“BIG DATA APPROACHES TO UNDERSTANDING THE INTERSECTION OF BIKESHARING & PUBLIC TRANSIT”

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ABSTRACT

Shared mobility systems, such as bikesharing, are rapidly growing in major metropolitan areas. However, it is unclear how these new shared modes impact existing public transit systems. This research takes a first step toward understanding the interactions of bikesharing and public transit systems. The results of two studies that utilize big data sources will be presented. The first study aims to quantify the impact that bikesharing had on bus ridership in New York City. The phased implementation of bikesharing to different areas of New York City created a natural experiment, which is exploited by dividing bus routes into control and treatment groups based on if they are located in areas that received bikesharing infrastructure or not. Daily bikeshare and bus ridership data are utilized in a difference-in-difference modeling framework. The second study focuses on a smartphone app known as “Transit” that is used to unlock bikeshare bicycles in numerous cities. Data from the Transit app are utilized in a two-part analysis of Chicago’s Divvy bikeshare system. First, cluster analysis is used to classify bikeshare user into groups with similar behavior. Then, a trip chaining algorithm is proposed to identify “bike chaining” trips. This term is introduced to describe bikeshare users who return a shared bicycle and immediately check out another, presumably to avoid paying extra usage fees for trips over 30 minutes. The results of these two studies are important for transportation service providers in major metropolitan areas to better understand user behavior, particularly as new shared mobility modes become increasingly popular.

BIOGRAPHY

Candace Brakewood is an Assistant Professor of Civil and Environmental Engineering at the University of Tennessee, Knoxville (UTK). At UTK, she teaches a graduate-level course in Public Transit Planning and Operations and an introductory undergraduate Transportation Engineering class. Her research group focuses on public transit and new shared mobility modes. Prior to UTK, she served on the Civil Engineering faculty at the City College of New York for three years. She holds a PhD in Civil Engineering from Georgia Tech, dual MS degrees from MIT in Technology Policy and Transportation, and a BS in Mechanical Engineering from Johns Hopkins University.