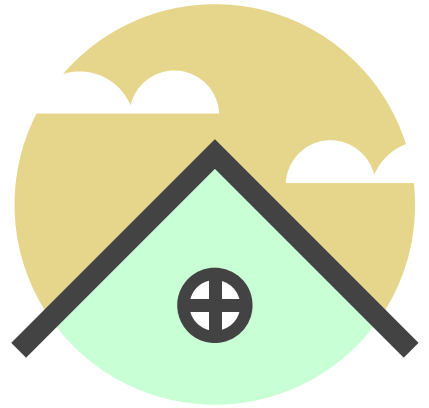# Understanding Kings County House Sale Prices

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4/2/2021
Module 2 Project

Real estate is an enormously competitive field. The chances are that your area already has at least one or two successful and popular real estate brokers and real estate companies actively engaged in the marketplace.

Understanding the Kings County housing market and considering a specific niche will help you build more successful real estate business and you give you a leg up on the competition.

- Gain an understanding of features that affect house sale prices
- Build a model to predict house sale prices

21,597 entries of houses sold in Kings County, Washington in 2014 and 2015

Example of house features in data:

- price - home sale price
- bedrooms - number of Bedrooms/House
- bathrooms - number of bathrooms/bedrooms
- sqft_living - square footage of the home
- sqft_lot - square footage of the lot
- floors - floors (levels) in house
- waterfront - House which has a view to a waterfront
- condition - How good the condition is (Overall)
- grade - overall grade given to the housing unit, based on King County grading system
- yr_renovated - Year when house was renovated
- zipcode - zip
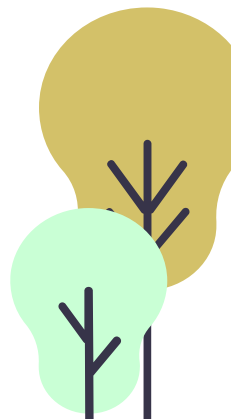
Obtain
Data was obtained via kc_house_data.csv

Scrub and Clean
Removed erroneous and null values. Removed unnecessary columns.

Explore
Created visualizations to understand data and applied feature engineering

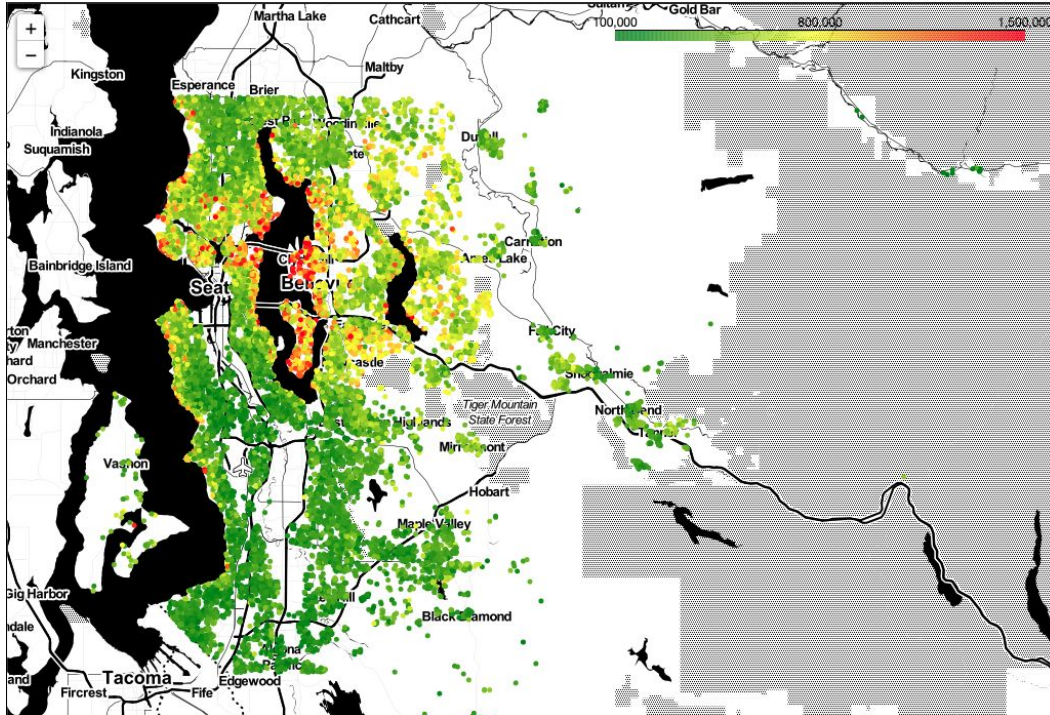**Transform**
One-hot-coding, normalization, log transformation

Model
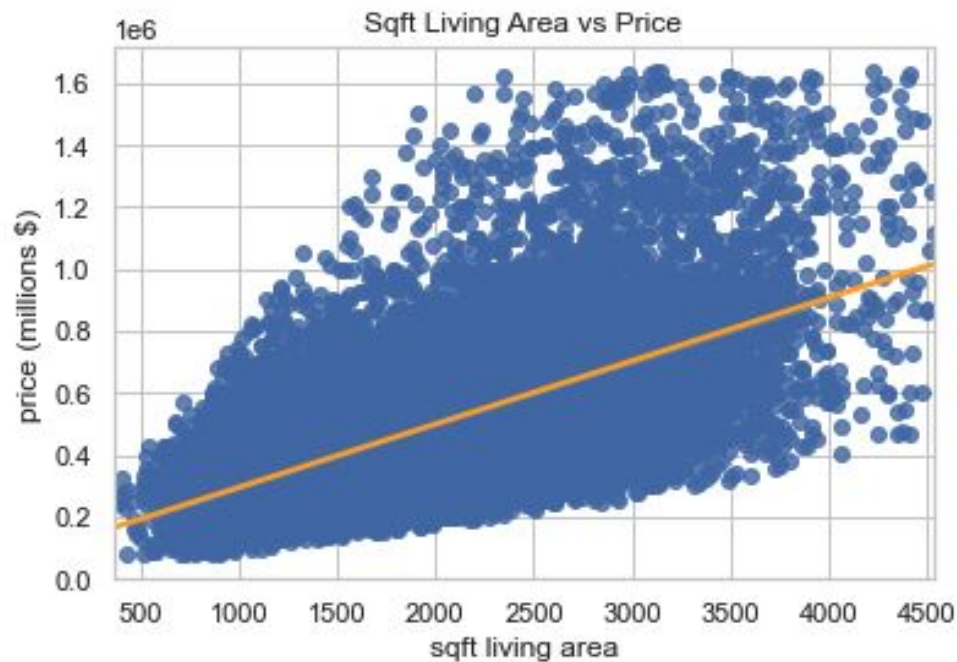Ordinary Least Squares Regression

Waterfront vs Median Price

Recommendation:
Target homes with a waterfront
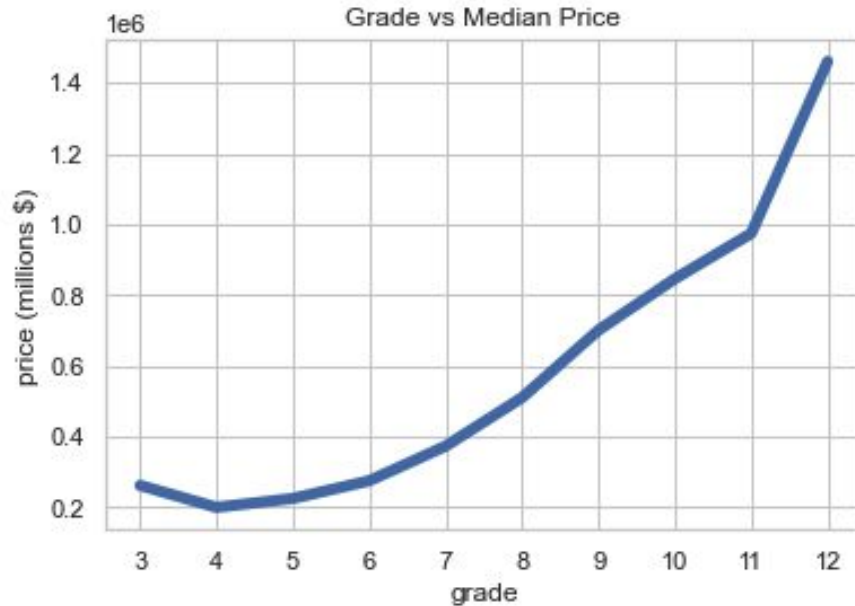
Note:
Waterfront is valued at $260,000

Sqft Living Area vs Price

Recommendation:
Target houses with larger sqft ($103/sqft)

Note:
A 2500 sqft home is worth $51,500 more than a 2000 sqft home

Recommendation:
Focus on houses with a grade 9 or higher

Note:
A grade 8 notably decreases in value by
$64,000 compared to a grade 9

Model Summary

|	Final Model
Features	22
Adj. R-squared	0.786
RMSE	$89,000

- Living area is valued at $103 per sqft
- Waterfront is valued at $260,000
- Being viewed is valued $75,000
- Better conditions are valued more
- Renovation is valued at $50,000
- Higher grades are valued more
- Higher zip code ranking are valued more

Incorporate added features:

- Central air conditioning: **69%** of buyers willing to pay more
- New kitchen appliances: **69%** of buyers willing to pay more
- Walk-in closet in master bedroom: **60%** of buyers willing to pay more
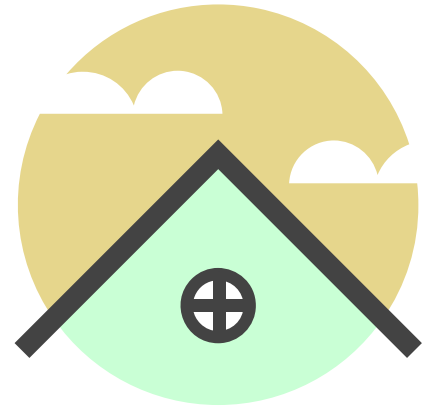
THANK YOU

Does anyone have any questions?

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Model Coefficients

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	5.298e+05	1.71e+04	30.912	0.000	4.96e+05	5.63e+05
sqft_living	103.3566	2.559	40.382	0.000	98.339	108.374
waterfront_1	2.607e+05	2.87e+04	9.100	0.000	2.05e+05	3.17e+05
view_1	7.527e+04	5346.925	14.077	0.000	6.48e+04	8.58e+04
condition_3	3.549e+04	1.26e+04	2.823	0.005	1.08e+04	6.01e+04
condition_4	4.977e+04	1.27e+04	3.925	0.000	2.49e+04	7.46e+04
condition_5	8.871e+04	1.33e+04	6.685	0.000	6.27e+04	1.15e+05
renovated_1	5.126e+04	7578.049	6.764	0.000	3.64e+04	6.61e+04
grade_4	-1.387e+05	4.57e+04	-3.032	0.002	-2.28e+05	-4.9e+04
grade_5	-1.803e+05	1.53e+04	-11.767	0.000	-2.1e+05	-1.5e+05
grade_6	-1.532e+05	1.01e+04	-15.238	0.000	-1.73e+05	-1.34e+05
grade_7	-1.353e+05	8610.622	-15.717	0.000	-1.52e+05	-1.18e+05
grade_8	-1.035e+05	8096.479	-12.784	0.000	-1.19e+05	-8.76e+04
grade_9	-3.615e+04	8407.049	-4.300	0.000	-5.26e+04	-1.97e+04
rank_10	-3.569e+05	7158.556	-49.863	0.000	-3.71e+05	-3.43e+05
rank_2	-5.313e+04	7386.483	-7.193	0.000	-6.76e+04	-3.87e+04
rank_3	-1.097e+05	6409.041	-17.112	0.000	-1.22e+05	-9.71e+04
rank_4	-9.015e+04	6650.451	-13.555	0.000	-1.03e+05	-7.71e+04
rank_5	-1.777e+05	7370.294	-24.106	0.000	-1.92e+05	-1.63e+05
rank_6	-2.278e+05	6820.404	-33.401	0.000	-2.41e+05	-2.14e+05
rank_7	-2.358e+05	6573.626	-35.872	0.000	-2.49e+05	-2.23e+05
rank_8	-3.132e+05	6650.525	-47.094	0.000	-3.26e+05	-3e+05
rank_9	-3.617e+05	6767.600	-53.440	0.000	-3.75e+05	-3.48e+05