**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?

You should expect to pay **8413 dollars more** if a diamond is 1 carat heavier than another with the same cut. The formula created by the regression determined that the coefficient for a carat is 8413, so for every increase in the number of carats, the price will increase by the amount of the coefficient.

1. 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?

You should pay **10 094.8 dollars** for it.

**Explanation :** -5269 + 8413 \* 1.5 + 158.1 \* 3 + 454 \* 5 = *10 094.8 Dollars*

# **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.
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model’s ability to predict prices?

When we look at Plot 2, we can see that there is a correlation between the predicted price and the number of a carat. In other words, the more carat a diamond has, the more expensive it is. Whereas, when we look at plot 1, we cannot state that there is a correlation between the number of a carat and the price. For instance, some diamonds with 2 carats have a price the same that some diamonds with 4 or 5 carats. However, we can see that the **Trend Line Equation** is almost the same. Thus, I **feel confident** in the model’s ability to predict prices.

# **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 **$8 213 465.93**. I arrived at this number by using a formula from the regression model provided that was based on previous home sales and applied it to the diamonds that were up for bid. I then factored in the margin the investors were looking for, which was 30%, so I multiplied the predicted amount of **$11 733 522.76** by .70 to get the final predicted bid of $8 213 465.93