

# Prediction of Housing Prices in Ames, Iowa

Lee's Estate

# Problem Statement

As a realty firm seeking to expand our market around the Midwestern regions of America, specifically in Ames, Iowa. We are interested in exploring the price of real estate in that region to ensure we remain competitive as we enter the local market.



Why you might ask?

**33**

**2019 Top 100 Best Places to Live**

**Ames, IA**

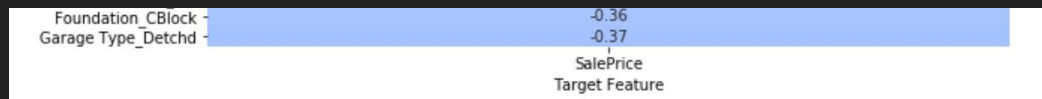
Population: 67,027

# Exploratory Data Analysis

- Features related to the Overall, External and Kitchen Quality have strong positive correlations with the Sale Price of the housing unit.



- Features related to Detached Garage and Cinder Block have a negative correlation with the Sale Price of the housing unit.

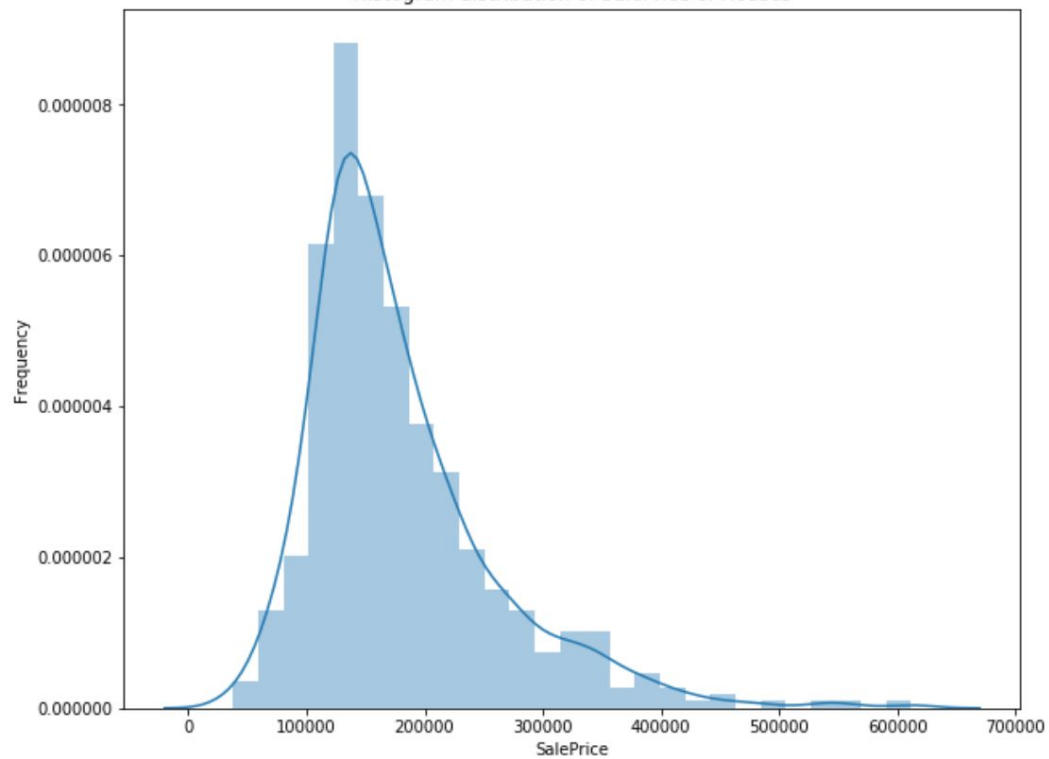


# Model selection

- The goal was to create an accurate model to predict the housing sale prices.
- To do that we used regression techniques, enhanced by feature engineering, feature selection and regularization.
- These models are compared by their train and test R2 scores; ensuring similar numbers and as close to 1.0 as possible.

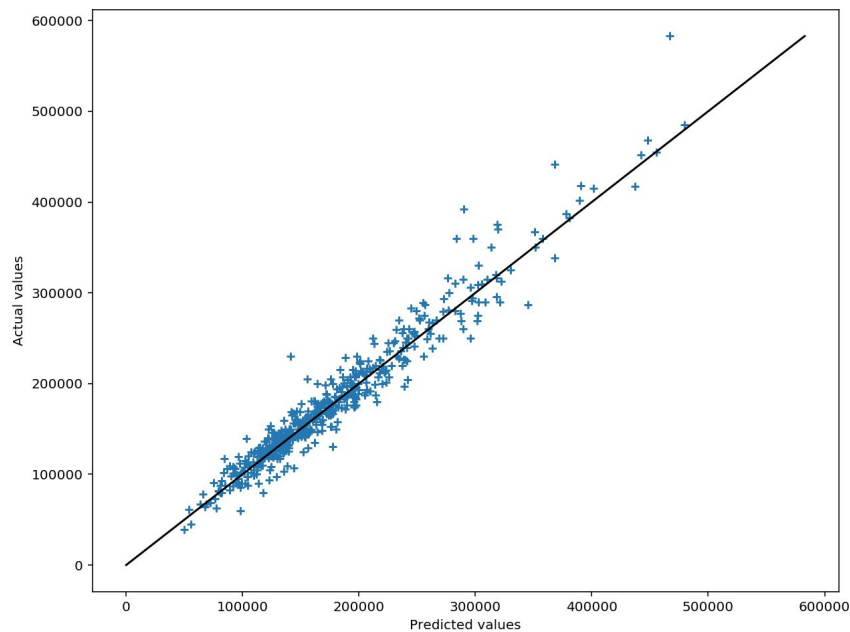
	Baseline Linear Regression	GridSearch with ElasticNet	Grid with ElasticNet, log Transformed Y
Train R2 score	0.9399	0.9334	0.9199
Test R2 score	0.9284	0.9194	0.9244

Histogram distribution of SalePrice of Houses



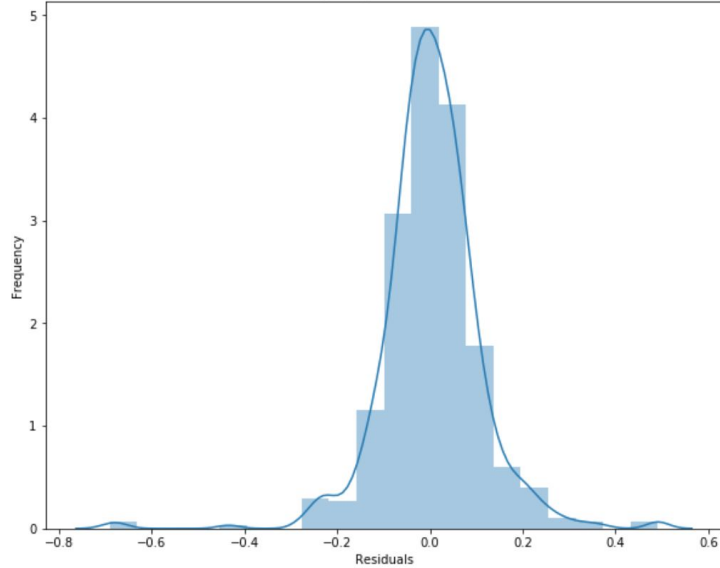
# Model Evaluation

Selected Model: GridSearch with ElasticNet (Log Transformed Y)

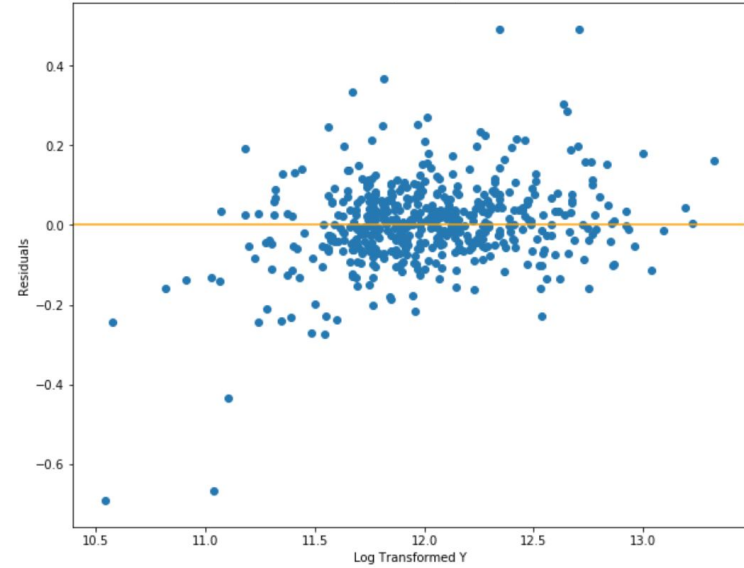


# Model Evaluation continued.

Histogram plot of Residuals



Homoscedasticity Assumption is Met





# Conclusion

The final selected model had  $R^2$  test score 0.9244. Which means that 92.44% of the predicted data fits the regression model. Hence, our model is good enough to be used to predict a sale price for a housing unit to be sold; knowing that our price would be competitive enough in the market.

## Key Points:

Evaluate and pay attention to the overall, external and kitchen quality of the house as it would be key determinations of a higher housing price. And detached garage and cinder block foundations affect the price negatively