HW5-Patrick Neyland

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## Question 1

### Part i

The sign will be negative—as an adult works more, they will get less sleep.

### Part ii

I think will be positive, however, I do not think it will be statistically significant. I think will be negative—the older someone gets, the less sleep they need.

### Part iii

The number of minutes is predicted to fall by 44.4 minutes.

### Part iv

Getting one more year of education, on average, holding all else constant, will result in a 11.13 minute decrease in the amount of sleep each week.

### Part v

Definitely not. With an of just 0.113, only 11.3 percent of the variation of sleep can be explained by these variables.

## Question 2

### Part i

Because the order of rank is in reverse numerical order. The higher the number of the rank for a particular school, the lower its rank. ### Part ii I expect to be positive. I expect to be positive. I expect to be positive. I expect to be positive. Cost of attendance is usually correlated with prestige and sometimes with quality of education. If a school is both prestigious and offers a quality education, I would expect its graduates to be offered high salaries.

### Part iii

If the median increases by one point, on average, the ceteris paribus difference in median salary will be an increase of 24.8 percent.

### Part iv

As the number of volumes in the library increases by 1 percent, on average, holding all else constant, the median starting salary will increase by 0.095 percent.

### Part v

I thinking ranking does matter to some extent, but perhps not as much as name recognition among the first you are interested in working in is. In this model, a 20 ranking difference would result in a 6.6 percent change in predicted starting salary. TO be honest, that difference does not seem to be significant. Other variables would be much better predictors.

## Question 3

The sample size is smaller so the variance of the model will be larger, leading to a smaller . FACT: As k increases, R squared is going to increase as long as correlation between x\_j and y is not equal to zero.

However, different sample sizes cannot be compared against eachother. These two models are working with different data, the model with

### Question 4

model4\_1 <- lm(price ~ sqrft + bdrms, data = hprice1)  
stargazer(model4\_1, type = "text")

===============================================  
 Dependent variable:   
 ---------------------------  
 price   
-----------------------------------------------  
sqrft 0.128\*\*\*   
 (0.014)   
   
bdrms 15.198   
 (9.484)   
   
Constant -19.315   
 (31.047)   
   
-----------------------------------------------  
Observations 88   
R2 0.632   
Adjusted R2 0.623   
Residual Std. Error 63.045 (df = 85)   
F Statistic 72.964\*\*\* (df = 2; 85)   
===============================================  
Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

### Part ii

The estimated increase in price will be $15,198.

### Part iii

The new increase with the sqrft specified for the new bedroom is $33118 THe result from this specification is much larger than in part ii because in part 2, it is assumed that the sqrft of the house remains the same despite the additional bedroom.

### Part iv

63.2 percent

### Part v

new\_df <- data.frame(sqrft = c(2438), bdrms = c(4))  
predict(model4\_1, new\_df)

1   
354.6052

354.6052\*1000

[1] 354605.2

The predicted selling price for the OLS model with the given parameters is $354,605.20

### Part vi

new\_df2 <- data.frame(sqrft = c(2438), bdrms = c(4))

## Question 5

### Part i

summary(discrim$prpblck)

Min. 1st Qu. Median Mean 3rd Qu. Max. NA's   
0.00000 0.01165 0.04144 0.11349 0.12106 0.98166 1

#stargazer(lm(psoda~prpblck+income, discrim), type = "text", digits = 7)  
stargazer(lm(speed~dist, data = cars), type = "text")

===============================================  
 Dependent variable:   
 ---------------------------  
 speed   
-----------------------------------------------  
dist 0.166\*\*\*   
 (0.017)   
   
Constant 8.284\*\*\*   
 (0.874)   
   
-----------------------------------------------  
Observations 50   
R2 0.651   
Adjusted R2 0.644   
Residual Std. Error 3.156 (df = 48)   
F Statistic 89.567\*\*\* (df = 1; 48)   
===============================================  
Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01