Comparing Congestion Pricing Schemes: Cordon-based Pricing, Area-based Pricing and Parking Deposit System

Thursday, Sept. 27, 2007
4:00 – 5:00 pm
Refreshments available at 3:30 pm

Location:
The Transportation Center
Chambers Hall, Lower Level Conference Center
600 Foster, Evanston

Abstract: This research compares performances of cordon- and area-based congestion pricing regimes on their social welfare benefit and equity impact. The key difference between the two systems is that the cordon charges travelers per crossing whereas the area scheme charges the travelers for an entry permit (e.g. per day). For the area licensing scheme, travelers may decide to pay or not to pay the toll depending on the proportion between their travel costs for the whole trip-chains during a valid period of the area license and the toll level. A static trip-chain equilibrium based model is adopted in the paper to provide a better evaluation of the area-based tolls on trip-chain demands. The model is tested with the case study of the Utsunomiya city in Japan. The results demonstrate a higher level of optimal tolls and social welfare benefits of the area-based schemes compared to those of the cordon-based schemes. Different sizes of the charging boundary have significant influences on the scheme benefits.

In addition, Parking Deposit System is recently proposed to improve public acceptability of congestion pricing policy. In this integrated system, drivers will be tolled to enter a designated zone, but the charged toll will be cashed out to some drivers who have their destination in the charged area as a deposit. The effect of this system is also investigated with the trip-chain equilibrium model.

Bio: Dr. Maruyama graduated from the University of Tokyo with his PhD in Environmental Studies in 2004. His PhD Dissertation won the Young Scholar Paper Prize by The City Planning Institute of Japan, and his research interests include transportation network equilibrium analysis, induced traffic, congestion pricing, and travel behavior analysis. Until recently, he worked at the University of Tokyo as a Research Associate. He is now a Postdoctoral Fellow at University of Texas at Austin, in collaboration with Dr. Kara Kockelman, and funded by Japan Society for Promotion of Science.