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Modeling of Road Accidents Using the Model of Interactive Highway Safety Design (Case Study: Roads of Qazvin, Zanjan and Hamadan)

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ABSTRACT

Although the increasing expansion of traffic in cities has increased economic and welfare benefits, it has, on the contrary, increased the number and severity of traffic accidents. Reducing the number of victims and injuries caused by road accidents in any common moral-value system is urgent and inevitable. In this way, finding effective factors on the severity of road injuries can be considered as a practical step towards achieving the values. Finding effective factors on severity of injuries, with emphasis on statistical efficacy of effective policy-making factors, will be used as an appropriate tool in the middle level of road safety management. Accident prediction results using MATLAB software in selected roads showed that although this model, by choosing the appropriate calibration factor and using the appropriate parameters and high precision, can produce good outputs, but the results are less accurate than the MLP. The statistical analysis of the observed values and the predicted crash values showed that their differences were not statistically significant at the 5% confidence level, and their results could be used to predict crashes and determine future conditions.

Keywords: MATLAB software, crash prediction, two-lane roads, Interactive Highway Safety Design

1. INTRODUCTION

The design of accidents, especially accident prediction, is one of the major research areas in traffic engineering [1,2]. In the study of accidents in the rural roads of the country, the relationship between geometric factors and accident occurrence has not been paid much attention [3-5]. Simon Huskying and colleagues in 2009 examined the effects of sending short messages to young Reviewed the role of road geometric design parameters in safety and reduction of road accidents. In his opinion, an accident and safety appear against each other. The accident is due to the lack of understanding the design principles as well as the drivers. According to their studies, the amount of time the driver does not pay attention to and does not pay attention to the driver while sending an SMS is more than 400% of the driver who does not send a message while driving. Also, according to their research, the safety clearance of these drivers decreased by 150% [6]. In 2018, Hou

lack of attention to traffic rules and regulations. But safety increases with respect to design rules and engineering principles. In this study, the effects of vehicle-road and driver have been investigated as three factors affecting traffic. Also, the parameters