PSC 400
SYRACUSE UNIVERSITY

DATA ANALYTICS FOR POLITICAL SCIENCE

CAUSALITY AND SINGLE VARIABLES

ASSIGNMENTS

- Review Exercise 0 due next Monday
  - try to do it ASAP if you haven't yet
- Review Exercise 1 due next Wednesday
  - try to do by Monday
- Problem Set 1 due next Friday

IN-CLASS EXERCISE

Variable	*Description*
year	election year
ANES	ANES estimated turnout rate
VEP	voting eligible population (in thousands)
VAP	voting age population (in thousands)
total	total ballots cast for highest office (in thousands)
felons	total ineligible felons (in thousands)
noncitizens	total noncitizens (in thousands)
overseas	total eligible overseas voters (in thousands)
osvoters	total ballots counted by overseas voters (in thousands)

- Calculate turnout rate based on voting eligible population (VEP)

IN-CLASS EXERCISE

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- **Compute the difference between the VEP and ANES estimates of turnout**
  - **What is the range of the differences?**

IN-CLASS EXERCISE

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- **Plot the difference between the VEP and ANES estimates of turnout over time**

CAUSALITY

- What is the *causal* effect of attending college on future earnings?

CAUSALITY

- Causal effect of attending college on earnings for Sophia:
  - Earnings(S attends college) - Earnings(S doesn't attend college)

CAUSALITY

- **Fundamental problem of causal inference: We only ever observe one of the two potential outcomes**
  - **either: Earnings(S attends college)**
  - **or: Earnings(S doesn't attend college)**
  - **but never both!**
  - **So: don't know what the counterfactual would be**

CAUSALITY

- How about this?
  - Earnings(people who attend college) - Earnings(people who don’t attend college)

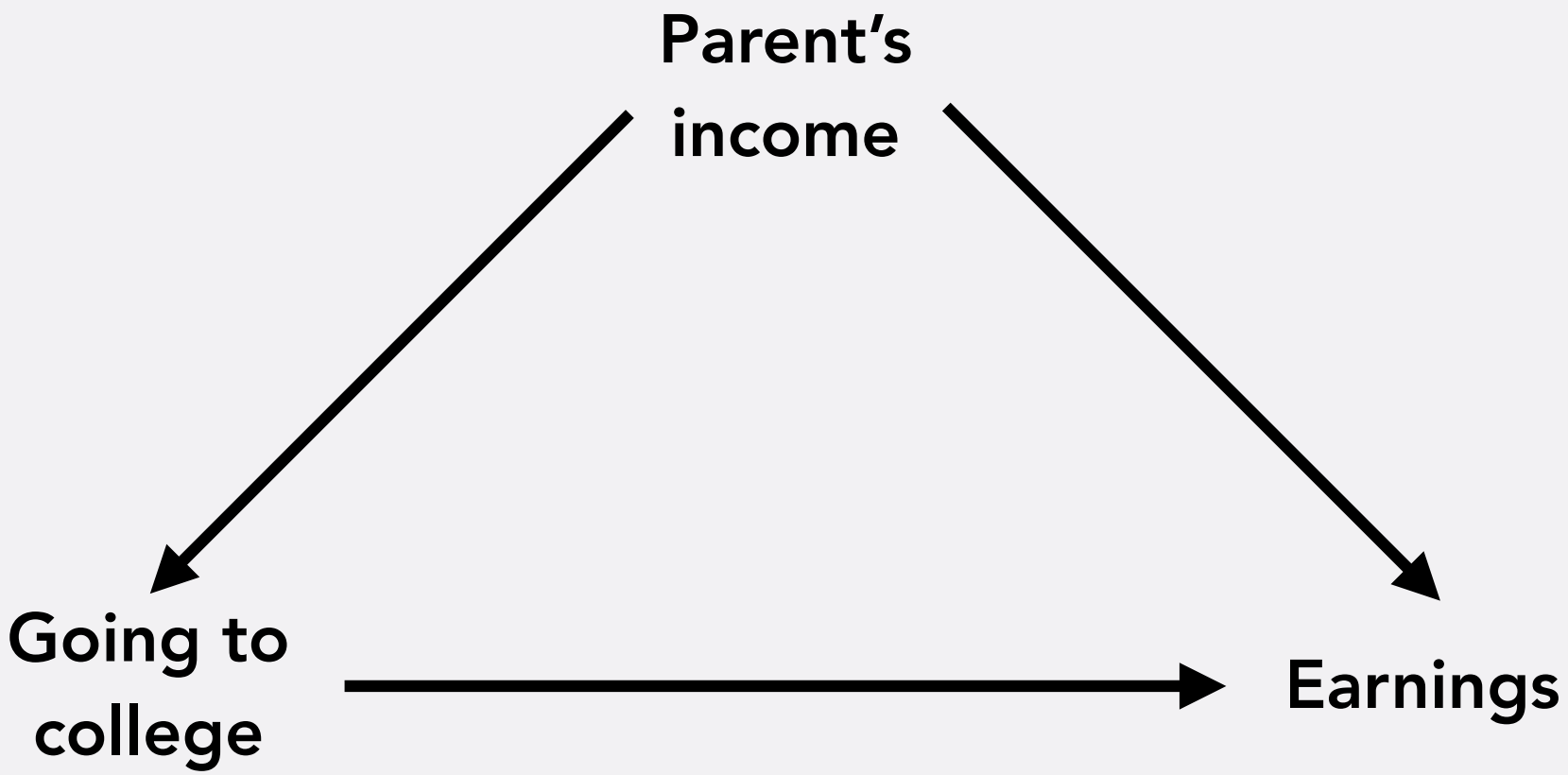
CAUSALITY

- People who choose to attend college are very different from people who choose not to attend college

CAUSALITY

- People who choose to attend college are very different from people who choose not to attend college
  - e.g. more academically inclined, more motivated, have wealthier parents
  - Some of these characteristics also influence future earnings (independent of whether they go to college or not)

CAUSALITY



CAUSALITY

- If we find that people who choose to attend college earn more, can be caused by
  - attending college
  - parent's income
  - both

CAUSALITY

- Is there racial discrimination in the labor market?
  - What is the causal effect of applicants' race on whether they are hired or not?

CAUSALITY

- How can we estimate the causal effect of race on hiring?
  - Want to compare Black and white applicants that are the same in terms of education, skills, experience, fit, etc.
  - Only difference: their race