Natural Experiments in the Social Sciences

This unique book is the first comprehensive guide to the discovery, analysis, and evaluation of natural experiments—an increasingly popular methodology in the social sciences. Thad Dunning provides an introduction to key issues in causal inference, including model specification, and emphasizes the importance of strong research design over complex statistical analysis. Surveying many examples of standard natural experiments, regression-discontinuity designs, and instrumental-variables designs, Dunning highlights both the strengths and potential weaknesses of these methods, aiding researchers in better harnessing the promise of natural experiments while avoiding the pitfalls. Dunning also demonstrates the contribution of qualitative methods to natural experiments and proposes new ways to integrate qualitative and quantitative techniques. Chapters complete with exercises, and appendices covering specialized topics such as cluster-randomized natural experiments, make this an ideal teaching tool as well as a valuable book for professional researchers.

Thad Dunning is Associate Professor of Political Science at Yale University and a research fellow at Yale's Institution for Social and Policy Studies and the Whitney and Betty MacMillan Center for International and Area Studies. He has written on a range of methodological topics, including impact evaluation, econometric corrections for selection effects, and multi-method research in the social sciences, and his first book, *Crude Democracy: Natural Resource Wealth and Political Regimes* (Cambridge University Press, 2008), won the Best Book Award from the Comparative Democratization Section of the American Political Science Association.

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A Design-Based Approach

Thad Dunning

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Dedicated to the memory of David A. Freedman

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Preface and acknowledgements

Natural experiments have become ubiquitous in the social sciences. From standard natural experiments to regression-discontinuity and instrumental-variables designs, our leading research articles and books more and more frequently reference this label. For professional researchers and students alike, natural experiments are often recommended as a tool for strengthening causal claims.

Surprisingly, we lack a comprehensive guide to this type of research design. Finding a useful and viable natural experiment is as much an art as a science. Thus, an extensive survey of examples—grouped and discussed to highlight how and why they provide the leverage they do—may help scholars to use natural experiments effectively in their substantive research. Just as importantly, awareness of the obstacles to successful natural experiments may help scholars maximize their promise while avoiding their pitfalls. There are significant challenges involved in the analysis and interpretation of natural-experimental data. Moreover, the growing popularity of natural experiments can lead to conceptual stretching, as the label is applied to studies that do not very credibly bear the hallmarks of this research design. Discussion of both the strengths and limitations of natural experiments may help readers to evaluate and bolster the success of specific applications. I therefore hope that this book will provide a resource for scholars and students who want to conduct or critically consume work of this type.

While the book is focused on natural experiments, it is also a primer on design-based research in the social sciences more generally. Research that depends on *ex post* statistical adjustment (such as cross-country regressions) has recently come under fire; there has been a commensurate shift of focus toward design-based research—in which control over confounding variables comes primarily from research design, rather than model-based statistical adjustment. The current enthusiasm for natural experiments reflects this renewed emphasis on design-based research. Yet, how should such research be conducted and evaluated? What are the key assumptions

behind design-based inference, and what causal and statistical models are appropriate for this style of research? And can such design-based approaches help us make progress on big, important substantive topics, such as the causes and consequences of democracy or socioeconomic development? Answering such questions is critical for sustaining the credibility and relevance of design-based research.

Finally, this book also highlights the potential payoffs from integrating qualitative and quantitative methods. "Bridging the divide" between approaches is a recurring theme in many social sciences. Yet, strategies for combining multiple methods are not always carefully explicated; and the value of such combinations is sometimes presumed rather than demonstrated. This is unfortunate: at least with natural experiments, different methods do not just supplement but often *require* one another. I hope that this book can clarify the payoffs of mixing methods and especially of the "shoe-leather" research that, together with strong designs, makes compelling causal inference possible.

This book grows out of discussions with many colleagues, students, and especially mentors. I am deeply fortunate to have met David Freedman, to whom the book is dedicated, while finishing my Ph.D. studies at the University of California at Berkeley. His impact on this book will be obvious to readers who know his work; I only wish that he were alive to read it. While he is greatly missed, he left behind an important body of research, with which every social scientist who seeks to make causal inferences should grapple.

I would also like to thank several other mentors, colleagues, and friends. David Collier's exemplary commitment to the merger of qualitative and quantitative work has helped me greatly along the way; this book grew out of a chapter I wrote for the second edition of his book, *Rethinking Social Inquiry*, co-edited with Henry Brady. Jim Robinson, himself a prominent advocate of natural-experimental research designs, continues to influence my own substantive and methodological research. I would especially like to thank Don Green and Dan Posner, both great friends and colleagues, who read and offered detailed and incisive comments on large portions of the manuscript. Colin Elman organized a research workshop at the Institute for Qualitative and Multi-Method Research at Syracuse University, where John Gerring and David Waldner served as very discerning discussants, while Macartan Humphreys and Alan Jacobs convoked a book event at the University of British Columbia, at which Anjali Bohlken, Chris Kam, and Ben Nyblade each perceptively dissected individual chapters. I am grateful to all of the participants in these two events. For helpful conversations and suggestions, I also thank Jennifer Bussell, Colin Elman, Danny Hidalgo,

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