KING COUNTY

HOME

SALES PRICE

Overview

- Analyzing the major factors affecting house price
- Selecting significant factors influencing general house price
- Establishing a statistical model for house price prediction
  (aka multiple linear regression model)
- Predicting and analyzing the house price

King County

Business Understanding

- For the real estate constructors, investors, and agents
- Do houses sold in any specific season cost more?
- Which features have the strongest relationship with house price?
- How much do these features affect the house price?

Data understanding

- The house sale prices between 2021. 6 ~ 2022. 6 in King County, Washington
- Main features

  Sale Price, Date house was sold

  Number of Bathrooms, Bedrooms, floors

  Square footage of living space, the lot, the basement, the garage, the patio

  Square footage of living space per bedroom

  Quality of view from the house, condition and grade of the house

  The season that house sold

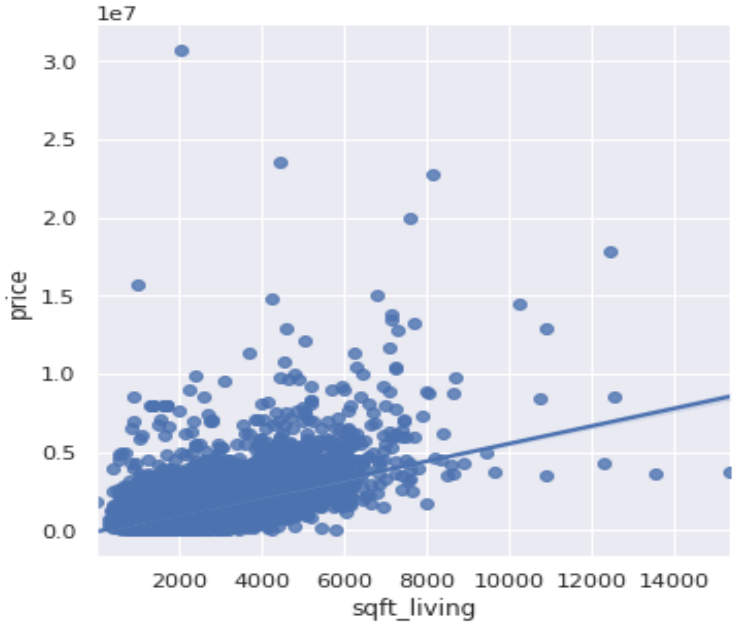
  Heat source, Sewer system, and so on

Modeling 1

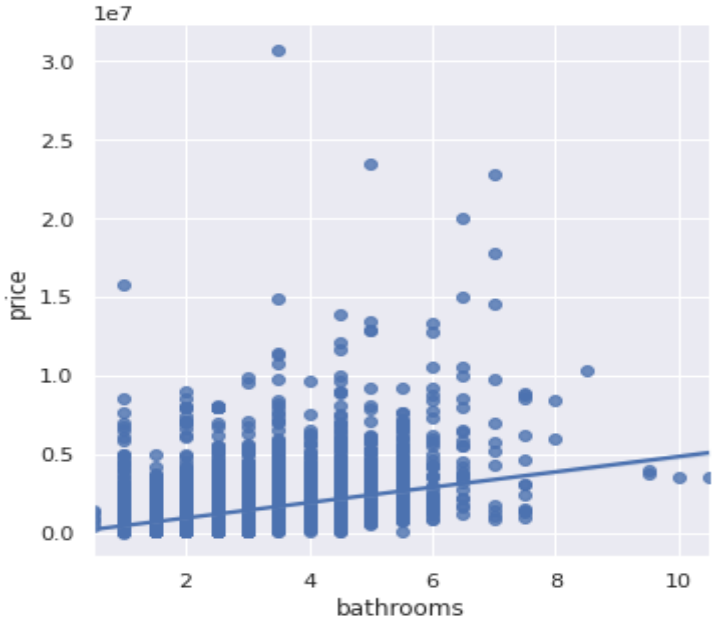
- ***Figure out***
    1. The features that have a High Correlation with House Price
    2. The features that are Statistically Significant
- ***Select 5 features***
    1. Square footage of living space in the home
    2. Number of Bathrooms
    3. Square footage of living space per bedroom
    4. Quality of view from the house
    5. The season that the house sold

Modeling 2

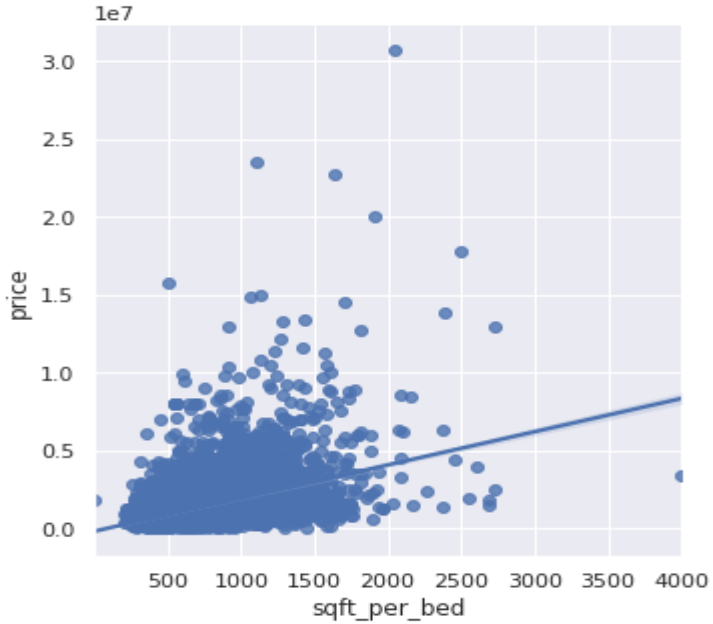
- The model features correlation with house price



Square Footage of Living Space



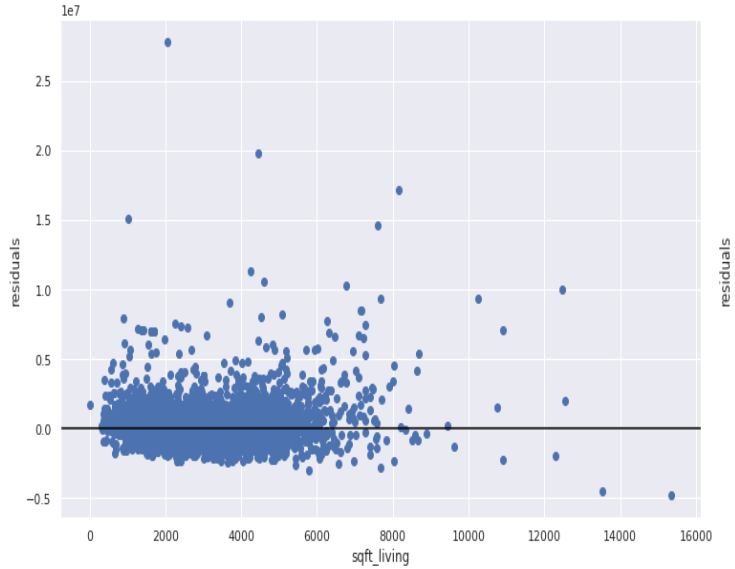
Number of Bathrooms



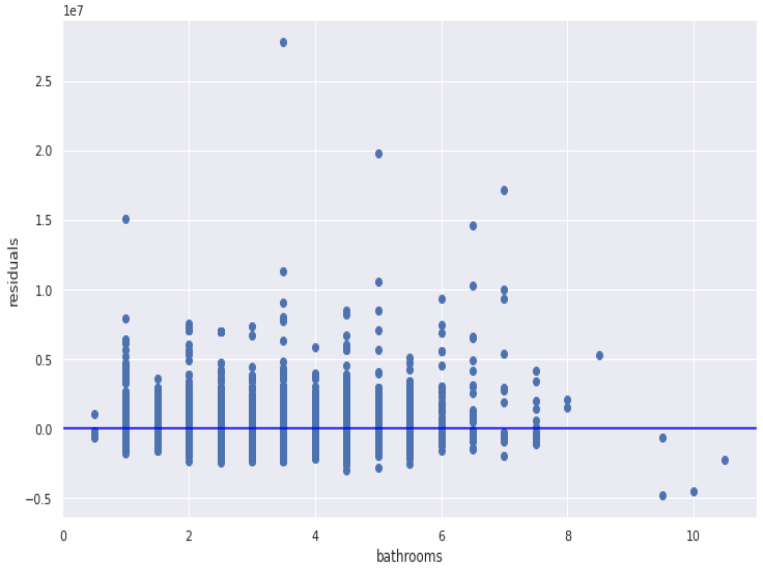
Square Footage of Living Space per bedroom

Modeling 3

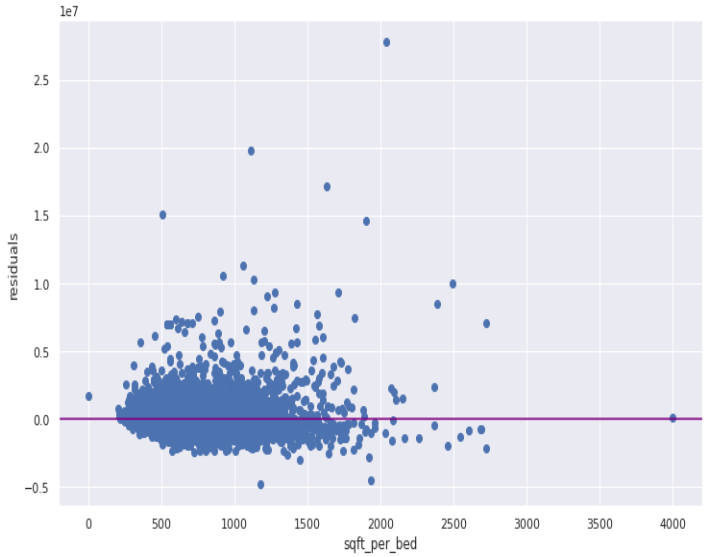
- Model residuals



Square Footage of Living Space



Number of Bathrooms



Square Footage of Living Space per bedroom

Modeling 4

- This model is statistically significant overall (p-value well below 0.05)
- This model explains about 38% of the variance in Sale Price
- To improve upon this model,
- Add the highly correlated non-numerical variables

  - Quality of view from the house
  - The Season that a house sold

Modeling 5

- Build the final model with this strongest correlation variables and interesting variable:

1. Square footage of living space in the home
2. Number of bathrooms
3. Square footage of living space per bedroom
4. Quality of view from the house
5. Sell season

Modeling 6

- Results

1. R-Squared: 43%
2. Sqft living $419, Bathrooms: $58k,
   Sqft per bedroom: $394
3. View EXCELLENT: $1.2M, View FAIR: $225k
   View GOOD: $85k, View NONE : - $169k
4. Sell season Fall : - $194k, Sell season Summer : - $209k
   Sell season Winter : - $121k

Results interpreting - Overall

- Statistically significant overall,
- Explains about 43% of the variance in Sale Price
- On average it is off by about $383k in its predictions of the house price.
- For each increase of

  Square footage of living space - increase about $419

  The number of bathrooms - increase about $58k

  Square footage of living space per bedroom - increase about $394

  in sale price

Results interpreting - View

- Compared to a ***AVERAGE view***

  Increase about $1.2M for an ***EXCELLENT view***

  Increase about $225k for a ***FAIR view***

  Increase about $85k for a ***GOOD view***

  Decrease about $169k for a ***NONE view***

  in sale price

Results interpreting - Season

- Compared to sell in ***Spring***

  Decrease about $194k for sell in ***Fall***

  Decrease of about $209k for sell in ***Summer***

  Decrease of about $121k for sell in ***Winter***

in sale price

Recommendation

- Making the good price of a house,
- Considering
  1. the square footage of living space, the number of bathrooms
     - the bigger, the more is better
  2. Quality of view from the house
     - make the excellent view
  3. Selling time
     - Spring is the best

Thank you !

- ***Email***

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