Diamond Prices

REVIEW

HISTORY

Meets Specifications

Hi,

Thank you for your submission. You've done a really good job!

Your answers are logical and well written. The project report is very well structured and neatly presented. I especially liked the two graphs that you've included in the project report. Well done!

Congratulations for passing the project

Onwards and upwards now! 👍

P.S ::

`Extra materials for your knowledge`

- Here is a link to one of my favorite blogs - StatisticsHowTo . As you move forward and dive deeper into lessons about linear regression, this website can be especially useful to get more explanations about statistical concepts.
- Here is a link to a good read about regression analysis - Harvard Business Review . I would advise you to go through a few more lessons about linear regression in the course and then come back & read this article. I'm sure you will find that it further adds to your knowledge.

Predicting Diamond Prices

1. The student has submitted a PDF file for commenting.
2. The student has answered *all* the questions and provided a sufficient explanation of how they arrived at their answer.

Thank you for submitting a PDF project report with all the required answers. Please refer the feedback to your answers below ::

`STEP 1`

`Q1`

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**

Above is the linear model equation.
Coefficient of carat is 8413. According to it if diamond is 1 carat heavier than another with the same cut, then Price will increase by 8413 units. Unit of price can be dollars.

Awesome ! The basic goal of this question is to help you understand the interpretation of the coefficient in the given linear equation. Consequently, as the carat coefficient in the given equation is 8413, we can expect that a 1-carat increase will lead to an increase of 8413 in the price. (If all other factors are constant)

`Q2`

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**

Price = -5269 + 8413 * 1.5 + 158.1 * 3 + 454 * 5 = 10094.8 units

The price predicted by the model is 10094.8 $, that we should pay for it.

Awesome, this answer is absolutely correct!

`STEP 2`

The model can predict prices, but some are below 0, which is not possible.

Let us consider carat 1.0 then we can see a few predictions above and below the regression line. That is over and under estimation of price. But almost all points are very near to regression line.

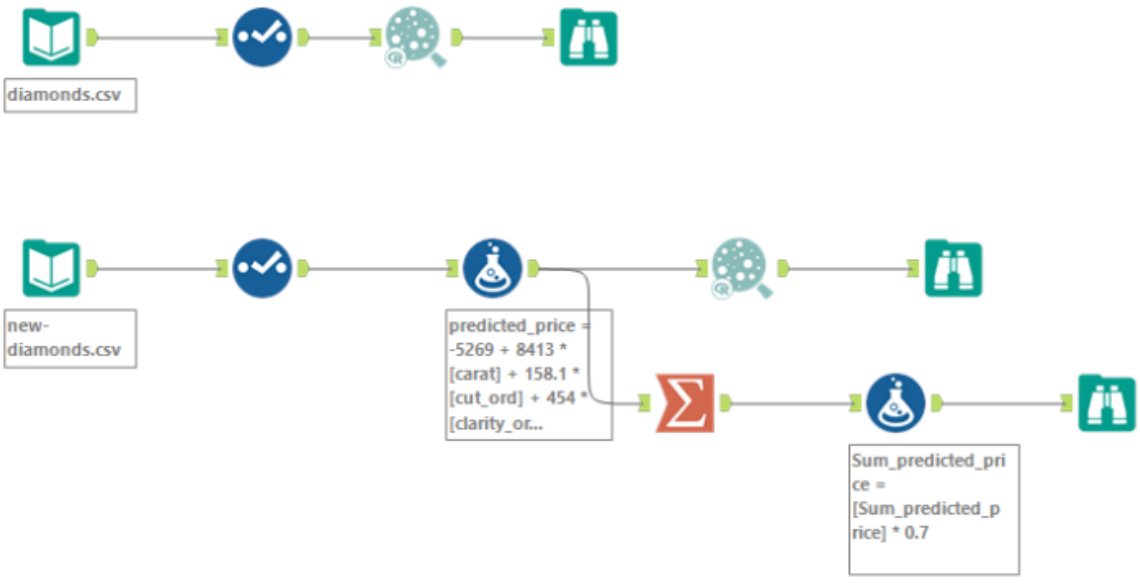
Also we can see that as carat weight increases price increases. So I feel confident in model's ability to predict prices.

Awesome! This is an excellent attempt! Here is some more detail ::

- As you rightly observe from the graphs, the model predicts a few negative prices. That is unrealistic and will not happen in real life. Therefore, the model is somewhat useful to predict prices, but it should not be relied upon too much.
- Additionally, the predicted prices are more compact than the actual/existing prices. This is because the linear model is not accounting for all factors that affect the price. Besides "carat", there are many other factors that affect the price of a diamond.

`STEP 3`

8213465.9320 unit[dollar] price is the recommended bid price for the jewelry. All 3000 diamonds predicted prices are added and multiplied with 0.7 to arrive at the price.



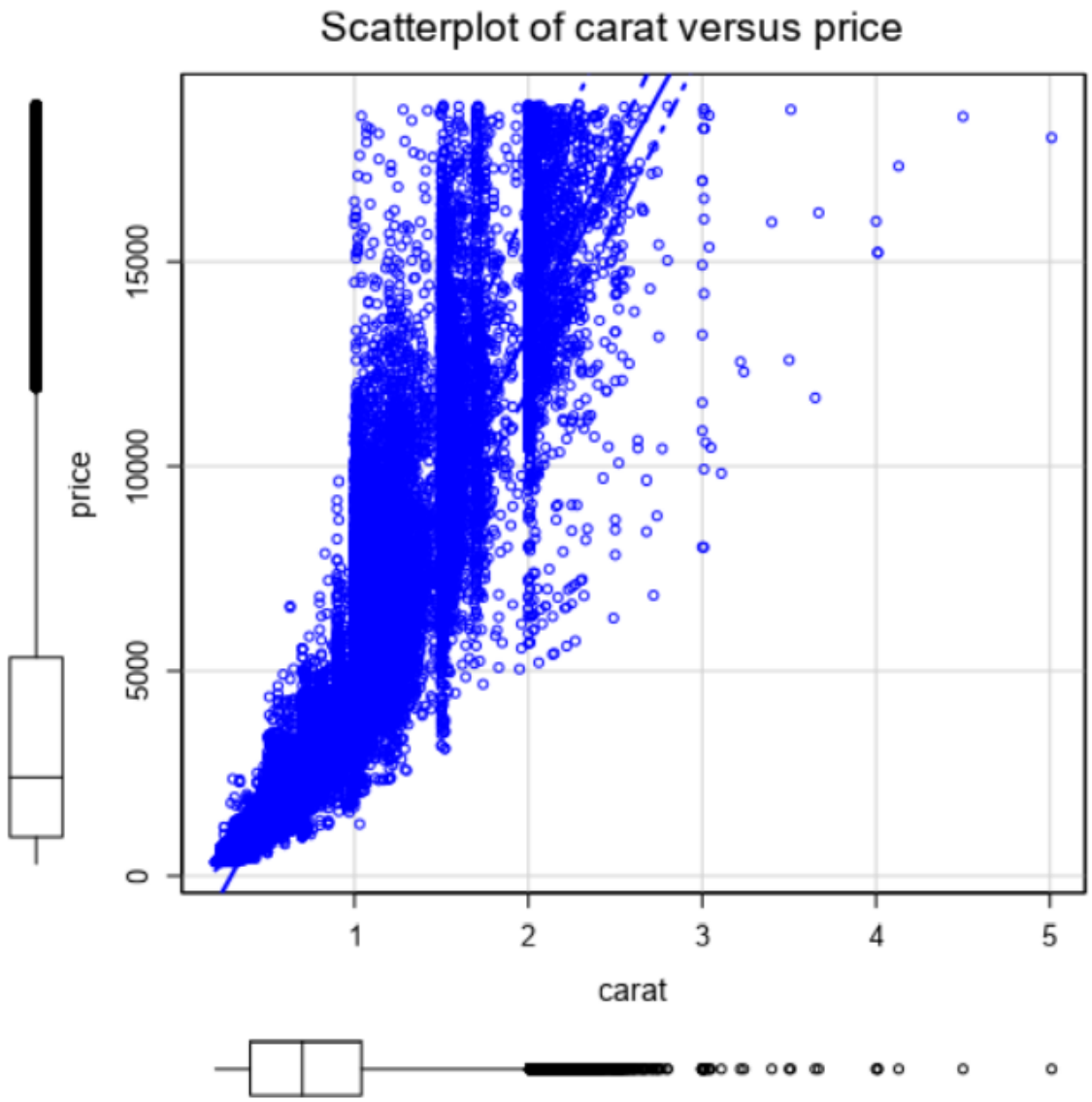
The bid price is 100% correct. Great job! The process you've described in words & shown via the workflow is also accurate.

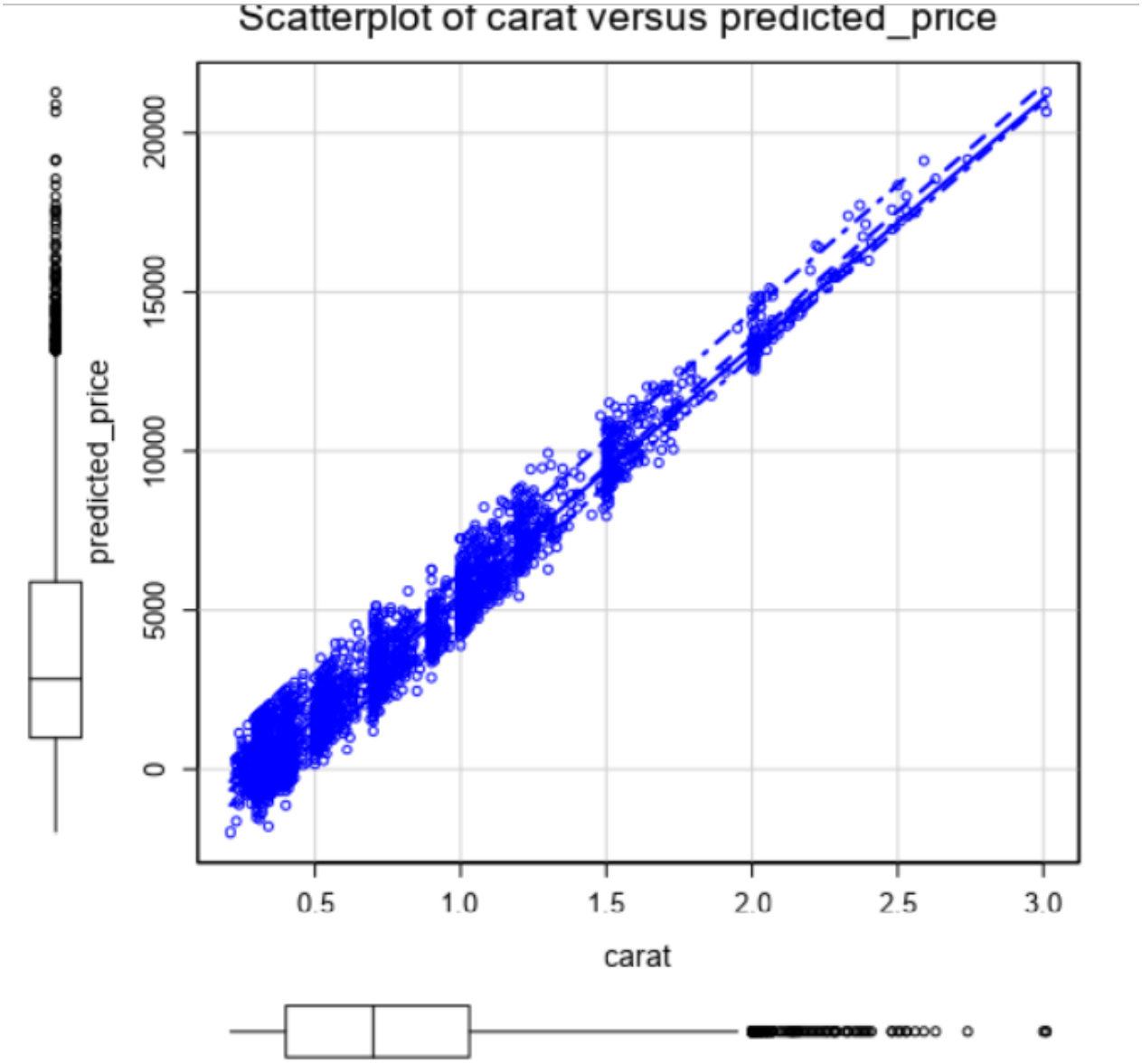
`Suggestion::`

In a real-life situation, we may look to first optimize the model further before computing the final bid price.

- One way of doing that would be --> Replacing all the negative predicted prices, with a value of zero.
  OR
- We can add more factors to our model which affect the price of a diamond.

1. **The student has provided plots for both old and new diamond prices. The two prices can be plotted in separate plots or a single one.**
2. **The student has defined *carat* on X-axis and *price* on the Y-axis.**


Scatterplot of carat versus price
price
0
5000
10000
15000
1
2
3
4
5
carat



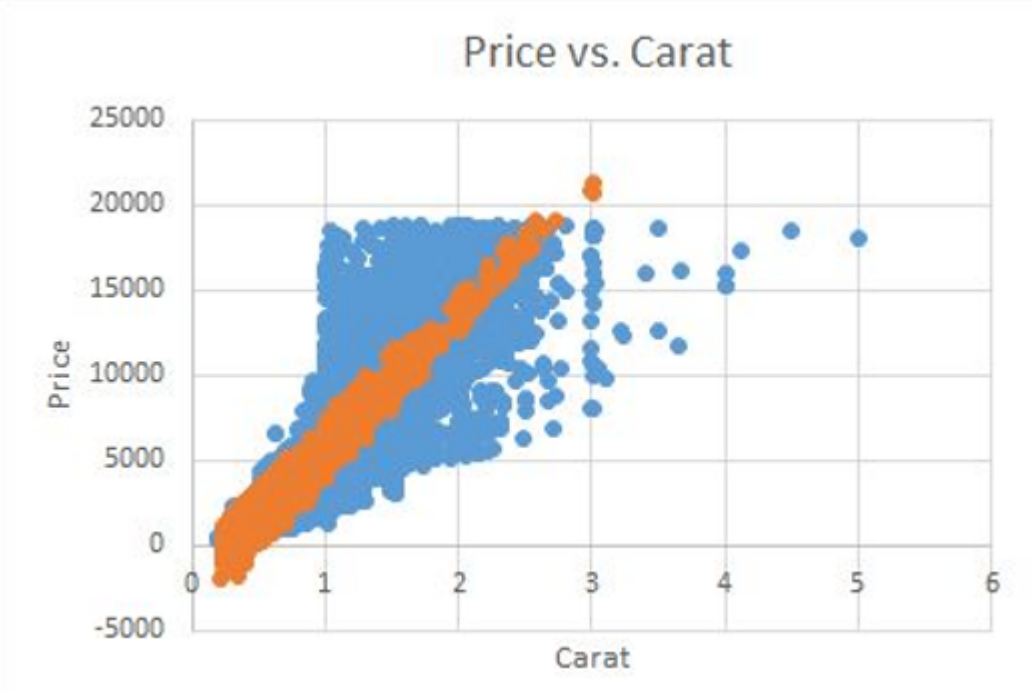
Very meticulously done! The visuals you've created are clear & informative.

`Additional feedback`

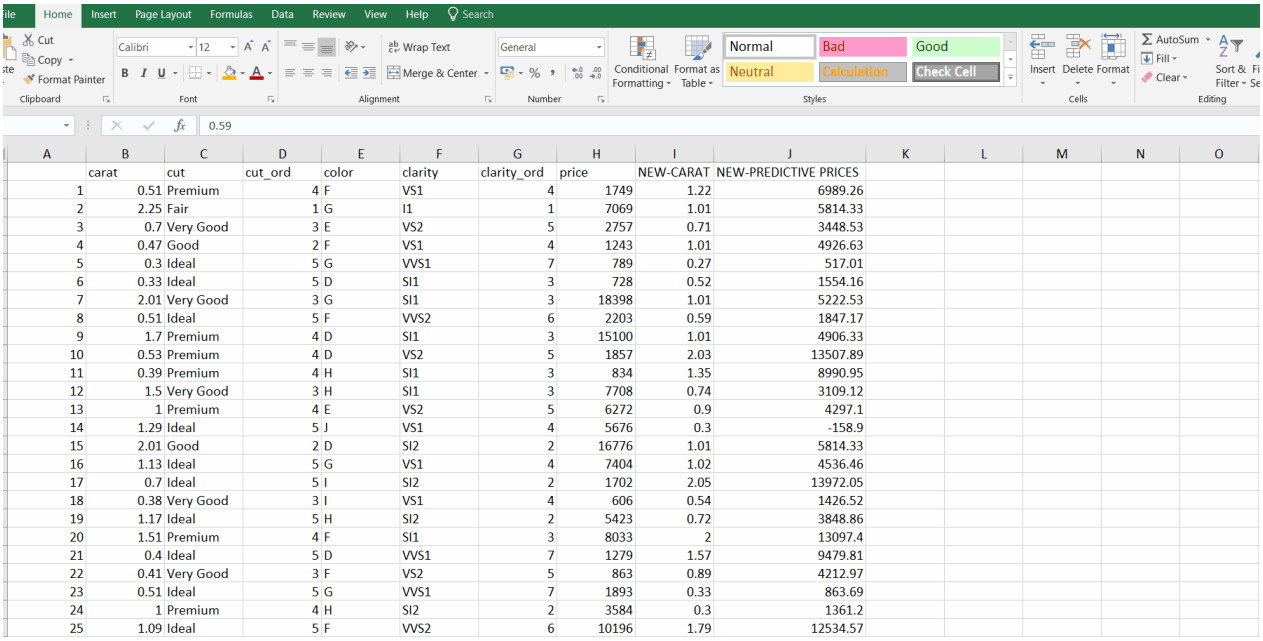
If you have the time, please go through this resource --> Data visualization . It suggests some good tips for chart formatting. I hope it will add to your knowledge.

Additionally, you can also create a combined graph in excel for easier comparison (Optional)

Combined Graph



Making of the combined graph



	carat	cut	cut_ord	color	clarity	clarity_ord	price	NEW-CARAT	NEW-PREDICTIVE PRICES
1	0.51	Premium	4	F	VS1	4	1749	1.22	6989.26
2	2.25	Fair	1	G	I1	1	7069	1.01	5814.33
3	0.7	Very Good	3	E	VS2	5	2757	0.71	3448.53
4	0.47	Good	2	F	VS1	4	1243	1.01	4926.63
5	0.3	Ideal	5	G	VVS1	7	789	0.27	517.01
6	0.33	Ideal	5	D	SI1	3	728	0.52	1554.16
7	2.01	Very Good	3	G	SI1	3	18398	1.01	5222.53
8	0.51	Ideal	5	F	VVS2	6	2203	0.59	1847.17
9	1.7	Premium	4	D	SI1	3	15100	1.01	4906.33
10	0.53	Premium	4	D	VS2	5	1857	2.03	13507.89
11	0.39	Premium	4	H	SI1	3	834	1.35	8990.95
12	1.5	Very Good	3	H	SI1	3	7708	0.74	3109.12
13	1	Premium	4	E	VS2	5	6272	0.9	4297.1
14	1.29	Ideal	5	J	VS1	4	5676	0.3	-158.9
15	2.01	Good	2	D	SI2	2	16776	1.01	5814.33
16	1.13	Ideal	5	G	VS1	4	7404	1.02	4536.46
17	0.7	Ideal	5	I	SI2	2	1702	2.05	13972.05
18	0.38	Very Good	3	I	VS1	4	606	0.54	1426.52
19	1.17	Ideal	5	H	SI2	2	5423	0.72	3848.86
20	1.51	Premium	4	F	SI1	3	8033	2	13097.4
21	0.4	Ideal	5	D	VVS1	7	1279	1.57	9479.81
22	0.41	Very Good	3	F	VS2	5	863	0.89	4212.97
23	0.51	Ideal	5	G	VVS1	7	1893	0.33	863.69
24	1	Premium	4	H	SI2	2	3584	0.3	1361.2
25	1.09	Ideal	5	F	VVS2	6	10196	1.79	12534.57

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