in relation to speed choice and attitudes to speed limits and their enforcement.

Research to support safety camera partnerships

Dissemination of research findings is an important part of the duties of all researchers and sponsors of research. However, accessibility of findings to Safety Camera Partnerships and to the public is a major issue. Partnerships need to have at their fingertips the latest research in order to keep abreast of the developments in this area to be able to fulfil their role of development and implementation of safety camera deployment strategies.

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Issues for partnerships include: criteria for site selection and should these be different for rural and urban sites as well as for mobile and fixed sites; should sites

be selected on total number of accidents, KSI accident or only on excess speed; what is the principle behind the use of the camera, is it a hazardous location treatment or is it there to influence speed choice over a wider area; which is the best operational strategy in terms of number of days of operation at a time, randomly allocated or on a fixed schedule, overt or covert; how does one decide which cameras are still working to reduce casualties even though the accident numbers may be zero or one per annum; how can partnerships be more integrated into speed management strategies?

Most of the information exists but it needs bringing together in an appropriate form.

Conclusions

The research programme is important to developing further the knowledge base on speed management. This in turn will help to develop better accident prevention countermeasures including those which improve communication to the public of important road safety messages.

References

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Gains A, B Heydecker, J Shrewsbury and S Robertson (2004) *The national safety camera programme: Three-year evaluation report*. London: PA Consulting Group and UCL