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?

   The formula is given as Price **= -5,269 + 8,413 x** Carat **+ 158.1 x** Cut **+ 454 x** Clarity
   Now supposing all variables except the Carat is kept same than the extra cost for a 1 carat is 8413$. This can be found as the coefficient of carat in the formula is 8413.

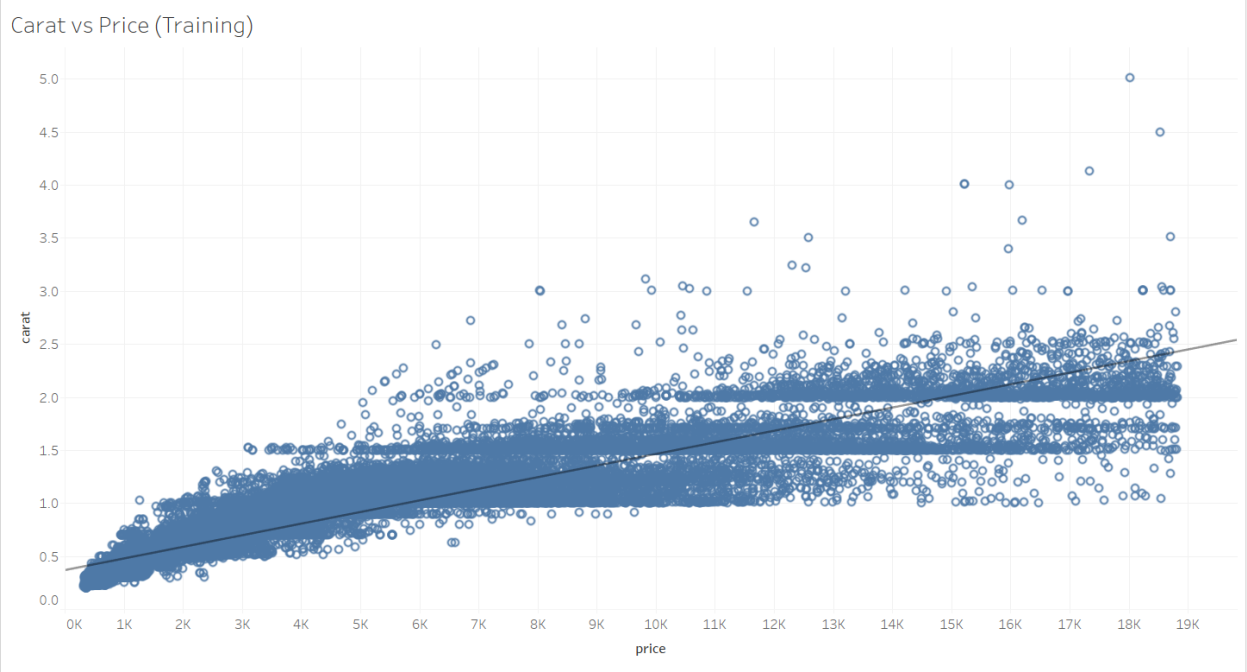
2. If you were interested in a 1.5 carat diamond with a Very Good cut (represented by a 3 in the model) and a VS2 clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?

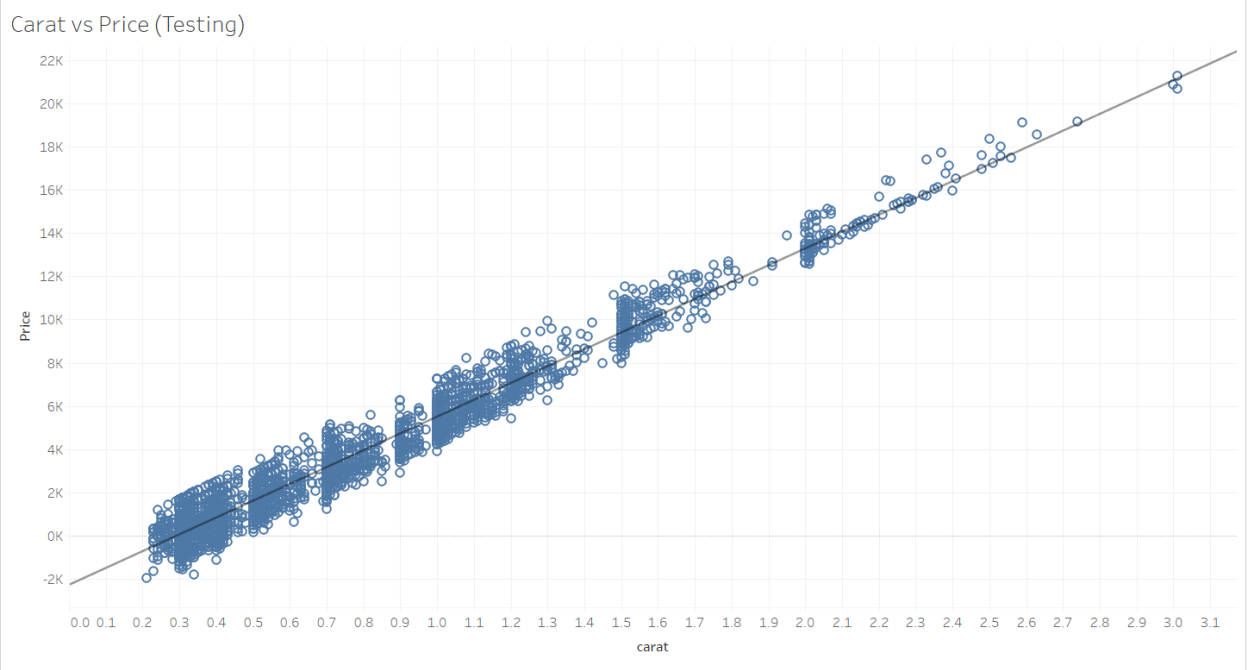
   The formula is given as Price = -5,269 + 8,413 x Carat **+** 158**.**1 **x** Cut **+** 454 **x** Clarity
   Plugging in values as Carat = 1.5 ; Cut = 3 ; Clarity = 5
   We get **Price = 10094.8**

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?





From the above plot of Carat vs Price for training we can see that the data is not evenly spread across the trend line with a few outliers. This goes on to show that only Carat does not determine the Price of a diamond and there are other parameters that do affect the Price.

We can see that the testing data is fairly evenly spread across the trend line with no outliers. After looking at this plot we can say that the model appears to predict the prices accurately.

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.

The price that I would recommend the company to buy the 3000 diamonds is **82,13,465.932$**. I have arrived at this number by calculating the total of all the predicted prices and multiplying it by 0.7 to account for the distributor discount i.e (11733522.76 *0.7)