Understanding Political Science Research Methods

The Challenge of Inference

Maryann Barakso
Daniel M. Sabet
Brian F. Schaffner

MIX
Paper from
responsible sources
FSC
www.fsc.org   FSC® C014174
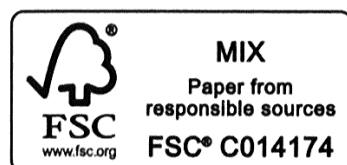
Introduction

THE ROLE OF THE LOGIC OF INFERENCE IN POLITICAL SCIENCE RESEARCH

In 2008, Barack Obama became the first African American to win a presidential election. Many political reporters and analysts reacted to this breakthrough by wondering whether the event signified that the country had made significant progress on race relations. Specifically, many journalists and analysts optimistically concluded that Obama's victory proved that he had not been penalized by voters because of his race. Social scientists tend to be skeptical of sweeping claims made without the benefit of clear evidence. Yes, Obama won, but can we be sure race played no role in the 2008 election? If race did play a role, how much impact did it have?

It is strange but true that the research papers students are asked to write throughout their college careers in the social sciences often bear only a passing resemblance to the scholarship that their own professors produce. For example, perhaps the most common college research assignment involves asking students to state a thesis and then track down facts from a variety of sources to bolster their argument. The research resulting from such a process certainly has the potential to contribute to the sheer amount of *information* in the world on a particular topic. However, what it can never do is fulfill the primary objective of the social scientist: to advance our collective *knowledge* about a subject. To fulfill this lofty objective, the scholar begins, not with an argument, but instead with a question. For example, following the 2008 election, pundits debated whether President Obama's election signified the "end of race," whereas scholars asked whether racial prejudice depressed white support for Obama.

1

The second critical difference between the typical student paper and that of a scholarly paper is that the scholar's research question develops not only out of her particular interests or her anecdotal observations of the world around her, but also—perhaps primarily—out of her interaction with the research of others on the subject. In other words, scholars view themselves not as isolated producers of information, but instead as participants in an ongoing conversation with other scholars' ideas and research.

For instance, scholars investigating the role of race in the 2008 presidential election were not simply responding to an important political event. They were also guided by and hoping to contribute to one or more of the existing scholarly discussions about the impact of race on how people vote. This previous body of literature not only provides insight into how race can affect electoral behavior, but it also provides helpful cues as to what aspects of the issue future research on the subject might address and how that research might be conducted.

Being aware of how scholars interact with each other through their research and how they build on prior studies makes a researcher's job more manageable because we are aware that we need not start from scratch every time we begin a new project. We also gain confidence in how to tackle a new study because we are guided by the communities of researchers before us who have explored questions similar to ours.

Scholars research and write, not to advance their own opinions or to reinforce their personal hunches about how the world should or does work, but to advance our collective understanding. Indeed, **scholarship** in the social sciences can be defined as the published work of individuals who are self-consciously building upon, challenging, and hoping to contribute new insight to research that has both already been produced and that is in progress.[1] By knowing and learning from each other's work on a subject, scholars interested in that topic are able to refine their own ideas, questions, theories, and methods. In this way, scholars position themselves to contribute something valuable to the discourse in their field of study and perhaps others as well.

THE CHALLENGE OF INFERENCE AND THE ADVANCEMENT OF KNOWLEDGE

To facilitate the scholarly project, it is essential that researchers agree on a set of conventions that should be followed as they conduct and evaluate their studies and the studies of others. In this book we focus on the *logic of inference* (a concept we explore in greater detail in Chapters 1), which sets forth general principles that guide inquiry in much of the social sciences. By better understanding the logic of inference we can move from being collectors of information to producers of knowledge.

---

1 We use the terms "scholarship" and "literature" interchangeably in this book.

In this book, we discuss two types of inference. One, **descriptive inference**, seeks to describe the state of the world. The other, **causal inference**, involves understanding how the world works by deriving empirical conclusions about the existence, extent, and direction of relationships between phenomena. While we are often ultimately interested in making causal inferences, such inferences are typically not possible without first making descriptive inferences. For example, a descriptive inference we can make from exit poll surveys in 2008 is that approximately 43 percent of whites voted for Obama (compared with 41 percent for John Kerry in 2004). A causal inference we may wish to test is whether racial prejudice *caused* any whites to vote against Obama.

While causal relationships are often what we are most interested in as researchers, they are also the most challenging to establish. In order to determine whether race mattered in the 2008 election, it is not sufficient to know that Obama won. What we need to know is whether more white voters would have voted for Obama if he were white. But this question confronts the fundamental problem of establishing causation: we can never know for sure whether a white candidate would have won more (or less) of the vote than Obama did, because we cannot observe that scenario—it didn't happen. Although we cannot know for certain what would have happened in this alternative reality, known as the **counterfactual**, by understanding the challenge of inference when asking research questions, designing studies, and evaluating data, we can make important deductions about the relationships between cause and effect with respect to many important political phenomena.

While it is impossible to be sure how many votes a white Barack Obama would have garnered in 2008, by building on existing literature and armed with an appreciation for the challenges of making causal inferences, several researchers set out to systematically examine whether race mattered in the 2008 presidential vote.[2] These scholars used different sources of data and different approaches to measuring racial prejudice, but overall they reached very similar conclusions. Race did not change the election outcome, but it did appear to matter for some white voters in 2008. Specifically, these studies estimated that Obama lost about 3 to 5 percent of the white vote because he was African American. This research has been invaluable because it not only provides context to Obama's historic victory, but also because it deepens our understanding about the continuing role of race in contemporary American politics. This book is about how you can join scholars in building upon and expanding what we know about the political world.

---

2 Vincent L. Hutchings, "Change or more of the same? Evaluating racial attitudes in the Obama era," *Public Opinion Quarterly* 73 (2009): 917–942; Josh Pasek, Alexander Tahk, Yphtach Lelkes, *et al.*, "Determinants of turnout and candidate choice in the 2008 US presidential election illuminating the impact of racial prejudice and other considerations," *Public Opinion Quarterly* 73 (2009): 943–994; Brian F. Schaffner, "Racial salience and the Obama vote," *Political Psychology* 32 (2011): 963–988.

PREVIEWING A FEW PRINCIPLES INTRINSIC TO MEETING THE CHALLENGE OF INFERENCE

Over time, empirically minded scholars have developed methodological approaches, research tools, and best practices that, when adhered to, promote the production of research that is likely to produce useful and theoretically well-grounded insights. Furthermore, as we discuss below, when scholars agree to be explicit about our assumptions, our research design, our methods, and our level of uncertainty about our results, others interested in the conversation can more easily learn from our work, correct it, or leverage it to make their own advances.

In the discussion that follows, we lay the groundwork for the rest of this book by calling attention to some of the fundamental premises and practices that political scientists often employ to address the challenge of inference. Fundamentally, we argue that by understanding the logic of inference, students will be better able to understand and critique the descriptive inferences and the assertions of causality that they confront in the media and in academic writing. Furthermore, they will be better equipped to contribute to ongoing conversations among researchers with whom they share substantive interests.

The Role of Theory in Scholarly Research

Scholarship is essentially about developing and testing theories about how the world works. As discussed above, rather than reinvent the wheel, we look to prior scholarship to gain insight into which competing theories may be contenders for further research and testing, to better hone our research questions, and to identify appropriate research design strategies. Becoming knowledgeable about and building on others' theories increases the likelihood that we will be in a position to make well-supported inferences as we embark on our own studies.

For example, one might be able to create a list of at least a dozen possible reasons why women are less likely than men to run for political office. Yet, by reading academic journal articles and scholarly books on the topic, it is likely that a student interested in the subject will be able to hone in on four or five "most likely" explanations for the dearth of women candidates, thereby helping him to design a much more manageable project and one that has a chance to move the ball forward. Similarly, scholars need not naively approach the question of whether race mattered in the vote for Obama; decades of research has explored how prejudice affects support for minority candidates.

Asking Questions That Can Be Answered

Applying the logic of inference drives us to ask questions that are answerable. Note that this does not mean political scientists do not or cannot ask

"interesting," "difficult," or "big" questions. The principles of inference simply encourage us to craft those questions such that we may gain some traction on them. For example, a scholar might be tempted to ask a question such as, "What is the best form of government?" This is what we call a **normative question**. It asks about how the world *should* be. In this book, we have a preference for **empirical questions**, or questions that can be answered with real-world evidence. An empirical question might ask: "Are democratic or authoritarian forms of government more likely to produce economic development?"

Generalizability

Finally, a question worthy of study is one that is generalizable. This means that scholars strive to design research studies whose findings will have some theoretical value beyond the particular time period, context, or case that they are focusing on. If the results of the study have too few applications or implications, the research is unlikely to influence the state of our knowledge on a subject. For example, political scientists are not just interested in the effect of race on voting for Barack Obama in 2008; instead, a study of the 2008 election should speak to the broader issue of the effects of race on voting behavior in all elections.

Acknowledging and Minimizing Uncertainty

For most researchers the primary goal of collecting data and conducting a study of any kind is to draw reliable and accurate conclusions. But how does one know whether those conclusions are sound?

Guided by the logic of inference, scholars endeavor to be as explicit as possible about revealing and justifying the many decisions all researchers make during the research process. Scholars have to be able to explain why their question is an important one to study; why they chose to include a given set of theories and not others; why and how they selected this particular set of cases to study; why and how they employed a specific method; how, precisely, their findings do or do not support their initial theories; and finally, how to interpret their findings. Furthermore, scholars are charged with taking seriously and responding to theories, evidence, and findings that appear to undermine their own expectations. In fact, one challenge of inference is that scholars must explicitly engage with alternative theories throughout the research process and consider whether and to what extent competing explanations or contradictory findings in the literature choices may undermine their own conclusions.

Scholars know that even as they do their best to make careful decisions throughout the research process, every choice risks introducing error into their study. Such errors are an inherent characteristic of research in the social sciences, regardless of the particular method one employs. Together with

inadvertent errors and omissions, these factors demonstrate why social scientists cannot claim to "prove" that their conclusions are correct. Instead, they acknowledge that a measure of uncertainty remains, no matter how confident they are of their findings.

Advancing Our Collective Knowledge

In our attempts to contribute to the existing scholarship on a subject, we must also be conscious of the need to facilitate future conversations. Many of you may remember painstakingly writing out mathematical proofs in high school or college to demonstrate "how you know what you know"—or the precise steps you took to justify your final answer. While we do not employ proofs very often in political science, adhering to the logic of inference when designing and conducting research makes it much easier for someone else to "check your work," or, at the very least, to feel more confident in your findings. In principle, non-reproducible work is of limited use in advancing knowledge because, by definition, the scholar has chosen not to fully engage in the scholarly conversation. Instead of using the shared language of science, the scholar asks her colleagues to "trust" her judgment, even as her peers are not provided with the tools to evaluate the validity of her findings. Although it is certainly possible that this scholar's work has the potential to contribute valuable information about her subject, irreproducible research cannot advance knowledge until other scholars are able to confirm, refine, or refute her findings.

THE PLAN OF THE BOOK

This book explains how political scientists design their research in order to make descriptive and causal inferences that will advance our knowledge on a topic. Students who grasp the challenge of causal inference will be able to better understand and critique the inferences they are confronted with and conduct their own social science research. This book is not intended to teach students how to conduct a multivariate regression or how to carry out structured interviews in the field, although we discuss these research techniques in light of the inferential challenges different methods pose. Rather, this book asks students to step back from the nuts and bolts of conducting research and to think about the big picture: how good theory can help you craft sound research questions, how different research questions can be addressed using diverse methodologies, and how different research methodologies minimize certain challenges to inference while exposing others.

While we tend to discuss the research process in a somewhat linear fashion, the research process is in fact non-linear. This reality is often obscured by the way academic journal articles follow a tidy sequence from research

question to theory, to hypothesis, to methodology, to results. In practice, however, data often inform our theories and available methodologies might affect our hypotheses. The development of a research question, for example, is informed at least partly by the type of research design that can be reasonably tackled by the student, given his resources (time, skills, prior knowledge, funding) and those questions may be revised based on the types of preliminary findings that he encounters. Knowing that the research process does not necessarily proceed sequentially will help you maintain an awareness of how one stage of the research process relates to every other stage. It will also remind you to remain open to adjusting your question, theory, or approach as you gain more information in the research process.

In truth, the research process can feel somewhat daunting at times. Ideally we could follow a set, prescribed methodology much like a cook would follow a recipe. However, every research project is at least slightly different (except for replications of prior studies) and poses different obstacles to overcome. Factors, often outside of the researcher's control, sometimes threaten to derail even the most well-designed studies. Recognizing the limitations of each of the research methods discussed, we present real and hypothetical research examples to illustrate what might go wrong in a given project at all stages of the process and—importantly—explore potential avenues for fixes.

In Chapter 1, we lay out the principles that describe the challenge of inference and explore how our attention to this challenge guides each stage of the research process. In Chapter 2 we turn to the matter of developing the all-important research question. In our experience, students often struggle more in defining their research question than in almost any other area of their projects. Yet, this element constitutes the most critical aspect of a successful research project. A poorly chosen or framed research question could lead to the accumulation of more information on a topic, but it will not allow you to draw meaningful inferences, which is the basis of advancing knowledge. Furthermore, once you are clear about the role of the research question, you will be much better equipped to explain to your audience why your inquiry matters.

Recognizing the centrality of the research question and how it relates to the broader goals of scholarship in the social sciences will clarify many other stages of the research process for you. For example, another frequently confounding but necessary element of scholarly research is the literature review. Students typically wrestle mightily with the concept of a literature review, but if you understand the challenges of inference, the connection between your question and your research design, the logic and purpose of this component of your study will make more sense. Chapter 3 focuses on the best way to think about and complete a review of the literature: not as an attempt to discover everything that has ever been written on a particular topic, but rather as a way of identifying the building blocks for your own theory and research.

In the second section of this book, we turn to the matter of which method to choose to execute your research design. We emphasize the different benefits

and drawbacks associated with three different approaches: experimental studies, large-n observational studies, and small-n observational studies. The overarching message of this section of the book is how important it is to choose a method best suited to answering the particular question you are asking. We examine how different research approaches can be used to address similar questions, while also demonstrating the instances where a particular method is not well suited for the question being posed. We do not simply provide a menu of methodological choices, but explain why you might choose one item from this menu in lieu of another.

Finally, conveying the substance of one's research to others in a clear way is at least as important as producing those findings in the first place. And meeting the challenge of inference is most rewarding when you can effectively convey your work to others. Throughout this section of the book, we guide you through the critical steps of evaluating, describing, and presenting your results accurately and effectively. The goal is for you to be able to explain not only what your research shows, but also to relate how confident you can be in your findings and what aspects of your research design lead to this level of confidence. Emphasizing the presentation of results during the research process—and not simply afterwards—can help you uncover inconsistencies, omissions, and new issues that deserve further inquiry, in addition to highlighting interesting relationships. Furthermore, the ability to concisely, clearly, and accurately convey research conclusions is, of course, an important skill applicable in many other contexts beyond the university.

KEY TERMS

causal inference   3

counterfactual   3

descriptive inference   3

empirical questions   5

normative question   5

scholarship   2