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?

   If a diamond is 1 carat heavier than another with the same cut, I am
    expected to pay an amount of 8413

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 model would predict the following:
   Price = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity= -5269 + (8,413 X 1.5) + (158.1 X 3
   + (454 X 5) = 10,094.8**

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.
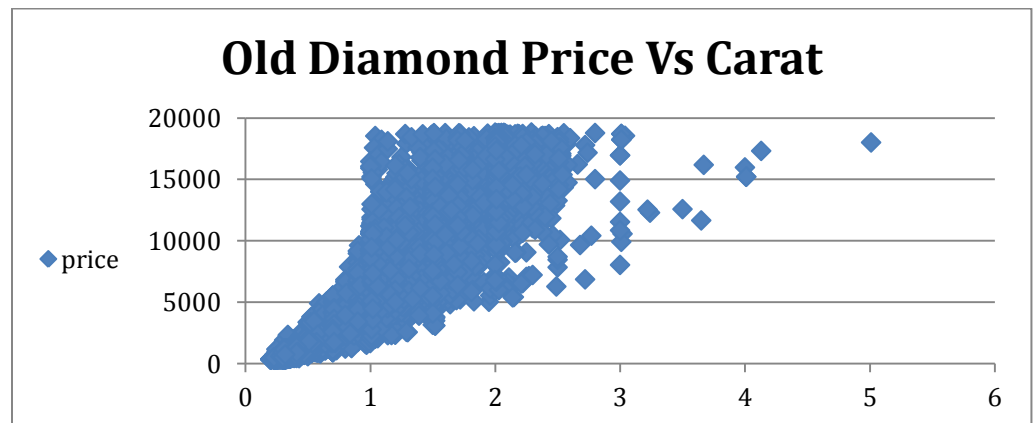
2. Plot 2 - Plot the data for the diamonds for which you are predicting prices with carat on the x-axis and predicted price on the y-axis.
   - ○ **Note**: You can also plot both sets of data on the same chart in different colors.

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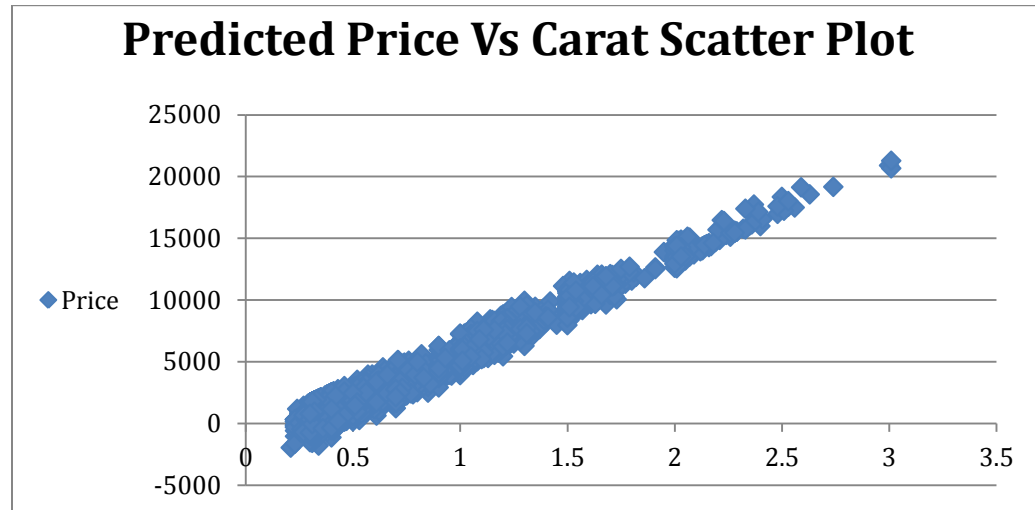
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?

The diamond data set does not have a positive correlation between the price and carat. For weight higher than 0.5 carat the price are not very linear and hovers till close to 20,000. Whereas the Predicted data set is more or less linear with a positive correlation with prices and carat across data sets.

The predicted model does not feel confident as some of the prices where carat weight is <= 0.5 the prices are negative. This shows this could not be the best fit model. I feel the transformation of categorical variable to ordinal variables for simplicity of modeling is not a good practice and hence showing negative pricing. This might have impact on the new predicted prices for diamonds in higher carat weights.

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.

The price to be recommended for the jewelry company to bid is 82,13, 466

Step 1: Summation of all 3000 New Predicted Prices.
Step 2: The Predicted model price is the final consumer price. The company in order to have margins from sale generally purchases diamonds from distributors at 70% of the price. Hence the bid price would be 70% of the final summation of total consumer price of 3000 diamonds.