

# Road Safety Case Studies

## Speed Management in Iran: A Review Process

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### Key Findings

- A demonstration project in Iran has provided an ideal environment to implement a Safe System focused on speed management, speed limit setting and infrastructure treatment.
- Public understanding, engagement and support is a critical component for the success of this project to reinforce a culture of safety on Iranian roads.
- A baseline review supports the rationale for reduced speed limits as an interim measure while Safe System infrastructure upgrades are implemented.
- The in- depth crash investigation process can be enhanced through a revised focus on identifying preventative measures in reducing risks.
- The electronic enforcement infrastructure can be enhanced to directly deter speeding.

### Abstract

The level of road trauma is high in the Eastern Mediterranean Region with the Islamic Republic of Iran having a particularly high fatality rate at 20.5 per 100,000 population. The Government, assisted by the World Health Organisation (WHO), committed to implementing demonstration projects in three provinces that will form the basis of road safety actions to be advanced by the WHO across the Region. In recognition that speed management is a pivotal factor in achieving a safer road and traffic system, and as a component of the project, a review was carried out in 2019 by a team of international experts in the field in collaboration with national consultants. This review was undertaken in consideration of the Safe System Approach and the Results-Based Management Approach. The findings of this review and their implications for future actions in Iran are discussed in this paper.

### Keywords

Speed management, speed limits, traffic calming, traffic policing, offender processing, crash investigation, Road Safety, Safe System, Road Crash

### Glossary

AASHTO - American Association of State Highway and Transportation Officials

MRUD- Ministry of Roads and Urban Development

NRSC – National Road Safety Commission

RBMA - Results-Based Management Approach

RMTO – Road Maintenance and Transportation Organization

SOP's – Standard Operating Procedures

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SSA – Safe System Approach

VSL – Variable speed limits

VMS – Variable message signs

WHO – World Health Organisation

## Introduction

In Iran, road traffic crashes are one of the leading causes of fatalities and injuries. According to WHO Global Status Report on Road Safety (2018) the annual crash fatality rate in Iran is 20.5 per 100,000 population, which is higher than the global average. The costs of traffic injuries in Iran in 2013 using the willingness to pay method constituted 6.46% of gross national income, much higher than the global average (Ainy, et al. 2014). Consistent with this, the medical costs and economic burden of road traffic injuries were estimated in 2011 to be USD \$4.44 billion (Behnood, 2017). Both these estimates do not account for the personal loss, suffering and trauma to Iranian families and the work environment.

In response to these high levels of road trauma, the WHO country office in coordination with the National Road Safety Commission (NRSC), Road Maintenance & Transportation Organization (RMTO), Traffic police, and the National Emergency Medical Organization commissioned a consultancy project titled “*Technical support towards enhancement of Speed Management strategy for road traffic injury prevention.*” They appointed international experts in joint collaboration with national partners to conduct an extensive review of speed management practices in Iran. This review was undertaken as an initiative to provide the foundation and justification for identifying and implementing speed management interventions in demonstration sites.

The RMTO is the main government agency responsible for rural road safety, reporting to the Ministry of Roads and Urban Development. The RMTO is guided by the American Association for State Highway and Transport Officials (AASHTO) for geometric design standards and speed limit setting. There are 31 Provinces in Iran with 20,625 kms of arterials (freeways 2,503kms, expressways 18,122 kms), 25,814 kms of main roads and 37,601 kms of minor roads in their interurban road network. Urban roads are the responsibility of local government. The general maximum speed limit on freeways is 120kph and on highways is 110kph. The enforcement tolerance is generous by international standards of good practice.

## Purpose of the Project

The purpose of the project was to investigate the ways the country was seeking to address the problem of speed related road trauma and advise on how these practices could be improved. Consistent with the Safe System Approach (SSA) and the WHO Results-Based Management

Approach (RBMA), the aim was to align Iran’s road safety strategy with these principles and provide guidelines for setting speed limits as well as an educational and enforcement framework.

Complementary to the project, it is noteworthy that two members of the international team presented as keynote speakers and facilitators at the 24<sup>th</sup> International Conference on Safe Communities in Tabriz, Iran (22-25 August. 2019). Critical themes included road safety governance, speed management, enforcement and public education campaigns.

## Description of the Project

This paper presents the perspectives of International and National practitioners to road safety reform with particular focus on the introduction of six demonstration sites in three Iranian provinces. The proposed introduction of international good practice in SSA and RBMA to these sites, traversing over 1300kms provides a rich opportunity to identify challenges across all road safety disciplines and the processes adopted to overcome these challenges. These sites were selected because of crash history, traffic volumes, multiple speed zone changes, the environmental conditions and the potential for beneficial infrastructure upgrades.

In the initial phase, a National Consultant, the ARG Engineering Company (ARG), was engaged by WHO Iran, to conduct a situational analysis through a literature review, a desktop review, meetings with stakeholders and field visits covering the following items:

- A variety of road infrastructure including divided roads, two-way rural roads, village, city and remote locations as well as observations on line markings, edge shoulders, roadside barriers and roadside furniture;
- Traffic crash trends and relevant morbidity and mortality by various road types/settings;
- Speed limit policy in different road settings and standard operating procedures (SOPs);
- The traffic laws and regulations related to speed management;
- Enforcement practices (both manual and automated controls) in various settings/road types;
- Applied methods of speed management and traffic calming such as speed signs; advisory signs, roundabouts, speed bumps, rumble strips;
- Community awareness campaigns and messages;
- Vehicle safety standards (age of the fleet and poor quality domestically built vehicles);
- Drivers’ habits and characteristics (i.e. diverging when unsafe and unsafe following distances); and
- Strengths and weaknesses of the data on speeding related crashes.

This review acted as a ‘baseline-study’, which could be used to monitor, evaluate and build a solid research framework for road safety reform. Within the project scope, the International consultants were responsible to assist by:

- Establishing protocols, policies, training and an education framework for enhancing road user compliance with road rules and regulations;
- Establishing a framework for highly visible and active police enforcement strategies;
- Recommending a speed limit policy for different road types/settings in the country; based on the situational analysis results and Safe System requirements;
- Preparing a speed management framework with practical steps to apply the recommended speed limit policy within the country;
- Facilitating a series of technical workshops with participation of all stakeholder representatives;
- Finalising the recommended policy and framework based on the workshop findings;

- Meeting with high-level authorities to advocate for speed management and presenting a summary of findings and recommendations; and
- Recommending applied speed management and traffic calming approaches and strategy (including the criteria to choose the best method of speed management based on the environmental context).

While the project focus is speed management within SSA, it does not neglect or devalue other contributing factors to crashes and related injuries such as fatigue and non-wearing of seat-belts which are being strictly monitored within crash investigation protocols.

In addition to reviewing the data provided by the National Consultant, the International team undertook two missions to Iran to observe the road environment and driver behaviour throughout a number of provinces and many thousands of kilometres on all road networks. The team consulted with the road authorities at national and provincial levels, traffic police, the Ministry of Health and Medical Education, academics, and NGOs, involved in road safety. They also facilitated workshops covering



**Figure 1. Vehicular traffic and road infrastructure in Iran.**  
 Source: Ray Shuey, Strategic Safety Solutions



Figure 2. Police enforcement in Iran

Source: Top row left to right – Ahmed Salari, ARG Engineering, Iran. Bottom row left to right Ray Shuey Strategic Safety Solutions

the SSA, traffic policing, infringement processing, crash investigation, road safety campaigns, community advocacy, SSA speed limit setting and traffic calming. These perspectives are presented below in relation to the project observations, discussion and findings.

### Project Team Observations

The Department of State and Ministry of the Interior manage local speed limits but cannot set speed limits higher than the top speeds set by MRUD. MRUD has set maximum speeds of 120kmh for cars, 110kmh for buses, and 100kmh for trucks (on freeways). At the time of the review, speed setting criteria included:

1. Road function and type
2. 85th percentile speeds of free-flowing traffic, plus 8km/h;
3. Geometric design (site distance, etc.); and
4. Prevailing land use.

This approach had been informed by the US AASHTO guidelines. These criteria were identified as being out of

step with contemporary principles and practices. Instead of basing maximum speed limits on what 85% of drivers choose, the current international leading practice is based on the safe system principles and places injury related criteria as paramount in setting speed limits.

During observational visits, blackspots were observed on rural road networks including:

- A T-intersection, at grade, where a slow-speed road (60kmh) connected with a high-speed road (110kmh);
- A site where a bus had vaulted the steel guardrail and crashed head-on into another bus, killing 40 people;
- Many locations on 110kmh zoned roads with U-turns and very short run-up lanes (entry from a standing start to merge or exit to slow from a fast-moving lane);
- Many sites where there were local businesses along high-speed roads with no separation, barriers, or on/off ramps;
- A downhill mountain road with a curve sign-posted at 50kmh and traffic being observed driving at 80kmh; and

- Pedestrians observed walking on road-ways with high-speed traffic.

Figure 1 depicts a sample of traffic within the Iranian road network.

In addition, it was identified that setting differing speed limits for different types of vehicles can increase the speed differential and thus contribute to an increase in the overall serious crash risk. This risk was confirmed in observations where cars travelling in excess of the speed limit were confronted with ‘a wall’ of slow-moving trucks being passed on grades resulting in the need for evasive action. Police advised that as a common fatal crash cause where sedans would under-run large transport vehicles (highlighting the need to explore improvements to truck rear under-run and side under-run protection systems).

For practical purposes, the speed differential should be at minimum - whether this be for cars vs heavy vehicles or cars vs cars. The differential creates uncertainty in driver behaviour and is a risk factor which must be minimised. In addition to the concerns raised by police, the risks have been substantiated by research in other countries (Dhahir & Hassan, 2017; Fildes & Lee, 1993; Garber, et al., 2006). As an example, a summary of the evidence entitled “*Differential speed limits make roads less safe*”, produced by a United States trucking association encapsulates the problem observed in Iran. It said, “the more drivers deviate from the average speed, the greater the chance of being involved in an accident” and 80% of rear-end collisions involving a large truck and car resulting in a fatality, [it was] the passenger vehicle [that] rear-ended the truck.” The traffic police have limited powers to stop motorists. There are 1,000 traffic police and 241 road traffic police stations across the country, a ratio of 3 stations per 1,000 square kilometres. They have 1112 modern portable police-operated speed video cameras, introduced in November, 2016. These were observed in operation by the project team during the field studies. Figure 2 depicts a variety of speed measuring equipment used in Iran for speed enforcement.

In this part, it is recommended to point out the SEPHTAN system – a device that was installed on public inter urban bus, while controlling the working hours of driver, transport documents, location of the bus, it controls the speed of the bus online and in speeding, alarm driver and send message to police station.

While these devices are used for speed detection, the operators or mobile police patrols do not actively pull drivers over to issue infringement notices and there is limited active awareness of enforcement. Advice was provided that on some occasions, a roadside interception occurred further down the road in what was described as a potentially dangerous practice especially on high-speed road networks. No evidence was observed or advised of any on-road visible police enforcement with vehicle interceptions for traffic offences or any active follow-up

for observed offences to compensate for this deficiency. Good practice road-policing must ensure there are visible enforcement presence and activities to act as a deterrent. These activities should be defined in SOP’s for both mobile and static enforcement with a primary focus on safety (Shuey 2013) and will be addressed in subsequent training and workshop programs.

Fixed cameras on the freeway network appear to be an effective system for measuring speeds – both spot enforcement and point-to-point average speeds. However, while there are 2300 cameras installed on the network, only 1800 are speed detection cameras with approximately 1000 operating at any one time. This is, in part due to vandalism including people shooting the cameras with guns and lack of timely maintenance and repair services. Those cameras additional to speed detection purposes are weigh-in-motion for heavy transport and traffic monitoring systems.

On triggering a speed camera, the computerised number plate recognition system has a priority focus in that a warning is immediately sent via SMS to the vehicle owner, followed thereafter by another SMS when police have processed the offence indicating that an infringement is issued and due for payment. These processes initiate from the central traffic monitoring and police control rooms in Tehran. However, the verification process and regulatory framework to complement the initial speed infringement would benefit from the adoption of strict effectiveness and efficiency criteria. Importantly, *it was reported that ~50% of speeding offences detected by cameras are not fully prosecuted by Police*. This is a critical system failure in the end-to-end processes from speed detection to final resolution of fines collection, clemency or exoneration.

These observations typify the ‘hole in the bucket’ phenomenon whereby visible police enforcement is diluted through leakages in its deterrent effect particularly when the expected outcome of an exposed offence does not occur, thus confirming the ineffectiveness of the system (Hemel, 1988). Further, punishment avoidance critically undermines the intended general deterrence of the camera infrastructure where drivers evade being detected or punished following the committing of illegal behaviours. This has a strong influence on future offending behaviours (Stafford and Warr, 1993, Fleiter et al., 2013). These studies highlight the need to improve the rigour of traffic enforcement processes while maintaining the unpredictability of enforcement operations (Bates et al., 2012).

The conceptual approach espoused by Hemel has been modified by the project team to become a funnel model for the offender processing environment, whereby the overall efficiency challenges are identified for actionable reform within this project (Figure 3). The number of offenders detected can be directly compared with those eventually sanctioned. Those who escape a sanction, after

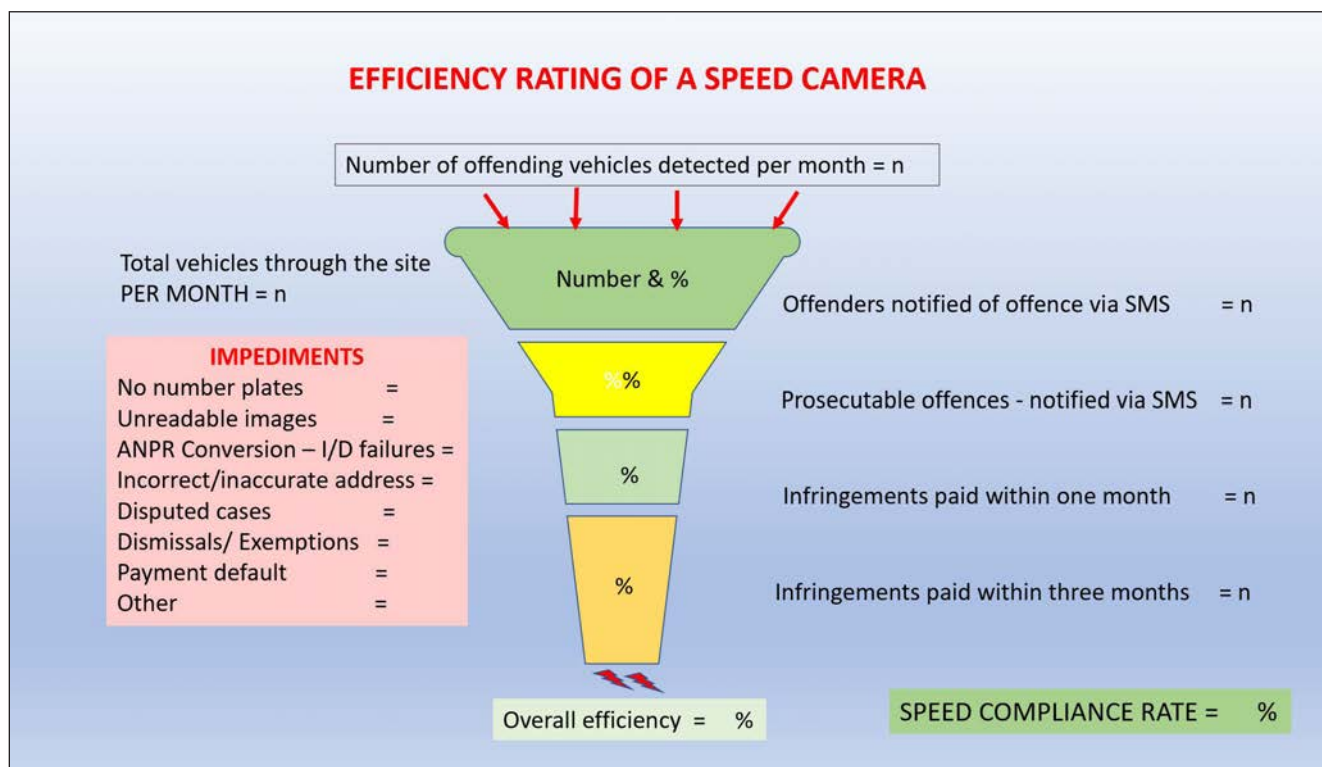


Figure 3. Efficiency rating of a speed camera as the foundation reform for offender processing  
 Source: Ray Shuey, Strategic Safety Solutions

initially being advised and those never advised through system inefficiency or ineffectiveness will almost certainly continue their errant speed behaviours.

Figure 3 provides a pictorial representation to enable a more comprehensive performance management framework to identify gaps and barriers in the process. Operationalising this framework will enable an in-depth analysis of the data to initiate reform.

These critical observations will be monitored and expanded in the offender processing cycle as negative reinforcement of poor driver behaviours and the relationship within the driving culture. The prevalence and rationale for speeding needs to be addressed within the framework of the demonstration project to determine underlying reasons. This broader perspective will then focus on the psychology of speeding and the deterrence theory to further understand errant driver behaviours (McKenna 2008). In the view of the International Consultants, the Traffic Police in Iran are reasonably well-resourced with speed-detection equipment, however these resources could be used more effectively and strategically with targeted outcomes and accompanied by specific performance measures. These are to be addressed in pending workshops.

The crash investigation and data management process was identified as another component which can be enhanced in this demonstration project. It is well acknowledged

that trained police officers have expertise in satisfying the judicial requirements of determining fault within the Qisas (Retaliation/retribution) and Diyat or compensation (blood money) law (Islamic Penal Code 2013). The Diyat or financial compensation is applicable when an accidental or semi intentional act causes bodily harm or death (Electronic Journal of Islamic and Middle Eastern Law, 2014). Additionally, it is of consequence that some religious and cultural factors such as belief in fatalism can be counter-productive to developing interventions and safety countermeasures (Kayani, 2016).

The primary criterion is the apportioning of blame so that the victim(s) or victim’s heirs or estate may be compensated for the death, serious injury or disability. This process has limited capacity for creating deterrence as it ‘individualises’ the offence against the victim rather than the society or the state. An assessment is required to be compared with good practice whereby the goal of the investigation should be to comprehensively identify the crash mechanisms involved, without the necessity to attribute blame.

This consideration of blame is further identified specifically in determining speed as a contributory factor in causality crashes where the statistics range from 8% declared by police to 25% and higher by other road safety bodies. This is attributed to the investigative process, the relative blame and the compensation to be apportioned. It

was explained that because police are responsible for the enforcement of speed limits, the cause is often deflected to other reasons such as fatigue due to long distance driving and a poor road network as major contributing factors. Notwithstanding a range of potential contributory factors, the true role of speeding and inappropriate speed in the circumstances needs to be rationally considered in the crash investigative assessment.

The review process will therefore focus on the root cause analysis with primary, secondary and tertiary causes as contributory factors and make a final determination of *how can the risk of a crash of this nature be prevented in the future?* This concept and a ‘contributory factor data-base’ aligns with the SSA for crash prevention strategies.

The National Road Safety Commission (NRSC) has developed a sophisticated approach to investigating serious crashes within the six demonstration corridors. This is intended to provide on-scene attendance and in-depth analysis of those crashes meeting its pre-determined criteria (any crash with five or more fatalities). The system involves on-line registration of the initial report, protocols, and processing with unified data collection forms. However, these investigations will only address a proportion of actual crashes, albeit the most serious.

To complement this process, it is proposed that a two-tiered approach be adopted to achieve expert investigation and analysis of *all* fatality and serious injury crashes in the demonstration corridors. The intention is for local police experts to continue to investigate all crashes within the legislative requirements of the Diyat and follow normal reporting procedures. The investigator will be required to list primary and contributory factors and then make a recommendation for preventative actions. An ‘expert review panel’ is to be established to mirror the competence and skills of the NRSC to review the crash on a ‘no blame’ basis with a determination to identify preventative measures to avoid future crashes. This is to become a critical component to expedite the identification of critical risks and provide a strong evidence base for intervention and reform.

Observations of the road infrastructure and environment, road user behaviours, and current policies and governance are summarised below.

Road infrastructure:

- There were higher posted speed limits than acceptable within good practice;
- Insufficient signage, lack of credibility and lack of advisory signs;
- Good audio tactile line marking but most line markings were faded or too light;
- Broken and insufficient barrier systems and a lack of good practice wire rope fencing;

- Lack of transitional speed zones and many speed limit zones too short;
- Lack of good practice in traffic calming treatments (mostly speed humps are used);
- Unsafe pedestrian crossings with limited on-site warnings;
- Unsafe U-turn and T-intersection design; and
- Adequate camera network and VMS/VSL technology.

Road user behaviours:

- Noncompliance with speed limits is prevalent as ingrained behaviour from some drivers;
- Dangerous, aggressive/discourteous driving is evident;
- Tailgating, lack of lane discipline and limited use of indicators, especially of weaving traffic;
- Speed differentials – trucks vs cars and cars vs cars;
- Counter-flow motorcycle practices & helmet non-compliance; and
- Dangerous pedestrian crossing behaviour and practices.

Policy and governance:

- The Traffic Police are the licensing authority;
- No defined strategy for speed management;
- No sustainable budget for road safety/speed management;
- Strategic enforcement practices need to be enhanced;
- Lack of integrity and effectiveness in the penalty system;
- Lack of interagency collaboration and lack of a strong lead road safety agency;
- Lack of robust crash investigation practices, to act as a robust agent for road safety reform;
- Disconnect with local municipalities on road & traffic planning;
- Dangerous and ineffective (active) speed enforcement practices; and
- Inadequate driver training and licensing (discussed further).

## Discussion on Potential Opportunities for Improvement

These critical observations provide the catalyst for adopting an holistic framework to address road safety reform across a broad road infrastructure network with varying road user behavioural issues. Specifically, the International Team is advising the National Consultants on the many opportunities for Iran to improve speed management and reduce road trauma within this framework. This process is intended as capacity building for further national initiatives.

## Speed Limits, Zoning and Traffic Calming

Many speed limits across the rural road network are too high for assuring safety and do not align with the SSA. Using the guide prepared by the international team, it is suggested that the RMTO review existing speed limits across the country. This will enable better alignment with safe system scientific principles in Iran. On the information thus far gathered from the crash data, the camera data, speed surveys, observations and interviews, there is clear evidence to substantiate reducing the speed limits as an interim measure while Safe System principles are applied to the infrastructure. The evaluation criteria will then assess its potential application throughout Iran and enable the Iranian authorities to confirm or modify the guidelines.

Using a (functional) road classification centred on movement and place (Austroads, 2020), together with crash risk calculations, will assist to determine appropriate road safety treatments consistent with both the function of the road (movement) and the human environment and activities surrounding the road (place). This will best determine how the gap with existing limits can be managed with low-cost infrastructure treatments in many cases. In this way, safe maximum speed limits can be set for assuring better intrinsic safety for all road users, including vulnerable road users such as pedestrians, bicyclists and motorcyclists. The international team has developed guidelines for adopting the Safe System principles and treatments within the Movement and Place Framework to set speed limits.

Traffic calming and infrastructure safety treatments can be adopted as part of the package of measures to provide lower risk speed limits and make the road environment safer for normal travel. These include such treatments as roundabouts, lane-narrowing, audio-tactile line-marking and wire rope side and median barriers. Also, the Swedish 2+1 system could be well utilised on appropriate lengths of the rural road network to reduce head on fatalities (Carlsson, 2009).

## Licensing, Regulations, Penalties and Enforcement

The project teams' observations of general driving behaviours on major highways and rural roads in conjunction with the concerns of the local authorities highlight the need to improve driver training and licensing system in Iran. Testing, including a hazard perception test should be stricter and a graduated licensing system is recommended. Also, as a deterrent against recidivism, each driver should be assigned a unique licence number for life. This would assure the integrity of the licensing system such that drivers would not be able to rid themselves of demerit points or loss of licence by obtaining another licence with a different number.

It is noted that the penalty system is not graded sufficiently to reflect the seriousness of speed in the fatality and injury hierarchy. i.e. apart from degrees of speed (above the posted speed limit). Good practice jurisdictions have dedicated offences of (a) speed or manner dangerous, (b) reckless driving, and (c) culpable driving causing death(s). The introduction of these culpability offences makes it even more imperative for the 'expert investigators' to have the best possible equipment, investigative knowledge and team support. Equipment such as 3D laser scanners, Event Data Recorders and Crash Reconstruction Software are common for police investigators to identify the 'real' causes of crashes.

A most serious concern is the infringement processing system. This is founded on a solid technological infrastructure of nation-wide speed and point-to-point (time over distance) speed cameras, identifying and recording infringements in real-time and passing to police for validation and ticket issue. An SMS is sent to the vehicle owner at the time of the offence but full prosecution of the offences is not completed in all cases. Some drivers do not pay fines until they sell their car. This undermines the effect of the penalties as deterrents. In addition, when penalty points are awarded to licence holders, there are ways for drivers/riders to obtain another licence when the maximum points result in licence cancellation.

Processing system integrity is in question directly with the certainty of penalty (if an offence is committed) and the immediacy of sanction/penalty. While the available evidence confirms that the perceived certainty of penalty is a more important consideration in achieving deterrence than the penalty regime, it appears that the penalties need to be sufficiently salient to be seen as consequential and prevent recurrent offences. Information provided to the project team failed to confirm that (a) infringements are currently issued in a timely manner (2 days for high level offences and 7 days for routine infringements), (b) the identified infringements are always processed to a prosecution (percentage prosecute-ability), and (c) the fines are paid or collected. Any weakness or delay in this process is critical in the penalty regime and counter-productive to behavioural reform.

A similar issue, where huge advantages can be realised, is the use of available data. The "Intelligent speed enforcement system" founded on the speed camera infrastructure, wireless technology and real-time recording of infringements provides routine and standard reports. This system should be totally integrated to provide meaningful data for "intelligence-led" enforcement capability. These cameras can provide information such as highest speed, mean speed, average speed, recidivist offence vehicles, vehicle profiling etc. - all of which can be integrated into a real intelligence system including speed survey analysis, crash data analysis and offender profiling providing the stimulus for real road safety reform.



To complement these initiatives, strategic traffic law enforcement must be *Intelligence-led, outcome-focused and dynamically driven*. The foundation for strategic enforcement is in following the four principles of effective enforcement, namely:

1. Highly visible and active enforcement;
2. Repeated often;
3. Fair and consistent in operation (aligned with procedural justice); and
4. Well-publicised (with strong media messages, partnership and community support) (Shuey, 2009).

This integrated and holistic approach with strong partnership support will enhance the effectiveness, efficiency and safety of all operations resulting in a community perception of ANYWHERE/ANYTIME/ANYBODY if you speed, you will be caught and punished. This perception is integral to road safety reform particularly in changing/modifying driver behaviour (Shuey, 2013). These four critical aspects of enforcement are an adaptation of the requirement to maintain the unpredictability of operations as a primary strategy (Homel, 1993).

## Public Education and Community Participation

Based on the observations of the project team and discussions with key stakeholders, there appears to be little regard for speed limits and other road rules among the driving public in Iran. The level of non-compliance with speed limits is perceived to be akin to mass civil disobedience. This may be as a direct result of the lack of highly visible and active road policing interceptions for speeding combined with the ineffectiveness of the offender processing of electronic enforcement, both of which have been discussed above.

The general public in Iran needs to be more informed about road injury risk of speeding, in order to achieve a higher degree of acceptance of speed enforcement. This is a pivotal requirement in road safety recognised from 1937 as a guiding component in “a balanced program of official activities by the states and organised public support for the official program” (Damon, 1958). Varying research to the present time has reinforced the importance of communication as a parallel road safety requirement (Raftery, et al., 2014).

Messages must be clear, concise and targeted - Who? What? How? When? and Why? It is a good idea to use focus group research of mediums and messages to ensure the education is clear and credible (Wundersitz, et al, 2010). Social marketing to create a demand for speed management must be a long-term component of regular speed management campaigns (Fleiter, et al., 2014). This

should assist the community support for enforcement and penalties that are needed to influence speed behaviour.

Importantly, sending out messages is not sufficient to optimise desired behavioural change (Elliot, 1998, Elliot, 2011 Fleiter, et al, 2014). Regular general deterrence operations using high profile police traffic enforcement boosted by high profile media and community campaigns to convince motorists that they are likely to be caught if they speed should be planned and carried out in tandem with the public messaging about the likelihood of getting caught and penalised for exceeding the speed limit. Sociological and psychological research should be used to inform behavioural campaigns. “The more that is known about the target audience – its characteristics, needs, wants, knowledge, beliefs behaviours, perceived risks, social environment and stage in the behaviour-change process – the greater the chances of developing a successful and cost-effective campaign.” (Delhomme, et al.)

Campaigns work best as a collaborative effort. The non-government organisation (NGO) sector and government agencies should collaborate in concerted messages to the general public on risks related with speeding and the need for road safety to be adopted as a cultural norm. Perhaps the business sector could also participate by sponsoring campaigns or conducting internal speed management programs for their employees. Strategies to raise the profile and content of road safety messages are being advised by the international team.

## Institutional Strengthening and Interagency Collaboration

It is suggested that Traffic Police and RMTO and other government agencies maximise the use of available data. Improvements to data collection and analysis would assist to understand the dimensions of the speed road safety issues that need to be addressed. Social and behavioural scientists could be engaged to prepare speed related problem definition documents. The use of research and analysis should inform all road safety actions, including research carried out in other jurisdictions (WHO, 2010). Also, pre- and post-intervention surveys can be used to identify the successful and less successful actions.

The role and influence of the lead agency in speed management is very important with the existing NRSC required to be strengthened. There may need to be some kind of formal review body at the political level to ensure that agencies support each other in their speed management roles. To strengthen the Commission’s outcome-focus, each representative must have documented accountable performance measures (Bliss and Breen, 2009) and attend progress meetings every 6 weeks. This requirement alone will sharpen the focus of all contributing agencies, through top-down accountability.

Interagency consultations and joint strategic planning for speed management requires respectful and positive communications. These may be formal or informal, but need to focus on common road safety goals (i.e. a single over-arching goal applicable to **all** contributing agencies as to how their agency goals contribute to saving lives). For example, a joint speed enforcement plan could be devised by RMTO, Traffic Police and other partner agencies. There is a need to ensure a better understanding and commitment by agencies and politicians of safe system philosophy and approach. A mindset change to safe system thinking must be integral to speed management programs across all agencies.

A speed management committee should be established and convened regularly within the demonstration zones (at least once per month). This Committee should then develop a speed management strategy through a broad community consultative process and as with the national committee, each member having accountability and transparent performance targets. Further, it may be useful to negotiate memoranda of understandings (MoUs) with key partners specific to speed management. As a component of the road safety community education program, a plan must be developed for a public information campaigns on speed management measures, to keep people informed about the actions being taken and reasons for these actions (WHO, 2008).

## Preliminary Findings

The baseline study, field observations and review of good practice undertaken to date have provided a solid foundation upon which to develop the demonstration project using Safe System principles guided by national and international knowledge transfer. This is to be supported by NRSC and government commitment with interagency collaboration to design, develop and deliver a safer road environment. It provides a rich source of research to monitor and evaluate progress, holistically and within the various disciplines to monitor and evaluate progress over the life of the project and beyond.

Among the preliminary findings that provide the strongest opportunities for road safety returns on the investment are:

- A demonstration project in Iran has provided an ideal environment to implement a Safe System focused on speed management, speed limit setting and infrastructure treatment
- Public understanding, engagement and support is a critical component for the success of this project to reinforce a culture of safety on Iranian roads.
- A baseline review supports the rationale for reduced speed limits as an interim measure while Safe System infrastructure upgrades are implemented
- The crash investigation process can be enhanced through a revised focus on identifying preventative measures in reducing risks

- The electronic enforcement infrastructure can be enhanced to directly deter speeding

## Implications and Next Steps

The consultants recommended sixteen specific practical improvements for Iran, listed in Appendix A, all of which have been endorsed by the NRSC. These recommendations endorse the establishment and continuance of the demonstration project to be supported by interagency collaboration and enhanced data sources. It is critical to acknowledge the importance of an integrated approach using multi-discipline skills and partnerships to achieve common objectives. Upgraded training is recommended across all road safety sectors as well as an internal and external communication strategy. The project should maximise current and emerging technologies, maximise research opportunities and strive to achieve benchmark status for Iranian road safety.

The consultants advocated three priority actions:

1. Use the new speed limit guidelines to trial changes in demonstration sites – enhanced safety model corridor(s);
2. Improve data quality and accessibility; and
3. Plan and carry out public education and general deterrence programs of action.

The demonstration project has commenced in the three provinces, officially launched by senior government ministers on 27 April, 2021, with oversighting, monitoring and evaluation over the next three years. The initiation of this project provides a practical example and impetus for other low- and middle-income countries to commit to a structured process of reform within the framework of SSA. Using the coordinated skills of a national team supported by international professionals ensures knowledge transfer and capacity building aligns with good practice with the ultimate aim of saving lives.

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## Appendix A – Recommendations presented and endorsed by the National Road Safety Commission

**Recommendation 1** – Implement a demonstration project on Enhanced Safety Model Corridors.

**Recommendation 2** – Improve the collection and analysis of crash data and share the data with all interested stakeholder organisations.

**Recommendation 3** – Plan and carry out a general deterrence campaign, involving high profile speed enforcement and complementary public media campaign.

**Recommendation 4** – Review and improve interagency collaboration and the role of the National Road Safety Commission.

**Recommendation 5** – Improve the integrity and timeliness of the administration of speed offence penalties.

**Recommendation 6** – Arrange for intensive road safety traffic enforcement and crash investigation training by international experts for Traffic Police

**Recommendation 7** – Arrange for intensive training by an international expert for the development of public education campaign expertise within the RMTO, Ministry of Health and Medical Education, Traffic Police and NGOs.

**Recommendation 8** – Arrange for intensive training by an international expert on speed limit setting with the use of the new guidelines.

**Recommendation 9** – Develop and implement a program of speed blackspot identification and remediation.

**Recommendation 10** – Develop and resource an annual program of public education and social marketing on speed risk and enforcement.

**Recommendation 11** – Implement a graduated licensing/ education system modelled on a competency-based framework.

**Recommendation 12** – Review speed management regulations and penalties and improve the deterrent value of these penalties.

**Recommendation 13** – Promote the use of emerging technologies and telematics, such as those developed by the Tehran University of Medical Science, to employers, universities and others.

**Recommendation 14** – Develop and commission a program of speed management research and evaluation to expert research bodies.

**Recommendation 15** – Conduct and report on speed surveys at all high-speed-risk locations the rural road network at least once per year.

**Recommendation 16** – Implement a benchmarking program of Iran traffic enforcement against International standards in a star-rating assessment using the International Road Policing Assessment tool.