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?

   It would cost $8,413 more for 1 carat increase in the diamond with cut and clarity being same.

   Because according to the below model

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

   8,413 is the coefficient of Carat and the price will increase by 8,413*(Carat increase).

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?

   Using the model price will be calculated to

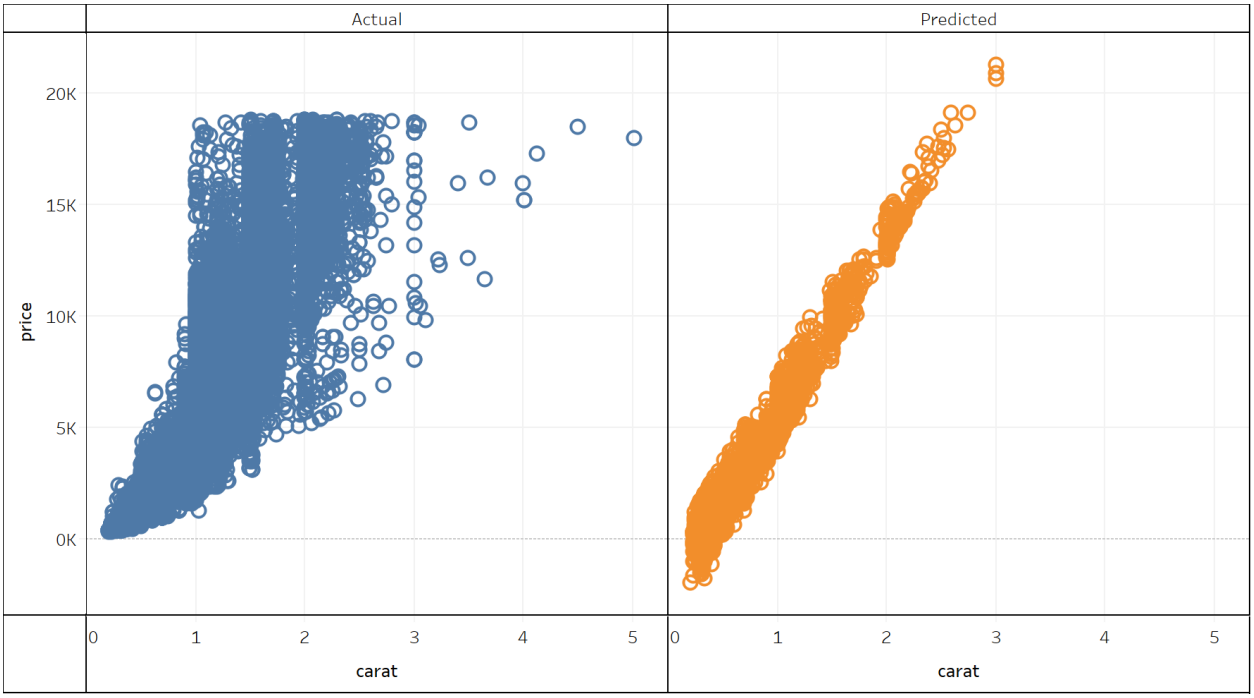
   Price = - 5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
   = - 5269 + 8413 x (1.5) + 158.1 x (3) + 454 x (5)
   = $10094.8

   The diamond would cost $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 actual data shows that even lower carat diamond also be priced higher.
    - The predicted price for diamond below 0.5 carats is tending to negative price. Hence the model can't be considered for the scenario.
    - In actual data the highest price of the diamond is $18.5k but predicted data is showing prices higher than $20k.
    - Carat might have strong dependency but model might require more tuning to predict values near to the actual values.

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.

2998	1.05	Very Good	3	G	SI1	3	5400.95
2999	0.7	Fair	1	G	SI1	3	2140.2
3000	1.01	Very Good	3	F	SI1	3	5064.43
				Total Price			11733523
				70% of the total price			8213466

By the calculation results

The bid price is recommended to be **$8,213,466**.