Project: Diamond Prices

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?

   Ans1. If a diamond is 1 carat heavier then it would result in an additional $8,413 in price (with the same cut and clarity). The formula created by the regression determined that the coefficient for the carat is 8,413, so for every increase in the value of carats the price will increase by the amount of the 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?

   Ans2. The formula for predicting price is: -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**
   After putting respective values in the above formula:
   Predicted Price = -5,269 + 8413*1.5 + 158.1*3 + 454*5
   = $10,094.8

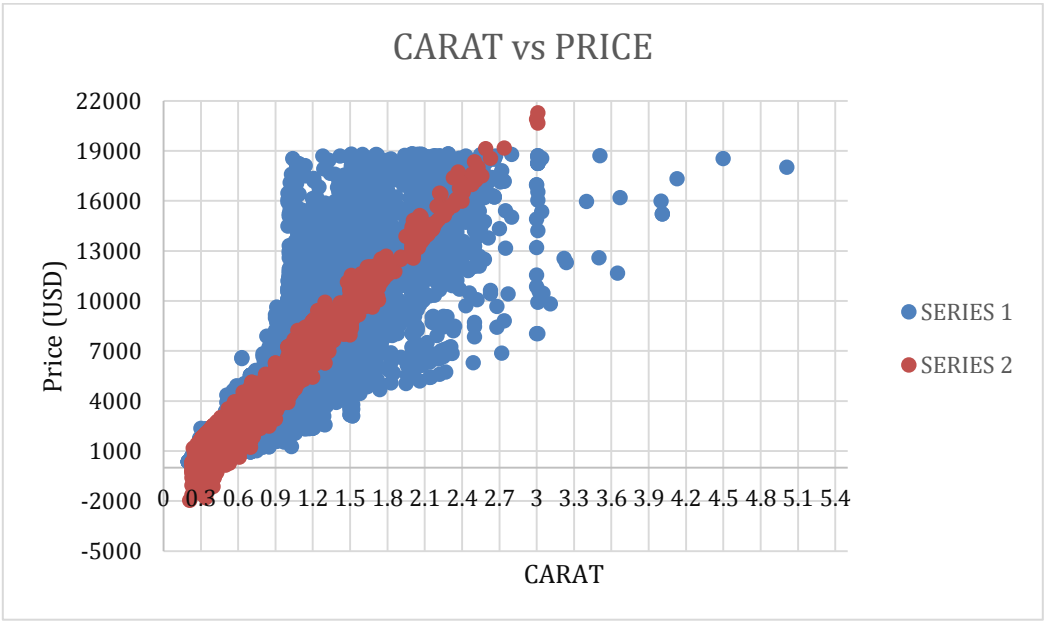
Step 2: Visualize the Data

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?

Ans .



The predicted prices are more compact than the actual data is. This is because we are not accounting for everything that effects prices like value of the cut and clarity as given in the regression model. After looking at this plot, the model appears on average to predict the prices for most of the diamonds. But for some diamonds the cost of the price is negative which means that some diamonds are of very poor quality

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.

   Ans. I recommend a bid of $8,213,466.1. I arrived at this number by using a formula from the regression model provided that was based on previous diamond prices and applied it to the diamonds that were up for bid. The company purchases diamonds from distributors at 70% of the price, so I multiply the predicted amount 11733523 by .70 to get the final predicted bid of $8,213,466.1