Political Science 202
Introduction to Political Analysis
Fall 2023: Problem Set #8

Due on Blackboard on Friday, December 1 at 6:00 PM. 3 points in total. Late submissions are penalized with 1 point per 24 hours.

MAKE SURE THAT YOU RECEIVE AN UPLOAD CONFIRMATION and SAVE THE CONFIRMATION (submission date and confirmation number). If you have trouble uploading to Blackboard, email as an attachment to your TA before the deadline. If you don't get a reply confirming that you handed it in, send it again.

You can discuss the problem set with others, but you need to submit your own answers. If you discussed the problem set with others, note their names on your submission.

1. A university has built a new dining hall in one of its dorms. It plans to survey a random sample of students who live in the dorm with the new dining hall as well as a random sample of students who live in the other dorms with traditional dining halls. The survey will contain a question asking the students to evaluate the dining hall in their dorm (on a 7 point scale, where 1= like very much and 7=don't like at all).

    a) State the null and alternative hypotheses you would use for examining whether or not the new design is viewed as an improvement.
    b) What would the consequences of a Type I error be?
    c) What would the consequences of a Type II error be?

    The survey brings the following results: The mean score for students in the dorm with the new dining hall is 2.5, and the mean score for students in the other dorms is 2.9 (the standard error of this difference is 0.25).

    d) Compute the t-statistic.
    e) Can we reject the null hypothesis?

2. Prof. Aysenur wants to examine the link between attendance of religious services (independent variable) and the willingness to extend freedom of speech to those who burn the American flag (dependent variable). Her hypothesis is: In a comparison of individuals, people who frequently attend religious services will be less likely to extend free-speech rights to flag burners than will people who infrequently attend. In a random sample of adults, she finds the following: Among those who attend religious services infrequently, 347 are willing to allow flag burning, whereas 337 do not want to allow it. Among those who attend religious services often, 206 are willing to allow flag burning, whereas 382 do not want to allow it.

a) What is the zero-order relationship between religious attendance and attitudes towards flag burning?

Prof. Xiaoxia suggests that education might influence both how often someone attends religious services as well as their attitude towards flag burning. To address this, Prof. Aysenur wants to construct a control table that shows the effect of religious service attendance on attitudes towards flag burning, controlling for education (high/low). The raw numbers are as follows:

- Low religious attendance, low education: 121 allow flag burning, 197 do not allow flag burning
- Low religious attendance, high education: 226 allow, 140 do not allow
- High religious attendance, low education: 44 allow, 187 do not allow
- High religious attendance, high education: 162 allow, 195 do not allow

b) Construct a complete control table from this information (use tables in lecture slides as a template).
c) Compute the controlled effects.
d) Decide which pattern—spurious, additive, or interactive—best describes the set of relationships. Explain what this means in a way that somebody who doesn't know what spurious, additive, or interactive mean can understand.