

Effect of Traffic Volume and Its Composition on Vehicular Speed under Mixed Traffic Conditions: A Kriging Based Approach

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Abstract : Use of speed prediction models sometimes appears as a feasible alternative to laborious field measurement particularly, in case when field data cannot fulfill designer's requirements. However, developing speed models is a challenging task specifically in the context of developing countries like India where vehicles with diverse static and dynamic characteristics use the same right of way without any segregation. Here the traffic composition plays a significant role in determining the vehicular speed. The present research was carried out to examine the effects of traffic volume and its composition on vehicular speed under mixed traffic conditions. Classified traffic volume and speed data were collected from different geometrically identical six lane divided arterials in New Delhi. Based on these field data, speed prediction models were developed for individual vehicle category adopting Kriging approximation technique, an alternative for commonly used regression. These models are validated with the data set kept aside earlier for validation purpose. The predicted speeds showed a great deal of agreement with the observed values and also the model outperforms all other existing speed models. Finally, the proposed models were utilized to evaluate the effect of traffic volume and its composition on speed.

Keywords : speed, Kriging, arterial, traffic volume

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