GV300 - Quantitative Political Analysis

University of Essex - Department of Government

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Week 21 – 17 February, 2020

Today's session

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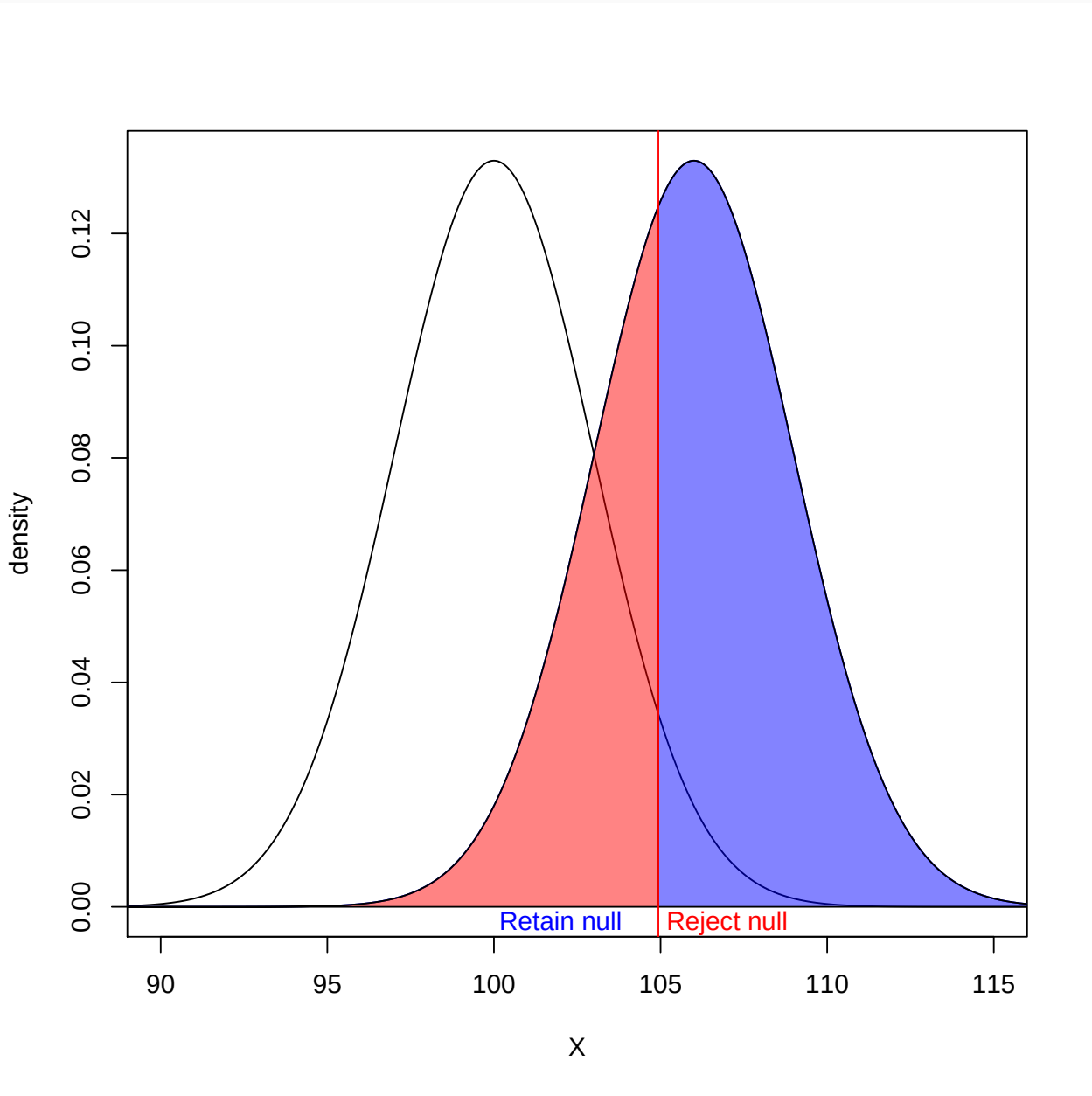
2. An exercise on an observational dataset from Card (1993). Try to make a causal claim

Final remarks on the power of a test

Again on the power of a test

- LABa01: power analysis (see R file)
- LABa02: discussion on the power of a test, α, β and $1 - \beta$ (see R file)

The power of a test



Exercise on observational dataset from Card (1993)

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1. Download the dataset `Card_data.dta` from Moodle.
2. Open the dataset, look at the variables you have and try to understand what they measure
3. Think about what research question you could answer by using these data. Find a causal claim you can test with them

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The research question from the author is:

Do years of schooling affect wage?

Causality and problems

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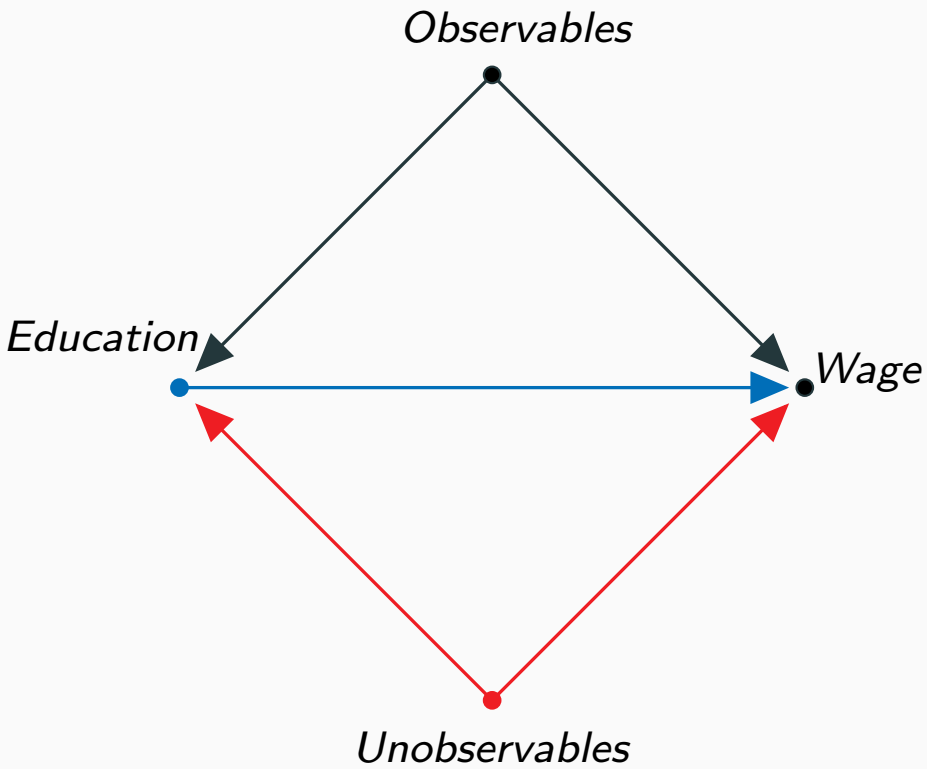
3. How can you represent these problems?

Threats to causality



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4. What do you need to implement it?

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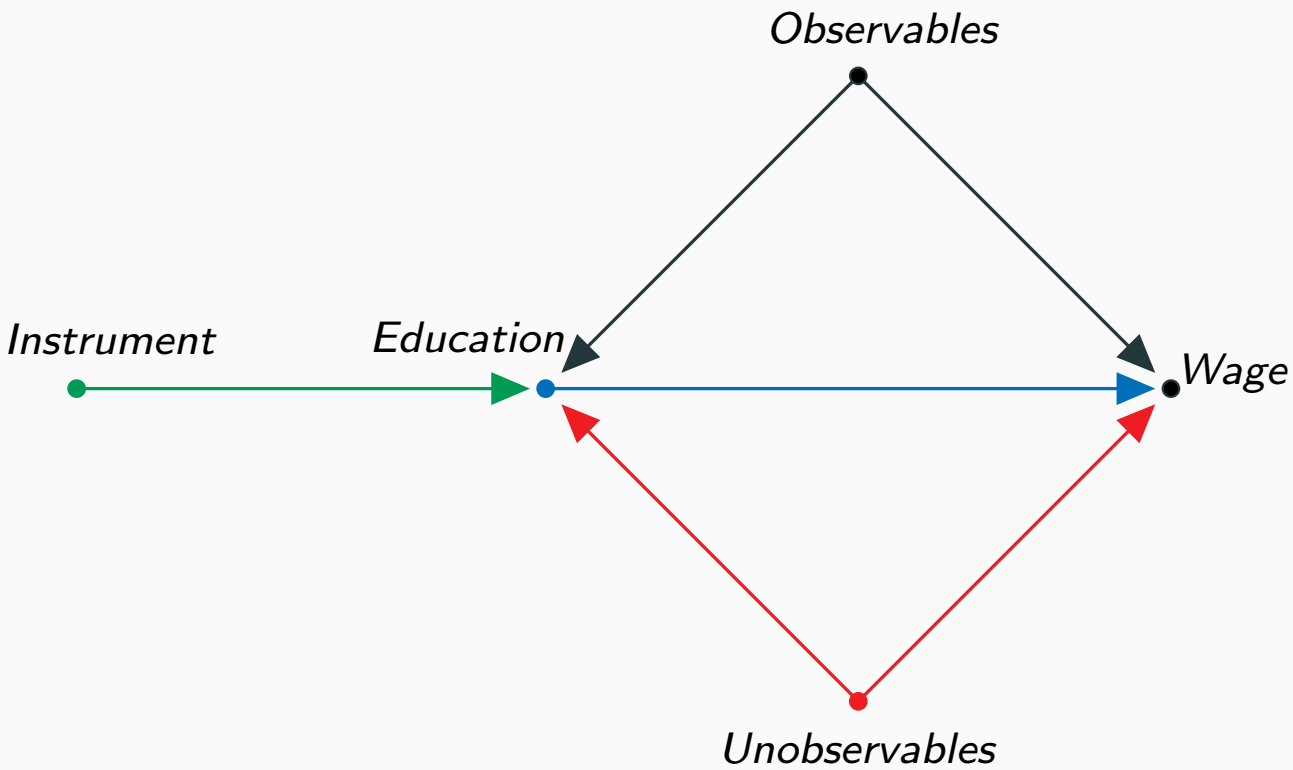
What instruments could we use in general? Which variable in this dataset?

Solution: Instrumental variable!



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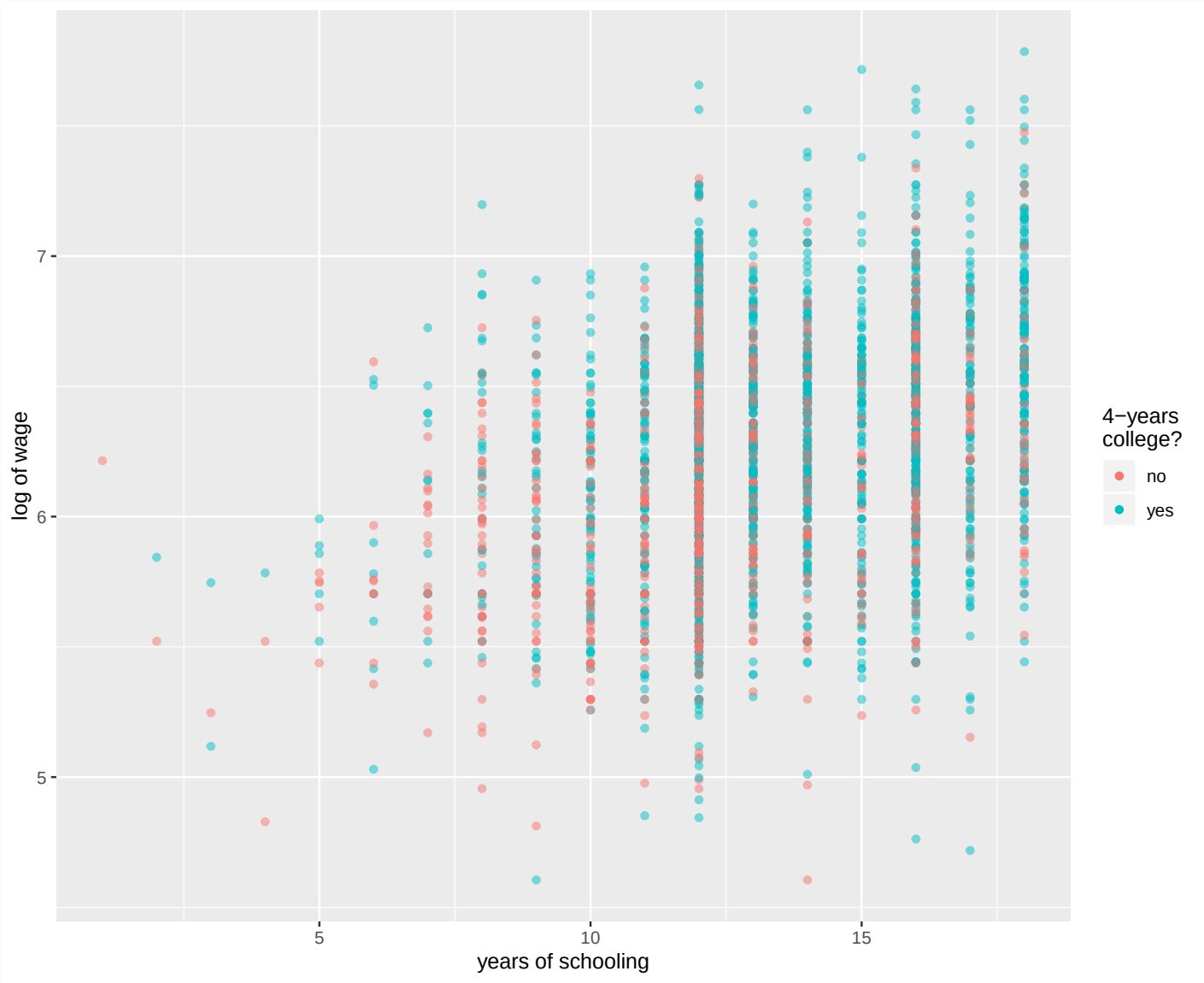
5. Do you buy these results? What do you think of the identification strategy?

Descriptive statistics



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$$log(wage_i) = \hat{\alpha} + \hat{\beta}\widehat{education}_i + \mathbf{X_i'}\hat{\theta} + u_i$$

Results

	Model 1	Model 2
(Intercept)	5.06^{***}	4.16^{***}
	(0.07)	(0.84)
educ	0.07^{***}	0.12^{**}
	(0.00)	(0.05)
exper	0.03^{***}	0.06^{***}
	(0.00)	(0.02)
black1	-0.17^{***}	-0.12^{**}
	(0.02)	(0.05)
south1	-0.13^{***}	-0.11^{***}
	(0.02)	(0.02)
married	-0.04^{***}	-0.03^{***}
	(0.00)	(0.01)
smsa1	0.18^{***}	0.15^{***}
	(0.02)	(0.03)
R^2	0.31	0.25
Adj. R^2	0.30	0.25
Num. obs.	3003	3003

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

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1. Strong instrument
2. Exclusion restriction

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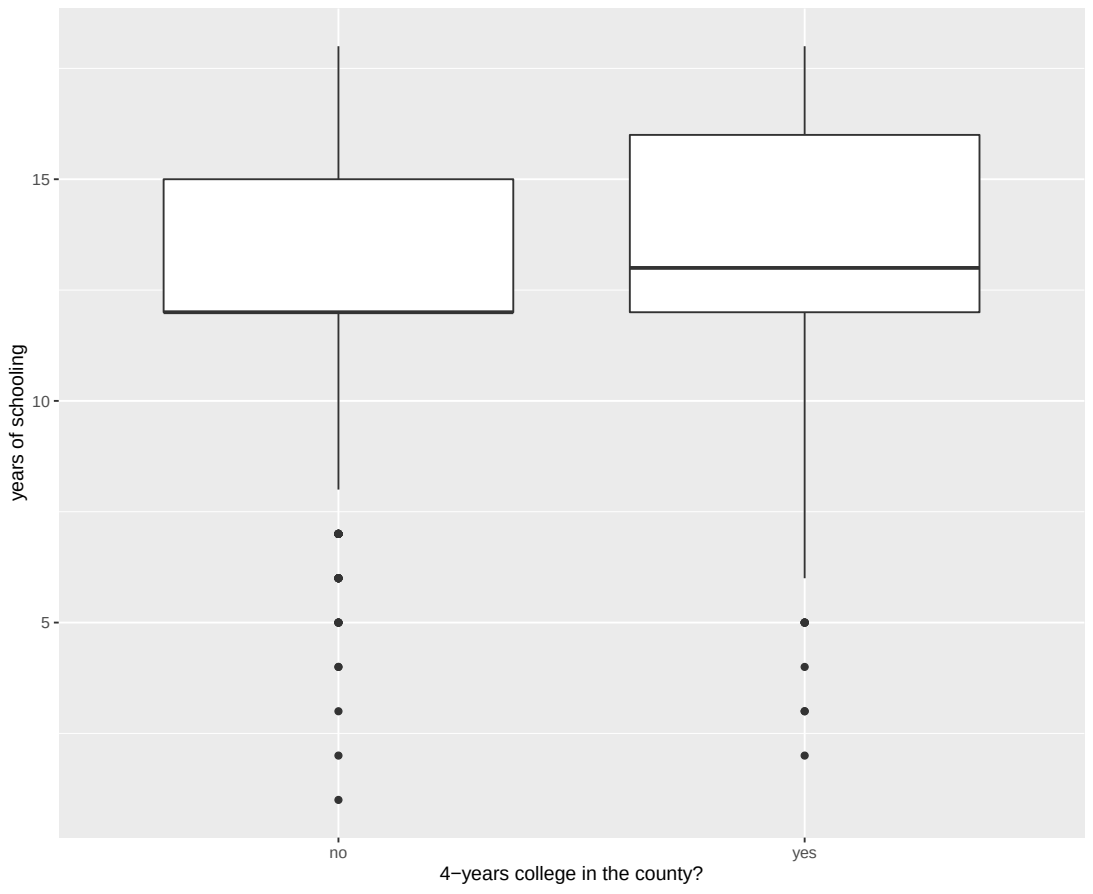

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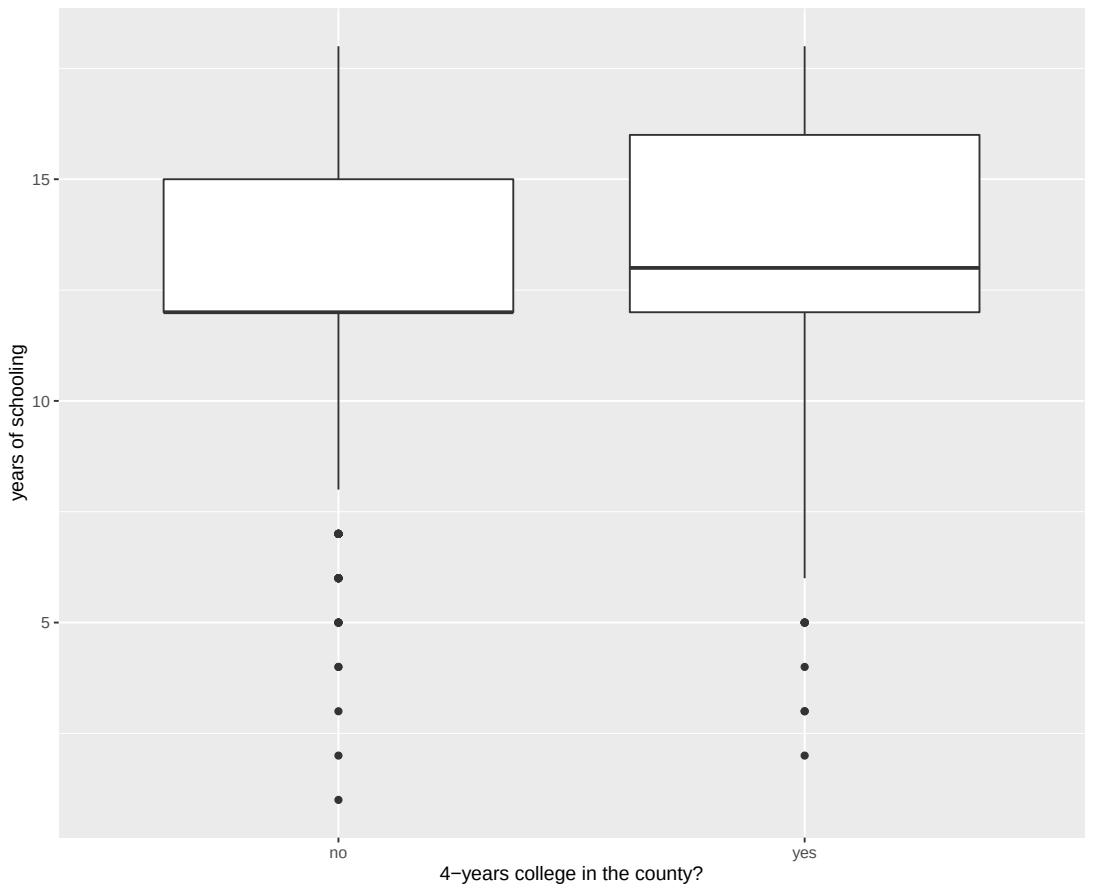

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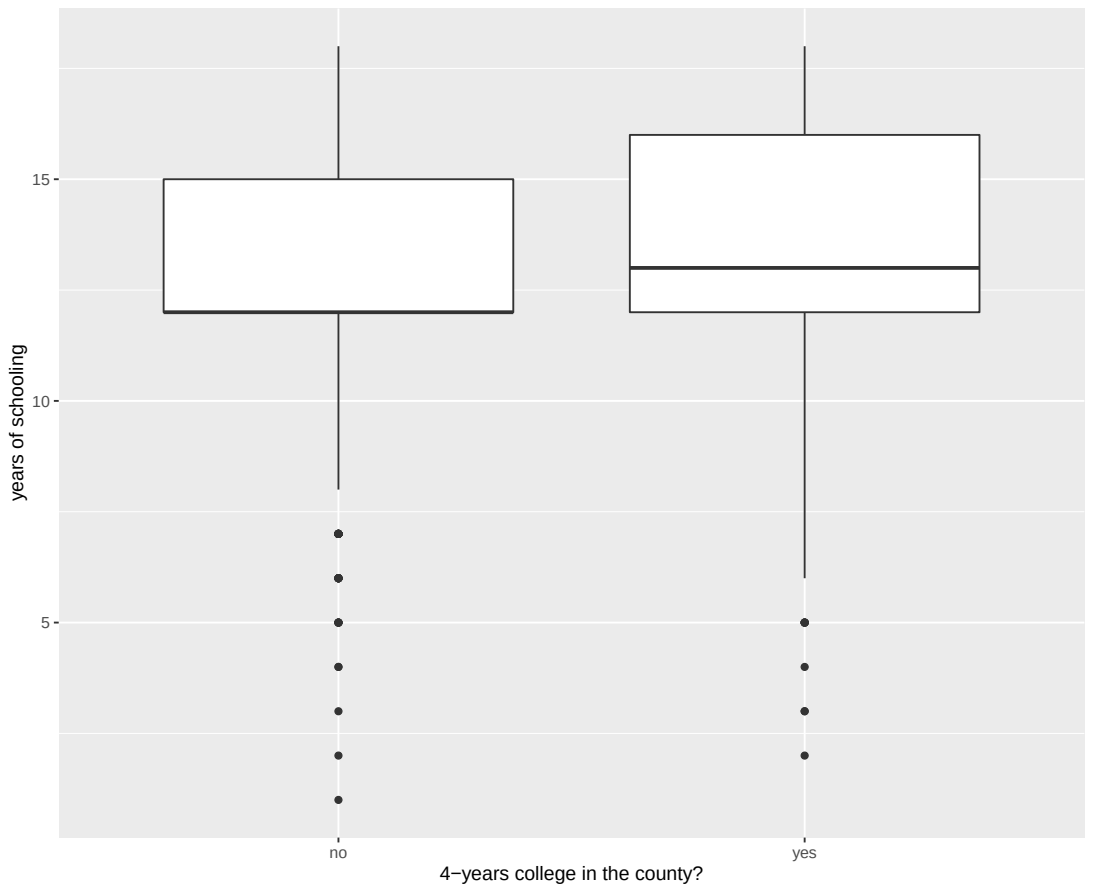

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What about the exclusion restriction?

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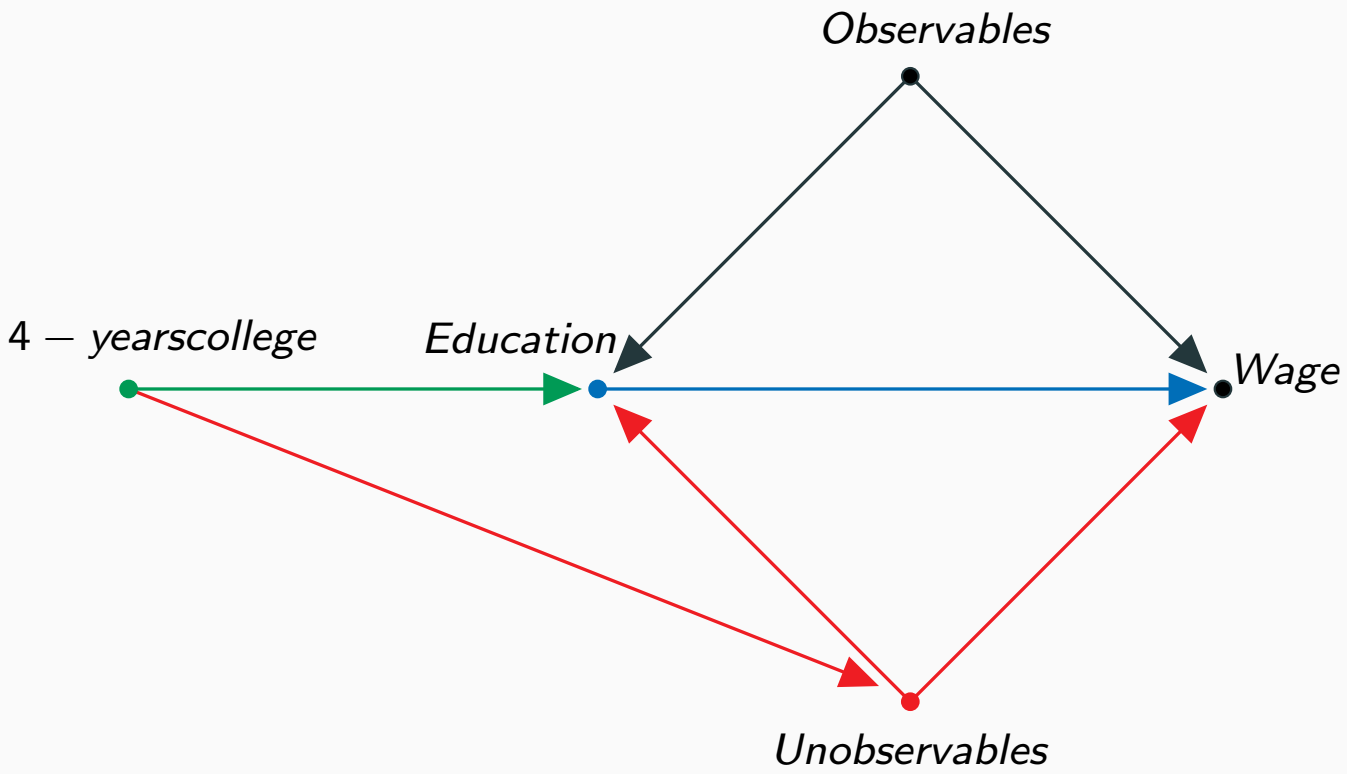

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What could a good instrument be, instead?

Conclusion

All clear? More questions?

Thanks and see you next week!

References

Card, D. (1993). Using geographic variation in college proximity to estimate the return to schooling. *NBER working paper*, (w4483).