DSCI 610

HW 3: NHANES Survey Data and Study Designs

By: Cody York

1. (4 pts) Briefly illustrate the sample design for NHANES survey data.
2. (2 pts) Download the demographics data from the most recent available survey cycle.
3. (2 pts) Download two laboratory data files that you are interested in from the most recent available survey cycle.
4. (8 pts) Import all three data sets into R and combine a subset of variables into an analysis dataset. Save the dataset as .rds file. You can use R markdown to for this question
5. (4 pts) Create at least two descriptive statistics tables for two key variables from your analysis dataset. You can use the same R markdown file in question 4 to create the summary tables.
6. (3+4+4 pts) Briefly illustrate the design aspects of BNT162b2 mRNA Covid-19 Vaccine trial. Assume a hypothetical scenario where you would like to design an intervention trial for a health condition in a target population. State a brief design protocol for your trial, similar to the method section discussed in BNT162b2 mRNA Covid-19 Vaccine trial. Create a flow-chart demonstrating randomization of the intervention, follow-up and completion, similar to Figure 1 in BNT162b2 mRNA Covid-19 Vaccine trial.
7. (3 pts) Identify the study design for the “BMI and future risk for COVID-19 infection and death across sex, age and ethnicity” study. What are the aspects of the design considered for this study?
8. (3 pts) Assume that you are considering designing a study to investigate the association between an exposure and a health condition that may occur due to the exposure. Design a prospective cohort study and show your study protocol with a flow chart. Be specific about the target population, exposure, outcome, and confounding variables (in any).
9. (3 pts) Now, assume that you do not have the budget in terms of the time or money to conduct a prospective study in question 3. Design a case control study and show your study protocol with a flow chart. Be specific about the cases, controls, and a strategy for collecting information on the exposure.