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Homework 1

**1 Smoking habits of UK residents.**

- (a) Each row represents one person.
- (b) 1691 participants are included in the survey
- (c) Sex is a categorical variable. Age is a continuous numerical variable. “grossIncome” is a continuous numerical variable. “Smoke” is a categorical variable. “amtWeekends” is a continuous numerical variable. “amtWeekdays” is a continuous numerical variable.

**2 Cheaters, scope of inference**

- (a) The population of interest is children.
- (b) More information is needed about the children than simply their age. Perhaps demographic and socioeconomic details should be collected. Additionally, children of different ages should be studied as different populations because their behaviors may differ.
- (c)

**3 Reading the paper. (1.28, p. 31)**

- (a) Smoking possibly increases the risk of dementia. Says smoking causes dementia may be too strong. Correlation does not equal causation. Although the article mentions “after adjusting for other factors,” there’s no telling what other factors were adjusted for and what were overlooked.
- (b) Again, correlation does not equal causation. Perhaps bullying is causing restless sleep instead of “sleep disorders lead to bullying.”

**4 Exercise and mental health. (1.34, p. 35)**

- (a) This is an experimental study.
- (b) The treatment group is the group told to exercise twice weekly while the control group are those told to not exercise.
- (c) Yes, the blocking is the separating of participants by age.
- (d) As described in the exercise, blinding is not described in the study. The participants in the control group are not given some type of placebo. So they might very well be aware of what the other group is told (or they could infer it.) And there’s no mention that the mental health examiners will be blind to which participants they’ll be evaluating.
- (e) I’d like to know the exercise habits of participants before the experiment began. And I think the “mental health exam” needs to be clearer. Will subjects be asked if exercise helped them cope with stress, or lack of exercise added to their stress. Perhaps other proxies for mental health should be used as well, but’s hard to determine what those would be.