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?

To answer this question, I have used the model below:
Price = 8309.62 * carat + 171.08 * cut_ord + 468.04 * clarity_ord + -5230.22

According to the regression model for each additional carat, you should expect to pay 8,413 dollars more.

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?

According to my model the predicted price would be: 11033.

Prices example for each color below:

carat	cut	cut_ord	color	clarity	clarity_ord	Predicted price
1.5	Very Good	3	colorE	VS2	5	10827,8
1.5	Very Good	3	colorF	VS2	5	10734,3
1.5	Very Good	3	colorG	VS2	5	10534,4
1.5	Very Good	3	colorH	VS2	5	10066,8
1.5	Very Good	3	colorI	VS2	5	9591,6
1.5	Very Good	3	colorJ	VS2	5	8711,6

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.

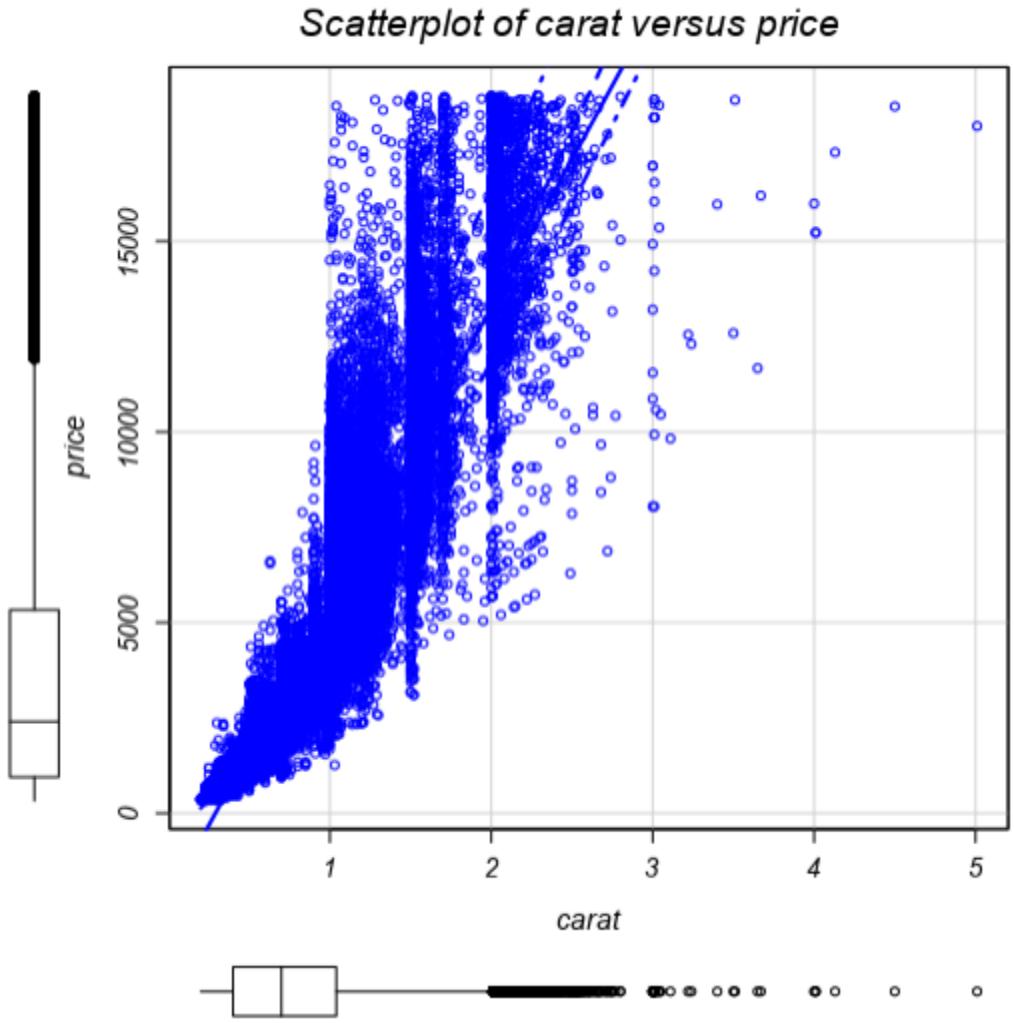

Figure 1. Scatterplot of Carat Versus Price

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.

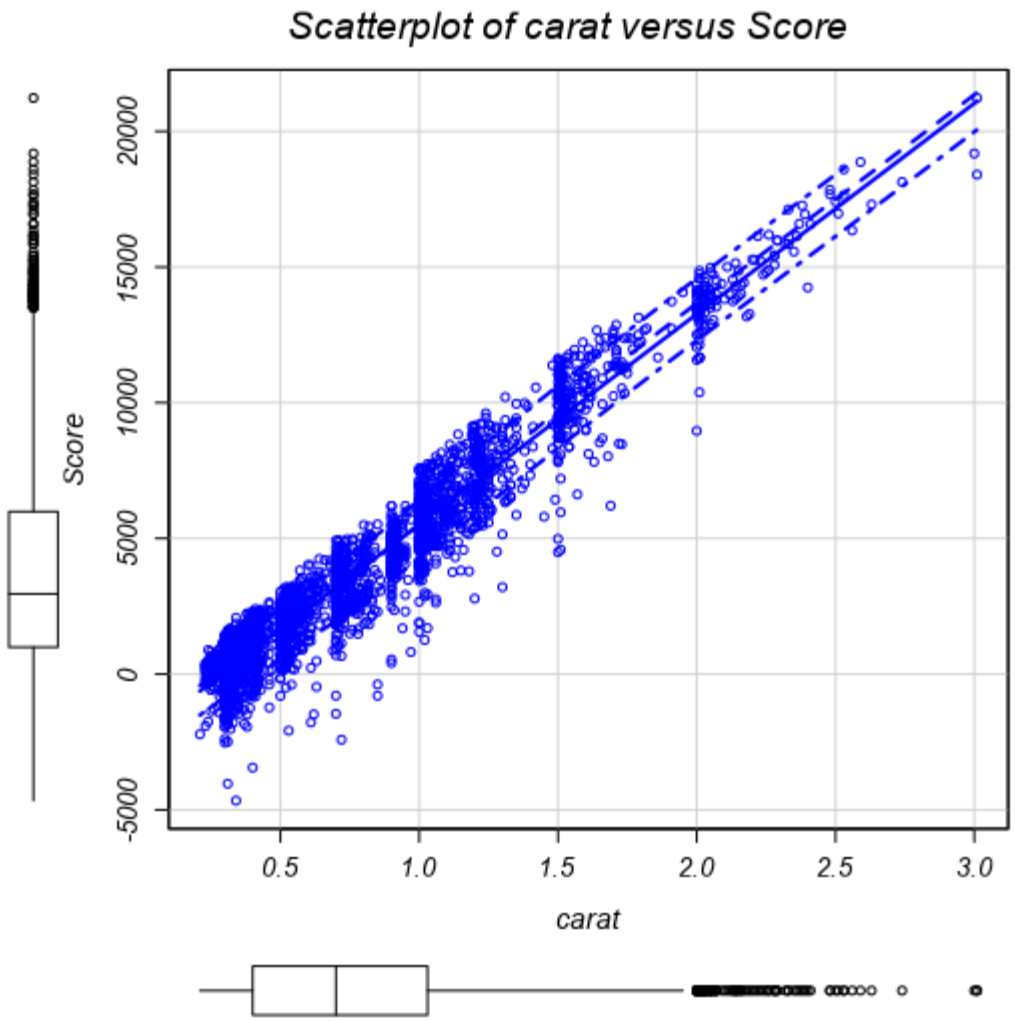

Figure 2. Scatterplot of Carat Versus Score

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

We see that the price and amount of carats have a strong correlation, and I would assume that this is something that I would expect to see on this graph. Nonetheless, I have doubts it can predict prices correctly. At first glance, we can see that some diamonds have negative values which don't make any sense.

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 have built a regression model that took into consideration the below parameters: Carat, cut, colour, clarity. I have used the data set we got with prices, and I have used it to predict costs for the new diamonds.

According to my model, new diamonds are worth approximately: 11 758 137$.

The recommended price is 70% of this number, and that would be approximately: 8 230 696$.