Project: Diamond Prices

Complete each section. When you are ready, save your file as a PDF document and submit it in your classroom.

Step 1: Understanding the Model

Answer the following questions:

1. According to the model, if a diamond is 1 carat heavier than another with the same cut, how much more should I expect to pay? Why?

- A diamond with one carat heavier will result in $8,413 increases in the price. The regression equation shown that the coefficient for a carat is 8,413, so for every increase in the carat, the price will increase by the same amount of the carat's coefficient.

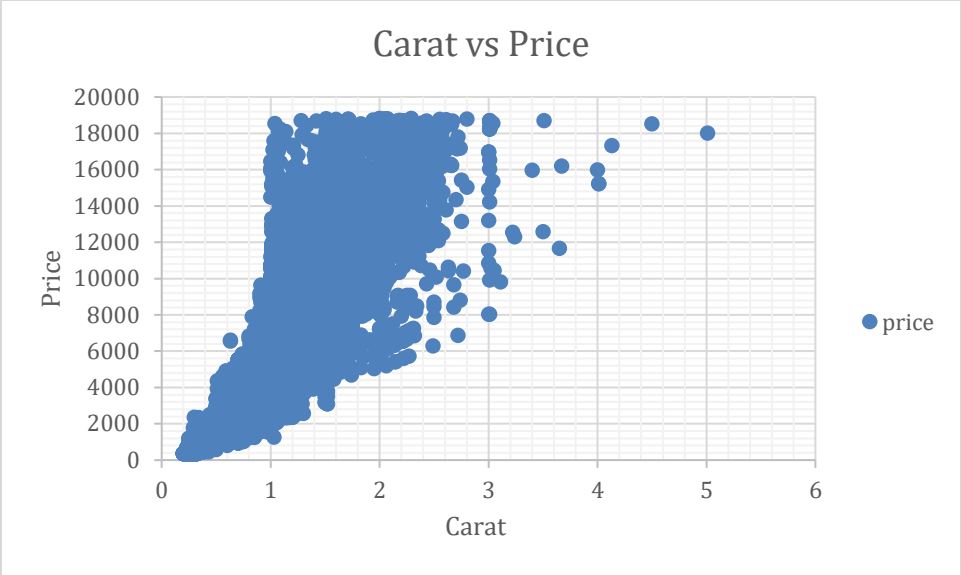
2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?

- The regression equation is Price = -5,269 + 8,413* Carat + 158.1* Cut + 454* Clarity
- Then, we will substitute the different variables with their values in the question.
- Price= -5,269 + 8,413* 1.5 + 158.1* 3 + 454* 5
- Price= $10094.8

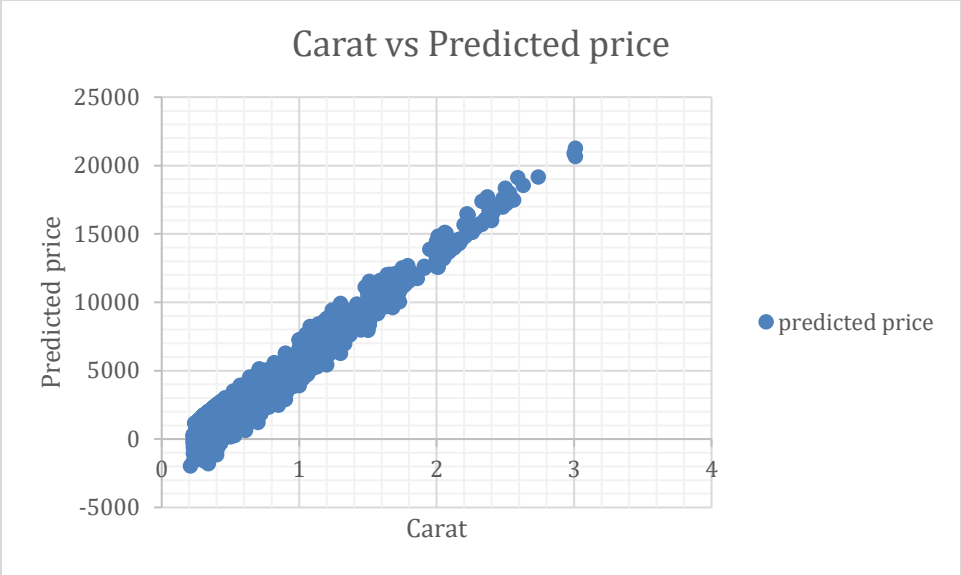
Step 2: Visualize the Data

Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.



2. Plot 2 - Plot the data for the diamonds for which you are predicting prices with carat on the x-axis and predicted price on the y-axis.



   - **Note**: You can also plot both sets of data on the same chart in different colors.

3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?

- After looking to both plots especially the second one, we can easily see that the carat and the predicted prices go together to make a positive correlation relationship. Therefore, yes, I am confident in the model's ability to predict the prices that the jewelry company will pay for the diamonds according to their weights (carat).

Step 3: Make a Recommendation

Answer the following questions:

1. What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.

- I recommend the jewelry company a bid of $8,213,465.932. I arrived at this number by multiplying the predicted price for the whole set $11733522.76 by 0.70 to get the recommended bid price of $8,213,465.932, taking into consideration that the jewelry company purchases diamonds from distributors at 70% of the whole retail price.