Predicting Home Prices

How understanding the predictions can help you make money

Agenda

- What data are we looking at?
- What do we see in the data?
- How can you use these insights to increase the value of your home?

Data Summary

What's inside the data set?

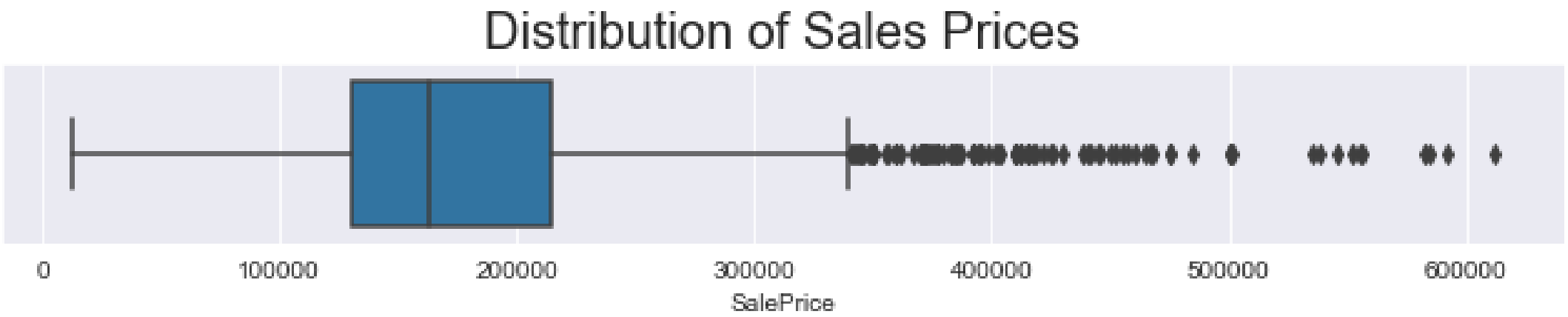
What data are we looking at?

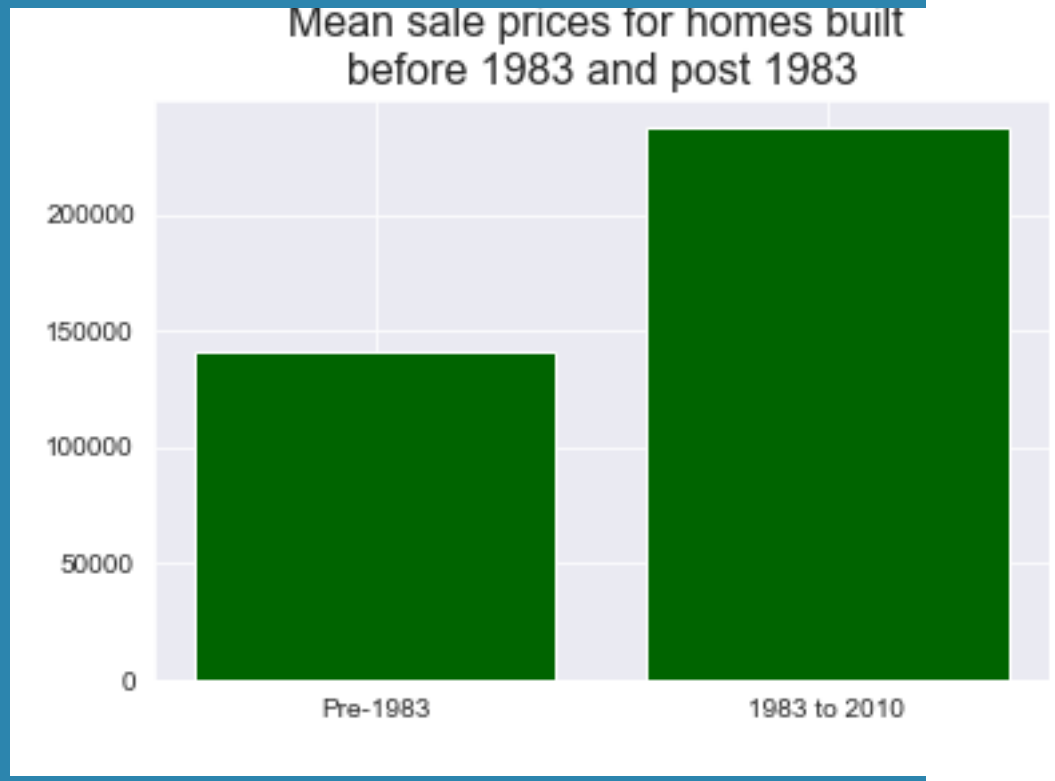
- Houses Sold in Ames, IA from 2006-2010
- 2930 homes, 82 variables
- Objective quantitative data
  - Square footage
  - Lot area
- Subjective qualitative data
  - Exterior quality
  - Kitchen quality
  - Overall quality/condition

Any issues with the data?

- For subjective home features like exterior quality, we don't know how the rating was derived.
- A few outliers with large square footage and partial sales, also a garage that was built in 2077!
- A lot of 'missing' data that implied that the homes didn't have those features. E.g. Pools

Let’s look at some visualizations!


Distribution of Sales Prices
0
100000
200000
300000
400000
500000
600000
SalePrice



Age of Home and Sale Price

- Homes prices in Ames, IA jump dramatically when the home has been built after 1983.

Overall Quality

- Though Overall Quality is a subjective measure, it seems to be a very strong indicator for house price.

About the models

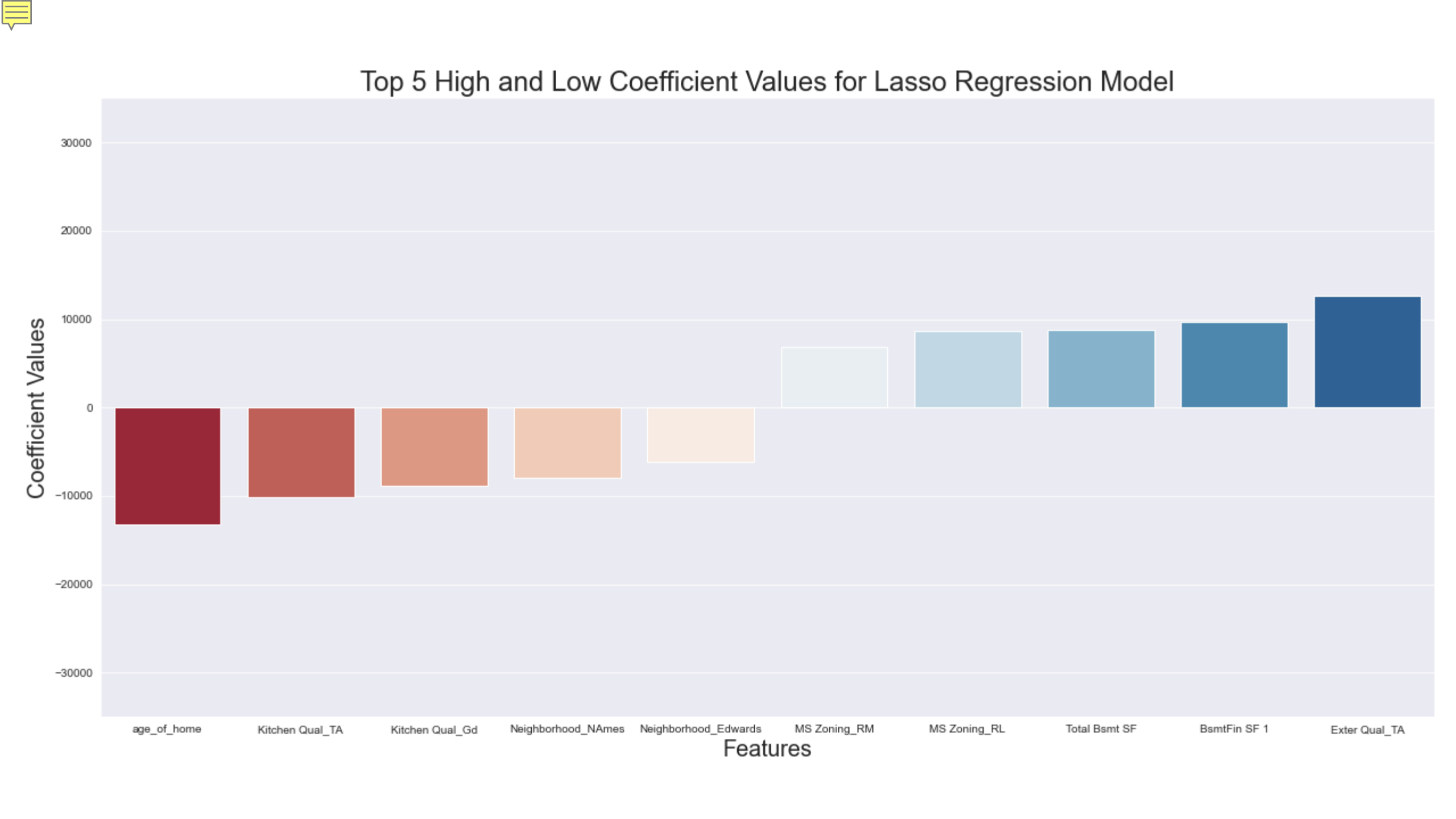
What was the process?

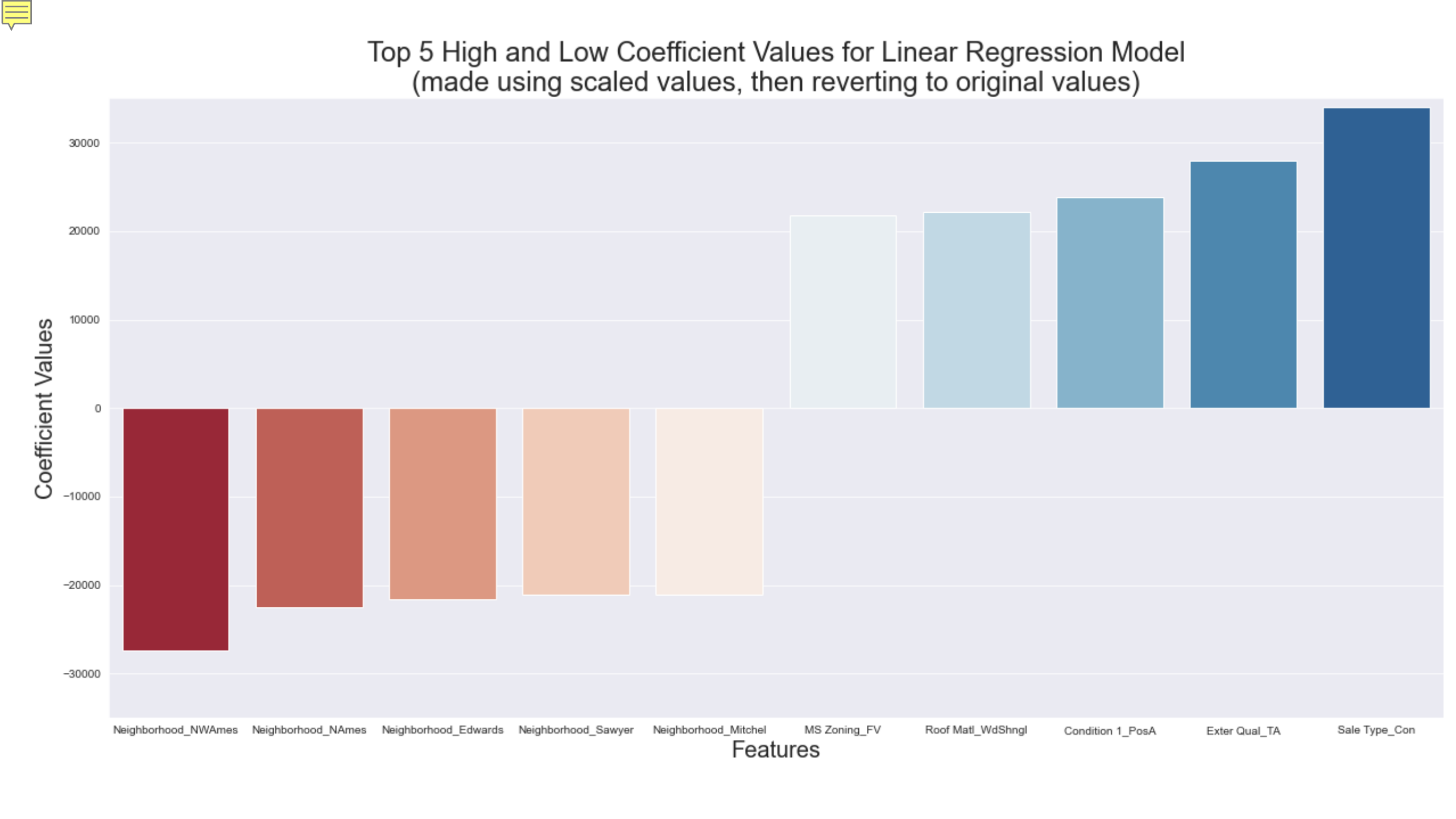
We chose a few different models for our purposes, some are more interpretable than others

We fed all the housing data into our models and let the computer crunch the numbers

Our models found some features of homes that are strongly correlated with home price

And now we get to share those results with you!


Top 5 High and Low Coefficient Values for Lasso Regression Model
Coefficient Values
30000
20000
10000
0
−10000
−20000
−30000
age_of_home
Kitchen Qual_TA
Kitchen Qual_Gd
Neighborhood_NAmes
Neighborhood_Edwards
MS Zoning_RM
MS Zoning_RL
Total Bsmt SF
BsmtFin SF 1
Exter Qual_TA
Features


Top 5 High and Low Coefficient Values for Linear Regression Model
(made using scaled values, then reverting to original values)
Coefficient Values
30000
20000
10000
0
−10000
−20000
−30000
Neighborhood_NWAmes
Neighborhood_NAmes
Neighborhood_Edwards
Neighborhood_Sawyer
Neighborhood_Mitchel
MS Zoning_FV
Roof Matl_WdShngl
Condition 1_PosA
Exter Qual_TA
Sale Type_Con
Features

What did we discover?

Upgrade your roof!

~$21,000

Remodel your kitchen!

~$8,000 - $10,000

Finish your basement!

~$8,000

Thank you!