Diamond Prices
Understanding the Model

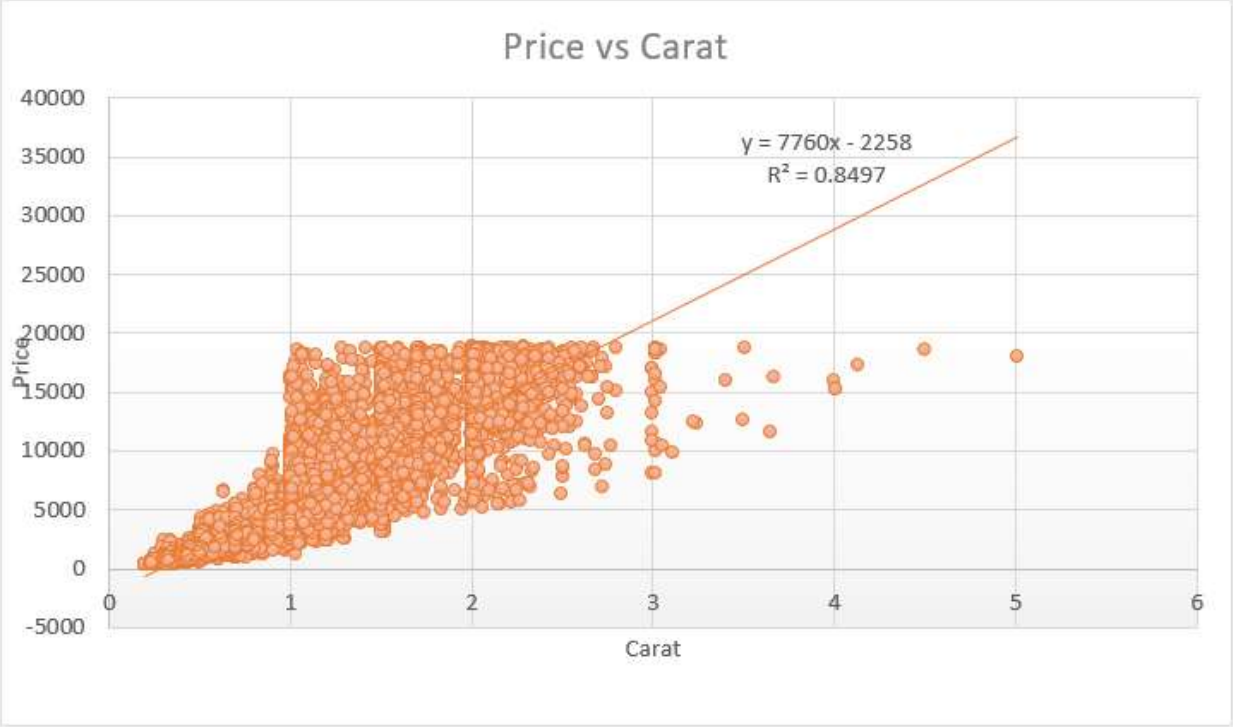
1. **According to the linear model provided, if a diamond is 1 carat heavier than another with the same cut and clarity, how much more would the retail price of the heavier diamond be? Why?**

Retail price for a diamond 1 carat heavier than another is **$8,413 more**, with the cut quality and the clarity being the same.

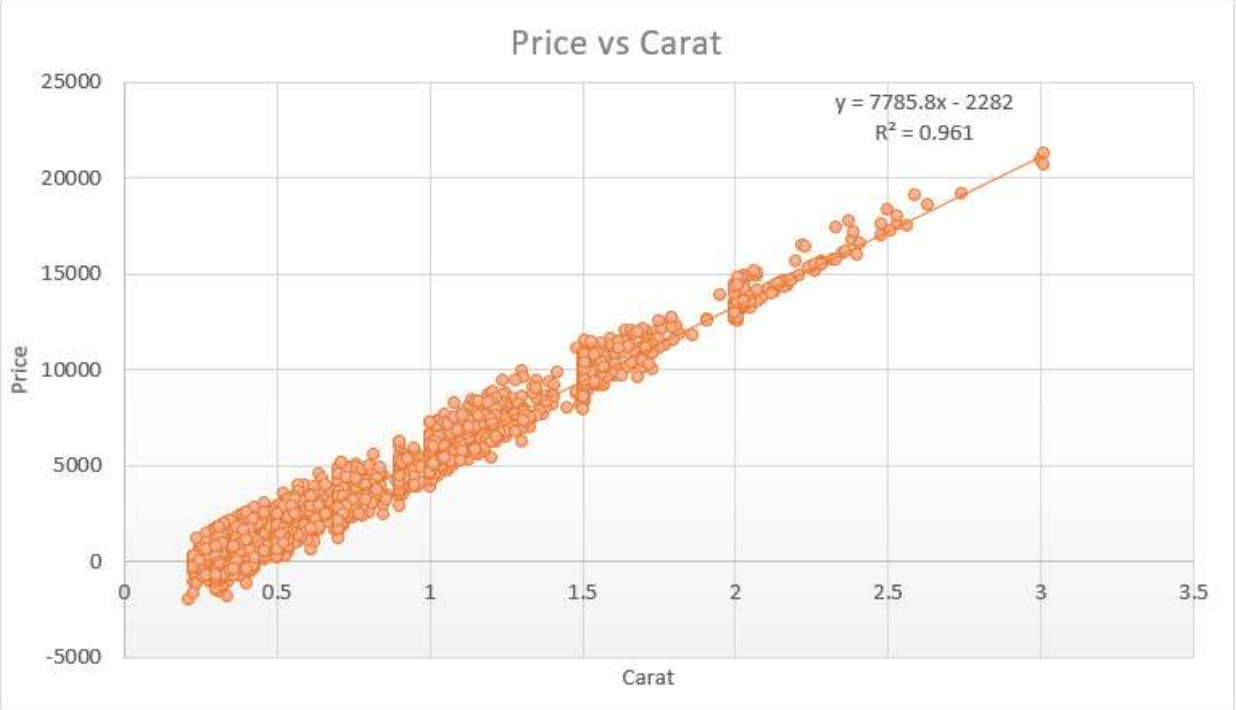
2. **If you were interested in a 1.5 carat diamond with a Very Good cut (represented by a 3 in the model) and a VS2 clarity rating (represented by a 5 in the model), what retail price would the model predict for the diamond?**

Price = - 5,269 + 8,413 x Carat + 158.1 x Cut + 454 x Clarity
= - 5269 + 8413 x (1.5) + 158.1 x (3) + 454 x (5)
= $10094.8
Using linear regression model, it would cost **$10,094.80**.

Visualize the Data
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.



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

- The relationship between price and carat are less obvious when the diamond carat is less than 0.5 because the predicted price can often fall below $0 which is not possible
- It also predicts a higher price for diamond larger than 3 carats
- There should be more factors in determining the price of diamond
- The model shows a strong correlation between carat and price when carat is between 0.5 to 2

Make a Recommendation

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

- Each diamond price is predicted using linear regression model
- The predicted prices are summed up
- Apply a 70% on the summation for all predicted prices for bidding price

The bid price is recommended to be **$8,213,466**.