

# Smart City Redevelopment

Eric Laverdiere  
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# Problem Statement

I was given a data set for the housing values in Ames Iowa and tasked with figuring out a way to predict the potential sale prices of houses in the city.

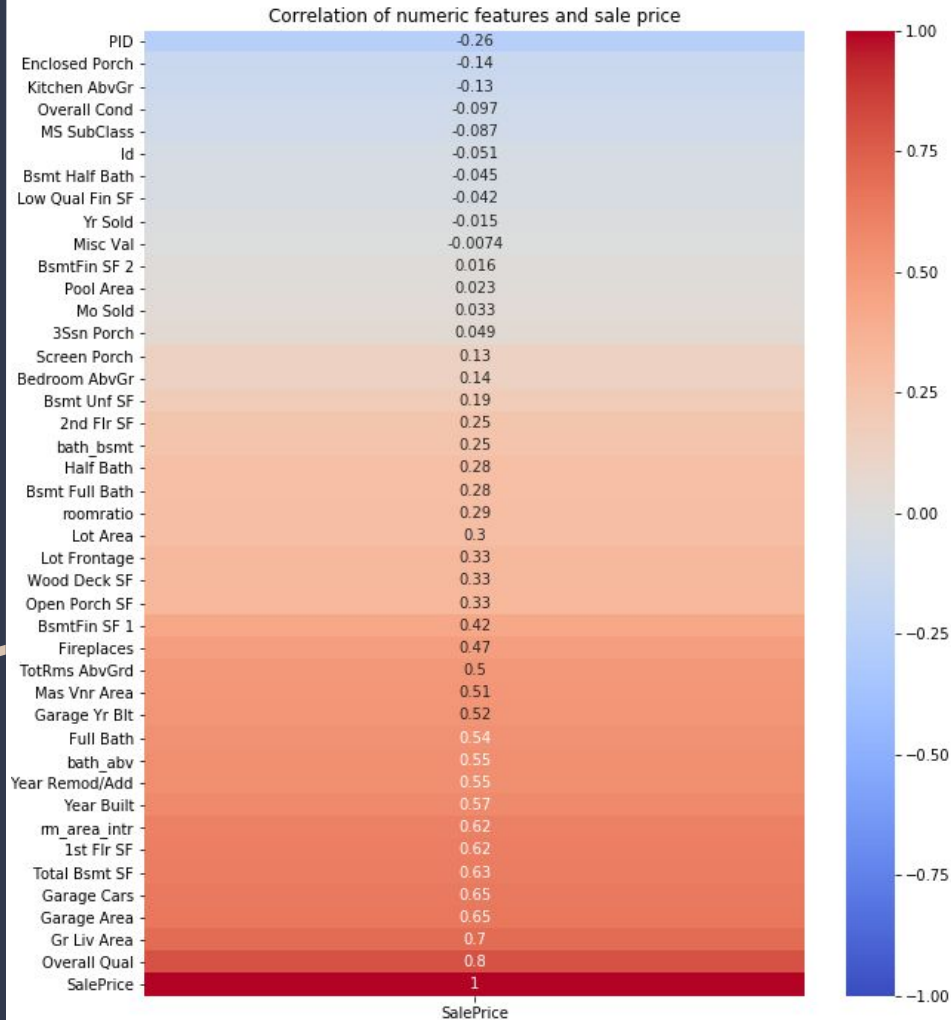
The data will be presented to the Ames city government to try and help them make redevelopment decision for the city while trying to avoid the issues of displacement or gentrification.

What can we figure out based on sale prices and how does that help with redevelopment?

# Examining the Data

Using a heatmap to see the correlations of the numerical values with the sale price.

This gives a place to start when looking at important features



# Main features

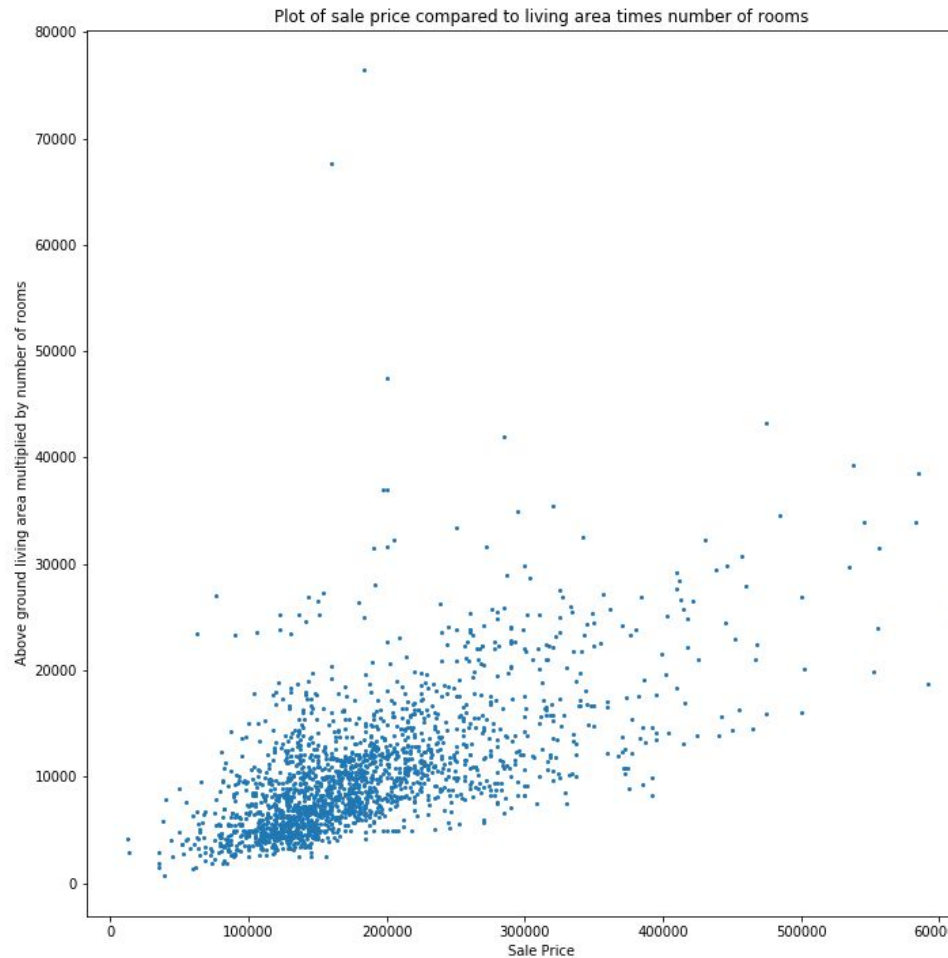
Some of the main features to take into account:

- Overall quality
- Above ground square footage
- Garage square footage
- Basement square footage
- Year Remodeled
- Basement Quality

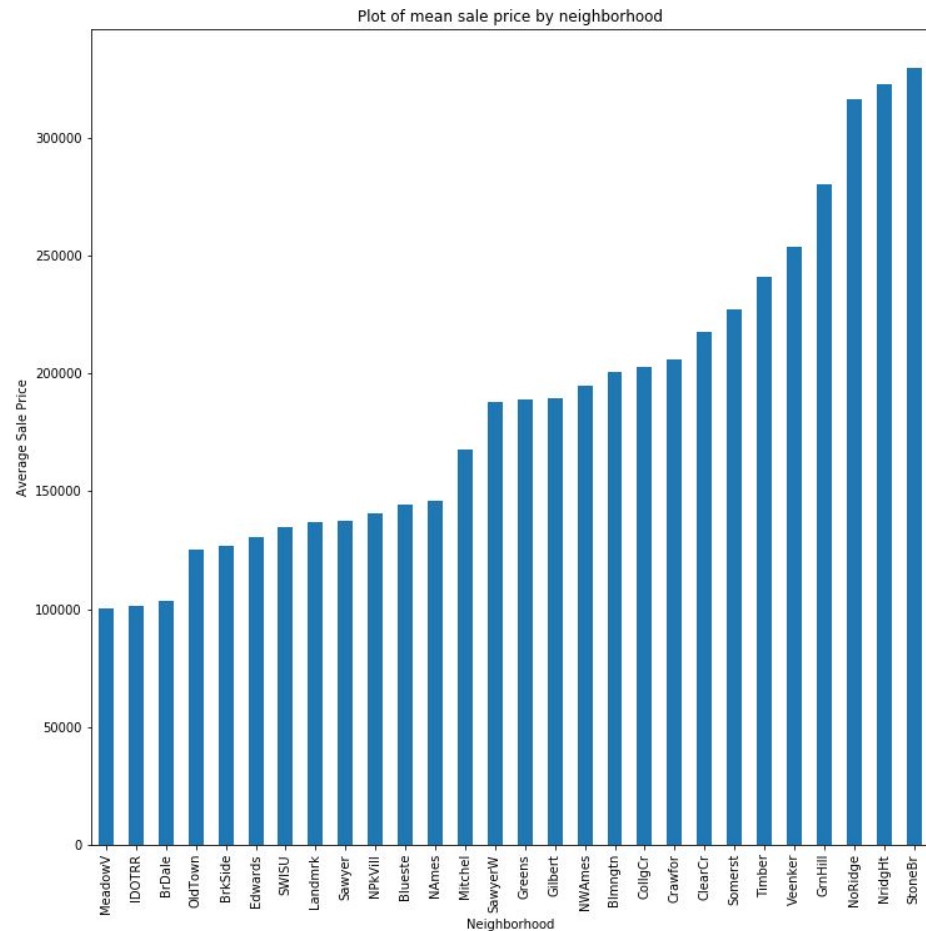
Additional add features:

- Total number of bathrooms above ground
- Total number of basement bathrooms
- Ratio of bathrooms to rooms above ground

# Interaction of above ground rooms and square footage

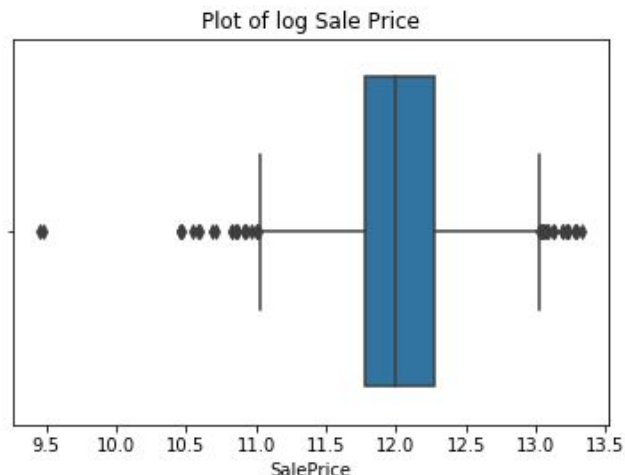
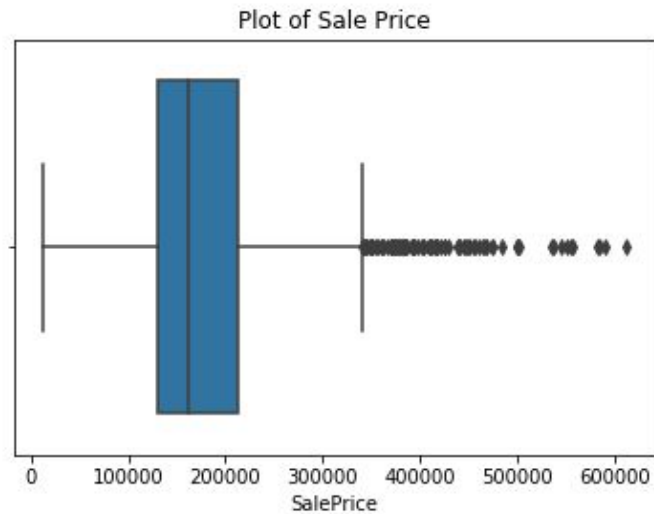


# Neighborhoods



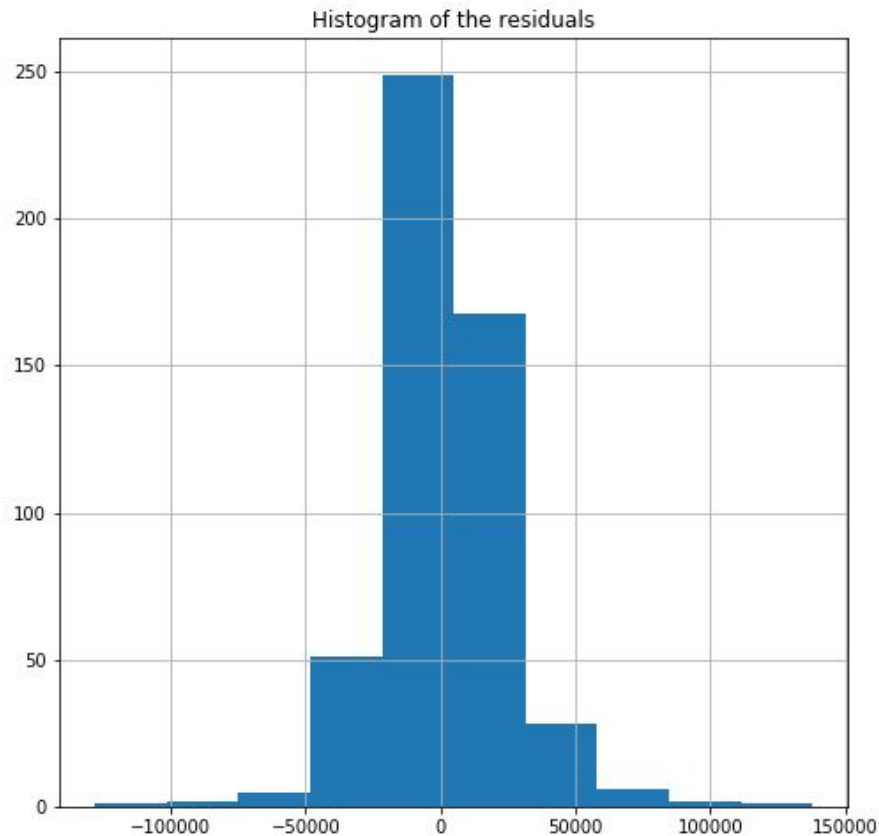
# Sale Price

Taking the log to normalize and reduce outliers



# Regression model

The final  $r^2$  score was about .909 so around 91% of the variability in the sale price was explained by the chosen features.





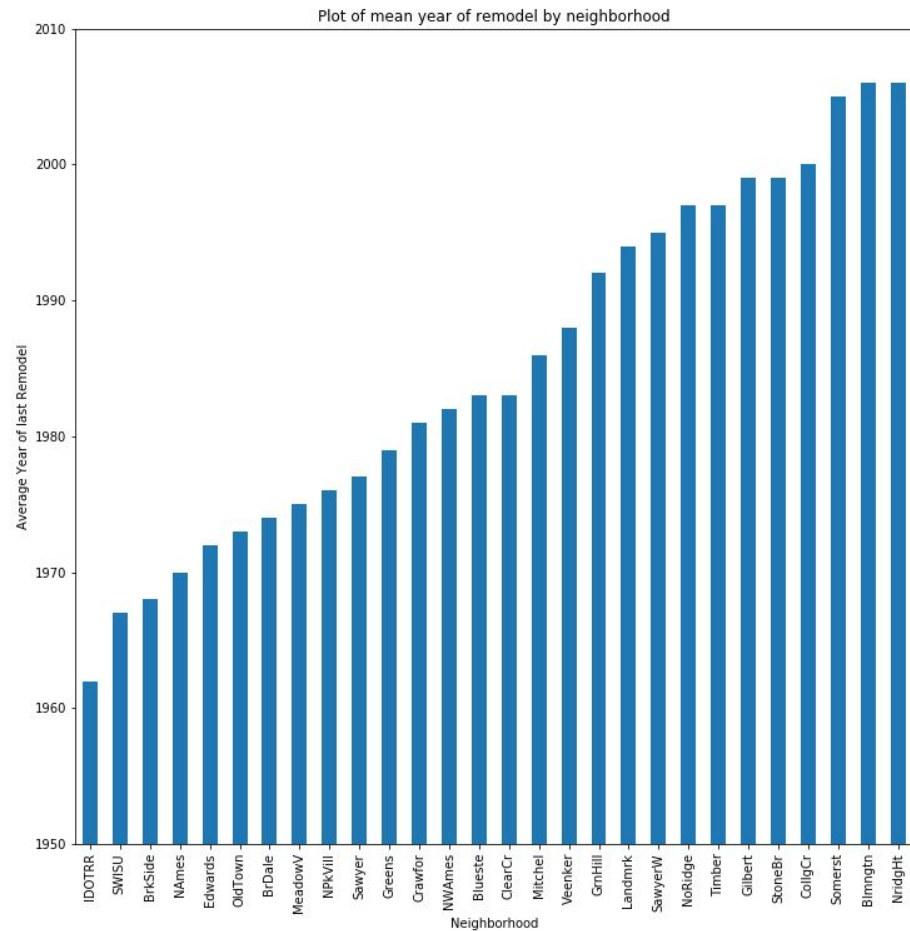
# What does this mean for the city?

Model can be used to understand the sale prices in certain neighborhoods and city areas to target investment.

Allow for smart redevelopment

Try to avoid problems sometimes associated with Gentrification(Roos 2020)

# Other Factors



# Conclusions

Understand what are strong factors in housing prices

Model can help know what places to target for investment

Make sure investment is balanced and does not price out the local residents

# What Next?

## Further Exploration

- How lot factors affect prices
- Improve the model with regularization techniques
- Look into outside factors that might affect sale price
- Demographics
- Crime
- Quality of Area

# References

Roos, Dave (2020)

<https://money.howstuffworks.com/gentrification.htm>

Grabinsky,Jonathan Butler,Stuart M. (2015 February 12)

<https://www.brookings.edu/blog/social-mobility-memos/2015/02/11/the-anti-poverty-case-for-smart-gentrification-part-2/>

Homeguru (2020)

<https://www.homeguru.com.au/house-prices>