عنوان مقاله:

Evaluating the Relationship between Operating Speed and Collision Frequency of Rural Multilane Highways Based on Geometric andRoadside Features

محل انتشار:

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خلاصه مقاله:

Speed is one of the main functional factors that affect road safety in terms of both collision occurrence and collision severity.Previous studies have shown that several roadside and geometric features affect road safety and operating speed. Thispaper aims to evaluate the effects of roadside and geometric features on operating speed and collision frequency,simultaneously. For this purpose, the operating speed data of 103 segments along with their accident data and roadside andgeometric characteristics were collected. Structural equation modelling (SEM) with latent variables was employed tomodel operating speed and collision frequency, simultaneously. Two latent variables including geometric effect and roadside effect were defined in SEM. The first latent variable is the combination of the natural logarithm of the segmentlength, longitudinal slope, the presence of a 2-meter paved shoulder, and curvature of the segment. The indicators of thesecond latent variable are the number of accesses and the presence of residential land use. The results show that the latentvariable roadside effect increases collision frequency by a standard regression weight of 3.455; however, it reducesoperating speed by a standard regression weight of –0.385. Also, the latent variable geometric effect causes an oppositeeffect on collision frequency and operating speed by the standard regression weight of –5.313 and 0.730, respectively.Besides, lower operating speed causes a reduction in the collision frequency by the standard regression weight of 7.734.The results of this study can be useful for designers .and road safety agencies to improve road safety

کلمات کلیدی:

Operating Speed; Collision Frequency; Geometric Features; Roadside Features; Structural Equation Modeling