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Road Traffic Enforcement: Using Technology Through Public-Private Partnerships (PPP)

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Abstract: ***The past two decades have seen a wide - ranging wave of privatizations in formerly government owned or - controlled activities. A government task or service which is funded and operated through a partnership between a public sector authority and private sector company based on guidelines and performance standards set by a public party is typically referred to as a Public Private Partnership (PPP). In most countries traffic enforcement cameras and other equipment are purchased, owned, and operated by government organisations. Back - offices, where violation data are processed, citations issued, and traffic fines collected, have traditionally been government - run activities. In a PPP model, a private party invests and installs enforcement equipment (e. g. speed or red - light cameras) and conducts back office processing, such as sending out violation notices and managing and confirming fine collection. The investment in equipment and related processing and support activities are funded by fine revenues collected from the motoring public over the contract term. Gaining public support, and ultimately acceptance, for the PPP model is crucial, which is why transparency, publicity and continuous communication are key factors for successful and sustainable implementation. Full service PPPs are often organised on a municipal level in close consultation with the local administration and police. Due to the high initial investment and gradual repayment, such PPPs are typically based on longer term contracts. Moreover, the regulatory environment may require some changes to allow involvement of a private party. One process that is difficult to outsource is the formal confirmation of a violation by a review of the photo or video evidence. Generally, this can only be validly performed by an authorised government official, such as a police officer. Depending on laws and regulations applicable to specific jurisdictions, there could be more issues that may limit the extent of the private party's involvement in these PPPs. When properly implemented, PPP's in traffic enforcement can considerably contribute to the reduction of casualties, injuries and crashes, as well as improve traffic flow, and increase quality of life with more safety, lower emissions and less noise pollution. Speed reduction also significantly benefits the safety of vulnerable road users such as pedestrians, and two - wheelers Personal injury and death on roadways also have a significant impact on the economy through medical costs, lost resources and wages and disability pay outs. These costs are significant and are estimated by the WHO to amount to an average of around 3% of a country's GNP. This figure rises to 5% in some low - and middle - income countries***

Keywords: Public Private Partnership, traffic enforcement, road safety, transparency, investment

Law and Liberty are two sides of One Coin

The Motor Vehicles Act, 1988 is a benevolent social legislation in so far as the protection of interests of victims of motor accidents is concerned.

Article 21 of the Indian Constitution states that "no person shall be deprived of his life or personal liberty except according to the procedure established by law." This article is one of the fundamental rights guaranteed by the Constitution.

The 4 Es of Road Safety: Education, Engineering, Enforcement & Empathy.

[136A. Electronic monitoring and enforcement of road safety.

1) The State Government shall ensure electronic monitoring and enforcement of road safety in the manner provided under sub - section (2) on national highways, state highways, roads or in any urban city within a State which has a population up to such limits as may be prescribed by the Central Government.
2) The Central Government shall make rules for the electronic monitoring and enforcement of road safety including speed cameras, closed - circuit television cameras, speed guns, body wearable cameras and such other technology.

Speed cameras were first used for enforcement in Great Britain in 1992, having been recommended by a review of road traffic law in 1988. Their rollout was accelerated between 2001 and 2005 in a national safety camera programme under the 'safer speeds' theme of the road safety strategy 2000–2010. Speed camera partnerships – joint ventures between police forces, highway authorities and magistrates' courts – were formed to implement this, and have since taken on a wider role as road safety partnership

In most countries traffic enforcement cameras and other road safety equipment are purchased, owned, and operated by government organizations. The past two decades have seen a wideranging wave of privatizations and introduction of public private partnerships (PPP) in formerly government - owned or controlled activities, including traffic enforcement. Implementing this concept properly and successfully requires a set of principles and good practices presented in this IRF policy statement. An Effective Automated Traffic Enforcement PPP Model needs at a minimum these basic elements:

- A study to identify the intersections or road sections that have a history of injuries or fatalities with the sole goal to improve road safety at these sites. The study should confirm that, besides safety cameras, a range of road safety countermeasures have been considered and thoroughly evaluated for effectiveness.
- A private party, either a supplier or a third party who is willing to supply the safety cameras for usage at no upfront charge to the public party, which could be a municipality, county, province, state, or nation, and provide a service to issue tickets and collect fines for traffic violations recorded by the safety cameras.

- A contractual arrangement between the public and private party allowing the private party to recover its investment over time by receiving an agreed and capped share of the revenue generated by the safety cameras. This contractual cap should not prevent the private party from issuing further tickets, which means a reasonable per ticket fee is needed to cover the private party's additional costs should continue once the cap is reached.
- No citations may be issued unless an authorized official has verified the offense after viewing the image or video of the incident.
- The end - to - end integrity of the enforcement system (from cameras to back office processes) must be guaranteed to ensure public trust and optimise efficacy and efficiency. An independent third party must be hired to formally approve and authorise usage, but also routinely inspect, verify and calibrate each camera to confirm the intended measurements and performances.
- An independent party should also monitor, inspect and verify that the entire enforcement process from violation registration to fine collection takes place according to agreed - upon performance and integrity indicators. .
- A clearly publicized campaign that promises that the sole objective of the automated enforcement operation is road safety improvement, and that all revenue above the expenses incurred by private parties' (camera supplier and operator as well as the third party hired to audit the cameras and enforcement processes) will be reinvested only in road safety related projects.

1. Introduction

Traffic enforcement cameras and related equipment are typically purchased, owned and operated by government organisations. Backoffices, where violation data are processed, citations issued and traffic fines collected, have also traditionally been government run.

Why should cash strapped governments invest in such systems if private parties, specializing in these businesses, can do it better, with more flexibility and at lower costs given considerable economies of scale? Would a Public Private Partnership (PPP) arrangement for traffic enforcement with local governments/police make sense?

How are such enforcement PPPs organised, and what tangible benefits can be expected from them? A proposed model for an effective Traffic Enforcement PPP should at a minimum include the following elements:

1) A study to identify the intersections or road sections that have a history of injuries or fatalities with the sole goal to improve road safety at these sites. The study should confirm that besides safety cameras, alternative road safety countermeasures have also been considered and thoroughly evaluated for effectiveness.
2) A private party, either a supplier or a third party who is willing to supply the safety cameras for usage at no upfront charge to the public party, which could be a municipality, county, province, state, or country, and provide a service to issue tickets and collect fines for traffic violations recorded by the safety cameras.
3) An agreement that the private party will recover its investment over time with a "capped" or fixed payment by the public party as agreed upon between the public and private party. This payment will include the private party's overhead, investment costs, and reasonable profit for the road safety venture. This cap should not prevent the private party from issuing tickets after this cap is reached, which means a reasonable per ticket fee only to cover the private party's additional overhead costs should continue beyond this cap. The purpose of this cap is to curtail potential tampering and bogus tickets that create unwarranted revenues.
4) An understanding that no citation will be issued unless an authorised official has verified the offense after viewing the image or video of the incident.
5) An independent government authorised third party must be hired to type - approve, routinely inspect, verify and calibrate each camera to confirm the intended measurements and performances.
6) An independent private party (not directly or indirectly connected to the enforcement PPP) should also be hired to monitor, audit and verify that the entire enforcement process from violation registration by the camera to fine collection as confirmed in the back - office takes place according to agreed upon performance indicators, ideally on a real time basis, thereby assuring that the private party's activity of violation processing and rejection prior to official confirmation, by e. g. a police officer, is proper and legitimate and that valid violations do not escape police scrutiny. To facilitate this auditing process the private party will need to grant access to the data feed of both the camera and associated back office processes.
7) A clearly publicized campaign that promises that the sole objective of the automated enforcement operation is road safety improvement, and that all revenue above the private parties' (camera supplier and operator as well as the third party hired to audit the cameras and enforcement processes on a regular basis) agreed to expenses that is generated from fines, will be reinvested only in road safety related projects.
8) Contractual obligations should clearly define the rights of both parties with respect to various issues such as early termination, camera relocation, camera image and data and vehicle and personal data privacy regulations, performance criteria and bonus - malus obligations, revenue and fine escalation criteria, violation criteria (e. g. rolling right turn on red).
9) Unforeseen and mutually agreed to costs in connection with the PPP such as legal, verification and auditing cost, vandalism, etc. should be separated from the private party's operational costs (and in some cases, procured through a separate contractual arrangement) to improve transparency.
10) Yellow light cycles should be based on engineering studies, guidelines, best practices and consultations with local authorities that take into account variables such as the size and layout of the intersection as well as the prevailing speed limit at the crossing.
11) Pedestrian and/or vehicle countdown timers could be installed at all intersections with cameras. These timers give the motorists and other road users a good indication of how much time they have before the light will change. This will allow motorists to adjust their

speed and should reduce the number of sudden stops prior to the intersection.

2. Concept and Scope

The scope of the enforcement process starts with the violation registration and could end in court. However, in most cases, it is settled early with the payment of a fine and/ or penalty points on a driver's license. For PPPs in traffic enforcement, the registration component of this process is covered by the procurement and installation of enforcement cameras by a private party. This private party could also be a consortium consisting of e. g. a financier, back office operator or hardware supplier or BPO (Business Process Outsourcing) organisation that sees managing such processes as its core business. When the registered violations (photos and specific data on the violation) are digitally transferred to a back office, the scope can vary. Certain legal restrictions may apply e. g. the confirmation of a violation by a sworn police officer or official.

Technically, however, private parties can handle the entire back - office process including the collection of fines and preparation of court documents for overdue or contesting violators. However, depending on the wishes of the authorities, the private - public 'cut' can be made at any practical point in the back office process. An essential issue with any enforcement activity and especially with PPPs is the principle: 'No enforcement without publicity'.

Every authority should deal with this issue before the enforcement programme is started, and preferably at the time when enforcement plans are made public by the authority in question. The key issue with publicity is transparency toward the public such as

1) Where and why the authorities are implementing the enforcement activities at certain locations,
2) What the results are,
3) What happens to the fine revenue, and
4) What is the (financial) role of the private party. A large part of this publicity can be carried out by the private party itself, or by another third party on behalf of the authorities.

Organization

The two public parties, the political authority and the enforcement authority, need to have a basic agreement before any private parties can be invited into the process. The police are often aware of trouble spots in the road network, which have seen serious crashes in recent years. Besides cameras, and depending on the situation, other road safety measures may also be effective, such as reduced speed limits, speed humps, electronic speed displays, and publicity campaigns.

Often traffic engineers, employed by the local jurisdiction, handle such decisions. On the political side, road safety needs to be viewed as serious issue. If not, commitment is low and projects will falter, especially contentious projects, such as PPPs in enforcement. The objectives should always be improvements in road safety, saving lives, and improving the quality of life for both residents and the driving public.

A public party that implements a PPP enforcement program with a financial objective based on fine revenue from the enforcement PPP will soon face the wrath of the public, who will see the PPP enforcement program as a tax or revenue - generating program and not a road safety program. As such, the PPP enforcement program will very likely fail. All surplus fine revenue received by the public parties beyond the "capped or/and agreed upon" fees for the private party should be reinvested in road safety related projects, such as children's traffic safety education programs, by the public parties. This mechanism keeps the whole process transparent and clean of revenue or tax collection accusations. It is also important that the private party is operating in the background and that most interaction with the public is taking place on behalf of the authorities. For example, citations would be sent out on the letterhead of the responsible authority. The PPP parties also need to agree upon a well - defined process on how to deal with unpaid fines and challenges that may need legal action.

Transparency, Integrity and Publicity

Transparency, integrity and publicity are key requirements for successful PPPs in traffic enforcement. This starts with national or community - wide discussions on how to improve road safety, but also extends to the question of data and legal integrity of the enforcement operation. In some countries, independent approval and verification organisations may not exist. In most European countries violations are legally only valid if they are registered with type - approved and regularly verified speed measurement devices. Violators should be able to see their violation photo and data online and should also have access to the type approval and annual verification certificates for the cameras that registered their violation. For example, it should also be made clear to any violator

1) What the violation process includes,
2) What happens in case of late payment,
3) Which laws apply and which rights the violator has,
4) Where fine revenues will be reinvested,
5) How challenges can be made, and
6) Why enforcement is taking place at that particular location,
7) What the (estimated) benefits of the enforcement action is in number of fatalities, injuries and crashes prevented for that road section or intersection.

It is clearly important to provide watertight evidence but also that the enforcement cameras are being used fairly and without discrimination. Besides the above mentioned type approval and annual verification, government authorities should also consider effective, systematic and continuous auditing of the entire enforcement PPP activity chain to ensure that certain predefined KPIs are complied with and the violation notifications are only issued for true traffic violations.

The motoring public should be made to understand the background and benefits of enforcement, and needs to be continuously informed about the associated results in terms of reduced casualties, injuries, and crashes, as well as better quality of life due to increased road safety, improved mobility, and less noise and pollution. This prevents drivers and residents from perceiving such enforcement PPPs as

simply tax or revenue generation programmes. The scope of this publicity task could even be expanded to a more holistic road safety responsibility which also includes other aspects e. g. prevention of alcohol and drug use while operating a vehicle and infrastructural road safety improvements - all financed with fines paid by violators. Securing data and legal integrity and being transparent and communicating about the entire enforcement process serves several purposes.

It encourages early payments, and reduces (costly) challenges, and prevents the enforcement PPP from being seen as a cash cow for the authorities, or even worse for the private party. For efficiency and credibility, legal procedures resulting from challenges to citations should remain at an absolute minimum. Publicity for the road safety objectives, integrity of enforcement equipment and transparency of back - office processes towards violators, drivers and the public are required to create and maintain public support in traffic enforcement PPP programmes.

3. Challenges and Opportunities

Automated traffic enforcement PPPs can be an effective road safety measure provided certain conditions are met, especially if government budgets are tight or if there is no administrative experience with automated enforcement. A potential challenge with enforcement PPPs is the fact that residents, drivers, politicians, administrators, and the police may be reluctant to see a former government task that involves fines, punishment and potential profits in the hands of a private party. Politicians and administrators may fear a political backlash.

The police could be reluctant to cede with part of their enforcement task. Residents and drivers may see fines as an additional tax and unjust profits for a private party. Discussion, transparency and publicity should neutralise most of these concerns. On the other hand there are many advantages to enforcement PPPs. Enforcement equipment and back offices are capital intensive and expensive to operate for cash - strapped governments. Back - office staff, overhead, funds, police, and other resources involved in enforcement can be used for other relevant projects.

Economies of scale can be obtained, such as by working with a common backoffice for multiple jurisdictions, specialist management, and operators, processing of other violations (e. g. parking), and use of the latest equipment and software applications with a predictable long - term cost structure. Governments can benefit from flexibility, competition and market pricing as operators can be changed at the end of the contact term.

Moreover, in jurisdictions with police integrity issues, better operational and accounting transparency can be realised. A funding structure whereby the private party is paid an unlimited fixed fee for each citation issued is contentious and politically sensitive.

A fixed monthly fee per camera might not be ideal; since, there is no incentive for a private party to process tickets and collect fines over the monthly fee. Depending on the circumstances, the best system may be a fixed ‘basic fee’ per collected fine for the private party up to a certain maximum fee limit per camera, and over this limit a relatively lower ‘surplus fee’ per collected fine.

This allows the private party to cover variable cost while maintaining the incentive to continue to issue tickets. The surplus fee also provides the public party with more revenue per collected fine and thus benefits public acceptance. Public parties should also consider all potential legal, administrative, and operational challenges prior to implementation.

In particular, governments and/or the police should have the right to relocate a certain number of cameras during the contact term should road safety objectives be achieved at certain camera locations. Further, they should also maintain control over other non - enforcement related road safety enhancements. Crash statistics and speed profiles at locations where cameras are removed should be actively monitored for pre/post comparisons, evaluation purposes and corrective actions. Government authorised or independent third parties should be used for type approval, verification, calibration, monitoring and auditing.

This prevents tampering and gives the public party and the judiciary an impartial yardstick should violations be legally challenged. Private parties often have experience with these issues and could consult on these issues. Fine levels and other disincentives (e. g. penalty points) should be set at levels that they are viewed as a just, balanced and effective deterrent by drivers. Other key issues include e. g.

1) KPI selection to measure performance, road safety effects and a related bonus - malus system, and
2) Rights of each party (government, public, police, private parties) including extent of business risk, integrity of the private party and operational on/off control over camera’s. Due to unique national, state, provincial and local legislation and conditions for each enforcement PPP, there is no one size fits all solution. Other activities besides enforcement including education and engineering initiatives should also be considered. For governments the main challenge is to balance the following interests which converge in these PPP projects: road safety, public acceptance and the business interests of private parties.

The key to success is a strong focus on road safety improvement and saving lives, transparency or integrity in the various PPP processes, and ample on - going publicity about the objectives and results of the enforcement programme.

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