Deterring Drunk Driving in India

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Sector(s): Crime, Violence, and Conflict, Political Economy and Governance

Location: Rajasthan, India

Sample: 183 police stations across 11 districts

Initiative(s): Governance Initiative (GI)

Target group: Civil servants Urban population Adults Police

Outcome of interest: Alcohol, tobacco, and drug use Arrests and convictions Road safety

Intervention type: Policing Non-monetary incentives

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Partner organization(s): Rajasthan Police, UK International Development

Every year, an estimated 1.35 million people die in traffic accidents worldwide, and evidence suggests that alcohol often plays a major role. To investigate which strategies are most effective at preventing drunk driving and reducing traffic accidents, researchers partnered with the Rajasthan Police in India to evaluate an anti-drunk driving program using sobriety testing checkpoints. Overall, the anti-drunk driving program was effective in reducing traffic deaths and accidents, with these reductions driven entirely by police stations that implemented surprise checkpoints.

Policy issue

Every year, motorized road transport results in more than 1.35 million deaths worldwide, and 90 percent of these occur in low- and middle-income countries. Evidence suggests that alcohol plays a major role in the frequency of traffic accidents. However, the role of alcohol is difficult to measure, especially in low-and middle-income countries where police often lack the manpower and technology to measure drivers' alcohol levels. According to a World Health Organization (WHO) review of studies conducted in low-income countries in 2004, alcohol was detected in around half of fatally injured drivers.[1] The broader literature on crime prevention includes mixed evidence over whether broad, low-intensity policing or focused, intense patrols known as hot-spot policing is more effective in reducing crime. There is also little evidence to date on which policing strategies are most effective at preventing drunk driving and reducing traffic accidents. Focusing police checkpoints at fixed locations where drunk drivers are most likely to travel may be effective as lawbreakers continue returning to these popular roads. However, drunk drivers could learn about policing patterns and switch their routes, making random patrols across a broader set of roads preferable. Which policing strategy to deter drunk driving is most effective at reducing traffic accidents and fatalities?

Context of the evaluation

Police in India can enforce drunk driving laws by a "selective breath checkpoint" strategy. Officers from local police stations set up fixed roadblock checkpoints that force passing vehicles to slow down, during which officers can order drivers to pull over for a brief conversation and potential breathalyzer test. If the driver is drunk (a blood alcohol concentration level of more than 30 mg of alcohol per 100 mL of blood), police confiscate the vehicle and order the driver to appear in court for sentencing (varying from monetary fines to imprisonment). Prior to this study, sobriety checkpoints were extremely rare as breathalyzers had not yet been widely distributed to police stations, making it difficult to prosecute suspected drunk drivers.

Comparable to other Indian states in 2007, just three years before the evaluation began in 2010, Rajasthan was ranked fourth out of 28 states in total crimes serious enough to warrant investigation without court order.[2], The total police force consisted of nearly 71,000 personnel across 711 police stations.[3]

Man driving car in India. Photo: Vipin Awatramani | J-PAL

Details of the intervention

To investigate which strategies are most effective at preventing drunk driving and reducing traffic accidents, researchers partnered with the state police in Rajasthan to evaluate an anti-drunk driving program using selective breath checkpoints. Among 183 police stations in 11 districts, researchers randomly selected 123 to serve as the program group and implemented the selective breath checkpoint strategy. The remaining police stations formed the comparison group, and did not receive any specific

instructions or additional resources to carry out an enforcement strategy.

Within the program group, researchers randomly assigned police stations to implement versions of the selective breath checkpoint strategy that differed along three dimensions:

1. **The frequency of the roadblocks:** To examine the relationship between policing intensity and drunk driving, program stations were randomly assigned to carry out a roadblock either one, two, or three nights per week. Police stations were also randomly assigned when to hold their last roadblock to create variation in the duration of checkpoints. Roadblocks were always held between 7 p.m. and 10 p.m.
2. **The location of the roadblocks:** To test the effectiveness of surprise checkpoints at random locations compared to fixed checkpoints, police stations were randomly assigned to hold their roadblocks at either:
    - The "best" location for catching drunk drivers, selected by the local police chief, on the same day every week, or
    - One of three "best" locations for catching drunk drivers, again chosen by the local police chief, with each night's location chosen at random.
3. Th**e personnel carrying out the roadblock:** Previous research suggests that small incentives or minor monitoring increases may improve civil servant and police performance. To examine the role of incentives and monitoring in future work, program stations were randomly assigned to implement two different personnel structures.[4], [5] Roadblocks were staffed by either:
    - Officers from the local police station. For these personnel, manning the checkpoints was an additional responsibility on top of their existing duties. They were monitored by the existing police hierarchy, and did not receive additional performance incentives.
    - A dedicated team selected from the "Police Lines," a district-level reserve force often considered to be a punishment posting since it removes officers from public contact. As an incentive, these officers were informed that good attendance, measured by GPS devices installed in their vehicles, would improve their chances for transfer to a different team.

Over two years, researchers used administrative data such as court records, breathalyzer data, and supplementary surveys from a set of randomly selected checkpoint locations to gather information on road accidents, deaths, and police performance.

Results and policy lessons

Overall, the anti-drunk driving program was effective in reducing traffic deaths and accidents, with these reductions driven entirely by police stations that implemented surprise checkpoints. Further, more frequent checkpoints increased the effectiveness of surprise checkpoints but not fixed ones. Police Line teams, incentivized by the promise of transfers, were more likely to perform their checkpoint duties.

Enforcement strategies: Across both fixed and surprise enforcement strategies, nighttime traffic accidents decreased by 17 percent and deaths decreased by 25 percent during and 90 days after the program, meaning approximately 70 deaths were averted. Police stations implementing surprise checkpoints saw a reduction of 29 percent and 30 percent in nighttime accidents and deaths, respectively, in areas they covered, relative to comparison stations. However, fixed checkpoints had no impact on nighttime accidents or deaths. Daylight accidents increased by nearly 10 percent at surprise checkpoints relative to the comparison group, likely because drivers who refused to stop drunk driving shifted their alcohol consumption earlier in the day in areas of surprise checkpoints but could continue drunk driving at night using alternate routes around the fixed checkpoints. Overall, checking at surprise locations still led to a greater reduction in accidents and deaths.

Frequency of checkpoints: Surprise checkpoints proved more effective at reducing traffic accidents and deaths as checkpoint frequency increased. However, increased checkpoint frequency reduced the number of drunk drivers caught per night at stations that implemented fixed checkpoints. As the number of weeks or the number of past checks increased, the difference between the number of drunk drivers caught per night at surprise and fixed checkpoints grew further. This suggests that drivers learned fairly quickly over time about the new policing strategies at fixed checkpoints. More frequent checks may have sped up this learning and caused would-be perpetrators to alter their driving routes, but there is no alternative route known in the case of surprise checks.

Incentives: Police Line teams were 28.4 percentage points (44 percent) more likely to carry out an assigned checkpoint than station-based teams. Checkpoints run by Police Line teams were also monitored for 23.7 minutes (15 percent) longer and stopped more vehicles.

After the program: Drivers slowly returned to drunk driving as time passed since the last checkpoint, with the program's effect fully dissipating over approximately 91 days. Drunk drivers avoided locations of prior checkpoints (and locations suspected to be targeted for checkpoints) for some time after the program ended, but reverted back to their normal routines sooner in locations that previously had more frequent checking. This suggests drivers expected police to have a limited ability to reinstate checking soon after an intense crackdown had ended.

These results suggest that people quickly learn about police interventions and adjust their behavior in response, hence police strategies targeting a single high-crime area are rapidly undone by the diversion of criminal activity to other areas. This made a regularly implemented checkpoint at the single highest-potential location less effective at reducing road accidents and deaths than implementing checkpoints across multiple initially less-promising locations which were harder to predict and avoid. However, drivers also learned when the checkpoint enforcement period was over, and slowly reverted back to their original behaviors.

Banerjee, Abhijit, Esther Duflo, Daniel Keniston, and Nina Singh. "The Efficient Deployment of Police Resources: Theory and New Evidence from a Randomized Drunk Driving Crackdown in India." Working Paper, July 2014.

1. WHO. 2004. *World Report on Road Traffic Injury Prevention*. Geneva: World Health Organization.

2. Banerjee, Abhijit, Raghabendra Chattopadhyay, Esther Duflo, Daniel Keniston, and Nina Singh. "Improving Police Performance in Rajasthan, India: Experimental Evidence on Incentives, Managerial Autonomy and Training." NBER Working Paper #17912, November 2014. https://www.nber.org/papers/w17912

3. Ibid.

4. Banerjee, Abhijit, Esther Duflo, and Rachel Glennerster. 2008. "Putting a Band-Aid on a Corpse: Incentives for Nurses in the Indian Public Health Care System." *Journal of the European Economic Association* 6, no. 2-3(2008): 487-500. doi:10.1162/JEEA.2008.6.2-3.487

5. Banerjee, Abhijit, Raghabendra Chattopadhyay, Esther Duflo, Daniel Keniston, and Nina Singh. "Improving Police Performance in Rajasthan, India: Experimental Evidence on Incentives, Managerial Autonomy and Training." NBER Working Paper #17912, November 2014. https://www.nber.org/papers/w17912