Traffic law enforcement and safety

Sir—Donald Redelmeier and colleagues (June 28, p 2177), emphasize the well known fact that extensive traffic-law enforcement reduces the frequency of fatal motor-vehicle crashes in countries with high rates of motor-vehicle use.1,2 However, crashes are also caused by other factors, including social, economic, and environmental factors. All such factors need to be controlled for in a study into traffic crashes; the results of a study that concentrates on a single factor being potentially less valid and possibly misleading.

In view of this fact, Redelmeier and colleagues seem to have overlooked important variables in their analysis that could affect their outcome—eg, vehicle miles travelled, vehicle density (number of registered motor vehicles divided by length of roads), speed-limit regulations imposed, and economic factors (rate of unemployment, etc). An understanding of the effect of such factors on traffic safety should help in the design and implementation of strategies to reduce traffic crashes worldwide, increase our knowledge of the relations between these factors and traffic law enforcement on traffic safety, and result in suggestions for policy change.

Despite this shortcoming, the study provides an important insight into a neglected area of study. The general deterrence model suggests that the effectiveness of a legal threat depends on the perceived certainty, severity, and speed of the punishment in the event of a violation of the law. Thus, the results of this study are particularly pertinent to countries in which the police force is underused with respect to the enforcement of traffic laws.

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Authors’ reply

Sir—E Desapriya and colleagues note that crash rates are affected by social and other external determinants of health. We agree and concord that such factors also affect many standard biological diseases. They emphasise that such factors should be controlled for in the assessment of the effectiveness of a single variable. Again we agree, and underscore our rationale of using the case crossover approach because doing so allows each driver to serve as their own control and eliminates all confounding from fixed individual factors.

Desapriya and colleagues seem to overlook the fact that we also examined multiple controls from different years and months, and observed robust findings in every case, contrary to the claim that fluctuations in distances travelled, vehicle density, speed regulations, or employment rates might explain our findings. Furthermore, we examined 11 years separately and noted consistent results (despite the multiple economic and social changes over the interim). External factors are, therefore, unlikely to be major confounders in our analysis. Finally, the remarkably consistent across seasons of the year, days of the week, and hours of the day further indicate that the observed reduction in fatal crashes after the average traffic conviction is not an indication of transient external factors.

Desapriya and co-workers are correct that ecological analyses are prone to the biases listed; hence, we did not use ecological analysis in our work. They are also correct in their assertion that testing our methods in other settings would be important because of the scientific strategy of replication and that implementation of any safety programme depends on sensitivity to local culture, preferences, and politics.

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Sir—We question the global importance of Donald Redelmeier and colleagues’ article and the accompanying Commentary1, describing the importance of law enforcement in reducing fatal motor-vehicle crashes.

Redelmeier and co-workers conclude that traffic-law enforcement effectively reduces the frequency of fatal motor vehicle crashes in countries with high rates of motor vehicle use. We do not know whether they meant to limit their results to industrialised countries, but we doubt their relevance to many developing countries, where low rates of motor vehicle use are nonetheless associated with high rates of mortality.

Analyses like these, calling for law enforcement while ignoring local social context, are worrisome. Our research,2,3 for example, on pedestrian injuries in Mexico has shown that law enforcement raises the risk of pedestrian mortality. The reason for this seemingly paradoxical finding is that drivers in Mexico fear the law because trials are extremely complicated and corruption within the enforcement network pervasive. As a result, 90% of cases in which cars hit pedestrians are classified as hit and run. The problem is not the law itself but how it is administered.

Given that road safety will be the focus of World Health Day in 2004,4 research on this theme must be inclusive. Closer attention should, hence, be paid to local variation in a globalised world.

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