

SAFETY EVALUATION OF LARGE TRUCK-PASSENGER VEHICLE INTERACTIONS AND SYNTHESIS OF SAFETY CORRIDORS

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ABSTRACT

Insights into the nature of large truck-passenger car interactions and the understanding of safety corridors can lead to improvements in the safety and efficiency of freeway operations.

One main contribution of this thesis is the analysis of truck-passenger car interactions on Missouri urban and rural freeways. The analysis consisted of: (1) comparison of mean, 85th, and 95th percentile speeds, (2) investigation of large truck lane usage and (3) comparison of at-fault crashes. Contrary to some public perception, on the average, trucks were found to travel slower than passenger cars. Trucks were found to concentrate mainly in the middle lanes and avoided the right-most and left-most (median) lanes. A new method of analysis was developed using the ratio of truck at-fault crash rates versus passenger vehicle at-fault crash rates, or RSEC ratios. The results show that in fatal and disabling injury rural interstate crashes, the passenger vehicle is more at fault. Trucks are more at fault in fatal and disabling injury urban interstate crashes as well as all minor injury rural and urban interstate crashes.

Another main contribution of this thesis is the development of a synthesis of safety corridor programs conducted throughout the country and the identification of the most promising practices and programs to disseminate among other state departments of transportation. Safety corridor programs use a multi-disciplinary approach to make roadways safer that have higher than average crash problems. This thesis provides a comprehensive list of characteristics and good practices found in safety corridor programs.