Social Science Experiments

This book is designed for an undergraduate, one-semester course in experimental research, primarily targeting programs in sociology, political science, environmental studies, psychology, and communications. Aimed at those with limited technical background, this introduction to social science experiments takes a practical, hands-on approach. After explaining key features of experimental designs, Green takes students through exercises designed to build appreciation for the nuances of design, implementation, analysis, and interpretation. Using applications and statistical examples from many social science fields, the textbook illustrates the breadth of what may be learned through experimental inquiry. A chapter devoted to research ethics introduces broader ethical considerations, including research transparency. The culminating chapter prepares readers for their own social science experiments, offering examples of studies that can be conducted ethically, inexpensively, and quickly. Replication datasets and R code for all examples and exercises are available online at cambridge.org/socialscienceexperiments.

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A Hands-on Introduction

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DESCRIPTION: Cambridge ; New York, NY : Cambridge University Press, 2022. | Includes bibliographical references. | SUMMARY: "Social Science Experiments: A Hands-on Introduction is an accessible textbook for undergraduates. Its four objectives are to help readers to (1) become perceptive critics of social science claims and the evidence used to support them, (2) learn basic terminology used to describe experimental designs and the statistical analysis of experimental data, (3) design and conduct a small-scale randomized experiment in a manner that sheds light on a causal question while at the same time respecting ethical boundaries, and (4) appreciate the importance of research transparency in all phases of experimental design and analysis. Chapters draw on a wide array of social science experiments from fields such as political science, psychology, criminology, and health. The textbook assumes no prior background in statistics or programming, making it a perfect complement for a course in introductory statistics. Worked examples are written in the open-source software R. The exercises invite readers to work with publicly-available datasets from published studies. Solutions to the exercises appear at the back of the book. Further instruction in R is provided by an R Companion to this volume"– Provided by publisher.
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Contents

Preface

For more than twenty years, I have taught undergraduate courses on experimental design. This textbook is my attempt to write an accessible and engaging introduction for students who have little experience conducting primary research and perhaps no exposure to social science experiments. As far as I can tell, that description seems to fit the vast majority of undergraduates majoring in political science, sociology, communications, environmental studies, or history. In economics or psychology, which tend to have their own dedicated statistics courses, few students design, conduct, or analyze experiments.

Although I enjoy teaching statistics, I was determined not to let this primer on experiments turn into a statistics textbook. *Social Science Experiments: A Hands-on Introduction* attempts to convey an intuitive appreciation for experimental design. Unlike the graduate textbook that I co-authored (Gerber and Green 2012), this textbook keeps notation to a minimum and discusses only essential statistical concepts. The first six chapters attempt to build an intuitive understanding of the key design principles that make experiments instructive. The examples that suffuse this book are designed to spark students' interest. I want students to see the relevance of experimental reasoning for their everyday lives as well as their academic pursuits. Chapter 7 invites readers to do more with their data, introducing regression, graphics, and hypothesis testing.

Unlike most textbooks, this *Hands-on Introduction* urges readers to roll up their sleeves and conduct their own experiments. Chapters 3 and 6 invite students to design their own original studies. The design process is meant to prompt reflection on basic questions. What is the treatment . . . and control? Who are the participants? What is the hypothesis? The process also entails creating a dataset, inspecting the results, and drawing inferences. Learning is easier when the motivation to acquire specific skills emerges organically through hands-on experience.

My four teaching objectives are to help readers to (1) become perceptive critics of social science claims and the evidence used to support them, (2) learn the basic terminology used to describe experimental designs and the statistical analysis of experimental data, (3) acquire the ability to design and conduct a small-scale randomized experiment in a manner that sheds light on a causal question while at the same time respecting ethical boundaries, and (4) appreciate the importance of research transparency in all phases of experimental design and analysis.

In keeping with the fourth objective, readers are encouraged to use open-source software and archive their materials in public repositories. This book is therefore written using elementary code for the R software language. All code and data are available from the book's open-source repository (https://osf.io/b78je/). More advanced R code may also be found there and in the online *R Companion*, available at cambridge .org/socialscienceexperiments, which provides instructional tools for those who want to learn more about data analysis.

This book may be used as the main text for a dedicated course on experiments, or it may accompany a brief experiments module within a course on research methods or introductory statistics. The many articles and datasets that I have compiled for the exercises help reinforce material from other parts of a research methods survey course.

I wish to acknowledge the many people who provided assistance during the preparation of this book. I had the good fortune of working with four outstanding undergraduate research assistants, Yesenia Ruano, Oscar Scott, Kerem Tuncer, and Alan Zhou, who contributed to every aspect of this book. This team worked tirelessly throughout the entire book-writing process, despite the fact that the COVID-19 epidemic prevented us from ever meeting in person. I am grateful to Michelle Zee, who helped prepare solution sets and R code, and Gosha Syunyaev, who served as a teaching assistant for this course while the book was in development. Special thanks go to Alex Coppock, Pia Deshpande, Jamie Druckman, Josh Kalla, Bruce Kogut, Costas Panagopoulos, Ethan Porter, Betsy Sinclair, and Gaurav Sood, who so generously commented on working drafts of this manuscript. I am indebted to the many researchers who graciously shared their data for the book's worked examples and exercises. I also owe a long-term debt to Alan Gerber, who shaped my thinking on so many topics as we co-taught courses on experimental design. Final thanks go to Columbia University, whose sabbatical leave and research support made this writing project possible.