King County Housing Prices

MULTIPLE LINEAR REGRESSION ANALYSIS

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The Business Problem

Our goal is to improve King County Real Estate Agency's predictive accuracy when determining a recommended listing price. We want sellers to achieve maximum profits while still attracting potential buyers.

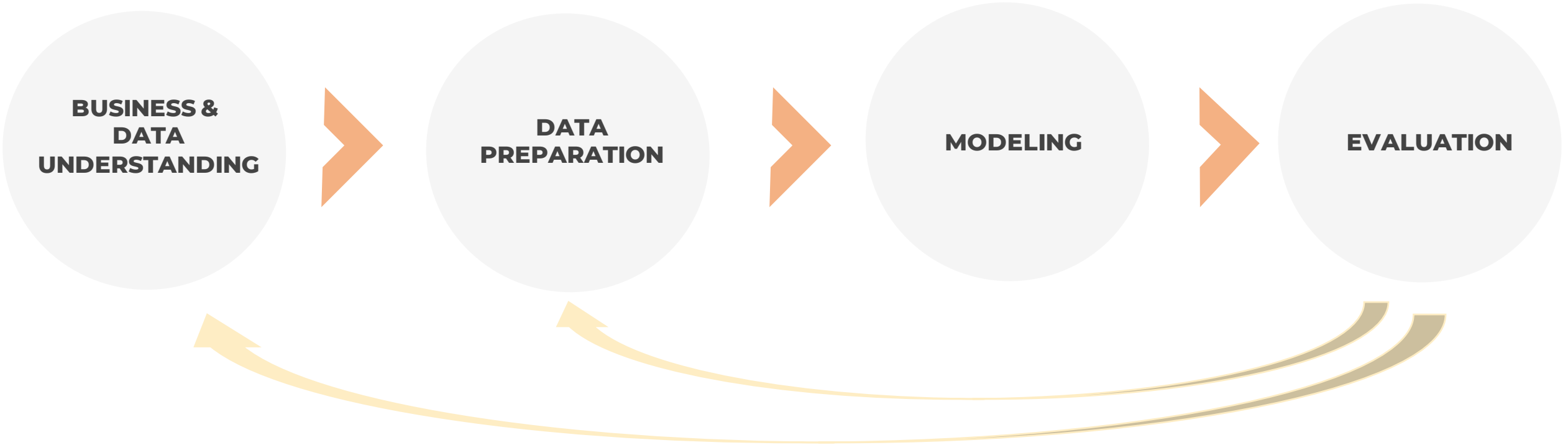
Which features of a house are the best predictors for price?

What actionable insights can be recommended to a homeowner to increase the value of their property?

The Data

Dataset containing property information for **21,597** houses sold between May 2014 and May 2015 was provided for this project.

Methods


BUSINESS & DATA UNDERSTANDING
DATA PREPARATION
MODELING
EVALUATION

Methods

In addition to the provided variables, this analysis also created new metrics:

- Month of the house sold
  - The age of the building
    - Straight-line distance from Seattle and Bellevue

Houses with more than 5 bedrooms or 4 bathrooms dropped from dataset.

Data was also split into training and test data (75:25).

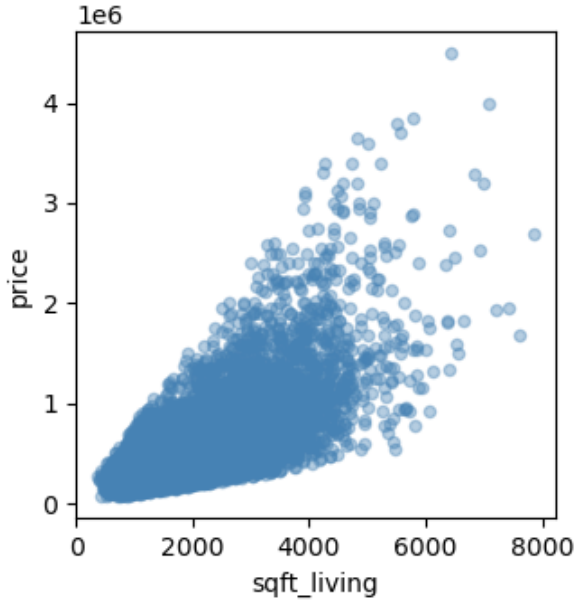
Results

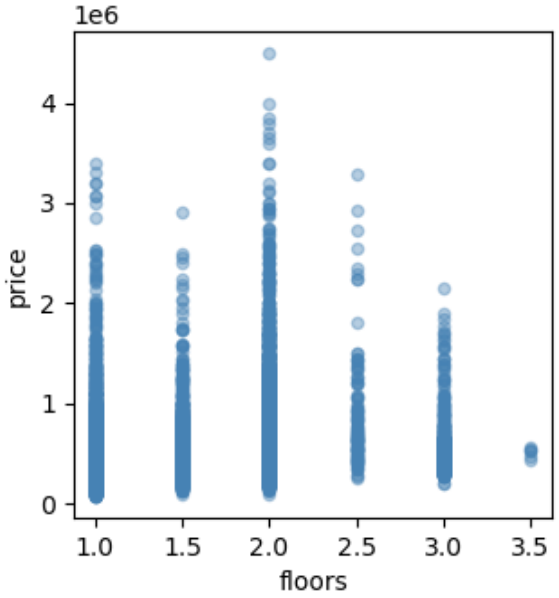
r2 = 0.715
MSE = 0.073

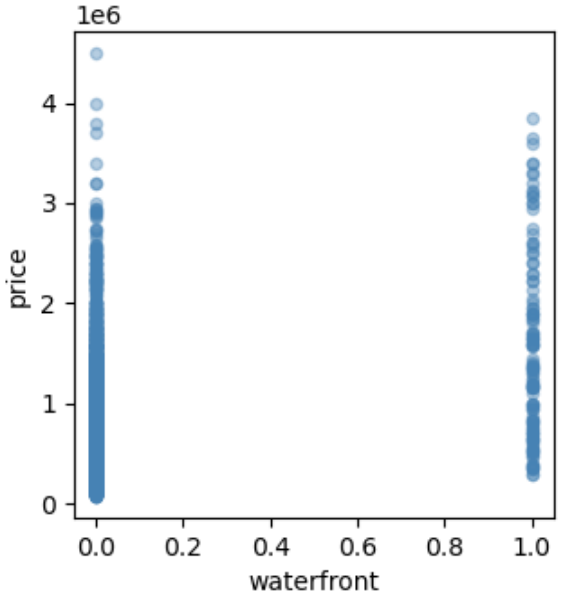
price_log = 12.901368 +
0.168077 * sqft_living_log +
-0.213223 * dist_bellevue_log +
0.663562 * waterfront_1.0 +
0.143770 * floors_1.5 +
-0.037811 * floors_2 +
0.141368 * floors_2.5 +
0.051897 * floors_3 +
-0.222200 * grade_<5 +
-0.284872 * grade_5 +
-0.154125 * grade_6 +
0.156281 * grade_8 +
0.322796 * grade_9 +
0.453090 * grade_10 +
0.587976 * grade_11 +
0.773181 * grade_12 +
1.105327 * grade_13 +
0.056608 * (sqft_living_log*floors_2)

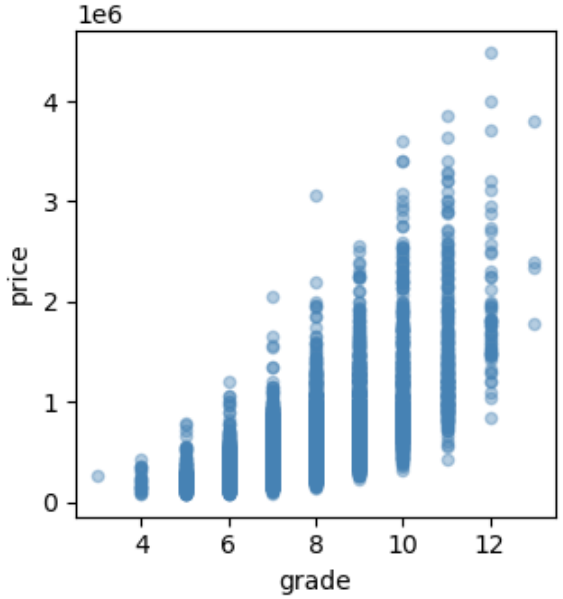
Baseline for Categorical Variables

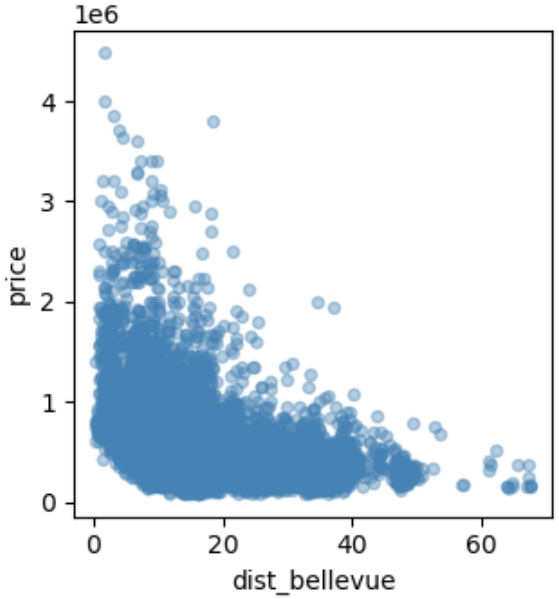
- Floors = 1
- Waterfront = 0
- Grade = 7





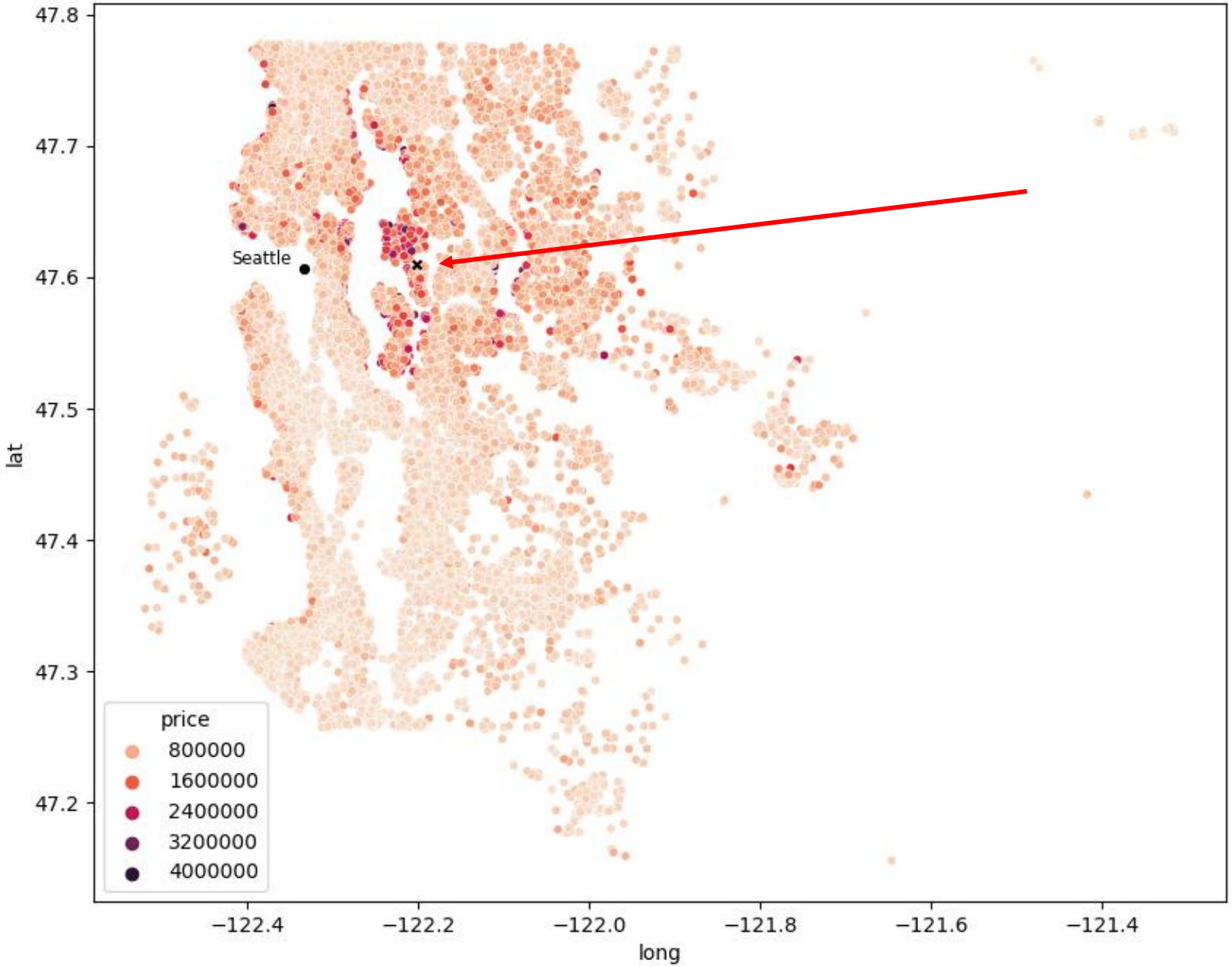






Building grade of the house had the strongest association with price; as construction quality increased, so did the price.

Houses with a waterfront view also saw a significant increase in price.


47.8
47.7
47.6
47.5
47.4
47.3
47.2
lat
Seattle
price
800000
1600000
2400000
3200000
4000000
−122.4
−122.2
−122.0
−121.8
−121.6
−121.4
long

Conclusion

The total living area, building grade of the house, number of floors, waterfront views, and distance to Bellevue were found to be the best predictors of sale price.

Actionable insights for homeowners:

- Increase the size of total living space
- Increase the grade of the building

Thank you

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