



# Ames Housing Data and Kaggle Challenge

Group 4 Presentation

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# Agenda

1. Problem Statement
2. Methodology
3. Explanatory Descriptive Analysis (EDA)
4. Model Performance
5. Conclusions & Recommendations

# Problem Statement

What are the important property features that would help to boost the property value in Ames?

# Methodology

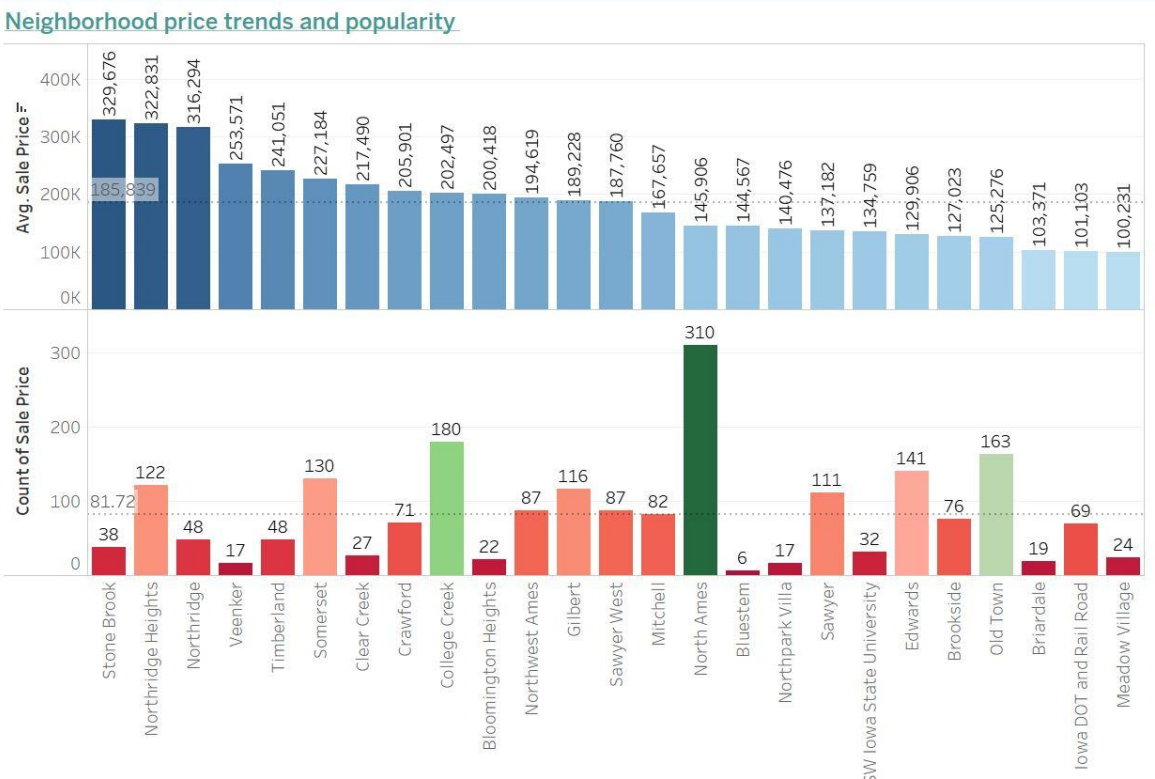
- Dataset is housing sales record in Ames, Iowa between 2006 and 2010
- Encapsulated in the dataset are more than 80 of the physical attributes of each property
- Each describing the quality or class of different aspect of the house
- Number of features simmered down to minimum, highlighting only 30 critical feature that affect sale prices in the final model
- Regression technique deployed for the modelling and prediction of sales price based on the selected features

# Neighborhood price trends and popularity

North Ames, College Creek and Old Town stand out on popularity. Two are below average sales price, only with College Creek a slightly above the average price.

The most pricey neighborhoods are: Stone Brook, Northridge Heights and Northridge. All 3 have average sale price above 300k which significantly higher than the 185k average. That said, they are not popular.

The above 2 observations looking at neighborhood popularity and most pricey neighborhoods draw a conclusion that house price is most important determinant factor for house sales.



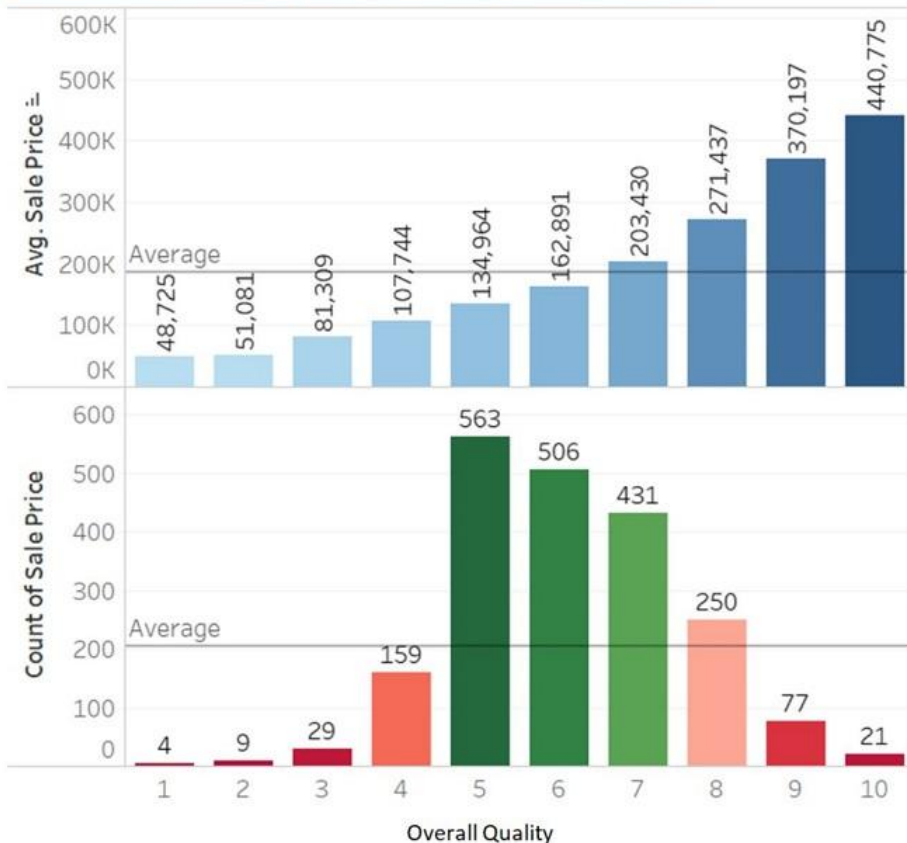
# Overall house quality and sale price

Houses with higher overall quality has a constant upward trend of being more expensive.

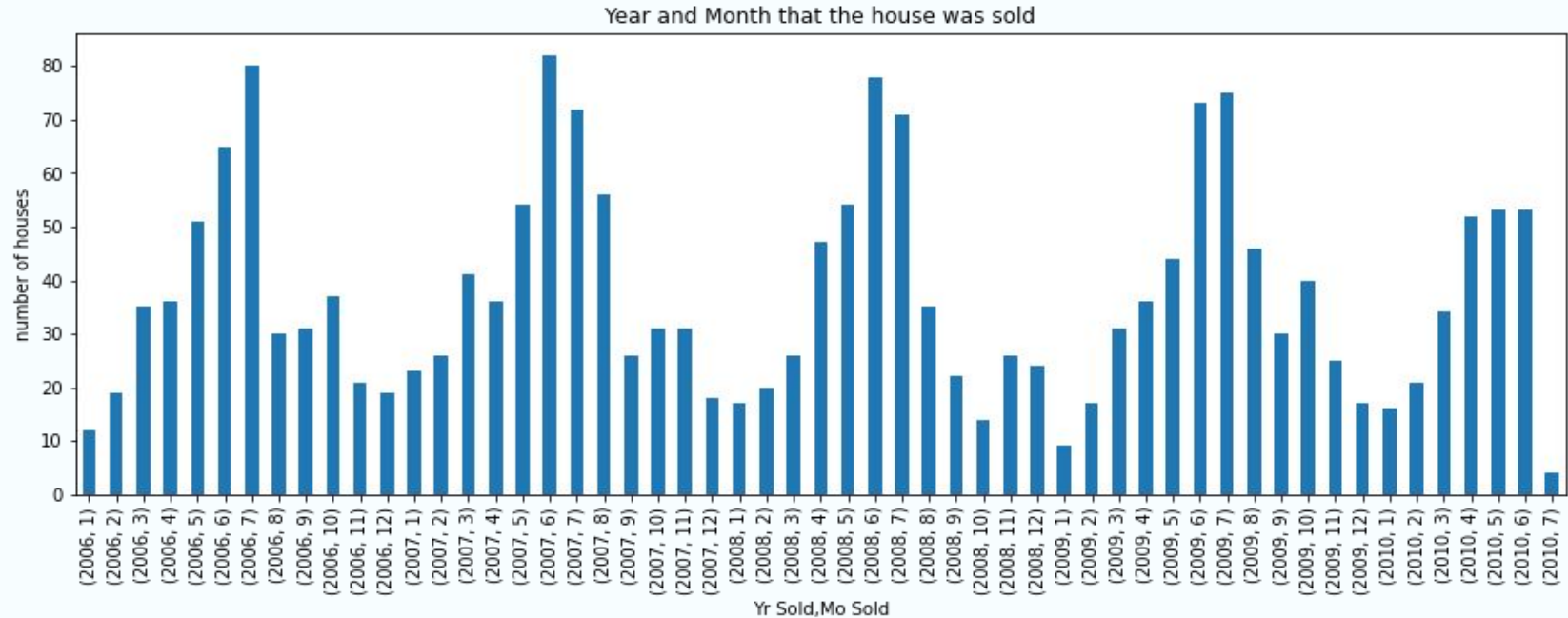
On the other hand, it is observed that not every house buyer is willing to pay top dollar for top end quality, most buyers usually settles for a house at a mid-high level (5-7), in essence finding a balance between the house price and of reasonable quality. Low quality houses are definitely frowned upon.

House sellers should definitely look towards re-modelling their house , but it might not be worthwhile to overspend as not many buyers are looking at the top quality range

Overall house quality and price trends



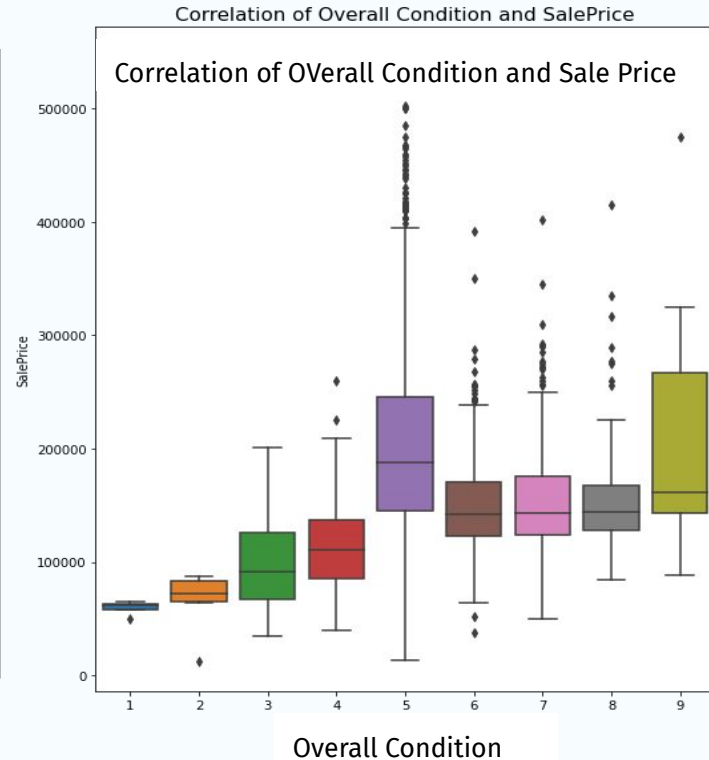
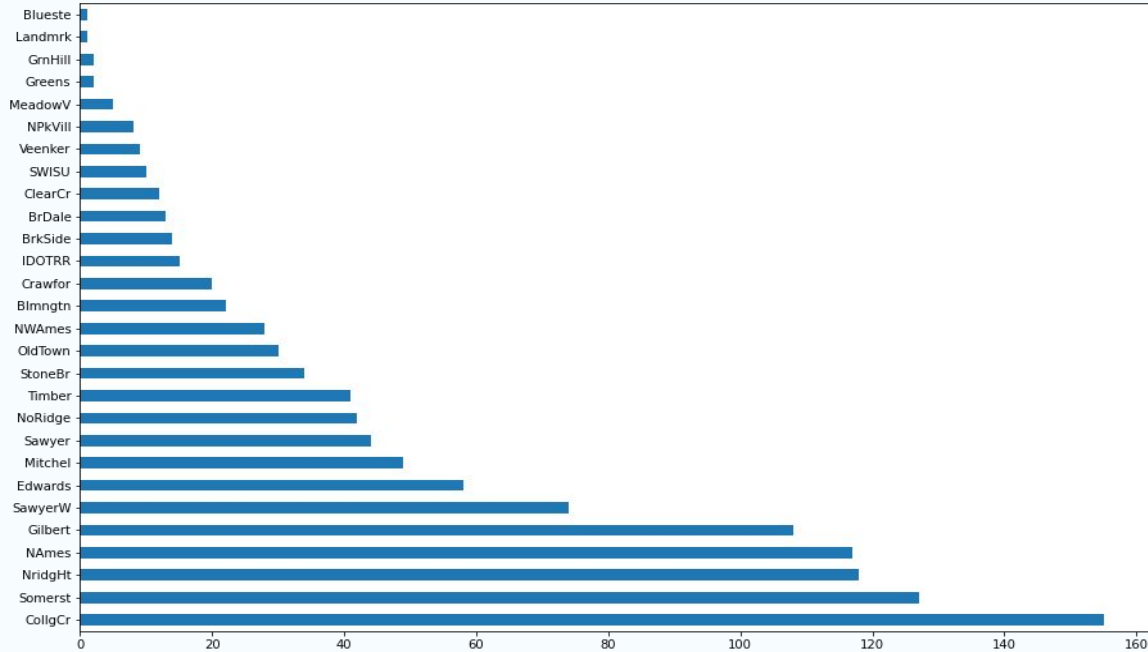
# High Seasonality Effect on Property Sales



- Property sale in Iowa experience a cyclical trend, peak in June and July every year
- Might be motivated by the starting of university school year in Iowa State University
- Might be attributed by summer month (June and July) in United States

# Observation on College Creek

Property Count in Neighborhood with Overall Condition of 5



- College Creek is the the second most neighborhood with the highest property sales
- Most of the houses only score 5 in the overall condition, but yet the sale price may still fetch a premium
- Iowa State University is the biggest employer in Ames



Iowa State University

College Creek, Ames, IA, USA

Add destination

Leave now

OPTIONS

Send directions to your phone

via Lincoln Way

Fastest route, the usual traffic

DETAILS

1 min

0.2 mile

via Lincoln Way

3 min

0.2 mile

via S Sheldon Ave

4 min

0.2 mile

Explore College Creek

Groceries

Hotels

Gas stations

P

Parking Lots

More

Sign in

Anderson Sculpture Garden

Farm House Museum

Iowa State University

Ivy College of Busi

Memorial Union Parking Ramp

Iowa State University Book Store

Iowa State University Memorial Union

State Gym Temporarily closed

College Creek

Ames Intermodal Facility

Jeff's Pizza Shop

Blaze Pizza

Thai Kitchen

Kum & Go

Geoffroy Hall

Union Dr

West St

Union Dr

Sheldon Ave

Lincoln Way

Welch Rd

Stanton Ave

Bay View Ln

Asht Ave

Bussell Rd

N Hyland Ave

S Hyland Ave

1 min 0.2 miles

3 min 0.2 miles

4 min 0.2 miles

Satellite

Ames

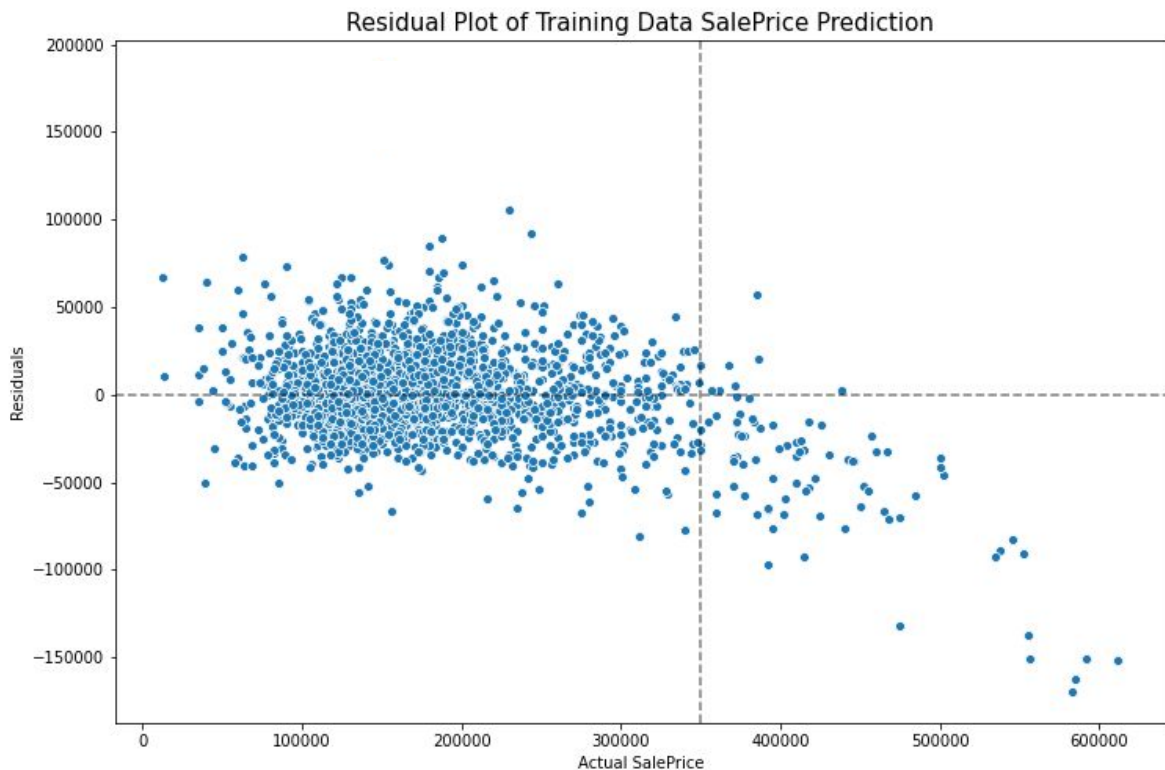
Iowa 50012, USA

42.024711, -93.646369

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# Model Performance and Limitation

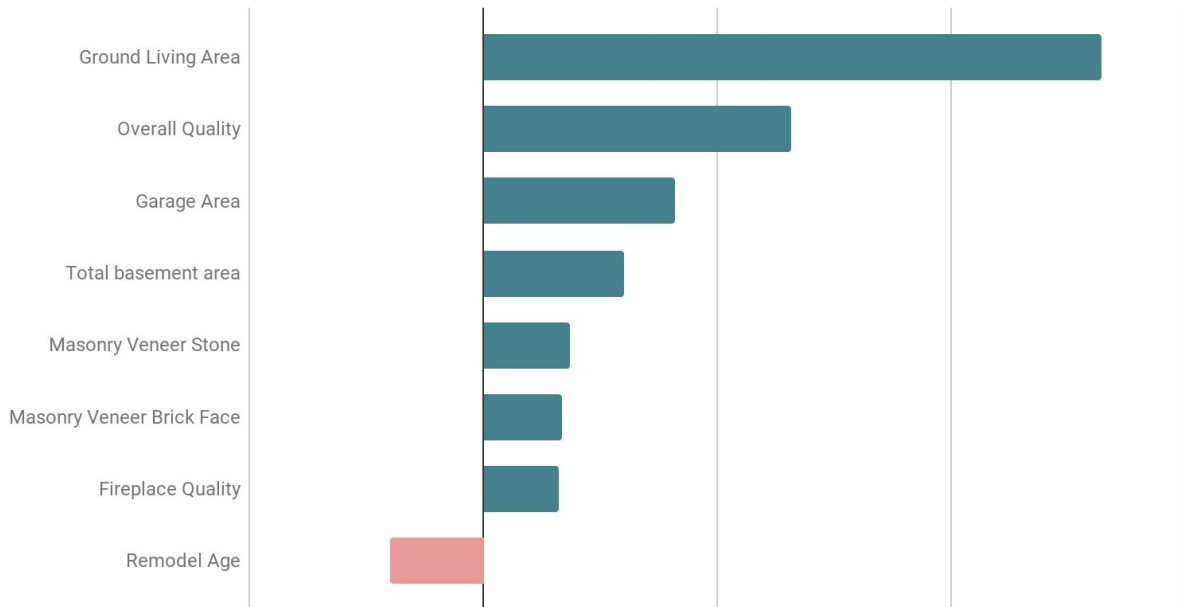


- Model is accurate for property priced below \$350,000
- Accuracy lies within  $\pm 50,000$  for each prediction
- Constantly undervalue property above \$350,000
- Lack of training data on high value properties

# Recommendations

- As expected, ground living area and overall quality of the house plays the most important role in sale price
- However, there are some sub feature of the house that are actionable to raise the sale value

Features Ranked by Importance



# Conclusion & Business Recommendations

- For Existing House Owner that are looking to sell, there are several methods to boost the selling price:
  - Clean and fix fireplace - (Increase home value by \$1000 - \$5000<sup>1</sup>)
  - Put the property on sale in summer when the demand is the highest (Increase saleprice by \$13,500<sup>2</sup>)
  - Renovate the interior of garage - (Able to get 70% ROI<sup>3</sup>)
- For Prospective Home Buyer, it would be cost-effective to purchase an undervalued homes by
  - Using the predictive model and input the house feature to devise a benchmark pricing
  - Make an informed decision
  - Consider buying a house at College Creek as an investment