Project: Diamond Prices

Complete each section. When you are ready, save your file as a PDF document and submit it in your classroom.

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 one additional carat heavier in diamonds will contribute $ 8,413.00 in diamond price. This based on the coefficient that generated from the regression of past diamond data which is $ 8,413.00 for carat. So that for every additional one carat. Will give additional prices by the amount of coefficient

KP: Awesome! The diamond prices are absolutely correct and well laid out.

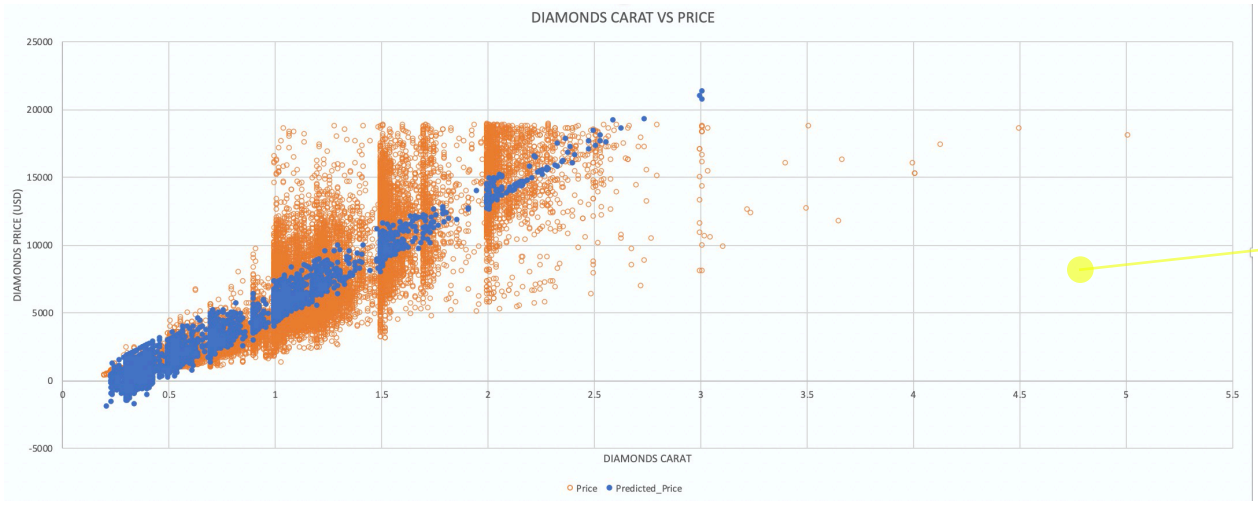
2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?
    - The regression formula for Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
    - From model that 1.5 carat diamond with a Very Good cut and VS2 clarity rating will have predicted price = -5,269 + 8,413*1.5+ 158.1*3 + 454 *5
    - Price = $ 10,094.80

KP: Awesome! This is perfect

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 show more uniform compared to the historical prices. This because we only show the comparison between the carat and the prices and not consider other variables. One interesting facts about this predicted price is the price of diamonds can have less than 0 in some point where the carat is less than 0.5.

After looking this plot, this prediction seems ok to predict the price of diamonds above 0.5 carat. However we need to adjust the prediction for the diamonds below 0.5 so that this diamonds will not have negative prices.

KP: Awesome! The scatter plot looks good and the x-axis and y-axis is well labelled

KP: Great observations! Additionally, there are other factors which might be useful to consider apart from carat such as clarity, cut, color etc

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.
    - Considering the model prediction, I recommend a bid of $ 8,213,466.00. This number arrived by sum all the predicted price either its positive or negative and then factored the margin of company want which is 30%. So I multiply the total predicted amount of $ 11,733,523 by 70% and get the final bid of $ 8,213,466.00.

KP: Awesome! The final bid price is absolutely correct and well laid out.