Overview

Discrete choice models are widely used for the analysis of individual choice behavior and can be applied to choice problems in many fields such as economics, engineering, environmental management, urban planning, and transportation. For example, discrete choice modeling is used in marketing research to guide product positioning, pricing, product concept testing, and many other areas of strategic and tactical interest. Recent applications to predict changes in demand and market share include areas such as choice of travel mode, coffee brand, telephone service, soft drinks and other foods, financial services, internet access, and choice of durables such as smartphones, tablets, automobiles, air conditioners, and houses.

This program undertakes an in-depth study of discrete choice models (logit, nested logit, generalized extreme value, probit, logit mixtures, hybrid choice models), data collection, specification, estimation, statistical testing, forecasting, and application. The covered topics include analysis of revealed and stated preferences data, sampling, simulation-based estimation, discrete panel data, Bayesian estimation, discrete-continuous models, menu choice, and integration of choice models with latent variables models. The course includes lab sessions where participants are provided with discrete choice software to learn how to use real databases to estimate and test discrete choice models taught in lectures and gain hands-on experience in using new discrete choice techniques for practical applications. By examining actual case studies of discrete choice methods, students will become familiar with problems of model formulation, estimation, testing, and forecasting.

Learning Objectives

• Understand discrete choice models and their applications.
• Learn to apply new discrete choice techniques.
• Understand problems of data collection, model formulation, estimation, testing, and forecasting, as learned through case studies of discrete choice methods.
• Utilize commonly available software to estimate and test discrete choice models from real databases.
• Evaluate theories of choice, random utility models, probabilistic choice models, alternative model formulations, statistical estimation procedures appropriate for alternative data sources, currently available computer software, tests of validity, and forecasting procedures.
PARTICIPANTS’ COMMENTS

★ ASSISTANT PROFESSOR OF MARKETING, SIMON FRASER UNIVERSITY, BRITISH COLUMBIA

“Discrete choice analysis is one of the most valuable new tools available to marketers interested in understanding and predicting consumers’ choices ... It goes beyond current textbook treatments of discrete choice analysis with discussions of state-of-the-art developments in the area and experimental applications.”

★ SENIOR RESEARCH ENGINEER, NTT TELECOMMUNICATIONS NETWORKS LABORATORIES

“Discrete choice analysis is an effective way to evaluate a new service and forecast future demand. I have applied it to the estimation of user preference ... in order to develop new telecommunication services.”

COURSE INSTRUCTORS

Moshe Ben-Akiva

Moshe Ben-Akiva is the Edmund K. Turner Professor of Civil and Environmental Engineering at the Massachusetts Institute of Technology (MIT), and Director of the MIT Intelligent Transportation Systems (ITS) Lab. He holds a PhD degree in Transportation Systems from MIT and honorary degrees from the University of the Aegean, the Université Lumière Lyon, the Royal Institute of Technology (KTH), and the University of Antwerp. His awards include the Lifetime Achievement Award of the International Association for Travel Behavior Research; the Jules Dupuit prize from the World Conference on Transport Research Society (WCTRS); and the Institute of Electrical and Electronics Engineers (IEEE) ITS Society Outstanding Application Award for DynaMIT, a mesoscopic simulator with algorithms for dynamic traffic assignment, traffic predictions, and travel information and guidance. Ben-Akiva has coauthored two books, including the textbook Discrete Choice Analysis, published by MIT Press, and over 200 papers in refereed journals or conference proceedings. He has been a member of over three dozen various scientific committees, advisory boards, and editorial boards. He has worked as a consultant in industries such as transportation, energy, telecommunications, financial services, and marketing for a number of private and public organizations, including Hague Consulting Group, RAND Europe, ChoiceStream, and Cambridge Systematics, where he is a Senior Principal and a member of the Board of Directors.