Predictive Analytics for Business Nanodegree

Project 1: 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 with the same of cut and clarity is more than $ 8,413

Let explain how got $ 8,413, assume that Diamond A has attributes (1) Carat, (1) Cut and (1) Clarity. For another side Diamond B that has attributes (2) Carat, (1) Cut and (1) Clarity.

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

Diamond A: -5,269 + 8,413 x 1 + 158.1 x 1 + 454 x 1= 3756.1

Diamond B: -5,269 + 8,413 x 2 + 158.1 x 1 + 454 x 1= 12169.1

Diamond A – Diamond B= 3756.1 – 12169.1 = 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?

The formula is 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

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 new diamonds dataset has a strong positive correlation between price and carat. However, for some cases the price is negative which indicates that is not a good idea to use linear regression model for finding prices.

The old diamond prices and carat did not have a strong correlation. There are other factors like cut and clarity, which affects the price of diamonds.

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 11733522.76. Therefore, I multiply the predicted amount 11733522.76 by .70 to get the final predicted bid of $8,231,198$.