We regressed salary on the years since someone earned their PhD. The model was significant, $F(1, 395) = 84.23$, $p < .05$, adjusted $R^2 = 0.17$. Specifically, the number of years since someone earned their PhD significantly and positively predicted their sales, $B = 985.3$, $p < .05$.

Next, we added in the second most related predictor: the number of years that someone has worked at their job, also known as their years of service. To do this analysis we regressed salary on both the years since someone earned their PhD and their years of service. The model was significant, $F(2,394) = 45.71$, $p < .05$, adjusted $R^2 = 0.18$. There was a significant unique effect of the number of years since one earned their PhD on their salary, $B = 1562.9$, $p < .05$, and also a significant unique effect of one's years of service on their salary, $B = -62.1$, $p < .05$.

We compared the second model to the first model.We found that there was a significant difference between the models. Specifically, the model with two predictors will produce a better prediction of salary than the model with only one predictor ($\Delta R^2 = 0.01$, $p < .05$).

OUTPUT FOR REGRESSING SALARY ON YEARS SINCE PHD

Call:

lm(formula = salary ~ yrs.since.phd, data = mydata)

Residuals:

Min	1Q	Median	3Q	Max
-84171	-19432	-2858	16086	102383

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	91718.7	2765.8	33.162	<2e-16	***
yrs.since.phd	**985.3**	107.4	9.177	**<2e-16**	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 27530 on 395 degrees of freedom

Multiple R-squared: 0.1758, Adjusted R-squared: **0.1737**

F-statistic: **84.23** on **1** and **395** DF, p-value: **< 2.2e-16**

OUTPUT FOR REGRESSING SALARY ON YEARS SINCE PHD AND Y

Call:

lm(formula = salary ~ yrs.since.phd + yrs.service, data = mydata)

Residuals:

Min	1Q	Median	3Q	Max
-79735	-19823	-2617	15149	106149

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	89912.2	2843.6	31.620	< 2e-16	***
yrs.since.phd	**1562.9**	256.8	6.086	**<2.75e-09**	***
yrs.service	**-629.1**	254.5	-2.472	**0.0138**	*

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 27360 on 394 degrees of freedom

Multiple R-squared: 0.1883, Adjusted R-squared: **0.1842**

F-statistic: **45.71** on **2** and **394** DF, p-value: **< 2.2e-16**

MODEL COMPARISON CODE

Analysis of Variance Table

Model 1: salary ~ yrs.since.phd

Model 2: salary ~ yrs.since.phd + yrs.service

Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
395	2.9945e+11				
394	2.9487e+11	1	4574160468	6.1118.	**0.01385 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

We subtract the adjusted r squared from Model2 – Model 1 to get the **ΔR^2**

- 0.1842 - 0.1737 **= 0.01**