

# Increasing the home value in Ames, IA

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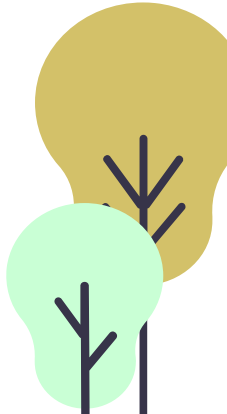
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# 01 Purpose

# Problem Statement

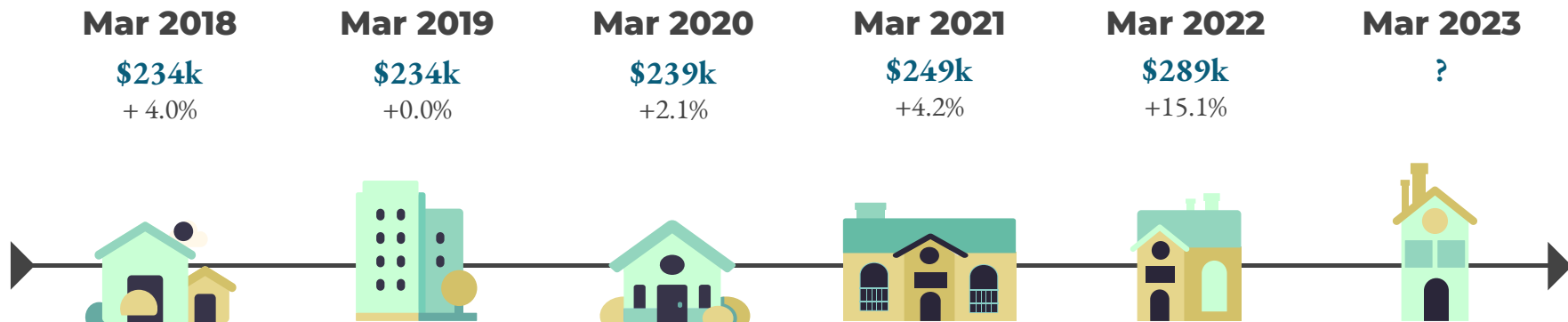
As of March 2022, the median home value in Ames, Iowa is \$286,826. The median home value has not seen much consistency with year over year percent changes in the past 5 years due to the housing crash in 2018/2019 and post COVID-19 economic effects in 2021/2022.

The city of Ames is interested in identifying ways in which they and their residents can do their part to help increase the city's median home value in spite of the continuing post COVID-19 economic effects.

**This project aims to identify specific housing features that have a high impact on a home's value using machine learning lasso regression model**, so that the city knows what to consider when building new housing and residents know what to consider when building, updating or selling their home.

## **02 Background**

## 5-Year Zillow Home Value Index



## 03 Data

# Dataset

## **The Ames Housing Dataset contains :**

- 2051 observations spanning from 2006 to 2011
- 79 features (39 numerical and 40 categorical)
  - Building/House Type & Style
  - Lot & Land
  - Foundation
  - Neighborhood
  - Roof & Exterior
  - Rooms & Square Footage
  - Basement
  - Garage
  - Deck, Porch & Fence
  - Pool



## **04 Methodology**

# Machine Learning

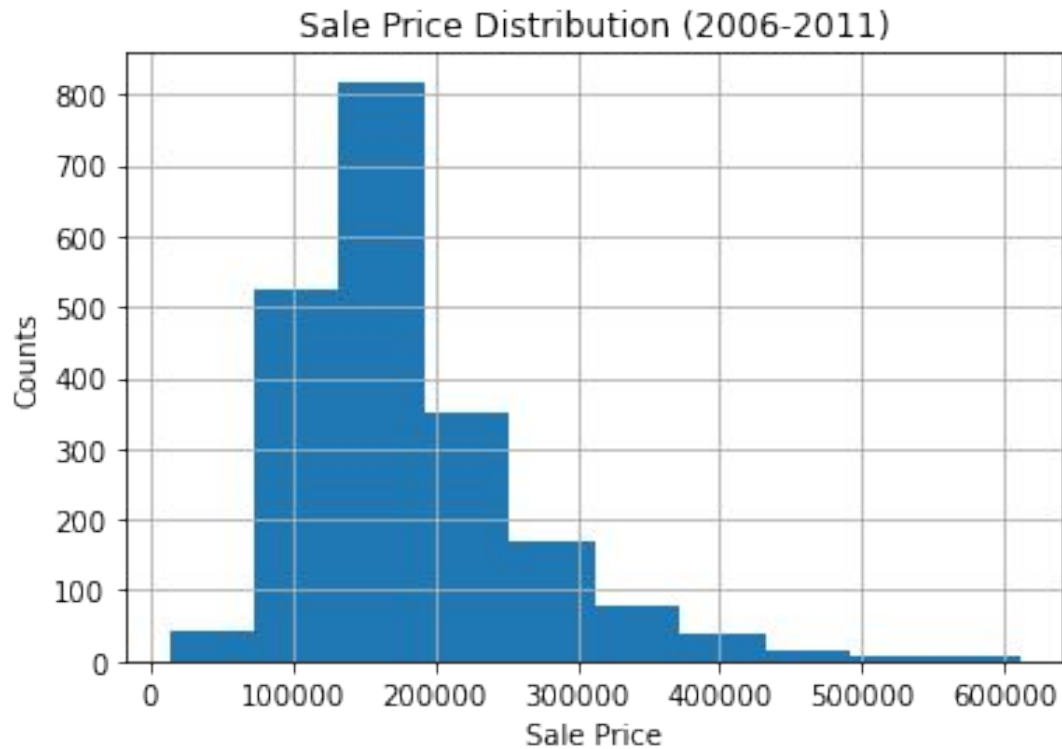
- **What is it?**
  - The process of letting your machine use data to learn the relationship between predictors (housing features) and responses (sale price).
- **Which model was used?**
  - Lasso Regression
    - Supervised
    - White-Box
    - Linear Regression
    - Regularization

# LassoCV

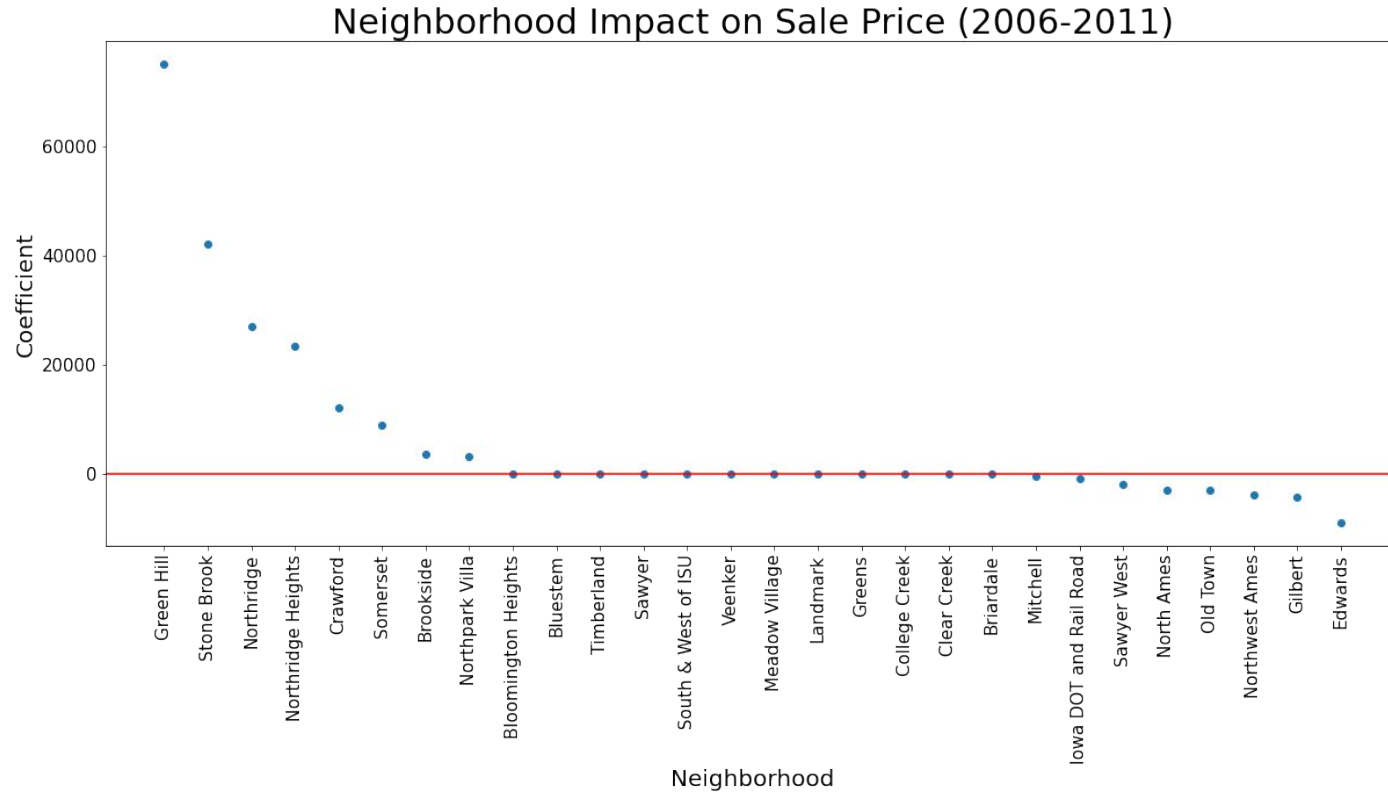
- **Best Performing Alpha**
  - 46.4158883361278
- **Cross Validation Score**
  - 0.838402361575566
- **R2 Scores**
  - Training Data: 0.9356412511488261
  - Validation Data: 0.9274721464439819

## **05 Findings**

## Home Sale Price Distribution



## Neighborhood Impact on Home Sale Price



# Neighborhood Insights (Top 5)

Top 5 neighborhoods that increase home value:

	Neighborhood	By...
1	Green Hills	\$75.2k
2	Stone Brook	\$42.3k
3	Northridge	\$27.0k
4	Northridge Heights	\$23.5k
5	Crawford	\$12.1k

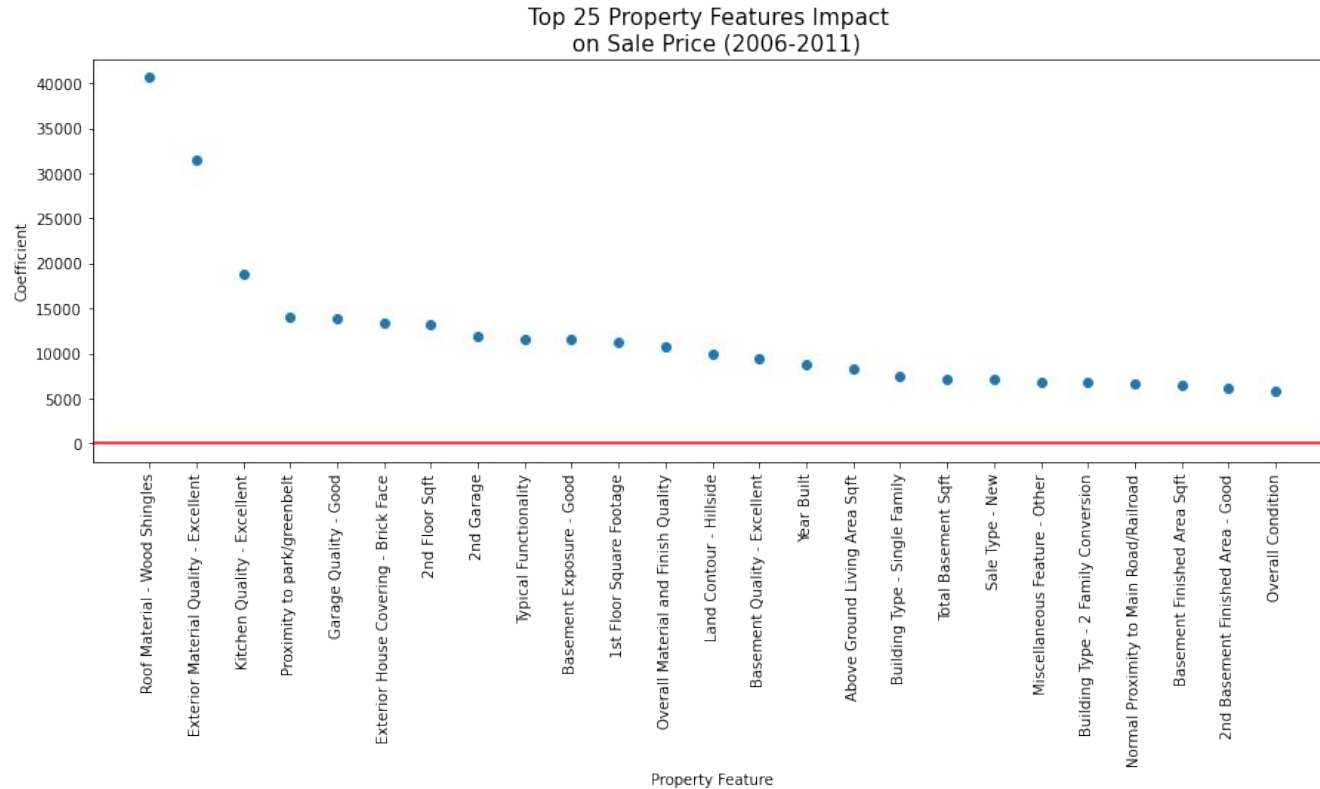
# Neighborhood Insights (Bottom 5)

Bottom 5 neighborhoods that decrease home value:

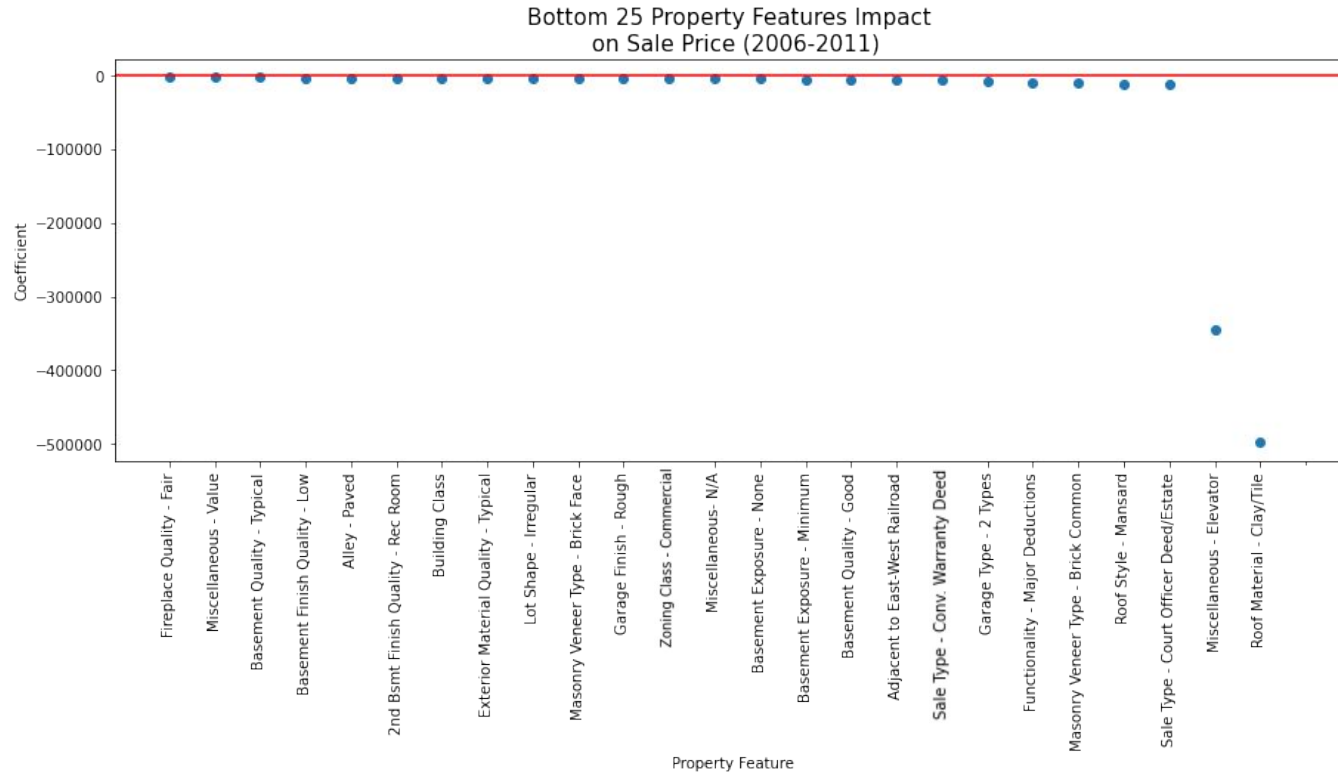
	Neighborhood	By...
1	Edwards	\$8.9k
2	Gilbert	\$4.1k
3	Northwest Ames	\$3.9k
4	Old Town	\$3.0k
5	North Ames	\$2.9k



## Top 25 Home Feature Impact on Home Sale Price



## Bottom 25 Home Feature Impact on Home Sale Price



# Home Insights (Top 5)

Top 5 home features that increase home value:

	Feature	By...
1	Roof Material - Wood Shingle	\$40.7k
2	Exterior Material Quality - Excellent	\$31.5k
3	Kitchen Quality - Excellent	\$18.9k
4	Proximity to a park/greenbelt	\$14k
5	Garage Quality - Good	\$14k

# Home Insights (Bottom 5)

Bottom 5 home features that decrease home value:

	Feature	By...
1	Roof Material - Clay or Tile	\$498.2k
2	Elevator	\$345.2k
3	Court Officer Deed/Estate Sale Type	\$12.7k
4	Roof Style - Mansard	\$12.5k
5	Masonry Veneer Type - Brick Common	\$10.9k

## **06 Conclusion**

# Recommendations

- Investing in housing in the Green Hills, Stone Brook, Northridge, Northridge Heights and Crawford neighborhoods
- Investing in more parks and green spaces
- Considering:
  - Wood Shingle Roofing (and avoid Clay, Tile or a Mansard style)
  - Excellent Exterior Material Quality (and avoid Common Brick)
  - Excellent Kitchen Quality
  - Good Garage Quality
  - Brick Face Exterior House Covering
  - Second Floor Square Footage
  - Avoiding unnecessary luxury features (elevator, 2 garages)

# Next Steps

1. Gaining more insight as to what is considered Excellent, Good, etc. for some of the categorical features
2. A follow-up analysis on an updated housing dataset to see if the findings of this analysis continue to hold true.

# Questions?

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