

Lecture Notes in Civil Engineering

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Speeding and Calming Characteristics and Speed Prediction Based on Spatiotemporal Traffic Data



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Abstract Delivering forgiving roads requires controlling traffic speed to levels appropriate for the road environment. Road-related speed management ensures that drivers adopt safe speeds through engineering measures. Evaluating the effectiveness of these safety interventions, like traffic calming measures, is important in data-driven analysis and decision-making. This study's results showed that speed calming measures were effective in changing driver behavior because they significantly reduced operating speeds. Prediction models were also developed by regression analysis for both scenarios of speed with and without the effect of speed calming, in order to comprehend the relation between speed, traffic characteristics, and road geometry. The models validated the role of speed calming measures in traffic speed management by demonstrating that they have a significant impact on speed reduction. The study offers transportation planners and engineers useful information for putting into practice efficient speed management techniques, especially in high-speed or vulnerable straight road stretches. The results also back up the application of focused speed control measures to enhance road safety and speed limit adherence on both urban and rural roads.

Keywords Speed prediction models · Traffic calming measures · Regression analysis · Truck composition

1 Introduction

Reducing accidents and enhancing transportation systems requires an understanding of traffic speed and road safety. Road design, which includes elements like curve geometry, potential for speeding of vehicles, and traffic calming devices, has a big

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