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#

1 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?

- Diamonds are heavy by weight:
  Price = -5269 + 8413 x 3 + 158.1 x 2 + 454 x 2 = $ 21,194.2
- Lighter Diamonds:
  Price = -5,269 + 8,413 x 2 + 158.1 x 2 + 454 x 2 = 12,781.2 USD
  $ 21194.2 - $ 12,781.2 = $ 8413.

- Yes, because heavier diamonds are more expensive compared to lighter diamonds.

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?

   price = -5,269 + 8,413 x 1.5 + 158.1 x 3 + 454 x 5 =$10094.8

2 Step 2: Visualize the Data

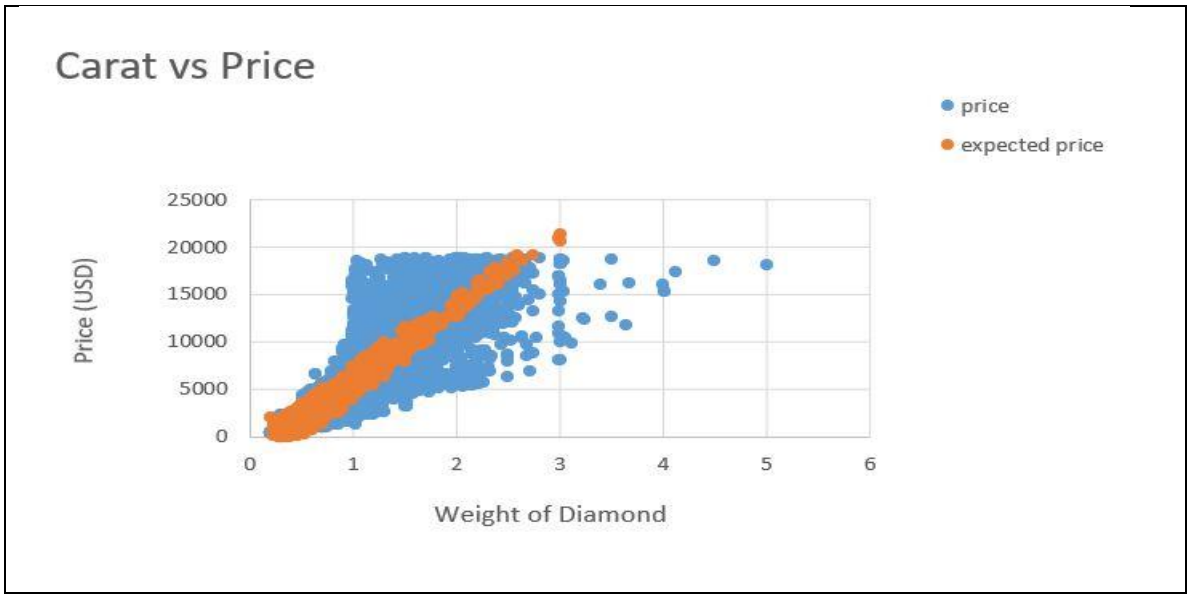
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

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 expected prices are narrower than the actual data. This is because we do not take into account everything that affects prices. There are so many things more than a karat that affect it, this formula might look very different depending on which city the pattern was used in.

I noticed that the linear regression model produces negative price values when the karat value is less than or equal to 0.4 as shown in the graph above. Then I tried to fix this by removing the negative signs from the price values and I got a …



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.

- From the Excel file the total price of all diamonds is calculated which is $ 11,733,522.76 and 70% of this price is $ 8,213,465.93, then we can get the company's profit which is $ 3,520,056.83. Finally, I recommend the company to go for $ 8,213,465.93.