

INTL 472 ADVANCED DATA ANALYSIS IN PYTHON  
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HOMEWORK 2 REPORT

For the second homework, I wanted to examine the relationship between female unemployment in Turkey and GNI per capita in Turkey. I argued that they are negatively correlated. To test whether this hypothesis is true, I used World Bank API data and formed a model in which “National Female Unemployment” is the independent variable and “GNI per Capita” is the dependent variable.

Firstly, I imported the several modules that are helpful in the analysis and visualization, such as wbdata, numpy, matplotlib and seaborn. Then, I extracted the data from the source and excluded the time period that lack the necessary data. That way, I narrowed the time period of my analysis down to years between 1990 and 2019. Then, in regfunction.py, I developed the regression equations by defining independent variable(b), error term, dependent variable (y), variance and variance squared. The results of regression indicate that there is a positive correlation between the female unemployment and GNI per capita in Turkey.

The regression fitted as  $\text{GNI per Capita} = [-2783.3] + [978.3] * \text{National Female Unemployment}$ .

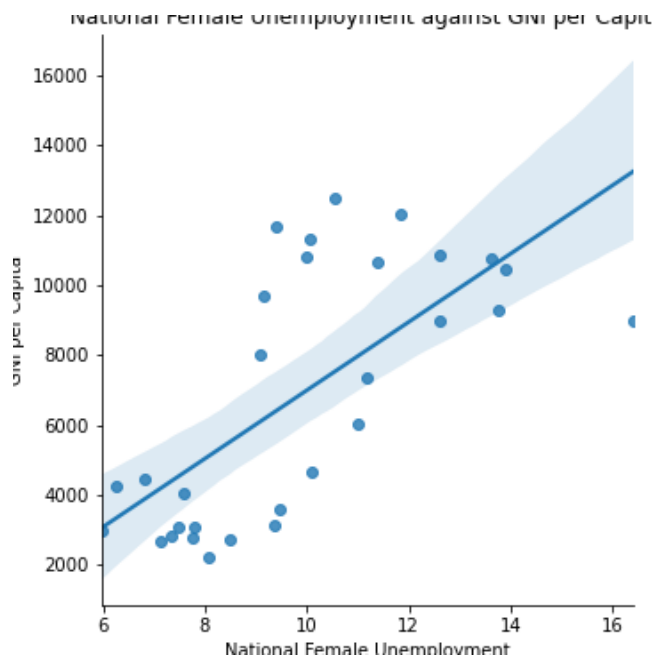
$B_0 = -2783.30458855$  and  $B_{\text{hat}} = 978.30008331$

Std errors for  $B_0$  and  $B_{\text{hat}} = [2012.6661068], [197.53080443]$

Conf interval for  $B_0$  and  $B_{\text{hat}} = [-6728.13015788], [1161.52098077]$ , and

$[591.13970663], [1365.46045999]$

With the help of seaborn module, I visualised the findings:



Prior to the analysis, it was assumed that the decline in unemployment would increase the GNI per capita, as employment is regarded as one of the productivity measures of the economy. This assumption is falsified by the analysis. Results are statistically significant as the confidence interval of  $B_{\text{hat}}$  does not contain 0.

Possible explanation can be related to the definition of “unemployment”. As the definition is based on the number of women who are seeking for a job, the increasing trend of female unemployment can be related to the increasing number of women who are registered as jobseekers. To assess the relation in detail, other factors related to the topic should be examined.