1 Introduction

The next step in answering a causal question is clearly stating your assumptions about the causal system of interest. You'll also want to think about what factors you will need to adjust for in order to make conditional exchangeability plausible. In this task, you will get to draw a directed acyclic graph (DAG) that represents the causal system you proposed in Task 1 and consider what variables you need to condition on for a valid causal analysis.

Fill in the answers to the "Action Items" section below using the provided .Rmd file, or you may complete this task by hand. This is because you are welcome to draw DAGs by hand instead of producing them by code. If you do this, scan or take a picture of your document. Turn in Task 2 on Canvas by **Thursday, Oct 17 at 11:59pm**.

2 Action Items

These are the questions you should answer and turn in for Task 2.

- Copy and paste the description of your causal question from Task 1 so the grader has some context for your problem
- (2 points) Write out the names of the treatment variable A and the outcome variable Y you are considering.
- (3 points) List out 4-6 factors that are particularly relevant for your causal question. These might be variables which either
  - Cause (either directly or through other factors) both your treatment variable and your potential outcomes
  - Are caused by both the treatment and the outcome

  Note, it would be good—but not necessary—if these variables are also included in the data set you considered in Task 1.
- (10 points) Draw a DAG that includes your treatment variable, outcome variable, and the factors you listed in the previous part. If you use letters for variables names, make sure you explain what the letter stands for.
- (5 points) In a few sentences, explain your DAG: tell us in words what is meant by each edge in your DAG.
- (5 points) Assuming your DAG is true, list one sufficient adjustment set to identify the causal effect of the treatment on the outcome. If a sufficient adjustment set does not exist, add additional variables to your DAG so that one does exist.