POL 345: Quantitative Analysis and Politics

Precept 2 (Week 3)

In this precept, you will learn the following new material:

- Adding `par(mfrow = c(X, Y))` at the beginning of graphical commands will produce `X` by `Y` figure in one graphical window. `mfrow` means the graphs will be filled by row whereas `mfcol` means they will be filled by columns

The Impact of Increases in the Minimum Wage

Many economists believe that increasing the minimum wage actually hurts the poor, the very part of the population such a policy is supposed to help out. The reason is that if employers have to pay higher wages then they would simply hire less people. This means that those who are earning the minimum wage may lose their jobs as a result of increasing the minimum wage. Two researchers, David Card and Alan Krueger, tested this argument using the data from fast food industry in New Jersey and Pennsylvania. We analyze their original data in this precept. The `njmin.txt` data file, available at Blackboard, contains the following variables

Variable	Description
`chain`	fast food chain
`location`	store location (`southJ`, `centralJ`, `northJ`, `shoreJ` & `PA`)
`wageBefore`	Starting wage measured before the increase
`wageAfter`	Starting wage measured after the increase
`fullBefore`	number of full-time employees before the increase
`fullAfter`	number of full-time employees before the increase
`partBefore`	number of part-time employees before the increase
`partAfter`	number of part-time employees before the increase

1. Load the data into **R**

2. Create a factor variable called `state`, which takes two values `NJ` and `PA`. How many stores in NJ and PA does the study sample contain, respectively? Which chain has the largest number of restaurants NJ and PA, respectively, in this study sample?

3. Create four histograms in one graph using the starting wage data; starting from the left upper corner in a clockwise manner, NJ before the increase, NJ after the increase, PA after the increase, and PA before the increase. Add informative labels to each graph. Are the starting wages similar between NJ and PA before the increase? What about after the increase? Within each state, does the histogram look similar before and after the increase?

4. Compute the average number of full-time employees in NJ separately before and after the increase. Do the same for PA. What do these numbers tell you about the impact of the increase in minimum wage? Are these average differences large compared to the standard deviation of full-time employees before the change in each state?

5. Calculate the difference in the number of full-time employees between before and after the increase within each state. Summarize the data using two *smoothed* histograms in one plot (red solid line for NJ, and blue solid line for PA), with dashed lines for representing the mean difference of each state. Finally, calculate the difference in differences between the two states. (If you are curious, go ahead and conduct the same calculation for part-time employment and see if similar results are obtained.)