

# **King County**

## Marketing Campaign

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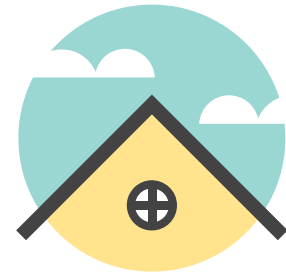
Data-driven insights and predictive modelling



# Problem Statement

**Advertising Campaign to encourage sales in King County**

- Data-driven recommendations
- Model to predict house prices



**PropertiesInc**

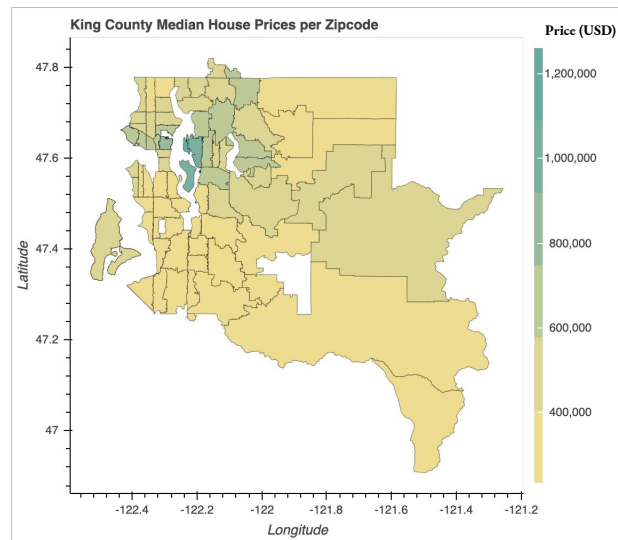
REAL ESTATE

## Location



- Understand which areas have the highest house prices and should be the focus of our campaign

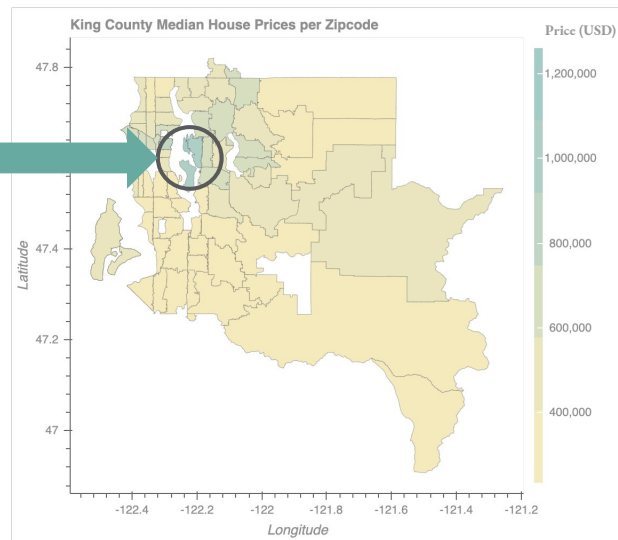
## LOCATION - Zip Codes



- Looked at the median house price per zip code. There were 70 different zip codes in our dataset.

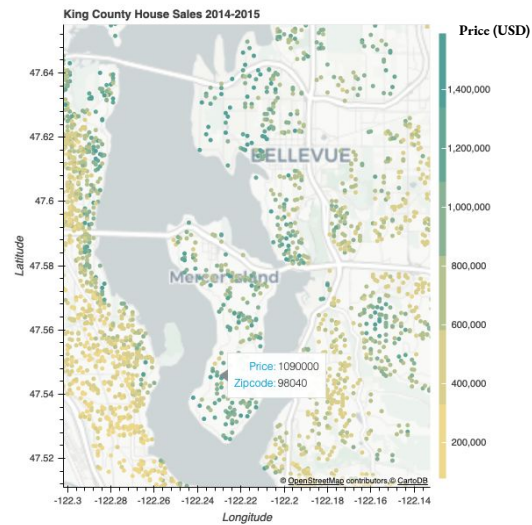
## LOCATION - Zip Codes

3 Top Zip Codes



- See top 3 zip codes in the NW area

## LOCATION - Neighbourhoods



- Zoomed in and see that waterfront is key
- Most expensive houses are in Mercer Island and Bellevue

## Recommendations



### Location

- Importance of waterfront
- Bellevue and Mercer Island areas



## House Features



- Then looked at house features to see which factors drive the price up and also which factors are the best predictor of price



## House Features - Living Area



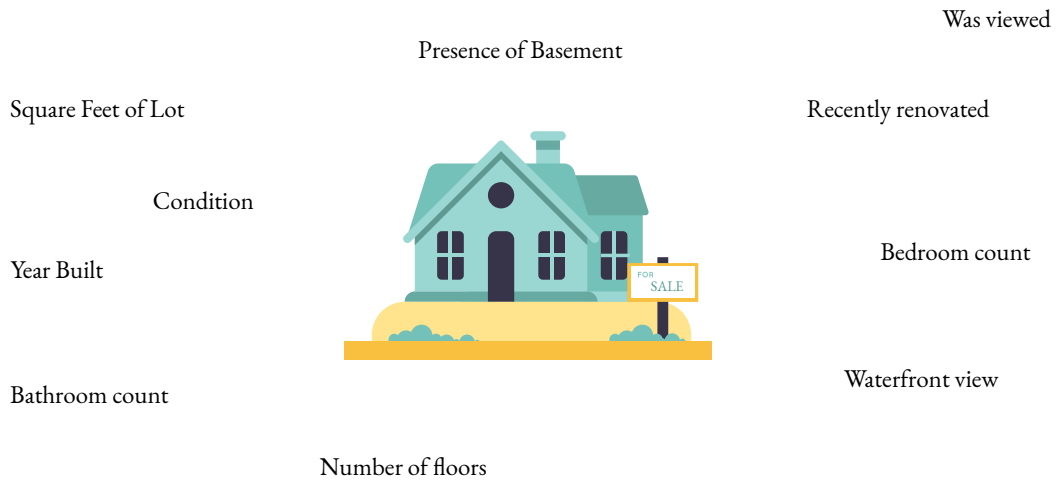
- Most obvious one first, sqft of living space. We would expect a larger house to be more expensive.
- See broad increase, more sqft is more expensive but not clear cut

## House Features - Grade



- Better predictor is grade, construction value from King County which ranges from 1 to 13 (though here we only had 3 to 12)
- For the campaign we would recommend looking at houses with a grade of 10 or above. This would have a starting median price above \$800,000. From the description we note that "Homes of this quality generally have high quality features. Finish work is better and more design quality is seen in the floor plans. Generally have a larger square footage."

## House Features - Other



- Other features we considered

## Recommendations



### Location

- Importance of waterfront
- Bellevue and Mercer Island areas



### Home Features

- Larger living area (sqft)
- Grade 10 and above
- Grade better predictor

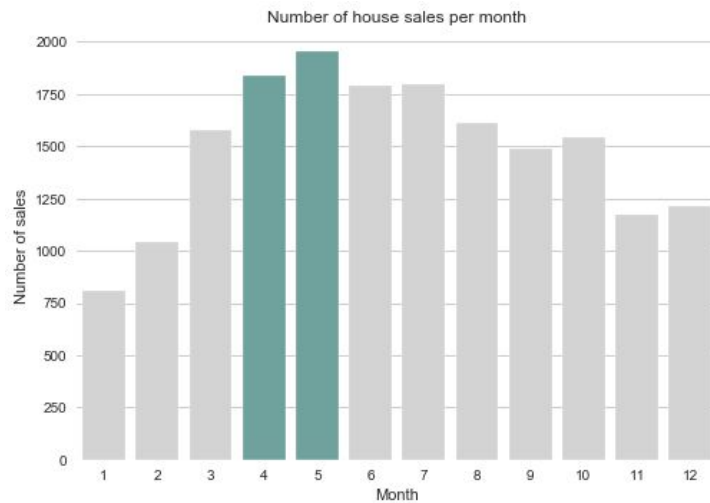


## Time of Year



- Investigated whether the median price was higher at a certain time of the year and whether there are any trends.
- Median price was almost the same, so no influence

## Time of year



- However volume of sales varied
- April and May are the most popular months for house sales. In contrast, January and February have the lowest number of sales.
- Recommend March/April for the campaign

## Recommendations



### Location

- Importance of waterfront
- Bellevue and Mercer Island areas



### Home Features

- Larger living area (sqft)
- Grade above 10
- Grade better predictor



### Time of Year

- Constant median house price
- April/May highest sales volume
- Campaign in March/April



# **Predicting House Prices**



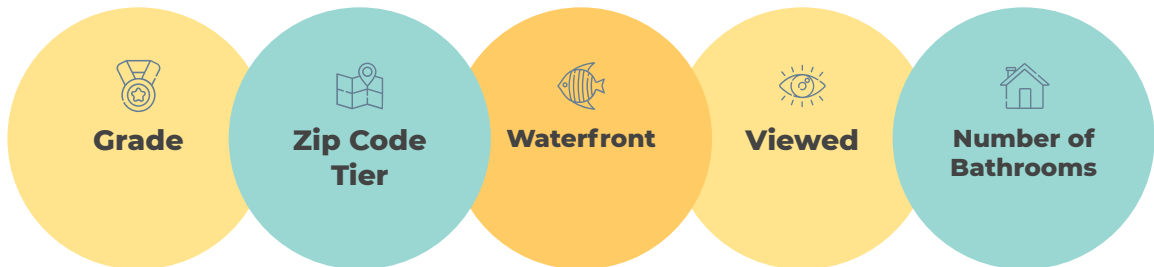


## Predicting House Prices

|                   | Model A                             | Model B                  |
|-------------------|-------------------------------------|--------------------------|
| <b>Features</b>   | 17                                  | 87                       |
| <b>Pros</b>       | Easy to interpret, generalises well | Performance              |
| <b>Cons</b>       | Less accurate                       | Uses exact zip code data |
| <b>Score</b>      | 0.70                                | 0.83                     |
| <b>Mean Error</b> | USD 132,444                         | USD 99,654               |

- Features is number of attributes used to predict
- Score is a value between 0 and 1 with 1 being a perfect fit
- Mean error is the amount in USD on average over or under
- 70% of variations in price can be explained by model A vs 83% for model B

## Best predictors - Model A



- being of grade 12 is worth USD 515,536.
- being in a top-10 zip code (by median house price) is valued at USD 435,924
- being on the waterfront is valued at USD 277,442.



## Further work

### School Ratings Data

Proximity to a good school is likely to increase sale price

### Commuting Time Data

Homes better connected to downtown Seattle are likely to be more valuable

### Longer Time Scale

See which areas show signs of growth/ decline



# THANK YOU

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