Project:

Diamond Prices

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?

    - The 1 carat heavier diamond would result in an additional $ 8,413 in price, by the formula(Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity) , The formula created by the linear regression model determined that the coefficient for a carat is $ 8,413, so for every increase in the number of carat the price will increase by the amount of the coefficient ($ 8,413).

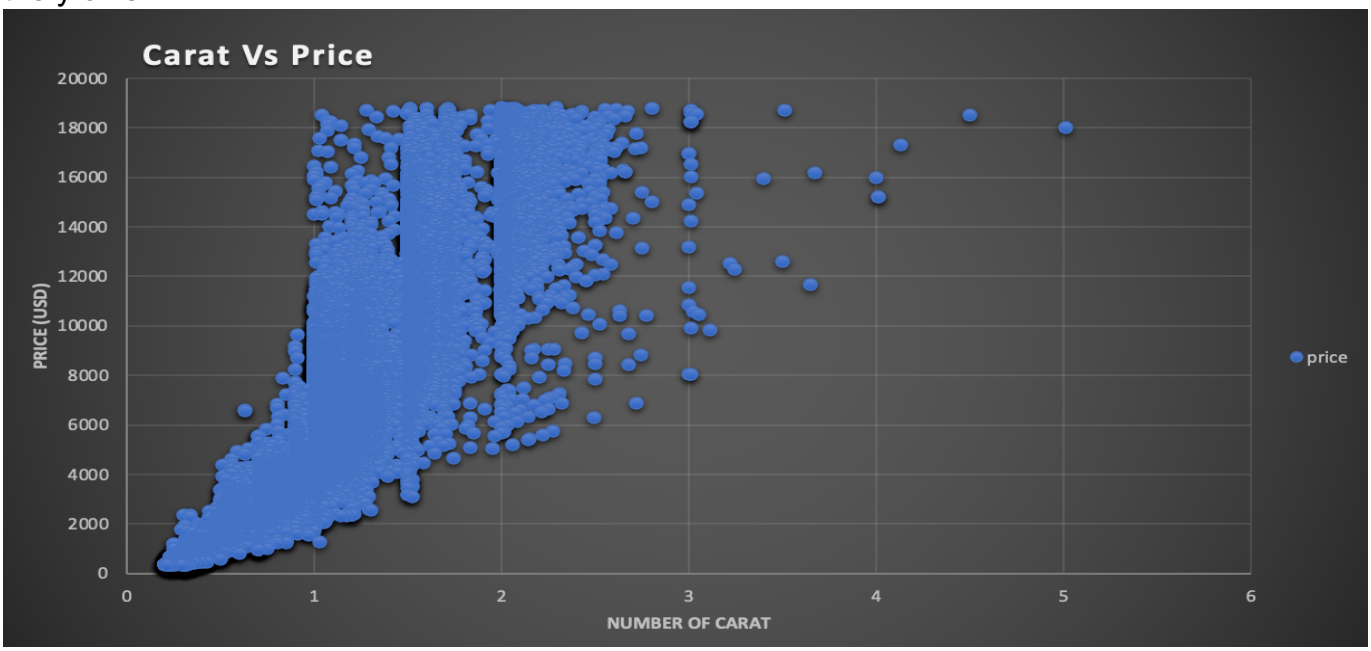
2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?

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

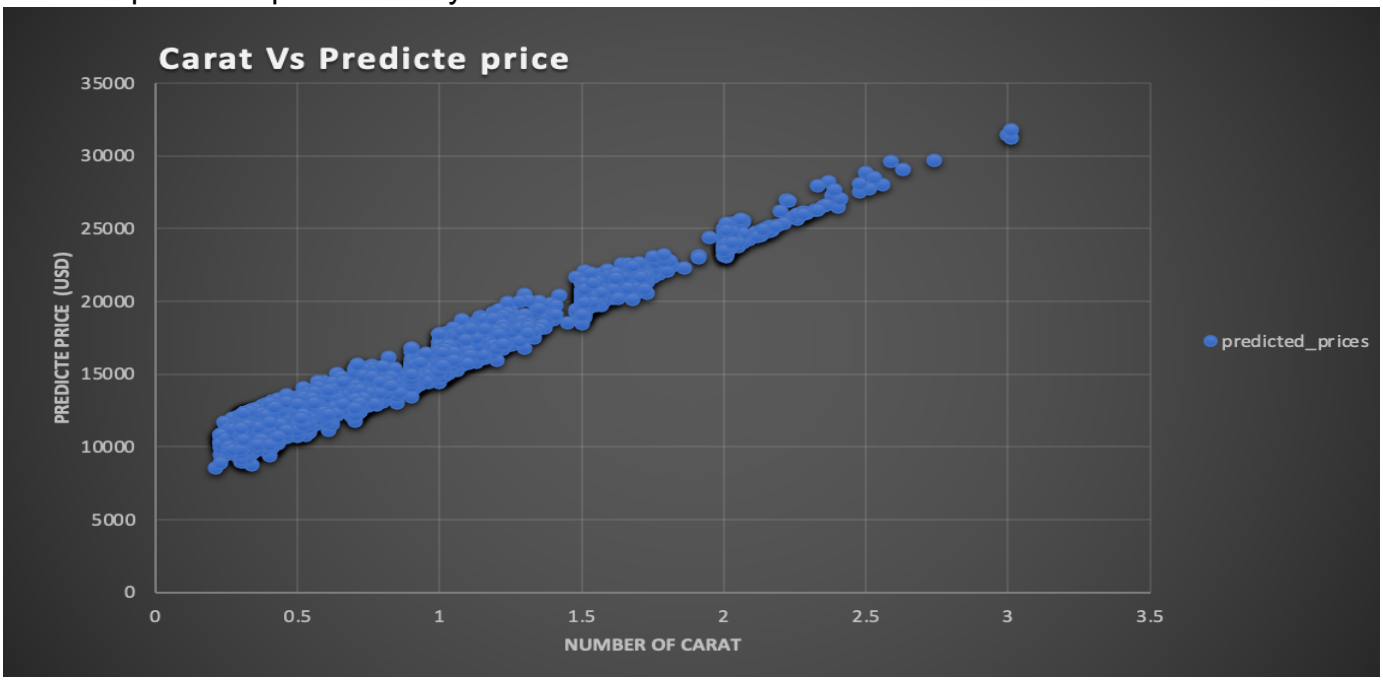
Step 2: Visualize the Data

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.



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

- Yes I do , After looking at this plot the model appears on average to predict the prices with carat (3,000 diamonds), which was a good, the difference between two plots that after calculating predicting prices the prevalence rate with carat became better and also the price became more accurately than before according to the classifications between one diamond to another diamond ,the predicted prices are more compact than the actual data.

Step 3: Make a Recommendation

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

- I recommend a bid of $2,617,766.19. I arrived at this number by using a formula from the linear regression model provided, I have calculated the sum of predict prices of 3,000 diamonds which was the result of the sum predict prices is $11,733,522.76 after I have calculated the sum of predict prices I multiply the total predict prices to 70% to extract the bid price($2,617,766.19) based on ("The company generally purchases diamonds from distributors at 70% of that price, so your recommended bid price should represent that").