## PSC202 Introduction to Political Analysis F23, Week 12 Section Worksheet

## Controlled Comparison Questions

1.1. You suspect there is a state-level difference regarding support for a nation-wide ban on abortion. Specifically, you have reason to believe that southern states are more likely to support a ban on abortion than northern states. To test your theory, you surveyed 200 respondents' opinion on a ban of abortion in Texas and New York separately ( 200 respondents in each state). Your classmate theorizes that religion is a confounding variable that may affect your results. As a result, you decide to use data from a survey that controls for religion (divided here into two categories: atheist and Christian).

Suppose you run another round of the survey and find an association shown in the following table.

| Ban on <br> Abortion? | Support Ban on Abortion? |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Atheist |  |  | Christian |  |  |
|  | Texas | New York | Total | Texas | New York | Total |
| Yes | $44(44 \%)$ | $42(42 \%)$ | 86 | $38(38 \%)$ | $36(36 \%)$ | 74 |
| No | $56(56 \%)$ | $58(58 \%)$ | 114 | $62(62 \%)$ | $64(64 \%)$ | 126 |
| Total | 100 | 100 | 200 | 100 | 100 | 200 |

a. Calculate the controlled effect of living in a southern state among atheists.
b. Calculate the controlled effect of living in a southern state among Christians.
c. Looking at the partial effects, what is the nature of the relationship (additive, spurious, interactive), and why?
1.2. Your classmate theorizes that ideology is another confounding variable that may affect abortion attitudes. As a result, you decide to use data from a survey that controls for ideology (divided here into two categories: liberal and conservative).

Here is how the survey data that controls for ideology looks like:
Among conservatives, 44 Texans and 42 New Yorkers support the ban, and 56 Texans and 58 New Yorkers oppose the ban. Among liberals, 38 Texans and 36 New Yorkers support the ban and 62 Texans and 64 New Yorkers oppose the ban.
a. Create a cross tab, and calculate the controlled effect of living in a southern state among conservatives, and liberals.
b. Looking at the partial effects, what is the nature of the relationship (additive, spurious, interactive), and why?

## T-statistic Question

The following table shows male and female feelings towards the US military. A researcher wants to know whether gender affects feelings towards the US military or not.

| Gender | Mean Thermometer <br> Score | Frequency | Standard Error |
| :--- | :--- | :--- | :--- |


| Female | 80.4 | 1,153 | 0.6 |
| :--- | :--- | :--- | :--- |
| Male | 78.7 | 941 | 0.7 |
| Difference | 1.7 | 2,094 | 0.92 |

a. What is the level of measurement of the independent variable? What is the level of measurement of the dependent variable?
b. What is the zero order effect of gender on feelings towards the US military?
c. What is the null hypothesis? What is the alternative hypothesis?
d. The standard error of difference is 0.92 . Calculate the $t$-statistic. Can we reject the null hypothesis? Why or why not?

