PSC 202

SYRACUSE UNIVERSITY

INTRODUCTION TO POLITICAL ANALYSIS

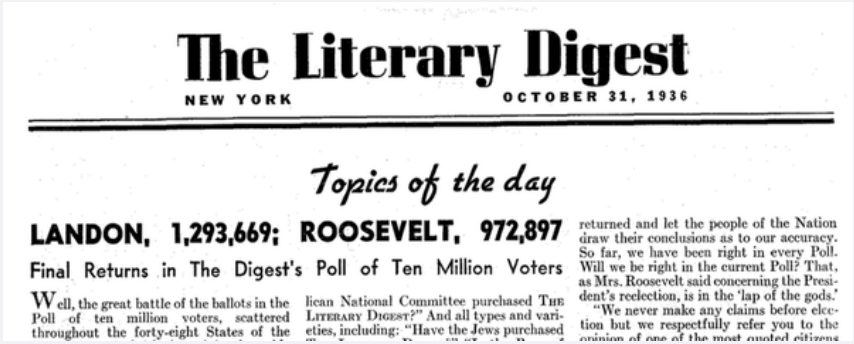
EXPERIMENTS, PART 2

HOUSEKEEPING

- Wednesday: Exam 3
- December 15: Final homework due
  - Counts double
- Student Hours: Tomorrow 1-3
  - 530 Eggers or Zoom
  - Zoom info on syllabus

THIS WILL NOT BE ON THE EXAM

- When conducting a study, collection of data is important
  - Do:
    - Population/census, random sample
  - Don't:
    - Send out questionnaires
    - Hope people fill them out and submit them, while not offering any incentive for people to actually do that
    - Get low response rate and self-selected sample
    - Use the results of the self-selected sample to make decisions



The Literary Digest

NEW YORK OCTOBER 31, 1936

Topics of the day

LANDON, 1,293,669; ROOSEVELT, 972,897

Final Returns in The Digest's Poll of Ten Million Voters

Well, the great battle of the ballots in the Poll of ten million voters, scattered throughout the forty-eight States of the

lican National Committee purchased THE LITERARY DIGEST?" And all types and varieties, including: "Have the Jews purchased

returned and let the people of the Nation draw their conclusions as to our accuracy. So far, we have been right in every Poll. Will we be right in the current Poll? That, as Mrs. Roosevelt said concerning the President's reelection, is in the 'lap of the gods.'

"We never make any claims before election but we respectfully refer you to the

AND YET...

Student Access in EvaluationKIT

For students, completing feedback forms in EvaluationKIT is easy to do. There are multiple access points:

- Access form(s) in the Course Feedback widget on the Blackboard main page
- Log in to **coursefeedback.syr.edu** with netID and password
- Click on the EvaluationKIT link in invitation or reminder emails to login and view available feedback forms from a phone or computer
- Click the EvaluationKIT Login button below:

EvaluationKIT Login

EVALUATIONS

- coursefeedback.syr.edu
- If 85% completion rate: extra credit for everyone

TODAY

- Exam Review
- More on Experiments

EXAM

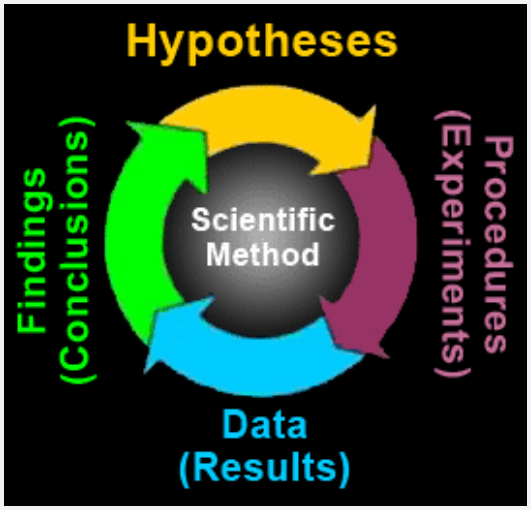
- Wednesday Dec 8: Exam #3
  - Bring a calculator (no phone etc.)
  - Allowed to bring one single-page (so front side only) letter-size (8.5x11) sheet with you. What you put on it is up to you, but it has to be your own sheet (we'll collect it)
- If you take exam at CDR, please sign up now!

EXAM

- Material covered
  - Everything from Nov 3 (More Bivariate Hypothesis Testing, Hypothesis Testing When Using a Sample) to Dec 6 (today)

SCIENTIFIC PROCESS

- Formulate research question
- Propose explanation/theory, hypotheses
- Data collection process
- Use data to evaluate hypotheses
- Reassess explanation



LINEAR REGRESSION

- General form: y = a + b * x
  - y: dependent variable
  - a: intercept
  - b: slope
  - x: independent variable
- Interpretation
  - Slope: For every one unit increase in x, y changes by b units
  - Intercept: When x=0, y takes the value a
- Caveat
  - *Linear* relationships

R-SQUARE

- R^2 tells us how much variation of the dependent variable is explained by the independent variable (in a linear regression)

USING SAMPLES

- Bivariate relationship between two variables in sample
- Is this a real relationship that we would find in the population as well, or is it something that only shows up in our sample?

HYPOTHESIS

- H_0: In the population, there is *no relationship* between dependent and independent variable
  - If there is a difference in the sample, it is due to random sampling error
- H_A: There *is* a relationship between the independent and dependent variable in the population

ERRORS

	There Is A Relation In The Population	There Is No Relation In The Population
We Conclude There Is A Relation	✔	✘ Type I
We Conclude There Is No Relation	✘ Type II	✔

ERRORS

	There Is A Relation In The Population	There Is No Relation In The Population
We Conclude There Is A Relation	✔	✘ Type I in at most 5% of cases
We Conclude There Is No Relation	✘ Type II	✔

IDEA

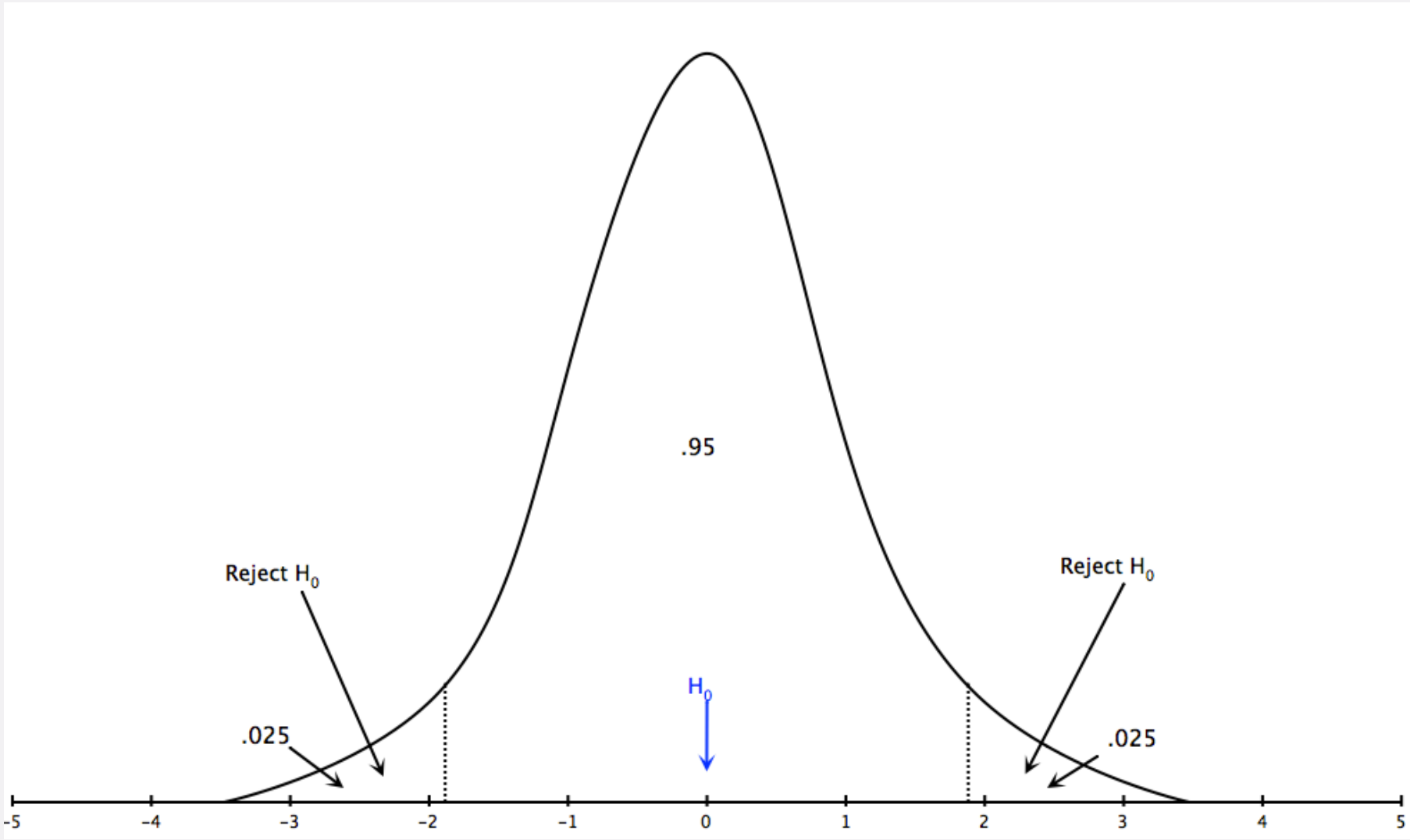
- We start out thinking H_0 is true
  - No relationship between X and Y in population
- We ask: If H_0 is true, how likely is it that a random sample would produce an effect as large (or larger) than the one we have observed?
  - If less than 5% ($p<0.05$): we reject H_0
  - If more than 5% ($p>0.05$): we don't reject H_0

T-STATISTIC

$$t = \frac{H_A - H_0}{\text{Standard Error}}$$

- **H_A: observed relation between X and Y in sample**
- **H_0: relation between X and Y if H_0 is true**

SIGNIFICANCE TEST



- We reject H_0 if t<-1.96 or t>1.96
- This is equivalent to p<0.05

HURDLES TO CAUSALITY

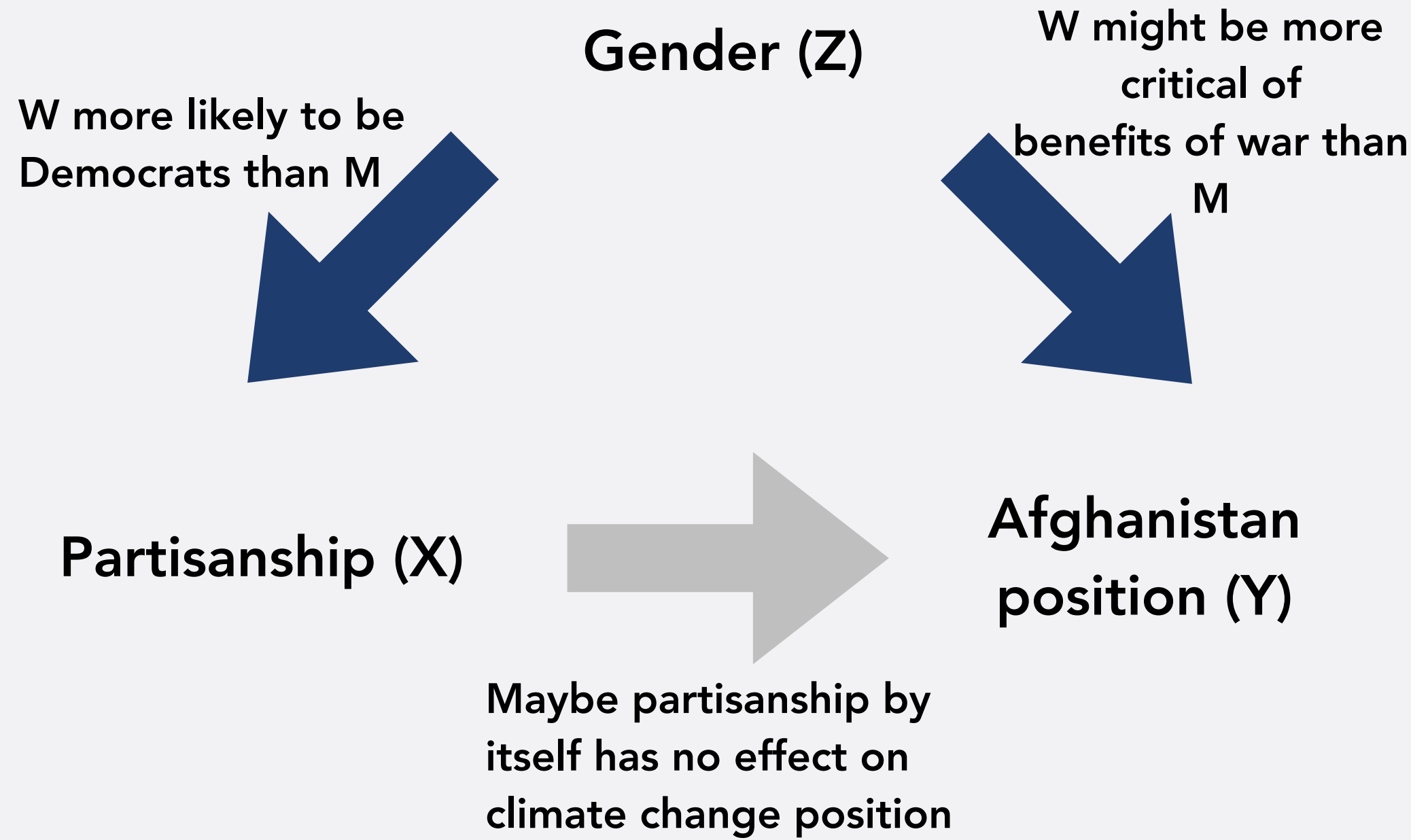
- Is there a credible causal mechanism that connects X to Y?
- Can we rule out the possibility that Y could cause X?
- Is there covariation between X and Y?
- Have we controlled for all confounding variables (Z) that might make the association between X and Y spurious?

BIVARIATE RELATIONSHIP

Partisanship → Evaluation of Afghanistan involvement

- Zero-order effect: Non-Democrats are 22.2% more likely to agree that Afghanistan involvement was beneficial than Democrats

MAYBE THIS IS GOING ON?



TERMINOLOGY

- Controlled effect: relationship between an independent variable (X) and a dependent variable (Y) within one value of another independent variable (Z)

CONTROLLED COMPARISON TABLE

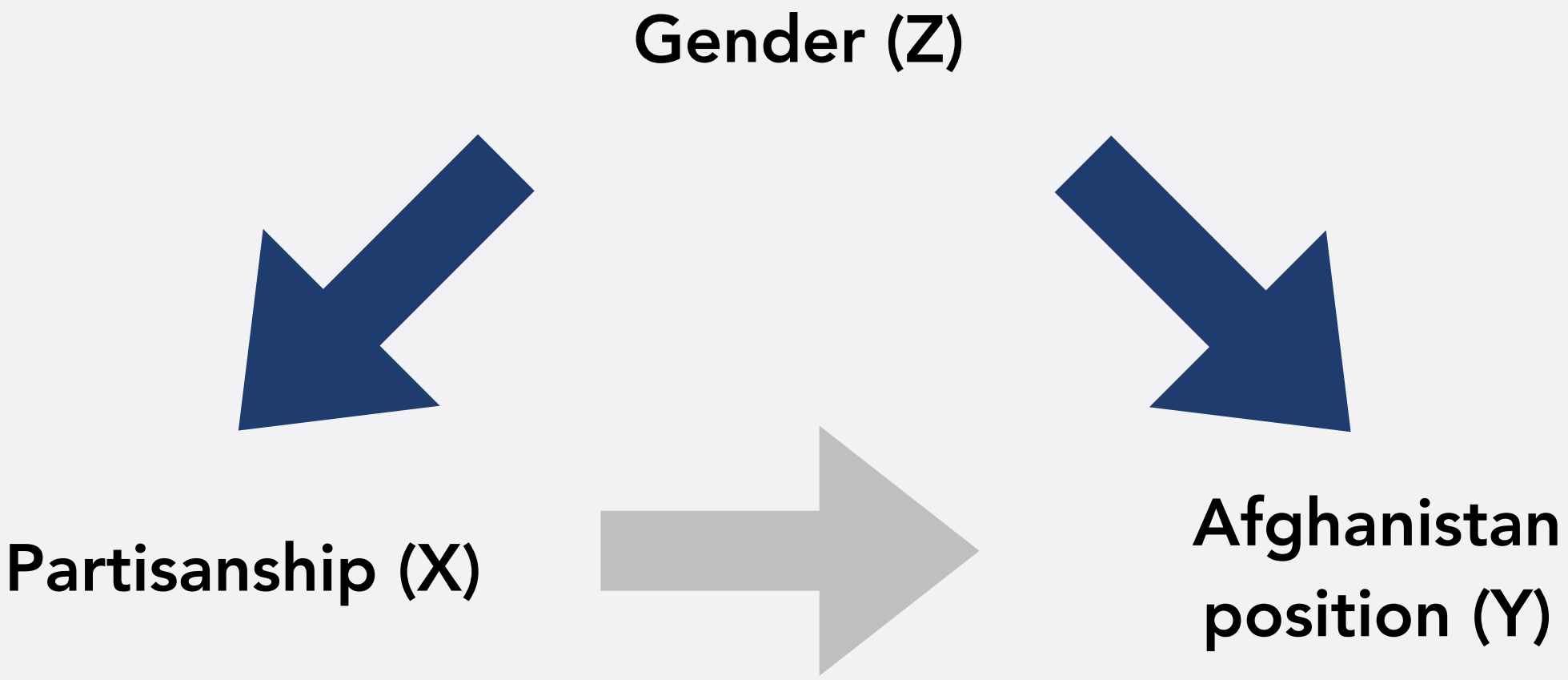
Afghanistan war was beneficial

	Female			Male		
	Dem	Non-Dem	Total	Dem	Non-Dem	Total
	22.3%			21.7%		
Agree	18.9% (7)	41.2% (7)	25.9% (14)	20.0% (3)	41.7% (5)	29.6% (8)
Disagree	81.1% (30)	58.8% (10)	74.1% (40)	80.0% (12)	58.3% (7)	70.4% (19)
Total	100% (37)	100% (17)	100% (54)	100% (15)	100% (12)	100% (27)

CONTROLLED EFFECT

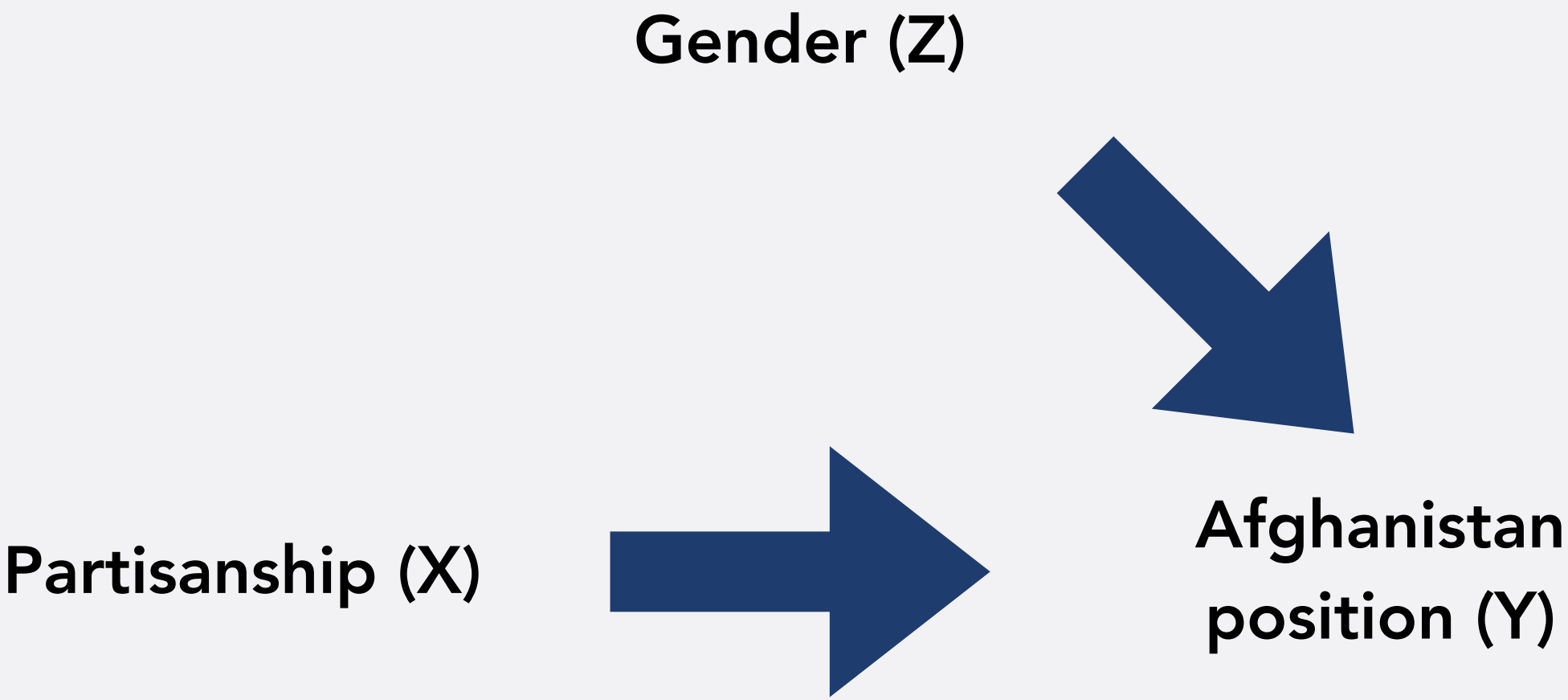
- Even when looking just among men, and just among women, partisanship still has an effect on Afghanistan evaluation
- Effect of partisanship holds when "controlling for" gender

SPURIOUS RELATIONSHIP



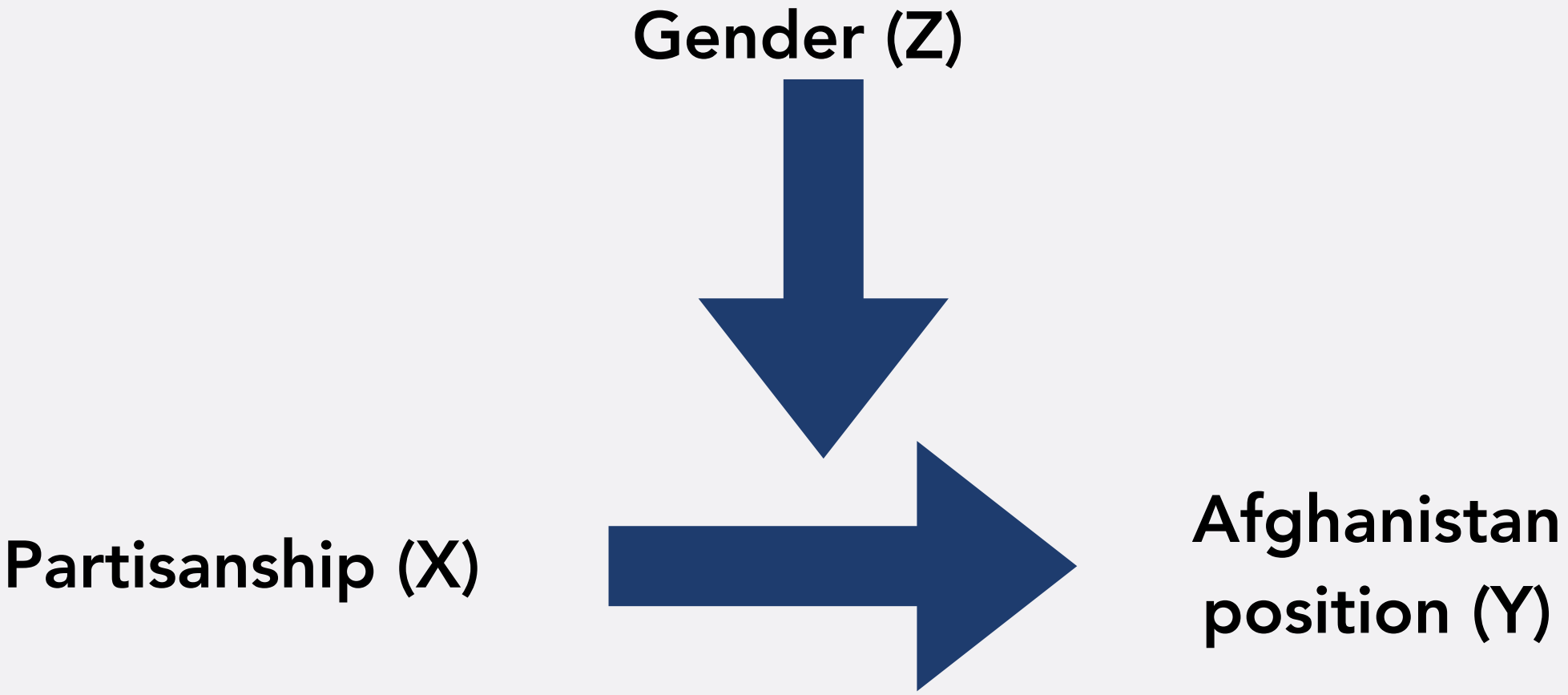
- Once we control for gender, no independent effect of partisanship
- All controlled effects zero or close to zero

ADDITIVE RELATIONSHIP



- Both partisanship *and* gender determine Y
- Controlled effects not zero and of roughly same size

INTERACTIVE RELATIONSHIP



- Gender determines how much partisanship affects Y
- Controlled effects not zero and of different size

MULTIPLE REGRESSION

- Another way to control for potential confounding variables: multiple regression
  - Allows us to control for many potential confounders
- $y = a + b_1*x_1 + b_2*x_2 + b_3*x_3 + b_4*x_4 + \ldots$

DV: APPROVAL OF J. BIDEN

	Coefficient	Standard Error	T-Value
Intercept	101.8	60.8	1.68
Liberal-Conservative	-0.44	0.15	-2.93
Age	-1.89	3.08	-0.61
Gender (Male)	11.66	6.29	1.85

R^2: 0.15

EFFECT OF LIB/CONS

- Coefficient: -0.44
- Interpretation: For every one point increase on the liberal-conservative scale, the evaluation of J. Biden decreases by 0.44 points, *holding all other independent variables constant*

EFFECT OF LIB/CONS

$$t = \frac{H_A - H_0}{\text{Standard Error}}$$

$$t = \frac{-0.44 - 0.00}{0.15} = -2.93$$

- **We reject H_0, so effect of liberal-conservative on evaluation is significant at the 5% level**

EFFECT OF GENDER

- Coefficient: -11.66
- Interpretation: If someone is male, their evaluation of J. Biden is expected to be 11.66 points higher than if someone is female, *holding all other independent variables constant*

EFFECT OF GENDER

- t-value: 1.85
- We do not reject H_0, so effect of gender on evaluation is not significant at the 5% level

PREDICTED VALUE

- Evaluation = 101.8 - 0.44*Lib/Cons - 1.89*Age + 11.66*Gender (Male)
- Expected approval for someone who is:
  - 50 on Lib/Cons scale
  - 22 years old
  - Male

PREDICTED VALUE

- Evaluation = 101.8 - 0.44*Lib/Cons - 1.89*Age + 11.66*Gender (Male)
- Expected approval for someone who is:
  - 50 on Lib/Cons scale
  - 22 years old
  - Male
- Evaluation = 101.8 - 0.44*50 - 1.89*22 + 11.66*1 = 49.88

DV: APPROVAL OF J. BIDEN

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R^2: 0.15

OBSERVATIONAL RESEARCH DESIGN

- Linear regression is (usually) used in observational research design
  - Takes data as we find it in the world
  - Regression isolates the independent effect of X on Y, controlling for other variables (=potential alternative explanations)

OBSERVATIONAL RESEARCH DESIGN

- Can never be sure we controlled for all potential alternative explanations
  - Potentially low internal validity

EXPERIMENTAL RESEARCH DESIGN

- Researchers *actively decide* assignment of the independent variable
- Treatment and control groups
  - Subjects randomly allocated

EXPERIMENTAL RESEARCH DESIGN

- On average, treatment and control group are the same on *every* variable we can think of
  - *Except* on the independent variable of interest, where researcher assigns treatment and control
  - Unlikely that differences in Y between treatment and control groups caused by other variables
  - High internal validity

TODAY

- Exam Review
- More on Experiments

TYPES OF EXPERIMENTS

- Field Experiment
- Lab Experiment
- Survey Experiment

FIELD EXPERIMENTS

- All kinds of field experiments
  - Candidates randomize TV ad buys to see if they have an effect on voter preferences
  - Candidates randomize what they talk about on the campaign trail to see if it affects vote share
  - Aid organizations randomize who gets aid (and in what way) to see if it helps people succeed
  - Military randomizes whether soldiers are in team with women or not to see how it affects performance and attitudes
- Among experiments, field experiments tend to have highest external validity

TYPES OF EXPERIMENTS

- Field Experiment
- Lab Experiment
- Survey Experiment

LAB EXPERIMENTS

- Experiment conducted in a laboratory
- Iyengar and Kinder (1987): Effect of media coverage on issue priorities
- Participants come into lab and watch news broadcast
  - Control: Actual newscast
  - Treatment: Doctored version, highlighting other topics

LAB EXPERIMENTS

- Post-test questionnaire: Participants rank issue importance of topics
  - Which newscast they see has an effect on which issues people consider important

LAB EXPERIMENTS

- **Internal and external validity?**

LAB EXPERIMENTS

- High in internal validity
- Low in external validity
  - Participants came to campus, knew that a professor would be watching them so probably paid more attention, etc.

TYPES OF EXPERIMENTS

- Lab Experiment
- Field Experiment
- Survey Experiment

MALFEASANCE

- Imagine that you live in a neighborhood similar to your own but in a different state. The member of Congress of that district is called *John Davis*. During his time in office, he has secured federal funding to improve the district's infrastructure, and he has put efforts into trying to attract companies into the district.
- Davis was also found to have *violated ethics regulations* by using his influential committee position to t*rade on insider information*. He denies the allegations. Other politicians have called on Davis to resign. What do you think he should do?

MALFEASANCE

- He should definitely not resign
- He should probably not resign
- Not sure whether he should resign or not
- He should probably resign
- He should definitely resign

OUR SURVEY

- Imagine that you live in a neighborhood similar to your own but in a different state. The member of Congress of that district is a Democrat called *John Davis*. During his time in office, he has secured federal funding to improve the district's infrastructure, and he has put efforts into trying to attract companies into the district.
- Davis was also found to have *violated ethics regulations* by using his influential committee position to t*rade on insider information*. He denies the allegations. Republican politicians have called on Davis to resign. What do you think he should do?

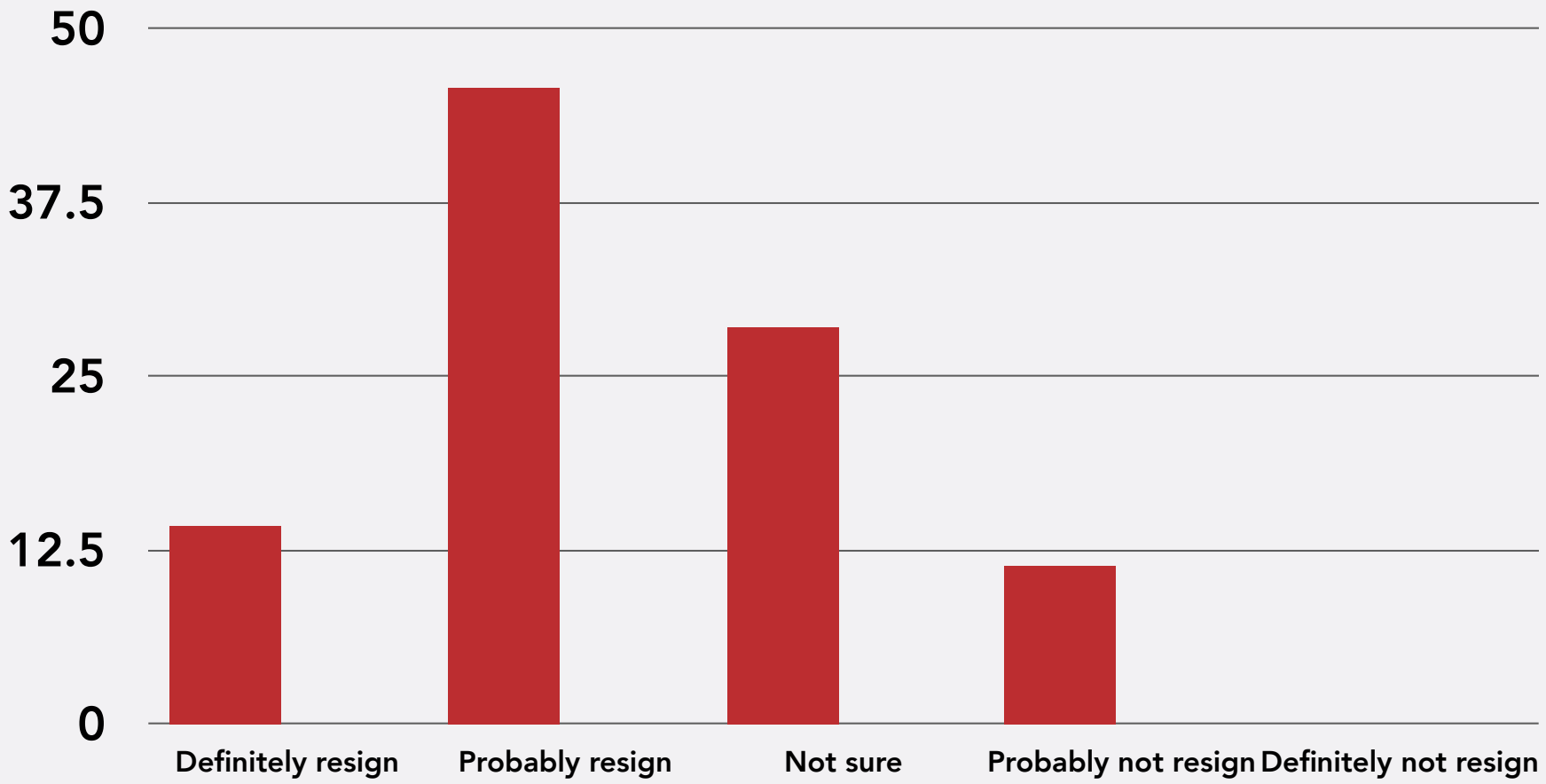
OUR SURVEY

- Imagine that you live in a neighborhood similar to your own but in a different state. The member of Congress of that district is a Republican called *John Davis*. During his time in office, he has secured federal funding to improve the district's infrastructure, and he has put efforts into trying to attract companies into the district.
- Davis was also found to have *violated ethics regulations* by using his influential committee position to t*rade on insider information*. He denies the allegations. Democratic politicians have called on Davis to resign. What do you think he should do?

OUR SURVEY

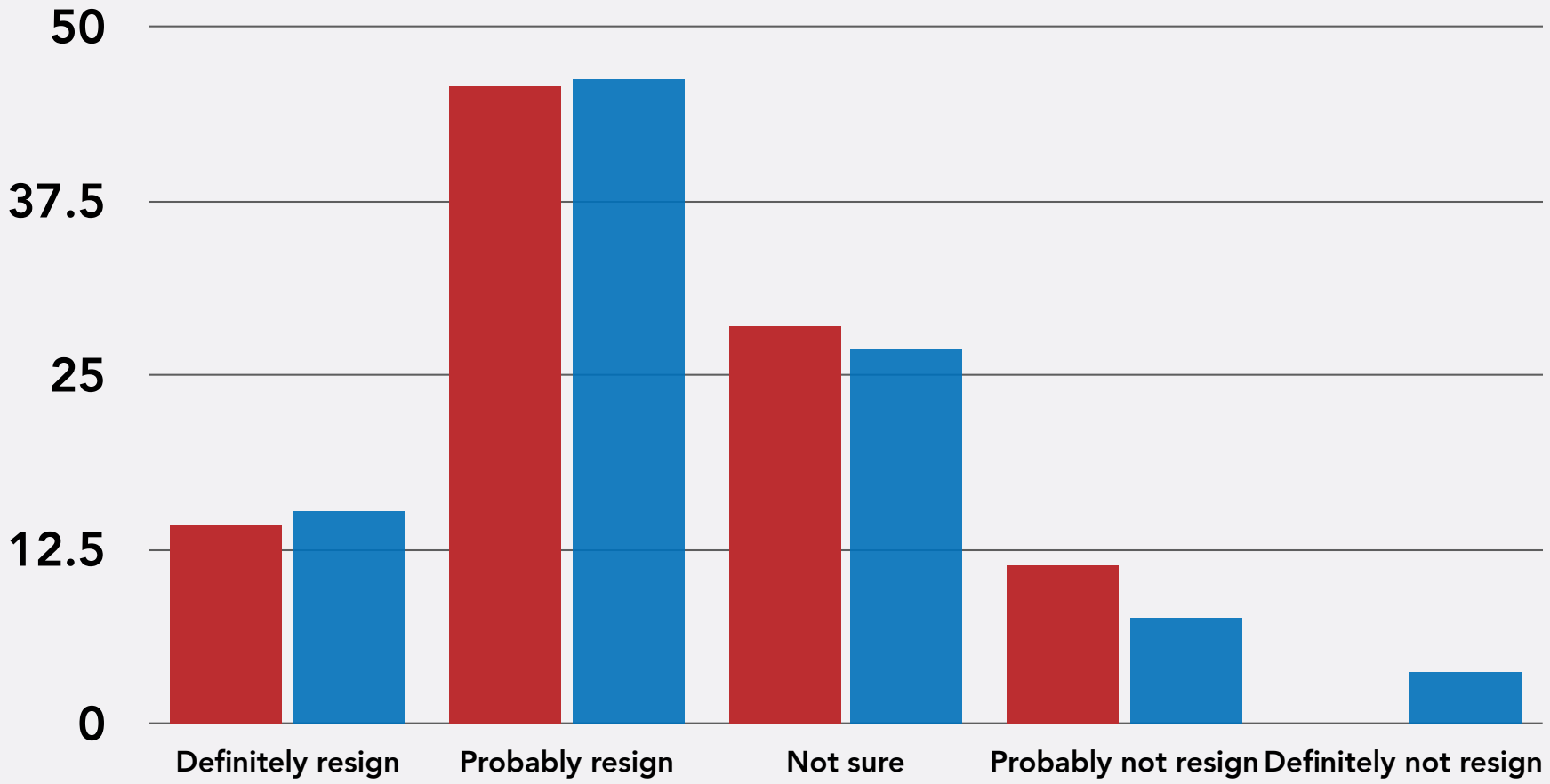
- All students were told about the same scenario
- Students randomly assigned into two groups
  - One group: Politician in party they support
  - Another group: Politicians in party they do not support

RESULTS



- Red: Candidate of same party as student
- Blue: Candidate of different party than student

RESULTS



- Red: Candidate of same party as student
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ISSUES WITH EXPERIMENTS

- May lack external validity
- Ethics issues
- Cannot study many things we are interested in experimentally

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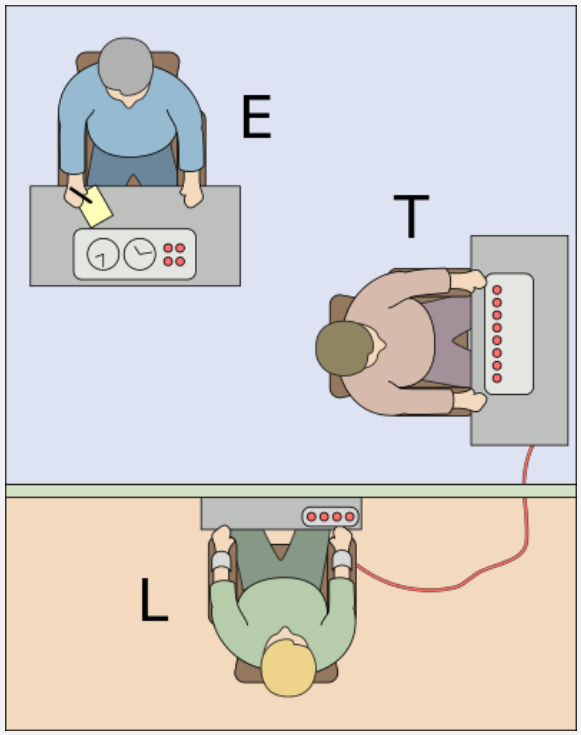
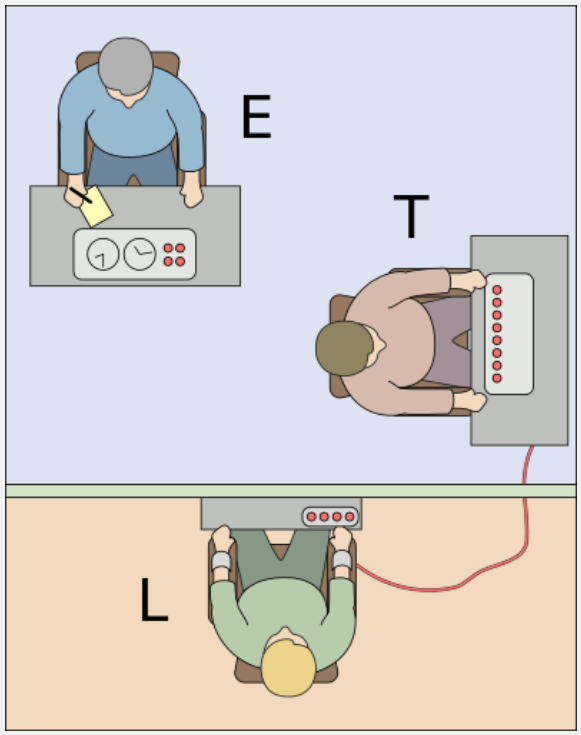
ETHICS: MILGRAM EXPERIMENT

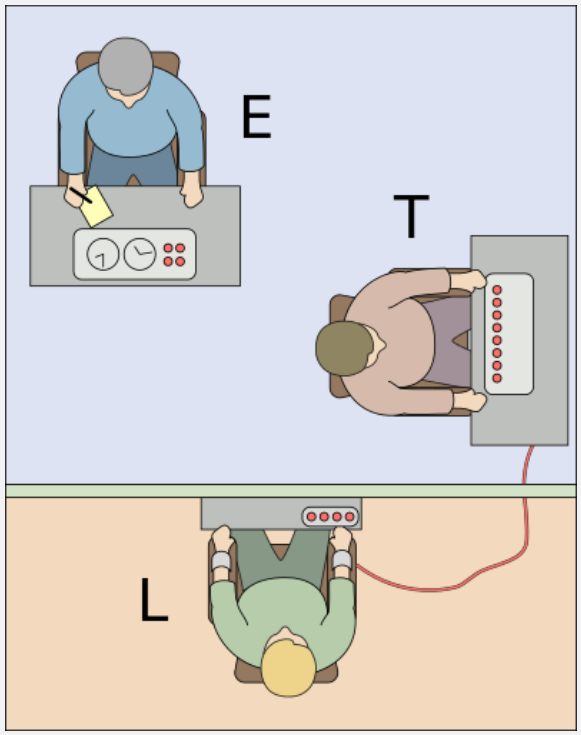


ETHICS: MILGRAM EXPERIMENT



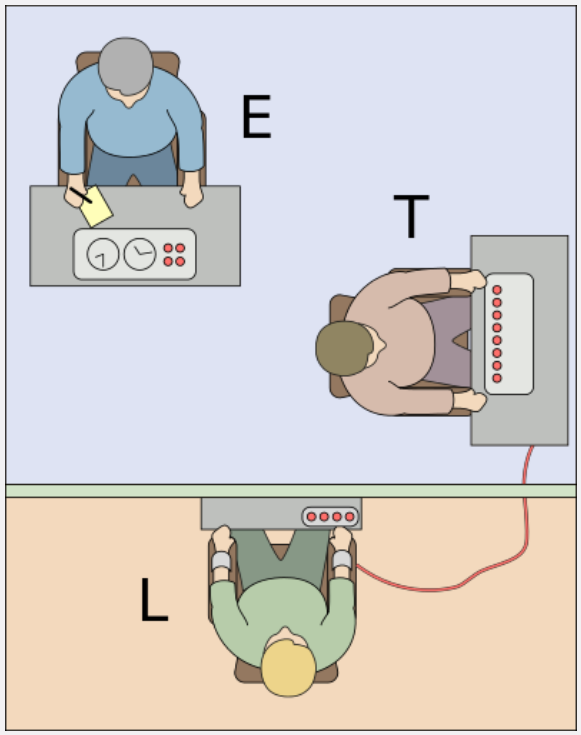
- Experiment in 1961, Yale University
- “Banality of evil”
- Do people execute orders, even if they are clearly harming other people?

ETHICS: MILGRAM EXPERIMENT



- **Ethical issues?**

ETHICS: MILGRAM EXPERIMENT



- Ethical issues?
  - Deception, potential harm to subjects (emotional stress, inflicted insight)

ETHICS: STANFORD PRISON EXPERIMENT

- Experiment in 1971, Stanford University
- Students randomly assigned as guards or prisoners

ETHICS: STANFORD PRISON EXPERIMENT

- Within days, “guards” resort to physical and psychological violence
  - “sadistic tendencies"
- Experiment had to be abandoned after 6 days

ETHICS

the ONION

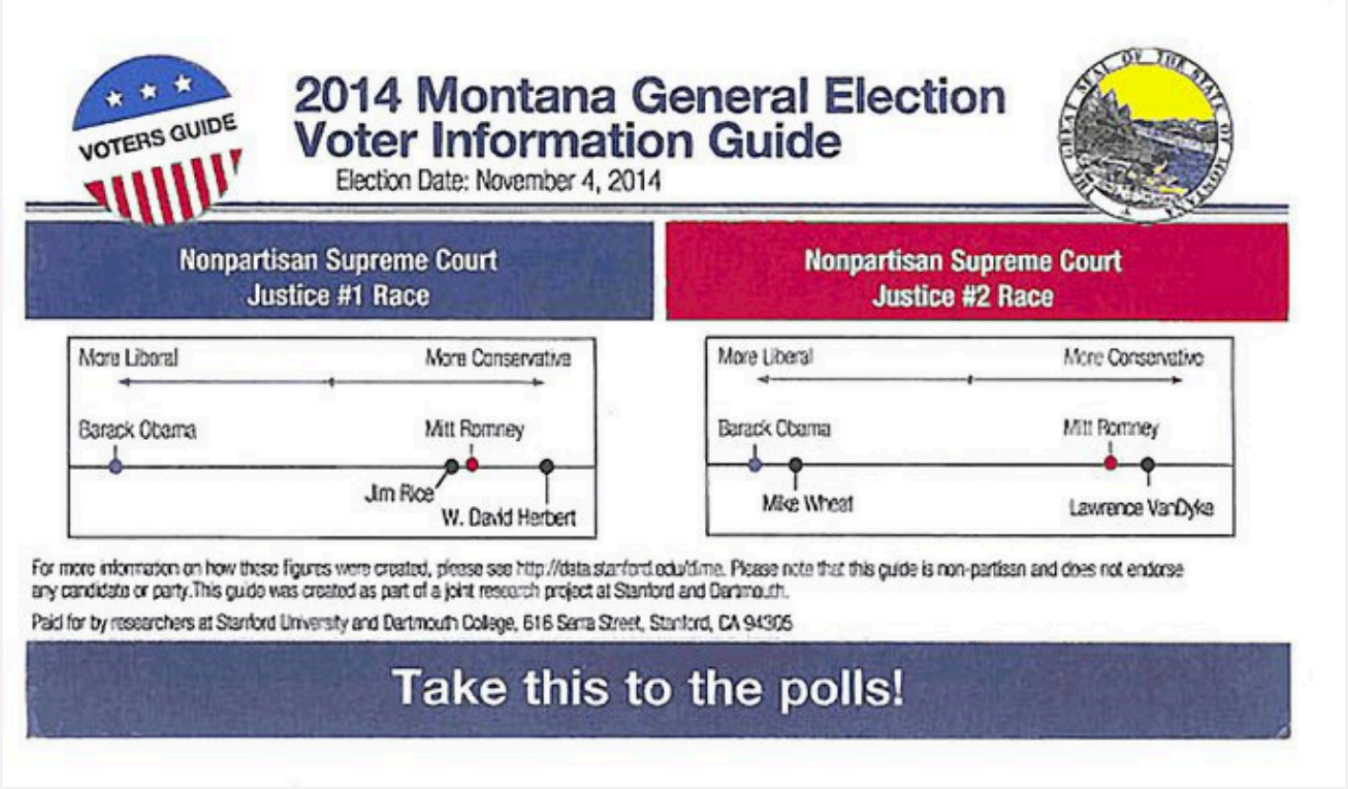
NEWS IN BRIEF

Report: Majority Of Psychological Experiments Conducted In 1970s Just Crimes

12/07/20 10:20AM

ETHICS: MONTANA ELECTION

Campaign experiment found to be in violation of Montana law



ETHICS: MONTANA ELECTION

- Randomly selected voters received flyer
  - Looks official (state seal)
- *Non-partisan* supreme court race
  - Flyer informs voters about how liberal/conservative candidates are
  - One candidate is revealed to be as liberal as Obama (in Montana!)
- 100,000 flyers distributed
  - Less than 350,000 voters turned out
  - Danger than experiment could have swung election

ETHICAL RESEARCH

- Experiments have to be approved by Institutional Review Board (IRB) in advance
  - Does experiment safeguard rights and welfare of participants?
  - Risk-benefits analysis of whether research should be conducted

ISSUES WITH EXPERIMENTS

- May lack external validity
- Ethics issues
- Cannot study many things we are interested in experimentally

KEY ATTRIBUTES

- Key attribute of experiments
  - Control over independent variable (randomly assigned)
- Impossible for many issues we are interested in
  - war, revolution, corruption, democracy/autocracy

SUMMARY

- *Observational*: Controlling for alternative explanations in linear regression
  - Cannot be sure we accounted for all alternative explanations (low internal validity)
  - But: more generalizable (high external validity)
- *Experimental*: Random treatment/control assignment
  - excludes alternative explanations (high internal validity)
  - But: Often low external validity
  - Impossible for many topics