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Variables, Values, and Hypotheses

Week 2 Spring 2020

Today's Agenda

- Reminders
- Q&A about SPSS
- Review the concepts of Variables & Values, Units of Analysis, and Hypotheses
- Practice Problems

Reminders

- Quiz 1 needs to be completed on Canvas by April 9th-12th
- SPSS Trial Run due April 15th
  - See my website for tutorial (lieselspangler.com/teaching)
- My office hours: Wednesdays from 2-3 and by appointment (calendly.com/lspangler)
  - This week: Thursday 9-10am

SPSS Questions?

Goals of Poli 30

- We want to teach you the tools and skills to answer research questions in an empirical way.

- *What does it mean to be empirical?*

Intuitions v. Hypotheses v. Testable Implications

- Intuition
- Hypothesis
- Testable Implication

Characteristics of Good Hypotheses

- 1. Hypotheses and Testable Implications require some sort of comparison.
  - *Example*: Dogs are loud animals.
  - What's the problem here?

Characteristics of Good Hypotheses

- 2. Include an Independent (Explanatory) Variable and a Dependent (Outcome) Variable.
  - IV= the thing that does the changing (its value is independent of the other values)
  - DV= the thing that changes (its value depends on the other values)

Characteristics of Good Hypotheses

- Other characteristics that Dr. G covers in lecture
    - 3. Is falsifiable.
    - 4. Is not immediately verifiable (i.e., google can't give you the answer)
    - 5. Clear direction of the relationship between IV and DV
- If you need clarification on these, come to office hours!

Intuitions v. Hypotheses v. Testable Implications

- Intuition:
  - studying helps you earn good grades
- Hypothesis:
  - Students who study more earn better grads than those who study less.
- Testable Implication:
  - An individual who studies more than five hours a week for Poli 30 will earn a better grade than an individual who studies less than five hours a week for Poli 30.

Variables & Values

Construct	→	**Variable**	→	**Values**
Education	→	Years of Ed	→	1 year, 2 years 3 years, 4 years, etc
Political Preferences	→	Vote Choice	→	Candidate 1, Candidate 2, Candidate 3

- Hypotheses will likely use *constructs* or *variables*
- Testable Implications will likely use *values*.

Units of Analysis/Levels of Data

- *For what unit/level are you collecting data? About whom are you collecting data?*

- <u>Examples</u>:
  - **Individuals**
    - Voters, Politicians, Citizens
  - **Aggregate** (Groups of Individuals)
    - Electoral Districts, Counties, U.S. States, Countries

Levels of Data

Example: VOTE TURNOUT

- **Individual-Level Data**
  - **Dataset is a collection of individuals asking, "Did you vote in the last election?"**

Individual	Did You Vote in 2012?
1	Y
2	N
3	N
4	Y

- **Aggregate-Level Data**
  - **Dataset is a collection of countries with rates of voter turnout (i.e., what percentage of eligible voters came out to vote)**

Country	Turnout Rate in 2010
Afghanistan	45.8%
Anguilla	82.07%
Australia	93.22%
Azerbaijan	49.76%

Levels of Data

Example: INCOME

- **Individual-Level Data**
  - **Dataset is a collection of individuals asking, "How much money did you make last year?"**

Individual	Income
1	$45,908
2	$108,465
3	$345,673
4	$12,820
5	$1,089,345

- **Aggregate-Level Data**
  - **Dataset is a collection of the average income of every county**

County	Income (Per Capita)
San Diego County	$31,043
Imperial County	$16,409
Riverside County	$23,660
Los Angeles County	$27,987
Orange County	$34,416

Work through examples on tablet:

Chapter 1, Problems 1, 3, 5, 6, 10