ECN 421 HW1

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February 2023

1 Question A2

Estimating Labor Demand with OEWS Survey Data

For this question we chose to estimate labor demand curves based on Bureau of Labor Statistics Occupational Employment and Wage Statistics survey data from a May 2021 industry census report. The data set itself had a wide variety of potential variables, but for simplicity we chose to only focus on Hourly Median Wages and Total Employment Numbers. In addition we conditioned on both "Broad" and "Detailed" occupation levels, where a "Broad" occupation is a basket of similar jobs, and "Detailed" is a granular occupation level.

Variable Descriptions

Hourly Median wages, is an estimate of the hourly median wage for a given worker in an occupation class. In addition the BLS defines wages as a wide range of potential payment types, including but not limited too: base rates, commissions, tips and production bonuses. More can be found here: $https://www.bls.gov/oes/oes_ques.htm$. Total Employment, is an estimate of the total number of people employed in a given occupation. Besides that a large number of other variables exist within this survey, but besides the variables mentioned above and the conditioning levels, no other data was analyzed. A large amount of data cleaning was conducted, which can all be found in the python scripts.

Findings

After cleaning each respective data set, we created two separate python data frames which we chose too work with. One of the data frames was conditioned on the "Detailed" occupation level and the other on the "Broad" occupation level. When we check the shape of each data set we find that the broad data set has a total of 433 observations and the detailed data set has a total of 753 observations. From here we plotted each variable of interest with a histogram too get an idea of the distribution of total employment and hourly median wages when we condition on the granularity of an an occupation class. We find that both have a non-normal right skewed distribution, regardless of the conditional. After plotting histograms we create multiple scatter plots to see if a negative linear relationship exists between total employment and median wages. We

find that when plotting total employment and median hourly wages, a very slight negative relationship does exist between the two variables. Further when we control for outliers and take any variable 3 standard deviations above the mean out of each respective data set, the negative linear relationship between total employment and median hourly wages strengthens. Overall this exercise, showed that even under very loose assumptions and subpar aggregate survey data, the labor demand curve is downward sloping.

Graphs

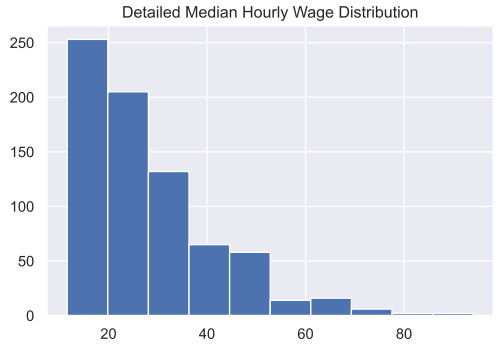

Figure 1: Detailed Wage Histogram

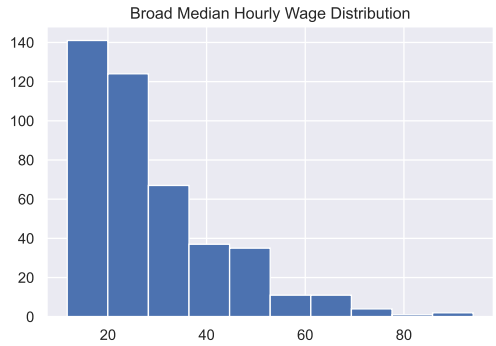

Figure 2: Broad Wage Histogram

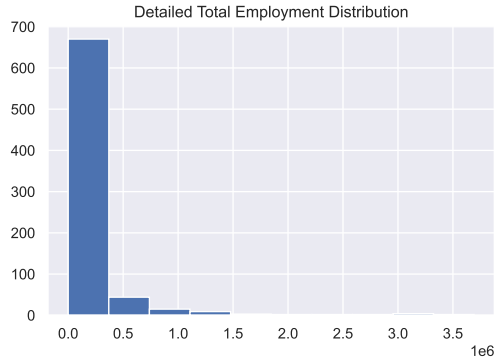

Figure 3: Detailed Total Employment Histogram

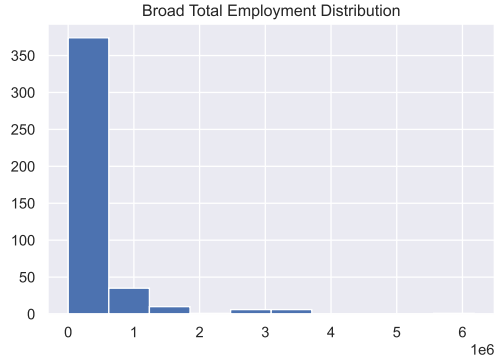

Figure 4: Broad Total Employment Histogram

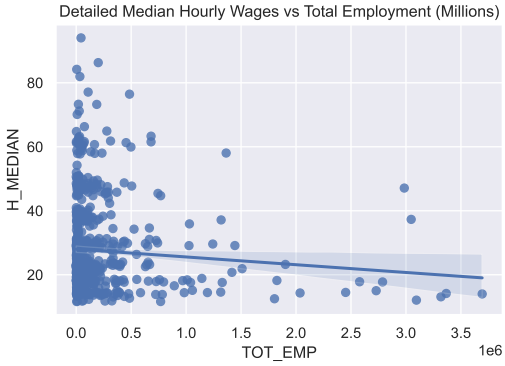

Figure 5: Detailed Wage vs Employment (With Outliers)

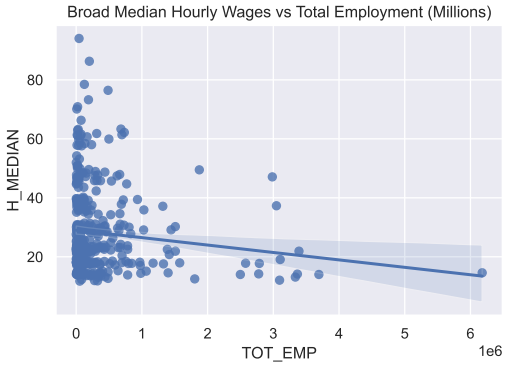

Figure 6: Broad Wage vs Employment (With Outliers)

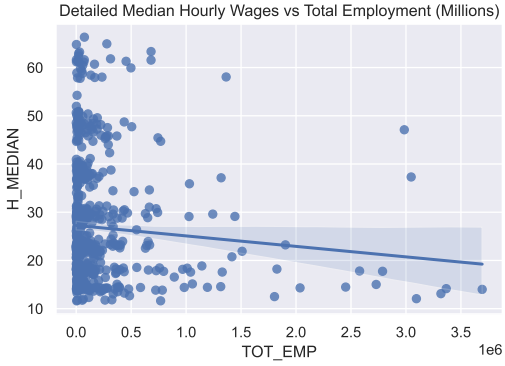

Figure 7: Detailed Wage vs Employment (Without Outliers)

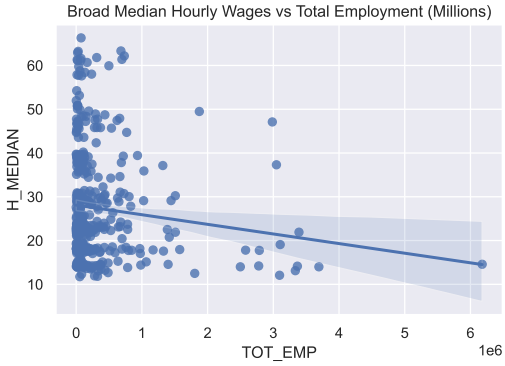

Figure 8: Broad Wage vs Employment (Without Outliers)