An independent report on the financial justifications for Safety Cameras and Vehicle Activated Signs

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1. EXECUTIVE SUMMARY

This report is an examination of the financial costs of controlling speed by the use of Safety Cameras and Vehicle Activated Signs (VAS's). It is not a report on the safety statistics or political benefits or disadvantages, although comments are to be made where relevant.

The financial conclusion is very clear – over a period of ten years one Safety Camera costs an average of £369,000 and one VAS costs £7,800. These costs include the equipment, the installation, maintenance and attributable overheads, i.e. the inclusion of the total costs of the Regional Safety Partnerships.

The biggest cost of the cameras is the overhead element. There are thirty eight (in 2005/06) Regional Safety Partnerships whose job it is to decide where cameras should be erected and to install and maintain them.

These partnerships are funded by government grants which it is suggested, are not based on the fixed penalty income from each region. However, there is a very clear correlation between the two and recent reports would suggest that almost 100% of the grants are used for safety cameras.

It is also clear from the management accounts information produced by the partnerships for the DfT (and presumably designed by the DfT) that ratios are provided about the penalties issued and collected and no comparative information is supplied on the safety effectiveness. Only summary information is included regarding the costs of the partnerships. This clearly suggests that the emphasis is on maximising the collection of fines.

One of the reasons this report was commissioned was to comment on the DfT's comments regarding the two alternatives. The Department suggested that there was a 12% difference in cost between the two systems in favour of cameras. In fact the ratio is 47:1 in favour of VAS's.

There were also various costs suggested for cameras and VAS's and later amended which were clearly wrong. For example in one communication, the DfT stated that the cost of a camera was £7,500 whereas the cost of a sign was £14,000. The department later amended both of these costs, but only after significant decisions had been made using such data.

This would suggest that the department was either working from incorrect data or was perhaps excluding essential costs such as operating the penalty system and management overheads. The ex-Secretary of State for Transport, Dr Ladyman suggested that accurate data was not available. However, all the data used in this report was compiled from information freely available on government websites or as a result of requests to government departments under the Freedom of Information Act.

The only two conclusions from this are a desire on the part of the DfT to hide information or simple incompetence. The problem is that this subject is about saving lives, and as such when important decisions are to be made the on back of this information, then such decisions could cost lives. They would certainly cost substantial amounts of money.

However, the main reason for erecting cameras and VAS's should be safety. In this area also, the DfT has made varying unsubstantiated claims which have been used for decision making.

2. INTRODUCTION

There has been a lot of debate about the justification of the various methods of saving lives by reducing accidents on the roads of Britain. Naturally the government has to consider the financial costs of the effectiveness of the various methods available, as well as practicality and enforcement.

Some of the various causes of accidents on the roads are (not exclusive and in no particular order):

- Alcohol and drugs
- Driver inexperience
- Excessive speed
- Fatigue
- Joy riding
- Road congestion
- Road rage
- Using mobile phones
- Vehicle deficiencies

Within these categories are also such reasons as a mother being distracted by children in the car, driving too close to the car in front and even poor eyesight. Of course there are usually multiple causes.

There have been many studies on the effect of excessive speed as a cause of accidents although speed alone is rarely a reason in itself, rather a contributory factor.

Speed is something that is relatively easy to control. It is visible and some of the methods are very effective. In urban areas, traffic calming techniques are proving very good at keeping speeds down. However, on faster roads, they become too restrictive to drivers.

It is here where speed enforcement becomes a useful deterrent. The various forms are:

- Mobile speed cameras, usually controlled by the police at the scene. These have the advantage of being focused in specific places where and when accidents are more likely to occur. On the negative side, it takes up a lot of police time.

- Average speed cameras are often used on long term roadworks where workers are often in close proximity to large volumes of fast-moving vehicles.

  These are highly effective as drivers can see them well in advance and so they have no option but to keep their speed within legal limits for the duration of the roadworks. They can also be moved from site to site as appropriate. However, such camera systems are extremely expensive – up to £250,000 per unit before installation, maintenance and overheads.

- Fixed cameras, these being permanently located in areas that are supposed to be accident black-spots. These are visible to oncoming drivers and warning signs are erected prior to the camera location. These cameras usually take a picture of the offender from the rear which avoids the flash distracting the driver and also giving a little extra time for the road users to ensure they are maintaining a legal speed. However, there are also a small number of front facing cameras in use. These have the same effect but can be less obvious before the driver is upon the camera.

- Vehicle Activated Signs (VAS's) are used in many black-spot areas. The more sophisticated versions can read a number plate and light up a sign showing the registration number and the speed the car is travelling. However most just either show the travelling speed or indicate that the speed limit is being exceeded. The use of bright LED's have a startling effect on drivers and they cannot fail to notice them. These are cheap and easy to install and maintain.

Cameras of any kind have a financial advantage of raising funds via fines. However, it is extremely questionable as to whether to include the financial benefit to offset the cost of the equipment for the following reasons:

- If a camera is effective, then it should have stopped drivers from speeding in the first place and so being a real deterrent to excessive speed. It can be argued that the more money a camera generates, the less effective it is.

- Speeding fines are a politically sensitive area in that many people see speed cameras as a way of making money rather than saving lives – another form of tax on drivers. In fact, the only genuine reason for the placement of a speed camera can be to improve road safety.

- What happens to the income from fines? There are many arguments from many quarters as to who should benefit; the police, central government, local government, road safety agencies and so on. The debate goes on, although at present the income goes to central government.

- What is the reason for a fine? Is it a deterrent or is it a way of raising money? The London congestion charge is a deterrent to drive in the centre London, but is it also a way of generating funds to support other forms of transport or an environmental charge? There are similar dilemmas re fines from cameras.

Then there is the argument about lives saved, reduced injuries and accidents. One difficulty in producing statistics for the benefit of such equipment is that one is trying to calculate the effect of something that has not happened. Hence unless the changes for before and after are very significant, then there could be a multitude of reasons for the changes.

3. TERMS OF REFERENCE

This report has been commissioned by:

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There has been recent criticism of the Government for massaging statistics relating to the justification for the placing of speed cameras versus other forms of speed control.

These criticisms are both aimed at the financial costs involved and also the number of “lives saved”.

Mr Idris Francis has taken it upon himself to question certain information that has been put forward by the Government, and in particular from the ex-Minister of State for Transport, Dr Stephen Ladyman MP and Mrs Gwyneth Dunwoody MP who is the Chair of the Select Committee on Transport.

On questioning the government’s statements it became clear that Mr Francis needed an independent assessment of the HMG’s quoted figures. Hence the Terms of Reference are:

1. To independently and without political bias, assess the costs of acquiring, installing and maintaining speed cameras and Vehicle Activated Signs (VAS's), obtaining third party costs wherever possible.

2. To compare those results against those quoted by the government and in particular Dr Ladyman MP and Mrs Dunwoody MP.

3. To comment on the scale of the differences, if any.

4. To make any assessments considered necessary to form a logical conclusion including safety and political issues if relevant.

4. ABOUT THE AUTHOR

Nigel Bottomley qualified as Chartered Management Accountant whilst working for Shell Chemicals in 1980. In 1986 he became a Fellow of the Chartered Institute of Management Accountants.

He worked for Tootal Group Plc until 1983. In 1984 as the Finance Director of a subsidiary of Staveley Industries Plc, he led a management buy-out team to acquire the business. The company closed in 1990 when contracts were halted as a result of Iraq's invasion of Kuwait.

He then built up a group of small engineering companies, selling them off in 1993 to become a self employed consultant, soon afterwards acquiring an accountancy practice in Cheshire.

As well as running the practice he has undertaken various contracts for the European Union setting up small micro-finance initiatives in the UK, Ghana, Poland and Russia. Nigel has also worked as a consultant for the New Economics Foundation, the Charities Aid Foundation and the Aston Re-investment Trust.

During his career he has had to asses the financial viability of various major capital projects (not dissimilar to the speed camera / VAS investment) for major companies examining not only the financial implications but in some cases the social and political impacts of investment.

He has no specific political affiliations and is not a member of any political party or formal pressure group.

5. RESULTS

5.1 Sources of information

Much of the data necessary to produce a reasonable accurate costing of buying, installing and maintaining safety cameras is available on the internet on various government websites. Further additional and supporting information was also used from responses to questions using the Freedom of Information Act, local Government and equipment suppliers.

Although Mr Francis has obtained a large amount of data himself as a result of his interest in this subject, this has not been used in the compiling of this report except where it originated from a reliable independent source.

However, there is a caveat in that some of the information is judged to be inaccurate both from direct government sources and from answers under the Freedom of Information Act. Most of these obvious errors have no significant effect on the overall result although the details could be important in themselves.

To put this into context, here are two examples:

1. A question in the House to Dr Ladyman MP, the then Secretary of State for Transport asking for the number of cameras in use (15th January 2007) – showed a list adding up to 2,522 when in fact the list added up to 2,533. Not a huge difference in itself, but it could suggest other errors behind the published figures.

2. Looking at the details of the cost build up for the various partnerships, the average "Project Office" cost is £600,000 where there is an office cost. However, eleven Partnerships show no cost at all. What it is impossible to tell is whether those costs have been absorbed elsewhere or whether they have been missed out completely.

The difficulties in finding exact prices for cameras and VAS's are that there is a multitude of equipment available performing varying levels of sophistication. In addition an installation in a rural area is significantly more costly than in an urban area. There are also different possibilities of power supply. This report assumes an average cost.

5.2 Safety Cameras

Cameras are complex pieces of equipment requiring careful siting and installing, as well as a significant amount of maintenance including occasional recalibration by the manufacturer. As such a cost calculation is not a simple matter of obtaining equipment prices and installation costs.

Indeed, the very need for the Safety Partnerships, which effectively manage safety cameras proves the point. The latest year for which information is publicly available is 2005/06 (data for 2006/07 is expected in the public domain imminently) and this shows a nationwide "business" with an income of almost £115m and expenditure of almost £100m and something in the region of 2,170 staff (calculated by using payroll costs and the average wage – government statistics 2007).

One of the areas which is not clear from the financial information is how much of the costs relate to the installation of new equipment and how much relates to the maintenance of old cameras. Notes have been included to try and help the reader follow what calculations have been used and why.

One unusual element in the figures (from an accounting perspective) is that the accounting principles used in Government write off all capital expenditure in the year expended. Commercial organisations would depreciate capital expenditure over the expected life of the asset. The author has continued to use the government method rather than creating a new element to an already complex situation. One side benefit of this is that assuming that there will always be a fairly consistent level of new camera installations (whether at new sites or replacing old ones) then the annual costs should be consistent.

The other area that is unique to safety cameras is that they generate income from speeding fines. It has been a political hot potato as to where these funds should be allocated and currently the system is that central government receives all the income and then grants funding to the partnerships to support their costs. This concept avoids (in theory) encouragement to the partnerships to "generate" income from fines.

However, it is strangely coincidental how the individual partnerships' incomes relate very closely to the Fixed Penalty Notice income. Indeed it is interesting that the little management information that is included in the regional partnerships' financial reports suggests a focus on income generation more than expenditure or safety. However, this is a subjective view of an accountant who is used to seeing management information that is there for a commercial purpose and to be used for management action.

One of the problems of viewing penalty income in this way (assuming that is the way it is viewed) is that it would suggest the partnerships would want drivers to exceed the speed limit, which of course they certainly would not. In which case the logic has to be that every time a driver is caught speeding, he/she is a failure of the system and as such that the fixed camera at that location is not doing its job properly.

This raises the question as to whether the penalty income should be included as part of these calculations, but in order to be consistent with established information, it is included here.

A summary of the main results are below (based on data from 2005/06):

	£'s
Income from Fixed Penalty Notices	114,625,360
Cost of camera equipment installed	12,869,158
Other capital costs	6,117,651
Revenue costs	80,556,090
Surplus in year	15,082,461
Average cost of one camera (out of the box) see note 1	30,000
Total cost of one camera see note 2	67,950
Total annual cost of maintaining one camera see note 3	33,456
Penalty income per camera	45,253

The total cost of one camera for a ten year life is £369,058

> *Note 1 – This is the average cost of an average camera. There are many types used in the UK, so this seems to be a fair estimate of the average camera cost, as delivered and ready for installation – the cost information publicly available is variable.*
>
> *Note 2 – The total cost of one camera – this includes the cost of the camera as in note 1, the installation costs and the relevant overheads.*
>
> *Note 3 – The annual cost of maintenance – this includes the cost of physically maintaining the camera, the re-calibration costs and the overheads to support this activity.*

5.3 Vehicle Activated Signs

Being a fairly simple piece of equipment, the VAS is much easier to cost. Although there are many types, many manufacturers and differing levels of sophistication, the price variances are much smaller than for cameras. This makes calculating prices and operating costs much easier.

The basic units cost between £1,500 and £5,000. They can be powered by mains electricity or "green" power such as wind or solar. For the purposes of this report a cost schedule has been used as provided by Buckingham County Council which has price of £7,800 plus VAT and includes all future maintenance (see appendix).

To manage the installations is a significantly simpler activity than for cameras. No maintenance crews would be necessary so a local partnership representing the police and local council is all that would be necessary. This should be able to be absorbed within normal existing employment roles and so avoiding any extra specific overheads in the manner of the regional partnerships.

5.4 Summary & Conclusion

It is quite clear from the figures that the physical cost of purchasing, installing and maintaining a Safety Camera is significantly more than the same for a VAS. Assuming that both pieces of equipment should have a useful working life of ten years the differences are £369k for a Safety Camera and £7.8k for a VAS.

The only other consideration as to which system to use is the safety performance. The statistics that have been produced by the DfT and other national and local government departments show such a variable number of results for each of the two systems as to be extremely questionable. However, it is clear that the two systems are both effective to a degree but not so different as to be significant.

As such on the basis of a cost/benefit analysis, the VAS's should be utilised more frequently and the cameras should be taken out of use except perhaps in very rare and specific situations.

The other issue to be considered is the one of penalty income. As stated earlier in this report, if the cameras are successful then there should be a significant reduction in speeding leading to a massive reduction in penalty income. As such it is the conclusion of this report that penalties should not be considered as part of the financial cost/benefit for two reasons; firstly if successful, those incomes cannot be guaranteed and secondly if they are then the only reason for installing cameras is to generate income, which the government claims it is not.

The Final Summary

1. The costs of cameras and VAS's as quoted by Dr Ladyman MP and Mrs Dunwoody MP were so inaccurate as to be either deliberately misleading or incompetent.

2. The safety justifications are too unreliable and vague to support the much more expensive option. Both methods slow down cars to a broadly similar extent.

3. It is clear from the financial data and supported by government correspondence, that the real reason for erecting so many cameras (as opposed to VAS's) is the financial gain to be made from speeding penalties – not safety.

4. It is clear that for any given budget, it is more advantageous to use VAS's than safety cameras to control excessive speed, whether by achieving the same results for less money or better results for the same money.