LETTERS TO THE EDITOR

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IMPACT OF SPEED CAMERAS ON SAFETY

The otherwise excellent evaluation by Mountain, Hirst and Maher (TEC September 2004 pp280-287) includes no evident discussion of their choice of predictive models for expected annual numbers of personal injury accidents (PIA) on road sections. These models are used in the authors' otherwise appropriate empirical Bayes (EB) estimation of regression to mean (RTM) effects. The authors report using models previously derived from data for the whole classified road networks of 6 counties for numbers of PIA on road sections between major intersections (or points where the speed limit or carriageway type changes) according to road class, speed limit and carriageway type. In these models section length, number of minor intersections and traffic flow appear as variables. The authors apply a correction for the time elapsed between the derivation of the models and their current application.

An important question is whether these models are appropriate for application to the road sections on which the speed cameras being evaluated were installed.

The need for correction for RTM arises from the fact that the 62 sections studied were chosen for installation of cameras partly on the basis of the number of PIA occurring there in a recent period overlapping with the before period used in the evaluation. To the extent that the numbers of PIA in the before period on the chosen sections tended therefore to be above the average for those sections, the numbers of PIA would have tended to be lower in the after period used for evaluation even without any effect of the cameras, and the best estimate of this element of reduction in accidents should be attributed to RTM and not to the effect of the cameras.

To make this best estimate by the EB method requires an estimate of the distribution of numbers of accidents in the before period on sections of the kind which, observed number of accidents apart, were candidates for the installation of cameras.

In the case of installation of cameras by the safety camera partnerships, for example, candidate sections were ones which met the criteria that

- they lay within a certain range of lengths

- speeding was indicated as a contributory factor in some or all recorded collisions

- 85th percentile speed in free-flowing traffic was at or above a certain level

- at least 20 per cent of drivers exceeded the speed limit

- conditions on the section were suitable for camera operation

- collisions clustered within the section

- no other remedial engineering measures were appropriate on the section

- cameras were able to be installed and signed for high visibility

The authors do not indicate what distinctive characteristics, numbers of accidents apart, contributed to the choice for installation of cameras of the 62 road sections they studied. But it seems unlikely that, numbers of accidents apart, the candidate sections from which the 62 had been chosen were typical in all respects of road sections of their class, speed limit and carriageway type in the areas concerned. The mean numbers of accidents for candidate sections are therefore unlikely to have been similar to the corrected means for the populations of sections on which the models used by the authors were based.

Pending discussion by the authors and probably substantial further research, it remains a matter of speculation whether the means for candidate sections were higher or lower than the corrected means in the models used by the authors. But the writer can think of a number of reasons why the means for candidate sections may have been higher, and has so far thought of no reason why they may have been lower.

It is therefore the writer's view that the authors' estimate of the effect of RTM is much more likely to be an overestimate than an underestimate, and may well be a substantial overestimate. It is therefore also his view that their estimate of the impact of speed cameras on safety on the 62 sections is much more likely to be an underestimate than an overestimate, and may well be an appreciable underestimate.

Both in relation to the authors' study and to the recent 3-year evaluation report on the national safety camera programme, it is to be hoped that ways can be found to investigate the distributions of numbers of accidents in the before period at candidate sections for camera installation in order to enable appropriate allowance to be made for RTM in estimating the safety impacts of speed cameras. Pending such investigation, it is mistaken to suggest that such allowance can be made.