Final Project: Apply the roadmap to a real world problem

1. Formally specify an SCM representing background knowledge
2. Specify your counterfactuals of interest and define your target causal quantity
3. Specify your observed data and link to SCM
4. Discuss identifiability of the target causal quantity
   – What assumptions are needed?
   – Are their additional data that would improve their plausibility?
5. Specify your estimand (target parameter of the observed data distribution) and statistical model
6. Specify estimation approach: discuss implementation of you estimators
   – Discuss assumptions, advantages, disadvantages
7. Present and interpret the results applying them to your real data problem

Final Project Overview

- Ideally 3-4 people per group
- You can choose your own groups
- Need
  - Real data
  - A specific question
- Leave it up to you to get organized
  - Email James if having trouble finding group
- See "Final Project Guidelines" on bcourses for more information

Project Deliverables

- Group membership and brief description of project: 4/1
- Group presentation: 5/1, 5/6, 5/8
  - Presentation (ppt or pdf) due electronically by 5pm 4/29
  - Including both formal notation and a serious consideration of real world issues
  - 12 minutes + 5 minutes for discussion
  - Each member of the group must talk
- Written write up: Due 5/8
  - Each group turns in a single write up
  - Need to make clear which part you wrote
  - Should include rigorous presentation of each step of the roadmap applied to your question.

Additional Guidelines

- Choose a point treatment data problem
- Implement all three types of estimators we have (or will) discussed
  - Simple substitution
  - IPTW
  - TMLE
- Provide a detailed plan for statistical inference
  - Implement as far as possible