Project: Diamond Prices

Step 1: Understanding the Model

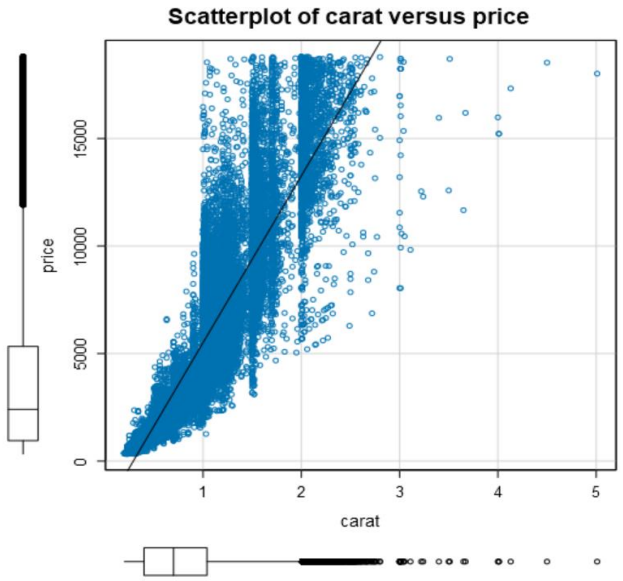
1. **According to the model, if a diamond is 1 carat heavier than another with the same cut, how much more should I expect to pay? Why?**
   According to the model, I expect to pay $8413 + clarity value for heavier diamond multiplied by 454 (value given in the equation). Each diamond's weight (carat) multiplied by 8413. So, each extra one carat will cost $8413 more, Regardless of the clarity of each diamond.

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 predicted price is $10,094.8. By applying the equation that given: **Price** = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**
   Price =-5269+8413*1.5+158.1*3+454*5
   Price = $10094.8

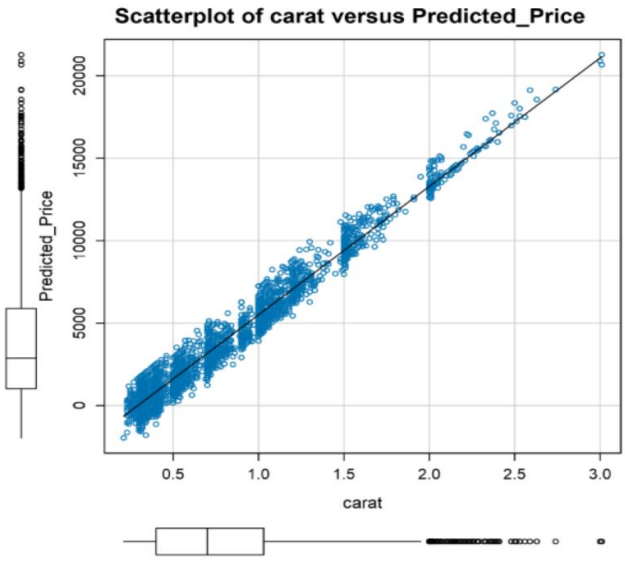
Step 2: Visualize the Data

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.



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?**
   The prediction model has a strong positive correlation between carat and predicted price. I noticed that the higher the value of the carat the lower the predictability of its price. After 1.5 carat the predicted values are decreased. So, I'm not completely confident in the predicted prices for new diamonds above 1.5 carat. Additionally, there are other attributes such as cut and clarity, has its effect in prices.

Step 3: Make a Recommendation

4. **What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.**
   The recommended bid for the new set of 3,000 diamonds is $8213465.932.
   It is the multiplication result of the predicted prices sum ($11733522.76), and the 70% of the final retail prices.
   Total predicted prices = 11733522.76 x 0.70= $8213465.932, the final bid amount.