

Research

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Studying the Role of Traffic Flow Control Methods in Freeways and its Effect on Drivers' Behavior

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ABSTRACT

High and improper speed is one of the most important factors in traffic accidents in many countries; as long as vehicle and road conditions remain constant, the severity of the accident increases by speeding the vehicle up. Therefore, injuries and damages caused by traffic violations and, consequently, road accidents are important and significant matters challenging the public health of society. Therefore, speed management is necessary to control the severity of accidents; thus, it is important to reduce casualties due to accidents. Speed cameras could be considered as one of the most important tools for managing the traffic flow on freeways. The methodology of the present study is quantitative and cross-sectional, and its main purpose is to investigate and analyze the role of traffic flow control methods on freeways and its effect on driver's behavior on the Karaj-Qazvin freeway based on comparative and field studies. In this study, after reviewing the traffic flow control methods, a standard questionnaire was prepared to analyze the studied traffic flow control and their feasibility on the Karaj-Qazvin freeway and was distributed among the members of traffic police and drivers. Data were inputted into SPSS software, and research hypotheses were tested using linear regression. The results indicated that the number and type of video surveillance cameras, along with the simultaneous presence of police in the route, is effective to reduce speed and driving violations.

Keywords: Traffic, Speed, Crash Reduction, Camera, Regression.

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1. INTRODUCTION

High and improper speed is one of the most important factors in traffic accidents in many countries [1-4]. The higher the speed, the greater the distance required to stop the car, resulting in an increased risk of injury from the accident. Many drivers are unaware of the involved risks and often consider the benefits of speed violation higher than its potentially critical consequences [5, 6]. Drivers' speed can be controlled by factors such as accelerators, traffic police, signs and equipment, and speed cameras. Speed cameras are considered one of the most important tools for managing the traffic flow on freeways. Speed cameras are used as an important element for managing vehicle speed in the field of intelligent systems. These cameras were first used in the United Kingdom in 1991 to encourage drivers to comply with speed limits. [7] The use of automatic speed control tools such as speed cameras will

facilitate following up and warning the violators. In the traditional procedure, with the presence of police forces, when the offending vehicle is stopped for submitting the fine sheet, it occurs an interruption in the control process, which may lead to the failure to identify and stop other vehicles moving at an unauthorized speed at the same time. However, by using automatic speed control tools, there is no need to stop the car in place, and as a result, speed control will be done continuously. This will increase the performance of the police together with increasing the identification and arresting the offending drivers, which will by itself increase the level of deterrence [8]. Injuries resulting from traffic violations and, consequently, road accidents are important and significant issues that can challenge the public health of the community. Therefore, in order to reduce these damages, there is a need for coordinated and integrated