



NATIONAL CENTER FOR UNDERSTANDING FUTURE  
**TRAVEL BEHAVIOR AND DEMAND**

# Contributions to TRB 2025

by TBD National Center Key Personnel

104<sup>th</sup> Annual Meeting of the

**Transportation Research Board**

Washington, D.C., January 5-9, 2025

## ABOUT

The Center for Understanding Future Travel Behavior and Demand (TBD) is a National University Transportation Center established in 2023 by USDOT. TBD's research focuses on understanding evolving travel behaviors driven by technological advances, demographic and cultural shifts, and environmental concerns. TBD is committed to undertaking breakthrough research that will fundamentally re-examine and transform the scientific base for measuring, monitoring, modeling, and managing traveler behavior. The Center's initiatives aim to support the design, development, and operation of a people-centric, multimodal, intelligent transportation system that meets the needs of people, institutions, and businesses for generations to come. TBD is led by The University of Texas at Austin and includes Arizona State University, Georgia Tech, University of Washington, University of Michigan, Cal Poly Pomona, City College of New York, and Diné College as consortium members.



# WORKSHOPS

## Workshop 1041

### Doctoral Research in Transportation Modeling and Travel Behavior Analysis

Sunday, January 05 1:30 PM - 4:30 PM ET | Convention Center, 151B

Presiding      Rolf Moeckel, Technische Universität München  
**Patricia Mokhtarian, Georgia Institute of Technology**  
Khandker Nurul Habib, University of Toronto  
Yanfeng Ouyang, University of Illinois, Urbana-Champaign  
**Ram Pendyala, Arizona State University**  
Kuilin Zhang, Michigan Technological University

## Workshop 5003

### Future Uncertain: Research and Tools for Transportation Planning Under Deep Uncertainty

Thursday, January 09 9:00 AM - 12:00 PM ET | Convention Center, 146A

Panelists      Prateek Bansal, National University of Singapore  
**Chandra Bhat, University of Texas, Austin**  
Rachel Copperman, Cambridge Systematics, Inc.  
Naomi Stein, EBP  
Tara Weidner, Oregon Department of Transportation

# SESSIONS

## Poster Session 2048

### Current Issues in Alternative Fuels and Technologies

Monday, January 06 8:00 AM - 9:45 AM ET | Convention Center, Hall A

#### Modeling Electric Vehicle Community-Charging Problem with Link-Charger-Flow Interactions: A Cross-Layer Modeling Approach

Yang Song, ElectroTempo, Inc  
Xianbiao Hu, Pennsylvania State University  
Peiheng Li, No Organization  
**Xuesong Zhou, Arizona State University**

#### Enabling Infinite Drive: Optimal Location of In-Motion Wireless Power Transfer Systems for Trips in Urban-scale Region by Electric Vehicles

Yudai Honma, University of Tokyo  
Daisuke Hasegawa, University of Tokyo  
Katsuhiro Hata, Shibaura Institute of Technology  
**Xuesong Zhou, Arizona State University**  
Michael Kuby, Arizona State University, Tempe  
Takashi Oguchi, University of Tokyo

## Lectern Session 2094

### Optimizing Port Operations and Combating Congestion: Current Research in Ports and Channels

Monday, January 06 10:15 AM - 12:00 PM ET | Convention Center, 147B

#### Use of AIS Data to Characterize Vessel Mix in Houston Port Operations for Simulation

**Kyle Bathgate, University of Texas, Austin**  
**Debojjal Bagchi, University of Texas, Austin**  
**Stephen Boyles, University of Texas, Austin**

#### A Queuing Theory-based Operating Capacity Model for Multimodal Port Operations

**Debojjal Bagchi, University of Texas, Austin**  
**Kyle Bathgate, University of Texas, Austin**  
**Stephen Boyles, University of Texas, Austin**

**Poster Session 2109**

**Navigating the Intersection of Health, Equity, and Mobility**

Monday, January 06 10:15 AM - 12:00 PM ET | Convention Center, Hall A

**Multivariate Analysis of Walking Habits After COVID-19**

**Hyunjun Hwang, University of Texas, Austin**

**Angela Haddad, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

**Lectern Session 2121**

**Emerging Technology for Signing and Marking Detection and Assessment**

Monday, January 06 1:30 PM - 3:15 PM ET | Convention Center, 146A

**Geometric-Aware 3D Object Detection for Traffic Signs**

**Ardavan Sherafat, California State Polytechnic University, Pomona**

**Hao Ji, California State Polytechnic University, Pomona**

**Yongping Zhang, California State Polytechnic University, Pomona**

**Wen Cheng, California State Polytechnic University, Pomona**

**Omar Mora, California State Polytechnic University, Pomona**

Chloe Cheng, No Organization

Jayden Chen, Diamond Bar High School

**Poster Session 2153**

**New Frontiers in Artificial Intelligence Research in Transportation**

Monday, January 06 1:30 PM - 3:15 PM ET | Convention Center, Hall A

**Learning to Generate Synthetic Human Mobility Data: A Physics-  
Regularized Gaussian Process Approach Based on Multiple Kernel  
Learning**

**Ekin Ugurel, University of Washington**

Shuai Huang, University of Washington

**Cynthia Chen, University of Washington**

**Poster Session 2154**

**Emerging Patterns in Vehicle Ownership: Insights on Autonomous, Connected, and Electric Vehicles**

Monday, January 06 1:30 PM - 3:15 PM ET | Convention Center, Hall A

**Atiyya Shaw, University of Michigan, Ann Arbor (Presiding)**

**Poster Session 2155**

**Travel Behavior Elements: Activity, Mode, Time Use, Destination, and Activity Patterns**

Monday, January 06 1:30 PM - 3:15 PM ET | Convention Center, Hall A

Heterogeneity in Intraregional Travel and Interregional Travel Patterns – A Classification of Travelers

**Yang Li, University of Texas, Austin**

**Ming Zhang, University of Texas, Austin**

**Lectern Session 2176**

**Understanding Travel Behavior: Insights, Theories, and Methods**

Monday, January 06 3:45 PM - 5:30 PM ET | Convention Center, 151A

A Methodology for Evaluating Wellbeing Implications of Activity-Travel Engagement and Time Use Patterns

**Irfan Batur, Arizona State University**

Sara Khoeini, WSP

Shivam Sharda, National Renewable Energy Laboratory (NREL)

Tassio Magassy, WSP

Xin Ye, Tongji University

**Ram Pendyala, Arizona State University**

Poster Session 2211

## Travel Behavior Studies: Insights from Pre-, During, and Post-COVID-19 Pandemic Periods

Monday, January 06 3:45 PM - 5:30 PM ET | Convention Center, Hall A

An Evaluation of the Long-Term Effects of the COVID-19 Pandemic on Public Transit Use

**Bonny Smith, University of Texas, Austin**

**Dale Robbennolt, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

Poster Session 2213

## Demographics, Life Stages, and Travel Behavior: Attitudes and Insights

Monday, January 06 3:45 PM - 5:30 PM ET | Convention Center, Hall A

How Much Do Attitudinal Variables Improve Travel Demand Models? Evaluation Using an Overlap Sample from an Attitude-rich Survey and the 2017 National Household Travel Survey

**Ilsu Kim, Georgia Institute of Technology**

**Patricia Mokhtarian, Georgia Institute of Technology**

Poster Session 2226

## Managing Public Transportation Wisely

Monday, January 06 3:45 PM - 5:30 PM ET | Convention Center, Hall A

**Steven Polzin, Arizona State University, Tempe (Presiding)**

Poster Session 2227

## Current Issues in Aviation

Monday, January 06 3:45 PM - 5:30 PM ET | Convention Center, Hall A

From Ground to Air: Data Integration for a Human-Centric Multimodal Transportation Study

**Sungho Lim, University of Michigan, Ann Arbor**

Max Li, University of Michigan, Ann Arbor

**Atiyya Shaw, University of Michigan, Ann Arbor**

Poster Session 2234

## Traffic Flow Modeling, Monitoring, and Control

Monday, January 06 6:00 PM - 7:30 PM ET | Convention Center, Hall A

Fundamental Diagram- Consistent Fluid Queue Model for Hyper-Congestion and Dynamic Traffic Flow Characterization

Yuyan Pan, Pennsylvania State University

Xianbiao Hu, Pennsylvania State University

**Mohammad Abbasi, Arizona State University**

**Xuesong Zhou, Arizona State University**

Poster Session 3092

## Recruiting, Retaining, and Asking New Questions

Tuesday, January 07 10:15 AM - 12:00 PM ET | Convention Center, Hall A

Investigating the Influence of Alternative Survey Participant Recruitment Strategies on Measurement and Inference of Mobility Patterns

**Victor Alhassan, Arizona State University**

**Fan Yu, Arizona State University**

**Jose Roberto Dimas Valle, Arizona State University**

Tassio Magassy, WSP

**Irfan Batur, Arizona State University**

Deborah Salon, Arizona State University

**Chandra Bhat, University of Texas, Austin**

**Ram Pendyala, Arizona State University**



Poster Session 3095

## Telework Trends: Shaping Mobility in the Post-Pandemic World

Tuesday, January 07 10:15 AM - 12:00 PM ET | Convention Center, Hall A

Telework-to-Play or Play-to-Telework? Investigating the Directional Relationship Between Telework and Nonwork Travel

**Katherine Asmussen, University of Tennessee, Knoxville**

**Angela Haddad, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

How Has the Importance of Factors Influencing Telework Adoption Changed Over Time? Observing Pre- to Late-Pandemic Trends Using Multi-Year Data from Two US Regions

**Seung Eun Choi, Georgia Institute of Technology**

**Ilsu Kim, Georgia Institute of Technology**

Xinyi Wang, Massachusetts Institute of Technology

**Jason Soria, Cintra**

**Patricia Mokhtarian, Georgia Institute of Technology**

Adapting to Remote Work: Analyzing WFH Trends and Impacts on Other Daily Activities in New Normal

Motahare Mohammadi, University of Illinois, Chicago

Zahra Hajibagher, University of Illinois, Chicago

Abolfazl Mohammadian, University of Illinois, Chicago

Sybil Derrible, University of Illinois, Chicago

**Ram Pendyala, Arizona State University**

Deborah Salon, Arizona State University

Poster Session 3097

## The Post-Pandemic Puzzle: How COVID-19 Redefined Mobility and Work

Tuesday, January 07 10:15 AM - 12:00 PM ET | Convention Center, Hall A

Telemedicine Adoption Before, During, and After COVID-19: The Role of Socioeconomic and Built Environment Variables

**Angela Haddad, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

## Hybrid Workers' Activity Intensity: Post-Pandemic Comparison of Telework-Only and In-Person Workdays

**Ali Kothawala, University of Texas, Austin**

**Angela Haddad, University of Texas, Austin**

Patrick Loa, University of California, Davis

Yongsung Lee, University of California, Davis

Giovanni Circella, Ghent University

**Chandra Bhat, University of Texas, Austin**

## How Does Teleworking Influence Online Shopping and Home Delivery Activity? Findings from Post-Pandemic New York City

**Fateme Rezapour Fardin, City College of New York**

Mila Le Morvan--Chevestre, Ecole Nationale des Travaux Publics de l'Etat

**Alison Conway, City College of New York**

## Understanding Accessibility Sufficiency, Activity Participation, and Quality of Life: Evidence from Austin, Texas

**Md Hamidur Rahman, University of Texas, Austin**

**Alex Karner, University of Texas, Austin**

### Poster Session 3107

## Transportation and Community Impacts

Tuesday, January 07 10:15 AM - 12:00 PM ET | Convention Center, Hall A

### A Rank-Based Model of Residential Location Preferences Before and After the COVID-19 Pandemic

**Dale Robbennolt, University of Texas, Austin**

**Angela Haddad, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

### The Efficacy of Decentralized Disaster Relief Resource Allocation Within Communities: The Role of Community-Based Sharing Captains

Olivia Wang, Purdue University

Zhengyang Li, Hong Kong Polytechnic University

**Cynthia Chen, University of Washington**

Poster Session 3109

## Transportation Research Board Minority Student Fellows

Tuesday, January 07 10:15 AM - 12:00 PM ET | Convention Center, Hall A

Analyzing Employment Projections for Trends by Ethnicity, Gender, and Region for Civil Engineers in Transportation

**Azriel Olmedo, California State Polytechnic University, Pomona**

Jeyoung Woo, No Organization

**Yongping Zhang, California State Polytechnic University, Pomona**

Lectern Session 3118

## Reimagining Mobility: Virtual Participation, Sustainable Travel, and Post-Pandemic Activity Choices

Tuesday, January 07 1:30 PM - 3:15 PM ET | Convention Center, 151B

An Investigation of Physical Participation Dissonance and Virtual Activity Participation

**Dale Robbennolt, University of Texas, Austin**

**Anna Beliveau, University of Texas, Austin**

**Chandra Bhat, University of Texas, Austin**

Poster Session 3147

## Safety Performance and Analysis Using Machine Learning or Artificial Intelligence

Tuesday, January 07 1:30 PM - 3:15 PM ET | Convention Center, Hall A

Spatial-Proximity Integration in Transformer Based Models for County-Level Collision Prediction

Jing Ding, No Organization

**Wen Cheng, California State Polytechnic University, Pomona**

Kirill Rogovoy, California State Polytechnic University, Pomona

Chris Cheung, Diamond Bar High School

**Poster Session 3149**

## Travel Forecasting Methods and Theory

Tuesday, January 07 1:30 PM - 3:15 PM ET | Convention Center, Hall A

Transformation-Based Flexible Error Structures for Choice Modeling

**Chandra Bhat, University of Texas, Austin**

**Lectern Session 3170**

## Generative Artificial Intelligence and the Future of Travel Surveys

Tuesday, January 07 3:45 PM - 5:30 PM ET | Convention Center, 150A

LLMs in Travel Behavior Model Development

**Chandra Bhat, University of Texas, Austin**

**Poster Session 4024**

## Regional Transportation Systems Management and Operations

Wednesday, January 08 8:00 AM - 9:45 AM ET | Convention Center, Hall A

Building Digital Infrastructure: Scalable and Reproducible Data Integration and Traffic Theory for Congestion Bottleneck Identification and Traffic Management Strategy Evaluation

**Mustafa Gadah, Arizona State University**

**Xuesong Zhou, Arizona State University**

**Frederic Duquella, Arizona State University**

**Poster Session 4025**

## Insights on Travel Behavior

Wednesday, January 08 8:00 AM - 9:45 AM ET | Convention Center, Hall A

Modeling Spatial and Social Interdependency Effects on Commuting Mode Choice

Daniele Giubergia, Università degli Studi Di Cagliari

**Angela Haddad, University of Texas, Austin**

Francesco Piras, University of Cagliari

**Chandra Bhat, University of Texas, Austin**

Italo Meloni, Università degli Studi Di Cagliari

## Lectern Session 4055

### The Great Commute Shift: Telework, Travel Behavior, and Transit in a Post-Pandemic World

Wednesday, January 08 10:15 AM - 12:00 PM ET | Convention Center, 150A

Analyzing the Discrepancy between Expected and Observed Teleworking Frequency as We Transition Out of COVID: A Blinder-Oaxaca Decomposition Approach

Xinyi Wang, Massachusetts Institute of Technology  
**Patricia Mokhtarian, Georgia Institute of Technology**

A U-Shaped Paradigm: Understanding the Impact of Telecommuting on Public Transit Ridership Before and After the Pandemic

**Fan Yu, Arizona State University**  
**Irfan Batur, Arizona State University**  
**Angela Haddad, University of Texas, Austin**  
**Eleanor Hennessy, Arizona State University**  
**Miguel Guillermo Rodriguez Ocana, Arizona State University**  
**Cynthia Chen, University of Washington**  
**Xuesong Zhou, Arizona State University**  
**Chandra Bhat, University of Texas, Austin**  
**Ram Pendyala, Arizona State University**

## Poster Session 4074

### Information Systems and Technology

Wednesday, January 08 10:15 AM - 12:00 PM ET | Convention Center, Hall A

Incident Detection from Novel Data Sources: Leveraging Satellite Imagery Alongside GPS Traces

**Ekin Ugurel, University of Washington**  
Steffen Coenen, University of Washington  
Minda Chen, University of Washington  
**Cynthia Chen, University of Washington**

## Emerging Practices for Transportation Network Modeling

Wednesday, January 08 10:15 AM - 12:00 PM ET | Convention Center, Hall A

A Relaxed Singly Constrained Static Traffic Assignment Model with Elastic Demand: Application to Telework and Urban Development Scenarios in Austin, Texas

**Jake Robbennolt, University of Texas, Austin**

**Dale Robbennolt, University of Texas, Austin**

**Stephen Boyles, University of Texas, Austin**