

The effectiveness of red light speed cameras on motor vehicle crashes and driving infringements in Western Australia

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Abstract

While previous evidence suggests that speed cameras and red light cameras are effective road safety countermeasures, the effectiveness of red light speed cameras has rarely been examined, and has never been evaluated in Western Australia (WA). The study adopted a quasi-experimental “before” and “after” design incorporating the use of comparison sites to examine changes in crash frequency and traffic infringements over a 5-year “before” and at least six months “after” period at 14 sites in the Perth metropolitan area. Eleven sites had newly installed red light speed cameras. Site information and driving infringements were obtained from the Western Australian Police and crash data was provided by Main Roads WA. A generalised estimating equation (GEE) Poisson regression method, taking account of the correlated nature of the repeated ‘before’ and ‘after’ data, was used to model the changes in crash frequency and traffic infringements. The average follow-up time post installation of red light speed cameras (or upgrade) was 1.2 years. Preliminary results showed a significant 13% ($p=0.03$) and 14% ($p<0.01$) reduction in all-reported crashes and rear-end crashes. While a significant 74% reduction in serious injury crashes was also found (RR=0.24, 95% CI: 0.08-0.71), the change in right turn through/right angle crashes was insignificant. Despite the increased detection rate in running a red light infringements, there was a significant decreasing trend in speeding infringements ($p<0.001$). The preliminary findings suggest that the installation of red light speed camera was effective in reducing road crashes, particularly serious injury crashes. The reduction in speeding infringements also indicates that drivers reduce their speeds at red light speed camera sites. Future evaluation with longer post treatment crash data is recommended to verify these preliminary findings.

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