



# Diamonds Price Prediction





## CROWN

Area between the table and girdle.

## CROWN ANGLE

This angle is the final stop before light is reflected back toward your eye. If this key transition is too sharp then the light will be cast downward and the diamond will appear lifeless when viewed from above. Too large and light will escape the crown greatly affecting a diamond's fire and brilliance.

## PAVILION ANGLE

Much like the crown angle the pavilion angle is essential to the collection and subsequent reflection of light. Too shallow and light not reflect toward the crown leading to a dull appearance. If the angle is too deep precious light will escape prematurely at the expense of brilliance.

## PAVILION

The area below the girdle containing angled facets which come to a point at the culet.

## TABLE

Resting at the top of a diamond, the table is the largest, most visible facet.

## DEPTH

The measurement of a diamond from the center of the table through its culet.

## CULET

The measurement of a diamond from the center of the table through its culet.

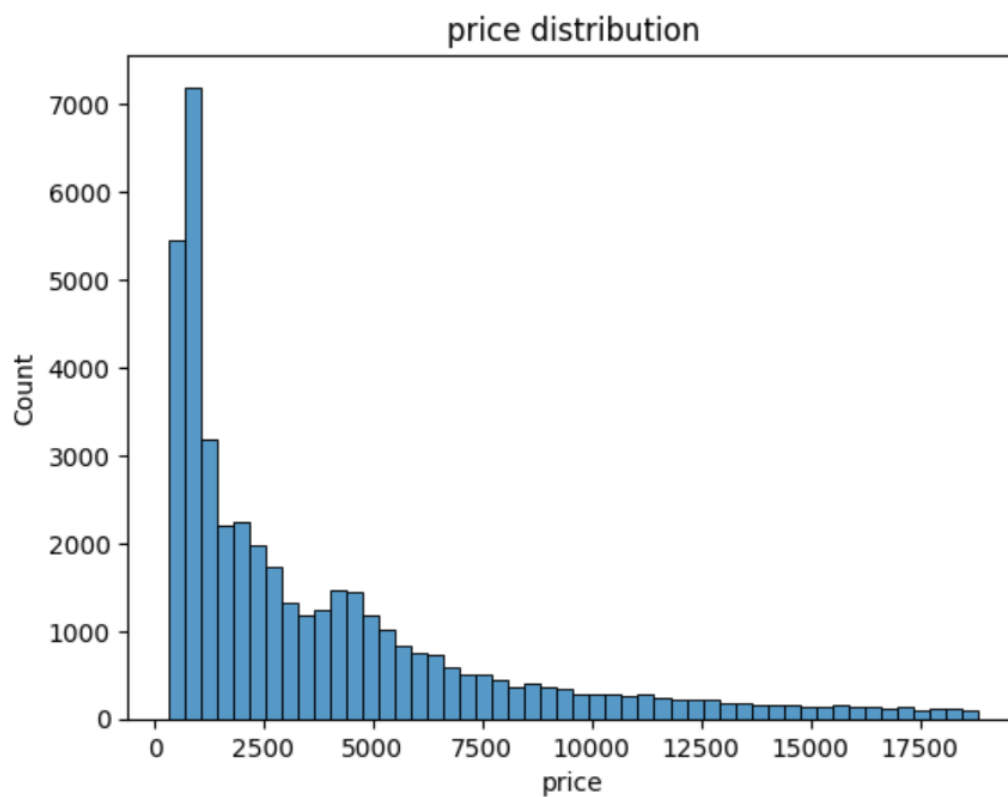
## GIRDLE

The small area separating the upper section (crown) from the lower section (pavilion) of the diamond. On a round brilliant diamond the girdle is scalloped with 16 hills and valleys. A thicker girdle contributes to its overall depth percentage. This greater depth may add weight and therefore cost without improving the diamonds face-up appearance. Traditionally the girdle has a frosted appearance but some cutters will micro facet them to give a completely finished look.



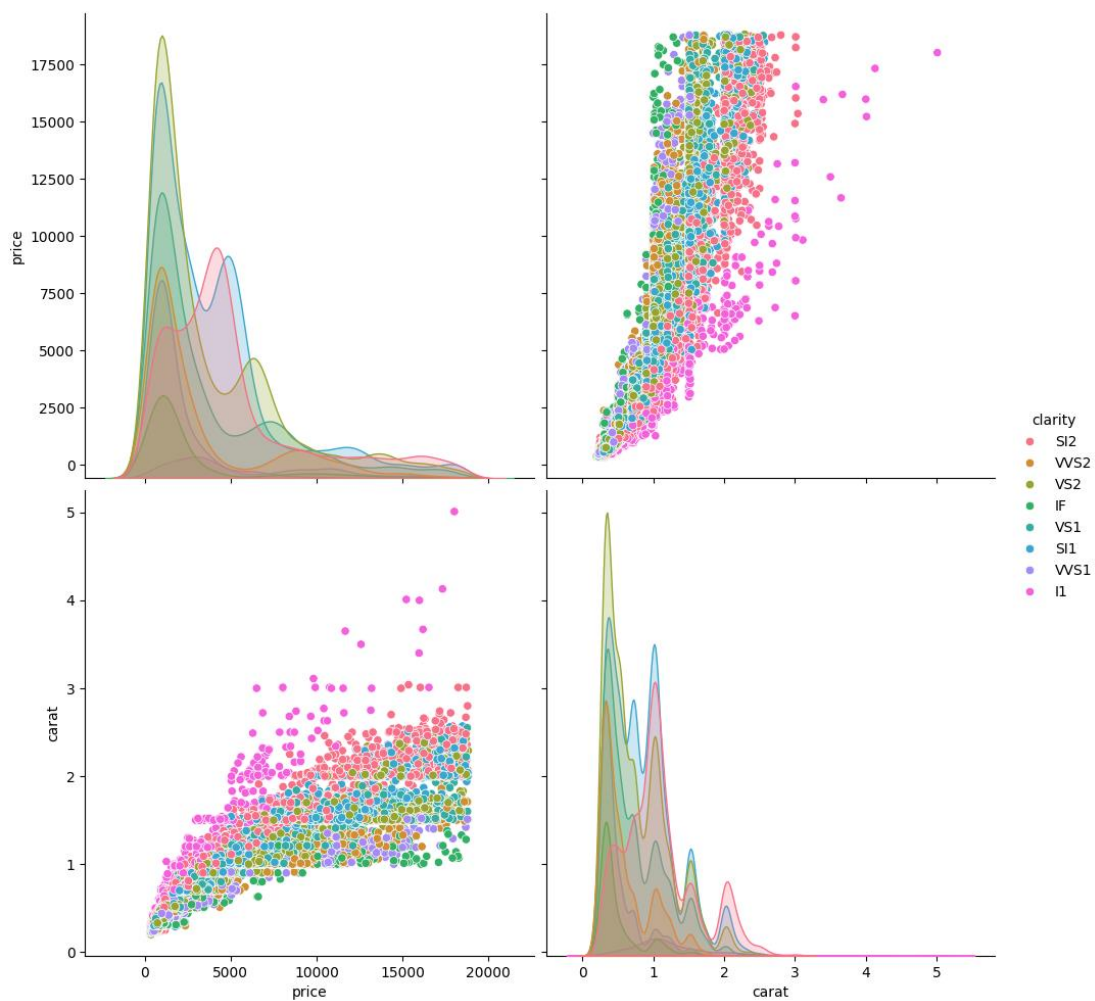


# EDA: Exploratory Data Analysis





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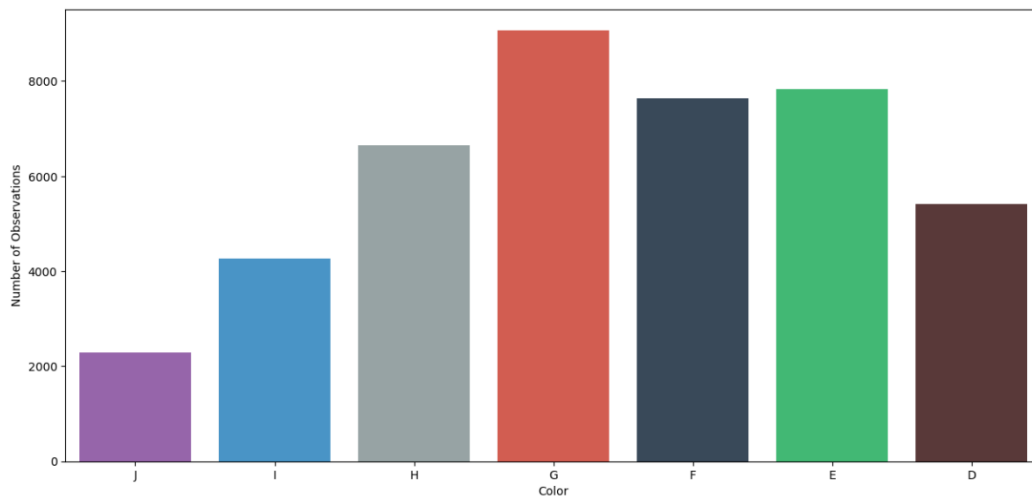
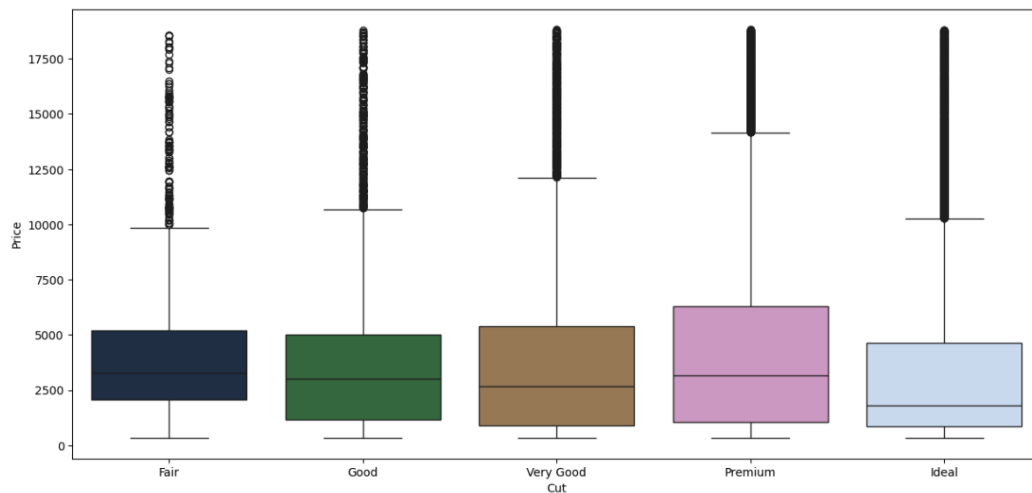




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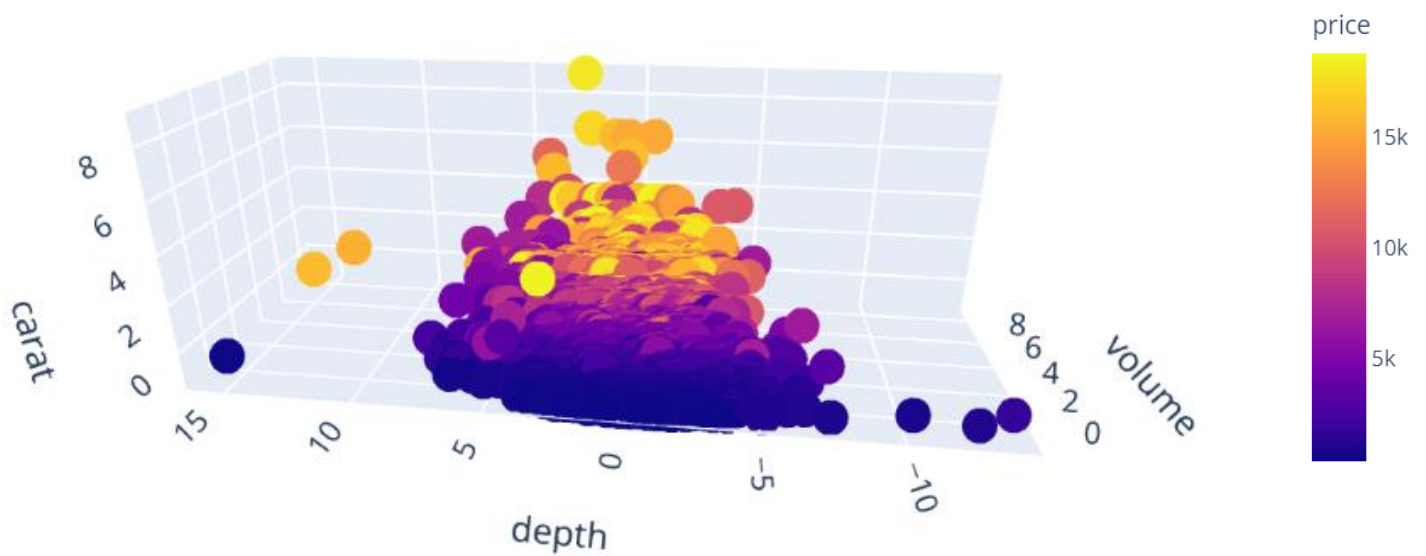
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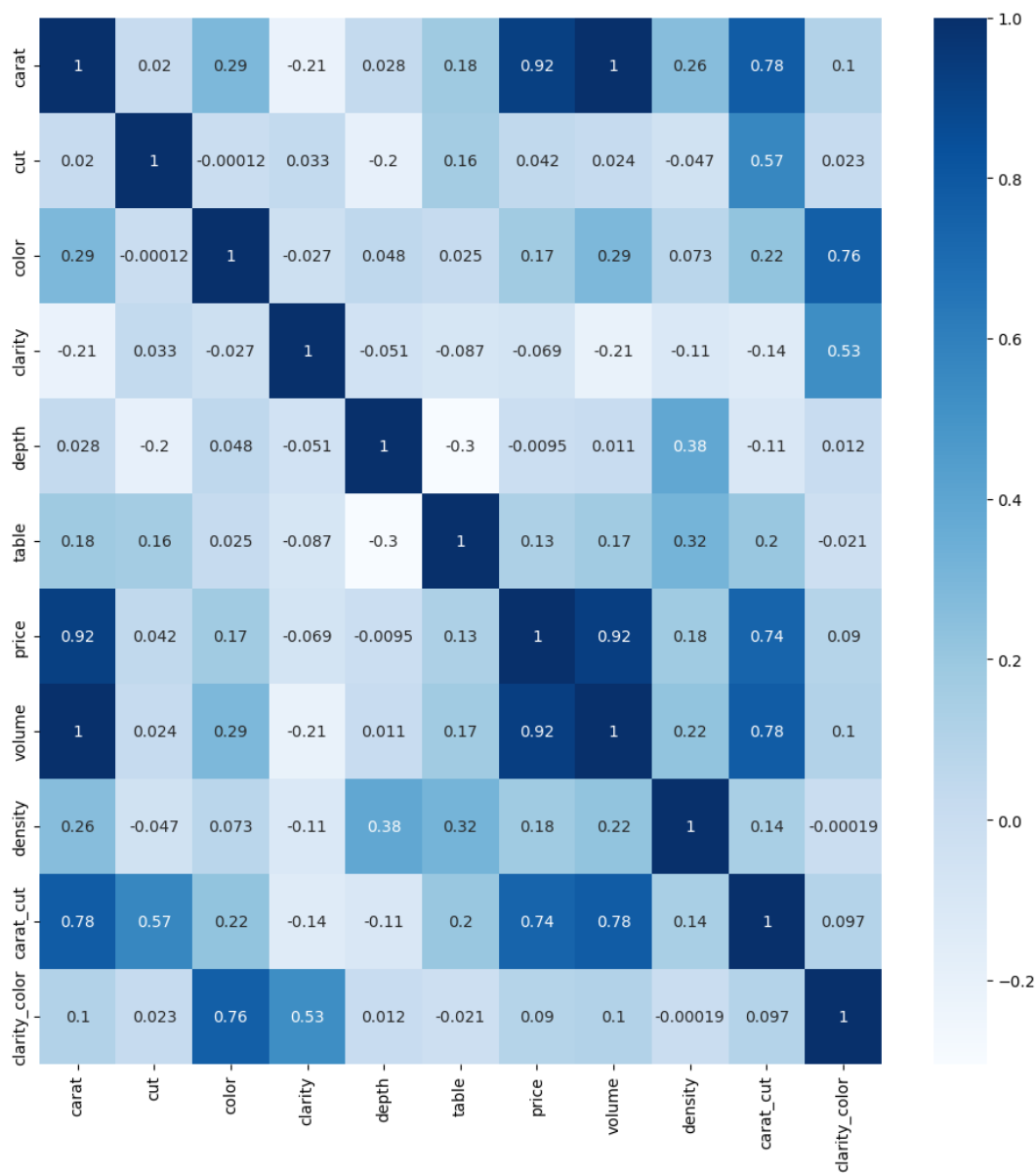


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# Create New Features







# Models Results

	Model	$R^2$	MSE	RMSE	MAE	Adjusted $R^2$
0	LinearRegression	0.8845	1.808432e+06	1344.779468	917.655156	0.8844
1	DecisionTreeRegressor	0.9668	5.201055e+05	721.183387	361.846435	0.9667
2	RandomForestRegressor	0.9823	2.775824e+05	526.860850	272.109677	0.9823
3	XGBRegressor	0.9808	3.003596e+05	548.050699	279.253440	0.9808
4	XGBRegressor best estimator	0.9821	2.807258e+05	529.835678	269.643746	0.9821

