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?

   From the regression model, we have the formula of Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity.
   For a diamond that is 1 caret heavier, with the same cut and the clarity, the price will be more by the coefficient of the Carat in the regression model. Therefore, you should expect to pay 8,413 more.

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?

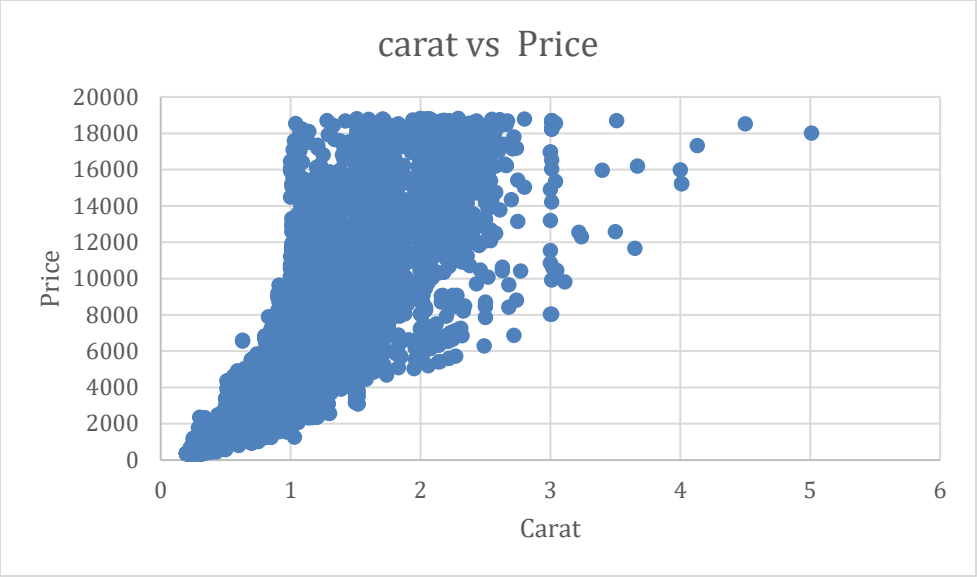
   The equation obtained from the regression model is
   Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity,

   For carat =1.5, cut=3, anc clarity=5, the price will be calculated as
   Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
   = -5,269 + 8,413 x 1.5 + 158.1 x 3 + 454 x 5
   = 10,094.8
   The model will predict to pay 10,094.8

Step 2: Visualize the Data

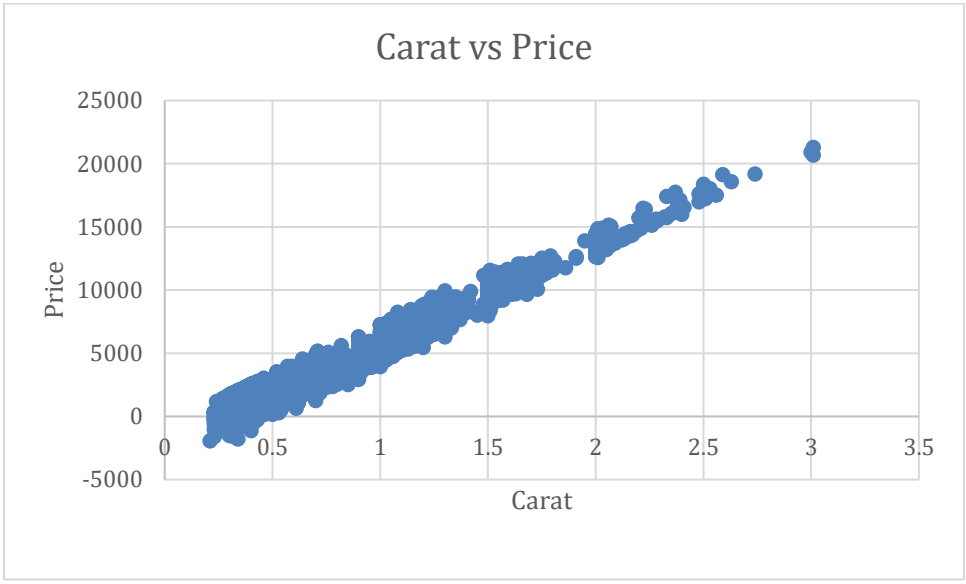
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

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.

For predicted price



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

The graph with the predicted price is more compact than the graph with the given price. The reason for this can be the fact that we are not considering the other attributes that

affect the price of the diamonds. We had cut and clarity in our formula but even that will not completely account to all variation.

Looking at these plots, the model seems to predict price ok, but it can differ in many cases. There seems to be diamonds with less carat but very high prices. The formula may do decent job for when finding out the price for many diamonds in average.

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 would recommend the jewelry company to bid at $8,226,065.96. I arrived at this number from the regression model based of previous data and applied it to the diamonds that were on bid. Since, the jewelry company has a margin of 30 percentage, I multiplied the predicted amount $11,751,522.8 by 0.70 to come to the conclusion.