

# Visual and Operational Impacts of Variable Speed Limit Signs on Bus Drivers on Freeways Using Driving Simulator

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## Abstract

The benefits of variable speed limit signs (VSLS) include preventing drivers from rear-end collisions and maintaining a stable traffic flow on roads. However, the configurations of VSLS will directly or indirectly affect drivers' recognition to VSLS systems and then influence their driving behavior. Since bus passenger occupancy is much higher than that of a small passenger car, a bus accident often causes high fatality and injury rate. Thus, this study integrates a bus driving simulator and the faceLAB system to conduct a driving simulation and analyzes visual and operational impacts of VSLS configurations on bus drivers on freeways. Results show that glance frequency, glance duration and perception reaction time (PRT) are influenced by VSLS configurations. In addition, glance duration and PRT on curved roadside VSLS are significantly higher than those on overhead VSLS. The overhead VSLS is the most effective system for bus drivers to react and slow down.

Keyword : Variable Speed Limit Sign, Bus, Driving Simulator, faceLAB, Impacts.