DEVELOPING SPEED MANAGEMENT PROGRAM FOR IRAN

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ABSTRACT

Speed of vehicles in roads, is a main traffic parameter. But it should be noted that safety issues are the most important problems of excessive speed, i.e. driving too fast for conditions. According to worldwide studies, about 25 to 35 percent of accident fatalities are due to excessive speed. Investigations in Iran have shown that about 30 to 40 percent of road victims are killed or injured due to excessive speed.

Upon importance of the role of speed control in reducing negative safety issues of roads, especially rural roads, nowadays so much efforts are made in many developed or even developing countries. These efforts are generally concentrated on the field of control, surveillance and enforcement of vehicular speed while the approach of these efforts is coordinately progressed to the same objectives.

Almost in all cases it was noted that proposed goals, strategies, actions and countermeasures should be developed in the form of instructions, usually called “Speed Management Program”. In fact Speed Management is a complex problem. It involves many factors including public attitudes, driver behavior, vehicle performance, roadway characteristics, enforcement strategies, court sanctions, and speed zoning. This program includes Engineering, Education, Enforcement and Evaluation process to control speed of vehicles. Generally in all Speed Management Programs, there is an interest in how to best determine and set reasonable and safe speed limits and to effectively enforce them.

Because of vast problems due to large amounts of road accidents and fatalities, conclusive officials' determination has been set to improve road safety in Iran. In this paper speed Management Program, was developed based on a comprehensive research on similar works in other countries.

Keywords: speed, management, program

INTRODUCTION

Speed of vehicles in roads is an important traffic factor which affects public attitudes in selecting shorter or faster routes or even selecting type of travel mode. Also, thrill made by speed is often pleasant for many people, especially younger drivers. But it should be noted that the most important problem of excessive speed is increasing in decision and stopping sight distances. Increasing speed causes increasing those distances, exponentially. Other undesired effects of excessive speed are as increasing probability of collision, decreasing drivers' level of ability, increasing in vehicles' kinetic energy and consequently increasing in magnitude of impact and injury and death probability. Also, difference in speed of vehicles using a certain section of road at the same time may cause collisions.

Studies and statistical analysis of recorded accident data, declared that speed is one of the most important and main factors in occurring road casualty accidents, worldwide. According to those studies, worldwide, about 25 to 35 percent of deaths in road accidents are due to excessive speed. Investigations in Iran shows that about 30 to 40 percent of road casualties are speed related. It should be noted that according to huge number of annually accidents and casualties in Iran (about 30,000 deaths annually), 30 to 40 percent of road casualties represent so many of whom died or injured. Road accidents in Iran annually cause huge undesired economic impositions. As a result, by using efficient and optimal speed control and surveillance methods, number of collisions, injuries, fatalities and consequently economic effects will decrease.

To reach this aim, nowadays so much effort are carrying out in the field of developing efficient methods in optimal, coordinating and all-around control and surveillance methods in developed and some developing countries. Almost in all cases, goals, strategies and related actions, are gathered in the form of instructions, usually called "Speed Management Program".

INVESTIGATION OF CURRENT SPEED CONTROL AND SURVEILLANCE PROCESSES IN IRAN AND COMPARISON WITH CONDITIONS IN OTHER COUNTRIES

Determining role of Speed in Occurring Accidents and Decreasing Safety

As it implied high number of accidents and casualties occurring in Iran annually. Accidents cause death in many of our compatriots, annually. Problems such low level of publicity and educational levels towards drivers, weak geometric design of roadways and their condition, lack of road safety equipments, weak designing and manufacturing standards in car factories and also lack of continuous control and surveillance especially in rural roads by police, cause epidemic of road accidents in Iran. Glance to road accident data, reported by Iranian officials, show that this national tragedy has an ascending trend comparing with previous years. In the last 10 years, number of accidents, injuries and fatalities has grown 322, 503 and 244 percent respectively. In this regard, speed of

vehicles has an important role in happening accidents. Studies show that this agent, especially in recent years, cause 35 to 40 percent of casualties and 25 percent of accidents.

Determining Current Conditions in Speed Control and Surveillance and Identifying Related Existing Problems and Gaps

Program planners and decision makers in Iran have not had a comprehensive and executive program for managing speed in roads, yet. So speed of vehicles in roads has been so problematic for them. But they also have identified the importance of effective factors in a Speed Management Program, including human and behavioral, technological and sanction and enforcement related factors, relatively. Because of the lack of strong management, there is not suitable base for correct implementation of related actions and countermeasures. Often those countermeasures have been done independently and with no attention with other sections activities. Most of strategies and actions in this regard, have been introduced via short or intermediate programs and results and consequences of actions have not been evaluated properly. The most important actions have been considered yet in the field of improving speed related safety of roads, are as follows:

1- Decreasing number of road sections which require lower speed limits, via methods such increasing radius of curves, changing routes, building bridges or climbing lanes.

2- Forbidding movement of trucks in some roads or in some days.

3- Forbidding movement of attrite vehicles.

4- General educations about road safety in schools, although uncoordinatedly.

5- Distributing booklets in kindergartens to educate safe walking.

6- Making attractive animations with collaboration of police officials and showing in TV or advertising from Radio.

7- Publicizing safety and speed related issues in newspapers, brochures, tracts, posters and billboards.

8- Providing School Area Safety Plans and implementing in some schools located near rural roads.

9- Establishing police schools and police faculties and educating police troops.

10- Legislating rules considering demerit points for speeding drivers. (Although these rules do not execute in practical)

11- Providing police with related equipment to control surveillance and penalize. Police stations in Iran were equipped to RADAR equipments in 1973. Modern

equipments which stations were equipped to them are stationary and mobile speed cameras, police patrols can use video systems and also automated speed enforcement systems.

12- Using speed calming techniques in roads especially in urban areas.

13- Providing plans for equipping public vehicles with GIS systems in order to assess their speed by use of satellite systems.

Despite the actions considered above, there are many problems and gaps in implementing speed control programs. They are typically classified in 4 following categories:

Public attitudes, Education and Publicity

Main problems categorized in this set are as follows:

1- Drivers' motivation in driving with excessive speed because of thrills especially amongst younger drivers.

2- Overestimating effect of speed in shortening travel time by drivers.

3- Weak of public awareness about the effect of speed in occurring accidents, injuries and deaths.

4- Drivers and passengers low attention to road safety issues and speed related concepts.

5- Disobeying drivers from speed related rules.

6- Excessive reliance of drivers on their personal experiences.

7- Drivers' disagreement with speed limits.

8- Inability of drivers in maintenance of distance with lateral or frontal vehicles.

9- Lack of awareness amongst drivers about differences of driving in urban and rural areas.

10- Lack of awareness amongst drivers about differences of driving in daytime and nighttime.

11- Lack of awareness amongst drivers about driving in different climatic conditions.

Coordination and Interaction between Related Organizations

Existing problems due to weakness in coordinating the involved organizations are as follows:

1- Lack of strong, orderly and coordinated managing activities to make alliance between all organizations.

2- Indeterminacy in duties each organization is responsible for.

3- Lack of practical guarantee in Safety Commission approvals.

4- Inconspicuous provincial effects in Road Safety Commission approvals.

5- Lack of a systematic process for registration and analysis of accident data.

6- Lack of a strong position for Non-Governmental Organizations (NGO) in preparing and implementing speed management program.

7- Lack of an orderly system for periodic vehicle inspection.

8- No suitable system for retiring off-duty vehicles from transportation fleet.

Effective, Dynamic and All-Around Legislation and Enforcement

Existing gaps in this regard are as follows:

1- Citation issues toward vehicles' owner instead of their drivers.

2- Equity in fining drivers who exceed speed limits by various amounts.

3- Not considering factors such kind of vehicle and number of passengers in the amount of speeding fines.

4- Lack of inhibitory rules to forbid car factories advertising speed of vehicles.

5- Lack of equity in confliction with offenders.

6- Not registering a driver's infringements in his driving license despite there is related rules.

Infrastructural Facilities, Fleet, Equipments and Technology

Main challenges in this regard are as follows:

1- Lack of appropriate and speed related standards in producing vehicles based on road conditions and driving behavior.

2- Inattention to maximum national statutory speed limits in producing vehicles.

3- Lack of control laboratories on safety of vehicles.

4- Concentrating the advertisements of vehicles on their speed.

5- Not participating Operating Speed in selecting Design Speed

6- Sharing roadway between local and transit traffic.

7- Lack of appropriate system and solidarity in selecting speed limits in road network.

8- Difference between speed limits posted in the same conditions.

9- Lack of systematic method in equipping roads with safety equipments specially speed safety.

10- Lack of systematic method in identification and analyzing black spots.

Investigating successful Experiences of Other Countries in Setting Goals, Strategies, Actions and Countermeasures

According to investigations, main objectives which have been considered in preparing Speed Management Programs in developed countries are as follows:

1- Modifying public knowledge, awareness and attitudes against thrills of excessive speed.

2- Creating a safe road environment and decreasing speed related crashes.

3- Reinforcing the relationships between organizations involved in the program.

4- Producing safer vehicles specially when driving fast.

5- Developing and utilizing modern technologies in road network and vehicles for adjusting vehicular speed with roadway condition.

6- Access to environmental benefits via control of speed.

7- Access to economic benefits via control of speed.

In all developed speed management programs, set of actions or countermeasures are introduced in four categories including Engineering, Education and Enforcement and ultimately Evaluation of the actions have been utilized. In the following, we will explain the actions considered in other countries "Speed Management Program", considering these categorization.

Engineering Actions

1- Using calming methods to reduce speed of vehicles especially in urban and suburban areas.

2- Improving roadway environment by auditing roadway geometries and adopting posted speed limits according to roadway conditions.

3- Modifying right of way according to speed management program for reducing dangers of excessive speed.

4- Verification of existing posted speed limits and determining appropriate speed limits.

5- Canalizing undivided roadways to eliminate head-on collisions.

Publicity and Education

1- Educating drivers about undesired consequences of excessive speed and the importance of speed control

2- Encouraging drivers to buy safer vehicles according to speed related standards.

3- Educating pupils with different road safety curriculums.

4- Constituting groups for doing public education and publicities.

5- Developing advertisement and announcement actions such familiarizing road user speed related rules and speed limits.

Enforcement

1- Modifying or developing rules to proportionate and appropriate issuing of aggressive drivers

2- Carrying on speed enforcement by efficient experts using modern technologies and equipments

3- Developing a network of speed cameras posted in appropriate sites

4- Using speed control equipments and police troops based on an orderly time frame schedule.

Evaluation

Ideal and measurable criteria should be used in evaluating the program and investigating success of program in approaching to predetermined objectives. In this regard, main criteria are as follows:

1- Operating speed consistency with pre-determined speed limits.

2- Amount of reducing in speed related crashes.

3- Amount of reducing percentage of offenders.

4- Amount of uniformity in the speed distribution of vehicles.

5- Amount of reducing in sound and air pollutions.

DEVELOPING GOALS FOR SPEED MANAGEMENT PROGRAM IN IRAN

According to high percentage of speed related accidents, fatalities and injuries in Iran, it is diagnosed that the most important speed related problems in Iran are safety issues. To improve speed safety conditions in Iran and decreasing speeding tolls, predetermined objectives used in preparing speed management program for Iran, are mentioned below:

Legislation Modification

Modifying drivers' speed behavior via utilization of actions and countermeasures introduced in speed management program requires dynamic legislation and updating existing rules, based on common driving culture. It should be noted that almost in all cases, speed management requires legislation or modifying and adjusting rules. In this regard, increasing rules compatibility and considering conditions offence has occurred in, increase level of efficiency. This strategy can be considered in developing speed management instructions. The mentioned objective can be achieved through following actions:

1- Modifying existing rules in a manner that the amount of speeding fines vary based on the amount of exceeding the posted speed limit, number of passengers, kind of vehicle and its load.

2- Assigning demerit points to offender's license of driving and intensifying penalizing, applying heavier fines, as well as obligating them to participate in related courses.

3- Obligating car factories regarding speed safety standards in their productions.

Coordinating Relevant Organizations

All organizations involved in accomplishing speed management program, must collaborate in an appropriate manner. To achieve this objective, all involved organizations must work under supervision of a commission i.e. road safety commission. This commission as a unit which performs managing and coordinating tasks does its duties in the field of speed management program. Actions which are considered in Speed Management Program must be planned and pursued via this commission. Main strategy in coordinating involved organizations include defining rule of commission as well as duties of each organization in running speed management program.

Setting Appropriate Speed Limits in Roads

Determining appropriate speed limits in road sections is one of the most objectives of speed management program. In road sections which using statutory speed limits, is not suitable because the presence of special conditions, speed limits should be posted based on speed zoning methods. To consider all effective factors in selecting speed of vehicles by drivers using 85th to 90th percent of vehicles speed, moving under free flow conditions, is the best criteria in selecting appropriate speed limit. Main strategies to achieve mentioned objective are developing an appropriate methodology in calculating roadway speed limits as well as developing a method for evaluating effectiveness of the posted speed limits. Actions considered in developing speed management program via mentioned strategies are as follows:

1- Determining appropriate speed limits under supervision of professional committees in road safety commission

2- Using appropriate speed zoning method.

3- Evaluating posted speed limits after passing acceptable time.

4- Using temporary speed limits in special conditions like work zones.

Using Publicity Specially about Speed Limits

As a supplementary and complementary tool, publicity can enhance the implementation of a speed management program. In general, a set of actions are used to enhance road safety, are more effective when arouse arbitrary acceptance of motorists. To achieve this purpose, developing guidelines for enhancing publicity is inevitable.
Using publicity before enforcement is very useful. Increasing perceived risk of apprehension and consequently increasing general deterrence level is the most important benefit of using publicity accompanying enforcement. Moreover, using publicity may increase necessity of enforcement in people mind and consequently decreasing road accidents following strategies have been used in preparing Speed Management Program in Iran.

1- Using appropriate methods for drivers' publicity.

2- Publicizing posted speed limits in roads.

3- Publicizing existing speed related rules.

4- Using publicity about how police use speed surveillance and enforcement methods.

Based on the above strategies, following countermeasures have been developed.

1- Informing speed limits in roads, properly and on time.

2- Using publicity about rules and sanctions about speed and its related infringements.

3- Continuously general publicity about speed enforcement via mass media.

4- Increasing level of publicity when speed control must accomplish more extensively.

5- Decreasing time gap between beginning of the publicity and beginning of the real speed surveillance in roads.

Equipping Vehicles, Roads and Police with Suitable Equipments for Comprehensive Vehicular Speed Surveillance and Control

Using modern control and surveillance instruments by police is very effective in decreasing number and intensity of crashes. But because of difficulties in working with such devices, most researchers are tended to the methods which concentrate on causes of speeding and speed behavior. In this regard, decreasing probability of speeding via modifying roadway conditions, vehicles or combination of two, make speeding impossible for drivers. In the speed management program, strategies related to the above goal are as follows:

1- Using appropriate speed warning and speed limiting devices in vehicles.

2- Equipping traffic police with modern speed enforcement devices and technologies.

3- Using appropriate physical and perceptual methods for reducing speed in roads.

4- In this regard, following actions are considered in speed management program:

5- Necessity of doing speed related quality control tests in national car factories and have a wide supervision on imported vehicles.

6- Recommending national car factories to in using speed limiting devices in their productions.

7- Recommending national car factories to consider the statutory speed limits in determining how fast their productions can run.

8- Forbidding the use of speed parameter in advertising cars.

9- Using physical speed calming methods based on road classification, its locations and desirable reduction in speed of vehicles.

10- Using perceptual speed calming methods, if considerations show using these methods are efficient.

11- Using optimal fixed and mobile speed enforcement methods based on recommendations suggested in the speed management program.

12- Assigning equipments for speed surveillance to rural police stations proportional to the speed related crashes have been occurred in each police station jurisdiction.

13- Decreasing time lag between the instance an infringement occurs and the instance ticket receiving to the offender.

Developing an Optimum Method for Speed Surveillance, Control and Enforcement of Vehicles

This section covers a set of actions about speed enforcement. Predicting drivers from unsafe behaviors, is an important part of speed management program, which may be caught via speed related rules and legislations. In this regard, deterrence is known as a process which can change speed behavior. Better accessibility to deterrence is the ultimate goal in developing optimal system in speed surveillance, control and enforcement. Enforcement should be carrying out in the offence scene. Because expediting the punishment is an important factor in increasing efficiency of each enforcement system. In this regard, developing appropriate speed surveillance, control and enforcement method with spatial and time scale coverage is an important strategy. Following actions are considered in approaching to the mentioned objective:

1- Noting that the effect of enforcement methodology is more important than increasing the amount of fines in preventing offenders in exceeding speed.

2- Noting the necessity of publicity before doing speed enforcement.

3- Concentrating the enforcement activities on regions which exceeding speed limits are high and speed related crashes are occurring mainly in those regions.

4- Selecting appropriate amount of equipment and the best method for speed enforcement based on existing restrictions.

5- Expediting intensity of speed control and surveillance when volume of

6- vehicles increases.

7- Doing speed enforcement, in a visible manner if possible.

Using Educational Method

Education of road users is an important part of each speed management program. It is important to use attractive and efficient methods in safety educations. Related actions considered in this regard mainly increase road users' knowledge, change public attitudes and also make new social behaviors. Following strategies approach the actions towards determined objectives:

CONCLUSIONS:

According to worldwide studies, about 25 to 35 percent of accident fatalities are due to excessive speed of vehicles.
Investigations in Iran show that about 30 to 40 percent of accident fatalities are due to high speed of vehicles.
Because of importance of the role of speed control in increasing roads' safety, effective measures must be applied to lessen speeding dangers while achieving an appropriate balance between the societal goals of safety and mobility. Speed management program has been developed in the following phases:
Phases1: Determination of the ratio of speed related accidents and the role of excessive speed in causing accidents and consequently reducing safety level.
Phase 2: Investigation of experiences of successful countries in developing and carrying out speed management program.
Phase3: Identifying current conditions of control and surveillance of vehicular speed and consequently challenges and difficulties of accessing to suitable and proportional objectives.
Phase4: Proposing a "Speed Management Program" adopted with Iran conditions.
The aim of this paper is to present an overview of circumstances which have been used in developing Speed Management Program for Iran, such as identification and modification of existing juridical gaps, coordinating organizations involved in Speed Management Program, using publicity and education about speed related safety problems, developing a method for speed zoning in rural roads, equipping roads, vehicles and police with appropriate equipments and developing a method for optimized police enforcement. Findings of this study are presented in the form of guidance to those who must make decisions about speed related topics.

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