The Course

1. An Overview of Empirical Research
2. Research Design
3. Data Collection/Coding
4. The Logic of Statistical Inference
5. Data Analysis
An Overview of Empirical Research

- A Definition of Empirical Research
- The Basics
What is Empirical Research?

- Research that is based on observations of the world—in other words, on data, which is just a term for facts about the world.

- “Data” may be quantitative (numerical) or qualitative; neither is any more empirical than the other.

- Many empirical projects start with hunches or “theories” about the way the world work but they do not end there; they attempt to determine whether those hunches or theories coincide with observations taken from the world.
The Basics

- Design Your Project
- Collect and Code the Data
- Analyze the Data
Designing Research

• Research Questions
• Theories and their Observable Implications
• Rival Hypotheses
• Measurement
The Basics

• Design Your Project
• Collect and Code the Data
Collecting/Coding
Data 1

- Involves amassing or translating information in a way that researchers can make use of it.
Collecting/Coding
Data 2

<table>
<thead>
<tr>
<th>Case</th>
<th>Judge’s Party</th>
<th>Who Won?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 F. 3d 1</td>
<td>Democrat</td>
<td>Defendant</td>
</tr>
<tr>
<td>1 F. 3d 10</td>
<td>Republican</td>
<td>State</td>
</tr>
<tr>
<td>1 F. 3d 20</td>
<td>Republican</td>
<td>Defendant</td>
</tr>
<tr>
<td>1 F. 3d 40</td>
<td>Democrat</td>
<td>Defendant</td>
</tr>
</tbody>
</table>

.... to 181 cases
Collecting/Coding Data 3

- A piece of most empirical research but typically not the end goal
- Important exception=the public, multi-user database. E.g., Spaeth, GSS
The Basics

- Design Your Project
- Collect and Code the Data
- Analyze the Data
  - Summarize the Data
  - Make Inferences
## Summarizing Data 1

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The Basics

• Design Your Project
• Collect and Code the Data
• Analyze the Data
  • Summarize the Data
  • Make Inferences
Inference

- The primary goal of most empirical research is inference—the process of using the facts we know to learn about the facts we do not know.

- Two types of inference: descriptive and causal
Descriptive Inference 1

- *Example 1:* Addressing a general research question—Which cases go to trial?—by drawing a random sample of 500 cases docketed by a specific court (the Tax Court) during a discrete period (1990-1995)

- *Example 2:* Addressing a general research question—Who will win the presidential election—by surveying an exemplary set of voters

The idea here is to generalize about the “world” based on examining just a small part of it. The “small part” is called a sample; “the world” is called a population.
Descriptive Inference 2

In both examples, the researcher is less interested in summarizing HER cases/voters than she is in using those cases/voters to make a descriptive inference: From her sample she wants to learn about the data she doesn’t have (ALL cases, all voters) (i.e., the population).

- **Example 1:** Addressing a general research question—Which cases go to trial?—by drawing a random sample of 500 cases docketed by a specific court (the Tax Court) during a discrete period (1990-1995).

- **Example 2:** Addressing a general research question—Who will win the presidential election—by surveying an exemplary set of voters.
Causal Inference 1

- Did Miranda bring about a decline in the number of confessions?
- Did racism cause a company to pay blacks less than whites?
- Does tightening penalties for DWIs lead to a decline in alcohol-related fatalities?

These sorts of questions ask whether a particular “event”—known as the key causal variable (e.g., Miranda)—caused a particular “outcome”—known as a dependent variable (e.g., confession rates). The possible events and outcomes are variables in that they take on different values; that is, they vary: e.g., either Miranda exists or it does not.
Causal Inference 1

- Did Miranda bring about a decline in the number of confessions?
- Did racism cause a company to pay blacks less than whites?
- Does tightening penalties for DWIs lead to a decline in alcohol-related fatalities?

These are hard questions to answer because the only way to define the total causal effect would be to rerun history, with and without the event. E.g., create a version of history with *Miranda* and without it. If we observe fewer confessions in the version with *Miranda*, we might conclude it had a causal effect.