

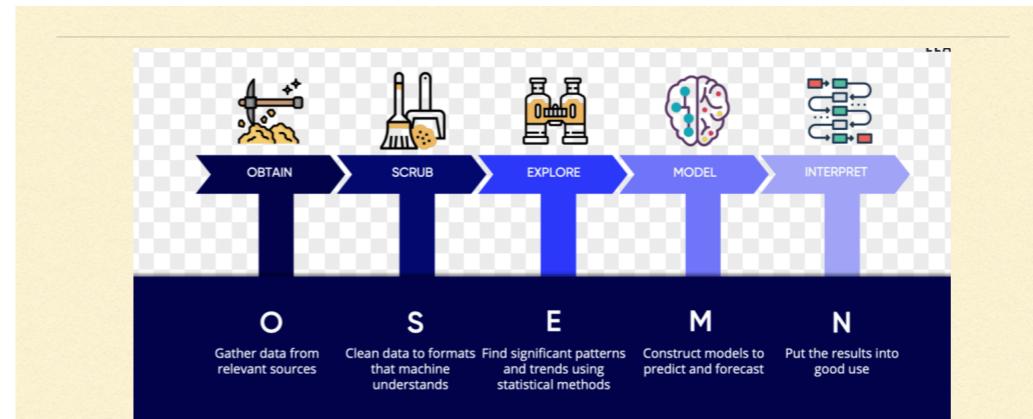
KING COUNTY HOUSE PRICE PREDICTION AND RECOMMENDATIONS



GOAL

1. Build a model that will predict house sale price.
2. Make recommendations that will have as result an increase in house sale price.





METHODOLOGY USED

1. Laura Vlad

June 21, 2020 at 14:04:30

1st model - R_squared of 0.689.

Used one-hot encoding to transform categorical data.

2nd model - R-squared of 0.835.

Log-transformed and normalized continuous features

3rd model - R_squared of 0.863

Used step wise selection to eliminate features with high p-value

4th model - R-squared of 0.862

Dropped features with potential to cause multi-collinearity

5th model - R-squared of 0.856

Created Training and Test

Fit model and compared

Train Mean Squared Error:
0.14445390660834123

Test Mean Squared Error:
0.1432230880164847

FINAL MODEL

OLS Regression Results

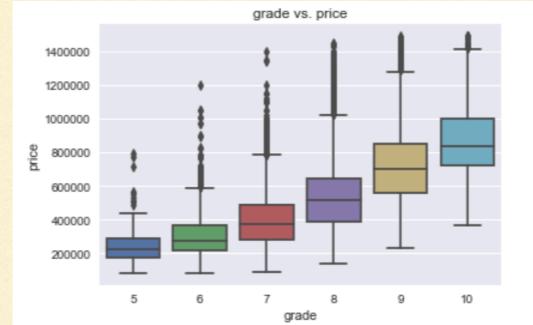
Dep. Variable:	price_log	R-squared:	0.863
Model:	OLS	Adj. R-squared:	0.862
Method:	Least Squares	F-statistic:	1193.
Date:	Sun, 21 Jun 2020	Prob (F-statistic):	0.00
Time:	11:05:30	Log-Likelihood:	-7993.9
No. Observations:	18735	AIC:	1.619e+04
Df Residuals:	18636	BIC:	1.696e+04
Df Model:	98		
Covariance Type:	nonrobust		

An Adjusted R-Squared value of 0.86 would indicate that the current model explains approximately 86 percent of the variation in the dependent variable.

GRADE VARIABLE

Building grade is a feature from King County government and represents the construction quality of improvements.

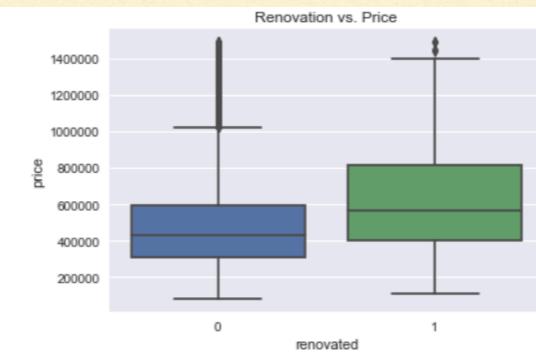
There is an average 29.29% increase in price when the grade increases.



HOUSE RENOVATION

Will the renovation increase the price?

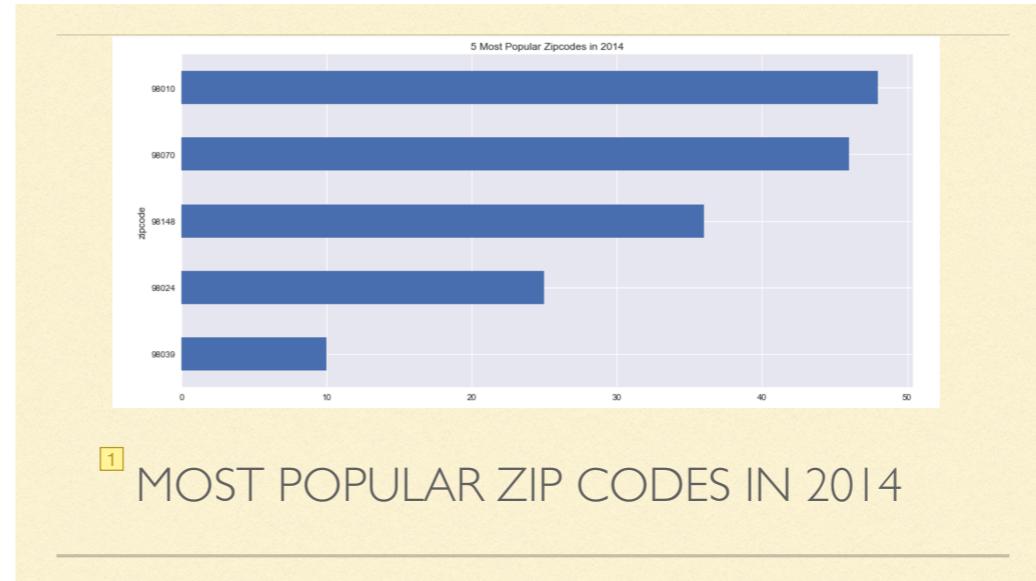
The mean house price of a renovated house increases on average 30.85%.



1. Laura Vlad

June 21, 2020 at 14:38:08

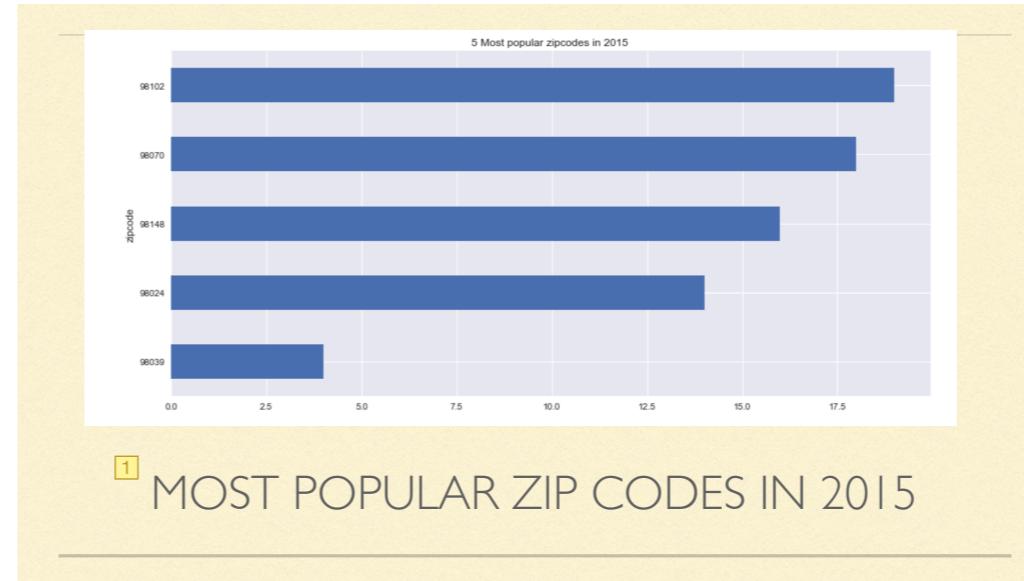
In 2014 most popular zip codes were in: Black Diamond, Vashon Island, Seattle, Fall City and Medina.



1. Laura Vlad

June 21, 2020 at 14:37:52

In 2015 most popular zip codes were in:
Seattle, Vashon Island, Fall City and Medina.



1. **Laura Vlad**

June 21, 2020 at 14:37:16

Grade variable is a reliable factor when predicting the sale price. The grade average coincides with the price average. The price of an average house in King County will increase with \$158,252 if the grade is improved.

We recommend renovating the house before selling, for an increased sale price. An average house price in King County will increase with approximately \$166,682 after renovation.

The fact that these zip codes were popular in 2014-2015 can be the result of many factors but it still tells us that these zip codes are desirable and sales should be focused on those specific areas.

FINDINGS

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1. House grade accuracy
2. Renovation effect
3. Zipcode

FUTURE WORK

These are some ways we could improve the model:

1. Utilize the date column: attempt to extract seasonality of prices based on sale date (time-series analysis).
 2. Add an income and school mean grade by zip code columns and build another model with the additional data.
 3. Incorporate folium to visualize sales in each zip code.
 4. Create a polynomial regression.
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THANK YOU