Bruce Podwal Seminar Series

Advances in ICT-enabled transit fare management strategies

Tuesday, October 6, 2015
12pm in the Steinman Exhibit Room

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Abstract
With increasing urbanization and consequences in more severe and volatile congestion effects, urban public agencies are looking for better solutions to maintain sustainable mobility. Public transit agencies, in particular, can set fare prices as part of their management strategies, and have been using that tool for many decades since the seminal research of Mohring (1972), Cervero (1981), and others. Today, transit agencies have more options than ever before for setting and differentiating fares, thanks to advances in information and communications technologies (ICTs). This talk will sketch out an overview of several research studies that my group has conducted at Ryerson University in the last three years related to this topic in supporting “smart” data-driven systems. One of the questions we sought to address is “how challenging is it to systematically design a differentiated fare pricing system across a network”? Or, in other words, how can we convince the MTA of the value of switching to smartcard or mobile device payment options? We illustrate using simple examples how challenging this can be, and summarize lessons learned in evaluating Toronto’s subway system. We studied how ICTs may alter the way transit agencies operate their fares. We investigated the feasibility of an electronic platform that would allow transit agencies to engage with private sector to manage fares, such that large venues like the U.S. Open might offer subsidies to travelers via transit to reduce the traffic and parking congestion impacts. Different operating paradigms are highlighted and evaluated using non-cooperative game theory. Lastly, we touch upon demand-responsive services. With the rise of alternative mobility service providers from the private sector (e.g. Uber, Lyft, Via) in NYC, public agencies are concerned with the impact these services have on the public social welfare. We offer up a new framework for designing fares for these systems based on queue tolling concepts.

Biography
Dr. Joseph Chow is an Assistant Professor in the Department of Civil & Urban Engineering at NYU. His research expertise lies in transportation systems, with emphasis on multimodal networks and behavioral urban logistics. As of 2015, Dr. Chow has over 50 publications, with 30 articles in distinguished journals like Transportation Research Parts A, B, C, and E, and Transportation Science. He is a subcommittee chair at the Transportation Research Board of the National Academies and a guest editor for a special issue on alternative fuel vehicles in Transportation Research Part C. Prior to NYU, Dr. Chow was the Canada Research Chair in Transportation Systems Engineering at Ryerson University, where he secured more than $1M in grant funding. From 2010 to 2012, he was a Postdoctoral Scholar at UC Irvine and a Lecturer at University of Southern California, where he led the development of a $1.4M statewide freight forecast model for Caltrans. He has a Ph.D. in Civil Engineering from UC Irvine (‘10), and an M.Eng. (‘01) and B.S. (‘00) in Civil Engineering from Cornell University with a minor in Applied Math. Dr. Chow is a former Eisenhower and Enon Fellow and a licensed PE in NY. He is a fellow New Yorker who attended Stuyvesant High School.

Light refreshments will be served.