Project: Diamond Prices

Complete each section. When you are ready, save your file as a PDF document and submit it here: https://classroom.udacity.com/nanodegrees/nd008/parts/235a5408-0604-4871-8433-a6d670e37bbf/project#

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?

    a. **The additional heavier carat would result in an additional $8413.00 in price. The formula created by the regression showed that each additional carat weight adds $8413 to the 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?

    Using the model for price:
    Price = -5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity

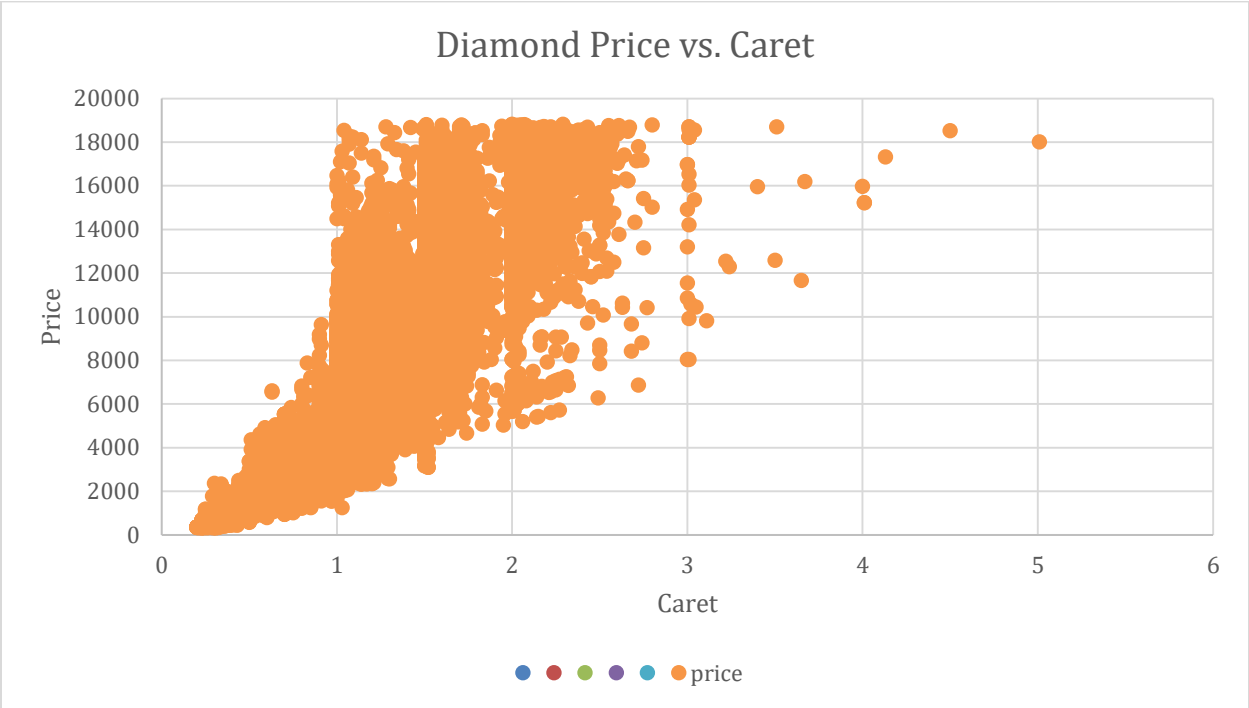
    Plug in the two variables (carat and clarity)
    Price = -5,269 + 8,413 * 1.5 + 158.1 * 3 + 454 * 5
    = $10,094.80

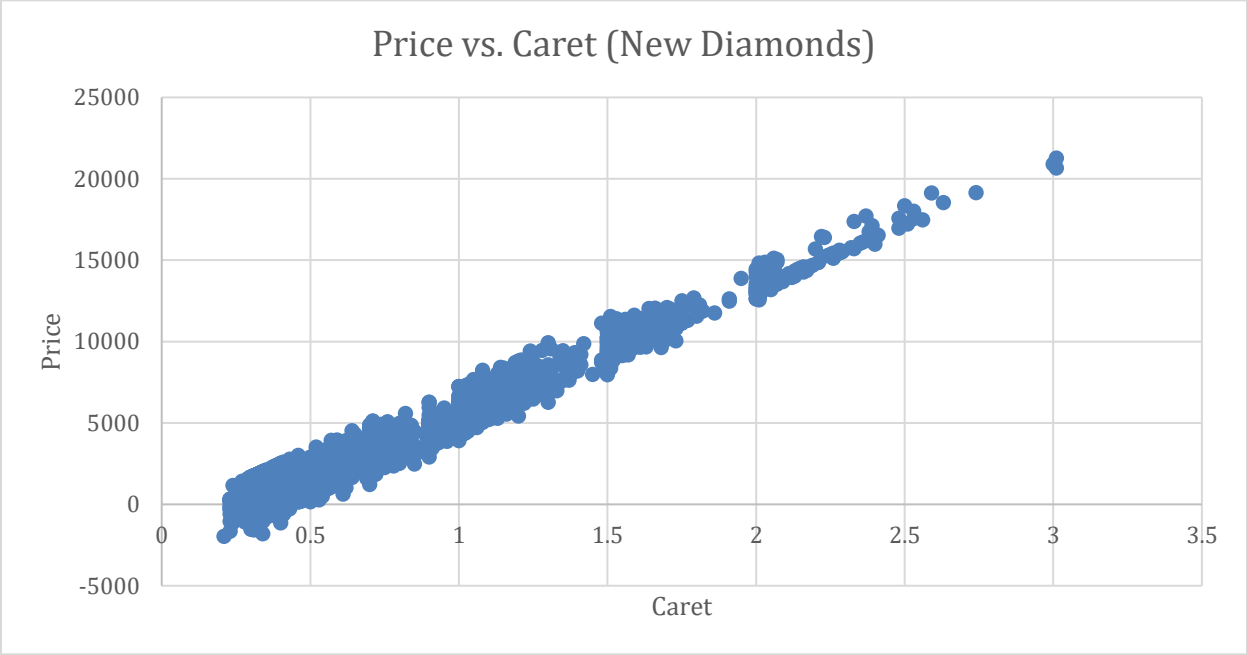
Step 2: Visualize the Data

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 diamond prices have a moderate strong positive correlation. It is a lot stronger the higher the caret goes. It has a much weaker correlation with the lower carets. I found this out when calculating new diamond prices using the predictive formula, that some lower caret prices should have been in the negative

prices. This model is not that strong. Another thing I noticed, was that on some clarity and cut have big consequences on 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.

Based on what I used from the predictive model, I would recommend paying around $8,213,466.00 for the diamonds.
Taking into account that the buyer wants to pay 70% of the price.