

POL 2504 PS 2

21 September, 2020

Section 1

A researcher conducted a randomized field experiment assessing the extent to which individuals living in suburban communities around Boston, Massachusetts, and their views were affected by exposure to demographic change.

This exercise is based on: Enos, R. D. 2014. "Causal Effect of Intergroup Contact on Exclusionary Attitudes." *Proceedings of the National Academy of Sciences* 111(10): 3699-3704.

Subjects in the experiment were individuals riding on the commuter rail line and overwhelmingly white. Every morning, multiple trains pass through various stations in suburban communities that were used for this study. For pairs of trains leaving the same station at roughly the same time, one was randomly assigned to receive the treatment and one was designated as a control. By doing so all the benefits of randomization apply for this dataset.

The treatment in this experiment was the presence of Hispanic confederates (a term used in experiments to indicate that these individuals did not know the full purpose of the study at the time of their participation) on the platform prior to the trains arrival. The presence of these confederates at the train station was intended to emulate the kind of demographic change anticipated for the United States in coming years. For those individuals in the control group, no such confederates were present on the platform. The treatment was administered for 10 days. Participants were asked questions related to immigration policy both before the experiment started and after the experiment had ended. The names and descriptions of variables in the data set `boston.csv` are:

Name	Description
<code>age</code>	Age of individual at time of experiment
<code>male</code>	Sex of individual, male (1) or female (0)
<code>income</code>	Income group in dollars (not exact income)
<code>white</code>	Indicator variable for whether individual identifies as white (1) or not (0)
<code>college</code>	Indicator variable for whether individual attended college (1) or not (0)
<code>usborn</code>	Indicator variable for whether individual is born in the US (1) or not (0)
<code>treatment</code>	Indicator variable for whether an individual was treated (1) or not (0)
<code>ideology</code>	Self-placement on ideology spectrum from Very Liberal (1) through Moderate (3) to Very Conservative (5)
<code>numberim.pre</code>	Policy opinion on question about increasing the number immigrants allowed in the country from Increased (1) to Decreased (5)
<code>numberim.post</code>	Same question as above, asked later
<code>remain.pre</code>	Policy opinion on question about allowing the children of undocumented immigrants to remain in the country from Allow (1) to Not Allow (5)
<code>remain.post</code>	Same question as above, asked later
<code>english.pre</code>	Policy opinion on question about passing a law establishing English as the official language from Not Favor (1) to Favor (5)
<code>english.post</code>	Same question as above, asked later

Question 1

The benefit of randomly assigning individuals to the treatment or control groups is that the two groups should be similar, on average, in terms of their covariates. This is referred to as **covariate balance**. Show that the treatment and control groups are balanced with respect to the income variable (`income`) by comparing

its distribution between those in the treatment group and those in the control group. Also, compare the proportion of males (**male**) in the treatment and control groups. Interpret these two numbers.

Question 2

Individuals in the experiment were asked a series of questions both at the beginning and the end of the experiment. One such question was “Do you think the number of immigrants from Mexico who are permitted to come to the United States to live should be increased, left the same, or decreased?” The response to this question prior to the experiment is in the variable **numberim.pre**. The response to this question after the experiment is in the variable **numberim.post**. In both cases the variable is coded on a 1 – 5 scale. Responses with values of 1 are inclusionary (**pro-immigration**) and responses with values of 5 are exclusionary (**anti-immigration**). Compute the average treatment effect on the change in attitudes about immigration. That is, how does the mean change in attitudes about immigration policy for those in the control group compare to those in the treatment group. Interpret the result.

Question 3

Does having attended college influence the effect of being exposed to **outsiders** on exclusionary attitudes? Another way to ask the same question is this: is there evidence of a differential impact of treatment, conditional on attending college versus not attending college? Calculate the necessary quantities to answer this question and interpret the results. Consider the average treatment effect for those who attended college and then those who did not.

Question 4

Repeat the same analysis as in the previous question but this time with respect to age and ideology. For age, divide the data based on its quartile and compute the average treatment effect within each of the resulting four groups. For ideology, compute the average treatment effect within each value. What patterns do you observe? Give a brief substantive interpretation of the results.

Section 2

In this section, we examine a so-called “natural experiment” in the Canadian House of Commons. Under reforms implemented prior to 2004, the order in which backbench MPs could introduce legislation and have it debated and voted upon by the full House was decided by lottery. Since it is otherwise quite difficult for members to introduce legislation, a group of political scientists decided to test the effect of this on individual MPs. This exercise is based

Peter John Loewen, Royce Koop, Jaime Settle, and James H. Fowler. 2013. “A Natural Experiment in Proposal Power and Electoral Success.” *American Journal of Political Science*, Vol. 58, No. 1, pp. 189-196.

The political scientists were able to compare the vote share members got in the 2006 or 2008 elections based on whether they had previously been able to introduce legislation under this procedure. The data in the file `proposalAJPS.csv` consist of MP-level observations for two parliaments, and include whether the MP had the power to propose (that is, came in low enough in the Order of Precedence lottery that they had the chance to introduce something and have it debated and voted upon), their vote share in the next election, and a bit of other information about the member and the election.

Name	Description
<code>gov</code>	1 if a member of the government party, 0 otherwise
<code>senate</code>	1 if the member introduced legislation initiated in the Senate, 0 otherwise
<code>p2p</code>	1 below the threshold, and therefore able to propose legislation, 0 otherwise
<code>election</code>	Election for which the vote share is measured 2006 or 2008
<code>previous_vote</code>	Vote share in the previous election
<code>current_vote</code>	Vote share
<code>winner</code>	1 if the member won reelection, 0 otherwise
<code>female</code>	1 if member is female, 0 otherwise
<code>quality</code>	1 if member faces a quality opponent in the election, 0 otherwise
<code>media_mentions</code>	Count of mentions of member in selected media
<code>spending</code>	Campaign spending in the election

Question 1

How many members of parliament are in the data? Why is it not simply $338 \times 2 = 676$?

What proportion of the observations in the data are members of the government party?

What proportion are female?

How much does a typical member spend on reelection? Is there anything about the spending data that is odd?

Question 2

First, we will check to see if the randomization procedure appears to have been fair. Calculate the difference between the proportion of MPs who were able to propose legislation under this procedure according to whether they are female. That is, a government MP, and whether their vote share in the previous election was greater than or less than the median.

Question 3

Calculate the mean vote share for MPs able to introduce legislation under this procedure and those unable to do so. How big is the difference?

Create a table of the power to propose and whether the MP won reelection. Did the power to propose help MPs win reelection? HINT: it might make sense to use `prop.table()`

Question 4

Create two new data frames, one with just MPs in the governing party and one with just members of the opposition. Now repeat what you did for Question 2 on each of these data frames. Is there a big difference in vote share or win share across the power to propose in either data frame? Do the differences look big?

Question 5

One possibility is that government MPs did better and opposition MPs did worse when they got proposal power because they draw lower quality opponents (as measured by previously holding electoral office). Did MPs with proposal power draw lower quality opponents in the next election? Did this vary by whether they were in the government party?

Another possibility is that proposal power shaped the MPs ability to fundraise, by letting them appear to be bringing home the pork. Did proposal power lead MPs to spend more or less money? Rather than answering this with just a difference in means, create a boxplot for each of four groups based on the 2x2 of government vs. opposition and proposal power and no proposal power. Provide a clear description as if it is in a paper (“This figure shows that...”)