

John L. Bowman, Ph. D.

Transportation Systems and Decision Sciences
Bowman Research and Consulting
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28 Beals Street
Brookline, MA 02446, USA

617-232-8189
John_L_Bowman@alum.mit.edu

Summary

John Bowman is best known for his development and ongoing improvement of the activity schedule approach for the forecasting of regional passenger travel demand, and for enabling planning agencies to develop knowledge, skills, models and software needed to implement and use the approach. He develops market demand simulators (based on customer and stated choice data), airport access models and commuter rail demand forecasts, and evaluates models developed by others. Dr. Bowman contributes to the field through publications, presentations and journal reviews, and has taught occasionally at MIT, where he earned graduate degrees (MST 1995, PhD Transportation Systems and Decision Sciences 1998).

Activity-schedule-based travel demand modeling

2008. Puget Sound Regional Council (PSRC). With Mark Bradley and Joe Castiglione. Implementing a day-activity pattern microsimulator and integrating it with PSRC's existing trip-based model system as a first step into activity-based travel demand forecasting. Conducting planning and design with PSRC for a subsequent full implementation of an activity-based model system that will be integrated with their land use forecasting microsimulation model.

2005-2008. Sacramento Area Council of Governments (SACOG). With Mark Bradley. Designed, developed, programmed and implemented a new activity-schedule-based travel demand model system with detailed treatment of time and space dimensions (DaySim). Integrated it with traffic assignment, validated and calibrated it with SACOG staff and DKS Associates. Enhancing it over time as SACOG uses it.

2003-2008. Developed a population synthesizer (PopSyn) for Atlanta Regional Commission (ARC). Helped DRCOG and PSRC implement it for their regions. Maintaining and enhancing it over time.

2006-2008. Denver Regional Council of Governments (DRCOG). Helped design and develop a new activity-schedule-based travel demand model system. Guided the development of model components by DRCOG staff.

2001-2004. Atlanta Regional Commission (ARC). Designed model system with Mark Bradley and Peter Vovsha.

2001-2003. Mid-Ohio Regional Planning Commission (MORPC). Assisted in design and model estimation.

1996-2001. Portland Metro. Designed the Portland Metro activity-based model system, the first practical modern activity-schedule-based model system used for policy analysis. Assisted Mark Bradley in model estimation.

1993-1998. Massachusetts Institute of Technology (MIT). For Masters and PhD theses, developed the first modern integrated activity-schedule-based travel demand model, demonstrating the correlation of activity schedule choices with transport level of service. Also, developed an integrated discrete choice model system of a household's residential location choice and its members' activity and travel schedules, demonstrating how activity-based accessibility impacts residential location.

Teaching

1995-2008. Occasionally provide instruction in activity-based travel demand forecasting to individuals and groups.

1995-2007. MIT. Teaching assistant, substitute instructor, and occasional instructor in charge of the core graduate demand modeling course. Topics include least squares, generalized least squares, instrumental variables, maximum likelihood, random utility theory, multinomial choice, probit, logit, GEV, multidimensional choice with nested logit, stated preferences, model specification and testing, sampling, forecasting, iterative proportional fitting.

Other experience

1998-2008. Stated choice market simulators. Serve as technical advisor, and perform experimental design, sample design, survey design, model estimation, and market simulator development for demand analysis by major public and private sector clients in North and South America and Europe. Projects have included demand for transportation (bus and rail transit, commuter rail, inter-city rail, intercontinental air), technology (TV, internet, telephone, wireless, automated IT services) and financial services (investment brokerage, credit cards, employee benefits).

2006. Atlanta Regional Commission (ARC). Researched and advised on state of the practice in land use modeling.

2002. Airport access models (Portland Metro and SACOG). Developed airport access mode choice models.

1999-2001. Model evaluation and uncertainty analysis (North America and Asia). Technically evaluated travel demand forecasts made by other consulting firms for urban rail transit and inter-city passenger rail systems, providing expert advice to litigators and estimates of bias and uncertainty for the placement of revenue guarantee insurance.

1997-2001. Commuter rail demand forecasts (Mexico and South America). Designed survey, selected survey intercept sites, designed demand models, developed EMME2 network model, developed demand model, calibrated and applied the model system under alternative forecast scenarios.