Transportation Center Seminar Series presents.....

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**A Joint Tour-Based Discrete-Continuous Model of Vehicle Type Choice and Tour Length**

**Thursday – Oct. 28, 2010**  
4:00 - 5:00 pm  
**Location:**  
Transportation Center – Lower level  
Northwestern University  
Chambers Hall - 600 Foster  
Evanston, IL  
**Refreshments available at 3:30 pm**

**Abstract:** Tour-based microsimulation model systems are increasingly being adopted in practice due to their ability to account for inter-relationships across trips in a tour. This presentation offers an examination of the relationship between two choice dimensions of tours, the type of vehicle chosen to undertake the tour and the overall length distance traveled) for the tour. These two dimensions are of much interest in the current planning context where concerns about energy sustainability and greenhouse gas emissions are motivating planners to seek ways to mitigate the adverse impacts of automotive travel. Virtually all tour-based models currently used in practice do not explicitly account for vehicle type choice in modeling tour attributes, despite its critical importance for energy and emissions analysis. This paper presents a joint discrete-continuous model of tour vehicle type choice and length estimated on a sample of tours undertaken by individuals in households that have multiple vehicles of different types. The sample of tours is extracted from the recent 2009 National Household Travel Survey data set. Estimation results suggest that there are significant common unobserved factors that affect vehicle type choice and length of tours, justifying the use of joint simultaneous equations modeling approaches to model tour attributes. It was found that the model specification in which vehicle type choice affects tour length performed better than the specification in which tour length affects vehicle type choice, suggesting that vehicle type choice (and allocation of vehicles among household members) is a longer term choice that influences shorter-term tour length choices. The presentation includes a description of the model formulation, estimation results, and non-nested test conducted to compare alternative model specifications.

**Bio:** Ram Pendyala is a Professor in the newly formed School of Sustainable Engineering and the Built Environment (previously the Department of Civil, Environmental, and Sustainable Engineering) at Arizona State University (ASU) in Tempe. Ram has taught courses and conducted extensive research in multimodal transportation systems planning, activity-based travel behavior modeling, travel survey methods, and sustainable transport development. Prior to joining ASU in Fall 2006, he served for 12 years as a transportation faculty member and 6 years as graduate programs coordinator at the University of South Florida Department of Civil and Environmental Engineering in Tampa. He serves as the Chair of the Travel Analysis Methods Section of the Transportation Research Board, and is the immediate past Chair of its Committee on Traveler Behavior and Values. He is also the Chair of the International Association for Travel Behaviour Research (IATBR). Dr. Pendyala has his Ph.D. and Masters degrees from the University of California at Davis, and his undergraduate degree from the Indian Institute of Technology - Madras (IIT-M) in Chennai, India.