

SPEED CAMERAS

10 CRITICISMS AND WHY THEY ARE FLAWED

Parliamentary Advisory Council for Transport Safety and the Slower Speeds Initiative
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INTRODUCTION

Since their introduction, speed cameras have consistently proven to be a remarkably cost effective and successful method of reducing casualties on the roads. In recent months, however, there have been a number of critical reports in the media branding speed cameras a 'failure'. This research briefing – prepared by the Parliamentary Advisory Council for Transport Safety and the Slower Speeds Initiative – reviews 10 of these criticisms of cameras and examines the research evidence surrounding them. The results reveal that that many of the criticisms are either unfounded or seriously flawed and do not accurately represent the majority of research evidence.

1. CAMERAS COST LIVES

Claim: Autocar and others have claimed that 'speed cameras cost lives', by pointing to the declining rate of reducing fatalities on the roads in the past ten years, compared to the previous ten years. The Association of British Drivers (ABD) has claimed that 5,500 lives have been lost as a result of speed cameras in the past 10 years.

Reality: There is no evidence and no logical reason to suggest a correlation between the advent of speed cameras and the declining rate of road casualty reduction. Research has consistently shown that speed cameras have a major impact in reducing casualties. A major two-year DfT study of speed cameras across six areas found a 35% reduction in people killed and seriously injured at camera sites, compared to long-term trend¹. This finding repeats results of previous studies: the West London Speed Camera Demonstration Project experienced casualty reductions of 55% compared to control sites and 70% compared to the period before cameras were installed². Similar findings have emerged from other countries: an evaluation of 28 camera sites in New South Wales, Australia found a reduction in fatalities from 21 in the three years before camera installation to 1 in the two years after installation³.

Some critics of cameras have disputed the DfT study, arguing that the 35% reduction in casualties at camera sites represents a 'regression to the mean' or a return to long-term casualty trends. However a study by Imperial College of the impacts of speed cameras over a twelve year period in Cambridgeshire enabled researchers to eliminate the effects of regression to the mean. It concluded that cameras can reduce collisions involving injury by 'an astounding 45.74%' with 'lower but still significant decreases' within a 2 kilometre radius of a camera⁴. The results also demonstrated that speed cameras do not increase crashes by leading to abrupt braking in the vicinity of cameras.

1 DfT. 2003a. A cost recovery system for speed and red-light cameras: two year pilot evaluation. DfT: London.

2 London Accident Analysis Unit. 1997. *West London Speed Camera Demonstration Project: Analysis of accident and casualty data 36 months 'after' implementation and comparison with the 36 months 'before' data*. Highways Agency: London.

3 Roads and Traffic Authority, New South Wales. 2003. 'Independent evaluations shows that speed cameras save lives'.

4 Hess, S., (in press) 'An analysis of the effects of speed limit enforcement cameras with differentiation by road type and catchment area', paper to be presented at the 83rd Annual Meeting of the Transportation Research Board, Washington DC, 2004.

Despite the positive impact of speed cameras on road casualty figures, however, the steep decline in road fatalities achieved in the 1980s has not been matched by the more gradual drop in fatalities in recent years. This is a concern for everyone involved in road safety, and further action should be taken to reduce the number of road fatalities.

Sharp reductions in the number of road deaths were achieved between 1983 and 1993, and have been largely associated with the 1983 law making front seatbelt wearing mandatory, better car design and major reductions in drink driving fatalities. Factors likely to be responsible for the slowing rate of reduction between 1993 and 2003 include continued increases in traffic (up from 583 billion passenger kilometres 1993 to 634 billion passenger kilometres in 2002⁵); sharp increases in motorcycle casualties (up from 427 in 1993⁶ to 609 in 2002⁷); a levelling-off of drink drive fatality numbers (up from 520 in 1993 to 560 in 2002⁸); a decline in seatbelt-wearing and the increased use of mobile phones while driving. The factors contributing to the slowing rate of fatality reduction are currently under review as part of analysis of progress towards targets for 2010 casualty reduction set out in the road safety strategy.

Other indicators show a somewhat more positive picture of declining road casualties. The casualty rate – the number of people killed or seriously injured per million vehicle kilometres – has fallen from 74 in 1993 to 62 in 2002⁹. The number of serious injuries per year has fallen by over 9,000 (or 20%) since 1993.

2. SPEED IS NOT A MAJOR FACTOR IN ROAD CASUALTIES

Claim: The ABD and other opponents of speed cameras claim that ‘speed doesn’t kill’¹⁰ and reject the relationship between speed and the frequency of road crashes.

Reality: Road safety literature overwhelmingly supports the relationship between speed and both the frequency and severity of crashes. Crash investigations have established that excessive or inappropriate speed is a major contributory factor in at least one-third of all road crashes, making it the single most important contributory factor to casualties on our roads¹¹. It is understandable that road safety professionals should make speed management a priority in casualty reduction strategies.

Studies based on the crash history of 300 sections of road, 2 million measurements of speed and the self reported crash history of 10,000 drivers conclusively demonstrated the correlation between speed and crash frequency¹². In a given situation, as speed increases, the risk that a crash will occur also increases (see Figure 1). The findings reflect the importance of drivers having time to respond to the unexpected. At higher speeds there is less time to react appropriately. Crash frequency is related to average speed, the spread of speeds and the percentage of drivers exceeding the speed limit.

Simple physics dictate that injury severity increases with speed. Figure 2 shows that even slight decreases in speed are beneficial, especially for death and serious injury. Research by TRL has indicated that reducing the speeds of the fastest drivers would yield the greatest benefits in reducing death and injury on the roads¹³.

Some critics of speed cameras use TRL Report 323 to argue that speed is a contributor to only 7% of road

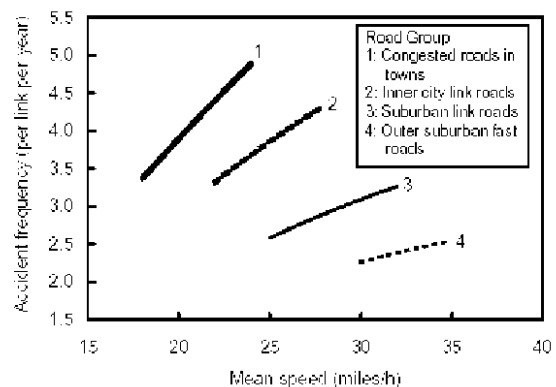


Figure 1: Accident frequency against mean speed for urban road groups (Source: see note 12, Fig 8)

5 DfT. 2003b. *Transport statistics for Great Britain 2002*. DfT: London.

6 DoT. 1994. *Road Accidents Great Britain 1993*. HMSO: London.

7 National Statistics/DfT. 2003. *Road Casualties Great Britain 2002: Annual Report*. TSO: London.

8 *Ibid.*

9 DfT. 2003c. *Transport statistics for Great Britain 2002*. DfT: London.

10 Association of British Drivers' website: <http://www.abd.org.uk>

11 DETR. 2000. *Tomorrow's Roads: Safer for Everyone*. DETR: London.

12 Taylor, M., Lynam, D., and Baruya, A. 2000. *The Effects of Drivers' Speed on the Frequency of Road Accidents*. TRL Report 421. TRL: Crowthorne, Berkshire

13 *Ibid.*

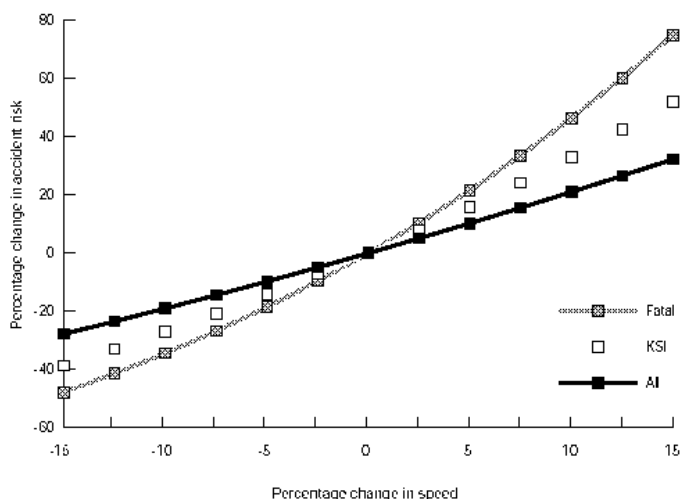


Figure 2: Changes in speed and in jury severity (Source: DETR 2000, *New Directions in Speed Management*, Fig A7)

speed being recorded as a factor, it will have been ‘part of the reason for other factors being recorded’ such as failure to judge another’s path or speed. It will compound factors such as following too close and aggressive driving. Finally, she notes that excessive speed was recorded as a factor in more than a third of the fatal crashes recorded and that the contribution from other speed-related factors ‘will mean that the true effect of speed is likely to be even greater than this’¹⁵.

3. RAISING SPEED LIMITS IN THE USA MADE NO DIFFERENCE TO CASUALTIES

Claim: In an article titled ‘Motorists cry foul at rise in speed cameras’, the *Daily Telegraph* argued that speed ‘does not of itself cause accidents’ and that ‘when the 50mph national speed limit was lifted in America, there was no noticeable increase in accidents caused by speed’¹⁶.

Reality: This would be very interesting if it were true. In 1987 the national speed limit in the United States rose from a 55 mph limit imposed during the fuel crisis in the early 70s to 65 mph. In 1995 individual states were allowed to set their own limits. A recent report found that the post-1995 rise in speed limits in many American states has triggered a 35% increase in death rates¹⁷. The report compared 22 states that raised interstate highway speed limits to 70 or 75 mph when the federal speed limit was abolished in 1995 to 12 states where the limit stayed at 65 mph, and found that there were 1,880 more deaths on interstates between 1996 and 1999 in states with higher speed limits. The reverse effect is also evident: in 1974, when the national speed limit was lowered to 55 mph, fatality rates dropped by 50% on the interstate highways and by 70% on other four-lane rural highways¹⁸. The US National Highway Traffic Safety Administration is now advocating the adoption of speed camera laws similar to those in the UK to help counteract the rising death toll¹⁹.

4. CAMERAS ARE NOT SITED ON THE MOST DANGEROUS ROADS

Claim: Autocar Magazine in association with the RAC Foundation has claimed that speed cameras are not sited on the most dangerous roads and ‘the most lethal 10 roads in the country (as designated by Euro RAP) are covered by just four speed cameras’.

14 Broughton, J., Markey, K. and Rowe, D. 1998. *A new system for recording contributory factors in road accidents*. TRL Report 323. TRL: Crowthorne: Berkshire.

15 Taylor, M. 2001. ‘Managing speeds for safety: Why? How?’, *Traffic Engineering and Control*. July August 2001 pp 226-229

16 Johnston, P. 2003. ‘Motorists cry foul at rise in speed cameras’. *The Daily Telegraph*, November 28 2003. p.4.

17 Insurance Institute for Highway Safety. 2003. ‘Deaths Go Up When Speed Limits are Raised’. *Status Report* 38 (10): 2-3.

18 Plowden, S., and Hillman, M. 1996. *Speed Control and Transport Policy*. London: Policy Studies Institute.

19 Arthur, C. 2003. ‘America aims to copy laws that give Britain safest roads’ *The Independent*, 28 November 2003

crashes¹⁴. However, TRL 323 was not a study of crash causation or of the role of speed in crashes, but rather an evaluation of a crash reporting methodology. The 7.3% figure in the report refers not to a proportion of crashes but rather a proportion of factors recorded by police and since on average two factors were recorded for each crash for which the methodology was used, it shows that excessive speed was recorded as a factor in at least 15% of crashes.

Marie Taylor, head of TRL’s programme of research on speed and accidents, has commented on the erroneous interpretation of TRL323. She points out that in addition to

Reality: The European Road Assessment Programme (Euro RAP) is a system to compare the relative statistical risk of death and serious injury on European roads. An assessment of risk on Britain's primary road network was published in September 2003²⁰. The data used to assess the roads, however, cover the period from 1997 to 2001 when only one of the police force areas covering the list of 10 most dangerous roads was involved in a pilot safety camera partnership. Until the netting off scheme was available, speed cameras were only infrequently used because of the costs involved in installing and servicing them.

The Government has set stringent criteria for the siting of cameras by safety camera partnerships. These stipulate that for a new fixed camera to be installed there must have been at least four deaths or serious injuries on a given 1km stretch of road within the past three years. At least 20% of drivers must be exceeding the speed limit. Fixed cameras also require collisions to be clustered. Finally, camera policing of speed limits can only be introduced after all else has failed: 'and there are no other obvious, practical measures to improve road safety along this stretch of road'²¹. If rates of speeding on the roads identified by Euro RAP are not this high and there is evidence that the collisions are not speed-related, safety camera partnerships would be unable to install new cameras.

5. CAMERAS DON'T CATCH THE MOST DANGEROUS DRIVERS

Claim: The RAC Foundation has claimed that speed cameras tend to catch the safest drivers, rather than the most dangerous²². According to its research, the drivers most likely to be caught by speed cameras are middle-aged male company car drivers who cover large mileage, rather than young drivers, despite the fact that young drivers are involved in more crashes when licence holding is taken into account.

Reality: The profile identified by the RAC Foundation - company car drivers and drivers with high mileage - are not only more likely to have a speeding conviction; they are also more likely to be involved in crashes than other drivers. Reports have consistently found that company car drivers and high-mileage drivers who drive for work are 50% more likely to be involved in injury accidents than other drivers, even after differences in exposure due to miles driven have been taken into account²³. Pressure to speed has been identified as a contributing factor to this figure, alongside fatigue and in-car distractions.

Research also shows that 'those drivers who had been stopped by the police for speeding or had been flashed by a speed camera had double the incidence of recent crash involvement'²⁴.

6. CAMERAS ARE NOT POPULAR

Claim: Opponents of speed cameras claim that they are 'deeply unpopular'. The Daily Telegraph concluded from a recent opinion poll that 'seven in 10 motorists think speed cameras are mainly revenue-raising devices that do little to reduce car accidents'²⁵.

Reality: Opinion polls generally indicate widespread public support for speed cameras, although some polls (like that cited in The Daily Telegraph) do not²⁶. A recent 'poll of polls' by Transport 2000 – based on six different surveys – shows that support for the use of speed cameras averages 74 per cent. Similarly, during trials of speed cameras, a DfT survey found that over 80 per cent of people living in pilot areas agreed that 'cameras are meant to encourage drivers to keep to the speed limit, not to punish them'²⁷.

20 The AA Motoring Trust. 2003. *EuroRAP 2003 British Results: Britain's Most Improved and High Risk Roads*. http://195.167.162.57/pdf/EuroRAP_UK_Results.pdf

21 DfT. 2003d. 'Rules for new Safety Camera sites'. Available on the DfT website: http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/downloadable/dft_rdsafety_025937.doc

22 RAC Foundation. 2003. Press Release: 'Profile of a Speeder'. 3 November 2003. <http://www.racfoundation.org/releases/031103rac.htm>

23 Lynn, P. and Lockwood, C.R. 1998. *The Accident Liability of Company Car Drivers*. TRL Report 317. TRL: Crowthorne, Berkshire. Broughton, J., Baughan, C., Pearce, L., Smith, L., and Buckle, G. 2003. *Work-related Road Accidents*. TRL Report 582. TRL: Crowthorne, Berkshire.

24 Stradling, S., Campbell, M., Allan, I., Gorell, R., Hill, J., Winter, M. and Hope, S. 2003. *The Speeding Driver: Who, how and why?* Scottish Executive Social Research Development Department Research Programme Research Findings 170/2003. <http://www.scotland.gov.uk/library5/finance/df170-00.asp>

25 Johnston, P. 2003. *op cit*.

26 Transport 2000. 2003. 'Polls show public want speed cameras'. Press Release: 29 November 2003. <http://www.transport2000.org.uk/>

27 DfT. 2003a. *op cit*.

7. CAMERAS ARE A WASTE OF MONEY

Claim: Some critics of speed cameras argue that ‘cameras are a waste of money’.

Reality: Speed cameras are remarkably cost-effective. In the two-year pilot study of cameras in six counties, there were 280 fewer people killed or seriously injured at camera sites than would otherwise be expected. This means that the total cost saving of casualties at camera sites over two years was around £58m²⁸. This figure is several times higher than both the amount spent on camera enforcement (£21 million) and the amount raised in fixed penalty income (£27 million)²⁹. When the reduction in casualties across the pilot area (4% reduction in KSI) is taken into account, it is estimated that the total benefit to society over two years is approximately £112 million. A previous Home Office Police Research Group cost benefit analysis of speed cameras found that cameras generate a return of five times the investment after one year and 25 times the amount after five years³⁰.

8. CAMERAS RAISE REVENUE FOR POLICE AND LOCAL AUTHORITIES

Claim: A Daily Telegraph article on speed cameras claimed, ‘The cameras generate around £80 million a year in income ... Much of this money is retained by the police, something that critics believe merely encourages the proliferation of the cameras’.

Reality: Neither the police nor local authorities retain income from speed cameras. As a DfT briefing on safety cameras explains:

Safety camera partnerships are not there to raise money and neither the police nor the local authority receive any money from the operation of safety cameras. Strict Treasury rules mean that any money from fines that is returned to the safety camera partnerships can only be spent on the operational costs of their camera network, including new cameras where the need can be identified. All remaining money goes to the Treasury; it does not stay with the Partnership³¹.

Of the £27 million raised in fines during DfT’s two-year camera pilot project, £21 million went to the safety camera partnerships to cover the costs of camera enforcement; the remaining £6 million went to the treasury³².

9. CAMERAS HAVE CONTRIBUTED TO A FALL IN TRAFFIC POLICING

Claim: An article in Autocar claims that speed cameras are a waste of police time and that policemen have been directed ‘by authorities to abandon their duties in favour of flash-equipped grey boxes’³³.

Reality: There has been a gradual decline in the number of designated traffic police officers from 15-20% of constable strength in 1966 to approximately 7% of force strength in 1998³⁴, and this trend has continued recently³⁵. This is a worry for everyone concerned about road safety. There is little evidence, however, to suggest that speed cameras are responsible for this decline. Instead of speed cameras occupying police time, a Home Office Police Research Group paper noted that ‘many forces had found that the use of camera technology released traffic officers for other duties’³⁶. Fixed speed cameras reduce the speed limit enforcement burden on

²⁸ This figure is calculated on the basis of lost output, medical and ambulance costs and human costs, based on DfT values for the prevention of road fatalities and serious injuries. DfT. 2003a. *op cit*.

²⁹ *Ibid*. The monetary figures refer to amounts in the original 8 county pilot area, while the casualty figures refer to the 6 county areas. This indicates that the true cost-benefit ratio may be significantly more favourable.

³⁰ Hooke, A., Knox, J. and Portas, D. 1996. Cost Benefit Analysis of Traffic Light and Speed Cameras. Police Research Group – Police Research Series Paper 20. Home Office: London.

³¹ DfT. 2003e. ‘Who manages safety cameras on the roads?’ Briefing document on DfT website: http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_025918.hcsp

³² DfT. 2003a. *op cit*.

³³ Barker, P., and Cropley, S. 2003. ‘Speed cameras: costing us millions and costing us lives’. *Autocar* 11 November 2003, pp19-23.

³⁴ Her Majesty’s Inspectorate of Constabulary. 1998. *Road Policing and Traffic: HMIC Thematic Inspection Report 1998*. Home Office: London.

³⁵ Designated police numbers have fallen by a further 12% between 1997/1998 and 2001/2. PA Consulting Group. 2003. *Highways Agency / Association of Chief Police Officers: Roles and Responsibilities Report*. PA Consulting: London.

³⁶ Hooke, A., Knox, J. and Portas, D. 1996. *op cit*.

traffic officers while speed limit enforcement reduces the time spent in dealing with collisions and their aftermath. Traffic policing and camera enforcement are mutually reinforcing, not mutually exclusive.

In a thematic inspection of 'Road Policing and Traffic', Her Majesty's Inspectorate of Constabulary concluded that the decline in the numbers of designated police officers is due to increasing demands on the police (particularly by more high-profile policing activity) and competing pressures on police time. The failure to sufficiently prioritise traffic policing is fuelled in part by policing indicators that largely exclude traffic enforcement and by a failure to include road traffic enforcement as a 'key priority' for policing. Of 31 indicators listed in the National Policing Plan 2004-2007, only one (a very general indicator of road casualties per vehicle kilometre) relates directly to traffic enforcement³⁷. Road traffic enforcement is excluded from the list of 'Key Priorities' in the National Policing Plan, but appears instead under 'Other Areas of Police Work'. PACTS and SSI believe that identifying road traffic enforcement and casualty reduction as a key policing priority would have a major effect in reversing the decline of traffic policing.

10. THE NUMBER OF TRAFFIC OFFENCES DETECTED HAS FALLEN

Claim: Autocar Magazine in association with the RAC Foundation has claimed that speed cameras remove police from the roads, 'so thousands of serious driving offences now go undetected'.

Reality: Recorded incidence of many serious driving offences have risen in recent years, in contrast to these claims. Contrary to the figure of 'a fall of 50,000 in the number of dangerous driving offences detected', the Home Office statistical report 'Crime in England and Wales 2002/3' indicates an increase of 65% (from 4,589 to 7,551) in the number of dangerous driving offences recorded between 1998/9 and 2002/3 (earlier data are not available)³⁸. Contrary to claims that fraudsters are not being detected, the same report shows recorded vehicle/driver forgery incidents increased from 6,028 to 8,553 – an increase of 42% – over the same period.

While the number of recorded dangerous driving incidents has risen, the number of successful prosecutions for dangerous driving has fallen (3898 findings of guilt in 2001 compared to 6849 in 1993³⁹). This may be partially explained by an earlier reluctance to prosecute by the Crown Prosecution Service. This is an area of particular concern for road safety organisations and is developed further in PACTS' Research Report Road Traffic Law and Enforcement: A driving force for casualty reduction⁴⁰.

CONCLUSION

As this review of research evidence indicates, excessive and inappropriate speed is a major contributing factor to road crashes and casualties. A comprehensive approach to speed management remains central to the continuing drive to reduce death and injury on our roads. Speed cameras have proven to be an extremely successful element of an integrated speed management strategy, and studies have consistently shown that deaths and serious injuries have been reduced by over a third at speed camera sites. In this context, it is important to dispel some of the myths about cameras. Rather than 'punishing motorists', speed cameras may instead save the lives of motorists and other road users.

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37 Home Office. 2003a. *The National Policing Plan 2004-2007*. Home Office: London.

38 Home Office. 2003b. *Crime in England and Wales 2002/3*. Available on the Home Office website: <http://www.homeoffice.gov.uk/rds/pdfs2/hosb703.pdf>

39 Home Office / National Statistics. 2003. *Offences relating to motor vehicles: England and Wales 2001 – Supplementary Tables*. Home Office: London. See also PACTS. 1999. *Road Traffic Law and Enforcement: A Driving Force for Casualty Reduction*. PACTS: London.

40 PACTS. 1999. *Road Traffic Law and Enforcement: A Driving Force for Casualty Reduction*. PACTS: London.