

Project: Diamond Prices

Step 1: Understanding the Model

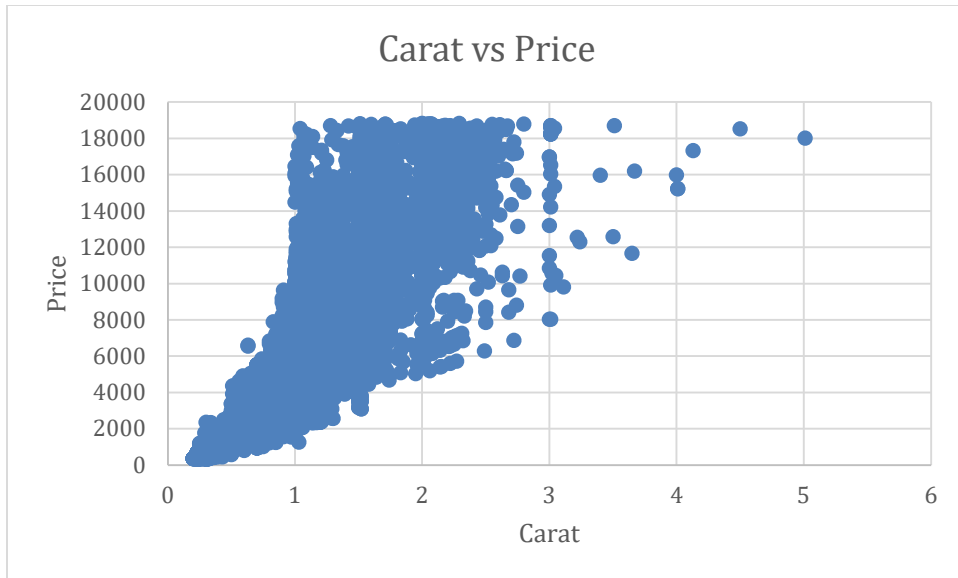
Answer the following questions:

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?
 - The diamond with 1 carat heavier would result in an additional \$8413 in price. The formula created by the regression determined that the coefficient for a carat is 8413, so for every increase in the carat of a diamond the price will increase by the amount of the coefficient.
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 formula is $\text{Price} = -5,269 + 8,413 \times \text{Carat} + 158.1 \times \text{Cut} + 454 \times \text{Clarity}$
 - so now we will plug in the values for the different variables.
 - $\text{Price} = -5,269 + 8,413 \times 1.5 + 158.1 \times 3 + 454 \times 5$
 - $\text{Price} = 10094.8$

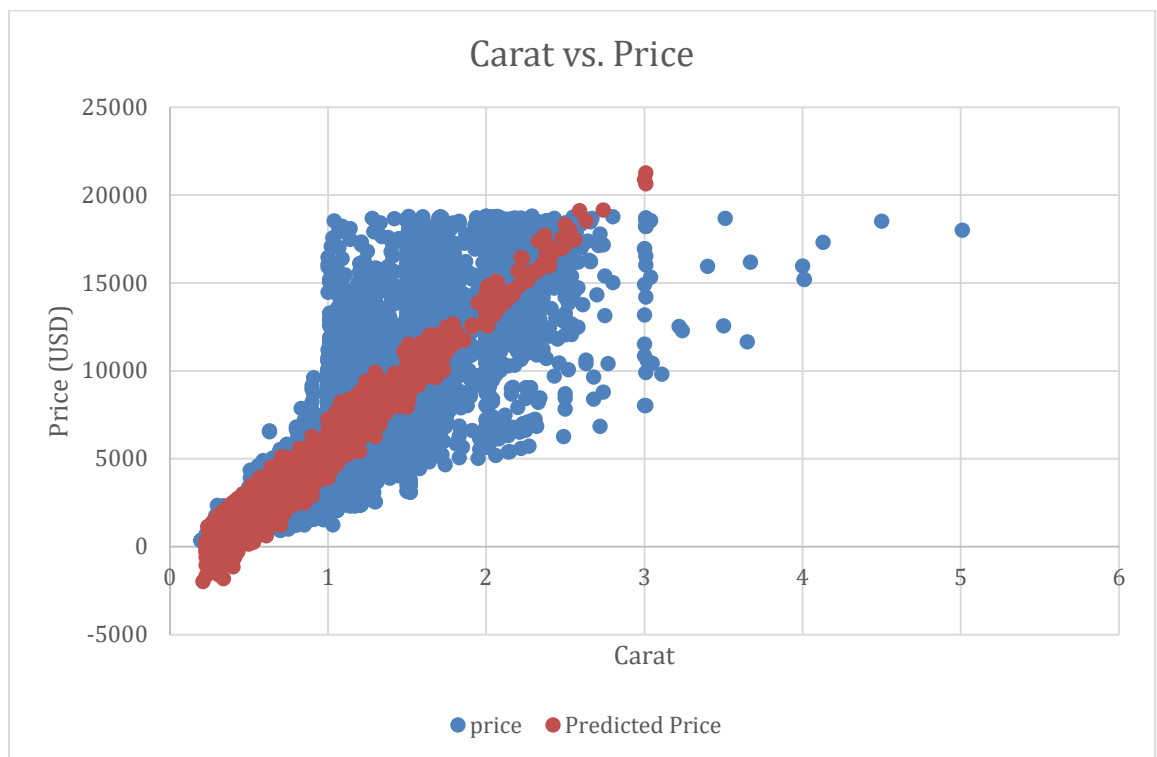
Step 2: Visualize the Data

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.
 - **Note:** You can also plot both sets of data on the same chart in different colors.



3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?
 - The predicted prices are more compact than the actual data is. This is because we are not accounting for everything that effects prices. There are many more things than carat

that effect it. We had other variables affect the diamond price such as cut, color and clarity. I'll be more confident to include those factors into the model to predict the price.

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 recommend the jewelry company to bid is \$8,231,465. The total predicted value for these 3000 diamonds is \$11,733,522.76. Since the company generally purchases diamonds from distributors at 70% of the price, it comes to \$8,231,465 for the bid price.