**DAGs**

Today’s class should provide students with specific DAG examples and ask them to write down:

1. the causal effect (directed edge) of interest.
2. The number of open back door paths.
3. The number of closed back door paths.
4. Whether a conditioning strategy can be used that satisfies the backdoor criterion.

Specific examples from economics articles. Illustrate a variety of strategies

* Minimum number of strategies one can make.
* Collider problem illustrated
* Conditioning on pre-treatment covariates
* More complex example

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Let D be college education, Y be wages and X2 income. Write down all backdoor paths from D to Y and note which ones are open or closed. What conditioning strategy will satisfy the backdoor criterion?

Causal effect (directed edge):

Backdoor paths:

Conditioning strategy:

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Write down all backdoor paths from D to Y and note which ones are open or closed. What conditioning strategy will satisfy the backdoor criterion? If there is more than one, write it down.

Causal effect:

Backdoor paths:

Conditioning strategy:

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Let Y be a students’ grade in 12th grade and Yt-1 her grade in 10th grade, D is Catholic schooling, V is unobserved parental Catholic adherence, and U is unobserved student intelligence. Write down all backdoor paths from D to Y and note which ones are open or closed. Is there a conditioning strategy will satisfy the backdoor criterion? If there is more than one, write it down. If no, then why not? Interpret the correlation between D and Y in this case.

Causal effect:

Backdoor paths:

Conditioning strategy:

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Let D be college education, Y be wages and unobserved intelligence, and Z be a school voucher program. Write down all backdoor paths from D to Y and note which ones are open or closed. What conditioning strategy will satisfy the backdoor criterion?

Causal effect (directed edge):

Backdoor paths:

Conditioning strategy: Macintosh HD:Users:scott_cunningham:Dropbox:Classes:Causality and Research Design:Class_folder:Lecture materials:DAG_nobc.pdf

Can you identify the causal effect of D on Y using a conditioning strategy which satisfies the backdoor criterion? If so, what is it, and is it unique? If not, why not?

Causal effect:

Backdoor paths:

Conditioning strategy: