

Transportation Engineering Seminar Series

Modeling and Analysis of Transportation System: A Study of Lane Closure on Two-Lane Highway Using Microsimulation Method

Presentation Abstract

Lane closure on a two-lane work zone can negatively affect operational performance. Although a microsimulation model is often used to quantify and predict these negative impacts, it requires proper calibration to produce meaningful results. The sixth edition of the Highway Capacity Manual (HCM-6) proposed a microsimulation model. This research examined the applicability of the HCM-6 model in two test sites in Nebraska and found that the HCM-6 estimation of the mean headways and travel times were statistically different from observed data at the 5% significance level. Using an alternative method, this research demonstrated that a two-lane work zone microsimulation model calibrated using the empirical distributions of traffic measures can replicate the corresponding distributions at the 5% significance level. However, if the model was calibrated using the mean value of traffic measures (as HCM-6 did), it could not replicate empirical distributions. The methodology and results of this research will benefit those who design and operate work zones because traffic agencies are interested in the variety of traffic conditions, not just the average.

About the Speaker



Dr. MM Shakiul Haque is a post-doctoral research associate at the Mid-America Transportation Center (MATC), University of Nebraska-Lincoln. He earned his Ph.D. in Civil Engineering (Transportation Systems Engineering) from the University of Nebraska-Lincoln in 2022. He received his Master of Science degree in Civil Engineering (Transportation Systems Engineering) from the Lamar University, Texas in 2017. With over seven years of research experience as a graduate research assistant and post-doctoral researcher, Dr. Haque has been involved with more than 10 research projects funded by the Texas and Nebraska Department of Transportation (DOT), the US DOT, and the University Transportation Center related to transportation engineering

operations and safety. His specific areas of research involvement and expertise include traffic modeling through microsimulation and evaluation of transportation networks, Intelligent Transportation Systems (ITS), connected and automated vehicles, traffic signal systems, work zone operations, and reliability and safety assessment of transportation systems.

Join us in person:

Friday, December 8, 2023

11:00 - 11:50 AM Central Time

Nebraska Hall (NH) Room 404 (in person), Lincoln

Peter Kiewit Institute (PKI) Room 160 (remote), Omaha