

Research Applications I

October 5, 2022

Today

- Brief review of basic approach to date
- Research applications
 - Two examples of published research using approaches we have discussed
- Preparation for first exam
 - Discussion of format and expectations

Review of Research Process

1. Identify research question
 - Ideally, interesting and important (substantively and/or theoretically)
2. Measure concepts
 - Conceptual definition
 - Operational definition
 - Variables
3. Survey literature
 - What do we already know (or think we know) in answer to the research question?
4. Develop theoretical argument which answers the question
5. Derive hypotheses
 - Identify Independent and Dependent Variables

Review of Research Process

6. Design a study to properly test hypotheses
 - Think about “what else” could affect DV
7. Collect data
 - Identify population and sampling strategy
8. Describe variables
 - Range, distribution, etc.
9. Test hypotheses
 - What is the direction of the relationship between IV and DV?
 - How confident can we be that a relationship in the sample means there is a relationship in the population?
 - How big of an effect does IV have on DV?
10. Write it all up
 - Seek out feedback and revise (repeatedly)
 - End goal--publish

Ideological Values and the Votes of Supreme Court Justices

- Jeffrey A. Segal, Albert D. Cover (APSR, 1989): “Ideological Values and the Votes of U.S. Supreme Court Justices”
- Research question: Do Supreme Court Justices’ (personal) policy attitudes and values influence their votes on cases before the court?
 - An important inquiry—no other systematic (large-scale) analysis of ideology where policy attitudes were measured independent to their votes.
 - Principle of **no circularity** in a systematic empirical analysis

Lit Review/Theory

- Expectation in the literature that attitudes, values, and/or policy preferences have influence on judicial decision making
 - Central to many qualitative studies of Supreme Court
- Likely to be particularly true for Supreme Court justices
 - Lifetime appointments—no electoral pressure
 - No desire for higher office
 - Court of last resort, no judicial oversight
- Little theory in this article, more effort to test an existing, and largely untested, expectation

How to Measure Justices' Personal Attitudes?

- Justices do not (and will not) take attitudinal surveys
- Indicators of attitudes need to be independent of votes
 - Otherwise, we have a circularity problem
- Need valid, consistent & comparable data
 - Cannot use prior (lower court) votes
 - Not all Supreme Court justices served in lower courts
 - Lower courts are substantively different venues & institutions
 - Confirmation hearings may reveal different (e.g. strategic) information

Concept #1—Measuring Attitudes

- Measurement:
 - Editorials from four newspapers from time of nomination to confirmation vote
 - Two liberal newspapers: *New York Times*, *Washington Post*
 - Two conservative newspapers: *Chicago Tribune*, *Los Angeles Times*
 - Three students coded each paragraph of editorial:
 - Liberal: 1
 - Moderate: 0
 - Conservative: -1
 - Not applicable
 - Justice Ideology = $\frac{\text{Liberal} - \text{Conservative}}{\text{Liberal} + \text{Moderate} + \text{Conservative}}$
 - Inter-coder reliability: 0.72

Measurements

Table 1. Justices' Values and Votes

Justice	Values ^a	Votes ^b
Warren	.50	78.1
Harlan	.75	41.9
Brennan	1.00	77.9
Whittaker	.00	43.4
Stewart	.50	51.5
White	.00	43.4
Goldberg	.50	89.6
Fortas	1.00	80.4
Marshall	1.00	79.7
Burger	-.77	29.7
Blackmun	-.77	42.9
Powell	-.67	37.9
Rehnquist ^c	-.91	19.5
Stevens	-.50	56.3
O'Connor	-.17	30.9
Rehnquist ^d	-.91	23.0
Scalia	-1.00	34.7
Kennedy	-.27	40.0

^aDerived by authors. The range is -1.00 (extremely conservative) to 1.00 (extremely liberal).

^bPercentage liberal in civil liberties cases, 1953-88.

^cValues and votes as Nixon appointee.

^dValues and votes as Reagan appointee.

Concept #2—Measuring Votes

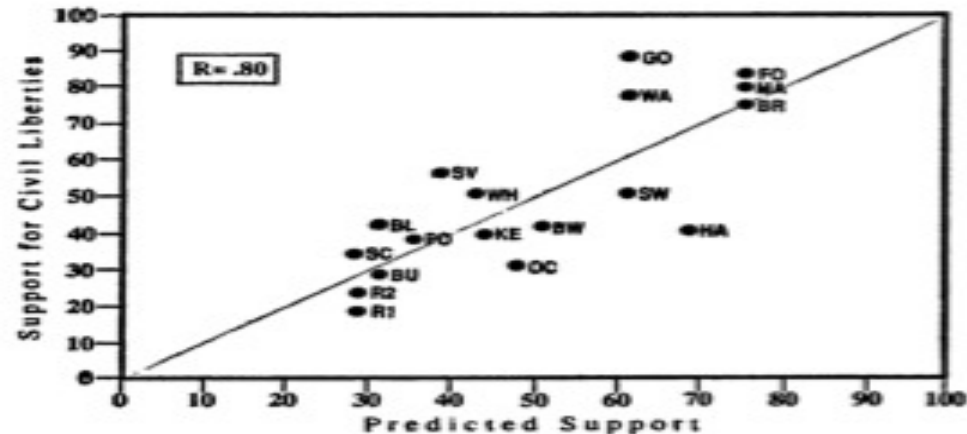
- Percent “liberal” vote in all formally decided civil liberties cases between 1953 and 1987
 - Civil liberties issues involve criminal procedure, civil rights, the First Amendment, due processes, and privacy
 - Liberal votes are:
 - Pro-person accused or convicted of crime
 - Pro-civil liberties or civil rights claimant
 - Pro-indigent
 - Pro-Indian
 - Anti-government on issues of due process and privacy

Results

- Correlation between ideological values of justices and votes in civil liberties cases: 0.80
- Regression of votes on values:
 - $Y = 51.25 + 23.44(X)$
 - Statistically significant (don't worry about this now)
 - R-squared: 0.64

Evaluating the Results

Figure 1. Civil Liberty Support by Ideology



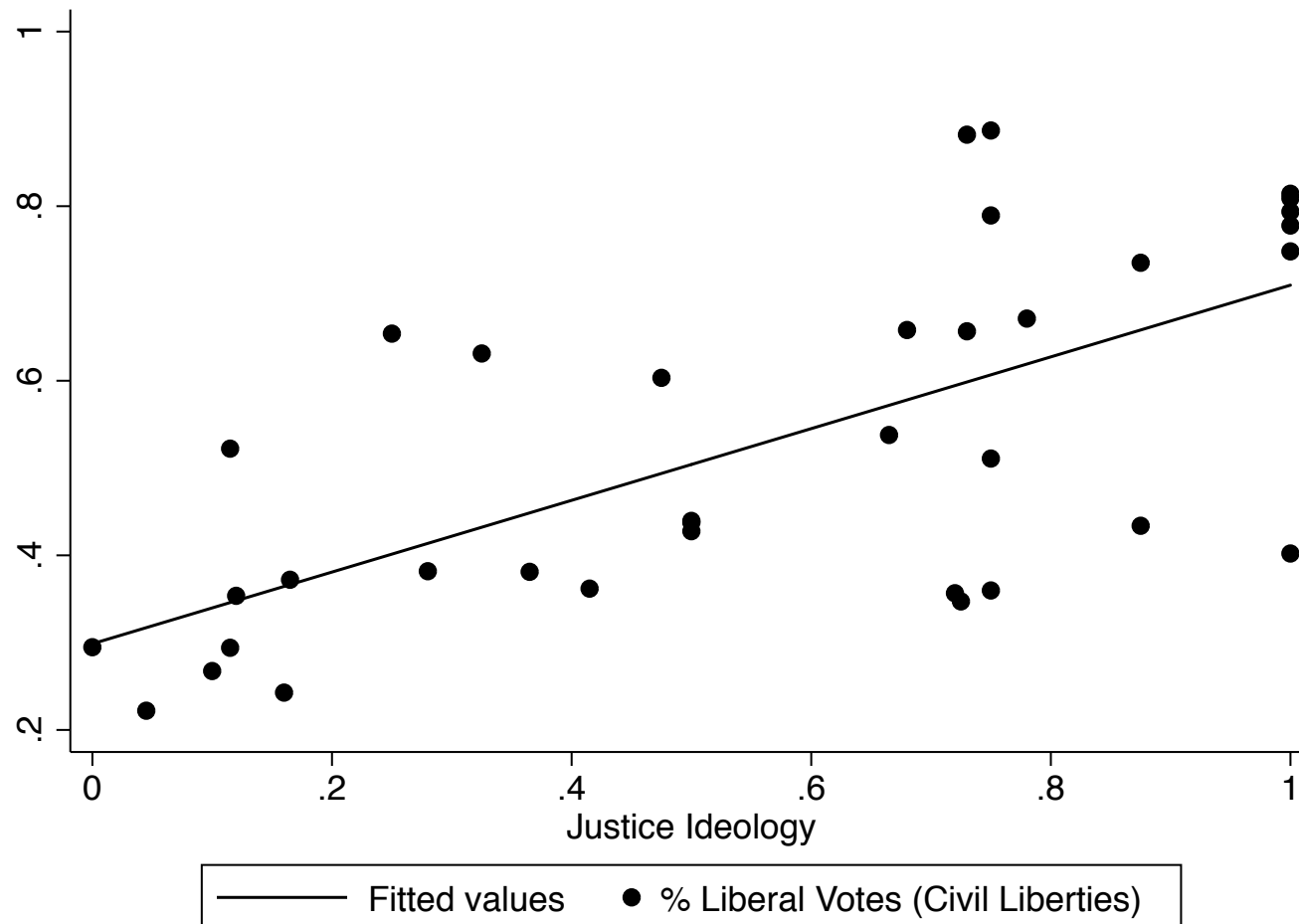
Note: WA = Warren, HA = Harlan, BR = Brennan, WH = Whittaker, SW = Stewart, BW = White, GO = Goldberg, FO = Fortas, MA = Marshall, BU = Burger, BL = Blackmun, PO = Powell, R1 = Rehnquist (1971), SV = Stevens, OC = O'Connor, R2 = Rehnquist (1986), SC = Scalia, KE = Kennedy.

Evaluation

- What type of research is this?
- Are there problems of lurking variables?
- Difficulties of measurement?
- Ways to improve the study?

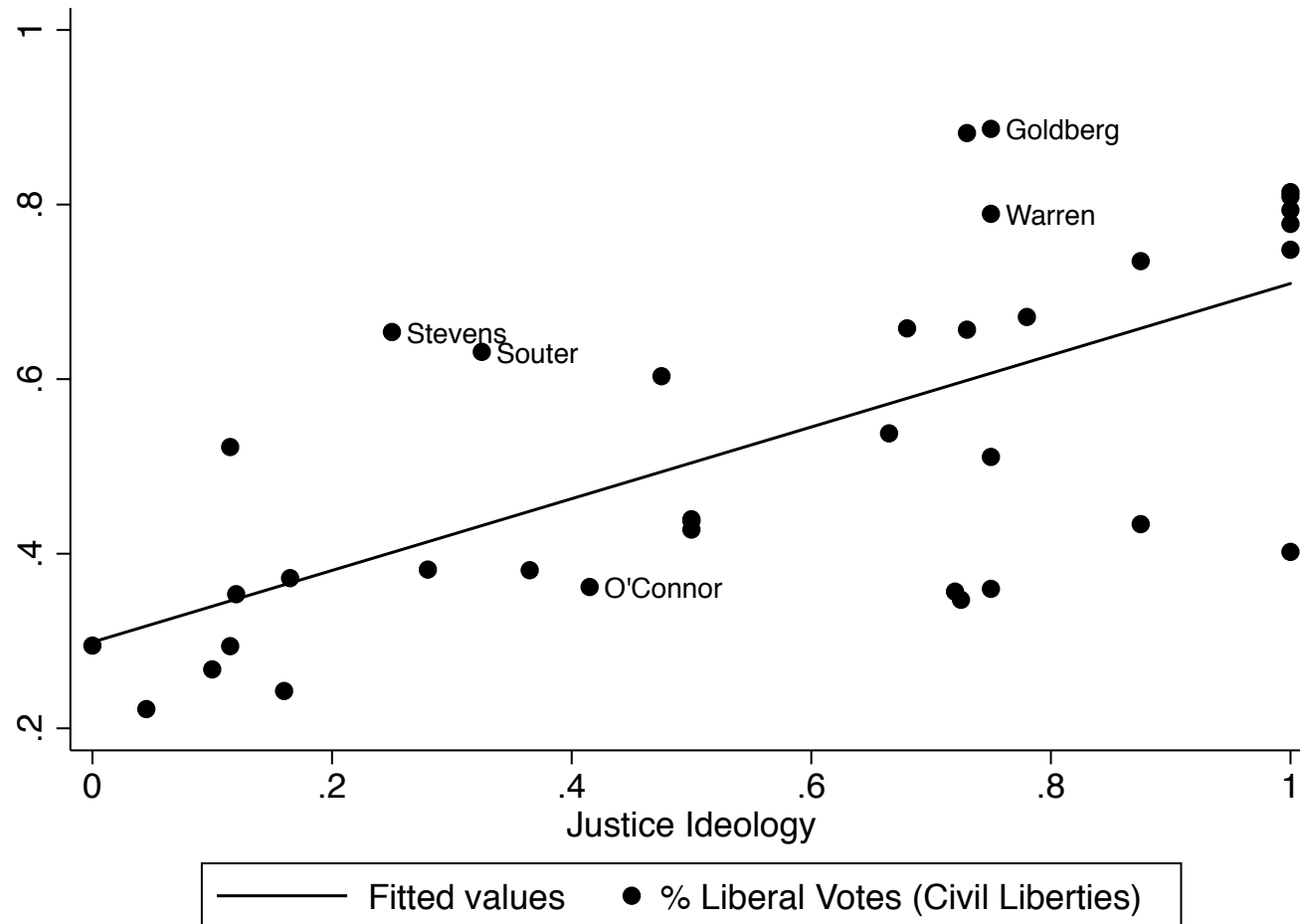
Revisiting the Data: 1946-2014

$$r = 0.66$$



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$$r = 0.66$$



Education and Voter Turnout

- Rachel Milstein Sondheimer and Donald P. Green (2010 AJPS), “Using Experiments to Estimate the Effects of Education on Voter Turnout”
- Research Question: Does increasing education make individuals more likely to vote?
- State of knowledge: Maybe
 - Observational research generally suggests correlations at individual level
 - But, high potential for lurking/omitted variables
 - And, microlevel evidence conflicts with macrolevel patterns

Relationship Between High School Graduation & Voting at the Individual Level

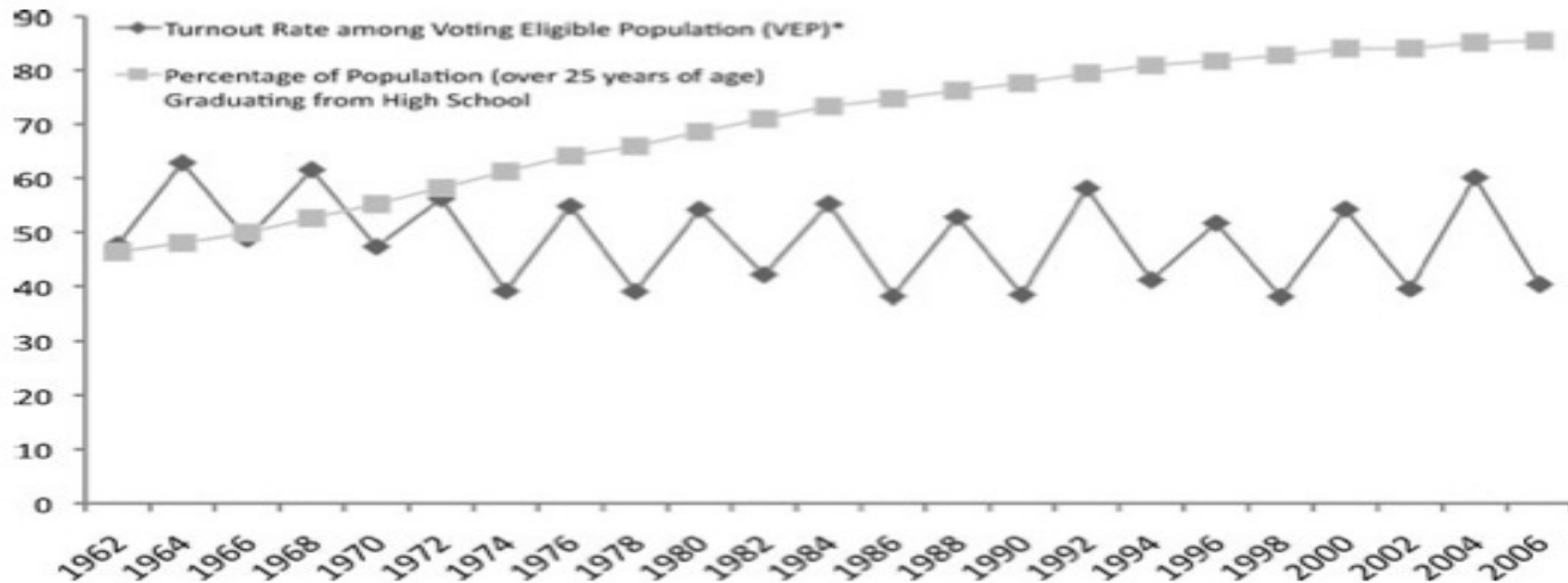
TABLE 1 Rates of Voter Turnout by High School Graduation, by Year

	Full Sample			African American Subsample		
	2000	2002	2004	2000	2002	2004
Non-high school graduates	43.2	31.2	45.0	50.0	34.6	54.8
High school graduates	70.3	54.7	75.5	69.5	53.1	76.1
N	52,918	51,617	63,052	1,180	953	837

Source: Current Population Survey, November Supplements. Weighted using final weights from Bureau of Labor Statistics.

Macro-level Patterns

FIGURE 1 Aggregate Levels of Educational Attainment and Voter Turnout, 1962–2006



Arguments

- Why might there be no correlation?
- Relationship might be **spurious** (i.e., due to confounders, or alternative explanations)
 - Family background
 - Innate cognitive ability
 - “Education predicts political involvement in America because it is primarily a proxy for cognitive ability” (Herrnstein and Murray 1994, 253)
- Trends in education may not be what they appear
 - Increased graduation rates, but perhaps some decreased awareness and concern with politics
- Education may just be a status marker

Sondheimer and Green Approach

- Very hard to tell effect of education through observational research
 - Educational attainment is not exogenous; affected by lots of things that could affect voter turnout
- Sondheimer and Green propose using experiments to test effect of education
 - Argument
 - (1) Randomly assigned educational interventions lead to higher high school graduation rates
 - (2) Higher high school graduation rates lead to more voting
 - Important idea—intervention leads to voting through education, not through other effects of treatment (e.g. political interest)
- 3 examples of experimental (or quasi-experimental) design

Perry Preschool Experiment

- Experiment in 1960s for students anticipated to attend Perry Elementary School in Ypsilanti, Michigan
- Five waves
 - Four received two years of preschool (ages 3 & 4)
 - One received one year of preschool (age 4)
- Entry into program (whose original focus was fighting poverty) was affected by:
 - Socioeconomic status
 - Parents' educational levels, parents' occupational levels, number of rooms in family household
 - Within this group, tried to identify children with low levels of intelligence
 - All African-Americans
- Matched pair design based on IQ scores, random assignment
 - Some modifications

Results

TABLE 2 Perry Experiment: Effects of Random Assignment on Graduation Rates and Voter Turnout

	Control	Treatment
Graduated from high school	44.4%	65.0%
Voted in 2000 or 2002 elections	12.7%	18.3%
N	63	60

Source: Voting records obtained from Voter Contact Services.

IHAD Natural Experiment

- “I Have a Dream” Program (IHAD)
 - Comprehensive scholarship program aimed at increasing high school graduation and postsecondary matriculation rates of at-risk youth
- Study focuses on program in Boulder County, Colorado
- 1992-enrollment in IHAD offered to and accepted by all 79 fifth-grade students in Lafayette, Colorado who qualified for free or reduced lunch program
 - More racial diversity than Perry preschool experiment (e.g. about 67% non-Hispanic whites, less than 5% African-American)
 - No control group
- But, Sondheimer and Green formed control group by looking at fourth and sixth graders at same schools on free or reduced lunch
 - Contacted both groups of students through same methods

Results

TABLE 3 IHAD Natural Experiment: Effects of Near-Random Assignment on Graduation Rates and Voter Turnout

	Control	Treatment
Graduated from high school	61.5%	79.0%
Voted in any election through 2004	33.3%	42.1%
N	39	19

Source: Voting records obtained from Voter Contact Services.

STAR Experiment

- In 1985, Tennessee spent money on experiment to test effect of smaller class sizes
 - Students drawn from a broad socioeconomic spectrum
 - Lasted from kindergarten to fourth grade, then return to regular classroom conditions
- Students and teachers randomly assigned to one of three groups:
 - Small classes of 13-17 students
 - Regular classes with 22-25 students
 - Regular classes with a full-time teacher's aide
- Some switching of groups, but Soudheimer and Green look in the sub-set of places with data on initial random assignment
 - Measure effect of initial assignment

Results

TABLE 4 STAR Experiment: Effects of Random Assignment on Graduation Rates and Voter Turnout

	All Subjects		Subjects with Known Graduation Status	
	Control	Treatment	Control	Treatment
Graduated from high school	—	—	85.0%	90.1%
Voted in 2002 or 2004 elections (broad match criteria)*	41.5%	43.8%	43.8%	48.4%
Voted in 2002 or 2004 elections (restrictive match criteria)**	38.8%	40.8%	42.2%	46.8%
N	1,026	429	559	252

Source: Voting records obtained from Polimetrix.

*The broad turnout measure is coded zero for subjects whose closest match to the voter file did not vote in 2002 and 2004.

**The restricted turnout measure is coded zero for any subject whose closest match to the voter file did not vote in 2002 and 2004 or who was, based on an imputation algorithm, thought to have a low probability of being a registered voter.

General Conclusions

- Experimental evidence suggests education increases voter turnout
 - Similar pattern across three types of experimental data
 - All use random assignment to determine control/treatment groups
- Conduct more nuanced statistical test
 - Bivariate Probit
 - Wait 2+ semesters until MLE
 - Suggests large substantive effect
 - High school dropout with 15.6% chance of voting would have 62.5% chance of turnout if randomly induced to graduate high school
 - Low end of confidence interval estimates 30.9% chance of turnout
- Suggests correlation identified in observational studies not spurious
 - But, see appropriate caveats—e.g. selected samples may not be representative of overall population (expected responsiveness to educational treatment)

Lingering Questions

- Big question: Why does education increase voting?
 - Promotes skills to overcome bureaucratic hurdles
 - Increases general interest in and knowledge of politics
 - Expands social network and likelihood of community endeavors
 - Others?
- Green and Sondheimer suggest these specific explanations could be tested through experimental design
 - Experiments designed to affect these mechanisms directly
- Another question: What about that macrolevel trend?
 - Maybe unrelated
 - Educational levels have increased, other factors undermine turnout, and turnout would have decreased more in the absence of increasing education
 - Need further experimental evidence to test this argument, though

Exam--what you should know

- How to compute mean, median, quartiles, minimum value, maximum value
- What affects variance & standard deviation (and how to compute them)
- How to make (and interpret) a cross-tab
- How to read parts of a regression table (what we have talked about so far)
 - What's the IV
 - What's the DV
 - What's the regression equation?
 - R-squared

What you should know (2)

- How to describe a distribution based on a histogram
- Some basics of research design:
 - Experimental vs. observational studies
 - Basic elements of different types of experiments
 - The logic behind control variables—e.g., why we control for certain things