

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:

- 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 equation to predict diamond price:

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

According to the model, ceteris et paribus, a diamond is 1 carat heavier than another with the same cut will increase the price by 8,413.

: Awesome: Good work getting the right value.

The more carat the diamond possess, the more valuable it is

- 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?

$$\text{Price} = -5269 + 8413 (1.5) + 158.1 (3) + 454 (5)$$

$$= -5269 + 12619.5 + 474.3 + 2270$$

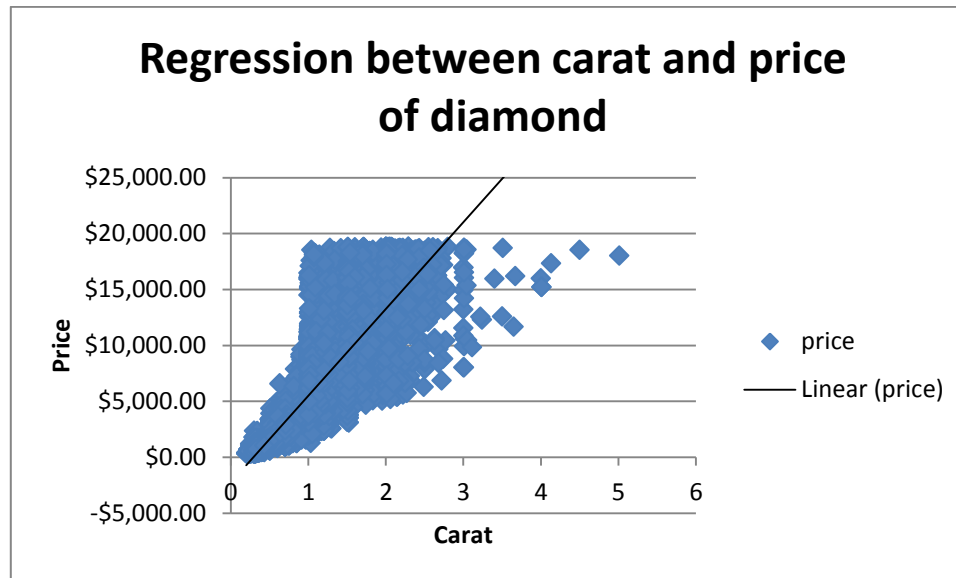
$$= 10,094.80$$

: Awesome: The predicted price is absolutely correct.

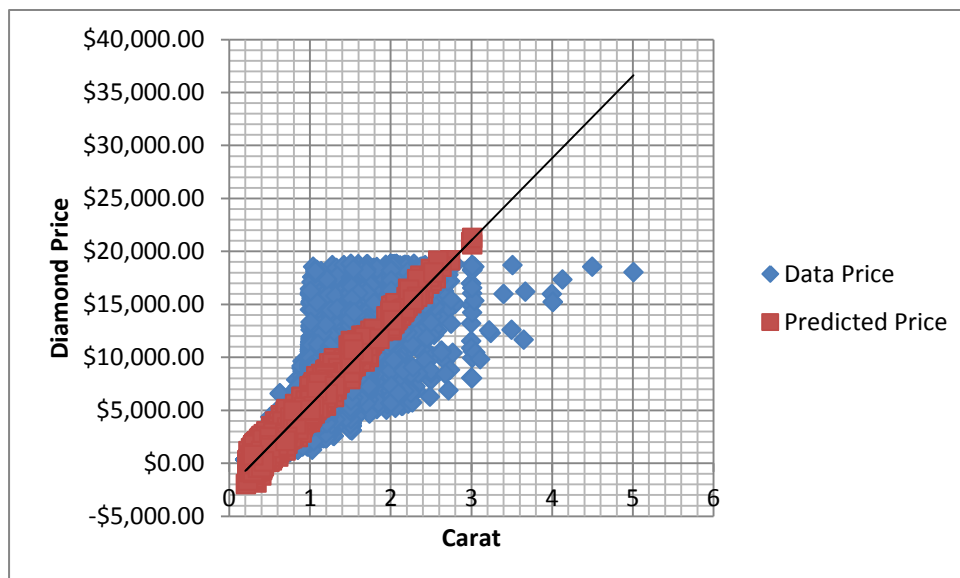
Step 2: Visualize the Data

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.

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



•

: Awesome: Both the plots are correct.

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

The predicted price variation is much lower than the real data, the predicted price somewhat centralized, less spread than the diamond real price. But it looks like the data point of real data can negates each other (the one above the linear line & below linear line)

In my opinion i'm somewhat I'm not confident if I need to predict only 1 piece of diamond, but if I need to buy in bulk, I might feel bit more confident

: Suggestion: We should proof read our report to ensure that our sentence formation and grammar is correct. This line can be replaced by "I would not be confident if I needed to predict the price for only...."

: Awesome: Great analysis for this question.

Step 3: Make a Recommendation

Answer the following questions:

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

I would recommend bid price of **\$7,760,897.64**.

FIRST : I would calculate the price of diamond according to regression analysis prediction with equation $\text{Price} = -5,269 + 8,413 \times \text{Carat} + 158.1 \times \text{Cut} + 454 \times \text{Clarity}$
Second: I would sum whole 3000 pcs of price prediction
Third : I would discount the price by 30% to get the supplier price
Fourth : I would multiply the result with 95% price of the total supplier price. I add another 5% dicsount of the predicted price to add pricing error risk.
Therefore I arrived at \$7,760,897.64.

: Requirement: We do not need to follow these steps. Instead, we just need to multiply the price obtained from "Second" by 70% to account for the desired gross margin.