Studying Social Inequality with Data Science

INFO 3370 / 5371
Spring 2023

Causal Estimators:

Nonparametric estimation with subgroup means

Learning goals for today

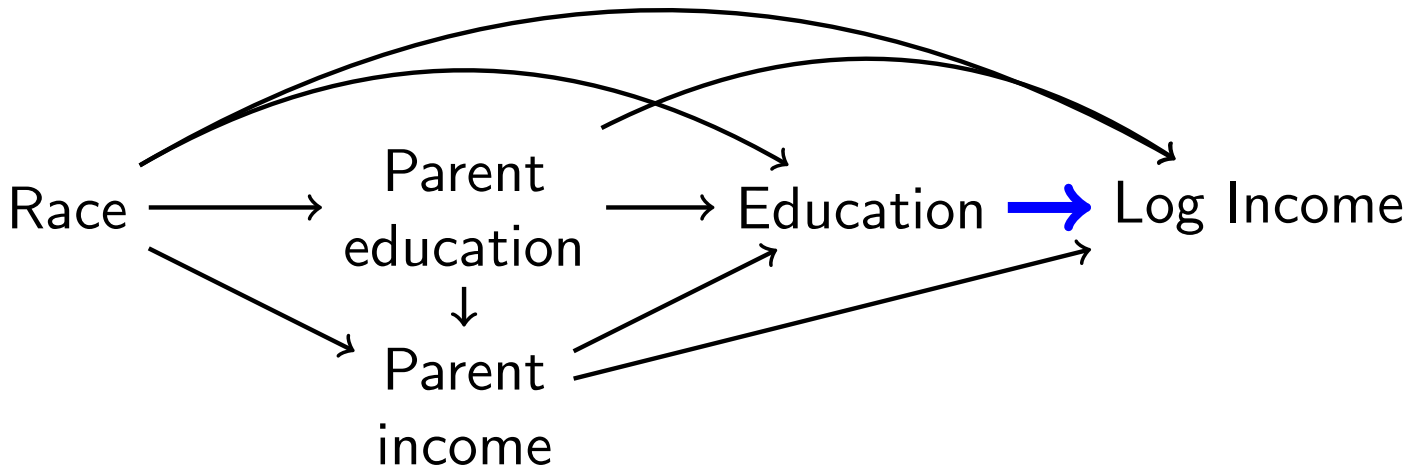
By the end of class, you will be able to

- Understand statistical adjustment as subgroup analysis
- Estimate causal effects nonparametrically

Data

We will examine the effect of education on log income using the data from the PSID Prediction Challenge

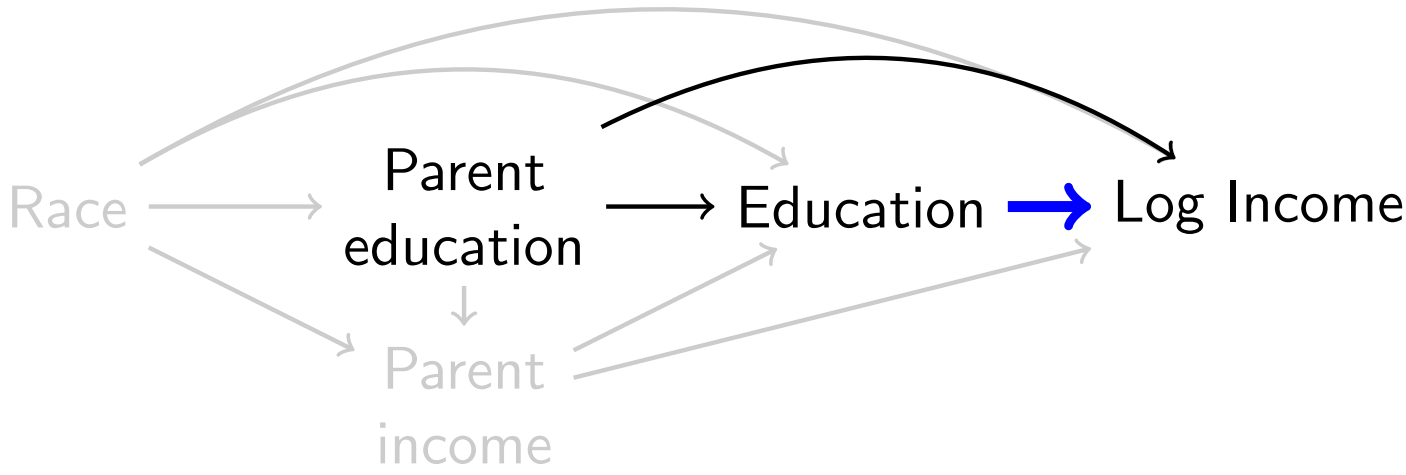
Assume this causal DAG:



Ultimately, we will adjust for race, parent education, and parent income

Nonparametric adjustment

First, pretend that parent education is a sufficient adjustment set (ignore everything that is gray)

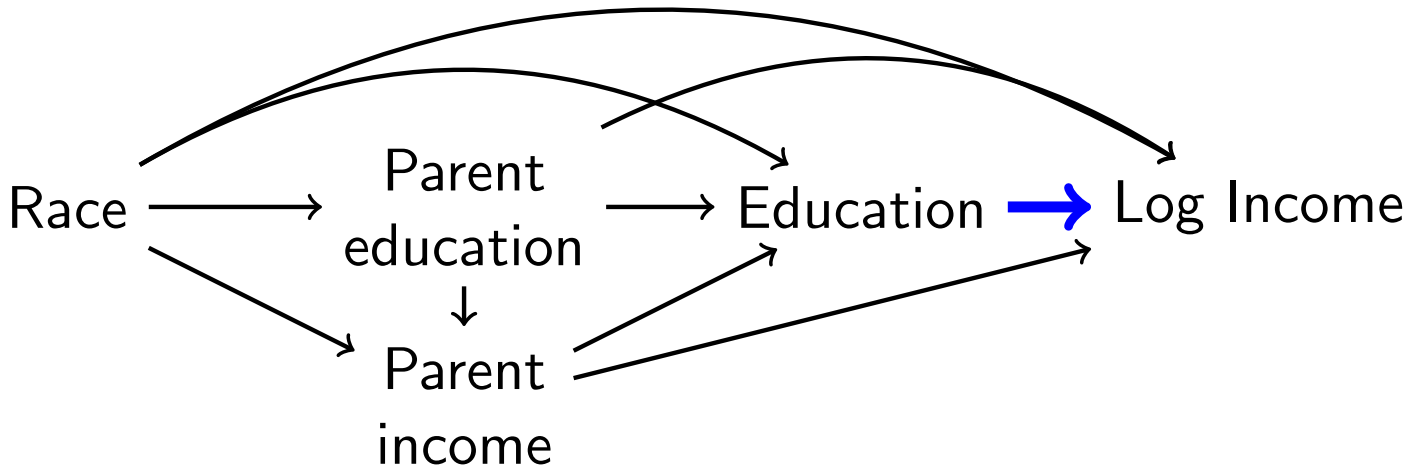


How to adjust nonparametrically:

1. take subgroups by confounders and treatment — `group_by`
2. take means within subgroups — `summarize`
3. difference over treatments — `pivot_wider` and `mutate`
4. (optional) average over confounder subgroups weighted by size

Preview for Monday

Now consider all variables. Is nonparametric adjustment possible?



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