Special Issue: New Approaches to Intergenerational Mobility

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Methodological Frontiers in Intergenerational Mobility Research

Yoosoon Chang[1], Steven N. Durlauf[2], Fabian T. Pfeffer[3], and Xi Song[4]

Abstract

This special issue of Sociological Methods & Research presents a collection of papers that develop a range of new statistical approaches and empirical insights on intergenerational mobility. The papers in the special issue involve four broad themes: the development of new statistics to characterize mobility, the exploration of methods to establish causal explanations, the enrichment of statistical models to better characterize heterogeneity in mobility across families, and the development and application of ways to employ machine learning tools to enrich mobility analysis. These papers demonstrate the excitement of the methodological frontier in mobility research.

Keywords

social mobility, causal inference, measurement, heterogeneity, machine learning

[1]Department of Economics, Indiana University, Bloomington, IN, USA
[2]Harris School of Public Policy, University of Chicago, Chicago, IL, USA
[3]Department of Sociology, Ludwig-Maximilians-Universitat München, Munich, Germany
[4]Department of Sociology, University of Pennsylvania, Philadelphia, PA, USA

Corresponding Author:
Fabian Pfeffer, Department of Sociology, Ludwig-Maximilians-Universitat München, Konradstrasse 6, Munich, Bayern 80801, Germany.
Email: fabian.pfeffer@lmu.de

This special issue of *Sociological Methods & Research* presents a collection of papers that develop a range of new statistical approaches and empirical insights on intergenerational mobility. Given the dramatic increase in intergenerational mobility research in both sociology and economics over the last 15 years, it is especially appropriate that this collection includes work from both disciplines.

The work in the special issue falls into four categories. The first category addresses conceptual issues involving the measurement of mobility. Linear regressions and Markov chains represent the respective default models in economics and sociology and continue to place appropriately major roles in empirical work. Yet each approach necessarily represents a conversion of the information in the conditional probability structures linking parents and children to a set of scalar measures and so lose information about this relationship. Several papers in this volume propose ways to move beyond these frameworks in order to provide a richer description of intergenerational mobility, both by generalizing the stochastic processes employed to link parents and children and by extracting new types of information from these processes.

Deirdre Bloome, in "Absolute and Relative Mobility: Two Frameworks for Connecting Intergenerational Mobility in Absolute and Relative Terms," provides a systematic analysis of the relationship between several measures of absolute and relative mobility. She demonstrates that the differences between absolute and relative mobility matter empirically. To shed light on these differences, she provides two methodological approaches that researchers can deploy to understand mobility in new ways.

Pablo Mitnik, in "Inequality of Opportunity, Income Mobility, and the Interpretation of Intergenerational Elasticities, Correlations, and Rank-Rank Slopes," demonstrates that four commonly used "mobility" statistics—the intergenerational elasticity (IGE), intergenerational correlation (IGC), rank-rank slope (RRS), and intergenerational elasticity of expected income (IGEE)—are not interchangeable proxies for mobility. Each reflects distinct conceptual and statistical assumptions, and their values can vary significantly, which may lead to different interpretations of inequality of opportunity.

Ethan Fosse and Fabian Pfeffer, in "Beyond the Diagonal Reference Model: Critiques & New Directions in the Analysis of Mobility Effects," examine the fundamental limitations of the Diagonal Reference Model (DRM), the dominant method for studying the consequences of social mobility in the social sciences. The authors demonstrate that the DRM, as well as

related approaches, is a special case of a bounding analysis that achieves point identification by invoking strong, untestable assumptions. As an alternative, the authors propose the Structural and Dynamic Inequality (SDI) model, which shifts the analytical focus from extracting unique "effects" of origin, destination, and mobility to estimating joint parameter sets. As they show, this fully-identified model distinguishes between structural inequalities (reflecting stable positions in the social hierarchy) and dynamic inequalities (arising from movements between social positions), yielding highly informative, interpretable parameters based on substantially weaker assumptions than conventional methods.

Lawrence Blume, Neil Cholli, Steven Durlauf and Aleksandra Lukina in "Immobility As Memory: Some New Approaches to Characterizing Intergenerational Persistence via Markov Chains" propose new measures of intergenerational persistence based on memory curves, which can track how the influence of initial class conditions evolves across generations in a way that has yet to be exploited in empirical work. Their Markov chains-based approach reveals heterogeneity in mobility patterns and shows that, on average, the memory of origin fades within three generations.

A second theme in the special issue involves causal analysis. This is an important extension of empirical mobility methods, which are almost always summary measurements as opposed to analyses of mechanisms.

In "The Causal Effect of Parent Occupation on Child Occupation: A Multivalued Treatment with Positivity Constraints," Ian Lundberg, Daniel Molitor, and Jennie Brand develop ways to make causal claims when outcomes take on multiple categorical values, leaving zeros in the Markov transition matrix.

In "Social Mobility as Causal Intervention," Lai Wei and Yu Xie, develop causal approaches to understanding how changes in the mobility regime affect the distribution of outcomes.

A third theme involves understanding heterogeneity in intergenerational mobility. Intergenerational mobility regressions and Markov chain calculations presuppose common mobility statistics for different families under study. These papers show how to relax is assumption in ways that facilitate richer descriptions of mobility dynamics.

Yoosoon Chang, Steven Durlauf, Bo Hu, and Joon Park generalize Markov chain models of mobility to allow for probabilities in the transition matrix to depend nonparametrically on both categorical and continuous covariates. This flexible framework enables the study of complex, nonlinear interactions among key socioeconomic factors in determining income status

and facilitates the identification of parental configurations that function as stochastic traps, where upward mobility is particularly unlikely.

Martin Nybom and Jan Stuhler, in "Geographic Variation in Multigenerational Mobility," develop ways to characterize geographic mobility using multigenerational data and show that these variations are interpretable using latent variable methods. They find that regional rankings derived from intergenerational and multigenerational measures are similar, and that regional variation in mobility largely reflects differences in the intergenerational transmission of latent advantages, rather than differences in how those advantages manifest in observed outcomes.

Xi Song and Xiang Zhou, in "Is There a Mobility Effect? On Methodological Issues in the Mobility Contrast Model," provide a systematic evaluation and critique of the mobility contrast model used to address heterogeneity in mobility. They show that the method suffers from important limitations that obscure its ability to separate mobility effects from the origin effects of family backgrounds and the destination effects of one's own social status.

Esfandiar Maasoumi, Le Wang, and Daiqiang Zhang consider the relationship between heterogeneity and mobility measurement from the perspective of how individual parent-child pairs are aggregated in "Generalized Intergenerational Mobility Regressions." This paper shows that different mobility calculations involve different ways of weighting families located in different parts of the parental income distribution and further demonstrates how to use social welfare functions to determine the weighting scheme that is appropriate for those preferences.

A final theme of the special issue explores the use of machine learning methods in mobility research. The tools developed here allow for the construction of much richer models of parent-child relationships than conventional statistical models.

"Deep Learning with DAGs," by Sourabh Vivek Balgi, Adel Daoud, Jose Peña, Geoffrey Wodke, and Jesse Zhou, develops a new methodology, causal-graphical normalizing flows (cGNFs), which employ deep neural network methods to analyze direct acyclic graphs without functional form relationships. The power of these methods is demonstrated in two mobility examples.

Haowen Zheng and Siwei Cheng, in "Social Rigidity Across and Within Generations: A Predictive Approach," develop a predictive approach to study social mobility. Results show that using machine learning methods and a large set of inter- and intra-generational factors (around 4,000) outperforms traditional models in predicting mid-life socioeconomic status.

Collectively, the contributions to this volume underscore the rich potential of methodological innovation to deepen our understanding of the shape, the sources, and the consequences of social mobility.

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ORCID iDs

Yoosoon Chang https://orcid.org/0000-0003-2919-0349
Steven N. Durlauf https://orcid.org/0000-0001-8699-7056
Fabian T. Pfeffer https://orcid.org/0000-0002-6196-0617
Xi Song https://orcid.org/0000-0003-3463-045X

Author Biographies

Yoosoon Chang is a professor of Economics and Director of the Economic Machine Learning Lab at Indiana University. Her research includes econometrics, machine learning, finance, energy, inequality, and intergenerational mobility.

Steven N. Durlauf is Frank P. Hixon Distinguished Service Professor and Director of the Stone Center for Research on Wealth Inequality and Mobility at the University of Chicago.

Fabian T. Pfeffer is a professor of Sociology at LMU Munich and Director of the Munich International Stone Center for Inequality Research. He investigates how social inequality is maintained and how it may be changed.

Xi Song is the Schiffman Family Presidential Professor of Sociology at the University of Pennsylvania. Her research interests include social mobility, occupations and work, Asian Americans, and quantitative methodology.