<u>Project: Diamond Prices</u>

Complete each section. When you are ready, save your file as a PDF document and submit it here: https://classroom.udacity.com/nanodegrees/nd008/parts/235a5408-0604-4871-8433-a6d670e37bbf/project#

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?

   o One additional carat would result in additional $8,413 in the price. The formula generated by the regression determines that the coefficient of carat is $8413. Increase in 1 carat will result in an addition of coefficient in the final price.

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?
   o The Formula:
      Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
      ▪ -5,269 + 8,413*1.5 + 158.1*3 + 454*5
      ▪ Price = $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.
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?
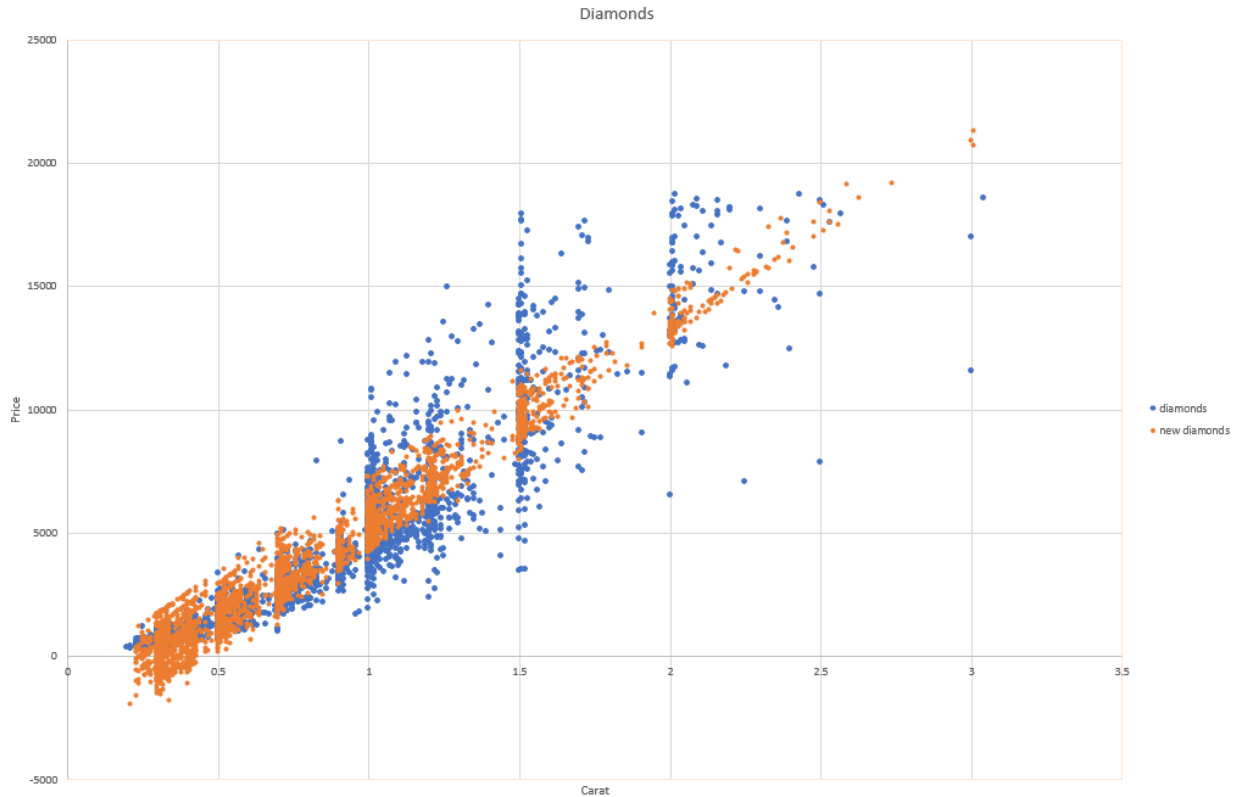
The predicted prices and the actual prices fall in the same range for weight of 0.5-1 carat. Over 1 carat the predicted prices are more compact while the actual prices are more scattered. This could be due to the factors not included in the model. Such as in many regions there could be obliged taxation on sale of heavier diamonds.

After looking at the plot of the model, it could be concluded that the model is fair predictor of prices for the diamonds with weights ranging from 0.5-2.5. Below 0.5 the model predicts a negative value and Above 2.5 the values are very off. Between the range of 0.5 – 2.5 the model can be used to predict prices for purchase of several diamonds at once.

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 sum for all predicted prices is $11733522.1. The company generally purchases diamonds from distributors at 70% of that price, by multiplying the above resultant by 0.7 answer is $8,213,465.