Project: Diamond Prices

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?

   According to the model, an increase of 1 carat will result in an increase of $8413 in price (As the amount of the coefficient which was determined by the regression formula).

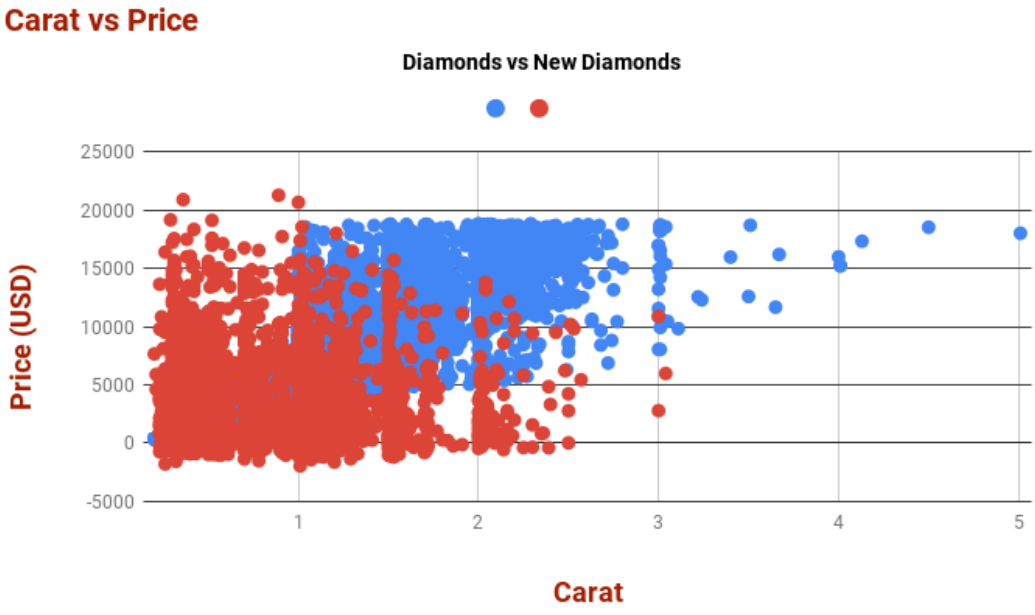
2. If you were interested in a 1.5 carat diamond with a Very Good cut (represented by a 3 in the model) and a VS2 clarity rating (represented by a 5 in the model), how much would the model predict you should pay for it?

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

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

   = 10,094.8

Step 2: Visualize the Data



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

   - The existing diamonds prices data (series A) is more scattered than the predicted one. As shown above, there are few 3-5 carat diamonds sold at a higher price (almost ranging from $10,000 to $18,000), while the carat of the predicted data, which are sold for higher prices, are lower than 4 carat.
   - The chart also shows almost all diamonds included in the predictive set are below 3 carat, except for three diamonds.
   - As a conclusion, when trying to predict prices of new diamonds, there are many factors to take in consideration other than the carat. Other factors includes diamond clarity and cut quality which also would result in an increase of price.

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.

   As Mentioned in the project description:

   > "The company generally purchases diamonds from distributors at 70% of that price."

   I multiplied the predicted price sum by 70% to get the final predicted bid of $8,213,465.932.