

Final Project: Smoking in the Framingham Heart Study

Analysis: For this analysis, we will be working as part of a research lab that studies smoking habits of adults. We are interested to describe the smoking habits of the participants in the Framingham Heart study as they age and the impact of smoking on certain health outcomes. The Framingham heart study asks participants about their smoking habits at each visit. In particular, participants are asked if they are currently smoking at this visit (0 = Not a current smoker, 1 = Current smoker), which we will refer to as current smoking status. In addition, participants also report the number of cigarettes they are smoking per day. A more complete description of each of variables in the Framingham Heart study can be found in the Framingham Heart Study Longitudinal Data Documentation. We are interested to answer the following questions:

- (1) Is there a relationship between age and smoking status? Does this relationship differ by sex?
- (2) Is there a relationship between the number of cigarettes smoked per day and age? Does this relationship differ by sex?

While answering these questions, please account for any confounders that you have evidence may impact the relationship between age and sex with smoking.

Next you are interested in the relationship between certain health outcomes and smoking status. In particular you are interested in :

- (1) The relationship between current smoking status and systolic blood pressure.
- (2) The relationship between current smoking status and diastolic blood pressure.
- (3) The relationship between current smoking status and serum total cholesterol.

Again, while answering these questions, please account for any confounders that you have evidence may impact these relationships.

Summary of Findings: The findings from your analysis should be summarized in a written report that is no more than 2 pages (standard 1 inch margins, single spaced). I will only read the first two pages if you submit a report longer than two pages. Please do NOT cut and paste R output within the abstract. In ADDITION to the two page report, you may include up to 2 table/figures to support your findings in an Appendix; be sure to appropriately label the tables/figures and reference them within the report.

Your report should include the following sections:

- a. **OBJECTIVE:** An objective or description of the goals of the analysis
- b. **STUDY DESIGN:** A brief description of the study design and the data
- c. **METHODS:** A methods section describing your statistical analysis (please justify all modeling choices that were made with evidence).

d. RESULTS: A results section that includes a) descriptive statistics for the data b) a summary of your key findings including supporting numerical summaries (i.e. confidence intervals, pvalues, etc.) c) interpretations of your key findings (i.e. interpretations of coefficients).

e. CONCLUSION: A conclusion specifically answering the objective of the analysis.

What to Turn In: For this assignment you will turn in a single pdf document with (a) your summary of findings and (b) an Appendix with figures and (c) an Appendix with all R code (in the form of a knited pdf).