Project: Diamond Prices

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?

    - **The diamond with a heavier than 1 carat will result in an additional $8,413.00 in price. The formula of the regression determined that the coefficient for a carat is 8,413, so for every increase in the number 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?

    The formula is Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity

    - **by plugging in the values for the different variables.**
    - **Price = -5,269 + 8,413 x 1.5 + 158.1 x 3 + 454 x 5**
    - **Price = $10,094.80**

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?

The predicted prices are more compact than the actual data is. As a result of the fact that we are not accounting for everything that impact prices. There are many reasons than carat that may affect it. We used cut and Clarity factored into our formula ,however this does not mean that we include all the variation that effect the price. For instance, this formula could look very different depending on the country you are training the model on.

After looking at this plot the model appears on average to predict the prices ok, but it may not show very well for certain diamonds. As we can see the diamonds with negative value evermore outlier diamonds with only 5 carats but sold for $ 18,018.00. While the formula may not be accurate for an individual diamond, it should do a decent job at predicting the price we should pay for several diamond at once since it on average looks representative.

Step 3: Make a Recommendation

- What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.
    - **I recommend a company to bid for the set of 3,000 diamonds of $ 8,213,465 . I arrived at this number by using a formula from the regression model provided that was based on previous diamond sales and applied it to the diamonds that were up for bid and sum all the predicted prices I got . According to the information that the company generally purchases diamonds from distributors at 70% of that price, I multiply the predicted price $11,733,522.76 by 0.70 to get the final predicted bid of $8,213,465.**

Sources….

All informations have been used for purely educational purpose .

https://classroom.udacity.com/