



FOCUS ON RESEARCH

THE PUBLIC HEALTH CHALLENGE OF ROAD SAFETY: A STUDY OF THE EPIDEMIOLOGICAL PATTERNS, HEALTHCARE CONSEQUENCES AND PREVENTION OF TRAFFIC RELATED INJURIES IN STRATHCLYDE

Researchers

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Aim

We investigated the epidemiological patterns, healthcare consequences and costs of road casualties in the Strathclyde police region, and evaluated the effectiveness of preventive interventions.

Project Outline/Methodology

We obtained data from several sources, including Strathclyde police and NHS Scotland (Information Services Division). The data were analysed to describe the epidemiology of road casualties and to evaluate the impact of three traffic calming interventions: fixed speed cameras, average speed cameras and vehicle activated signs. We also attempted to assess the costs of road casualties and the savings achieved by preventive measures.

Key Results

Epidemiology. Between 2004-9, the incidence of road casualties in Strathclyde declined. Males had a 30% higher risk than females. A higher proportion occurred in more deprived postcodes of residence than the total population at risk.

Impact of interventions. Fixed speed cameras appeared to reduce the incidence of both speeds and casualties – the former being slower particularly just before the camera. Some drivers appeared to manipulate the cameras by driving above the speed limit just beyond the camera active zone. Average speed cameras tended to reduce casualties within their active zone. There may have been a migration effect as there was a rise in casualties outwith the camera zone. No statistically significant reduction in casualties was attributable to vehicle activated signs (VAS). Observational data suggested three driver behavioural types: those who do not trigger the sign; those who trigger the sign and react by slowing down; and those who trigger the sign and do not slow down.

Economic costs and benefits. The human and social costs of road casualties amounted to £400 million per year in Strathclyde, of which around one twentieth are direct healthcare costs. Fixed speed cameras probably pay for themselves within a year even in the absence of fines.

Conclusions

Speed cameras appear to be effective in reducing casualty frequency while vehicle activated signs do not. The most effective range of fixed speed cameras appears to be in the zone just before the camera. Some drivers regain high speeds soon after passing a camera. Average speed cameras are also effective in reducing speeds and casualties though there may be a displacement effect. All three interventions may act as a reminder concerning excessive speed to drivers with a disposition to observe the speed limit.

What does this study add to the field?

By adopting a public health perspective on road safety, we have demonstrated the preventive impact of speed cameras on road casualty rates, and the ineffectiveness of vehicle activated signs.

Implications for Practice or Policy

Fixed and average speed cameras appear to reduce the incidence and severity of road casualties, though there may be some displacement of casualties. Our analyses suggest that cameras should be installed directly *after* the hazardous location, not before. These findings should assist public health, law enforcement and transport policy makers in planning traffic calming measures. Speed cameras should be encouraged (and perhaps cross-funded by the NHS), as they appear to significantly reduce casualty incidence, severity and costs.

Where to next?

There is a need for further investigation of the public health impact of road safety measures. In particular, the linked police-NHS database requires refinement to facilitate its use for epidemiological evaluation, for economic analyses, for the assessment of the impact of speed cameras on casualties over longer time periods, and for the evaluation of other speed reduction interventions such as speed bumps and 20mph zones.

Further details from:

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