Problem Set 1

1. Derive the ATE decomposition result.
2. Use Q2data.csv to solve this question
3. Compute the ATE and report the value.
4. Compute the ATT and report the value.
5. Compute the ATU and report the value.
6. Compute the difference between ATE and the estimate of .
7. Verify the decomposition result using this data.
8. Give an example of a policy, whose ATE might not be equal to ATT.
9. Use nswre74.dta to solve this question. The dataset was provided by Rajeev Dehejia and it was used for his paper, "Causal Effects in Non-Experimental Studies: Reevaluating the Evaluation of Training Programs," Journal of the American Statistical Association, Vol. 94, No. 448 (December 1999), pp. 1053-1062.

The data was downloaded from <https://economics.mit.edu/faculty/angrist/data1/mhe/dehejia>

The data includes sample who participated in the National Supported Work Demonstration (NSW) program, which is to support the workers without enough job skills to reenter the labor market. The program was randomized, so the treated group received the job training whereas the control group did not receive it. The variable “treat” indicates whether the sample is the treated group or not. The variables “re74” and “re75” are the pre-intervention earnings. The program was implemented between year 1975 and 1977. The variable “re78” is the post-intervention earnings.

1. Run regressions to test whether the pre-intervention incomes are different between treatment and control group. Report either test statistic / standard error / p-value to support your conclusion.
2. Test whether the treated and the control have different demographic characteristics (age, education, race, marital status). (Hint : use the “ttest” (or “estpost ttest”) command. Look up the syntax by typing “help ttest”). Interpret the results and state any concern regarding identification.
3. Run a regression to estimate the average treatment effect of the program using the post-intervention income variable, “re78”. Explain why the regression estimand is the average treatment effect. Report either test statistic / standard error / p-value to support your conclusion.

(d) State the conclusion from the analysis. Was the program effective to raise the income of the workers?