Lunch Seminar in Economics

Reconstructing daily schedules of individuals: a utility maximization approach

by Michel Bierlaire, Ecole Polytechnique Fédérale de Lausanne, CH
joint work with Janody Pougala and Tim Hillel

Abstract

The understanding and prediction of daily activity patterns is important to understand the use of resources such as transportation and energy. In this presentation, we propose a modeling approach based on utility maximization. We assume that an individual schedules her day in order to maximize her overall utility. To do so, she solves a mixed integer optimization problem which combines discrete decisions, such as whether or not to participate in different activities, and continuous decisions, such as the start times and duration of planned activities. We propose a detailed specification of the optimization problem, illustrate it on concrete examples, and discuss how the model parameters can be calibrated from real-world data.

Michel Bierlaire holds a PhD in Mathematical Sciences from the University of Namur, Belgium. Between 1995 and 1998, he was research associate and project manager at the Intelligent Transportation Systems Program of the Massachusetts Institute of Technology (Cambridge, Ma, USA). Between 1998 and 2006, he was a junior faculty in the Operations Research group ROSO within the Institute of Mathematics at EPFL. In 2006, he was appointed associate professor in the School of Architecture, Civil and Environmental Engineering at EPFL, where he became the director of the Transport and Mobility laboratory. Since 2009, he is the director of TraCE, the Transportation Center. From 2009 to 2017, he was the director of Doctoral Program in Civil and Environmental Engineering at EPFL. In 2012, he was appointed full professor at EPFL. Since September 2017, he is the head of the Civil Engineering Institute at EPFL.
His main expertise is in the design, development and applications of models and algorithms for the design, analysis and management of transportation systems. Namely, he has been active in demand modeling (discrete choice models, estimation of origin-destination matrices), operations research (scheduling, assignment, etc.) and Dynamic Traffic Management Systems.
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GS: https://scholar.google.com/citations?user=xJeiiC4AAAAJ&hl=en

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Location
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Registration
- Free seminar
- Registration to dem@uni.lu (please specify full name and institution)

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