An Analysis of Kings County Housing Prices

By Megan & Ari

Questions

Zip code

Does the average price of a home vary based on the zip code?

Are some zip codes more densely populated than others?

Nearest Cities

How does house price vary based on the proximity to the nearest city?

- Bellevue
- Seattle

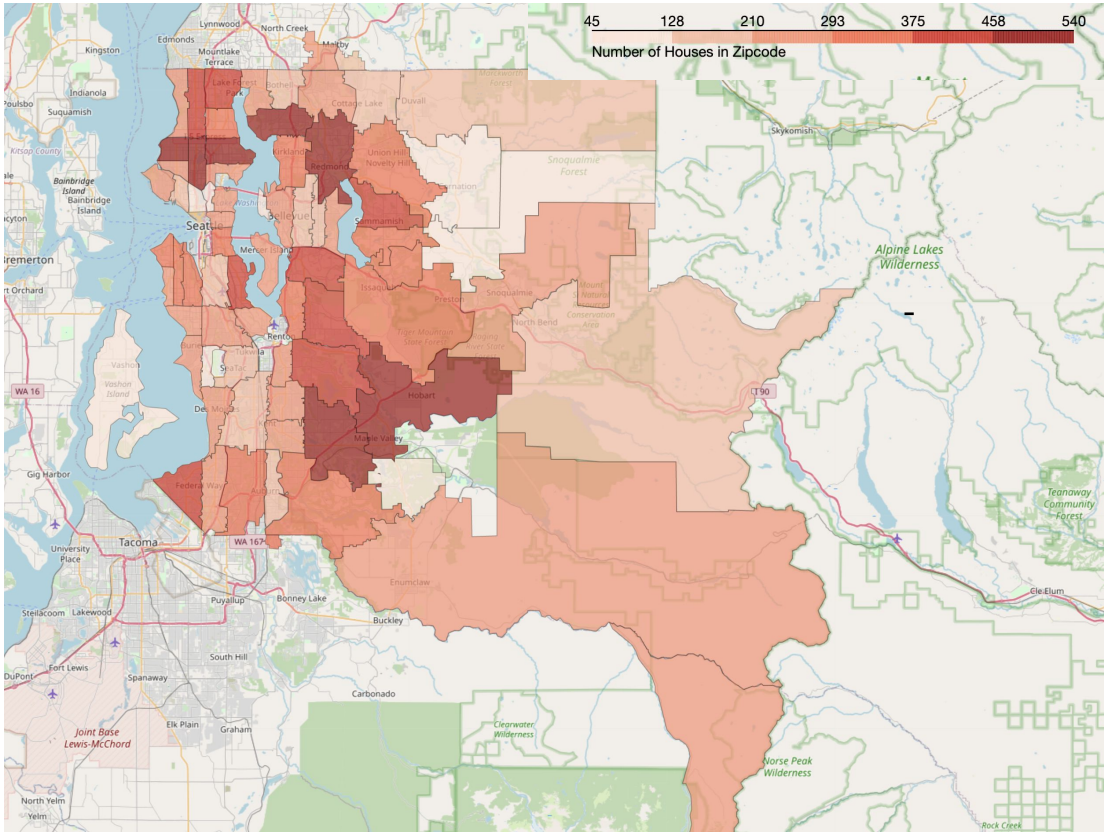
Waterfront

Are waterfront properties more expensive?

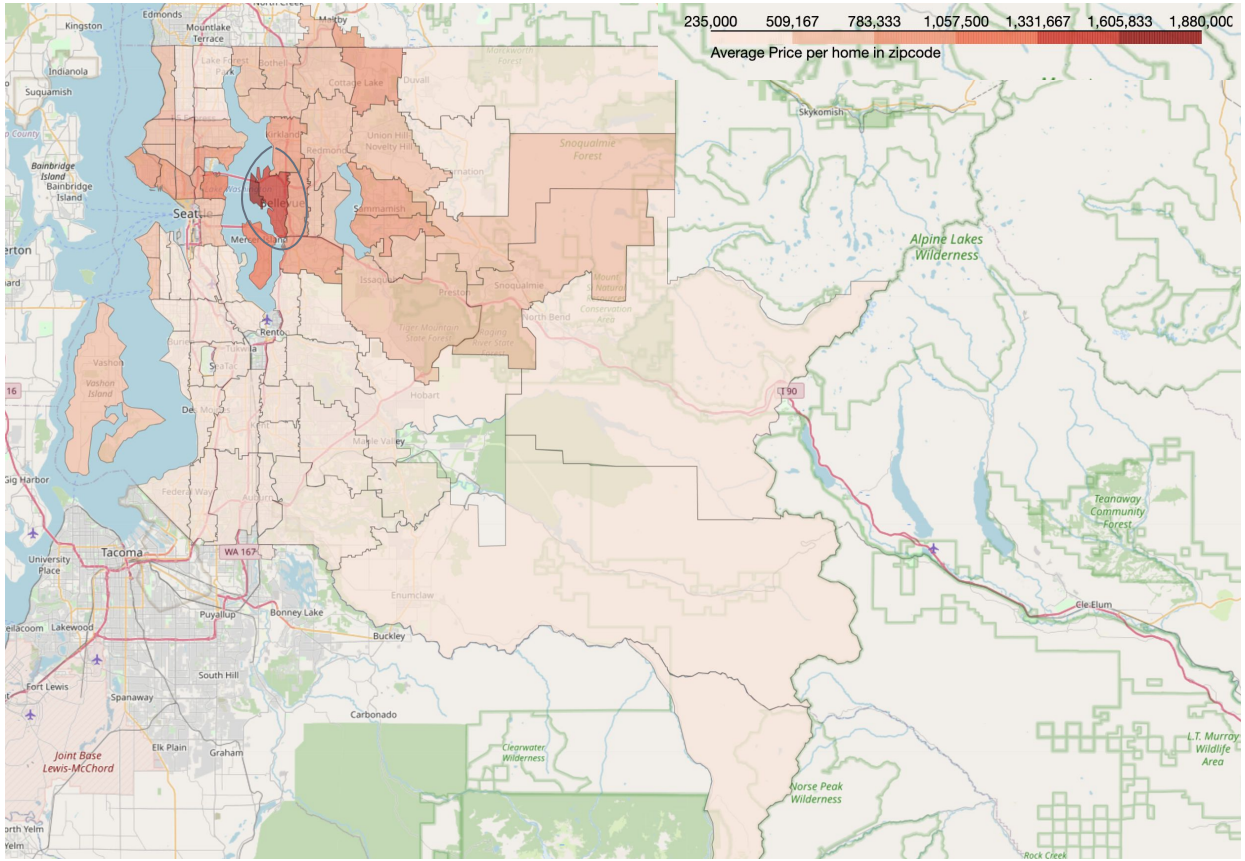
How does their price compare to non waterfront properties?

Breakdown by Zip code

Distribution of houses by Zip Code

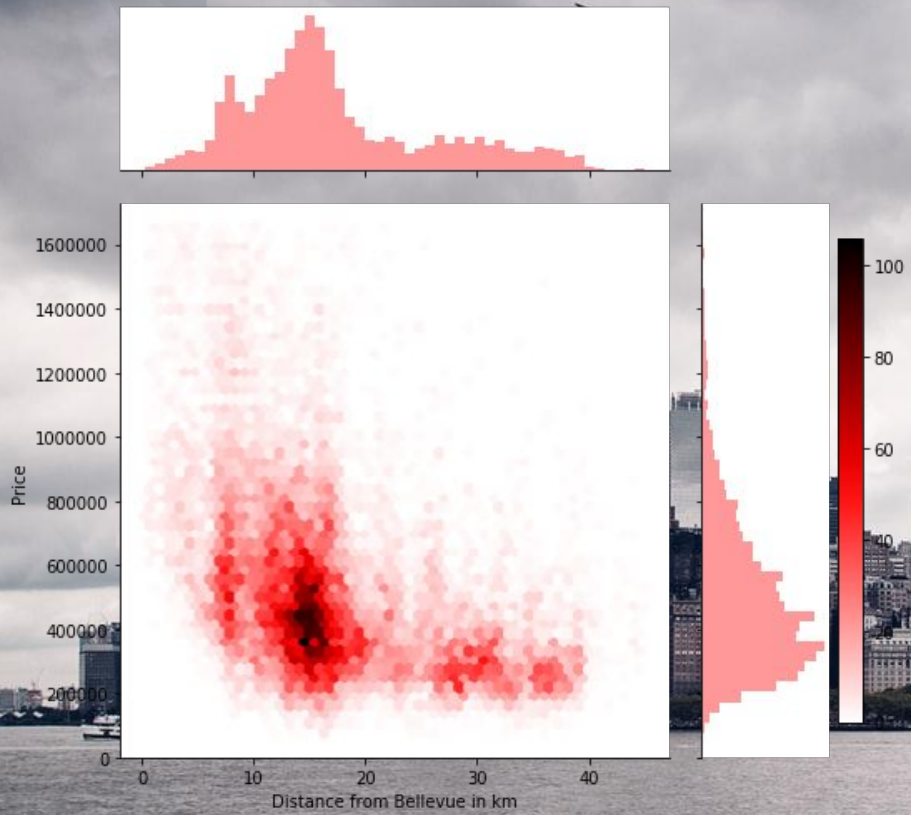


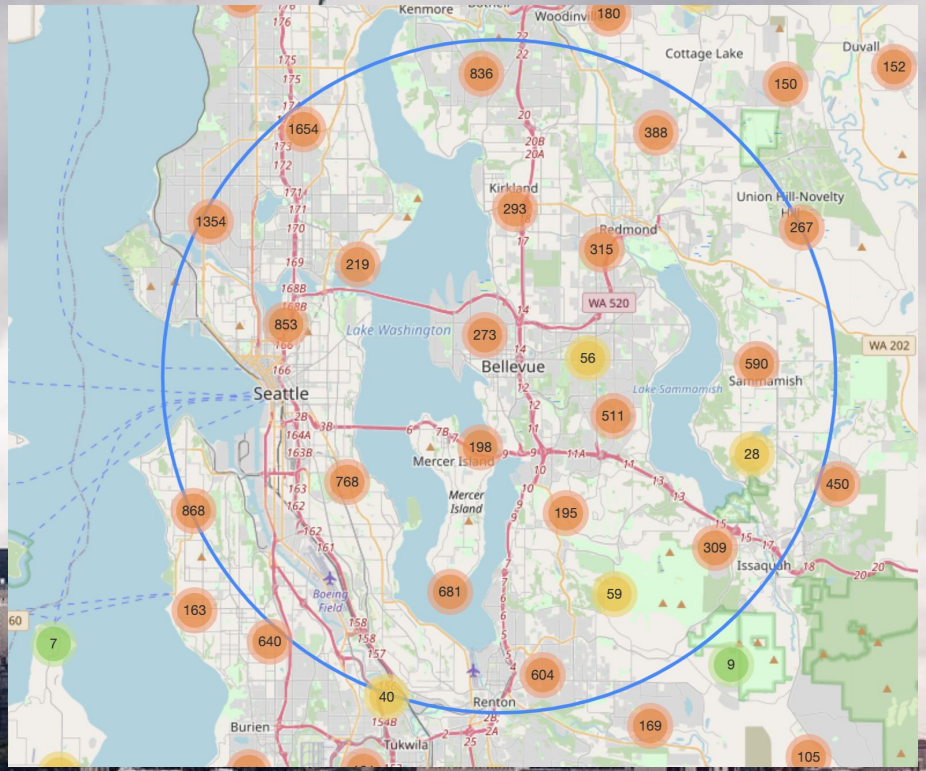
House Prices by Zip Code



Distance from 2 major Cities

Bellevue


1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
Price
0
10
20
30
40
Distance from Bellevue in km
100
80
60
40


Kenmore
Woodinville
Cottage Lake
Duvall
Kirkland
Redmond
Union Hill-Novelty Hill
Lake Washington
Bellevue
Seattle
Lake Sammamish
Mercer Island
Issaquah
Renton
Burien
Tukwila
Boeing Field
WA 520
WA 202
180
836
150
152
1654
388
293
1354
267
315
219
853
273
56
590
511
198
28
768
450
868
195
309
681
59
163
640
604
9
40
169
105
7

What effect does waterfront have on the price of a home?

House prices vs Waterfront

There’s about half a million dollars in difference between the average of houses with a waterfront and houses without a waterfront within Kings count. Given this I can conclude that the resale value of most waterfront home will be no less than $300,000.

Regression Model

Housing Price Predictor

Features of Model:

1. **Bathrooms (-)**
2. **Bedrooms (+)**
3. **Sqft Living (+)**
4. **Sqft Lot (+)**
5. **Distance to Nearest City (Bellevue/Seattle) (-)**
6. **Grade (+)**

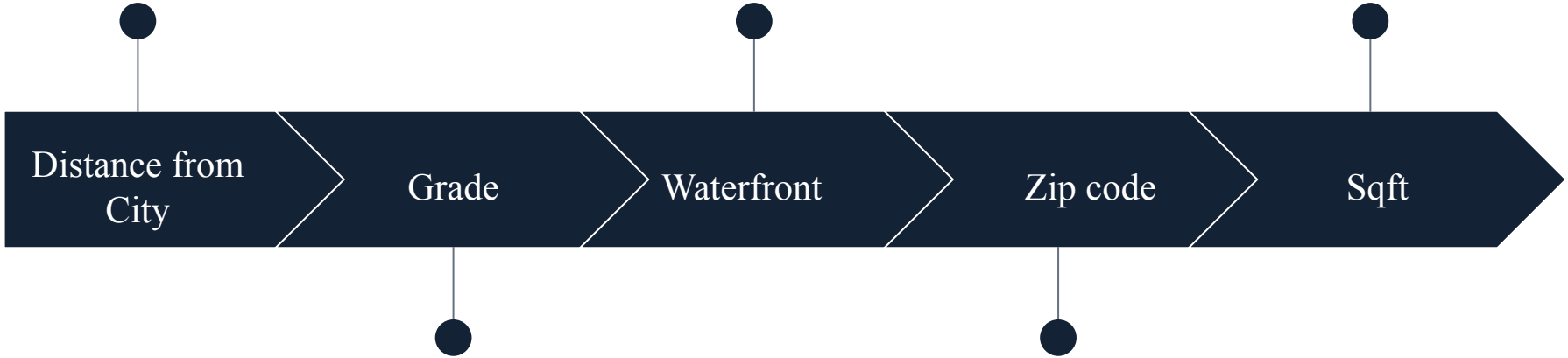
See Appendix for more detailed explanation

Conclusions

Houses over USD1m are located within 10km of Bellevue

Waterfront properties are more expensive

Bigger House means bigger price



Higher grade means higher price

Average Price of houses varies greatly by zip code

Future Work

Zip code Feature

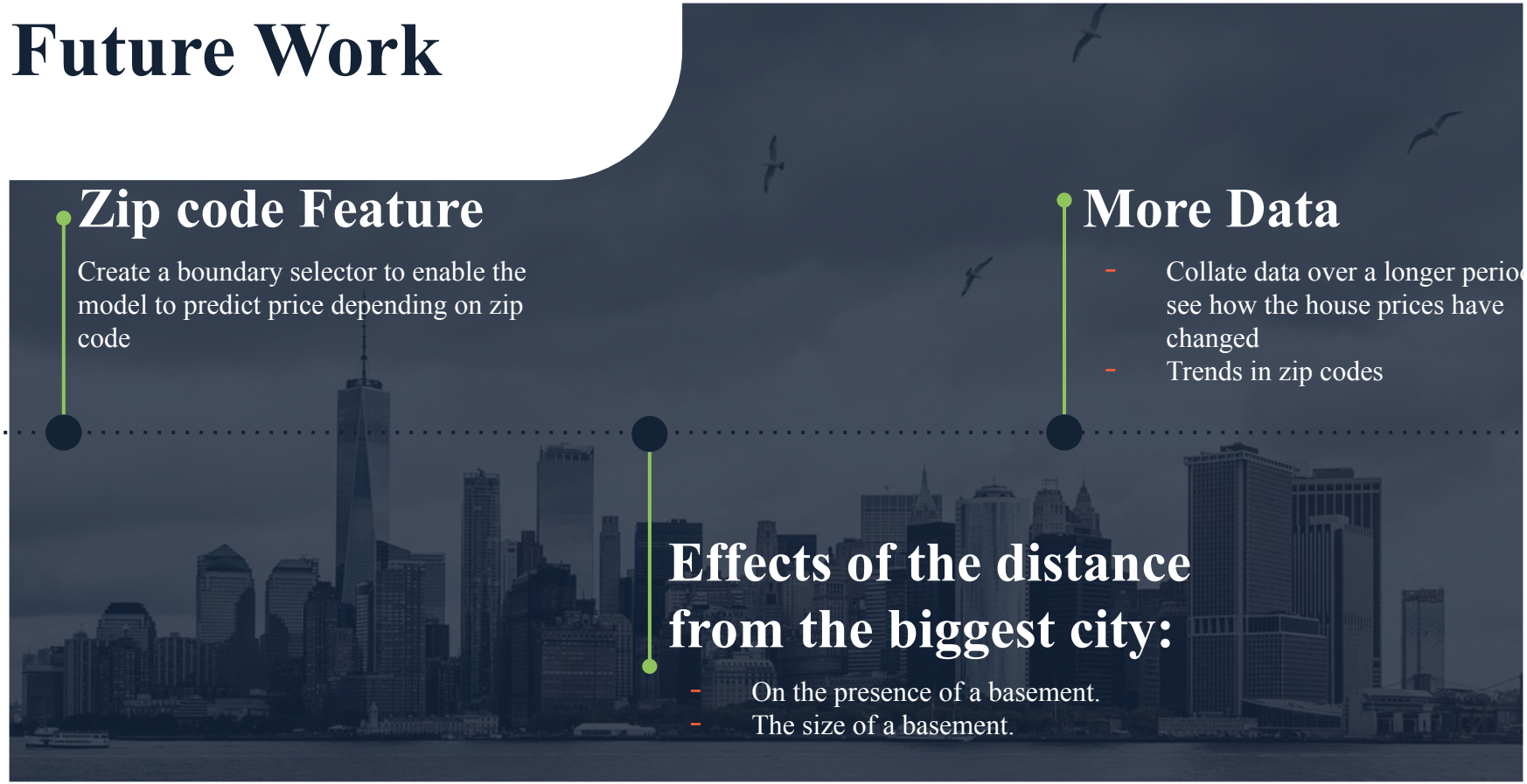
Create a boundary selector to enable the model to predict price depending on zip code

More Data

- Collate data over a longer perio see how the house prices have changed
- Trends in zip codes

Effects of the distance from the biggest city:

- On the presence of a basement.
- The size of a basement.




Thank You!

Appendix I

Details on Regression Model :

The Model works by taking a base price based on the grade of the house.

It then makes further adjustments based on the other features

See next slide for Beta Coefficients

Beta Coefficients & Prediction Equation

Price = (84541 * Area inside) + (24190 * Area parking lot) + (-12510 * Number of bedrooms) + (3849.4898 * Number of bathrooms) + (-109100 * Distance from City) + (429646 * Grade 4) + (410804 * Grade 5) + (400781 * Grade 6) + (441474 * Grade 7) + (499282 * Grade 8) + (588835 * Grade 9) + (648431 * Grade 10) + (707515 * Grade 11)

Bedrooms: -12,506.75

Bathrooms: 3,849.49

Sqft_Living: 84,541.15

Sqft_Lot: 24,188.31

Distance from City: -109,135,43

Grade 4: 429,646.63

Grade 5: 410,804.70

Grade 6: 400,781.68

Grade 7: 441,474.33

Grade 8: 499,282.51

Grade 9: 588,835.14

Grade 10: 648,431.59

Grade 11: 707,515.76

Appendix II

Box Cox Transformation & Z Scores :

The Following features were transformed into a more normal shape using BoxCox:

- **Sqft Living**
- **Sqft Lot**
- **Distance from the City**

All features were then normalized using z-scores