Project: Diamond Prices

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 diamond 1 carat heavier than another would cost $8413 more.The formula created by the regression determined that the coefficient for carats 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?

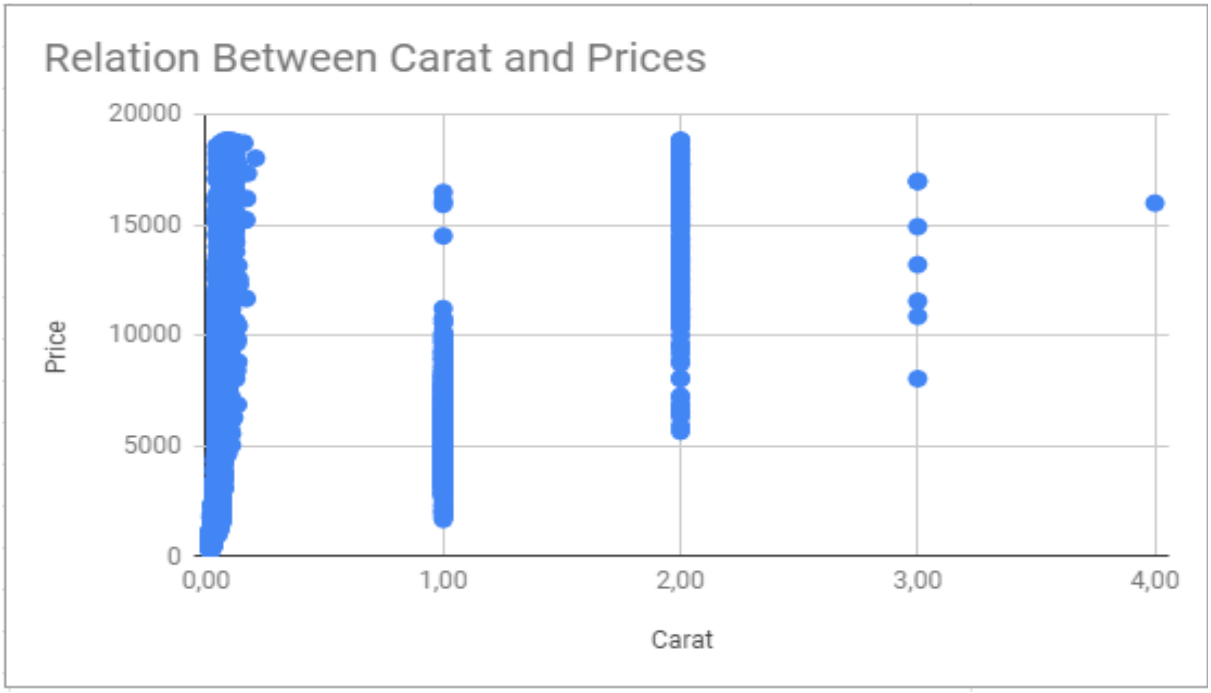
- The formula is: Price = -5,269 + 8,413 x Carat + 158.1x Cut + 454 x Clarity
- After plugin the values into the formula it should look like this:

  Price = -5,269 + 8,413 x 1.5 + 158.1 x 3 + 454 x 5

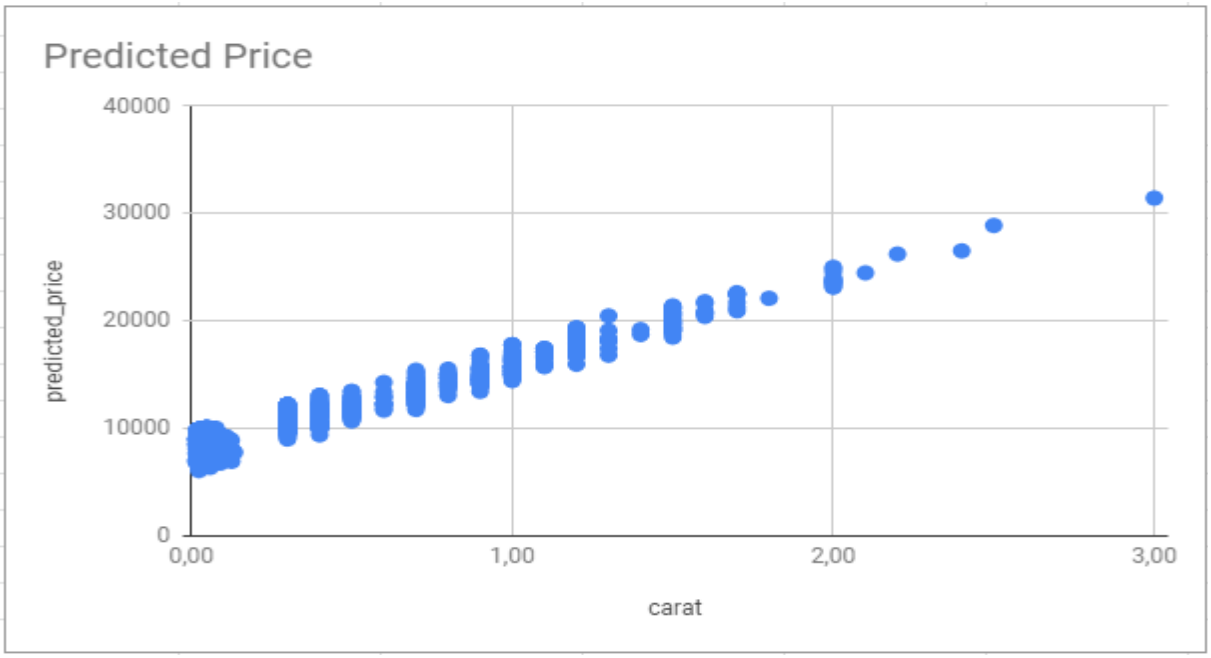
  The predicted price is $10094,8

Step 2: Visualize the Data

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. This is because there are other factors other than carat that affect the price. The model on average values seems to be on point but there are some diamonds wich prices are not predicted well enough. Since we need to predict the price of a lot of diamonds the model works well because on average the predictions are on point.

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.

I recommend to offer to buy the diamonds for the price of $20,177,007.48 since the sum of the predicted diamond prices is of $28,824,296.4 and the company need to make a profit of at least 30%. The recommended price will allow the company to make the needed profit by selling the diamonds at the price of $28,824,296.4

$28,824,296.4 * 0,7 = $20,177,007.48