Learning Outcomes

By the end of section today, you should:

- Understand key concepts from lecture:
  - Independent Variable
  - Dependent Variable
  - Confounding Variable
  - Spurious Correlation

- Be able to evaluate whether hypotheses meet the criteria to be “good” hypotheses and write your own

- Be able to identify confounds and explain how they limit our ability to make causal claims
Plan for the Day

- Introduce ourselves
- Go over section participation expectations
- Answer questions from lecture this week
- Dig in!
A Little About Me

4th year in the program, PhD candidate
Focus Areas: American Politics and Methodology
Dissertation: How does information get distorted as it diffuses from the media to the masses? How does this distorted information impact political behavior?

I love teaching!

Before UCSD
Home: Minnesota
(Go Vikings!)
College: College of William & Mary in Virginia

Contact Information:
Email: tncarlson@ucsd.edu
Office Hours: Wednesdays 8-9:30am; 11am-12pm in SSB 341, or by appointment
Discussion Section slides and materials can be found at http://pages.ucsd.edu/~tfeenstr/
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Getting to Know You:

Please take a notecard and write the following:

- Name (and preferred name you go by)
- Fun fact about yourself
- 1 thing you are looking forward to in this class
- 1 thing you are nervous about in this class
- 1 thing that I can do to be helpful to you and your learning
Discussion Section Format and Expectations

- Section participation is *required* and accounts for 10% of your course grade (7 section attendances = full participation)
- Review concepts from lecture, give additional examples, practice problems, help learning Stata
  - Large group (whole class) discussions
  - Small group discussions with the people around you
  - Small group activities
General Advice for POLI 30

- Don’t give up!
  - Inspiration: Minneapolis Miracle: Keenum to Diggs; Bruno Mars: Don’t Give Up; Michael Scott
- Come to lecture – very interactive, take notes on the discussions
- Come to section
- Practice!
  - Odd problems in the textbook (answers in the back)
  - Additional practice exercises posted on my website
  - Examples from section and lecture
- Come to office hours sooner rather than later
“Stats sometimes mean something, sometimes mean nothing, and sometimes are just coincidence” - Trey Wingo post-game Jan 14, 2018
What questions do you have from lecture this week?
Hypothesis Recap

- **Hypothesis**: The perceived relationships between or among properties/concepts (our guesses about how two things are related)
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- **Good Hypothesis Checklist**:
  - Falsifiable
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- **Good Hypothesis Checklist**:
  - Falsifiable (can be proven wrong)
    - Clear
Hypothesis Recap

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**Good Hypothesis Checklist:**
- Falsifiable (can be proven wrong)
  - Clear (describe what we mean by variables)
- Direction (positive (IV up → DV up, IV down → DV down) or negative (IV up → DV down, IV down → DV up))
- Explicit comparison (explains both sides of a variable — what happens to our DV when our IV is high, compared to what happens to our DV when our IV is low)
- Avoids value (normative) judgments (uses concepts that can be analyzed/measured scientifically, not whether something is "good" or "bad")
- Not Immediately Verifiable (can't be proven true or false on a quick, limited investigation)
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- Carlson
- POLI 30-Section 1
- January 19, 2017
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- What’s wrong with this hypothesis? (What’s missing from the checklist?)
The lower the overall level of crime, the more likely a country will be democratic.

- What’s wrong with this hypothesis? (What’s missing from the checklist?)
- How would you make it better?
Choose a hypothesis and write down your answers the two questions below.

1. Age and voter turnout are related.
2. Career politicians are bad.
3. UCSD students are happier than University of Wisconsin students.

- What’s wrong with this hypothesis? (What’s missing from the checklist?)
- How would you make it better?
Hypothesis Practice: In Groups

Pair up with 2-3 other students and discuss your answers.

1. Age and voter turnout are related.
2. Career politicians are bad.
3. UCSD students are happier than University of Wisconsin students.

- What’s wrong with this hypothesis? (What’s missing from the checklist?)
- How would you make it better?
Causality

- We **want** to make causal claims ...
Causality

- We **want** to make causal claims ...
- But it’s hard
Confounds and Spurious Relationships

- Three criteria for a **confound**
  - Causes changes in the DV
  - Is correlated with the IV
  - Is causally prior to the IV

Examples of Confounds:
- Do hospital visits make people sicker?
  - IV: Hospital Visit
  - DV: Health (after visiting a hospital)
  - Confound? Prior health / selection into going to the hospital

If we have a confound, then the correlation we observe between the IV and DV may be spurious. A third variable affects both the IV and the DV.

Example: the weather affects both ice cream sales and shark attacks.
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- If we have a confound, then the correlation we observe between the IV and DV may be **spurious**
  - A third variable affects both the IV and the DV
  - Example: the weather affects both ice cream sales and shark attacks
How do we show causality?

1. Establish temporal ordering (did the IV come before the DV?)
2. Establish correlation (when changes in one variable occur together with changes in another variable)
3. Causal mechanism (tell the story)
4. Rule out confounds
Confounds Practice

- Go back to the improved hypotheses you wrote earlier.
- Brainstorm any possible confounds in these relationships.
- Can you show causality with your hypothesis?