Project: Diamond Prices

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?
    - The diamond with one carat heavier would result in an additional $8,413.00 in price. The formula created by the regression determined that the coefficient for the diamond carat is 8,413.00, so for every increase in the carat of diamonds 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 + 158.1 x Cut + 454 x Clarity
    - For a 1.5 carat diamond with a Very Good cut and a VS2 clarity rating, the calculation will be: price = -5,269 + 8,413 x 1.5 + 158.1 x 3 + 454 x 5
    - Price = $10,094.80

Step 2: Visualize the Data

1. Plot 1:

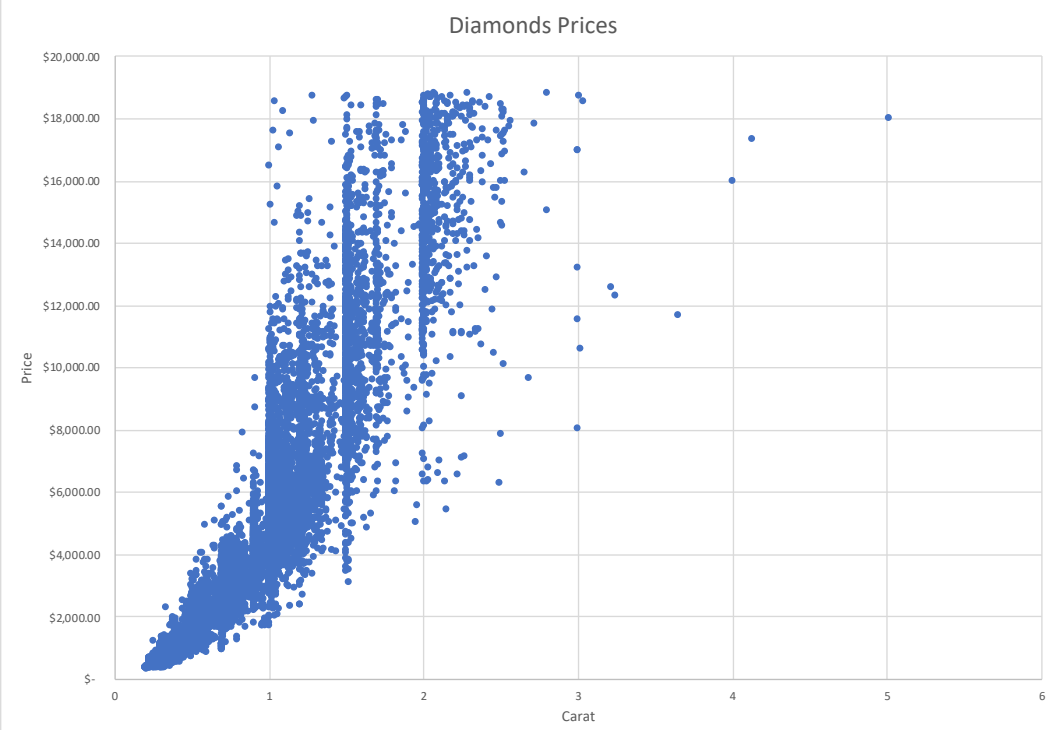

Figure 1 Current Diamonds Prices

2. Plot 2:

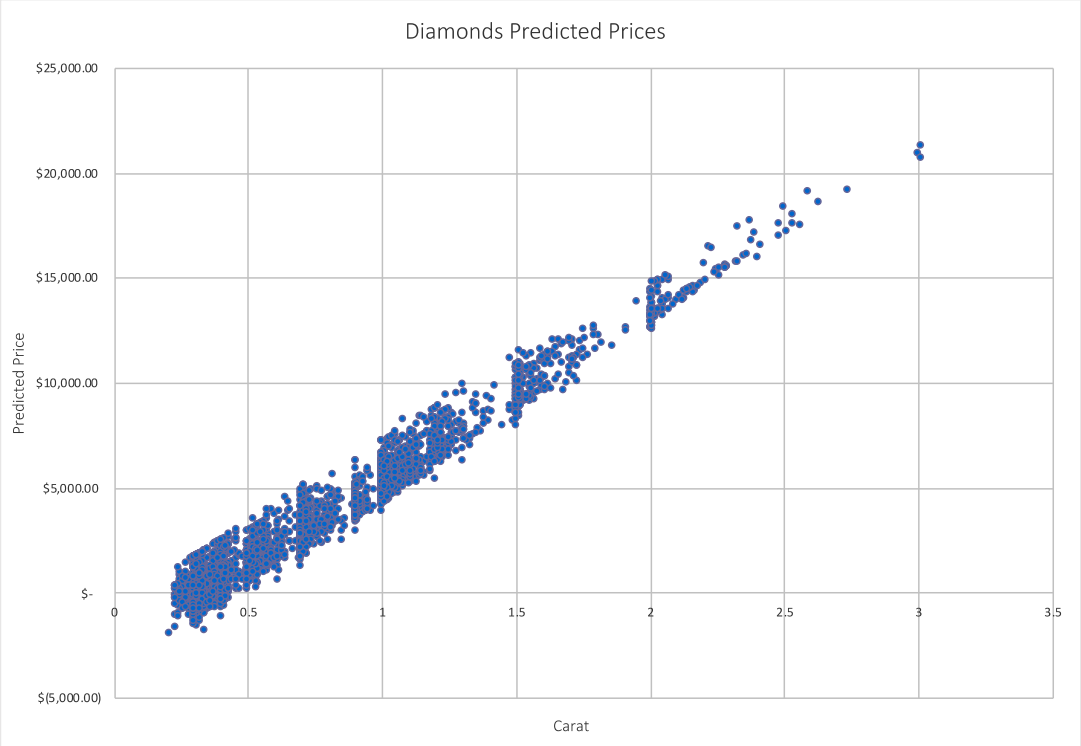

Figure 2 Diamonds Predicted Price

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 prices. This is because many factors that may affect the prices such as metals market status and the bargaining power of buyers and suppliers are not considered. Although many important factors are considered in the formula, still there is an additional factor will affect the price. This plot is still representing the average to predict the prices which can vary in certain cases.

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 $328,412.76. I arrived at this number by using a formula from the regression model provided that was based on previous diamond prices and applied it to the diamonds that were up for bid. I then factored in the margin the investors were looking for which was 70% so I multiply the predicted amount $1,094,709.20 by .30 to get the final predicted bid of $328,412.76.
    - I recommend not to invest in a diamond below 1 carat which will result in loss investment.