An Integrated Choice and Latent Variable Framework to Incorporate the Influence of Travel Time Variability in Truck Route Choice

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Date: **8 October 2018 (Monday)**
Time: **17:00 – 18:00**
Venue: **Room Z414, 4/F, Block Z,**
181 Chatham Road South, Hunghom,
The Hong Kong Polytechnic University

Speaker's Biography

Dr Abdul Pinjari is an Associate Professor in Civil Engineering and Chairman of the Centre for infrastructure, Sustainable Transportation and Urban Planning (CiSTUP), at the Indian Institute of Science, Bangalore, India. He holds a courtesy Associate Professor position at the University of South Florida, where he served on the faculty of Civil Engineering from 2008 to 2018. His expertise includes choice modeling, passenger and freight travel demand forecasting, multimodal transport planning with a focus on public transit, and land-use transportation interactions. His contributions to the state of the art in choice modeling have now made their way into regional transportation modeling practice. In the last decade, he has secured more than 3 Million US Dollars in sponsored research and published over 80 journal and conference articles. He is on the editorial boards of *Transportation, Transportation Research Part B, Journal of Choice Modelling,* and *Transportation in Developing Economies* and a Board Member of the International Association for Travel Behavior Research (IATBR). Dr Pinjari has a bachelor's degree from the Indian Institute of Technology (IIT) Madras, M.S. from the University of South Florida, and Ph.D. from the University of Texas at Austin; all degrees in Civil Engineering.

Abstract

This study proposes a Multinomial Probit (MNP)-based Integrated Choice and Latent Variable (ICLV) modelling framework that allows simultaneous estimation of route-level travel time variability and incorporation of the influence of such variability on travel route choice. The framework considers travel time on a route as a latent (unobserved) variable and uses GPS data measurements of travel time to identify the parameters of its statistical distribution. Specifically, route-level travel time variability is viewed as a result of variability in travel speeds in the network and is captured through random coefficients on the route attributes specified in a structural equation of the latent variable. Further, the latent variable component of the ICLV framework helps *impute* the travel time distribution for routes without travel time measurements.

The proposed model is applied to an empirical data set on truck route choice using GPS data collected in Florida, USA. The route choice component of the proposed ICLV demonstrates a superior statistical fit and better predictive ability than traditional choice models that do not consider the influence of travel time variability on route choice – both on the estimation and validation datasets. A reduced form mixed probit model was found to have a superior data fit than the route choice component of the ICLV model, albeit it fails to offer the insights that the proposed ICLV model offers on travel time variability and its influence on route choice.

The seminar will discuss the above study and outline a scope for research on quantifying travel time uncertainty and its influence on travel behavior.

***   All Interested Are Welcome ***

For further information, please contact Prof. William H.K. Lam at Tel. 2766-6045.
Free Admission. Please reserve your seat with Ms. Connie F.Y. Lam by email: fyc.lam@polyu.edu.hk.
Certificates of attendance will be provided to participants who attend the whole seminar.