

Instructions: Answer each question concisely. Bullet lists, diagrams, etc. are welcome. Submit your homework as both the questions and your answers to Ashley as a pdf, with your name on the top of the first page.

It seems that every year we read a different version of the hazards of drinking coffee: some years, we read that it is bad for you, but in some years it seems to be good for you. Design a big-data study using surveys and medical records of thousands of patients admitted to US hospitals in 2022 to obtain a definitive answer to this ongoing conundrum.

1. What are your proposed scientific hypotheses?
2. Summarize the design of your study to test those hypotheses.
3. What are the strengths and weaknesses of your proposed study?
4. What kind of confounding variables do you expect to address?
5. How do you imagine analyzing the data?

Now imagine your research is of a smaller scale; to experimentally test the organism of your choice for the combined effects of two changing environmental conditions on survival and reproductive output through their life spans.

6. Summarize your choice of organism and conditions. What are your proposed scientific hypotheses?
7. Summarize the design of your study to test those hypotheses.
8. What are the strengths and weaknesses of your proposed study?
9. What kind of confounding variables do you expect to address?
10. How do you imagine analyzing the data?