

John L. Bowman, Ph. D.

Transportation Systems and Decisions Sciences
Bowman Research and Consulting
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Summary

John Bowman is best known for his research, 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 has a special interest in effectively incorporating non-motorized modes into these models, and in fostering livable communities at the local level. He has also conducted planning studies for advanced model development; developed market demand simulators (based on customer and stated choice data), airport access models and commuter rail demand forecasts; and evaluated 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 as a student of Professor Moshe Ben-Akiva (MST 1995, PhD Transportation Systems and Decision Sciences 1998). He works at his home office in Brookline, Massachusetts.

Experience: 22 years in the field, 17 years as a sole proprietor

Advanced travel demand modeling

2012-present. Delaware Valley Regional Planning Commission (DVRPC). Leading design and technically directing implementation of an activity-based model system spanning the 25 counties of the DVRPC region and surrounding area.

2011-present. FHWA (STEP). With Mark Bradley and RSG. Lead contractor and Principal Investigator empirically testing and demonstrating the transferability of advanced (activity-based, or “AB”) models between regions.

2011-present. Danish Council for Strategic Research. With Danish researchers. Developing an advanced AB model system with emphasis on intra-household interactions, at-home family priority time, non-motorized and public transport, and disaggregate assignment.

2005-present. Co-developer, with Mark Bradley and RSG software engineers in the ongoing development and enhancement of **DaySim**, the micro-simulation software platform used in numerous regional AB model forecasting systems.

2013-2014. Metropolitan Government of Nashville and Davidson County (Metro). Guided the preparation of survey data and other technical aspects for implementation of an activity-based (AB) model for the Nashville region.

2013-2014. San Diego Association of Governments (SANDAG). Advised SANDAG on the incorporation of bicycle route choice model and accessibility into the SANDAG regional AB model.

2013. Danish Road Directorate. Interviewed officials in the four largest Danish cities and wrote white paper proposing improved model-based forecast methods to better meet their information needs related to bicycle infrastructure and policy.

2009-2014. Puget Sound Regional Council (PSRC). With Bradley, DKS Associates and RSG. Managed project to implement an activity-schedule-based travel demand model system. Served as technical lead, principal designer and model developer (with Bradley). Guided and assisted all other aspects of project.

2010-2013. NCHRP (project 08-78). With J. Richard Kuzmyak and others. Developed model-based methods for a guidebook for practitioners on estimating and forecasting bicycling and walking activity.

2010-2013. Beijing Transportation Research Center. Advised Beijing researchers in the development of an activity-based model system for the Beijing metropolitan region.

2009-2013. FHWA (SHRP2 C10A project). With Resource Systems Group (RSG), Mark Bradley and AECOM Consult. Integrated an activity-based model system (DaySim) with the TranSims Router and Microsimulator.

2012. San Francisco County Transportation Authority (SFCTA). Advised SFCTA modelers on the resolution of technical issues related to use of their bicycle route choice model in their activity-based model system (pro bono).

2010-2012. Sacramento Area Council of Governments (SACOG). With DKS, Mark Bradley and RSG. Implemented major SACSIM/DaySim enhancement to support advanced pricing, costs and transit service features.

2010-2012. San Joaquin Valley MPOs. With Mark Bradley, RSG and others. Implemented activity-based models in the San Joaquin Valley, including a parcel-based model in Fresno, and a microzone-based model for the northern three counties.

2010-2012. FHWA (STEP). With RSG and others. Assisted in the research and development of advanced tour-based and logistics supply chain models for freight transport forecasting, with responsibility for developing the data development plan.

2009-2010. Chicago Metropolitan Agency for Planning (CMAP). Developed the data development component of a strategic plan for advanced travel modeling at CMAP.

2008-2010. Mid-Ohio Regional Planning Council (MORPC). Assisted University of Texas at Austin to compare MORPC trip-based model system with their new tour-based model system.

2008-2010. FHWA. With Bradley, Joe Castiglione and RSG. Integrated the SACOG activity-based demand model (DaySim) with the TranSims Router.

2003-2009. Developed a population synthesizer (PopSyn) for Atlanta Regional Commission (ARC). Helped DRCOG, PSRC and SANDAG implement it for their regions.

2008. Florida DOT Region 7 (Tampa Bay area) and Southern California Association of Governments (SCAG). With Bradley. Explained the state of practice and prepared activity-based model system design and implementation plan.

2008. Puget Sound Regional Council (PSRC). With Bradley and Castiglione. Implemented a day-activity schedule microsimulation model and integrated it with PSRC's existing trip-based model system. Conducted planning and design for a subsequent full implementation of an activity-based model system.

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.

2005-2008. Sacramento Area Council of Governments (SACOG). With 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 and DKS. Enhancing it over time.

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

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

1996-2001. Portland Metro. Designed 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-present. Occasionally provide instruction in activity-based travel demand forecasting to individuals and groups.

1995-2012. MIT. Served occasionally as instructor in charge, substitute instructor or teaching assistant 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. Served as technical advisor, and performed 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 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).

2006-2007. Developed demand models to predict future customer behavior based on past customer behavior, for a major U.S. mutual fund company.

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.

Publications, working papers and presentations (many are available at <http://JBowman.net>)

Service

Member of Brookline Complete Streets Committee

Friend of Brookline Bicycle Advisory Committee

Paper reviews for the following journals and conferences: Transportation, Transportation Research, Transportation Research Record, Transportation Science, Journal of Consumer Research, Geographical Analysis, Marketing Science, Journal of Choice Modeling, IATBR, Journal of Transport Engineering, World Conference on Transport Research

Past memberships: Transportation Research Board Committee on Passenger Travel Demand Forecasting, European Transport Conference Innovative Methods Programme Committee.