A Simulation Analysis for the Installation Influence of Warning Signs on Bus Drivers under an Intersection Bus-Pedestrian Collision Warning System

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Abstract

This study designed a bus driving simulation trying to analyze the visual and operational influences of warning signs on bus drivers under an intersection bus-pedestrian collision warning system. The related parameters were also developed to provide a useful base for the development of an intersection bus-pedestrian collision warning system. We recruited eighteen bus drivers working with a bus company in Taiwan. After factorial analysis of variance (ANOVA) and paired comparison analysis, the experimental results indicated that the installation of variable warning message signs have significant influences on bus drivers' behavior. The best site for an active warning sign is installed on the left side of the approaching bus and ranges 40 m from the edge of crosswalk. Generally speaking, the visual reactions of a bus driver are more sensitive than the operational behavior of the same driver such as perception-reaction time and deceleration behavior. The glance frequency and the glance duration are different significantly when the installation site of the sign and the pedestrian type change. Basically, this study integrates a bus driving simulator and the faceLAB system to design a scenario for analyzing the installation influence of warning signs of an intersection bus-pedestrian collision warning system. The scene can also be used to analyze the influence of normal variable message signs (VMS).

Keyword：Intersection, Bus, Pedestrian, Driving Simulation, Warning Sign.