

Where should you invest your money?



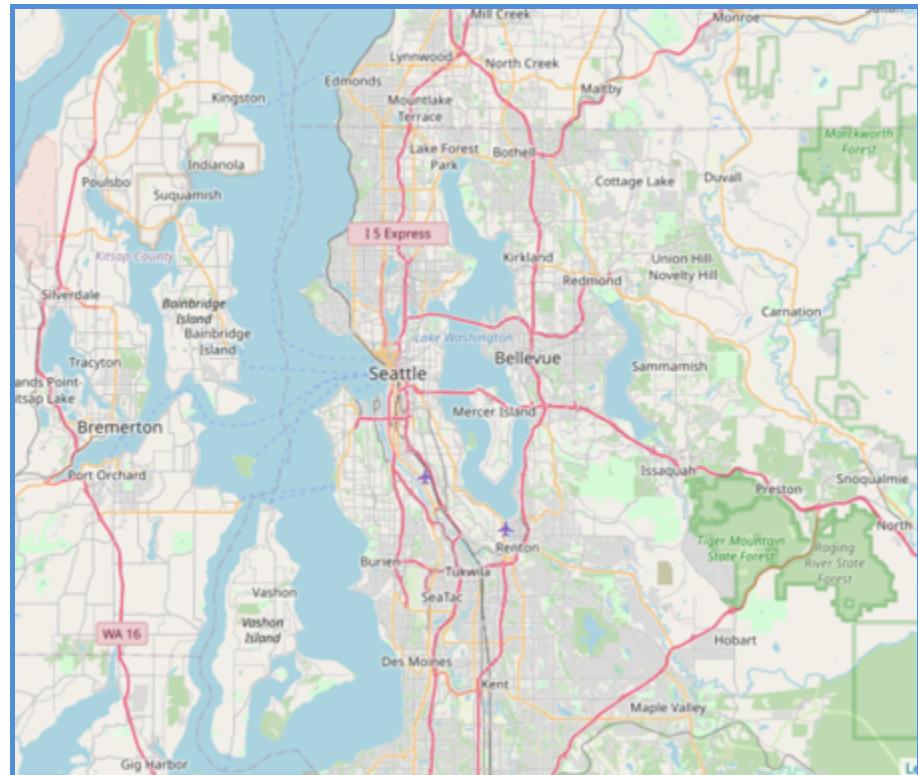
Project Details

Stakeholders: Investors trying to build a real state based portfolio in King County

Threshold: 1 million US\$ / property

Property specifications: None. Should be provided by us.

Database: King County dataset (years: 2014-2015)



Objectives

1. Find where would the best area to invest in King County
2. Compare house prices based on different characteristics
3. Create a Price Prediction Model



Key Features

- Sectors

4 different sectors were created based on lat and long coord

- Square Footage

Analysis of the square footage price per sector

- Waterfront

Waterfront Avg. Price vs Inland Avg. Price

- Square Footage of 15 closes neighbors

Analysis of average price variation based on the closest 15 neighbors

- Number of Bedrooms

Analysis of average price variation by number of bedroom per sector

- Grades

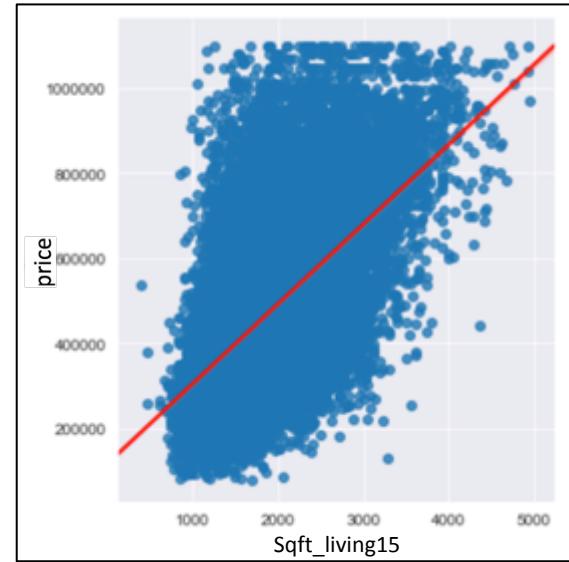
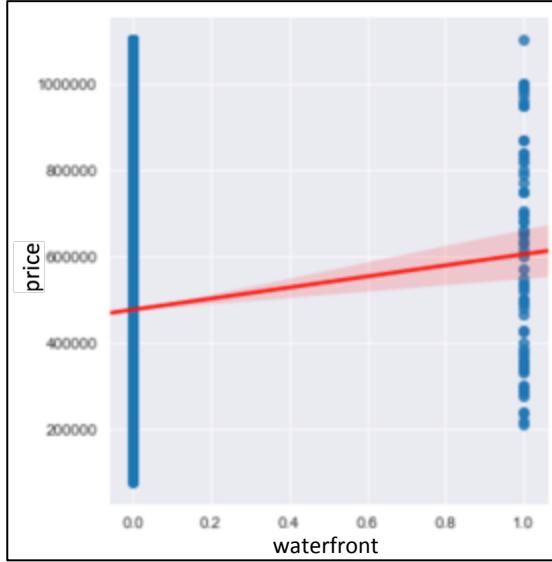
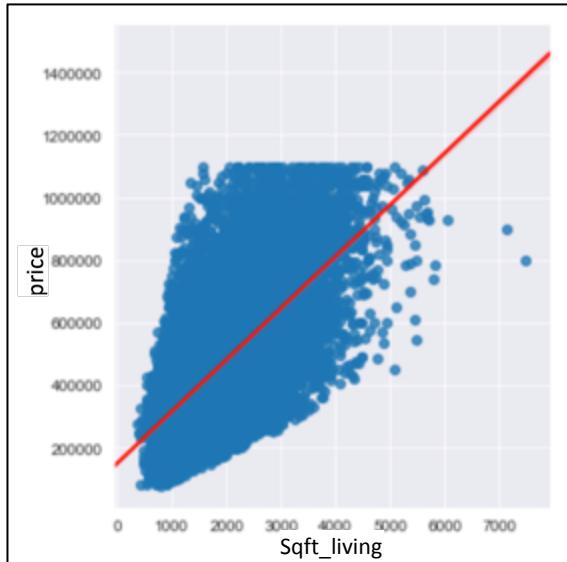
Grading per sector



Exploratory Data Analysis

Some of the best predictors:

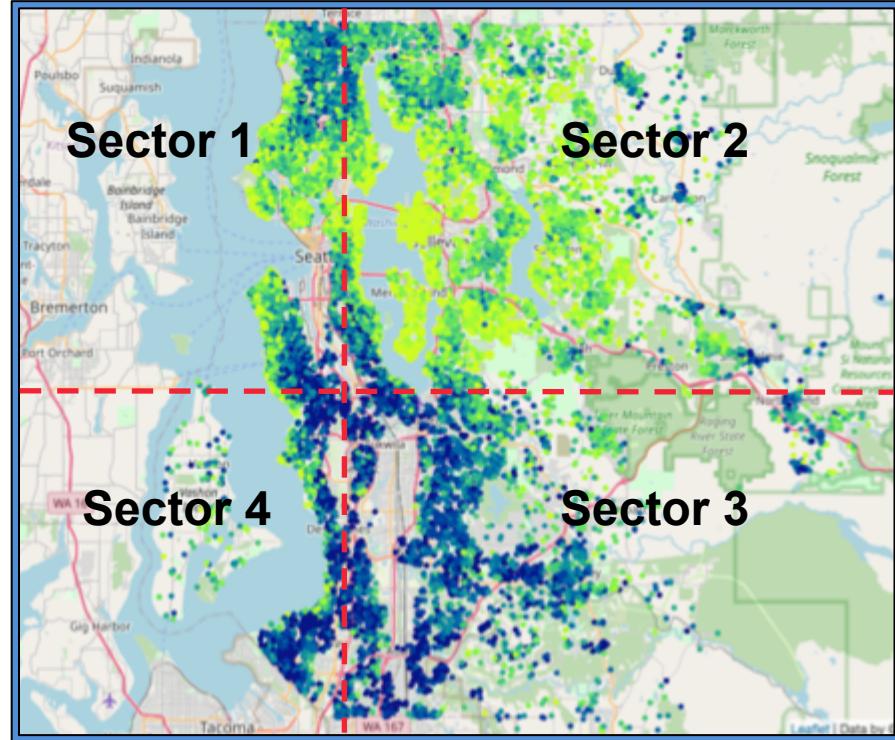
- Best predictor is location (sector).



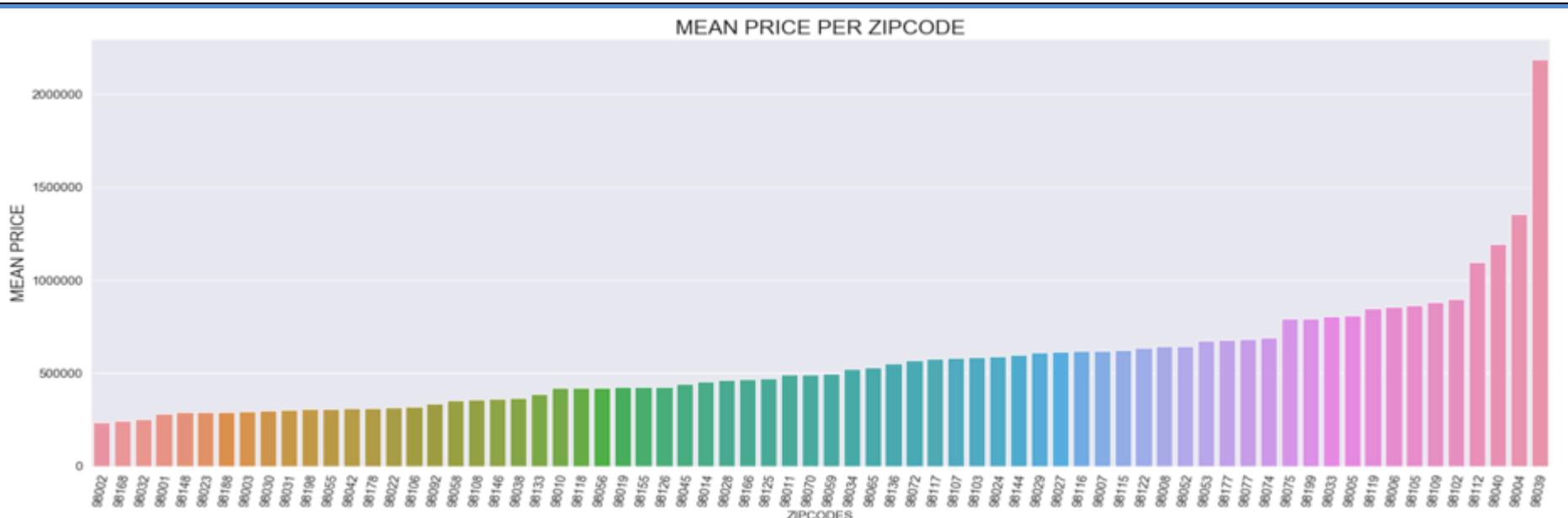
Sector Creation

- Dealing with 70 zip codes might be complicated, but ultimately it might result in a more accurate recommendation since the average price is clearly controlled by them
- Sectors managed to separate price ranges up to a certain degree and can be considered a good starting point

Sector definition based on lat & long and house price

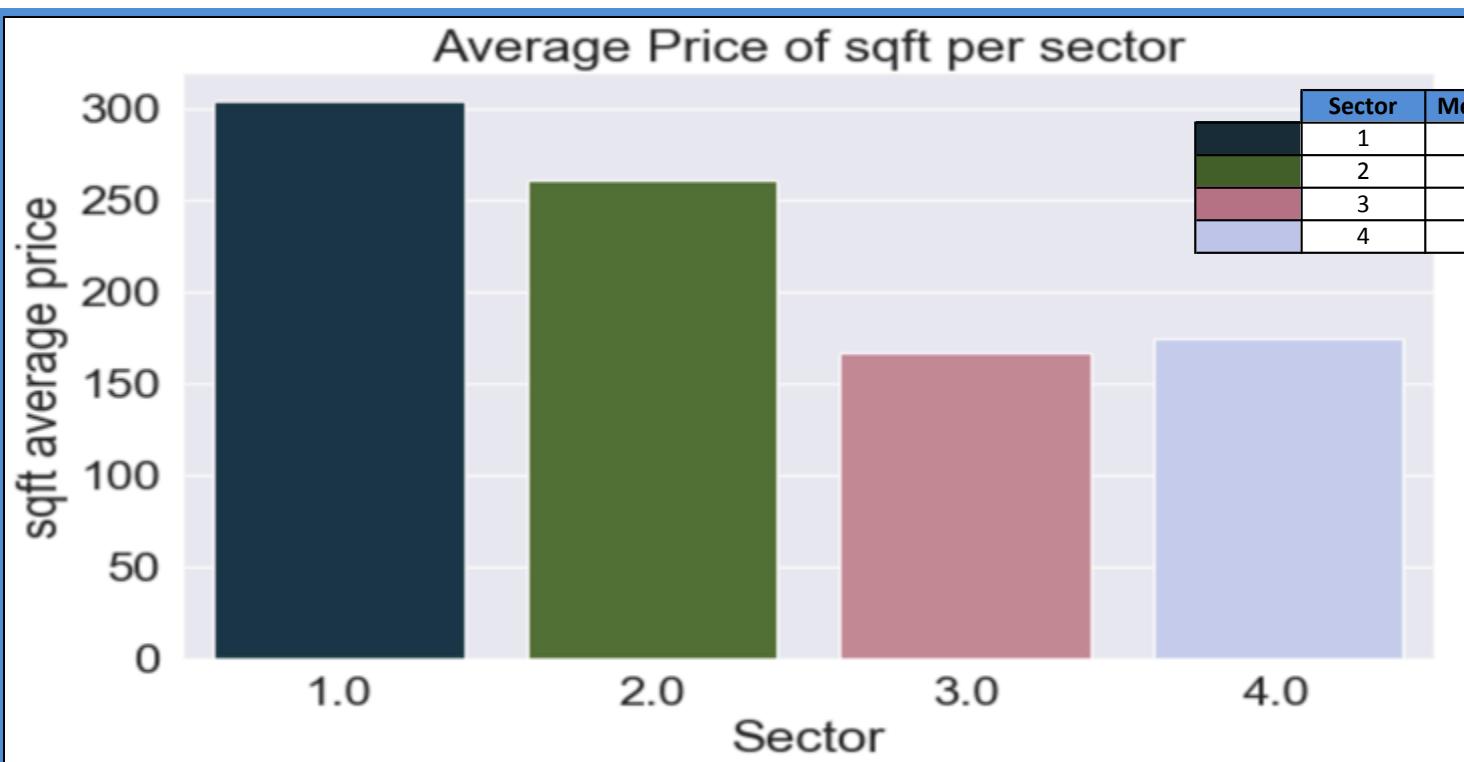
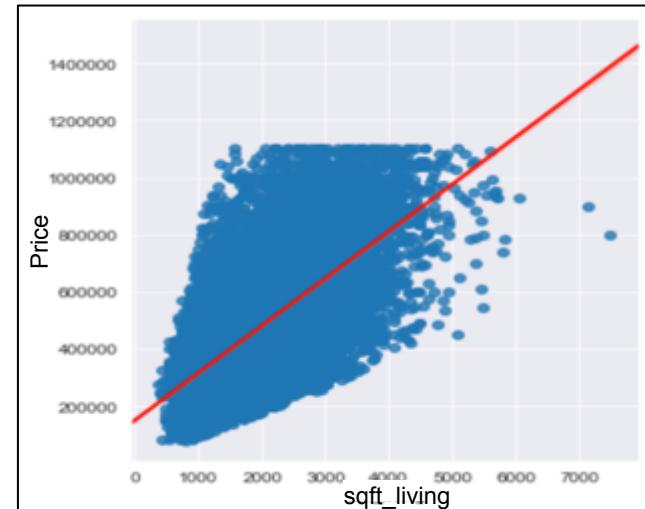


MEAN PRICE PER ZIPCODE



Which sector should you be looking at? and, what price per square foot will you get?

- Sector 1 contains the highest price per square foot
- Sector 2 covers the majority of the houses located in the waterfront
- Bigger houses within Sector 2 didn't pass the threshold/filter value of 1 million \$

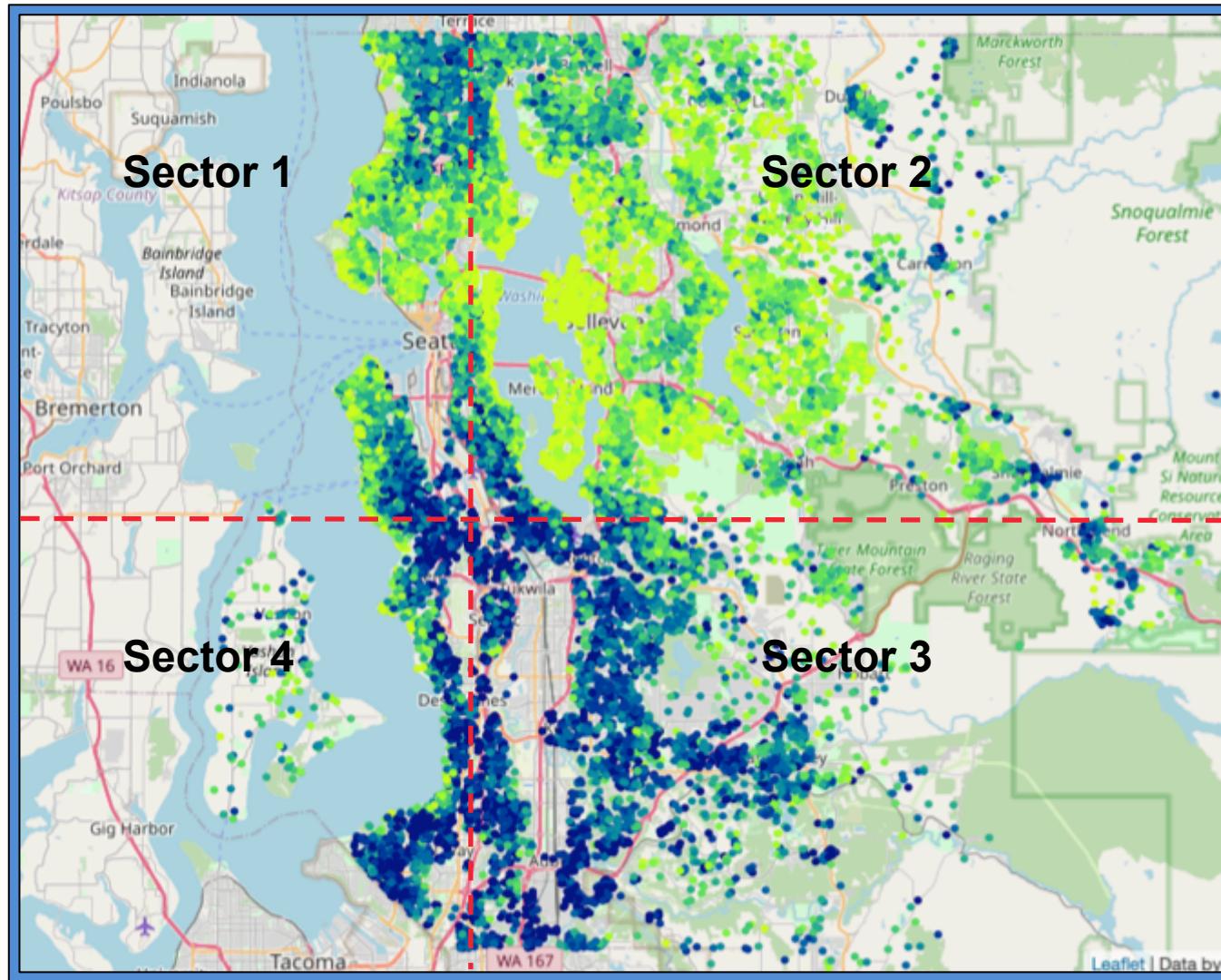


Should you be looking at the waterfront or in-land view?

- Buying in the waterfront is always more expensive with the exception of Sector 3, which has the lowest average price
- With the exception of Sector 3, the price uplift from in-land to waterfront property is rather significant



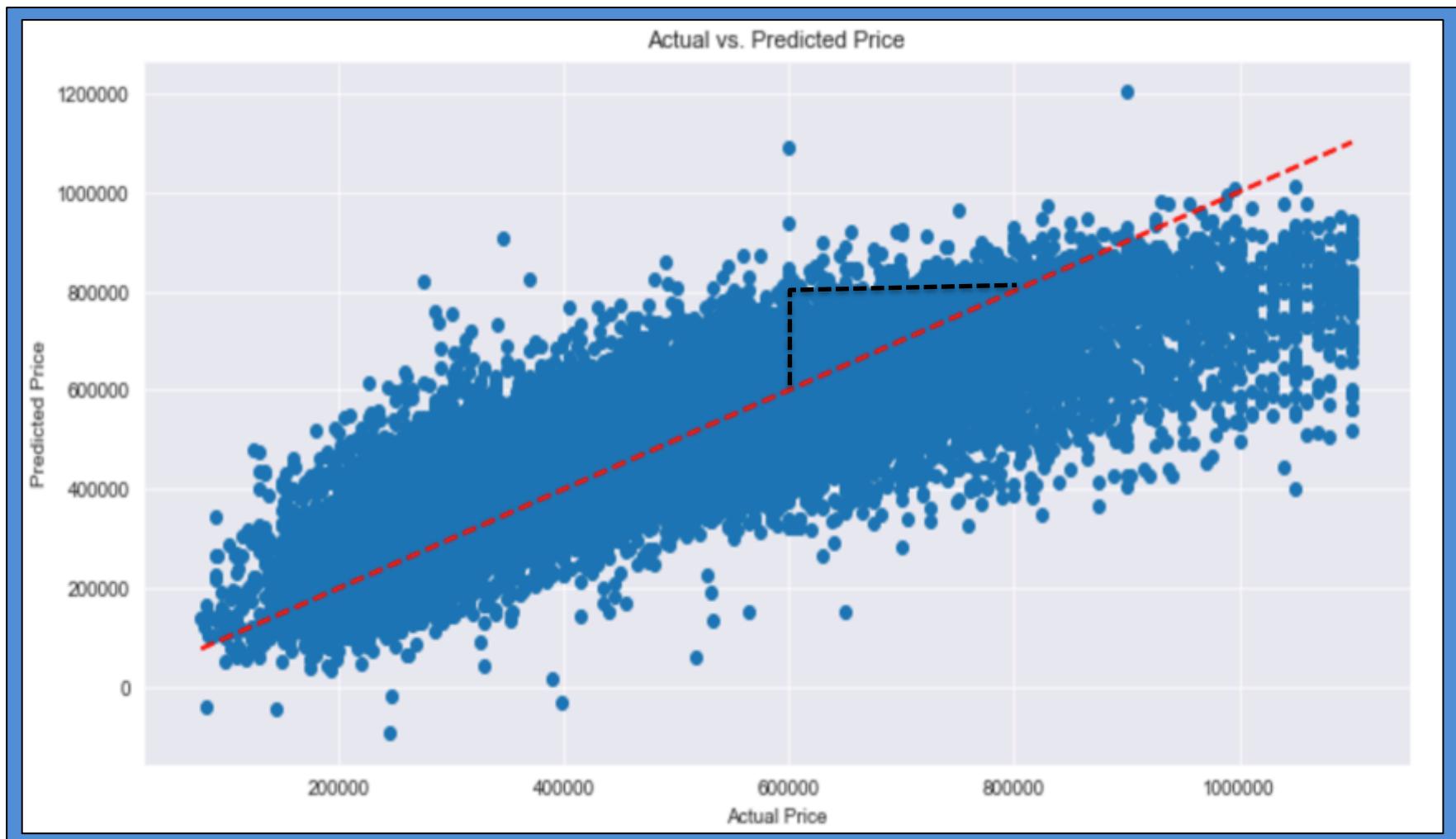
Should you be looking at the waterfront or in-land?



Color variation correlation with the water is quite clear

As expected, being in the waterfront will demand a higher price!

Actual vs. Predicted Price



Model Result Details

Input Data: King County dataset from 2014 - 2015

Metric: Mean Absolute Error (mse) & R²

R² : 0.716

Predictive Error (mse): 107,879\$ (10.7% on price range)

Price Range: 1,000,000\$ (~94% of the data)

Average Price: 468,468.61\$

SUMMARY:

- According to my model the sector (location), square foot of living, and the waterfront view are the variables that will contribute the most to predicting price.
- Other good predictors worth looking at are the renovations, square foot living 15, and the grade given to the property (9 - 11)



Recommendations

- Concentrate on Sector 1 and 2 for high end property investment
- For a best square foot price, within the 1 million \$ range, concentrate on Sector 2.
- Within those 2 sectors, look for houses with waterfront view
- Within the given budget, it is advisable to stay between 600 to 700,000\$ to avoid entering the zone where the model under-predicts the prices by over 100,000\$
- If you want to minimize the error stay around 500,000\$



Way Forward

- Extending the study into individual zip-codes could not only refine the model but allow more accurate recommendations on specific locations of where to invest
- Get mode data :
 - The one available only covers 2014-2015 and as an investor it would be interesting to analyze price variations with time
 - School, hospitals and public transportation distance to properties would be interesting to add to the model as well



*Thank
you*

