

Data Analysis 2- Assignment 1

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Introduction

Wages, Sex, and Highest Grade Completed: I expect to see an impact on wage gap and the highest degree completed. I want to explore whether this difference prevails regardless of gender. The question here would be, does it matter whether you are male or female if the highest degree you have completed is the same across both genders?

As an analyst I was assigned a task to perform a comparative analysis of differences in the hourly wage rate received by men and women as Chief Executives. I filtered the data as per my occupation to be able to conduct an accurate analysis. I included education level Bachelors and above, age to be 35 and above and working hours to be 40 and above. I also created dummy variables for education degrees and calculated the natural log of wages using hourly wages.

Interpretation & Analysis

In the sample taken with the occupation Chief Executives we have a total of 874 observations. Out of these 211 which makes around 24% are females.

Regression 1 in figure 6 reveals that controlling for all other factors, females as Chief Executives tend to earn 10.34% less than the men working as Chief Executives. It has a SE of 0.04 giving a confidence interval of [-0.18, -0.03]. This p-value of this coefficient is less than 0.01 as indicated by the asterisks. This indicates that the coefficient is statistically significant at the 0.01 level. We can also check the statistical significance by looking at the confidence interval. As the confidence interval does not contain the null hypothesis value i.e. 0, the coefficient is statistically significant. The intercept 3.7837 shows the average log earnings for males i.e. baseline group, in the filtered dataset.

For **Regression 2** I have taken Bachelor and Master as they include the greatest number of observations shown in figure 3. On average, controlling for other factors, individuals who have an education level of Masters earn 4.85% more than those who do not have an education level of Masters. Within our observations, those with a Bachelor degree earn 2.25% higher than those without a bachelor. Looking at the

Regression 3 is modelled using all the other education degrees excluding Bachelor. With a PhD which is the highest degree in our sample, our observations will earn only 0.5% more than those with a bachelors. However, our coefficient is not statistically significant, and we fail to reject our null hypothesis. We can possibly conclude that increasing levels of education beyond the bachelor's degree are correlated with higher income levels, but only up to a certain point. While we see the coefficient for the dummy variable on Masters is statistically significant, the case is not the same with the dummy variable on PhD.^[P, SEP] One study indicates that the income gap widens with a college degree, that is income gap between men and women with a college degree is wider than the income gap between men and women without a college degree, therefore I added an interaction term in the **Regression 4** model for education and gender. Regression 4 shows that on average, controlling for other factors, a one year increase in age corresponds to a %0.03 increase in log earnings. We can see that the coefficient for age is statistically significant at a $p < 0.05$. By taking age females earn around 10.4% less than their male counterparts.

Summary

Although all our regression models depict that women overall earn less than male with education and age but this does not necessarily mean discrimination against women as there are other factors that can be taken into consideration.

Figure 1A

sex		Mean	SD	Min	Max	N
Male	h_wage	47.00	15.00	3.20	72.12	663
Female	h_wage	43.72	17.05	7.10	72.12	211

Figure 1B

sex		Mean	SD	Min	Max	N
Male	lnw	3.78	0.40	1.16	4.28	663
Female	lnw	3.68	0.48	1.96	4.28	211

Figure 2

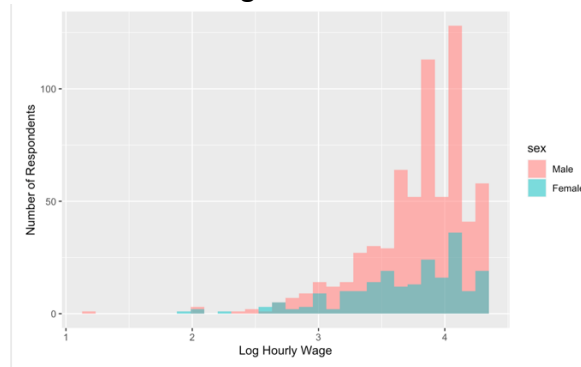


Figure 3

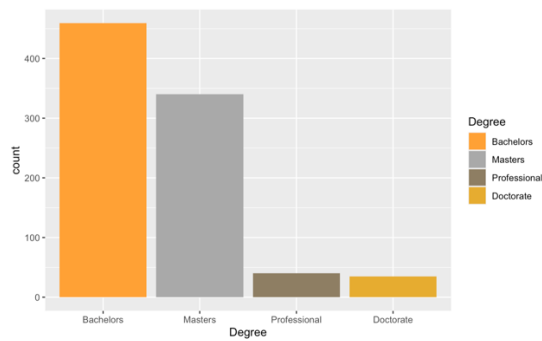


Figure 4

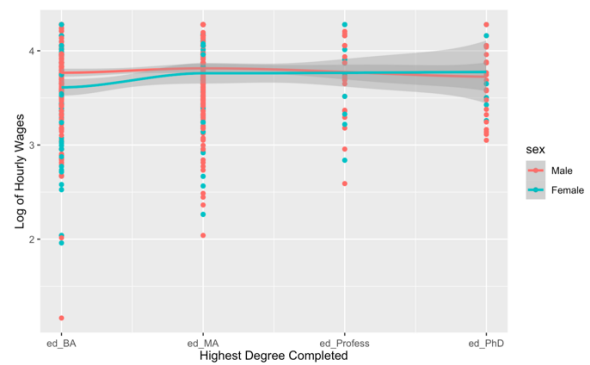


Figure 5

	(1)	(2)	(3)	(4)	(5)
(Intercept)	3.7837 **** (0.0155)	3.7759 **** (0.0463)	3.7535 **** (0.0214)	3.7672 **** (0.0225)	3.9791 **** (0.1203)
female	-0.1036 *** (0.0366)	-0.1007 *** (0.0364)	-0.1010 *** (0.0364)	-0.1553 *** (0.0530)	-0.1049 *** (0.0365)
ed_MA		0.0485 (0.0502)	0.0710 ** (0.0297)	0.0466 (0.0325)	0.0589 (0.0661)
ed_BA		-0.0225 (0.0500)			-0.0132 (0.0660)
ed_PhD			0.0057 (0.0656)	-0.0428 (0.0742)	
ed_Profess			0.0373 (0.0688)	-0.0099 (0.0791)	0.0313 (0.0894)
female:ed_MA				0.1029 (0.0763)	
female:ed_Profess				0.1657 (0.1564)	
female:ed_PhD				0.2064 (0.1519)	
age					-0.0042 ** (0.0020)
N	874	874	874	874	874
R2	0.0110	0.0173	0.0174	0.0215	0.0230