# 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?

   **Price** = -5,269 + 8,413 x **Carat** + 158.1 x **Cut** + 454 x **Clarity**

   All other factors remaining same, a 1 carat heavier diamond would cost 8413 more.

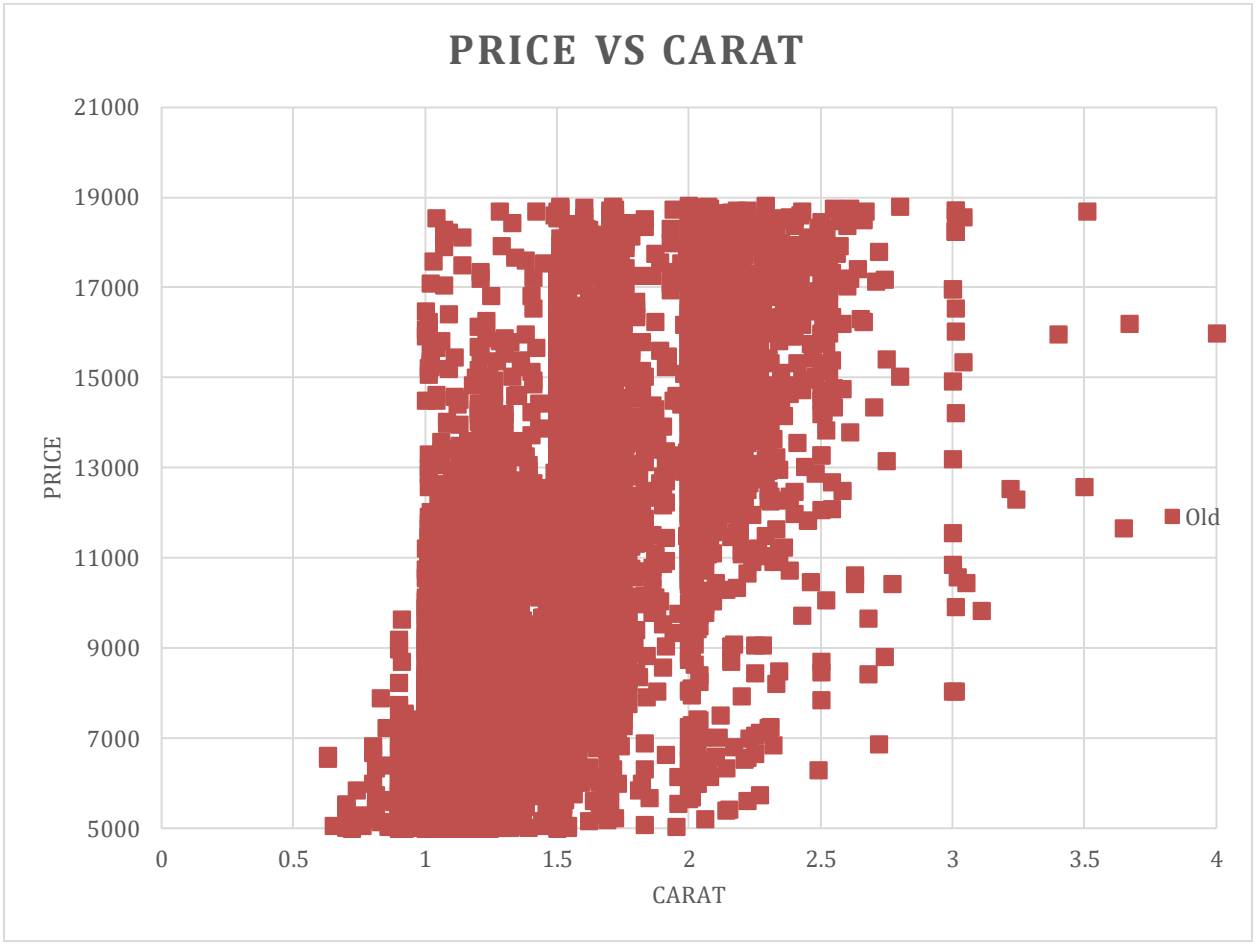
2. If you were interested in a 1.5 carat diamond with a **Very Good** cut (represented by a 3 in the model) and a **VS2** clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?

   10094.8

# Step 2: Visualize the Data

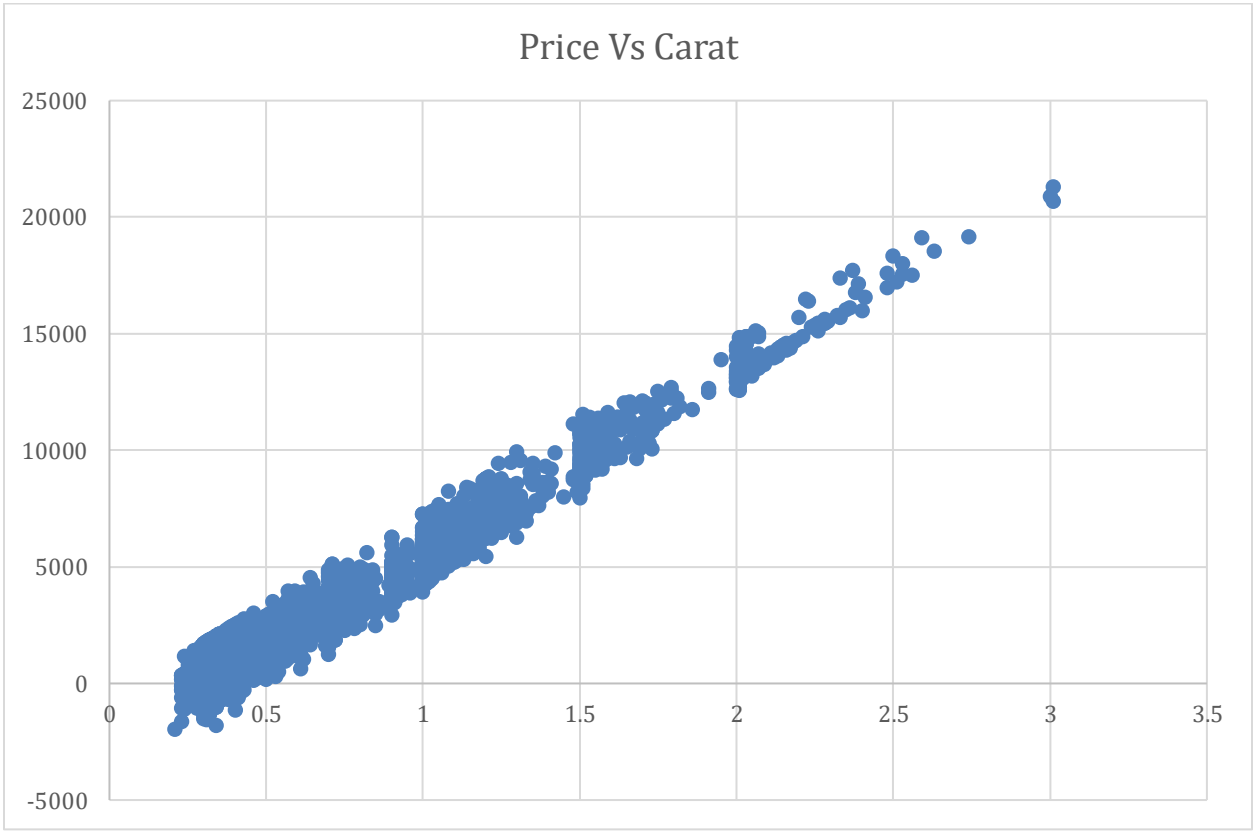
Make sure to plot and include the visualizations in this report. For example, you can create graphs in Excel and copy and paste the graphs into this Word document.

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



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.



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

The linear model probably is not an ideal model to use for individual diamond price predictions as this has negative values as well. We can use the model to aggregate and calculate the bid price. There is a strong correlation with the carat and predicted prices for the new diamonds dataset.

# 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 company generally purchases diamonds from distributors at 70% of total price, so my recommended bid price is (11733522.76)*.7 = 8213465.93