DA2 Assignment 1 - Gender and Teacher Wages

Data

From the CPS suvery I analysed higher education teachers' wages. First, in the governmental sector I didn't expect a difference in payments. Second, it is not as dominated by one gender as Nursery or primary schools.

I included only graduate level degrees (generally required for teachers) of age between 24 and 65, excluding self-employed people (not common) and people who reported working less than 20 hours a week. I found 2 people who reported less than 5 dollars per week (working 40+ hours). This may be against minimum wage laws, therefore, I excluded them.

I created additional columns for hourly wages for fair comparison and log hourly wages which I consider to be easier to interpret (difference in USD is less meaningful than in percentages to me).

Data Summary

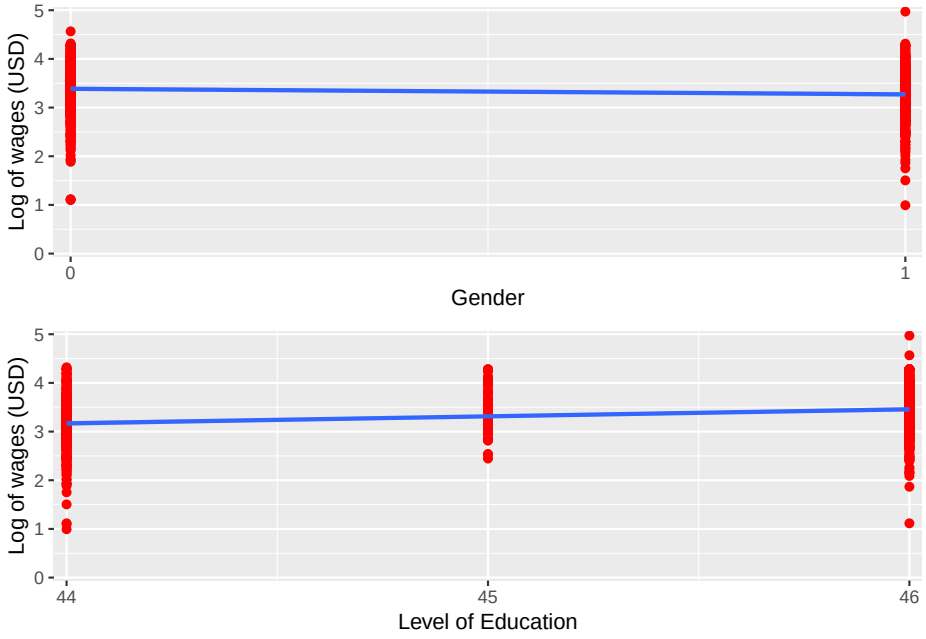
The main findings (further findings in appendix) from the below table are the following:

- On avg. men earn more in the sample and the spread of their wages is also bigger.
- The number of men and women in the sample are nearly equal with N = 949.
- Most post-secondary teachers hold a PhD or a Masters degree.

			Mean	SD	Min	Max	Median	P95	N
Gender	Female	Weekly wage	1198.51	651.96	54.00	2884.61	1153.84	2624.69	471
	Male	Weekly wage	1455.65	770.59	60.00	2884.61	1353.61	2884.61	478
Education	Masters	Weekly wage	999.08	630.24	54.00	2884.61	865.38	2252.33	387
	PhD	Weekly wage	1551.43	691.24	61.00	2884.61	1442.00	2884.61	493
	Prof	Weekly wage	1576.83	762.71	250.00	2884.61	1425.00	2884.61	69
		Hourly wage	31.67	15.80	2.70	144.23	28.82	62.50	949
		Ln Hourly wage	3.33	0.52	0.99	4.97	3.36	4.14	949

Simple Linear Regression Graphs

Based on the non-parametric graphs I created (Appendix), I chose simple linear models. Since I don't have much variation in my x variables the confidence of my findings will decrease.



Regression Models

Model 1 shows log hourly wages regressed on gender. We get an exact number: females earn on avg. 11% less than males.

Model 2 shows log hourly wages regressed on education. We see a positive association, a degree one level higher means 14.5% higher hourly wages on avg.

Model 3 regresses log hourly wages on both independent variables. We find that controlling on education the gender wage differences become smaller: 8.2% lower avg. hourly wages for women of same level of education. This means that on avg. males have higher level of education. The confidence intervals of Model 1 and 3 heavily overlap which means that we can't rule out that in the population the gender wage difference is the same with or without controlling for education.

Models 4 and 5 show the same multivariate regression with education transformed to a categorical variable. The gender difference is lower but still significant. In model 4 PhD is the reference in Model 5 Masters, because these have the highest sample sizes netting lower standard errors. Both models confirm the significant difference between Masters wages to PhD/Professinal wages among the same gender. There is no significant difference in PhD vs Professinal wages.

All findings in the models are significant at 95% confidence, except for the difference in professional and PhD degrees in Model 4. All other conclusions can be generalized to the population of Post-secondary teachers in the US in 2014 with 95% certainty.

	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	3.386**	−3.190**	−2.916**	3.479**	3.196**
	(0.025)	(0.790)	(0.804)	(0.026)	(0.035)
female	−0.114**		−0.082*	−0.075*	−0.075*
	(0.034)		(0.033)	(0.033)	(0.033)
grade92		0.145**	0.139**		
		(0.017)	(0.018)		
master				−0.283**	
				(0.035)	
professional				0.037	0.319**
				(0.060)	(0.063)
phd					0.283**
					(0.035)
Num.Obs.	949	949	949	949	949
R2	0.012	0.070	0.076	0.084	0.084
R2 Adj.	0.011	0.069	0.074	0.081	0.081

* $p < 0.05$, ** $p < 0.01$