Predictive Analytics for Business Nanodegree

Project: Predicting Diamond Prices

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Step 1: Understanding the Model

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?

   I should expect to pay for a diamond with 1 carat heavier than another and with the same of cut and clarity is **more than $8,413**.

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?
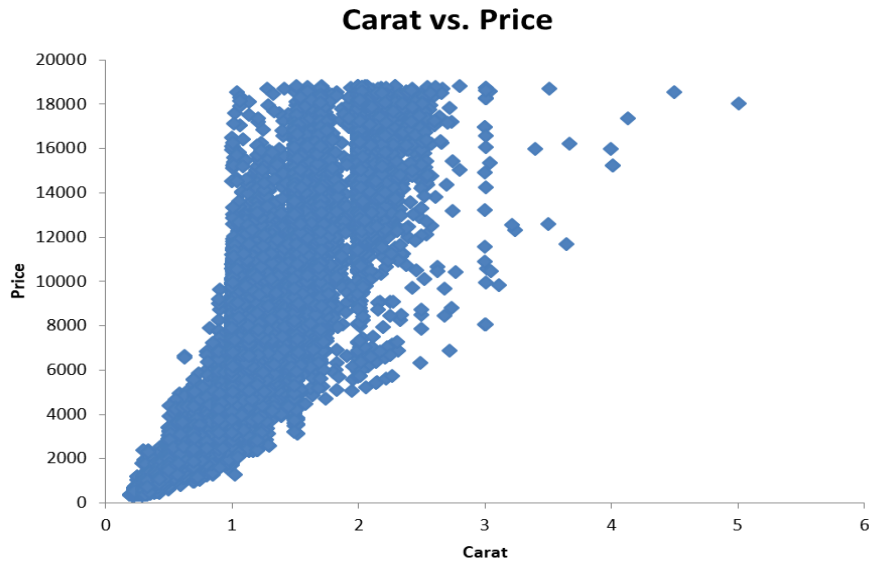
   Price = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**
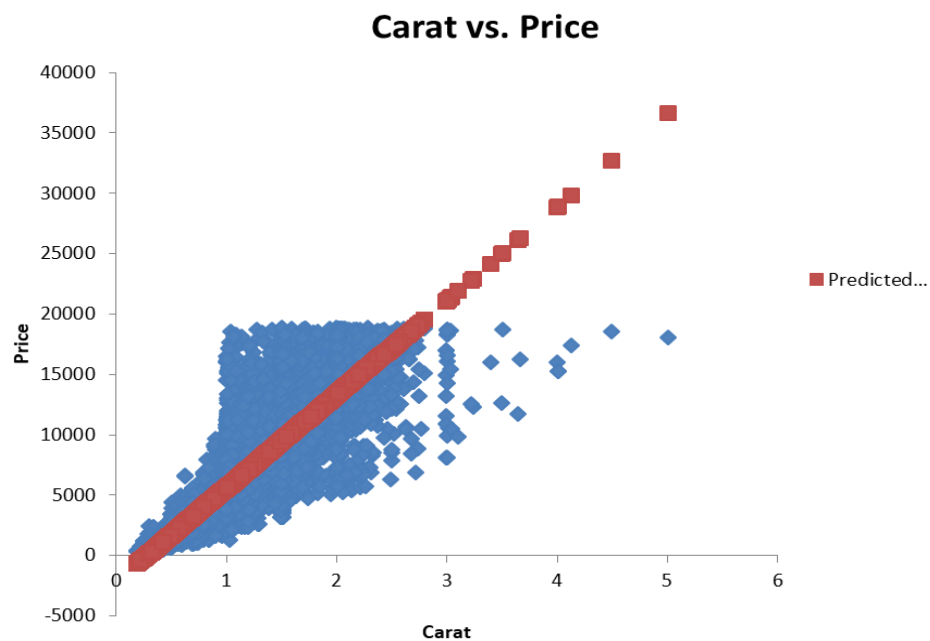   **Price** = -5,269 + 8,413 x **1.5** + 158.1 x **3** + 454 x **5**
   Price = **10,094.8$**

Step 2: Visualize the Data

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

Carat vs. Price

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.

Carat vs. Price

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

From Carat vs. Price plots above, there is a positive relationship between carat and price. Once the carat has increased the price also increases. But, there is one thing doesn't make sense when the carat below 0.5 the price below 0 with a negative value. In addition, there is a strong positive correlation between carat and price when carat is 0.5 and below 3.

Step 3: Make a Recommendation

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

The price that I recommend the jewelry company to bid is **8,231,198$.** I used the **Linear Regression Model** for predict the price. I arrived to this number by calculating the sum of predicted price for 3000 diamonds which is 11758854. Then, I apply 70% of the summation of the predicted price for the bid price.

Recourses:

- https://www.statisticshowto.datasciencecentral.com/probability-and-statistics/regression-analysis/find-a-linear-regression-equation/
- https://www.dummies.com/software/microsoft-office/excel/how-to-use-the-regression-data-analysis-tool-in-excel/
- https://www.rwu.edu/sites/default/files/downloads/fcas/mns/calculating_and_displaying_regression_statistics_in_excel.pdf
- https://www.analyticsvidhya.com/blog/2015/08/comprehensive-guide-regression/