
Integrated Land-Use and Transportation Models: Behavioural Foundations is a timely book that attempts to incorporate, in a single body of work, emerging and contemporary approaches in the area of land use and transportation modeling. The authors’ attempt to integrate land use and transportation models is highly laudable, given the varying scales and theoretical motivations that underlie land use and transportation modeling. This book cuts to the core of the integration challenge through careful assimilation of seminal work that is embodied in a variety of analytical forms: computational, simulation-based, and work that is purely analytical. The authors are internationally known scholars in the field of land use-transportation modeling, and they have woven together a carefully and deliberately thought-out body of work from leading authors in the field.

The book can be broken down into three major areas: conceptual issues and approaches, key behavioral components and related data needs, and operational modeling issues and advances. For the novice reader being introduced to the constantly evolving subject of land use-transportation modeling, this structure is useful. For the experienced modeler, laying out critical issues relating to behavioral underpinnings remains the main benefit. The authors present a comprehensive landscape of concepts, empirical arguments, and implementation challenges fundamentally related to identification. Much of the merit of the body of work in this book is prefaced on the assumption of observationally identifiable models. As such, data issues are rightfully dealt with in detail, as are fundamental analytical notions related to identification of complex transportation demand models. As a methodological requirement, the authors undertake a deliberate tour of individual level decision-making models and processes by first laying out a retrospective analysis of travel demand. Then they walk the reader through important questions related to data collection and completing the decision loop with a discussion of analytical requirements for micro-level models of travel activity in space and time.

One should note the fair amount of emphasis on travel demand modeling in this book. The editors raise tough and timely questions in this constantly evolving field: Are we measuring the right kind of travel behavior data? What are the appropriate scales of measurement, in both time and space? The behavioral foundations embodied in these questions are driven by models of the user of transportation infrastructure—from economic motivations to constraints-based analysis of traveler activity in time and space. The book would benefit from extended treatment of land use models at the disaggregate level. Much of the emphasis on land use modeling is on the computational aspect of model construction and spatial economics. As such, it is appropriate to view land use treatment in this book as a network-oriented spatial economics approach. It is the network nexus that bridges the travel demand models and land use models in the address of behavioral underpinnings. However, this nexus will be comprehensive and expansive if empirical formulations are provided in the form of land use micro form measures that abet or inhibit travel activity. Urban simulation models are emergent issues in the nexus between transportation and land use. The geography and construct of urban simulation models varies considerably, both in scale and perspective. Expanded treatments of this constantly evolving subject in future editions will also be of immense value to a variety of audiences.

In summary, this book is a valuable resource for scholars, modelers, planners, engineers, and information scientists aspiring to explore the methodological interface between computational and mathematical modeling of land use and travel demand. As computational power continues to expand, expectations of what can be achieved at this methodological interface will grow. To this end, this book sets the tone for formal and methodical debate on the critical issues motivating such growth. The book has benefited from the works of seminal thinkers and will serve as a cornerstone in the field of land use transportation modeling for years to come.

Venky Shankar
Associate Professor of Civil Engineering
The Pennsylvania State University
University Park, Pennsylvania 16802