

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?

- ☐ You should expect to pay \$8,413 more, because carat increase one unit affecting the formula for price prediction where carat factor is considered.

If the original formula for predict diamond price is:

$$\text{Price Diamond}_{\text{carat}} = -5269 + 8413 * \text{carat} + 158.1 * \text{cut} + 454 * \text{clarity}$$

If the carat increases by one the formula will be:

$$\text{Price Diamond}_{\text{carat}+1} = -5369 + 8413 * (\text{carat} + 1) + 158.1 * \text{cut} + 454 * \text{clarity}$$

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?

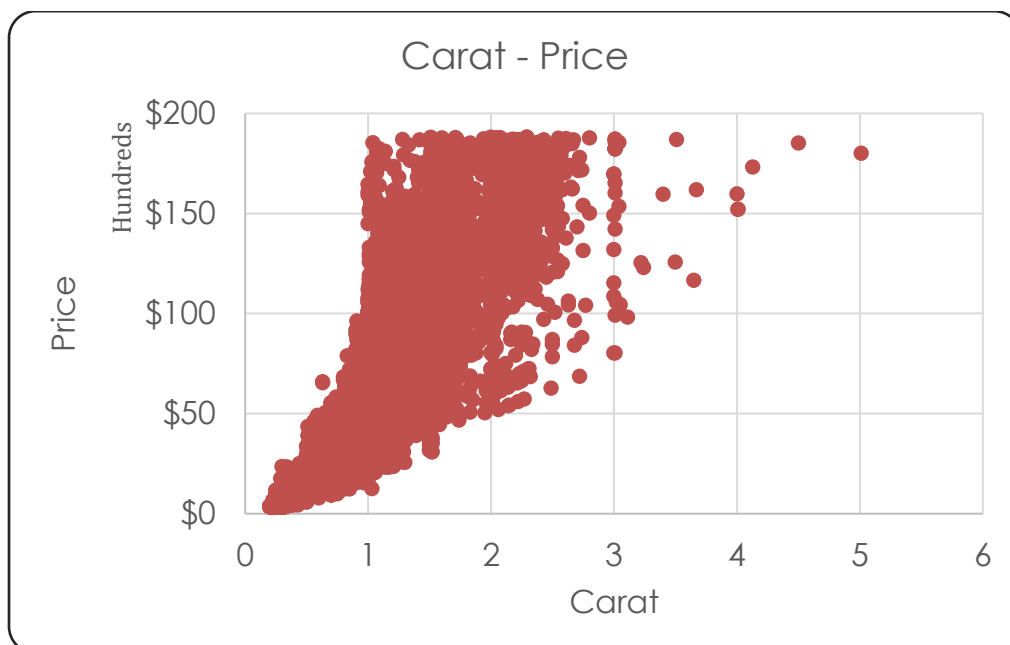
- ☐ The model will be predicting that I should have to pay \$10,094.80

$$\text{Price Diamond} = -5269 + 8413 * (1.5) + 158.1 * (3) + 454 * (5) = 10,094.0$$

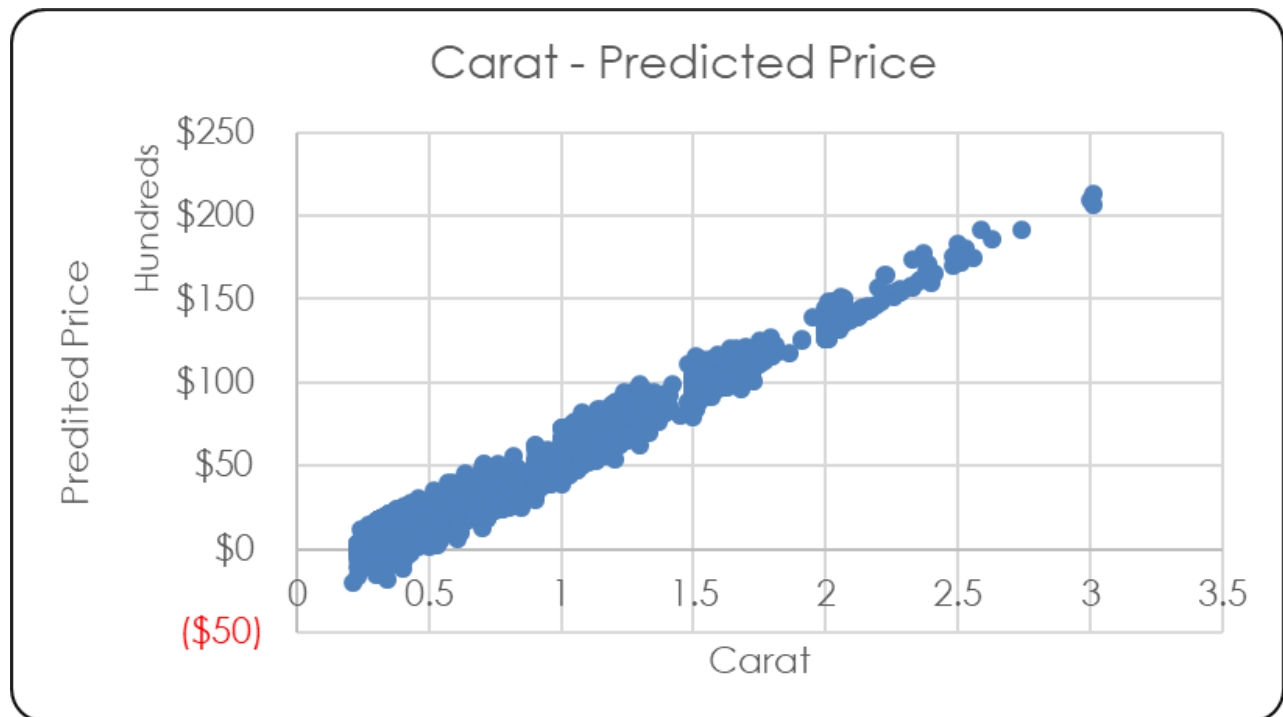
Step 2: Visualize the Data

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.

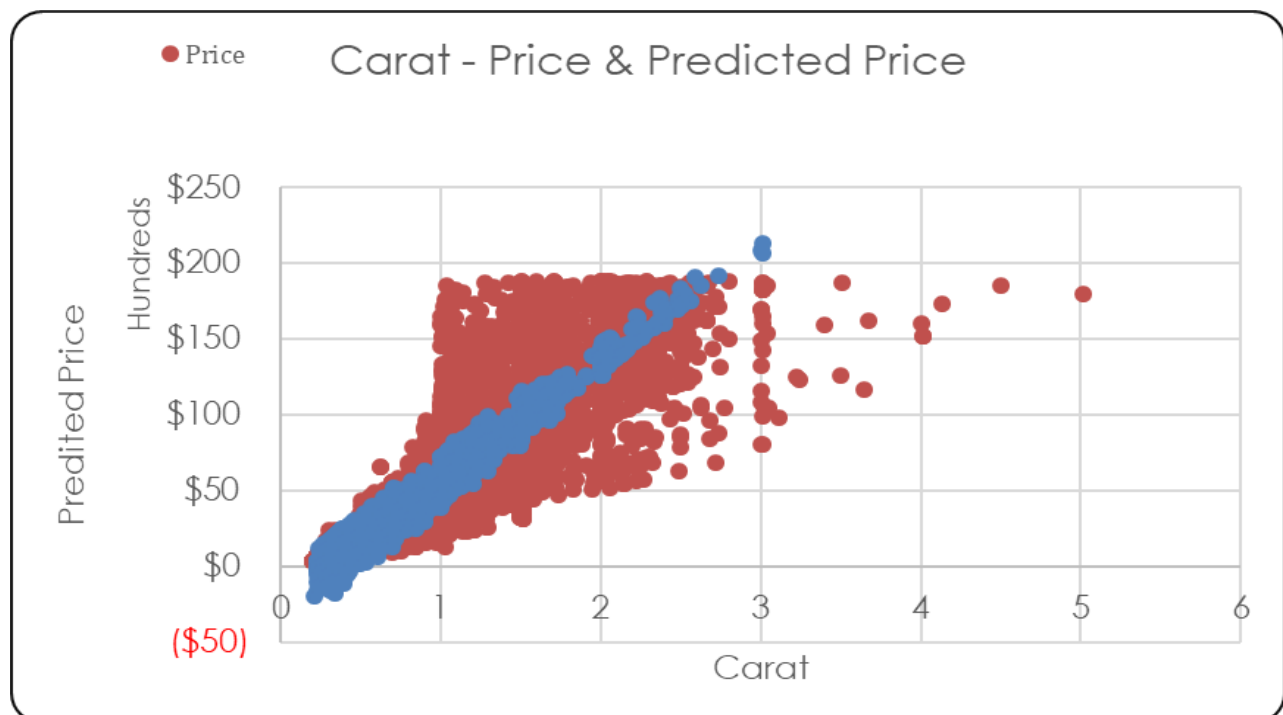
1. Plot 1 - Plot the data for the diamonds in the database, with carat on the x-axis and price on the y-axis.



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.



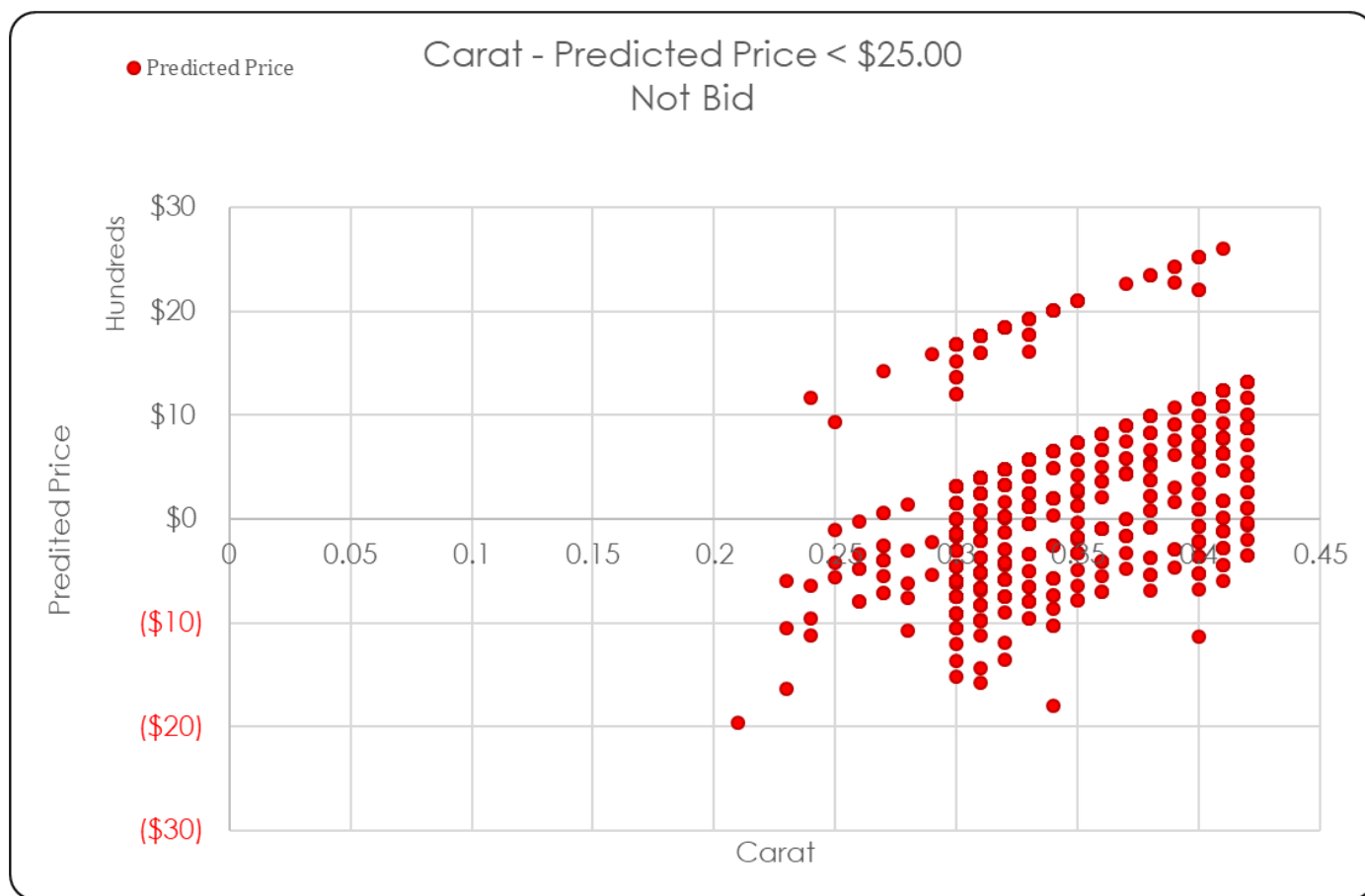
3. What strikes you about this comparison? After seeing this plot, do you feel confident in the model's ability to predict prices?
- The regression equation has a good approach about predicting the diamond price, I feel confident about the model's ability to predict process without doubt



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.
 - I will recommend to the jewelry company to avoid bid diamonds prices under \$25.00 USD and start to bin diamonds with a price over it



To identification these kinds of diamonds I suggest using the Bid Index. To calculate it I used the formula:

$$\text{Bid Index} = \text{carat} * \text{cut}_{ord} * \text{clarit}_{ord} * \text{predicted price}$$

And the jewelry company has ten bid diamonds with Bid Index over 69 points