Effectiveness of speed cameras in preventing road traffic collisions and related casualties:

systematic review

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CRD summary

The well-conducted review assessed whether speed cameras reduce road traffic collisions and related casualties. The authors concluded that the existing research consistently shows that speed cameras are an effective intervention in reducing road traffic collisions and related casualties, but the level of evidence is relatively poor. The conclusion appears to be reliable.

Authors’ objectives

To assess the effectiveness of speed cameras in reducing road traffic collisions and related casualties.

Searching

MEDLINE (from 1966), EMBASE (from 1988), the Cochrane Controlled Trials Register, the Cochrane Injuries Group's Specialised Register, the Social Sciences Citation Index (from 1981), TRANSPORT database (from 1988) and Zetoc (a British Library current awareness service; until February 2004) were searched; the search terms were reported. In addition, the bibliographies of identified studies and several internet sites were searched, experts and organisations were contacted, including every police force in England and Wales, the Faculty of Public Health Transport and Health e-group, and several road safety organisations. No language or date restrictions were applied.

Study selection

Study designs of evaluations included in the review
Controlled trials and observational studies were eligible for inclusion in the review.

Specific interventions included in the review
Studies on fixed or mobile speed cameras were eligible for inclusion in the review. Studies where the speed camera was not the main intervention were excluded. The included studies used speed cameras at speed camera sites and along unmarked road sections, situated in marked and unmarked police vehicles, and one study used an automated traffic infringement and notice penalty system alongside.

Participants included in the review
No inclusion criteria were applied to study participants.

Outcomes assessed in the review
Studies that investigated collision, injuries and deaths were eligible for inclusion.

How were decisions on the relevance of primary studies made?
Two reviewers screened the search results.

Assessment of study quality

The authors assessed the following: the representativeness of the study areas to the general population; control areas being representative of intervention areas; objective and valid outcomes; results provided with estimates of uncertainty; main conclusions based on primary study hypotheses; and whether important confounders were measured and controlled for. Studies scoring 0 to 5 were considered poor quality, 6 to 8 average, and 9 to 12 good quality. Two reviewers independently rated the studies. Any disagreements were resolved by consensus.
Data extraction
Two reviewers independently extracted the data into a standardised data extraction form. Any disagreements were resolved by consensus. Where available, the number of cases in the intervention and control area for the studied time period was extracted, and risk ratios with confidence intervals for before-after and experimental-control comparisons were calculated.

Methods of synthesis
How were the studies combined?
The studies were briefly described in the text and documented in a detailed table. The range of percentage reductions in collisions, injuries and deaths was presented.

How were differences between studies investigated?
The study details were described in detail and differences in study designs were discussed in the text.

Results of the review
Fourteen studies met the inclusion criteria. Five studies employed control areas, one study used the same area at times when cameras were not used as a control, and 8 studies employed a before-and-after design.

Seven studies were classified as average quality, two as average-to-poor, and five as poor.

All 14 studies reported a reduction in road traffic collisions and casualties with the installation of cameras. The reductions ranged from 5 to 69% for collisions, 12 to 65% for injuries and 17 to 71% for deaths.

Authors’ conclusions
The existing research consistently shows that speed cameras are an effective intervention in reducing road traffic collisions and related casualties, but the level of evidence is relatively poor.

CRD commentary
The review had clear inclusion criteria, and extensive searches for published and unpublished studies were carried out without language or date restrictions. The authors undertook steps to reduce bias and errors in the review process and assessed the validity of the studies in detail. The data extraction was detailed and enabled a good overview over the studies. The conclusion is likely to be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that randomised controlled trials should be undertaken in countries where the large scale introduction of speed cameras is planned, and where it is not politicised. Alternatively, data can be collected as cameras are introduced in a phased manner spread over several years. Studies should also investigate the effect of the type of camera (static or mobile), location criteria, the use of educational initiatives alongside enforcement, and the long-term effects of speed cameras on speeding.

Bibliographic details

PubMedID
15653699
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.