

## عنوان مقاله:

A Genetic Algorithm Based Reliability Assessment of Crash Modification Factors Calculated by Full Bayesian Method

## محل انتشار:

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## خلاصه مقاله:

Given the importance of reducing crashes, as well as the implementation of principled and practical road safety measures, it is necessary to calculate the Crash Modification Factors (CMFs), which is the main factor in road safety effectiveness analysis, with high accuracy. Therefore, reliability assessment is of great importance and necessity for calculating CMFs. In this study, a method for evaluating the reliability of CMFs using metaheuristic Genetic Algorithm (GA) is presented. The proposed model is defined based on the before-after study method with the comparison group and based on the Full Bayesian (FB) method for calculating CMFs. The Monte Carlo Markov Chain (MCMC) has been applied for calculating posterior distributions as a sampling method that allows the simulation of posterior samples from complex distributions. Crash data, categorized into total crashes and fatal-injury crashes, were collected from the city of Karaj and had a period of 5 years (۲۰۱۶-۲۰۲۰). The remedial action of signaling the intersections along with the installation of the counters was considered as the treatment considered in the study. Results show that the CMF value for remedial action of signaling intersections with counters, did not have a significant impact on reducing total crashes ( $CMF=1.07$ ). On the other hand, by evaluating the CMF values calculated for fatal-injury crashes, it is determined that the calculated CMF is approximately equal to ۰.۷۵, which indicates the positive effect of the remedial action and reduction of fatal-injury crashes. In addition, according to the proposed GA-based rating system, CMF values for fatal-injury crashes have the highest rank, which indicates a very high reliability for the calculated CMF values. Therefore, it is possible to confidently take the remedial action of signaling intersections with the installation of a counter as an effective measure to reduce the number of fatal-injury crashes.

## کلمات کلیدی:

crash modification factor, Genetic Algorithm, Full Bayesian, Monte carlo Markov chain

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1866123>



