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# Housing Analysis:

Predicting house prices in King County, Washington, for a renovation company using multiple linear regression.



A walkthrough by Orin Conn

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# Data Explored:

A single data set of over 20,000 homes sold in King County, Washington in one year.

- Price (\$, Target Variable)
- Bedrooms
- Bathrooms
- Home Square-Footage
- Lot Square-Footage
- Number of Floors
- Condition
- Year Renovated
- Location
- View of the House
- Square Footage of Neighbors

# Features Engineered

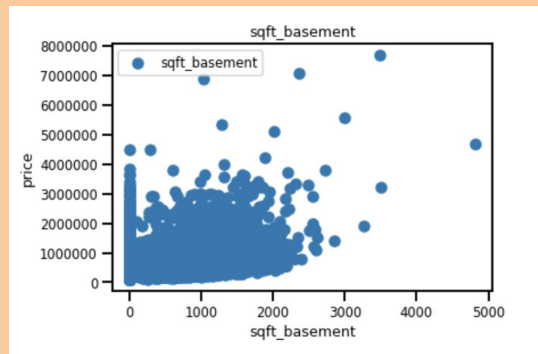
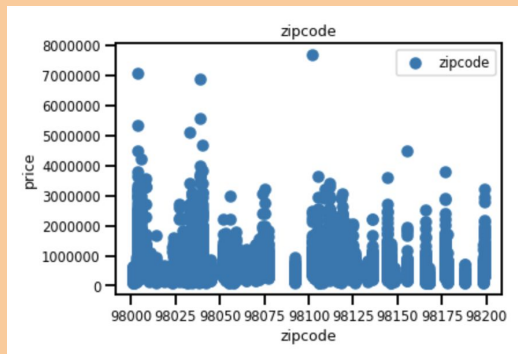
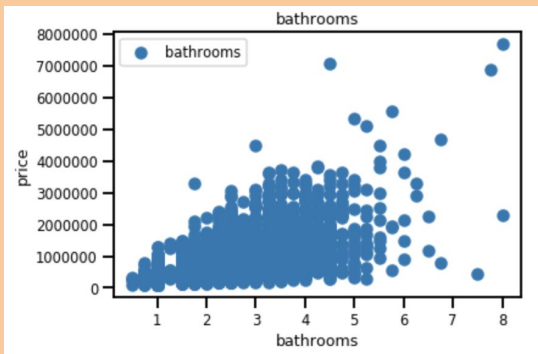
## Categorical Variables

vs

## Continuous Variables

- Bedrooms
- Bathrooms
- Zipcodes
- Grade
- etc.

- Square-Footage Above ground
- Neighbor's Square-Footage
- Basement Square-Footage
- etc.



# Modeling:

Initial Train/Test:    Train Root Mean Squarred Error: 197334.45385007933  
Test Root Mean Squarred Error: 207176.59378378882

Baseline model



Removing High Price Outliers



Removing Variables with Extreme Probability



Final Model:    Train Root Mean Squarred Error: 139095.3303205061  
Test Root Mean Squarred Error: 136062.5375278874

## Strongest Predictors of Price:

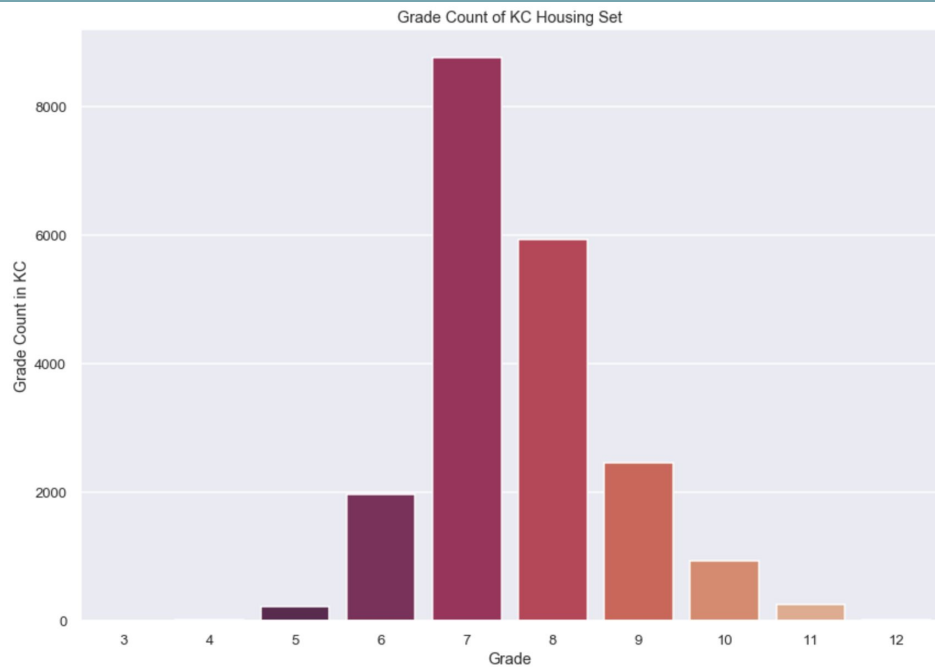
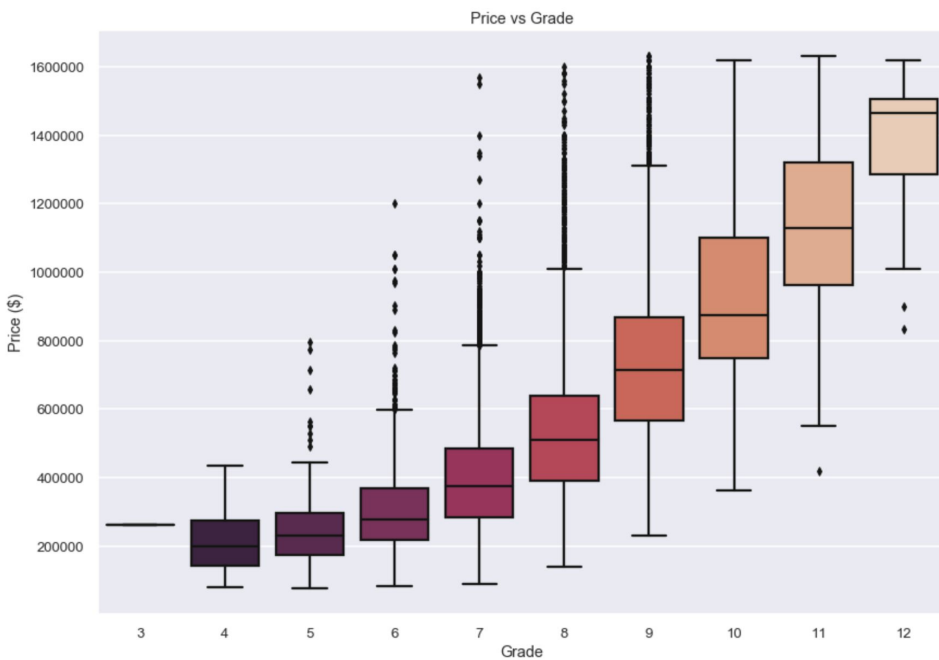
**grade\_9\_13**    301577.3742

**waterfront**    212760.8886

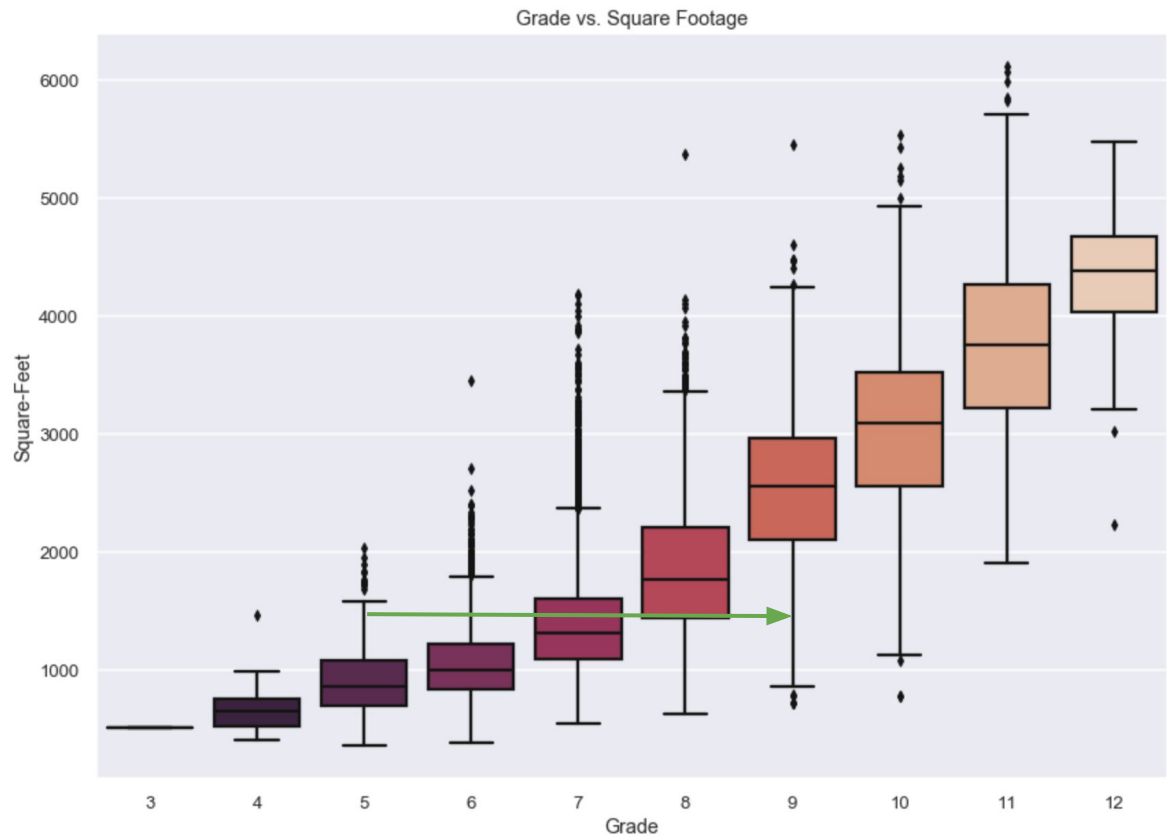
**log\_sqft\_above**    211544.1564

Adj. R-squared:    0.711

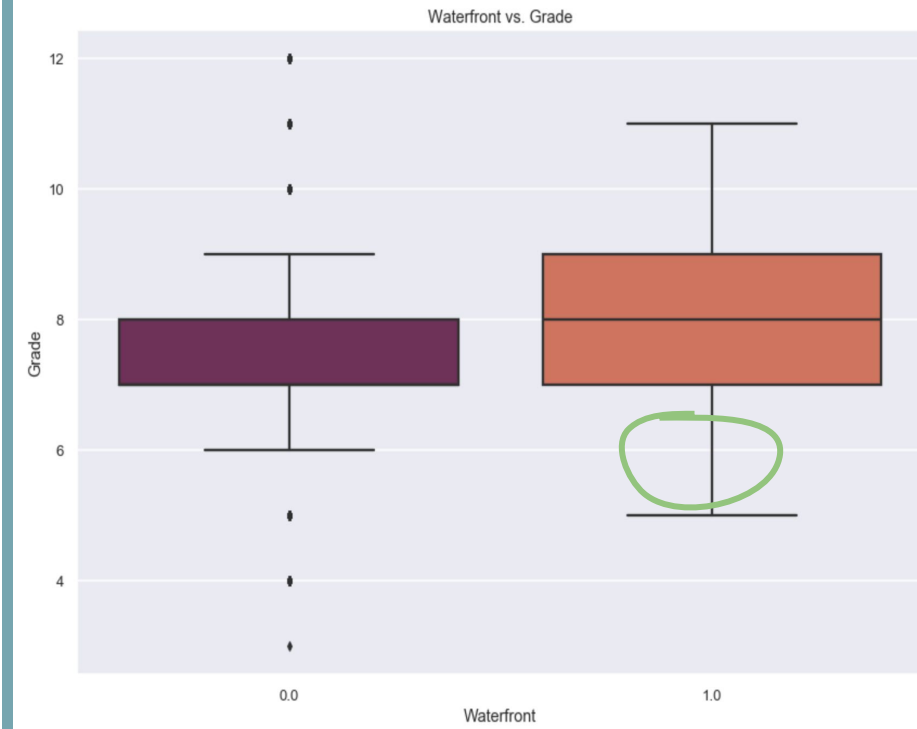
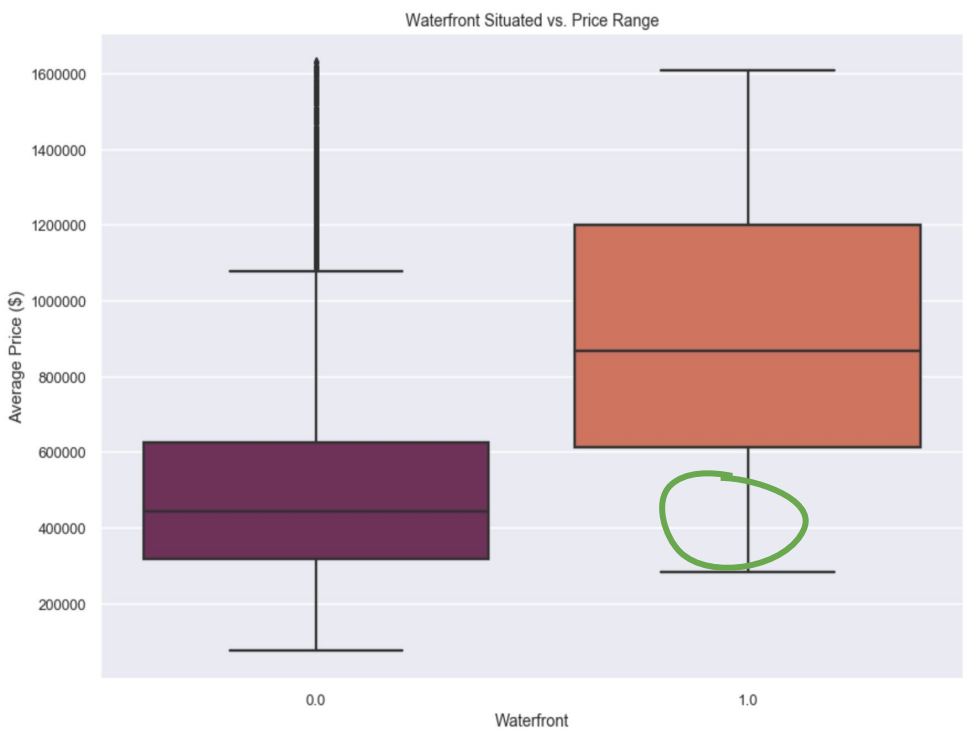
# Housing Grade



# Square-Footage



# Waterfront Situation





# Conclusions

## Homes to pick for renovations:

- Lower grade homes (5-6)
- Highest square-footage of those lower grade homes
- The lower grade homes which are waterfront situated

## Recommendations for further research:

- More insight into inland locations vs price distribution
- Better understanding of renovations needed in a lowest-grade home
- Average cost of renovation for moving up a grade

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**Thank You!**