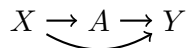


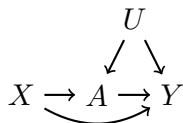
Practice with sufficient adjustment sets

DAG 1

$$X \rightarrow A \rightarrow Y$$


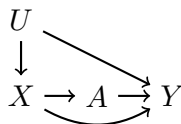
- ▶ write down all backdoor paths between A and Y
 - ▶ recall a backdoor path has the form
 $A \leftarrow \text{possibly other nodes and edges} \rightarrow Y$
- ▶ suppose we condition on nothing
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?
- ▶ suppose we condition on X
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?

DAG 2



- ▶ write down all backdoor paths between A and Y
 - ▶ recall a backdoor path has the form
 $A \leftarrow \text{possibly other nodes and edges} \rightarrow Y$
- ▶ suppose we condition on nothing
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?
- ▶ suppose we condition on X
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?

DAG 3



- ▶ write down all backdoor paths between A and Y
 - ▶ recall a backdoor path has the form
 $A \leftarrow \text{possibly other nodes and edges} \rightarrow Y$
- ▶ suppose we condition on nothing
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?
- ▶ suppose we condition on X
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?

DAG 4



- ▶ write down all backdoor paths between A and Y
 - ▶ recall a backdoor path has the form
 $A \leftarrow \text{possibly other nodes and edges} \rightarrow Y$
- ▶ suppose we condition on nothing
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?
- ▶ suppose we condition on X
 - ▶ which backdoor paths are unblocked, if any?
 - ▶ is the causal effect of A on Y identified?