

Microsimulation for Urban and Regional Policy Analysis, edited by Graham P. Clarke. 1996. European Research in Regional Science, Vol. 6. London: Pion. 204+iii. No price indicated (paper).

Ask a roomful of regional scientists what the biggest problems facing the discipline are today, and you can count on them to give you an mournful earful. Declining enrollments, imminent program termination or consolidation, low pay and prestige compared to other social scientists, philosophical quandaries will probably rank high among them. But, likely to be identified as the biggest indicator of the ongoing marginalization of this discipline is the decreasing availability and quality of regional data. In the U.S., at least, the trend has been towards fewer and fewer government issued regional economic series. It has been going on unabated for about 15 years and shows no sign of ebbing.

One can understand the frustration that this situation creates. Less data means hypotheses that cannot be tested or wasted research hours spent generating synthetic data to replace previously available survey-based data. To be honest, though, regional scientists have always had to work under difficult conditions and have, despite the obstacles, been remarkably deft in finding shortcut strategies to deal with these data limitations. Indeed, it is a mark of their success that few researchers seem to be bothered by the fact that some of the existing "hard" regional data is actually the result of estimation techniques that creatively weave, chop, and meld bits and pieces of periodic aggregated survey data into disaggregated chunks of regional time series data. But, some shortcuts still have their critics, like when researchers attempt to make dynamic inferences from cross-sectional data or when geographically aggregated data is used to test patently micro processes.

One of the basic points of *Microsimulation for Urban and Regional Policy Analysis* is that the final shortcut, is increasingly unnecessary. Regional scientists have a wealth of custom-made micro data practically at their fingertips and have not, up to this time, utilized it. Microsimulation is logical. It basically involves using conditional probability analysis to estimate chain conditional probabilities. Microsimulation is respectable. Applied microeconomists have been using it for decades and with considerable success in policy analysis. Microsimulation is cheap and easy. With a Pentium Chip, 166 MH, 3 gigabyte hard-drive desktop PC sitting on many academic desks, it is now possible, inexpensive, and relatively painless for researchers to microsimulate in the comfort and safety of their office chairs.

If it all sounds too good to be true, it is, to a certain extent. To be sure, the data is partially synthetic and will be sensitive to underlying assumptions, which in many instances will mean what you use and how you choose to stratify your conditional probability chain. There are also a few other problems in adapting the technique to regional analysis, which the authors in this collection candidly discuss at some length. But, for regional scientists who have grown accustomed to working with manufactured data, this is no time to get squeamish. The procedure represents a positive step forward which would enrich regional analysis.

The technique itself is conceptually simple. It entails stringing together a series of conditional probability functions with a randomized component to build micro datasets. You could start from scratch, but it is much better if you can anchor your microsimulation into an existing micro dataset (for U.S. microsimulations the starting point might be U.S. Census PUMS or University of Michigan PSID). That way the additional attributes can be grafted onto existing microactors. Individuals who were formerly mere census beings, with the associated demographic and housing characteristics, can be jazzed up with additional features to facilitate narrowly focused research questions. They can be made into those sometimes lovable, sometimes annoying creatures who, for instance, consume vast amounts of water with their extra-large capacity Maytag washing machines (Williamson, Clarke, and McDonald), drive inordinately long distances in their BMWs to work (Wegener and Spiekermann), become elderly, enfeebled, and dependent on non-familial assistance (Williamson), and accumulate large stock holdings from grandpa's estate (Caldwell and Keister).

The book's first chapter is written by the book's editor, Graham Clarke, and clearly and concisely lays out the purpose and nature of the assembled papers. It also provides a solid but brief overview of the method. The book's following chapter (by M Birkin, Graham Clarke and M Clarke) is a sort of perspective essay. It

describes the proper place of microsimulation in the regional modelling repertoire, a few problems encountered in adapting the method to urban and regional analysis, and several policy issues in the area of infrastructure and income transfer policy that might be illuminated using a microsimulation approach. The third introductory paper by P Hooimeijer is more detailed, and describes the nuts-and-bolts of creating an interactive, dynamic regional model. The approach is described as “life-course,” meaning that microactors live, die, cohabitate, commute, and migrate in the same way that ordinary people and enterprises do.

The remaining chapters are applications to concrete regional microeconomic research problems. Each one investigates a unique policy issue, using varied data sources and simulation methods. The first paper, by P Williamson, constructs microdata from British Census and independent survey data to examine the geographical incidence of elderly individuals who are likely to be incapacitated, uninsured, and uncared for. In this way, he is able to identify particular locales where additional public services may be needed. In a subsequent paper, P Williamson, Graham Clarke, and A T McDonald use a similar procedure to identify wards where individuals are more likely to own water consuming appliances, such as dishwashers and washing machines.

Two papers describe more involved large-scale modelling efforts. M Wegener and K Spiekermann construct an integrated urban land-use and transportation model for Dortmund, Germany called IRPUD which uses microdata minutely disaggregated at the spatial level for analyzing a variety of urban policies on commuter flows. E Holm, U Lingren, K Makila, and G Malmberg, outline the three stage process by which they are attempting to create a comprehensive life-course microdata set (TOPSIM — total Population Simulation Model) for the entire population of Sweden. The final unfinished stage will involve a demanding “time geographical perspective” in which microactor “trajectories” are linked to “individual characteristics, relations with others, and spatial/temporal contexts.”

The two remaining papers in this book are distinct from the others. One paper, by S B Caldwell and L A Keister, microsimulates national family stock ownership and accumulation patterns in order to determine the role that race plays in this important component of wealth. The simulation is based on a seasoned U.S. microsimulation model, CORSIM, which is a successor to Guy Orcutt’s original DYNASIM model, one of the world’s first large-scale socioeconomic microsimulation models. Only at the end of the paper, however, do they admit that the analysis could have been modified to examine differences in regional wealth accumulation and distribution processes. Another paper, by M Danson and A Lavercombe, examines the micro- decision processes of the firm. It is atypical of papers in the book in its primarily microeconomic focus and use of a hybrid regression analysis, linear programming method to generate microdata.

For those unfamiliar with microsimulation and its potential uses in regional science, *Microsimulation* provides a solid introduction. Published by Pion Press (the publisher of the *Environment and Planning* journals), it shows the same high quality and serious editorial judgement exhibited by other books in the *European Research in Regional Science* series (other volumes are concerned with infrastructure, environment, networks, and regional convergence). It brings together cutting-edge research in a timely fashion without sacrificing clarity and style. Its papers are, for the most part, connected, and they make good sense. Finally, the book’s contents serve as a counterpoint to the persistent lamentations that there is just not enough data for regional scientists to use and abuse. In fact, we are living in a golden computer age when just about any data creation task is possible. Perhaps, the only things we are constrained by these days (to adopt the “time-geographical perspective”) are the arcs of our individual microactor trajectories.

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