

CITATION

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Evidence Synthesis on Key Metrics for Enhanced Enforcement to Address Behavioral Risk Factors for Road Safety

Background

While enhanced enforcement measures have been implemented and found to be effective in preventing risky road behaviors in both high and low and middle-income countries, clarification about the meaning of 'enhanced enforcement' and key metrics to assess it are lacking. This review aimed to identify key metrics for enhanced enforcement of interventions targeting behavioral risk factors, including drink driving, non-compliance with seat-belt use, and speeding, that can be used to quantitatively measure the interventions' impact on road fatalities and RTIs and further leverage the data to compare their effectiveness across geographies.

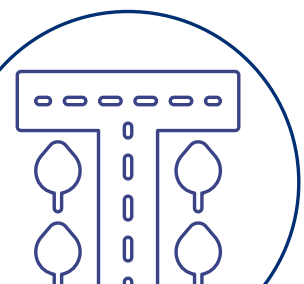
What Our Review Found

Key Findings

- Increasing the dose of enforcement and ensuring sustained and highly intensive operations¹ generally improves road safety by reducing the occurrence of risky behaviors and improves safety.
- Speeding countermeasures drawing on negative reinforcement (such as high levels of detection) combined with public awareness campaigns are effective deterrent methods.²
- Recent and increased exposure to drink driving enforcement increases the perceived risk of detection for drink driving.²



Road traffic injuries (RTIs) and fatalities, represented as a pandemic in several studies, account for 50 million disabilities and 1.19 million annual fatalities worldwide.³



Definition of '**enhanced enforcement**' and key metrics to assess it are lacking.

- The following key metrics* for enhanced enforcement for each behavioral risk factor were identified:
 - Frequency/periodicity of enforcement, e.g., the number of breath tests performed per month during high alcohol hours (8pm to 4am).¹
 - Visibility of the enforced activity/intervention, e.g., visibility of drink driving enforcement², combination of overt and covert enforcement for speeding.⁴ (Note: the visibility of speed enforcement is unlikely to be an effective speed deterrent outside of the enforcement site.)⁵
 - Compliance with established standards, e.g., enforcing from as close to the speed limits as possible.⁵
 - Public perception, e.g., randomness and predictability of a drink driving checkpoint location, perceived awareness of speed enforcement activity, and perceived risk of being apprehended.^{5,6}
 - Penalties issued, e.g., the number of demerit/penalty points/fines/citations issued for violation of a seat-belt law.⁷
 - Location of the enforced activity/intervention, e.g., random and unpredictable speed enforcement sites, as well as speed enforcement at specific high-risk intersections, school zones and/or crash hotspots.⁴
 - Trained police personnel/human resource (HR) capacity, e.g., availability of trained police officers to report fatal and serious injury crashes.¹
- There are a lack of studies investigating enhanced enforcement for non-compliance of helmet use, compared with other behavioral risk factors (i.e., drink driving, non-compliance with seat-belt use, and speeding) related to road traffic injuries (RTIs). However, given the effectiveness of enhanced enforcement on other behavioral risk factors, it is likely that the same effect will be seen for helmet use.

Recommendations

Conduct further research related to the key metrics for enhanced enforcement, such as:

- Implement enhanced enforcement efforts coordinated with targeted public awareness programs.¹⁰
- Conduct further research related to the key metrics for enhanced enforcement, such as:
 - the frequency of use of road safety enforcement techniques, such as penalties, checkpoints, and speed cameras that can ensure sustainable impact of the planned interventions.^{9,10}
 - the impact of the amount of time spent by police officers on target roads and dosage (i.e., the volume of breath tests and speed infringements issued), particularly random breath testing during hours when alcohol consumption is likely higher.^{5,7,10}



The key metrics for enhanced enforcement identified include:

- Frequency/periodicity of enforcement
- Visibility of enforcement
- Compliance with standards
- Public perception about interventions
- Penalties issued
- Location of enforcement
- Enforcement personnel capacity

- the impact of the visible and covert speed enforcement measures on perceived risk of being apprehended for speeding and actual speeding behavior.^{9,10}
- the context of application of the key metrics, such as the blood alcohol content (BAC) limit set across different countries, duration of the intervention, time of day (day versus night), and location of the specified intervention (an urban versus a rural setting), can inform road safety policy decisions tailored to the settings in which they are implemented.^{7,8}

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