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INTL 550–Python: Homework 2
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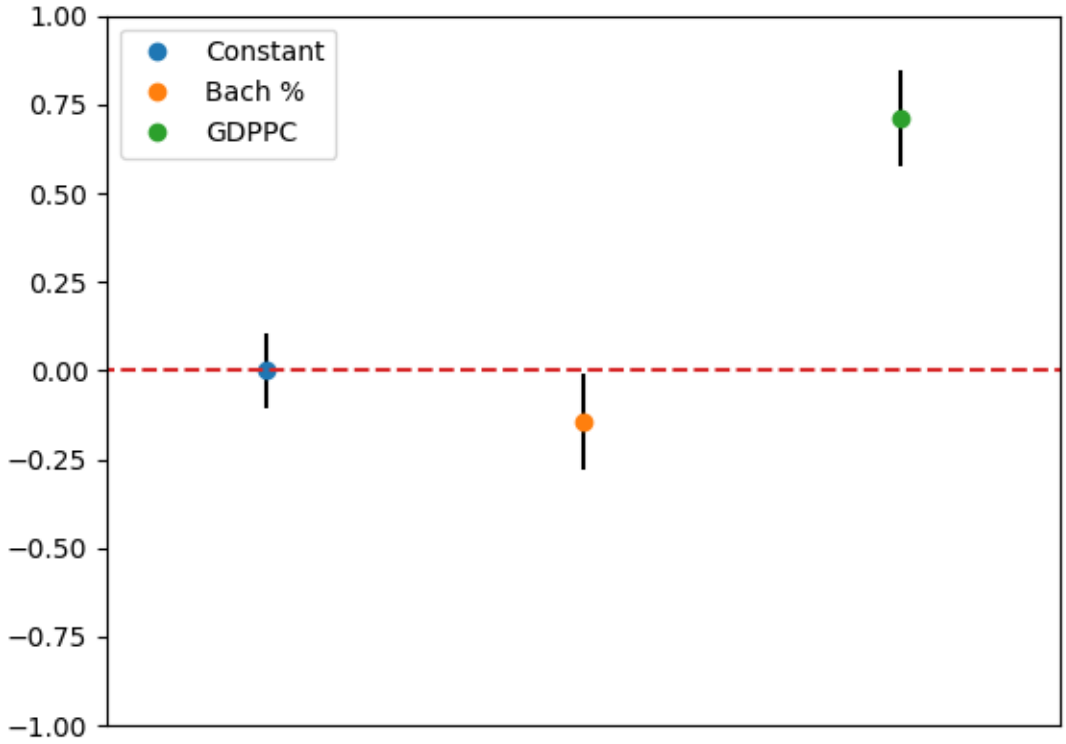
For my homework assignment I tested the hypothesis that a higher percentage of college graduates in a country will correlate with lower CO_2 emissions using simple regression. College graduates should engage in "greener" behaviors such as taking alternative transportation, reducing single-use plastic consumption, and supporting strong environmental policies. I utilized variables from the World Bank on CO_2 emissions per capita, the percent of adults in a country with at least a bachelor's degree, and GDP/capita as a control variable. I also limited my scope to countries within the World Bank's highest three income aggregates:high income, upper middle income, and middle income. This ensures that each country is, at least, moderately industrialized. I controlled for GDP/capita since richer countries should have greater latitude to pursue strong climate change policies without jeopardizing their economic development. This helps isolate the effect of education and should reduce the error in my model.

My regression returned the following values:



As shown, population education negatively correlates with CO_2 emissions with a coefficient of -0.144, and this result is statistically significant. Thus my proposed relationship finds support in this model. GDP/capita was also statistically significant and positively correlated with emissions wiht a coefficient of 0.713 showing that richer countries on average generate more environmental damage. Since I scaled all of my variables, β_0 was nearly zero and did not reach significance.

Although the regression results supports my hypothesis, it has quite a few limitations. First, on account of rampant missing values in the dataset, the population only included 205 observations, frustrating the results' generalizability. Second, the analysis could be improved with multiple other controls such as region or economic reliance on heavy industry. A fixed effects analysis may also eliminate some unobservable differences between countries. Finally, a stronger theoretical base could inform a more robust of the relationship between education and CO_2 emissions. However, these results suggest that the relationship deserves further research.