

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?*

We are using this formula:

$$\text{Price} = -5,269 + 8,413 \times \text{Carat} + 158.1 \times \text{Cut} + 454 \times \text{Clarity}$$

As you can see the value for carat is factor so if you multiple 8,413 with 0.5 or with 1,5 there is an increase of the complete product. Instead of using: 4,206.5 (for the factor of 0.5) we are using: 12,619,5 (for a factor of 1.5). If in the part of the formula for calculating the carat is: 8,413 / carat value than you can say the lower the carat value is the bigger is the resulting complete factor. And no there is no value < 0 for the carat value.

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?*

If we are using our formula:

$$\text{Price} = -5,269 + 8,413 \times \text{Carat} + 158.1 \times \text{Cut} + 454 \times \text{Clarity}$$

we have to insert the values from above:

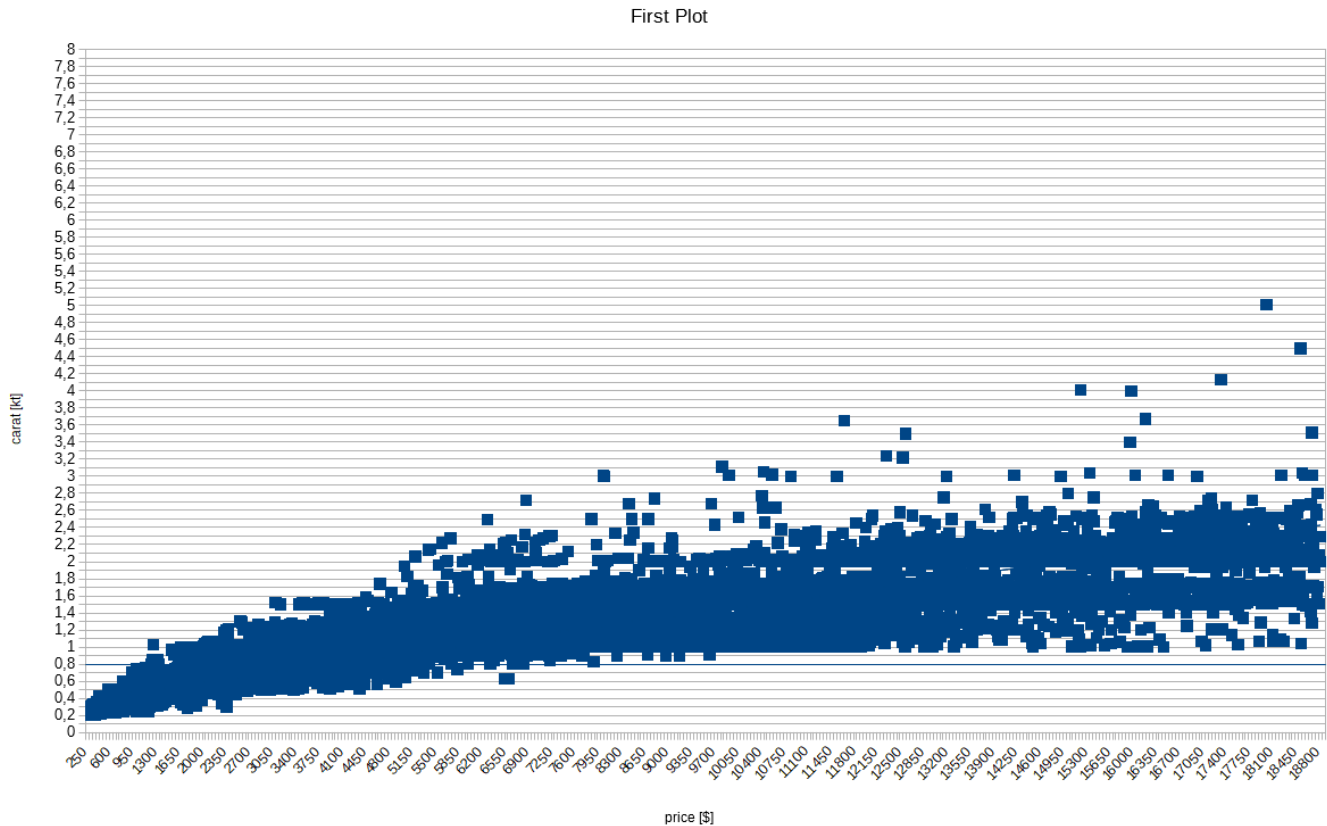
$$\text{Price} = -5,269 + 8,413 \times 1.5 + 158.1 \times 3 + 454 \times 5$$

*The result is: **10094.80 \$***

Step 2: Visualize the Data

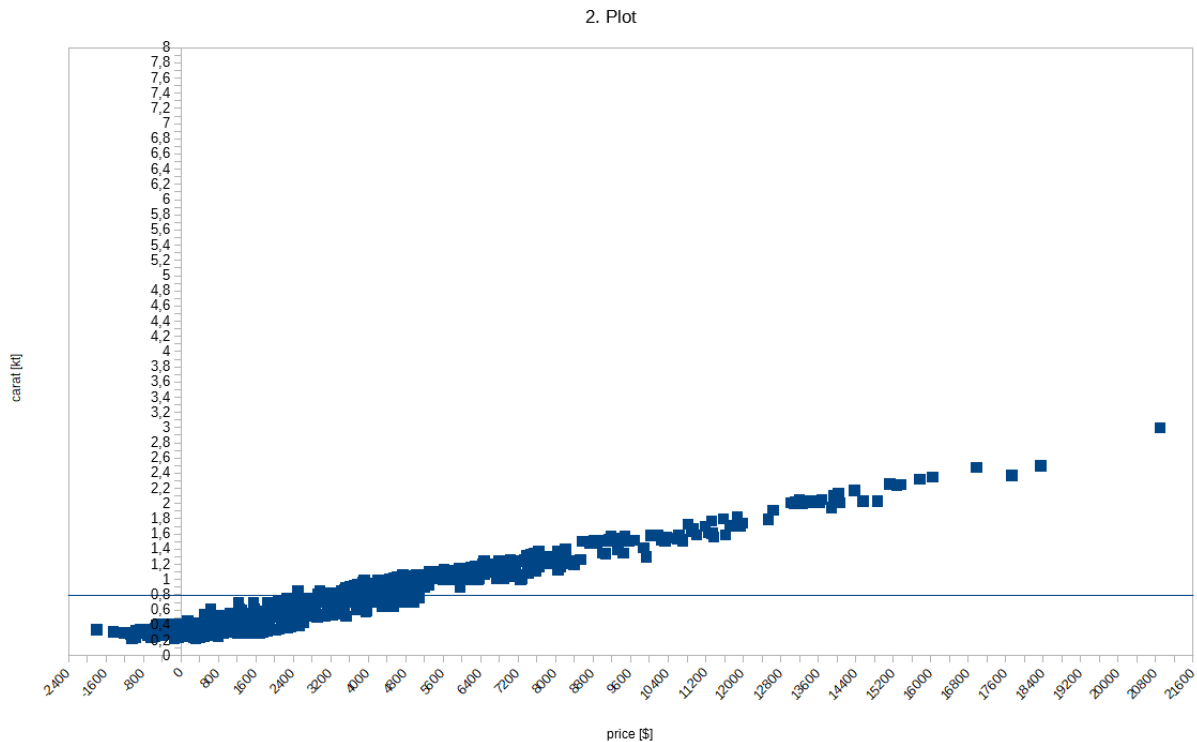
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

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



Graph based on the historical data of the diamond price.

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



Graph based on the estimated price.

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

You can see that the price and the carat value is more or less the same at the range of: carat = 0.6 – 1.0 and price: 4,800 \$ - 5,000 \$ you're getting the most diamonds. You also notice that the quality of the graph is pretty good and if you not sure you can use the coefficient.

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.

For getting a better recommendation you can use the average value of the carat and the average price and so you're getting for the predicted table: **0.79544kt** and **3,699.42\$** and the average value for the historical data is: **0,79855kt** and **3,938.99\$**.

So I would recommend to buy diamonds with 0.79kt and the price of 3,699\$. If our formula/assumption is correct.