Research Design
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Wednesday 6pm-8:40pm, BSB 117

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Overview
Research in the social sciences is a process of developing evidence to generate and test hypotheses. To draw causal inferences about variables of interest, the effects of confounding variables must be controlled. Research design refers to techniques for organizing the research process to control for confounding variables in the process of data collection and development, rather than doing so after-the-fact through the use of statistical techniques. It also refers to a variety of statistical techniques that make creative use of existing data to sharpen causal inferences.

A thorough understanding of research design is crucial to conducting high quality research and to assessing the limitations of existing research studies. This course is intended to be of value both to those who will go on to conduct their own research in their chosen fields and to those who intend to use/evaluate the findings of research conducted by others. Topics covered include: (1) experimental designs; (2) non-experimental designs; (3) sampling methodologies; (4) measurement techniques; (5) model specification in relation to research design; (5) qualitative methods; (6) quantitative methods; and (7) internal and external validity.

Course Objectives
At the end of this course, students should:

- Understand the challenges facing researchers who wish to conduct causal research in the social sciences;
- Develop an understanding of the key components of research design;
- Learn how various statistical techniques can be employed to develop compelling evidence for and against research hypotheses;
- Become comfortable critiquing research designs;
And have the experience of developing and defending a research design on a topic of their choosing.

**Prerequisites**
To succeed in this class, you should have already taken Quantitative Methods I (824:702, or an equivalent class in descriptive and inferential statistics) and Quantitative Methods II (824:709, or an equivalent class in multiple regression analysis). The latter may be taken concurrently, if necessary, but this is not preferred. You should also have taken the Logic of Social Inquiry (824:703), which covers the philosophical foundations of social science research and introduces a number of issues and research designs considered here. In comparison to that course, this class contains less philosophy of science and more of the nuts and bolts of how and when to employ different research designs.

**Required Texts**
Most classes will focus on chapters in these two books, supplemented by other readings that will be available on Sakai:


**Grading and Assignments**
There are several assignments in the course.

- Each week, you will write a response to one or more of the readings. I will provide a specific question for you to answer based on your understanding of the readings.
- At least twice during the semester (depending on the number of students enrolled), you will lead the class in discussing one of the readings. Normally, you will be asked to present a summary and/or critique of the research design in a published journal article.
- There will be an in-class midterm.
- The final assignment is a research design of 10 to 20 pages, including a statement of the problem to be addressed, a literature review, and a section on data and methods. You do not need to show results. Drafts of each section will be due at different points in the semester, on which you will receive feedback. The final grade will be based on the final version that you turn in at the end of the semester. Time permitting, you will be asked to present your proposal to the class.

The research design assignment could serve as the basis for development of a dissertation proposal, but it does not need to be. Ultimately, you will develop your dissertation proposal in consultation with the chair and members of your doctoral committee. However, this assignment
is certainly good practice for developing a dissertation proposal, whether or not you retain the same topic and/or research design when you move to the dissertation stage of your graduate career.

Grades will be determined as follows:

- Reading responses: 20%
- Leading class discussion(s): 20%
- Midterm: 25%
- Research Design final paper: 25%
- Attendance and participation: 10%

**Schedule and Readings**

The following is a preliminary outline of topics to be covered in the class. Exact dates for each topic, additional readings, and assignment due dates will be posted in the online schedule on Sakai. Readings are likely to be modified as we get into the class and I learn more about your skills and interests so *do not rely on this version of the schedule*; always refer to the “live” schedule which will be posted and updated on Sakai. Readings not in the two textbooks will be available as PDF documents on Sakai or via links to online documents.

**Introduction**

**Week 1 - January 21st**

- Correlation and Causation
- Alternative Methods of Control: Overview

**Readings**

- Murnane and Willett, Chapter 3
- Shadish, Cook, and Campbell, Chapter 1
- Alzheimer's Linked to Retirement - Press Release

**Techniques and Tools**

**Week 2 - January 28th**

- The elements of research (review, these should already be familiar):
  - level of measurement
  - data structures
  - units of analysis
  - dependent and independent variables
• descriptive statistics
• inferential statistics and tests of hypotheses
• Index and scale construction

Readings:

• Nachmias and Nachmias (2008) - Chapter 18
• Application Reading: TBD

Week 3 - February 4th

• Reviewing the Literature and Editorial Review Process

Readings:

• Literature Review: Kristen A. Kuhne (2008)

Week 4 - February 11th

• Sampling Techniques
• Simple Random
• Stratified Sampling
• Multi-Stage Cluster Sampling
• Survey Research
• Questionnaire Construction
• Survey Administration
• Online options to reduce cost? Implications and Challenges of that choice?

Readings:

• Nachmias and Nachmias (2008) - Chapters 8, 10, 11
• *Chamber of Commerce / Harris Report PR*
• Washington Post Critique of Chamber/Harris
Qualitative Methods

Week 5 - February 18th

- Ethnography
- Participant Observation
- Principles of Field Work

Readings:

- Liebow (1967) - Tally's Corner - Introduction and Appendix
- MacLeod (2009) - Ain't No Making It - Chapter 1 and Appendix 1
- TBA

Week 6 - February 25th

- Case Studies
- Structured Interviews

Readings:

- Gerring (2004) – *Sakai*
- Ostrander (1993) – *Sakai*
- Pape (2003), The Strategic Logic of Suicide Terrorism. *American Political Science Review*.
- Gomez (2011)

Shaping the Data: Alternative Designs

Week 7 - March 4th

- The Gold Standard: Experiments
- Fool's Gold?: Threats to Internal and External Validity

Readings:

- Murnane and Willett, Chapter 4, 5
- Shadish, Cook, and Campbell, Chapter 2-3, 8
Week 8 - March 11th

- Statistical Power

Readings:

- Murnane and Willett, Chapter 6-7
- Cook (2001)
- Stuart (2007)

Week 9 - March 18th (NO CLASS - Spring Break)

Week 10 - March 25th

- Natural Experiments

Readings:

- Murnane and Willett, Chapter 8.

Week 11 - April 1st

- Quasi-Experiments

Readings:

- Shadish, Cook, and Campbell, Chapters 4-5

Week 12 - April 8th

- Panel Data Designs
• Interrupted Time Series

Readings:

• Finkel, Causal Analysis with Panel Data, pp. 3-21.
• Murnane and Willett, Chapter 7
• Shadish, Cook, and Campbell, Chapter 6

Week 13 - April 15th

• Regression Discontinuity

Readings:

• Murnane and Willett, Chapter 9
• Shadish, Cook, and Campbell, Chapter 7

Week 14 - April 22nd

• Instrumental Variables
• Propensity Score Matching

Readings:

• Murnane and Willett, Chapter 10, 12
• Nguyen-Hoang, Yeung, and Bogin (2013), "No Base Left Behind." Public Finance Review
• Jargowsky and Park, 2009 "Suburban Sprawl and Central City Crime." *(Note the instrumental variables models.)*

Overarching Issues and Wrap-Up
Week 15 - April 29th

- Ethics in Research
- Choosing among Research Methods and Designs
- Revisiting Significance vs. Importance
- Bonus topic: Quantile Regression

Readings:

- Shadish, Cook, and Campbell, Chapter 9
- Eide and Showalter, "The effect of school quality on student performance."