Quiz: Causality

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Questions for Discussion

1. Consider an individual i who receives a binary treatment $D_i = 1[i\,treated] + 0[i\,not\,treated]$. Let Y be the outcome of interest, with Y_i^1 and Y_i^0 the elements of the potential outcome.

- Describe the causal question;
- Describe what Y_i^1 and Y_i^0 mean. Can they be both observed?
- What is the distinction between the individual treatment effect and the average treatment effect?

2. Explain in words the meaning of the "simple difference in mean outcomes" (SDO). Why is it not a good measure of the effect of a treatment?
3. Under which condition(s) are SDO and ATE equivalent?
4. Explain in words the meaning of SUTVA.
5. Why would one include control variables in a regression even if randomizing a treatment?