**عنوان مقاله:**

(Modelling Traffic Crashes Using Takagi-Sugeno Fuzzy Inference System (Case Study: Qazvin-Rasht Highway

**نویسندگان:**

Majid Ehsani Sohi - *Dept. of Mathematics and Computer Science, Amirkabir University of Technology*

Adele Kardar - *Dept. of Transportation Engineering, University of Golestan*

Razieh Asoode - *Dept. of Transportation Engineering, Imam Khomeini International University*

Alireza Jafari Anaraki - *Dept. of Roadway and Transportation Engineering, K.N. Toosi University of Technology*

**خلاصه مقاله:**

There are numerous studies in the literature that have established the relationship between crash occurrence and roadway characteristics. Nevertheless, few efforts can be found in the related literature to utilize fuzzy inference system for modelling traffic crashes. This study aims at applying a Takagi-Sugeno fuzzy inference system (TS-FIS) to model road crashes as a function of road and roadside attributes. For this purpose, detailed information on crash data, road geometric design, and roadside characteristics were collected on Qazvin-Rasht intercity highway for a two-year period (2008-2009). The results showed that lane width (LW), shoulder width (SW), land use (LU), and minor access points (AP) significantly affect crash frequency. Furthermore, to investigate the appropriateness of the TS fuzzy system in modelling traffic crashes, a negative binomial regression model was also developed and compared with the proposed approach. The comparison results showed that the TS-FIS model gives better results than the NB model. As a result, the fuzzy-based model developed herein could be used as a superior alternative to model traffic crashes, which are viewed as complex and rare events.

**کلمات کلیدی:**

Takagi-Sugeno fuzzy inference system, Crash prediction models, Rural roads

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