Ames Housing Data

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Getting to know Ames

Population	66,427
Area	72.32 sq km
Housing Units	23,876
Median House Value	$196,400

Ames's Neighborhoods

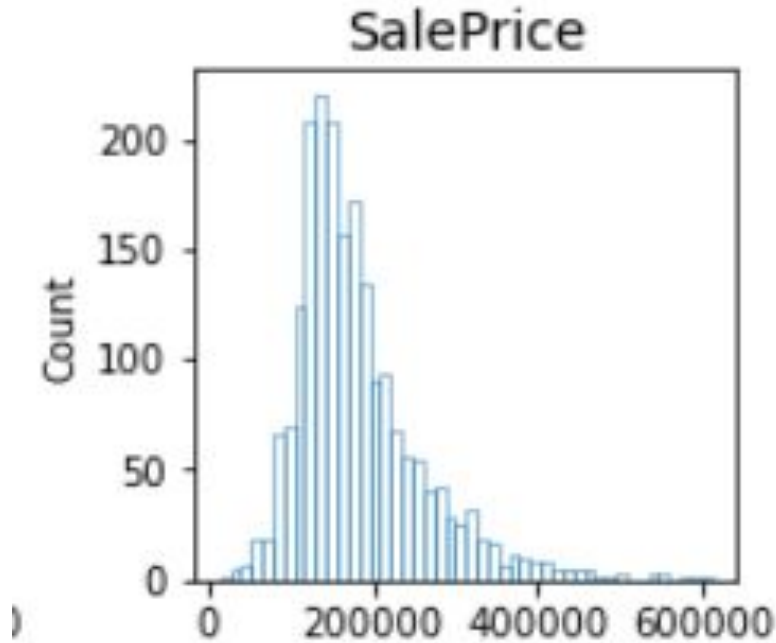North Ridge Heights

Stonebridge

Somerset

College Creek

Overview of Dataset

- Information used in computing assessed values for individual residential properties sold in Ames, IA from 2006-2010
- 2930 observations, 82 variables
  - Square footage of house, overall quality of rooms etc
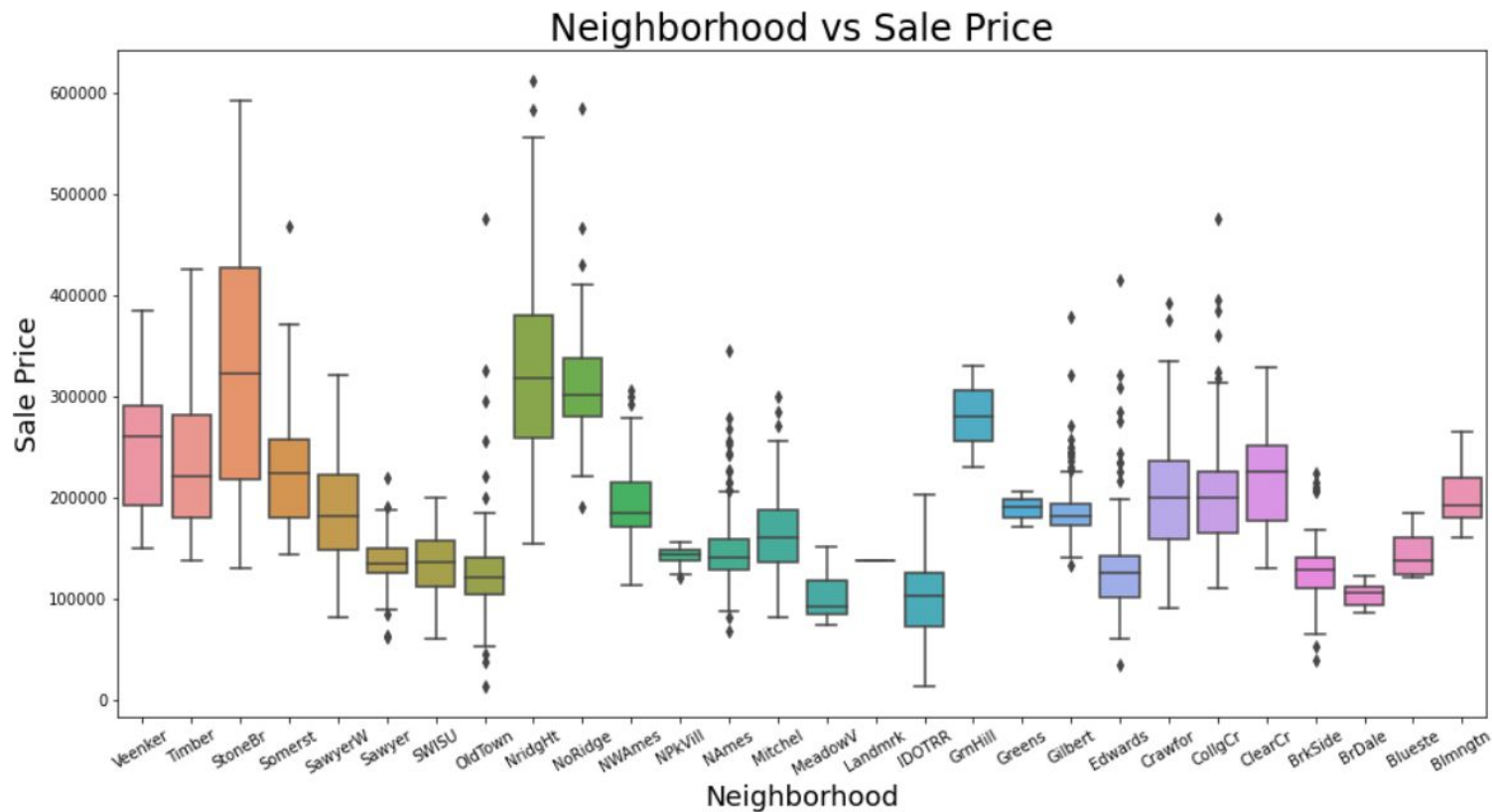- Target variable: Sales Price

Problem Statement

How can we use a linear regression model to best predict house sale prices in Ames, Iowa?

Sale Price of Houses in Ames

SalePrice

- Right skewed

- Peak is right around the $150,000 - 200,000

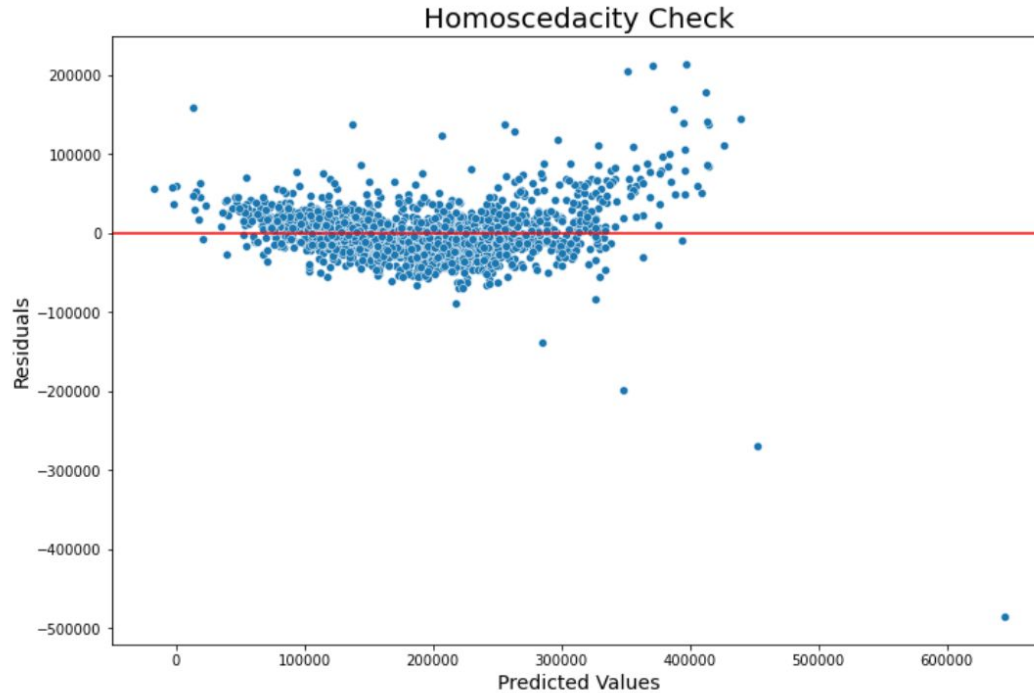# Neighborhoods in Ames

Neighborhood vs Sale Price

Multiple Linear Regression Requirements

- ## Linear Relationship
    - Outcome variable vs independent variable
- ## Multivariate Normality
    - Residuals are normally distributed
- ## No Multicollinearity
    - Heatmap shows some multicollinearity
    - Garage cars, garage area and Year Built, Garage Yr Built
- ## Homoscedasticity
    - Variance of error are similar across independent variables

Homoscedasticity
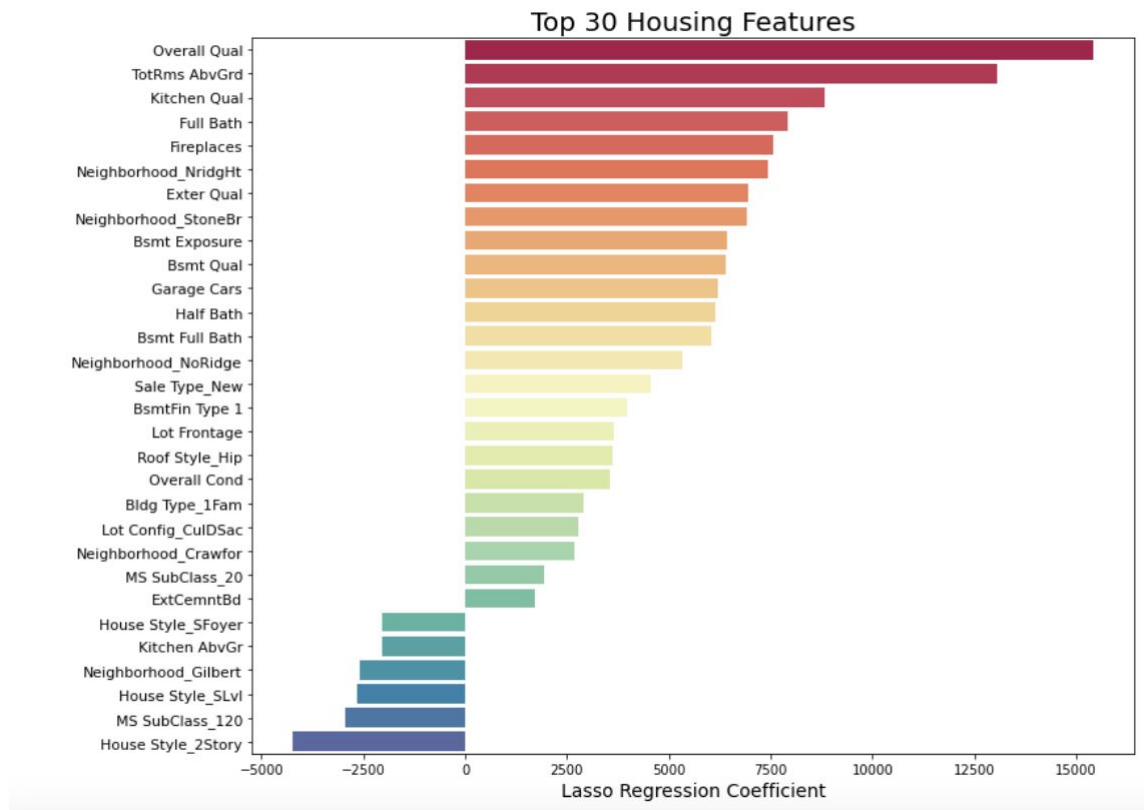
Data Cleaning

Before

After

```
housing.shape
```

(2051, 81)

```
housing.shape
```

(2049, 121)

Feature Correlation to Sale Price after Data Cleaning

Top 30 Housing Features

Prediction Model

Lasso Predictions of Sale Price vs Actual Sale Price

- The final model accounts for around 88% of the variation in Sale Price of a home
- Model is able to predict the Sale Price within approx. $26,000

Limitations

- Only accounts for Ames, Iowa
- 2006-2010 was during economic crisis
  - Home prices were plummeting at this point

Recommendations

Any homeowner that is looking to maximize their home value could do the following:

- Improve the overall material and finish of the house

- Improve the kitchen quality

- Improve external quality of the house

- If possible, improve garage size to fit more cars