Discussion Assignment #3

Sabrina Boyce, Shelley Facente, and Steph Holm

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Question 7: Under the assumption of sequential randomization and positivity, write out the (counterfactual or "post intervention") distribution $Q^{\bar{a}}$ a of the counterfactual non-intervention variables $(W; \bar{L}_5^{\bar{a}}, Y^{\bar{a}})$ as a function of the observed data distribution P_0.

Question 8: Specify the statistical estimand using the traditional G-computation formula.

Question 9: Briefly review implementation of "traditional" longitudinal parametric G-Computation for this estimand. What are some possible pros/cons to this approach?

"Traditional" longitudinal parametric G-Computation requires:

- estimation of distribution of each time-varying covariate given the past, and
- evaluation through simulation.

Pros:

- Fairly easy to set up and run
- Efficient, if the model is correct

Cons:

- Susceptible to bias if model not correctly specified
- Requires estimating lots of conditional densities