Flipping Ames

INSIGHT THROUGH STATISTICAL MODELING

Introduction

+ Data Description

+ Ames Description

+ Model description – Linear Regression

+ Model description – Polynomial/OLS

+ Outliers

+ Features
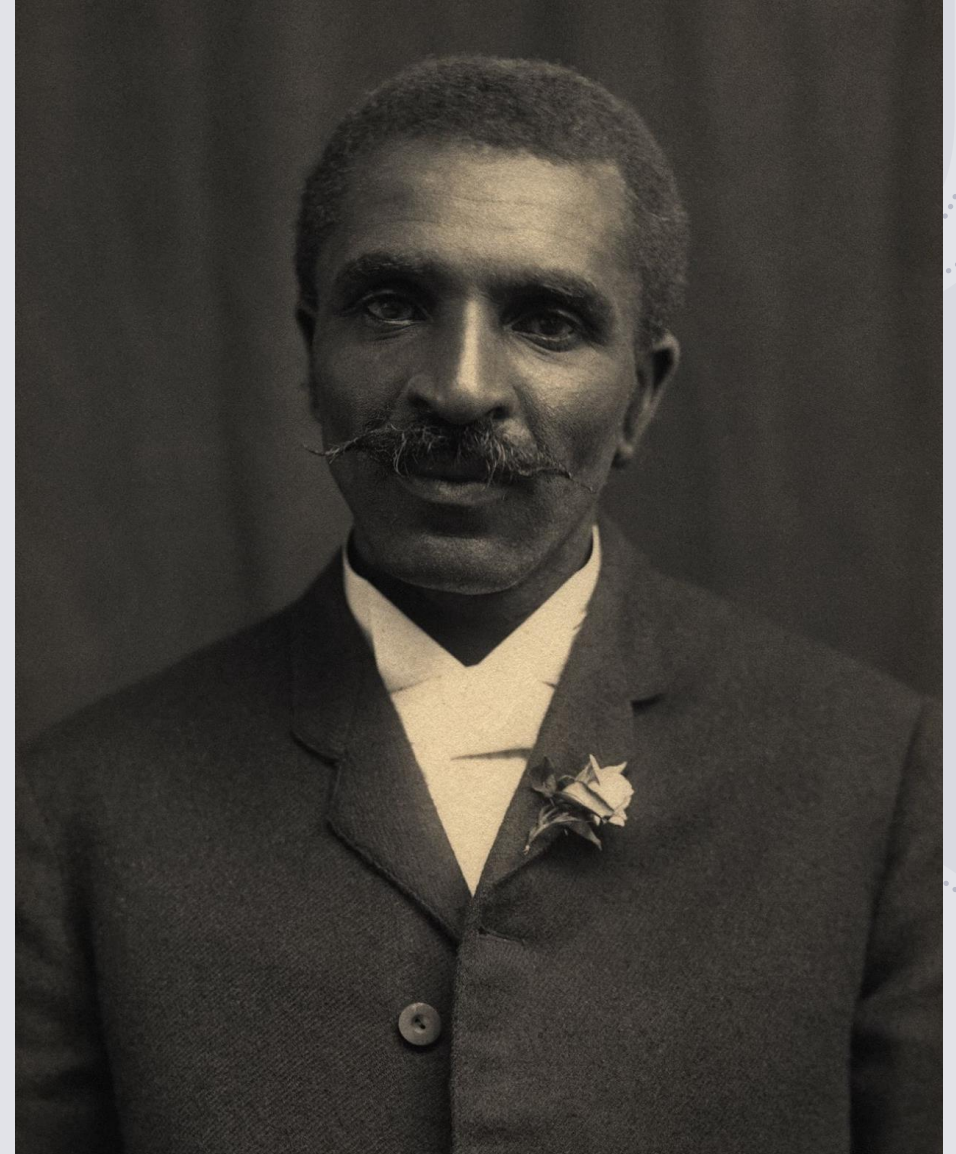
+ Model Interpretation

+ Conclusion

Data description

- 82 columns

- Data types

  -39 numerical

  -42 non-numerical

- Conditions

- Locations

- Years

- Material types

Ames description
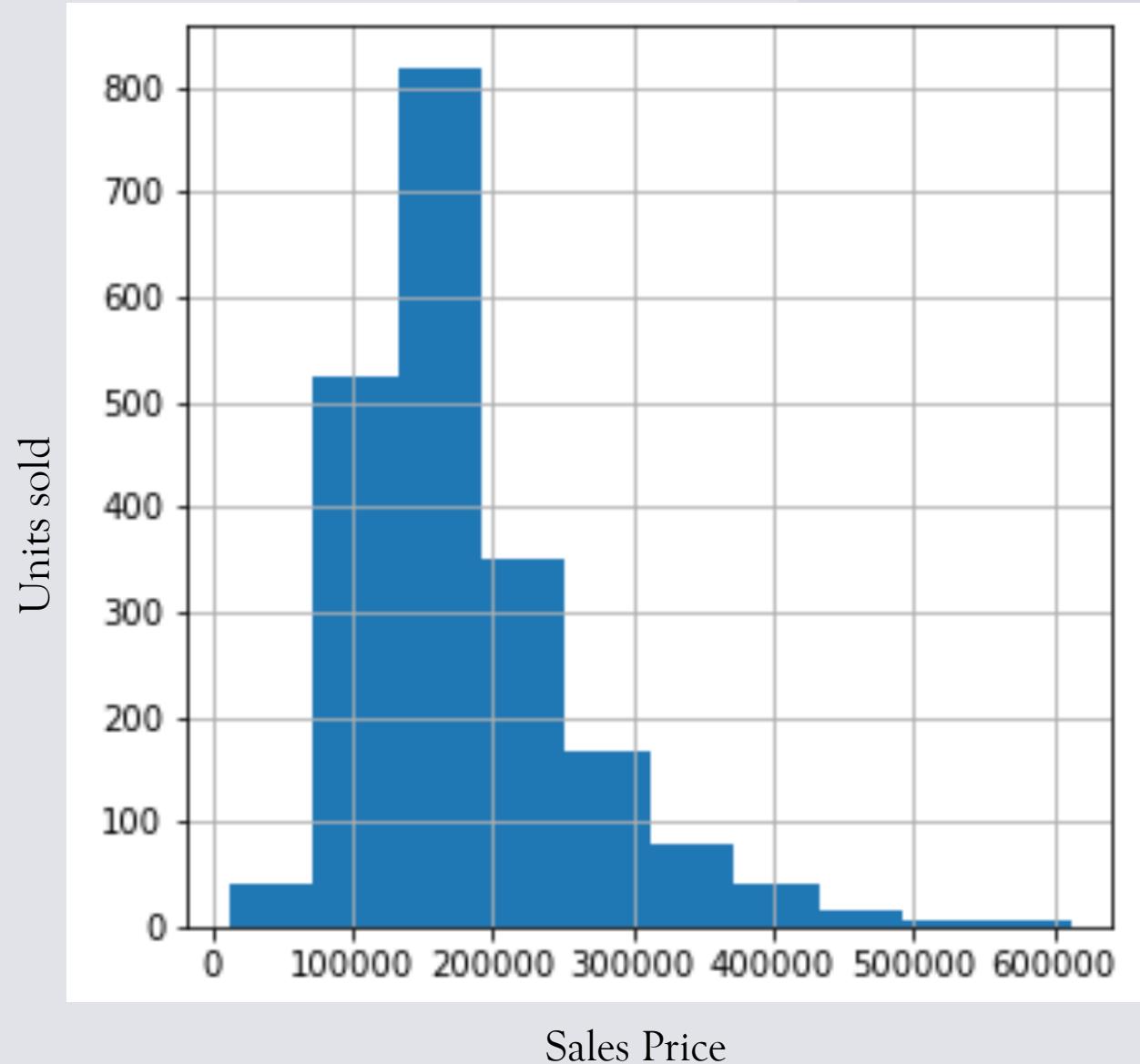
- 33rd of 100 on Livability.com most livable city in 2019

- Population
  -66,000
  -33,000 ISU students (1/2 city population)

- Income range….
  -Median income $43,000
  -Median age 23.3

Sale price range

- Majority between $130k-$215k

- Average sale price $182k

- Standard dev. $79k

- Max price $611k

Histogram of Sale Price vs. number of units

Model description – Linear Regression

- RMSE training – **30842** / RMSE testing - **32306**

- Represent (R squared) this much…..**82%**

- Five primary variables
  -Overall Quality, Garage Sq. ft., Total Basement Sq. Ft, Year Bu
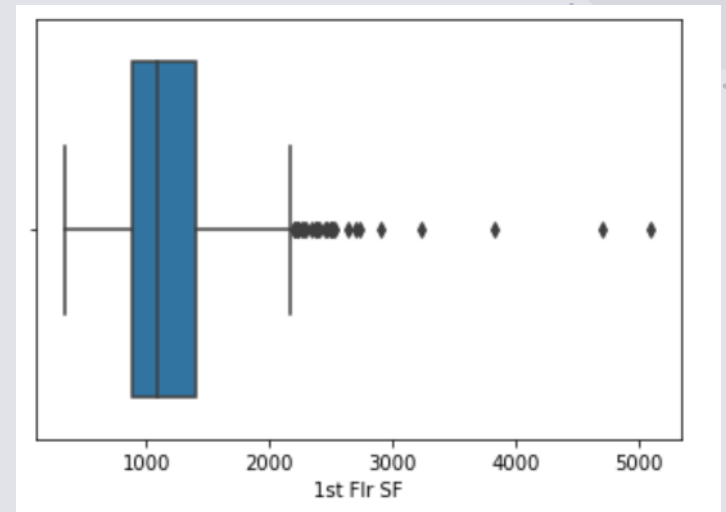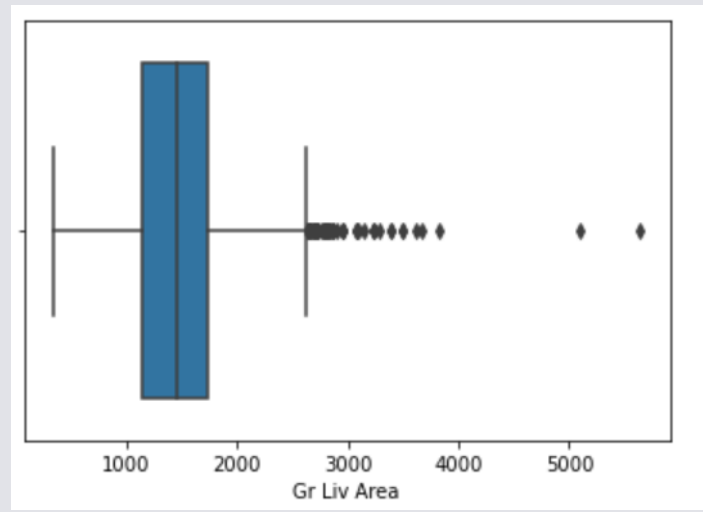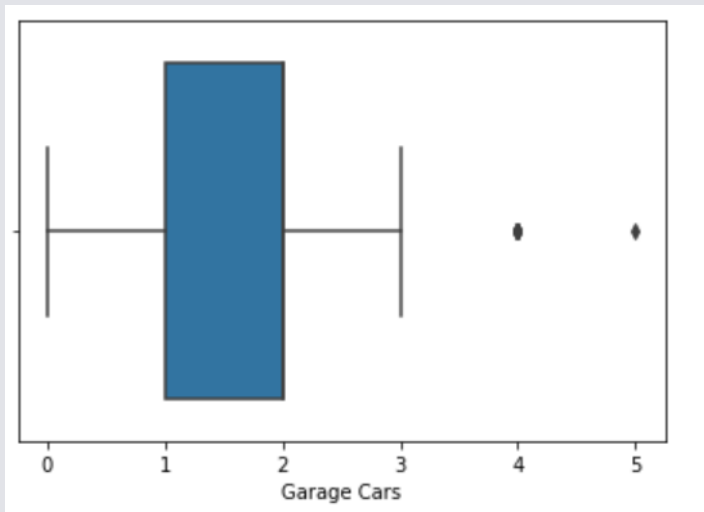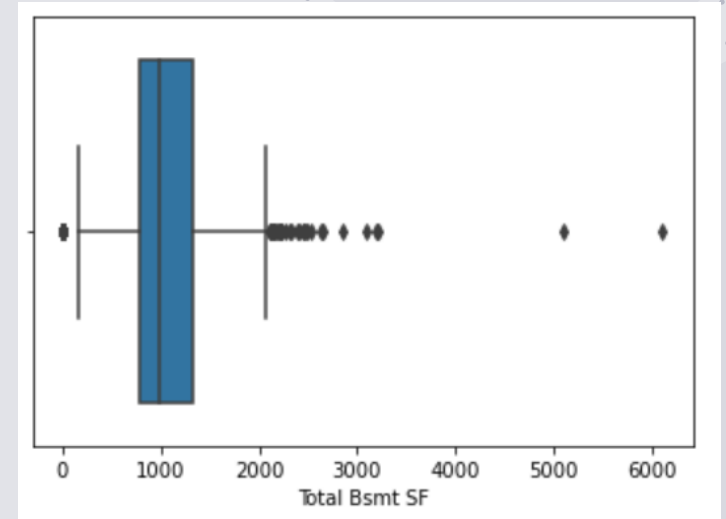
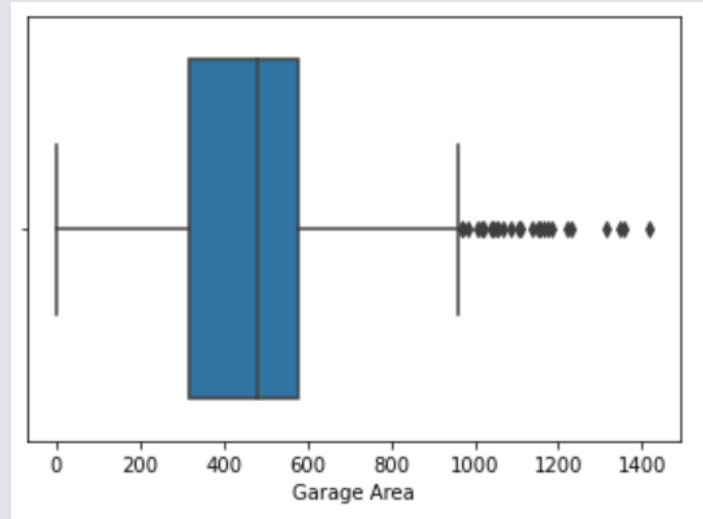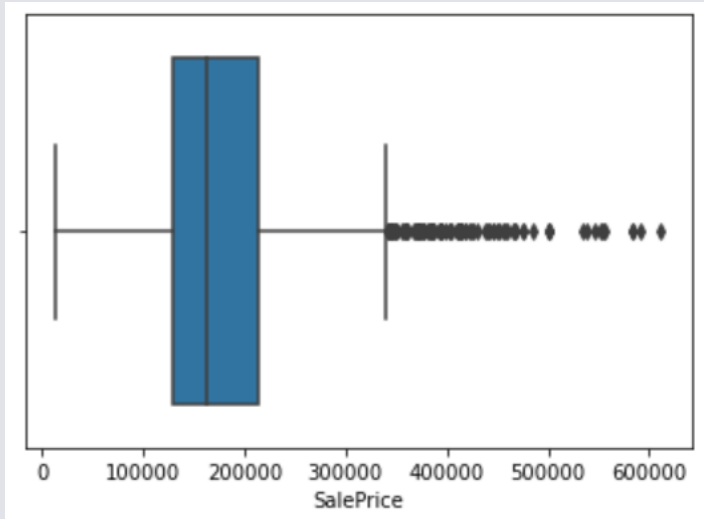- Null model vs. model
  -Less errors

Model description – Polynomial OLS

- RMSE training – **27250** / RMSE testing - **28257**

- Represent (R squared) this much…..**84.45%** (cross validated)

- Five primary variables
  -Overall Quality, Garage Sq. ft., Total Basement Sq. Ft, Year Built

- Null mse MUCH greater than model mse
  -less errors

Outliers – Polynomial/OLS

Strongest features

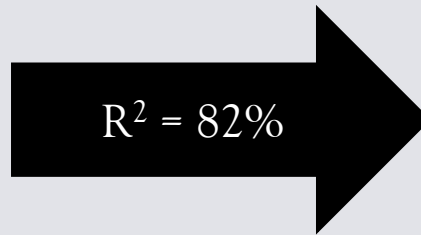|	
1. 0.800	Overall quality
2. 0.697	Ground Living Area Sq. Ft.
3. 0.650	Garage Area Sq. Ft.
4. 0.648	Garage Capacity
5. 0.629	Total Basement Sq. Ft.
6. 0.618	1st Floor Sq. Ft.
7. 0.572	Year Built

Rehab components

Exterior covering on house
Fireplace
Miscellaneous features
Fence
Kitchen

R² = 82%
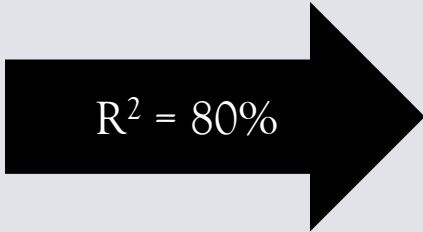
Exterior covering with other material
Fireplace
Kitchen

Exterior covering with other material	$28,000
Fireplace	$10,000
Kitchen	$300

Initial flip selection

Impactors

Overall Quality
Garage size
Square Footage
Year Built
Full Bath

$R^2 = 80\%$ →

Top 3 impactors

Overall Quality
Garage size
Year built

Sales price increase per unit increase

Overall Quality	$19,000
Square footage	$1700
Year built	$395
Square footage	$36

Best neighborhoods?

North Ridge Height	$43,800
Stone Brook	$29,200
North Ridge	$29,100
Timberland	$16,200
Somerset	$11,000

82% represented by the model
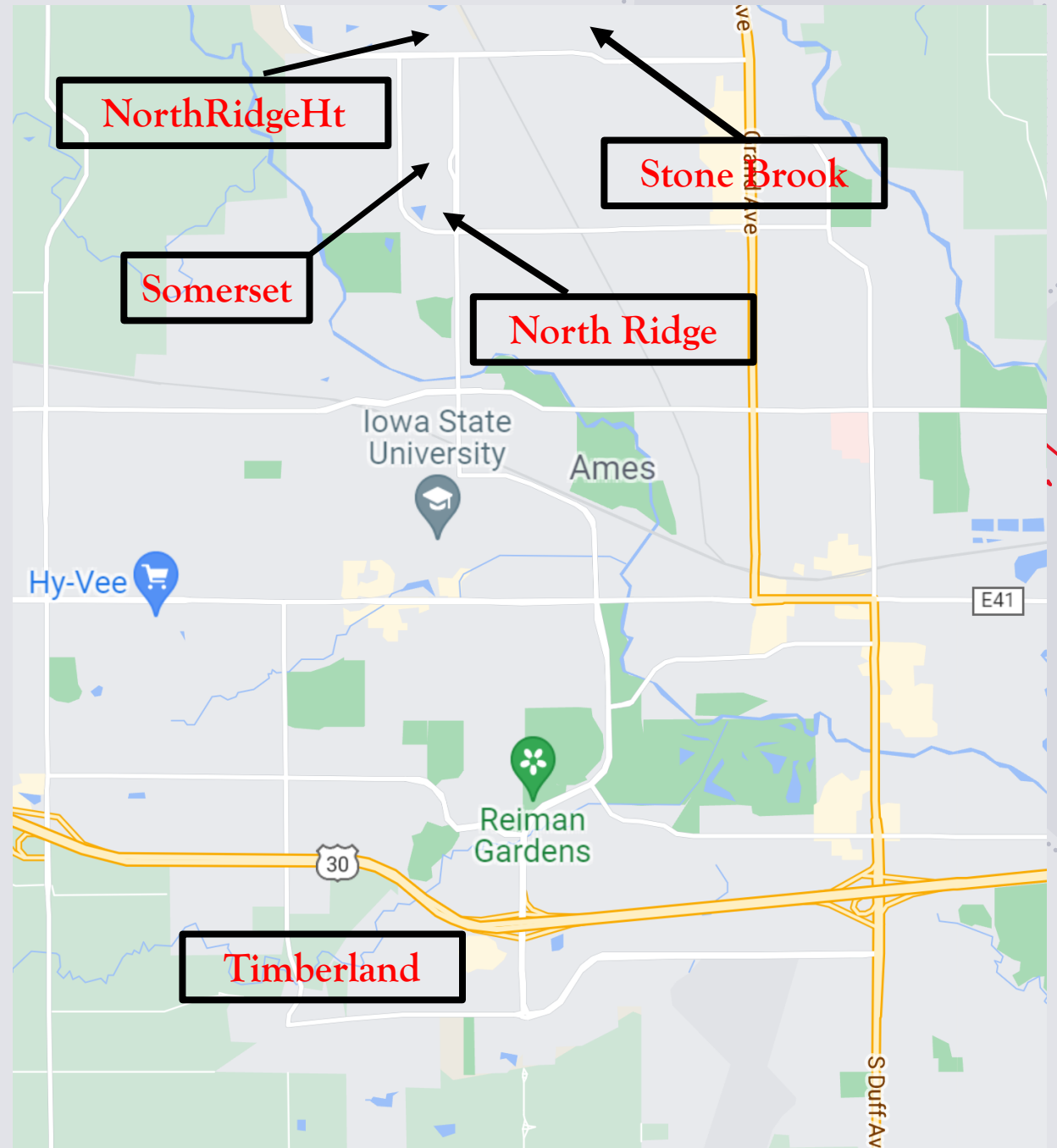
Conclusion

- Obvious good quality

- Factors of a successful flip
  -Square footage (900-1400 sq. ft.)
  -Kitchen
  -Northern Ames
  -Year built – (majority > 2003)
  -Multi car garage (>2 cars)
  -Fireplace
  -Exterior vinyl siding – mix