

# WWS 403 Methods Lab

## Lecture 3

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## The Plan

Announcements: Brief debrief and extra sessions

Part 1: How to get people to vote?

Part 2: What should I put in my model?  $\beta$

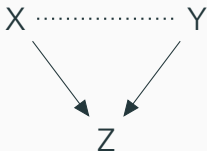
Lab: Because we love labs

## Extras: Selection on the dependent variable

Even when there is no causal link between X and Y



conditioning on Z will create spurious association.



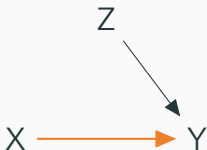
## Selection on the dependent variable

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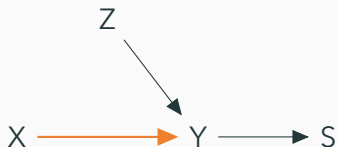
Assume Z raises Y but does not affect X



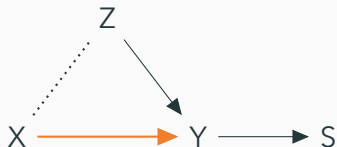
Z is not a confounder

## Selection on the dependent variable

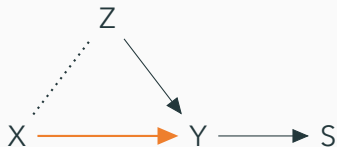
However, if we select (S) only units with, say, high Y



Then we will see spurious association between X and Z

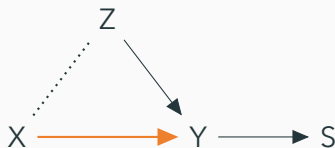


## Selection on the dependent variable



This subsample will have more high **Z** units with low **X** and more low **Z** units with high **X** than the population.

## Selection on the dependent variable



This subsample will have more high Z units with low X and more low Z units with high X than the population.

So effect of X on Y will seem to be *larger* than it really is.



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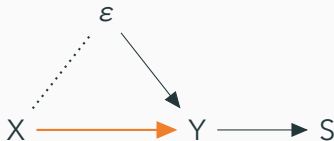
$$Y = a + X\beta + \varepsilon$$

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$\varepsilon$  is now correlated with  $X$  because of the selection, so  $\hat{\beta}$  no longer estimates  $\beta$ .