

AQA-II Lab Assignment 4

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Due: April 25, 2020

1 Theoretical questions

You do not have to write down equations but make sure to support your answers with logical reasoning.

- a. Describe what Missing at Random (MAR) and Missing at Completely Random (MACR) is?
- b. Describe when list-wise deletion (complete case analysis) can be troublesome and how?
- c. When analyzing panel data, what is the major assumption difference between Random and Fixed effects model? Discuss different situations where you would prefer each one and why.

2 Analytical questions

- d. If you are tasked to analyze the treatment effect of an RCT that follows a panel data structure, which of the methods we learned so far would you choose and why? What assumptions do you need for you to unbiasedly estimate the ATE?
- e. In a month or so, you would need to turn in the final draft of your research project for this class. Now take this as a chance to practice, write down your main estimation equation, and explain each part of this equation.
- f. Following the previous question, describe your research question in one sentence. What assumptions do you need for you to estimate this question with the equation in e?
- g. Use (at most) two sentences to describe your sample. Use a paragraph (short) to evaluate your project's external validity (generalizability).
- h. Data visualization is a great way to describe your research. I highly encourage you to include one in your project, either for presenting your most important results or illustrate a descriptive stats for motivation (e.g., yearly trend). Include your graph and interpret it if you have one; describe your plan to create one or the reason for not to, if you don't have one.