

Modeling the interaction between vehicle yielding and pedestrian crossing behavior at unsignalized midblock crosswalks

Abstract

The interaction between pedestrians and vehicles is an inevitable phenomenon at unsignalized midblock crosswalks. This study aims to contribute to a better understanding of the interaction between vehicle yielding and pedestrian gap acceptance (VY and PGA). A microscopic traffic flow model was established to describe the interaction and explores its effect on traffic flow. The VY and PGA behaviors were converged into the proposed model. The proposed model was accomplished in a time step simulation. The results stability and descriptive power of the proposed model were analyzed. The proposed model was also validated using empirical data. The effects of the traffic and geometric factors on the operation of the unsignalized midblock crosswalks were discussed based on numerical experiments. Accordingly, the recommendations on choosing the proper control mode of midblock crosswalks (unsignalized or signalized) were proposed.

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