Karthik Charan Konduri, Ph.D.
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EDUCATION

- Arizona State University, Tempe, AZ, USA
  - Ph.D., Civil Engineering, February 2012
- University of Kentucky, Lexington, KY, USA
  - M.S., Civil Engineering, 2006
- Institute of Technology, Banaras Hindu University, Varanasi, UP, India
  - B.S., Civil Engineering, 2004

PROFESSIONAL EXPERIENCE

- **Assistant Professor**, August 2012 - present

Department of Civil and Environmental Engineering, University of Connecticut, Storrs, CT

- **Postdoctoral Researcher**, February 2012- August 2012

School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, AZ

- **Graduate Research Associate**, January 2007- February 2012

School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, AZ

- **Transportation Engineer,** May 2006-December 2006

Strand Associates Inc., Joliet, IL

- **Graduate Research Assistant**, July 2005-May 2006

Department of Civil Engineering, University of Kentucky, Lexington, KY

RESEARCH INTERESTS

- Activity-based Travel Behavior and Time Use Analysis
- Travel Demand Modeling and Forecasting
- Transportation Planning and Policy Analysis
- Integrated Models of Land Use and Transportation
- Econometric and Statistical Modeling Methodologies
- Planning Software Development and Implementation

TEACHING INTERESTS

- Undergraduate-level Courses: Introduction to Transportation Engineering, Probability and Statistics
- Graduate-level Courses: Activity-based Travel Behavior and Time Use Analysis, Transportation Planning and Applications, Modeling Urban Systems and the Built Environment, Statistical and Econometric Methods in Civil Engineering, Sustainable Transportation Systems

RESEARCH EXPERIENCE

Projects at University of Connecticut

- **Modeling Transportation Systems in the Information Era** (Sponsor Agency: New England University Transportation Center; Role: Project PI; Duration: August, 2012 – December, 2013)

- **Economic Impact of Transportation Projects: Assessing Economic Development Value as a Result of Transportation Projects and Systems** (Sponsor Agency: Connecticut Academy of Science and Engineering; Role: Project PI; Duration: September, 2012 – June, 2013)

Projects at Arizona State University

- **Modeling the Urban Continuum in an Integrated Framework: Location Choice, Activity-Travel Behavior and Dynamic Traffic Patterns**
  The project is aimed at developing methodologies, feedback mechanisms, data structures, and computational and analytical tools that allow the integration of three key dimensions of urban systems modeling namely – Land Use, Activity-Travel Demand, and Traffic Microsimulation. (2008 – present)
  - Part of the team that designed the framework for integrating the component model systems
  - Contributed to the development of software interfaces that enable communication across model systems
  - Lead student researcher involved in the design and development of the activity-based demand model software dubbed OpenAMOS (see **OpenAMOS** under **Transportation Planning Software** below for additional information)
  - Assisted my advisor with project management tasks and coordinated efforts with other project members from University of Arizona, and University of California at Berkeley

- **Baltimore Metropolitan Council Regional Travel Demand Model Update: Development of A Synthetic Population Generator**
  As part of this research effort, PopGen – a synthetic population generator (see **PopGen** under **Transportation Planning Software** for additional information) was modified and customized to be integrated with the current four-step travel demand model environment (supported by **Citilabs Cube** software platform). In addition, a prototype of population evolution model was designed, developed and implemented. The population evolution model mimics various household- and person-level socio-economic and demographic life-cycle processes that individuals experience from one year to the next. The resulting synthetic population can then be used to run microsimulation models of land use and transportation for a forecast year. (2010 – 2011)
  - Modified the PopGen software to be integrated with the BMC four-step travel demand model
  - Developed a prototype of population evolution model using the OpenAMOS software framework

- **Activity-based Travel Demand Model Development for the Southern California Association of Governments**

The project is aimed at implementing a state-of-art activity-based travel demand model system for Los Angeles and surrounding counties.

- Generated synthetic populations for 2003, 2008, and 2035 horizon years using PopGen – a synthetic population generator. The generated synthetic population was then used to simulate activity-travel patterns using a travel demand model system dubbed CEMDAP – Comprehensive Econometric Micro-simulator for Daily Activity-travel Patterns. (2009-present)

- **Activity-based Travel Demand Model Development for the Maricopa Association of Governments**

  The main goal of the project is to implement an activity-based travel demand model system using the CT-RAMP (Coordinated Travel Regional Activity-Based Modeling Platform) framework. A number of enhancements were also envisioned to improve the behavioral realism and policy sensitivity of the travel demand model. One of the enhancements was to better represent and locate the student population of Arizona State University (ASU) – the largest university within the model region. (2010 - present)
  - Part of team that designed the framework for synthesizing and locating ASU's student population in the model region
  - Estimated models of key dimensions of interest including, household living arrangement and household location choice

- **Analysis of Travel Demand and Mode Use Patterns for Arizona State University**

  The project was aimed at understanding the travel demand and mode use patterns at Arizona State University and to estimate ridership on the planned light rail that can be attributed to individuals affiliated with the university. (2007 – 2008)
  - Involved in the design, pilot testing and administration of Stated Preference-Revealed Preference (SP-RP) travel survey
  - Led a team of undergraduate researchers to collect and process travel survey data
  - Designed an approach to estimate and analyze existing mode-use patterns and to forecast the university's contribution to a planned light rail system

Transportation Planning Software

- **PopGen – Population Generator**

  An open-source software for generating synthetic populations for use in microsimulation models of Land Use and Travel Demand (2008 - present)

  Link: http://code.google.com/p/populationsynthesis/
  - Lead programmer involved in the design and development of the software
  - Actively involved in enhancing existing features and adding new ones
  - Assisted with the implementation of PopGen across United States for research projects - *Federal Highway Administration's Strategic Highway Research Program (SHRP), and Federal Highway Administration's Exploratory Advanced Research Program (EARP)* and planning agencies - *Southern California Association of Governments (SCAG), Baltimore Metropolitan Council (BMC), Maricopa Association of Governments (MAG), and Denver Regional Council of Governments (DRCOG)* among others

- **OpenAMOS – Open-source Activity Mobility Simulator**
  An open-source travel demand model system for generating activity-travel patterns for the population in a region. The software framework was primarily developed to implement a microsimulation-based travel demand model system. However, the software framework is robust enough to accommodate any microsimulation model system (recently the framework was used to implement a prototype of population evolution model for BMC region). (2010 - present)
  Link: http://code.google.com/p/simtravel/
  - Lead programmer involved in the design and development of the software
  - Managed team of developers working on various components of the software system including the core algorithms, graphic user interfaces, and output analysis and visualization

TEACHING EXPERIENCE

Courses

- CEE 598: Travel Behavior Analysis (Spring 2009, Spring 2011)
  - Served as a teaching assistant and was involved in teaching the laboratory portion of the course. The laboratory part involved training students in the use of various statistical and econometric analysis tools including SPSS, LIMDEP, NLOGIT, and SPSS Amos for modeling various dimensions of activity-travel behavior.

- CEE 372: Introduction to Transportation Engineering (Fall 2009)
  - Served as a teaching assistant and lectured few introductory transportation engineering topics including vehicle kinematics, sight distances, horizontal and vertical geometric design, and introduction to transportation planning.

Professional Workshops

- **Workshop on PopGen - A Synthetic Population Generator for Microsimulation Modeling of Land Use and Transportation**
  - Workshops conducted to date:
    - At Baltimore Metropolitan Council, June 16-17, 2011
    - At Arizona State University, May 12-13, 2010
    - At Arizona State University, November 3, 2009
    - At Southern California Association of Governments, September 8, 2009

  One of the main goals of the workshops was to teach practitioners about the motivations, concepts and methodologies for generating a synthetic population in the context of Microsimulation models of Land Use and Transportation. The workshops included a hands-on training module where participants were taught to use PopGen – An open source Synthetic Population Generator. I was the lead instructor for the hands-on training module and assisted my advisor with other modules.

PUBLICATIONS IN REFEREED JOURNALS

- Pendyala, R.M., Konduri, K.C., Chiu, Y, Hickman, M., Noh, H., Waddell, P., Wang, L., You, D., and Gardner, B. (2011). An Integrated Land Use-Transport Model System with Dynamic Time-

Dependent Activity-Travel Microsimulation. *Transportation Research Record, Journal of the Transportation Research Board* (accepted).

- Pendyala, R.M., Bhat, C.R., Goulias, K.G., Paleti, R., Konduri, K.C., Sidharthan, R., Hu, H., Huang, G., and Christian, K.P. (2011). Application of Socioeconomic Model System for Activity-Based Modeling: Experience from Southern California. *Transportation Research Record, Journal of the Transportation Research Board* (accepted).
- Konduri, K.C., Ye, X., Sana, B., and Pendyala, R.M. (2011). Joint Model of Vehicle Type Choice and Tour Length. *Transportation Research Record, Journal of the Transportation Research Board*, 2255, 28-37.
- Konduri, K.C., Astroza, S., Sana, B., Pendyala, R.M., and Jara-Díaz, S.R. (2011). Joint Analysis of Time Use and Consumer Expenditure Data. *Transportation Research Record, Journal of the Transportation Research Board*, 2231, 53-60.
- Ferdous, N., Pendyala, R.M., Bhat, C.R., Konduri, K.C. (2011). Modeling the Influence of Family, Social Context, and Spatial Proximity on Non-Motorized Transport Mode. *Transportation Research Record, Journal of the Transportation Research Board*, 2230, 111-120.
- Konduri, K.C., Ye, X., and Pendyala, R.M. (2010). Probit-based Discrete Continuous Model of Activity Choice and Duration with History Dependency. *Transportation Research Record, Journal of the Transportation Research Board*, 2156, 17-27.
- Plotz, J., Konduri, K.C., and Pendyala, R.M. (2010). To What Extent Can High-Occupancy Vehicle Lanes Reduce Vehicle Trips and Congestion? *Transportation Research Record, Journal of the Transportation Research Board*, 2178, 170-176.
- Sana, B., Konduri, K.C., and Pendyala, R.M. (2010). Quantitative Analysis of Impacts of Moving Towards a Vehicle Mileage-Based User Fee. *Transportation Research Record, Journal of the Transportation Research Board*, 2187, 29-35.
- Ziems, S.E., Konduri, K.C., Sana, B., and Pendyala R.M. (2010). Exploration of Time Use Utility Derived by Older Individuals from Daily Activity-Travel Patterns. *Transportation Research Record, Journal of the Transportation Research Board*, 2156, 111-119.
- Eluru, N., Bhat, C.R., Pendyala, R.M., and Konduri, K.C. (2010). A Joint Flexible Econometric Model System of Household Residential Location and Vehicle Fleet Composition/Usage Choices. *Transportation*, 37(4), 603-626.
- Pendyala, R.M., Verma, A., Konduri, K, and Sana, B. (2009). Socio-economic and Transportation Trends in India and the United States: A Preliminary Comparative Study. *Transportation Letters*, 1(2), 121-146.
- Ye, X., Konduri, K.C., Pendyala, R.M., and Sana, B. (2009). Formulation of an Activity-Based Utility Measure of Time Use: An Application to Understanding the Influence of Constraints. *Transportation Research Record, Journal of the Transportation Research Board*, 2135, 60-68.
- Ye, X., Pendyala, R.M., Washington, S.P., Konduri, K., and Oh, Jutaek. (2009). A Simultaneous Equations Model of Accident Frequency by Collision Type for Rural Intersections. *Safety Science*, 47(3), 443-452.

PUBLICATIONS IN REFEREED CONFERENCE PROCEEDINGS

- Paleti, R., Pendyala, R.M., Bhat, C.R., and Konduri, K.C. (2011). A Joint Tour-Based Model of Tour Complexity, Passenger Accompaniment, Vehicle Type Choice, and Tour Length. *Proceedings of the 91st Annual Meeting of the Transportation Research Board*, Washington, DC.

- Goulias, K.G., Bhat, C.R., Pendyala, R.M., Chen, Y., Konduri, K.C., Paleti, R., and Hu, H. (2011). Simulator of Activities, Greenhouse Emissions, Networks, and Travel (SimAGENT) in Southern California. *Proceedings of the 91st Annual Meeting of the Transportation Research Board*, Washington, DC.
- Konduri, K.C., Paleti, R., Pendyala, R., and Bhat, C. (2010). A Joint Tour-Based Model of Vehicle Type Choice, Tour Length, Passenger Accompaniment, and Tour Type. *Proceedings of the 12th World Conference on Transport Research*, Lisbon, Portugal.
- Ye, X., Konduri, K.C., Sana, B., and Pendyala, R.M. (2009). A Methodology to Match Distributions of Both Household and Person Attributes in the Generation of Synthetic Populations. *Proceedings of the 88th Annual Meeting of the Transportation Research Board*, Washington, DC.
- Bar-Gera, H., Konduri, K.C., Sana, B., Ye, X., and Pendyala, R.M. (2009). Estimating Survey Weights with Multiple Constraints Using Entropy Optimization Methods. *Proceedings of the 88th Annual Meeting of the Transportation Research Board*, Washington, DC.
- Ye, X., Pendyala, R.M., Al-Rukaibi, F.S., and Konduri, K.C. (2008). A Joint Model of Accident Type and Severity for Two-Vehicle Crashes. *Proceedings of the 87th Annual Meeting of the Transportation Research Board*, Washington, DC.
- Ye, X., Pendyala, R.M., Shankar, V.N., and Konduri, K.C. (2008). A Simultaneous Equations Model of Accident Frequency by Severity Level for Freeway Sections. *Proceedings of the 87th Annual Meeting of the Transportation Research Board*, Washington, DC.
- Rose, J.G., and Konduri, K.C. (2006). Kentrack - A Railway Trackbed Structural Design Program. *Proceedings of the 2006 Annual Conference of the American Railway Engineering and Maintenance-of-Way Association*, Louisville, KY.

PUBLICATIONS IN BOOKS

- Konduri, K.C., and Pendyala, R.M. (2011). An Activity-Based Analysis of Time Use to Assess the Influence of Information and Communication Technologies on Mobility Patterns. *Time Use Observatory* (*in press*).
- Pendyala, R.M., Konduri, K.C., and Plotz, J. (2009). Non-Motorized Transportation. *In the 94th Arizona Town Hall: Background Report*, Tucson, AZ, April 19-22, 2009.

WORKING PAPERS

- Konduri, K.C., Pendyala, R.M., You, D., Chiu, Y, Hickman, M., Noh, H., Waddell, P., Wang, L., and Gardner, B. (2012). Reflecting the Impacts of System-wide Pricing Strategies in an Integrated Continuous-Time Prism-Constrained Activity-Travel Simulator of Demand and Supply. Submitted for Presentation and Publication to the *92nd Annual Meeting of the Transportation Research Board*, Washington, D.C.
- Konduri, K.C., Pendyala, R.M., You, D., Chiu, Y, Hickman, M., Noh, H., Waddell, P., Wang, L., and Gardner, B. (2012). A Network-Sensitive Transport Modeling Framework for Evaluating Impacts of Network Disruptions on Traveler Choices under Varying Levels of Information Provision. Submitted for Presentation and Publication to the *92nd Annual Meeting of the Transportation Research Board*, Washington, D.C.
- You, D., Garikapati, V.M., Konduri, K.C., Pendyala, R.M., Vovsha, P.S., and Livshits, V. (2012) A Multiple Discrete-Continuous Model of Activity Type Choice and Time Allocation for Home-Based Non-Work Tours. Submitted for Presentation and Publication to the *92nd Annual Meeting of the Transportation Research Board*, Washington, D.C.

- Archer, M., Paleti, R., Konduri, K.C., Pendyala, R.M., and Bhat, C.R. (2012). Modeling the Connection Between Activity-Travel Patterns and Subjective Well-Being. Submitted for Presentation and Publication to the *92nd Annual Meeting of the Transportation Research Board*, Washington, D.C.
- Paleti, R., Pendyala, R.M., Bhat, C.R., Lorenzini, K., and Konduri, K.C. (2012). Accommodating Immigration Status and Self Selection Effects in a Joint Model of Household Auto Ownership and Residential Location Choice. Submitted for Presentation and Publication to the *92nd Annual Meeting of the Transportation Research Board*, Washington, D.C.
- Pendyala, R.M., Konduri, K.C., and Volosin, S.E. (2012). Measuring Activity-Travel Patterns of University Students Using an Online Survey Methodology. Submitted for Presentation to the *13th World Conference on Transport Research*, Rio, Brazil.
- Pendyala, R.M., Konduri, K.C., and You, D. (2012). A Behavioral Framework to Model Household Interactions and Vehicle Sharing, Allocation, and Usage. Submitted for *Presentation to the 13th World Conference on Transport Research*, Rio, Brazil.
- Pendyala, R.M., Konduri, K.C., and Paul, S. (2012). A Population Evolution Model System for Forecasting Future Year Socio-Economic Data: Methods and Results. Submitted for *Presentation to the 13th World Conference on Transport Research*, Rio, Brazil.
- Pendyala, R.M., and Konduri, K.C. (2012). Modeling the Short- and Long-Term Behavioral Impacts of Road Pricing Policy: The Application of an Integrated Model of the Urban Continuum (SimTRAVEL). Submitted for Presentation to the *13th World Conference on Transport Research*, Rio, Brazil.

PRESENTATIONS

Conferences

- Konduri, K.C., Ye, X., and Pendyala, R.M. (2012). Challenges and Solutions in the Development of Population Evolution Models for Microsimulation of Land-Use and Activity-Travel Patterns. Presented at the *13th International Conference on Travel Behaviour Research*, Toronto, Canada, July 15-20, 2012.
- Pendyala, R.M., Konduri, K.C., Chiu, Y, Hickman, M., Noh, H., Waddell, P., Wang, L., You, D., and Gardner, B. (2012). An Integrated Land-Use Transport Model Application: Simulating the Impact of Network Disruptions on Activity-Travel Engagement Patterns. Presented at the *4th Transportation Research Board Conference on Innovations in Travel Modeling*, Tampa, FL, April 30-May 2, 2012.
- Konduri, K.C., Paleti, R., Pendyala, R.M., and Bhat. C.R. (2011). A Simultaneous Equations Choice Model System of Tour Type, Vehicle Type, Accompaniment, and Tour Length. Presented at the *2nd International Choice Modeling Conference*, Leeds, UK, July 4-6, 2011.
- Konduri, K.C. (2011). The Development of an Integrated Model of Urban Dynamics: Land Use, Activity-Travel Demand, and Traffic Networks. Presented at the *1st Annual Graduate Student Research Symposium*, March 20, 2011.
- Sana, B., Konduri, K.C., Pendyala, R.M., and Ye, X. (2009) An Evolutionary Model of Population Synthesis that Controls for Household- and Person-level Attribute Distributions. Presented at the *12th International Conference of the Travel Behaviour Research*, Jaipur, India, December 13-18, 2009.

- Konduri, K.C., Ye, X., and Pendyala, R.M. (2008). A Time Use Analysis of Work, Play, and Other Activities to Assess the Role of Information of Communication Technologies (ICT) in Promoting Sustainable Mobility Patterns. Presented at the *2008 Graduates in Earth, Life, and Social Sciences (GELSS) Symposium*, Tempe, AZ, February 1, 2008.
- Ye, X., Konduri, K.C., and Pendyala, R.M. (2007). A Time Use Analysis of Work, Play, and Other Activities to Assess the Role of Information and Communication Technologies (ICT) in Promoting Sustainable Mobility Patterns. Presented at the *International Association of Time Use Researchers Conference*, Washington, DC, October 17-19, 2007.

Invited

- "Recent Advances in Activity-Based Modeling: A Network-Sensitive Transport Modeling Framework for Evaluating Impacts of Network Disruptions on Traveler Choices under Varying Levels of User Information Provision" at the University of Connecticut, Storrs, October 1, 2012.
- "A Network-Sensitive Transport Modeling Framework for Evaluating Impacts of Network Disruptions on Traveler Choices under Varying Levels of User Information Provision" at the University of Illinois, Chicago, August 17, 2012.
- "Population Generation for Microsimulation of Land-Use and Activity-Travel Patterns" at Cambridge Systematics, August 10, 2012.
- "Synthetic Population for Travel Demand Forecasting" at Introduction to UrbanSim workshop conducted at the University of California at Berkeley, May 25-26, 2010.

AWARDS AND ACCOMPLISHMENTS

- Recipient of the **2012 Transportation Research Board's Pyke Johnson Award** for the best paper in the field of transportation systems planning and administration along with co-authors Dr. Xin Ye, Dr. Ram Mohan Pendyala, and Bhargava Sana.
- Recipient of the **University Graduate Fellowship** in Spring 2011 at Arizona State University
- Awarded a **travel grant** to attend the *International Association of Time Use Researchers Conference*, Washington, DC, October 17-19, 2007

PROFESSIONAL AFFILIATIONS

- Member, Transportation Research Board
  - Young member, Committee on Traveler Behavior and Values (ADB 10)
- Member, Institute of Transportation Engineers
  - Secretary, Student Chapter of the Institute of Transportation Engineers at Arizona State University, 2008-2010
- Member, World Conference on Transport Research Society
- Member, International Association for Travel Behaviour Research
- Member, Association of American Transportation Professional of Indian Origin

PROFESSIONAL SERVICE

Conference Activities

- Student volunteer involved in organizing the *First International Symposium on Advances in Transport Sustainability*, Tempe, Arizona, November 17-19, 2010

- Student Volunteer involved in planning and organizing the *3rd Conference on Innovations in Travel Modeling*, Tempe, Arizona, May 10-12, 2010
- Student volunteer involved in organizing the *12th International Conference on Travel Behaviour Research*, Jaipur, India, December 13-18, 2009

Referee

- Journals
  - Transportation Research Record (and Annual Meeting of the Transportation Research Board)
  - Transportation Research Part A: Policy and Practice
  - Transportation Letters
  - International Journal of Sustainable Transportation
- Conferences
  - 12th World Conference on Transport Research, Lisbon, Portugal, July 11-15, 2010
  - 4th Transportation Research Board Conference on Innovations in Travel Modeling, Tampa, Florida, April 30 – May 2, 2012
  - 13th International Conference on Travel Behaviour Research, Toronto, Canada, July 15-19, 2012

Moderator

- Session titled "Population Synthesis" at the *13th International Conference on Travel Behaviour Research*, Toronto, Canada, July 15-20, 2012.
- Session titled "Understanding Sustainable Transportation Systems" at the *First International Symposium on Advances in Transport Sustainability*, Tempe, Arizona, May 17-19, 2010

SKILLS

Programming languages: Python, C/C++
Data Analysis Tools: LIMDEP, SPSS, Amos, working knowledge of SAS
Mapping Tools: ArcGIS, PostGIS, QGIS
Modeling Software: GAUSS
Databases: PostgreSQL, MySQL
Operating Systems: Windows - XP, Vista, and 7, Linux - Ubuntu

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