



Understanding
King County
Housing Prices

STEPHEN LANIER

PROBLEM STATEMENT

- What factors affect the price of a house in King County?
- An **understandable** model

BUSINESS VALUE

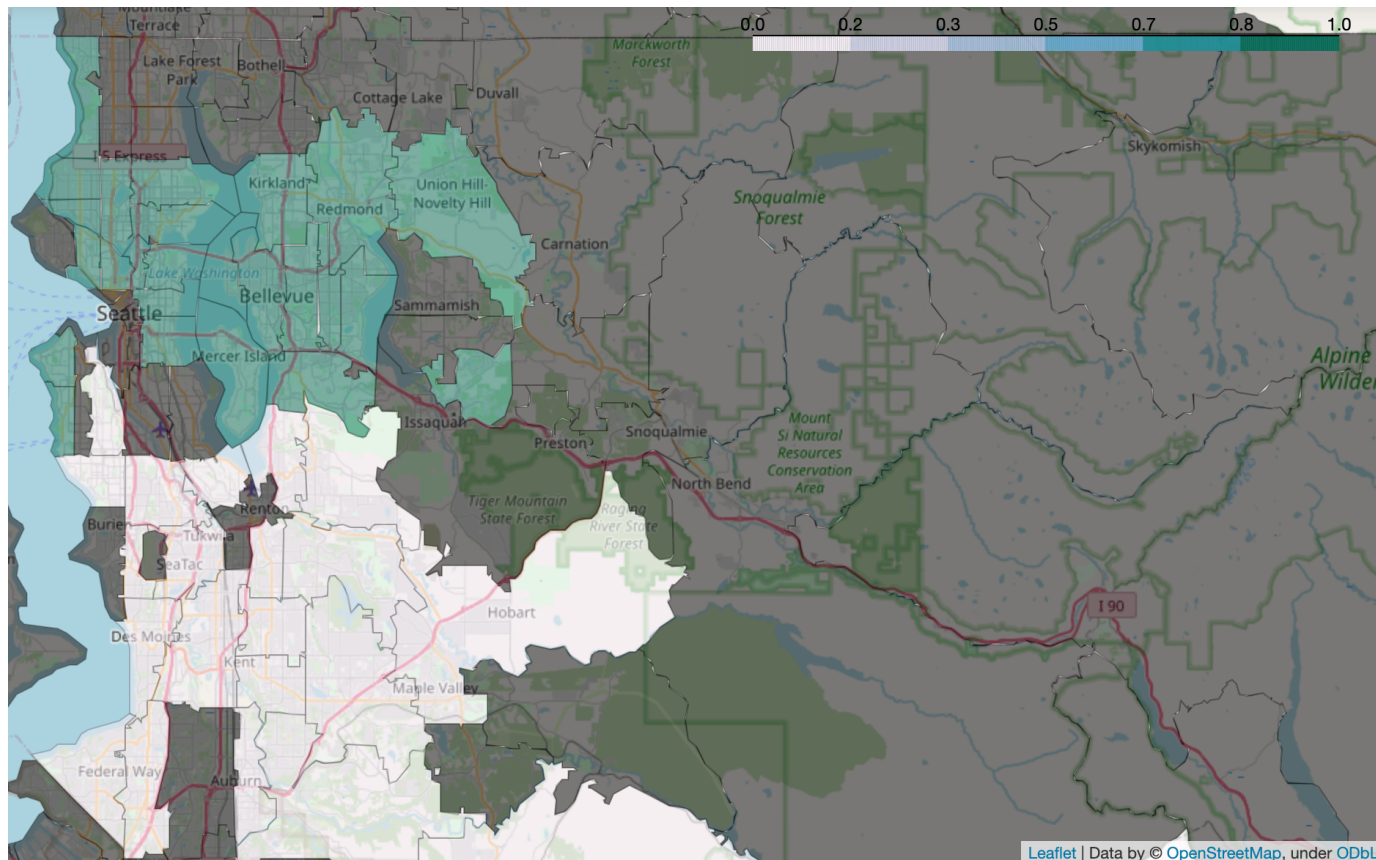
- Deeper understanding of housing market
 - Factors with highest affect on value? Lowest?
 - Factors with positive affect on value? Negative?
- A model for predicting a house's value

METHODOLOGY

1. Clean and reshape data
2. Find baseline model
3. Remove factors (but retain model accuracy)

FINDINGS

- Highest impact factors:
 - Zip code
 - Square footage
 - Presence of a basement
 - Grade
 - Waterfront location
 - Renovation



Zipcodes by
Positive/Negative
Impact

CONCLUSIONS

POSITIVE EFFECT

- Basement
- Renovation
- Grade of 9 or higher
- Waterfront location
- Zip codes near Seattle, Bellevue

NEGATIVE EFFECT

- Grade of 7 or lower
- Zip codes south of Seattle

SCALING EFFECT

- Square footage of house

Future Work

- Prediction-focused model
 - Higher accuracy, less interpretability
 - A “black box” model

Thank You!

Citations and Acknowledgments

- https://gis-kingcounty.opendata.arcgis.com/datasets/e6c555c6ae7542b2bdec92485892b6e6_113/data (List of King County Zipcodes)
- <https://github.com/OpenDataDE/State-zip-code-GeoJSON> (zipcode GeoJSON data)

Appendix 1:

Positive Impact Factor Coefficients

feature	coefficient						
zipcode_98004	0.521011	zipcode_98102	0.255622	grade_11	0.103897	renovated	0.0463937
zipcode_98039	0.508023	zipcode_98115	0.25031	view_3.0	0.0839275	floors_1.5	0.0268665
zipcode_98112	0.420499	zipcode_98117	0.245765	zipcode_98136	0.0805921	view_1.0	0.0186502
zipcode_98119	0.355919	view_4.0	0.233761	grade_9	0.0721661	month_sold_4	0.0146636
zipcode_98105	0.324765	zipcode_98107	0.230771	zipcode_98052	0.0715896	zipcode_98053	0.0113463
zipcode_98109	0.307728	zipcode_98033	0.220859	zipcode_98008	0.0713831	zipcode_98007	0.00856
waterfront_1.0	0.292281	zipcode_98122	0.202291	zipcode_98006	0.0672796	grade_12	0.00804484
zipcode_98040	0.279702	zipcode_98116	0.17351	zipcode_98144	0.0671594	zipcode_98029	0.00686909
zipcode_98199	0.271987	grade_10	0.124267	condition_5	0.0507265	basement	0.00276861
zipcode_98103	0.256475	zipcode_98005	0.108034	view_2.0	0.0496268	zipcode_98177	0.00242109
						sqft_living	0.000221837
						sqft_living15	0.000114527

Appendix 2:

Negative Impact Factors

feature	coefficient					
condition_3	-0.0174655	61	grade_6	-0.185186	zipcode_98030	-0.277594
zipcode_98106	-0.0240696	55	zipcode_98178	-0.186794	zipcode_98032	-0.302324
zipcode_98148	-0.0244981	34	zipcode_98058	-0.197554	zipcode_98042	-0.30372
condition_2	-0.0359858	32	zipcode_98055	-0.1983	zipcode_98003	-0.311501
zipcode_98059	-0.0363614	26	zipcode_98038	-0.204068	zipcode_98092	-0.313628
grade_4	-0.0382272	19	zipcode_98022	-0.204984	zipcode_98002	-0.314816
zipcode_98056	-0.0386621	60	grade_5	-0.243892	zipcode_98023	-0.401641
zipcode_98146	-0.0532703	57	zipcode_98198	-0.254735		
grade_7	-0.0883592	23	zipcode_98031	-0.25562		
zipcode_98188	-0.18085	53	zipcode_98168	-0.263408		