

Letter to Editor

Beyond Penalties: Positioning Karachi's E-challan System as a Public Health Intervention

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Introduction

Road traffic injuries (RTIs) remain a significant public health challenge in Pakistan, contributing substantially to mortality, long-term disability, and economic burden. Globally, approximately 1.19 million people die annually from road traffic crashes, with a disproportionate burden in low- and middle-income countries (LMICs) [1]. In Karachi, the consequences extend beyond physical injury: a study of patients attending five trauma centres documented substantial out-of-pocket healthcare costs and work-related income losses following road traffic injuries [2]. Karachi's dense urban environment and mixed traffic create important challenges for road safety, although their specific contribution to injury rates requires local evaluation. Karachi introduced its Traffic Regulation and Citation System (TRACS), commonly referred to as E-Challan, in October 2025. According to the Government of Sindh, the system replaced manual ticketing with automated electronic citations using AI-enabled CCTV cameras to detect selected traffic violations, including speeding, red-light violations, and helmet non-compliance [3]. However, the system's impact on public health outcomes remains unassessed. The number of citations issued is an indicator of enforcement activity, not necessarily evidence of improved public health outcomes.

Main Body

Evidence from comparable urban interventions suggests this impact is measurable and testable. In Barcelona, fixed speed cameras were associated with a 27% reduction in road collisions (relative risk 0.73, 95% confidence interval 0.63–0.85), with an even stronger protective effect on weekends [4].

More Information

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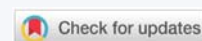
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An empirical evaluation of Chicago's automated speed-camera programme also reported reductions in fatal and injury crashes at the analysed sites [5]. However, these findings should not be assumed to translate directly to Karachi, where road-user patterns, infrastructure, traffic exposure, and enforcement conditions differ. Karachi already possesses historical local evidence that can inform evaluation: the 2006–2009 Road Traffic Injury Surveillance Project documented injury patterns across the city [6]. These historical data provide useful context but should not be treated as a directly comparable contemporary control because traffic exposure, infrastructure, reporting practices, and healthcare access may have changed substantially since the surveillance period. A stronger evaluation could use a controlled before-and-after design comparing camera-monitored corridors with comparable non-monitored roads over consistent periods before and after implementation. Where sufficient observations are available, an interrupted time-series analysis could assess changes in outcomes following implementation. Historical surveillance findings could contextualise longer-term trends, while contemporary police, hospital, and emergency-care data should form the basis of the primary analysis. The evaluation should assess crash incidence, injury severity, and road-traffic mortality, alongside relevant measures of traffic exposure.



Where feasible, analyses should account for changes in traffic volume, road design, speed limits, enforcement intensity, and concurrent road-safety policies. Disaggregating outcomes by road-user type and location could help identify high-risk groups and corridors requiring additional protection. The World Health Organization's guidance on strengthening road-traffic-death data systems recommends a multisectoral approach to improving data collection and addressing gaps in reporting [7]. Enforcement alone is insufficient. Integrating E-Challan within a Safe System Approach, which combines technology, policy, and infrastructure to prevent fatal errors, is essential [8]. Effective implementation also requires data transparency, continuous monitoring, and standardized enforcement supported by independent oversight. A 2024 scoping review of road-traffic data systems in the Eastern Mediterranean Region identified over-reliance on police data, weaknesses in data quality, and limited linkage between data sources. The authors emphasised the need for robust road-safety data systems to inform policies and interventions [9]. For Karachi, transparent reporting of enforcement coverage, violation categories, appeals, and road-safety outcomes could strengthen accountability. Subject to appropriate privacy safeguards and governance, access to de-identified, standardised enforcement and injury data for independent public-health researchers could facilitate evaluation, identify unintended consequences, and inform evidence-based policy adjustments.

Conclusion

Positioning E-Challan as a public health intervention rather than solely a punitive mechanism would allow Karachi to assess whether digital enforcement contributes to fewer serious injuries and deaths. A transparent, methodologically sound evaluation, informed by historical local surveillance but anchored in contemporary comparison data, could generate

practical lessons for other urban centres in LMICs considering technology-enabled traffic enforcement. The priority should be to establish not merely whether violations are detected, but whether the intervention makes roads safer.

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