Project: Diamond Prices

Step 1: Understanding the Model

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?

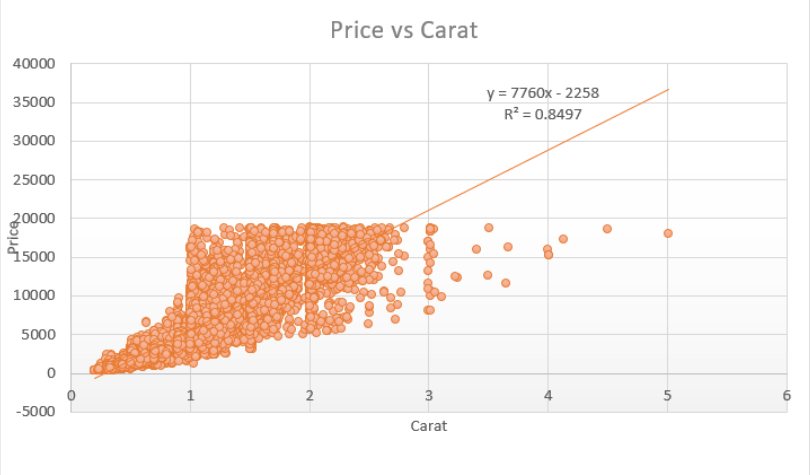
If the diamond were 1 carat heavier, then you would pay $8413 more. This is so because the coefficient of carat is 8413 so price increase/ decrease if diamond is heavier/lighter is in multiples of 8413 (assuming everything else is constant).

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?

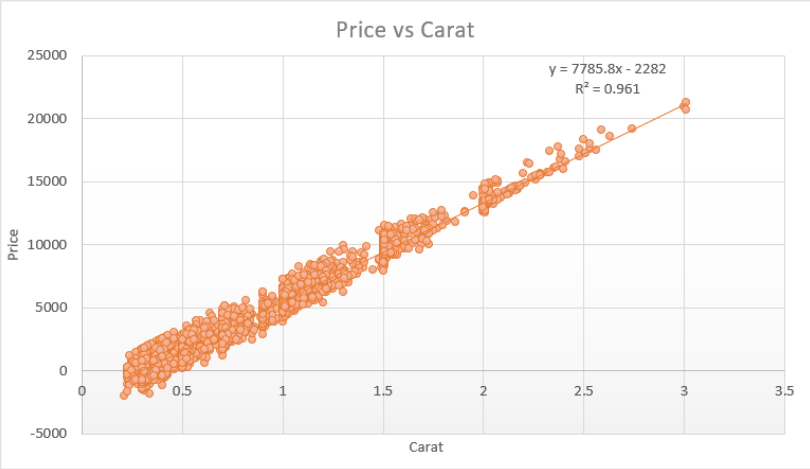
Amount payable is $10094.8,
Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
= - 5269 + 8413 x (1.5) + 158.1 x (3) + 454 x (5)
= $10094.8

Step 2: Visualize the Data

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



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.



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

The prices for diamonds as per the equation seems to be compact. This is again likely due to the inability to assess and account for all the factors with which the prices of diamonds vary.

I think the model does a good job of averaging out the prices. However, it is quite interesting to note that the prices from diamonds database – some higher carat diamonds (3-5 carat) were sold at prices similar to what lower rated (1- 2 carat) were sold at. It is quite possible that lower carat diamonds had higher purity or higher carat diamonds were of lower purity. It cannot be seen from the graph, but the equation does account for that.

Step 3: Make a Recommendation

What price do you recommend the jewelry company to bid? Please explain how you arrived at that number.

The jeweler usually buys the diamonds at 70% price from the distributor i.e. he makes 30% margin. The total price he will pay for all the available diamonds is $11,730,233. Hence, the company's maximum bid should be $11,730,233* 0.70 = **$8,211,163**