

# Which factors influence a home's sales price?

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May 5, 2021

# Summary

- I have been tasked to work for RE/MAX, a real estate agency that helps homeowners buy and/or sell homes.
- I need to provide advice to homeowners about which home renovations might increase the estimated value of their homes, and by what amount.



# Outline

- Business Problem
- Data
- Methods
- Results
- Conclusions



# Business Problem

- Do the various predicting factors which have been chosen initially really affect a home's price?
- Which top factors might increase the estimated value of a home, for the buyer or the seller, and by what amount?
- Which top factors might decrease the estimated value of a home, for the buyer or the seller, and by what amount?

# Data

- This project uses the King County House Sales
- From the King County House Sales dataset, I used the following columns:
  - sqft\_living
  - sqft\_lot15
  - sqft\_living15
  - bedrooms
  - bathrooms
  - floors
  - waterfront
  - view
  - condition
  - grade
  - age
  - year\_sold
  - renovated
  - month\_sold



# Methods

- Data Exploration
- Data Cleaning
  - Feature Engineering
  - Replacing Missing or NAN values
- Selected columns
- Using statsmodels to run our Multiple Linear Regression
  - Logging and Scaling features
- Checking the assumptions of our linear regression
- Creating Visualizations to confirm if the statistically tests are in line with the "eye test"

# Results

- We are able to account for about 60% of the variance within the King County House Sales dataset by using the 14 columns mentioned previously
- This model finds a significant relationship existed between Home Prices and the 14 features
- We have strong visually strong evidence that the model's findings are reliable

# Conclusion

## The three factors that would increase price of a home:

- 1.) **The square footage of interior housing living space for the nearest 15 neighbors**
  - For each additional 1% increase in the square footage of interior housing living space for the nearest 15 neighbors, we expect a home's price to increase by a percentage change of 0.3248.
- 2.) **The footage of the home**
  - For each additional 1% increase in footage of the home's, we expect a home's price to increase by a percentage change of 0.3112.
- 3.) **The overall grade given to the housing unit, based on the King County grading system**
  - For each additional 1% percent increase in the standard deviation of the overall grade given to the housing unit, we expect a home's price to increase by a percentage change of 0.2389.



# Conclusion Continued

## The three factors that would decrease price of a home:

- 1.) If the home was renovated within the last 10 years, it received a 1. If not, it received a 0.
  - For each additional 1% percent increase in the standard deviation of renovation, we expect a home's price to decrease by a percentage change of -2.4270.
- 2.) **The square footage of the land lots, from the nearest 15 neighbors**
  - For each additional 1% increase in square footage of the land lots of the nearest 15 neighbors, we expect a home's price to decrease by a percentage change of -0.0949.
- 3.) **The number of of Bedrooms per House**
  - For each additional 1% percent increase in the standard deviation for bedrooms, we expect a home's price to decrease by a percentage change of -0.0337.

# Next Steps: I can see for this Project

- Are there data points we don't have, that could be included and meaningful for RE/MAX?
  - We could look at including additional data from King County's:
    - Schools Districts
    - Economic Activity
    - Population Demographics
    - Occupational Employment
    - Number of Households
    - Median and Average Income
    - Education Statistics
    - Marital Status
    - Environmental, Social and Corporate Governance

# Thank You!

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