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?

   This is the Linear Regression Model:

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

   From the Linear regression model, the coefficient of the predictor variable carat is 8,413. if a diamond is 1 carat heavier, you will be expected to pay 8,413 more in price.

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?

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

   Carat = 1.5
   Cut = 3
   Clarity = 5

   Plugging the above information into the Linear Regression Model Equation

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

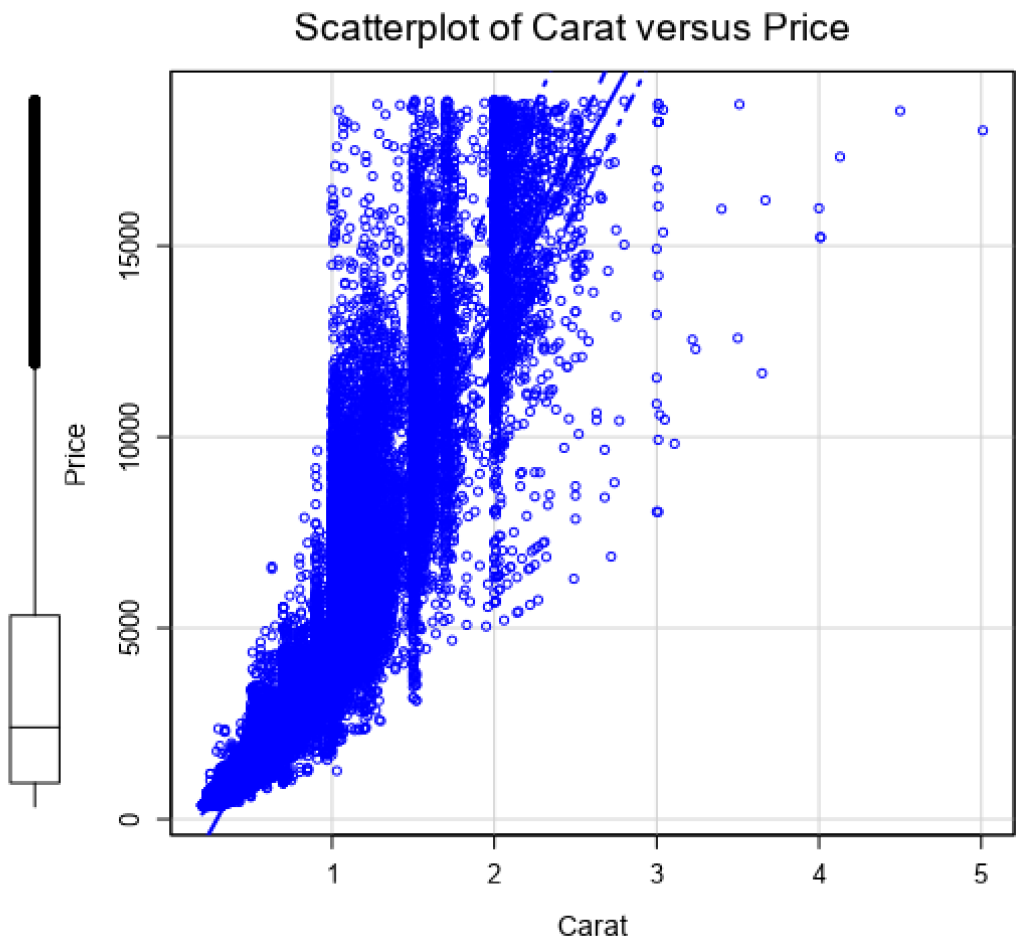
   Price = 10,094.8

   The price to pay is **10,094.8**

Step 2: Visualize the Data

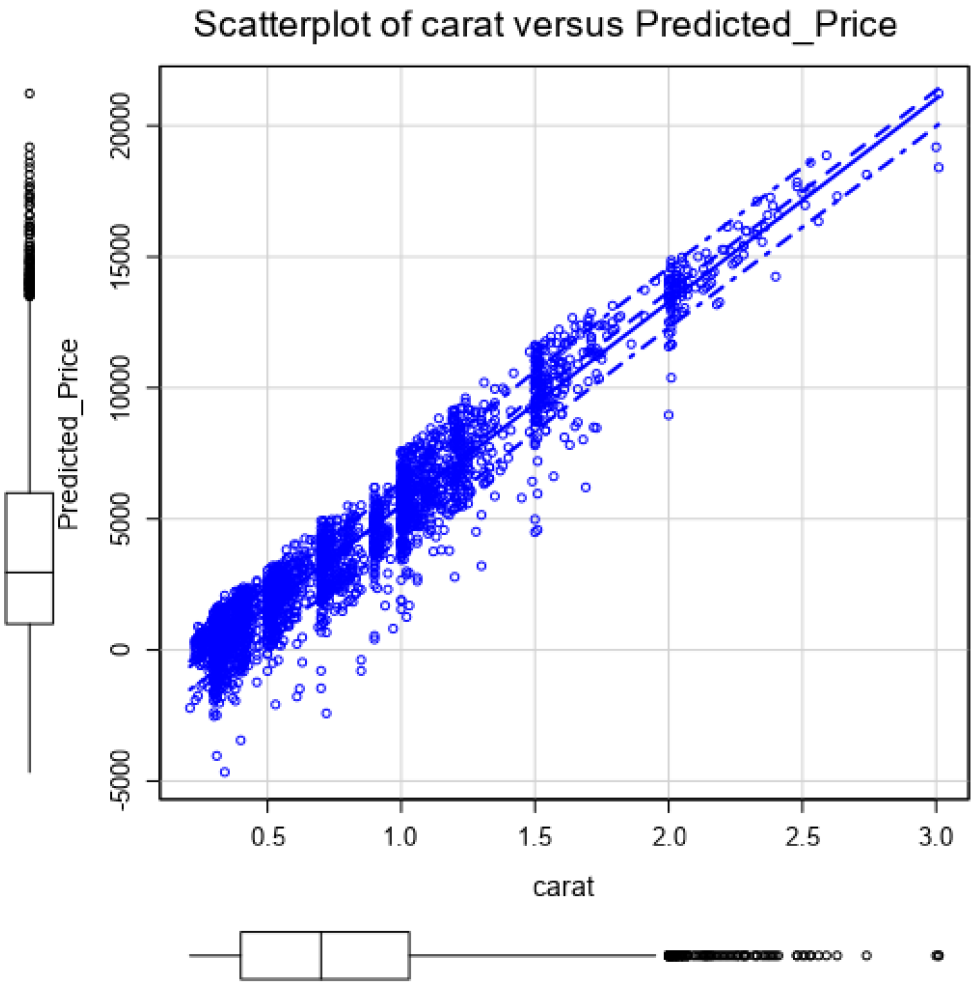
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.



NB: This scatterplot visual was created using Alteryx Designer.

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.



This is a plot showing the correlation between Carat and the Predicted_Price, after applying Linear Regression Model on the new_diamonds Dataset.

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

   I feel strong about the model's ability to predict price of the new_diamonds dataset as there seems to be strong positive correlation between predicted_price and carat.

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.

The recommend price to bid is: 8230695.68974552

How I arrived at the number:

The predicted_price of all new diamonds data was summed up, which amounted to 11758136.6996365, this value was then multiplied by 0.7, which is the margin set by the company.

i.e., Recommended price = 11758136.6996365 * 0.7 = 8230695.68974552