



Predicting King City House Prices Project

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Dataset

price - Price of each home sold **bedrooms** - Number of bedrooms

bathrooms - Number of bathrooms, where .5 accounts for a room with a toilet but no shower

sqft_living - Square footage of the apartments interior living space

sqft_lot - Square footage of the land space

floors - Number of floors

waterfront - whether the house was overlooking the waterfront or not

view - An index from 0 to 4 of how good the view of the property is

condition - An index from 1 to 5 on the condition of the house,

grade - An index from 1 to 13, where 1-3 falls short of building construction and design, 7 has an average level of construction and design, and 11-13 have a high quality level of construction and design.

sqft_above - The square footage of the interior housing space that is above ground level

sqft_basement - The square footage of the interior housing space that is below ground level

yr_built - The year the house was initially built

yr_renovated - The year of the house's last renovation

zipcode - What zipcode area the house is in

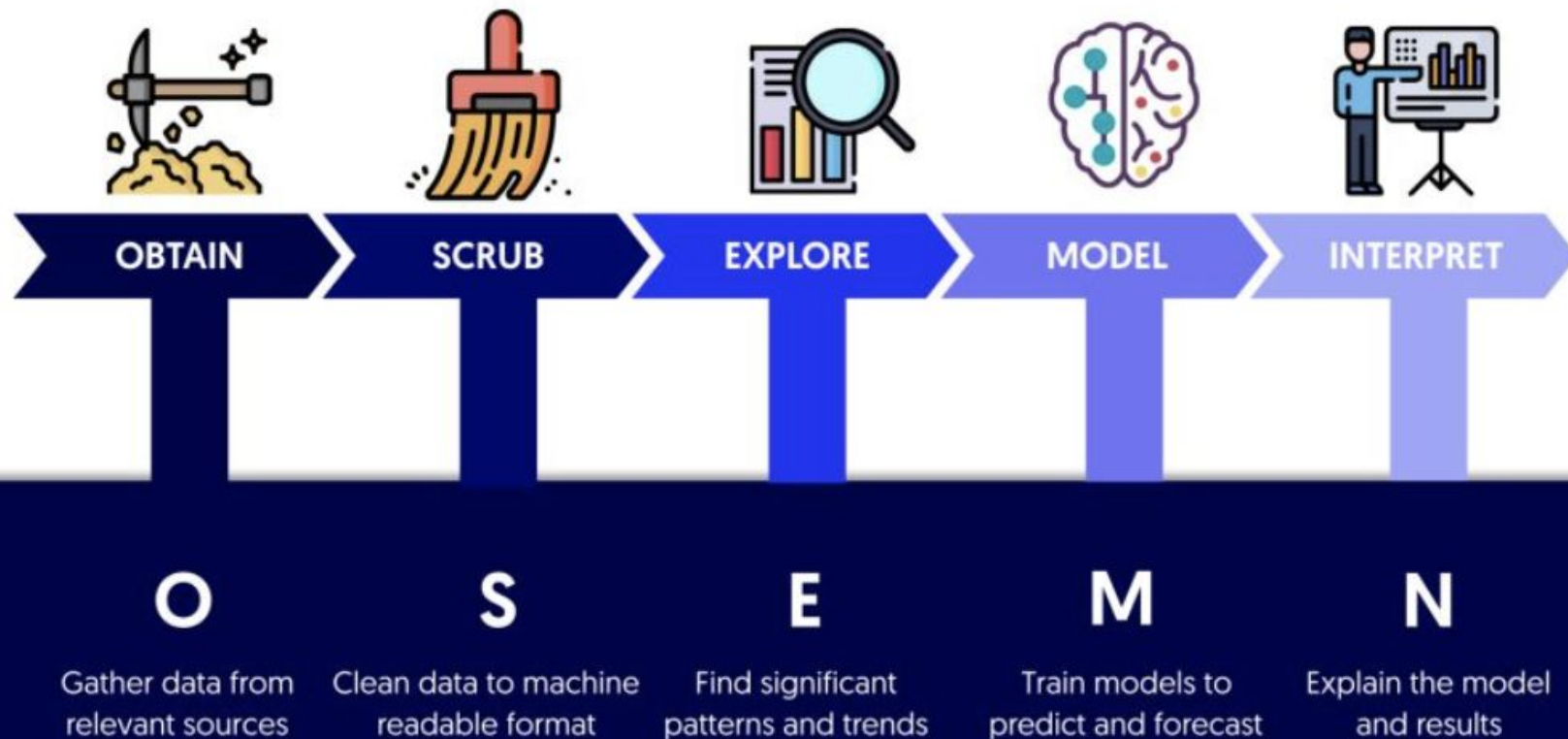
lat - Latitude

long - Longitude

sqft_living15 - The square footage of interior housing living space for the nearest 15 neighbors

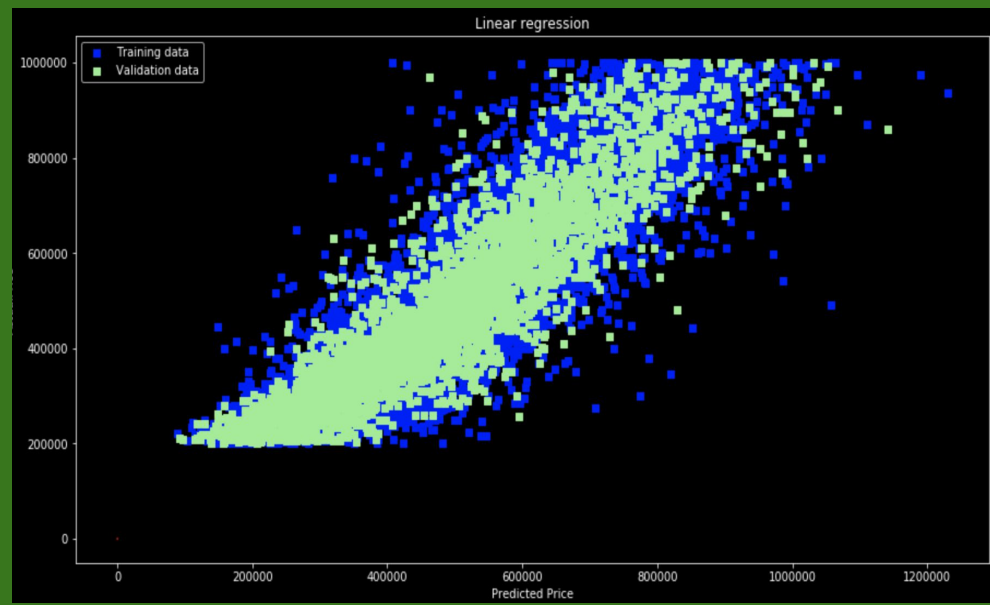
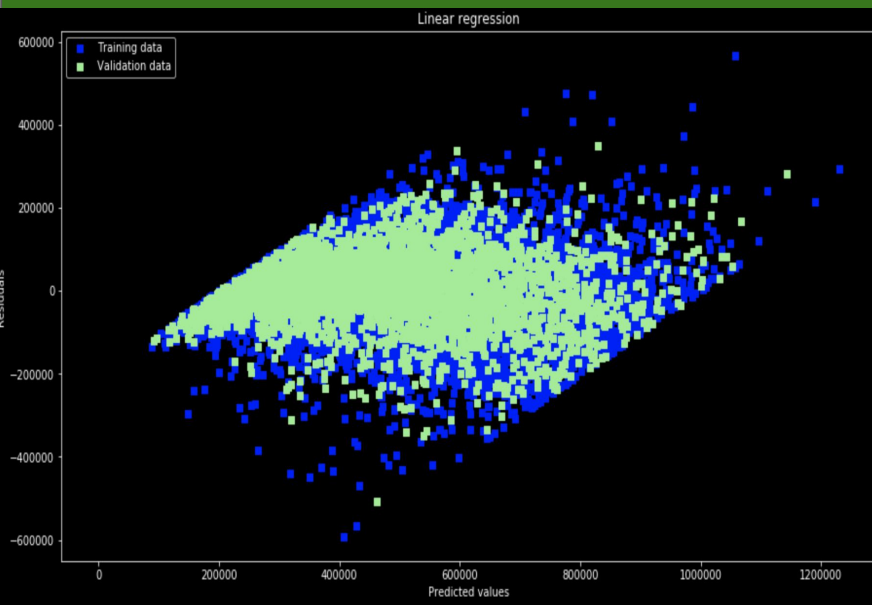
sqft_lot15 - The square footage of the land lots of the nearest 15 neighbors

DATA SCIENCE PROCESS



Model Validation

The model used is linear regression with a fitting score of 0.82. The model was validated through many score tests between the true data and the predicted data.



Important Questions:

1. What are the most powerful features to predict the house sale price of King County?
2. What are the top 10 best zip codes in King County, with regards to the housing sale price?
3. What are the top 10 worst zip codes in King County, considering the housing sale price?
4. What is the most important factor of house sale price in King County?
5. Are the houses overlooking waterfront more expensive?



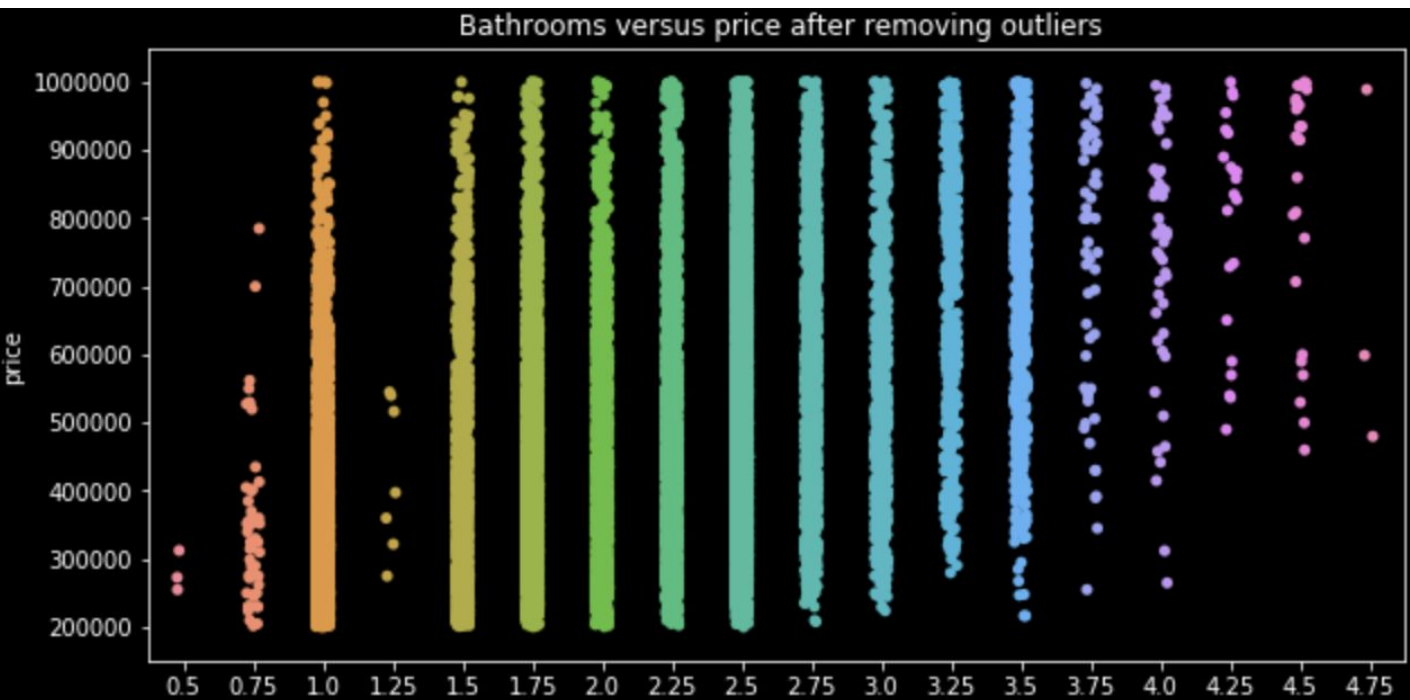
Powerful Predictors

Question 1: What are the most powerful predictors of house price in King County?

Predictor	Increase Power (thousand \$)
zip_98039	500
zip_98004	339
zip_98040	276
grade_12	251
zip_98112	241
zip_98109	232
zip_98119	221
zip_98102	218
grade_11	210
zip_98105	185
zip_98005	179
grade_10	156
zip_98116	151
zip_98122	150
water_1	139

The Power of Bathrooms

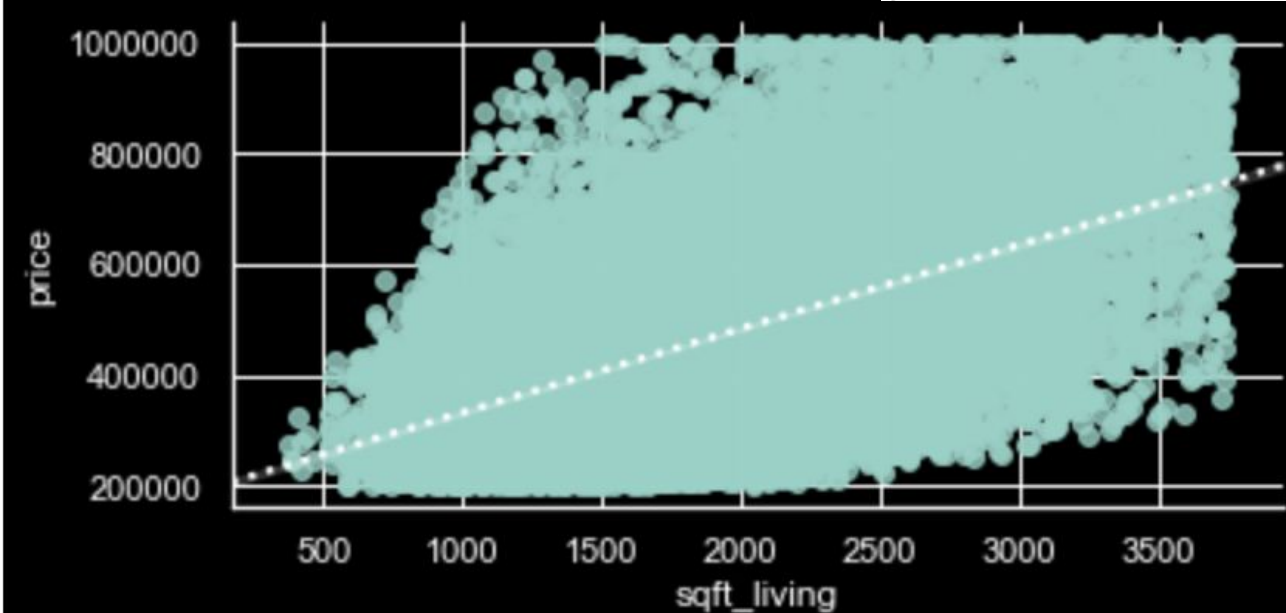
Every unit increase in Bathrooms will boost predicated sale price by \$80000



Power of Sqft

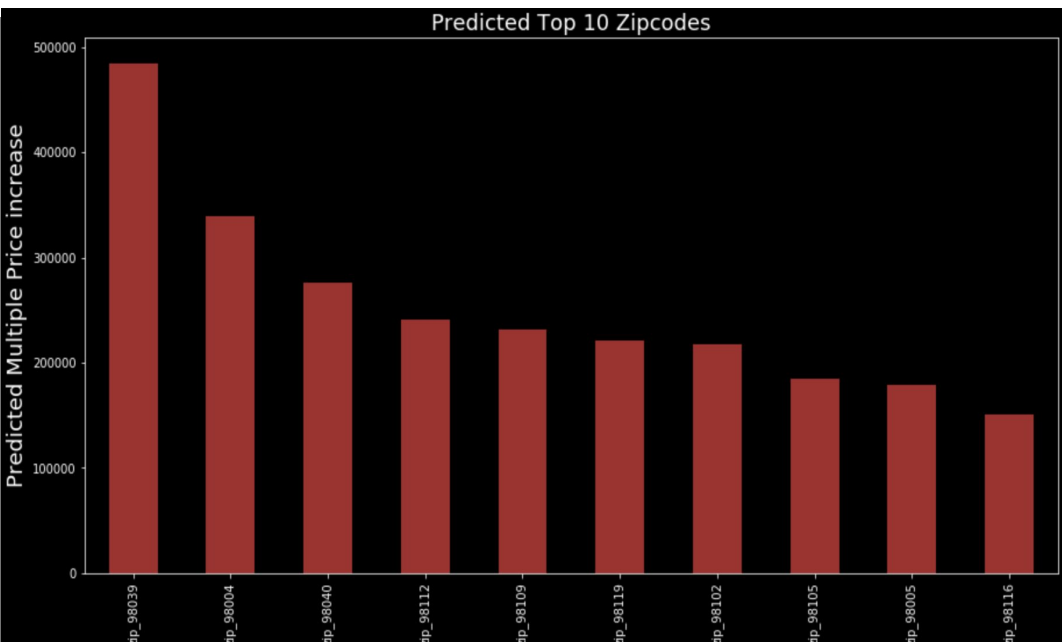
Every unit increase in Square feet living, living 15, and lot, will increase the predicted price.

sqft_living	6.29E+04
sqft_living15	2.18E+04
sqft_lot	1.23E+04



Prediction of Top 10 zip codes

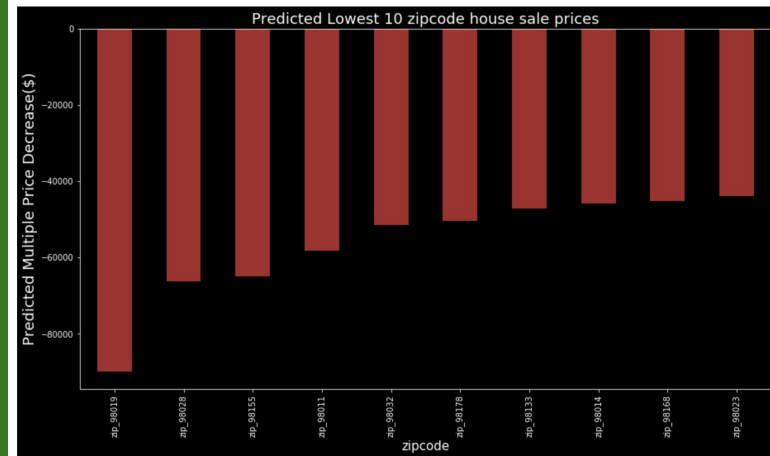
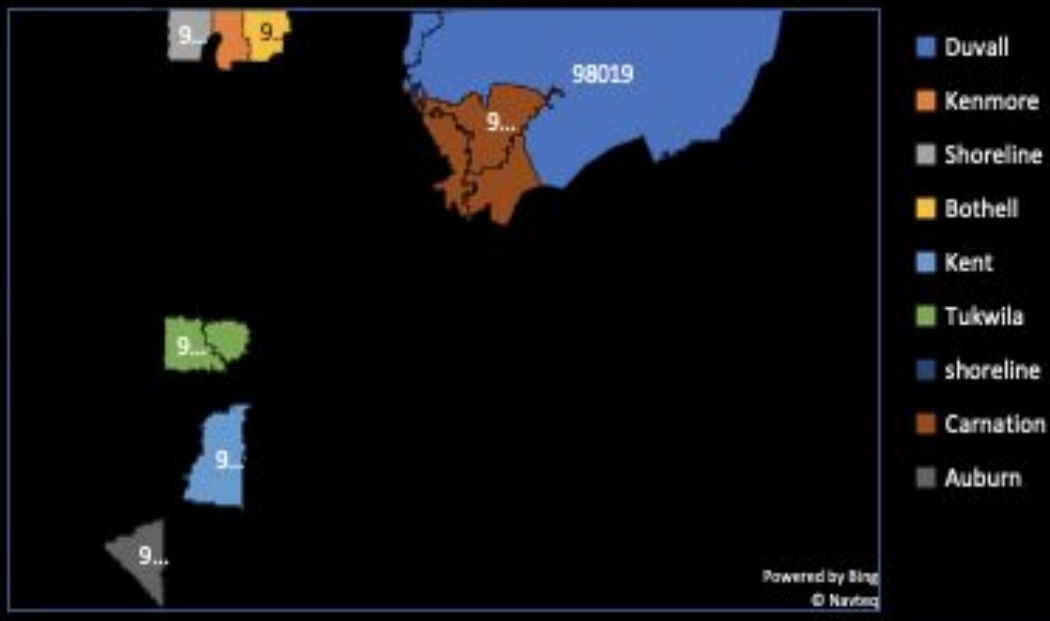
What are the top 10 best zip codes in King County, with regards to the housing sale price?



zipcode	City	multiple_coefficient_increase
zip_98039	Medina	4.85E+05
zip_98004	Bellevue	3.39E+05
zip_98040	Mercer Island	2.76E+05
zip_98006	Bellevue	1.38E+05
zip_98116	Seattle	1.51E+05
zip_98119	Seattle	2.21E+05
zip_98136	Seattle	1.27E+05
zip_98109	Seattle	2.32E+05
zip_98005	Bellevue	1.79E+05
zip_98102	Seattle	2.18E+05
zip_98122	Seattle	1.50E+05
zip_98105	Seattle	1.85E+05

What are the top 10 worst zip codes in King County, considering the housing sale price?

Predicted Lowest 10 zipcode house sale prices

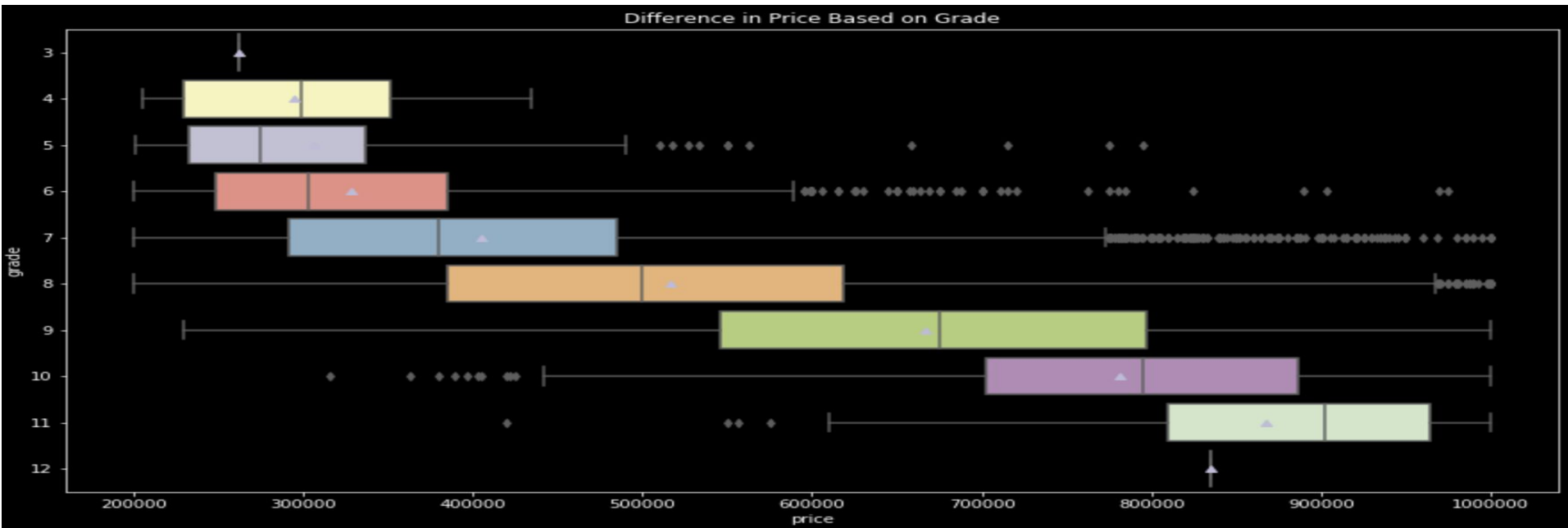


Zipcode	Multiple decrease in Sale price \$	City
98019	-6.50E+04	Duvall
98028	-4.71E+04	Kenmore
98155	-6.63E+04	Shoreline
98011	-9.00E+04	Bothell
98032	-5.82E+04	Kent
98178	-2.35E+04	Tukwila
98133	-2.25E+04	shoreline
98014	-4.58E+04	Carnation
98168	-5.03E+04	Tukwila
98023	-4.52E+04	Auburn

What is the most important factor of house sale price in King County?

A grade higher than 8 will boost the sale price. To boost a houses grade you improve material quality and design and add more luxurious comforts.

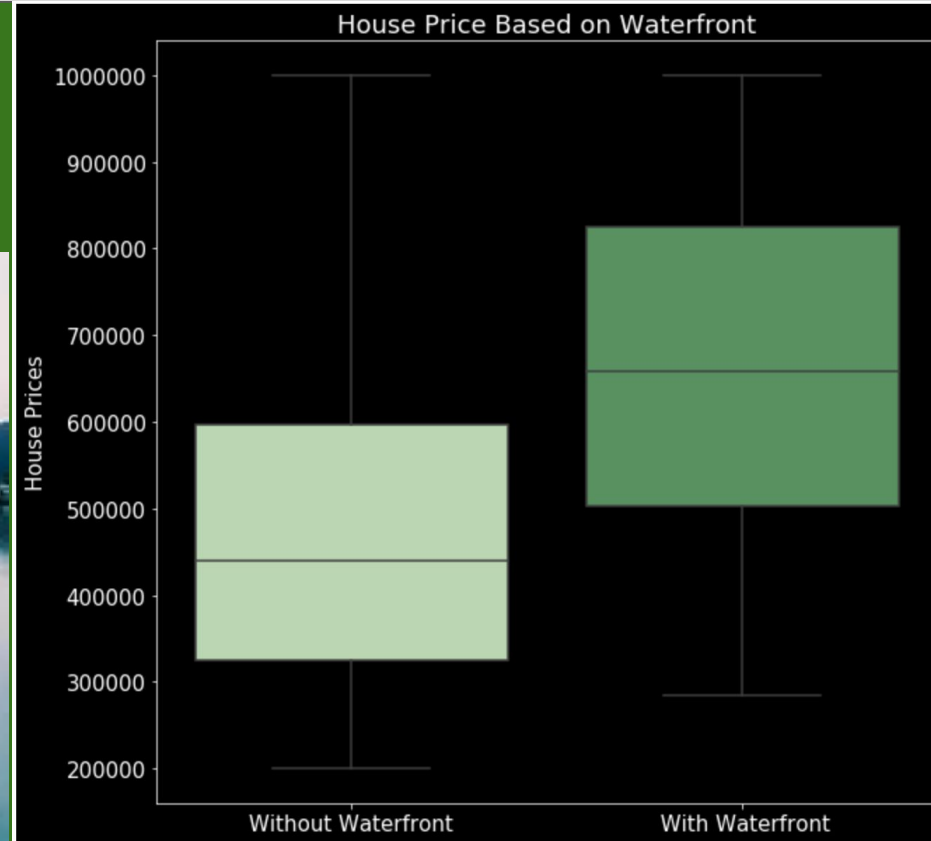
Grade	Increase Coffient thousand (\$)
grade_12	two hundred fifty one
grade_11	two hundred nine
grade_10	one hundred fifty-five
grade_9	one hundred fourteen
grade_8	forty-two



The Power of a Waterfront

Are the houses overlooking waterfront more expensive?

Yes




Recommendation

1. Consider the location as a primary factor, and invest in profitable cities such as: Medina, Bellevue, Mercer Island, and Seattle.
2. A real estate investor must consider spending more money to increase the quality of a house to a grade 8 and above with added amenities such as solid woods, bathroom fixtures, and more luxurious comforts.
3. A real estate investor should consider houses that have access to a waterfront as more profitable.
4. A real estate investor should avoid investing in cities such as Duvall, Kenmore, Shoreline, Bothell, Kent, Carnation, and Auburn which have predictions of a decrease in sale price.
5. Home sellers, real estate investors, and home buyers must focus on factors such as living space area, and lot space area as main factors of house price.
6. Also consider that bathroom addition will raise the house price.

Future Work and Research

- I would like to consider the interaction effect between my variables in my linear regression model
- I would like to add more important features such as, crime rate, services like shopping centers, restaurants, public transportation, traffic, and the business growth in these cities, demographic data, school rating, and entertainment
- I want to collect data of other effective elements such as availability of credit (mortgage interest rates), consumer sentiment and other economic factors e.g. the effect of Coronavirus pandemic in the house sale price of King County Houses.



Thank You
Any Questions?