Safety issues at school zones have been an important topic in the traffic safety field. This study assesses the safety effects of different roadway countermeasures at school zones. Although several studies have evaluated the effectiveness of various traffic control devices (e.g., sign, flashing beacon), there is lack of studies proposing innovative operation and engineering countermeasures, which might have significant improvement of safety at school zones. In this study, the most crash-prone school zone is identified based on crash rates in Orange and Seminole Counties in Florida. Afterward, a microsimulation network is built to evaluate different safety countermeasures. Three different countermeasures i.e., two-step speed reduction, decreasing the number of driveways, and replacing the two-way left-turn lane (TWLTL) with raised median are implemented in the microsimulation. Multiple surrogate safety measures are utilized as indicators for safety evaluation. The results show that both two-step speed reduction and decreasing driveway access significantly reduce crash risks compared with the base condition. Moreover, the combination of these two countermeasures outperform their individual effectiveness. On the other hand, for TWLTL to the raised median, the crash risk is higher than the base condition. The results of this study could help transportation planners and decision makers to understand the effect of these countermeasures prior to implementing them in the real field.

Major: Civil Engineering

Educational Career:
Bachelor's of Civil Engineering, BS, 2015, Bangladesh University of Engineering and Technology

Committee in Charge:
Mohamed Abdel—Aty, Chair, Department of Civil, Environmental and Construction Engineering
Jaeyoung Lee, Department of Civil, Environmental and Construction Engineering
Mohamed H. Zaki, Department of Civil, Environmental and Construction Engineering

Approved for distribution by Mohamed Abdel-Aty, Committee Chair, on May 1, 2019.

The public is welcome to attend.