AMG Realtors

Enhancing AMG Realtors Decision Making

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AMG Realtors

Overview

- Real estate is a lucrative venture for AMG Realtors
- However, the real estate agency must invest in market research before purchasing a house at King County
- As data scientists, we endeavor to advice AMG real estate agency in its journey of home trade
- We specialize in providing market expertise to guide in house purchase decisions

Business Understanding

- In this project we seek to provide AMG Realtors with up-to date predictions on house prices in King's County, Washington DC.
- Our analytics involving linear regressions are aimed at predicting conditions that are favorable to sell or buy houses at affordable prices at King County.
- Our predictive models will focus on size of living room, grade, and number of bedrooms, bathrooms, and floors.
- These factors play a critical role when choosing to sell or buy a house at King' county

Data Understanding

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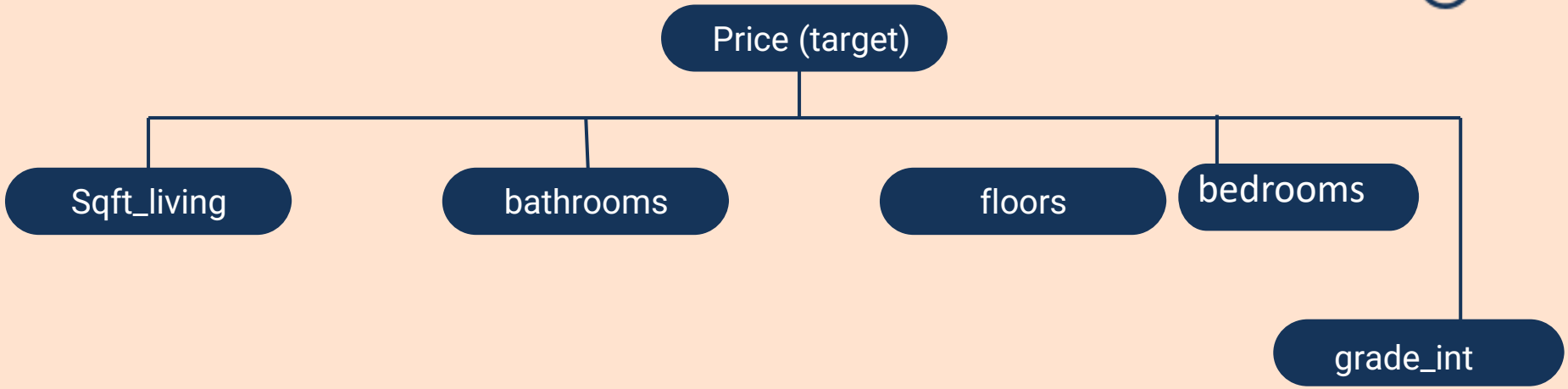
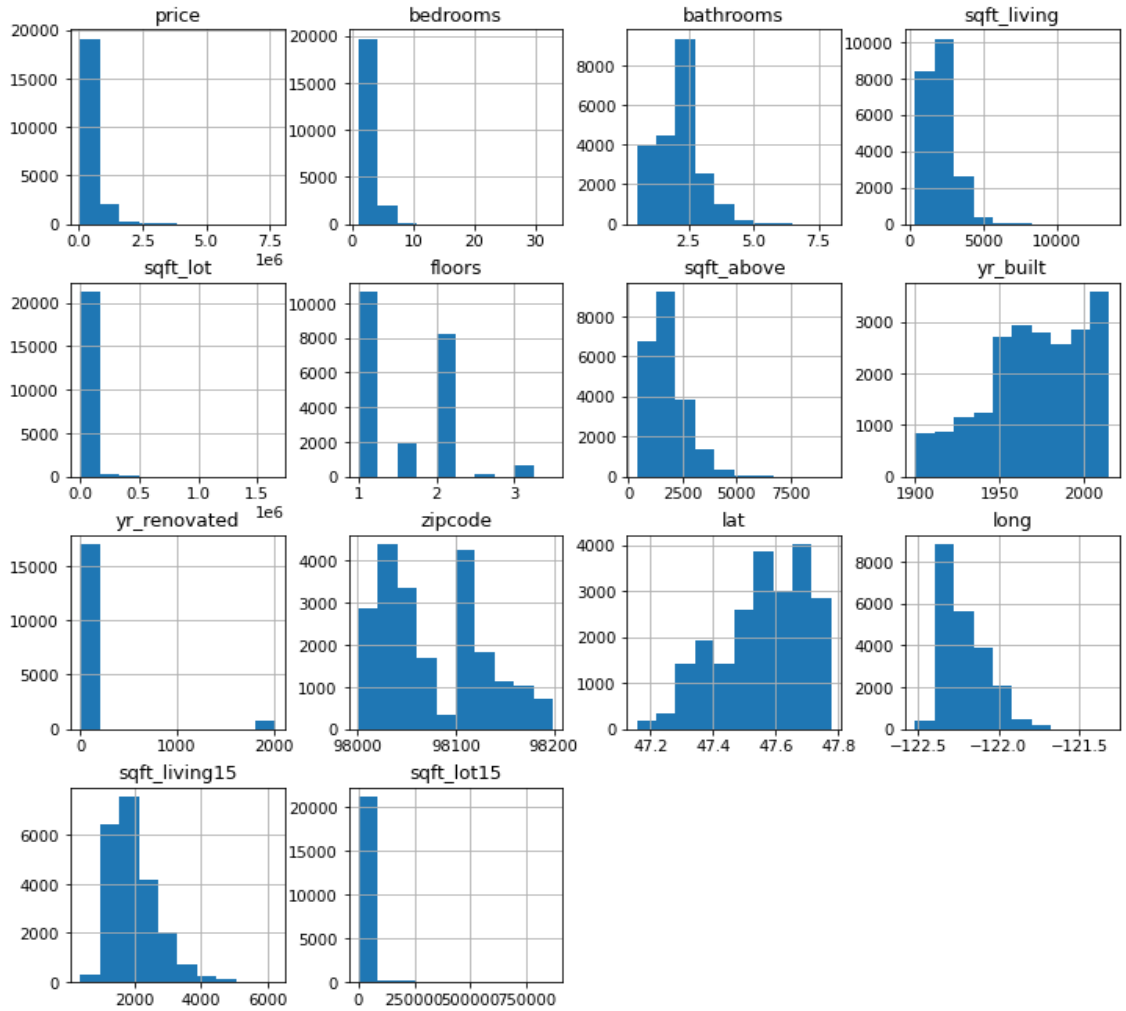


Notes

- After filtering the dataset, we decided to work with the above target and predictor variables to build our linear regression model.
- Our dependent variable (target variable) will be the price and predictor variables are other variables.

- **The project utilized King County Housing Data Set.**
- **The dataset provide information on condition, size, and other features of houses in this county**

Data Distributions



Notes:

Most variables are not normally distributed. This created some issues in having a perfect linear regression model

Feature Engineering

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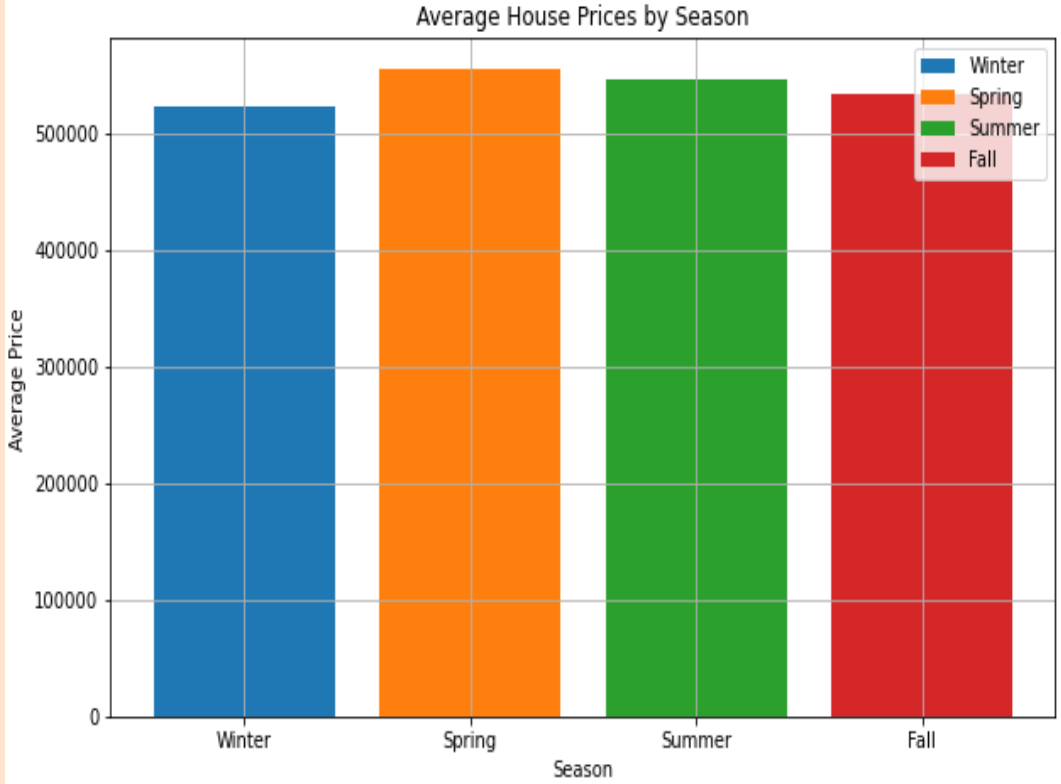
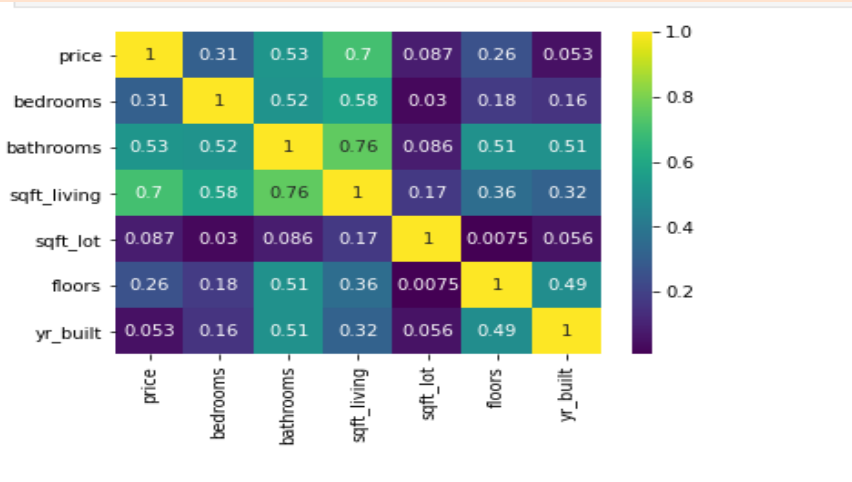
Notes

- Feature engineered date column to create season column
- From the analysis, season was not a good predictor of prices as average prices of houses was above $ 500000 in all seasons



Correlations




```
price          1.000000
bedrooms       0.309057
bathrooms      0.526609
sqft_living    0.704428
sqft_lot       0.087430
floors         0.258797
yr_built       0.053433
Name: price, dtype: float64
```

Correlations with price

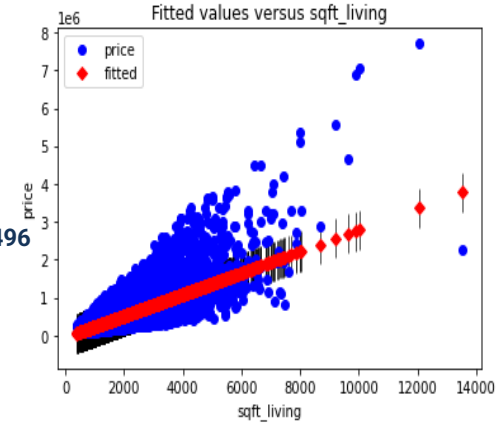
- Features with high correlation with price included sqft_living, bathrooms, bedrooms, and floors

Correlations with price

- Features that are highly correlated with price were included in the model

Linear Regressions Models and Results

1



R-squared = 0. 496

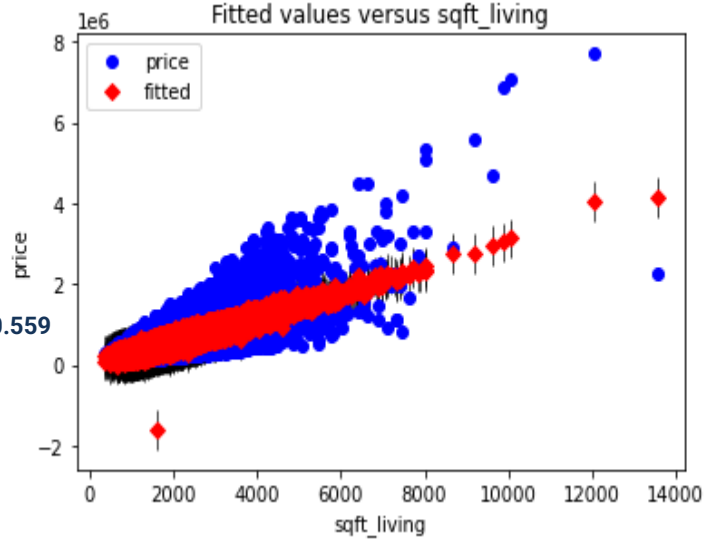
P-value = 0

price~sqft_living

Notes:

- The model accounts for 49.6% variability in price.
- A p-value of 0 means we reject the null hypothesis that there is no relationship between the price and sqft_living variable

2



R-Squared = 0.559

P.Value = 0

price~ sqft_living +bedrooms + bathroom + floor + yr_built

Notes:

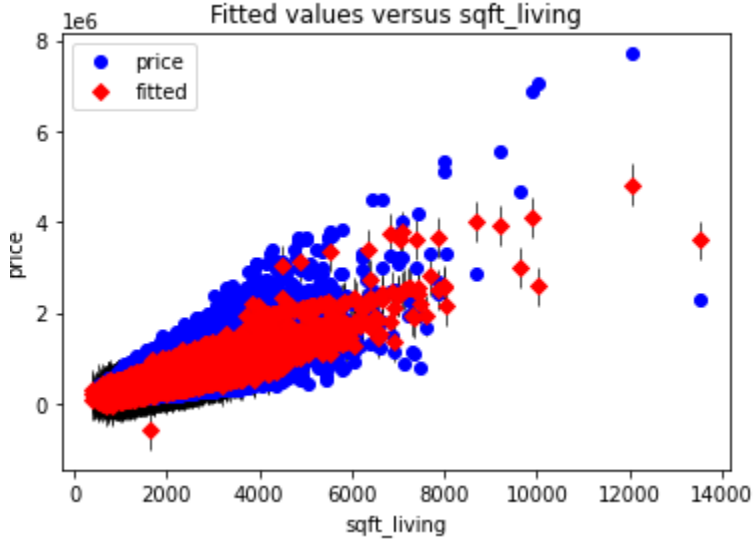
- The model accounts for 55.9% variability in price.
- A p-value of 0 means that we reject the null hypothesis that there is no relationship between price and predictor variables.

Final Model and Results

3

R-Squared = 0.646

P.Value = 0



Price~sqft_living + bedrooms + bathroom + floor + yr-built + grade_int

Notes:

- The model accounts for 64.6% variability in price. The model improved by 8.7% from 55.9% in our previous model after including another predictor variable called grade_int (categorical)
- A p-value of 0 means we reject the null hypothesis that there is no relationship between the price and other six predictor variables

Conclusions

Important Note 1

The size of the living room, grade, and number of the bedrooms are among the strongest predictors of house prices at Kings County

Important Note 2

Old properties tend to have lower prices or lower resale value

Important Note 3

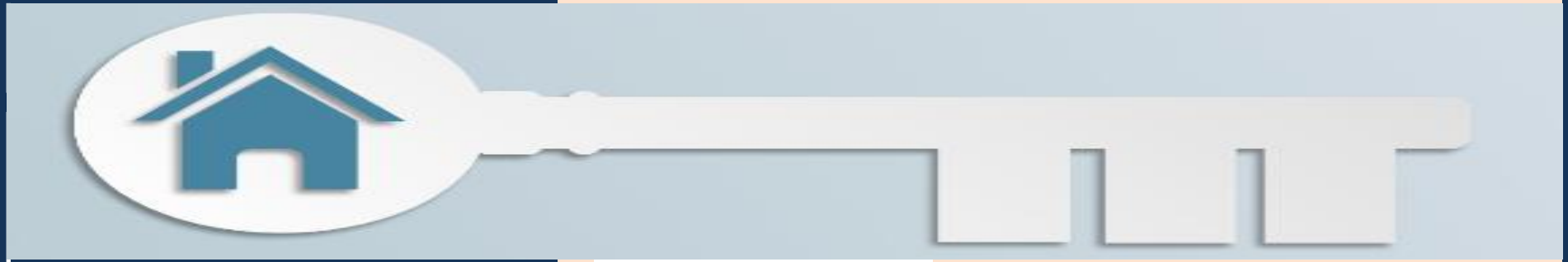
Renovating, repairing, or upgrading a house improves its resale value at King County

Limitations

Given the data is from 2014-2015, it may not reflect the current market conditions that impact house prices at Kings County

A perfect model could not be obtained since most of the data used was not normally distributed

Recommendations



- AMG Realtors should consider expanding the living areas and adding a bathroom to sale at higher price

- AMG Realtors should consider houses with good grade from the city council

- To increase profits in their sales AMG realtors should consider flipping old houses

Future Analysis

What would happen to our model if all our data was normally distributed?

Are the best predictors for price similar for a 2023 market in real estate?

THANK YOU

G | For More Information, visit our git hub repository

https://github.com/juliet-2013/REALESTATEPROJECT-8