

# King County House Sales 2015

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# Introduction

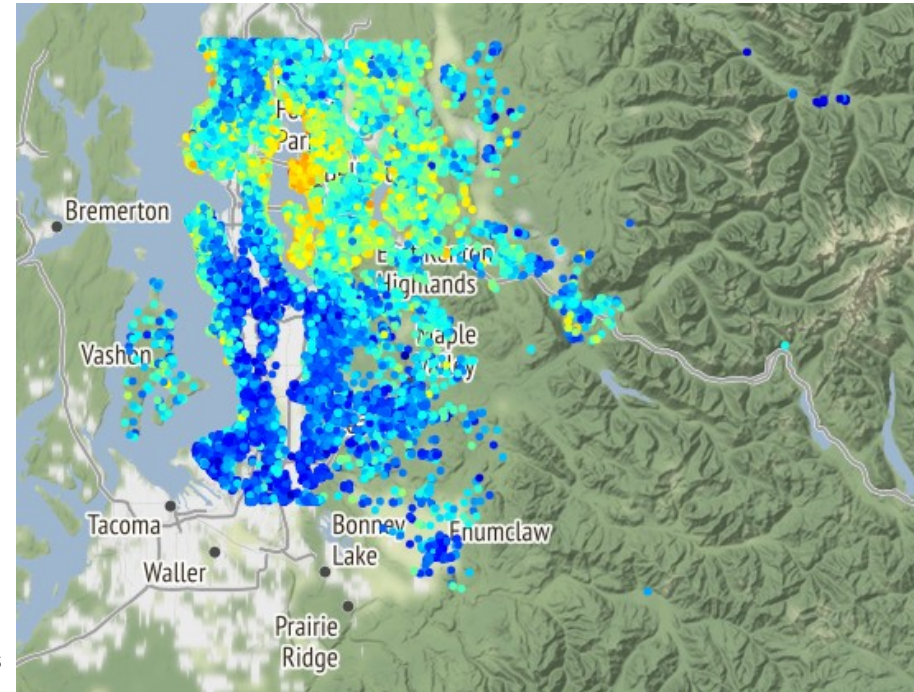
- King County, WA house sale
- Date: May 2014 to May 2015
- Data
- Special Vocabularies
- Results
- Recommendations
- Future Work

# Data

- Date: May 2014 to May 2015
- Data Columns:
  - id - unique identified for a house
  - dateDate - house was sold
  - pricePrice - is prediction target
  - bedroomsNumber - of Bedrooms/House
  - bathroomsNumber - of bathrooms/bedrooms
  - sqft\_livingsquare - footage of the home
  - sqft\_lotsquare - footage of the lot
  - floorsTotal - floors (levels) in house
  - waterfront - House which has a view to a waterfront
  - view - Has been viewed
  - condition - How good the condition is ( Overall )
  - grade - overall grade given to the housing unit, based on King County grading system
  - sqft\_above - square footage of house apart from basement
  - sqft\_basement - square footage of the basement
  - yr\_built - Built Year
  - yr\_renovated - Year when house was renovated
  - zipcode - zip
  - lat - Latitude coordinate
  - long - Longitude coordinate
  - 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
- Model: multi-variate linear regression

Color:

- Dark Blue: \$78,000
- Blue: \$195,000
- Cyan: \$490,000
- Yellow: \$1,227,000
- Orange: \$3,073,000
- Red: \$7,700,000



# Special Vocabularies

## Condition:

Relative to age and grade. Coded 1-5.

1 = Poor- Worn out. Repair and overhaul needed on painted surfaces, roofing, plumbing, heating and numerous functional inadequacies. Excessive deferred maintenance and abuse, limited value-in-use, approaching abandonment or major reconstruction; reuse or change in occupancy is imminent. Effective age is near the end of the scale regardless of the actual chronological age.

2 = Fair- Badly worn. Much repair needed. Many items need refinishing or overhauling, deferred maintenance obvious, inadequate building utility and systems all shortening the life expectancy and increasing the effective age.

3 = Average- Some evidence of deferred maintenance and normal obsolescence with age in that a few minor repairs are needed, along with some refinishing. All major components still functional and contributing toward an extended life expectancy. Effective age and utility is standard for like properties of its class and usage.

4 = Good- No obvious maintenance required but neither is everything new. Appearance and utility are above the standard and the overall effective age will be lower than the typical property.

5= Very Good- All items well maintained, many having been overhauled and repaired as they have shown signs of wear, increasing the life expectancy and lowering the effective age with little deterioration or obsolescence evident with a high degree of utility.

## Grade:

Represents the construction quality of improvements. Grades run from grade 1 to 13. Generally defined as:

1-3 Falls short of minimum building standards. Normally cabin or inferior structure.

4 Generally older, low quality construction. Does not meet code.

5 Low construction costs and workmanship. Small, simple design.

6 Lowest grade currently meeting building code. Low quality materials and simple designs.

7 Average grade of construction and design. Commonly seen in plats and older sub-divisions.

8 Just above average in construction and design. Usually better materials in both the exterior and interior finish work.

9 Better architectural design with extra interior and exterior design and quality.

10 Homes of this quality generally have high quality features. Finish work is better and more design quality is seen in the floor plans. Generally have a larger square footage.

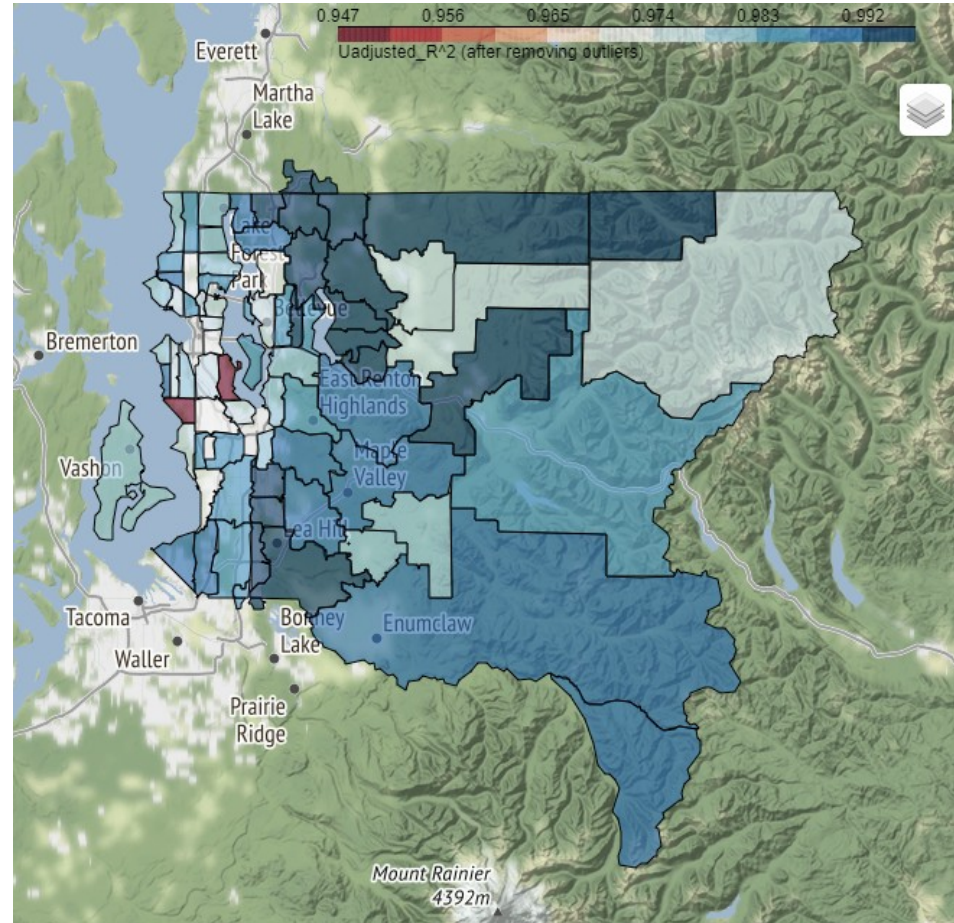
11 Custom design and higher quality finish work with added amenities of solid woods, bathroom fixtures and more luxurious options.

12 Custom design and excellent builders. All materials are of the highest quality and all conveniences are present.

13 Generally custom designed and built. Mansion level. Large amount of highest quality cabinet work, wood trim, marble, entry ways etc.

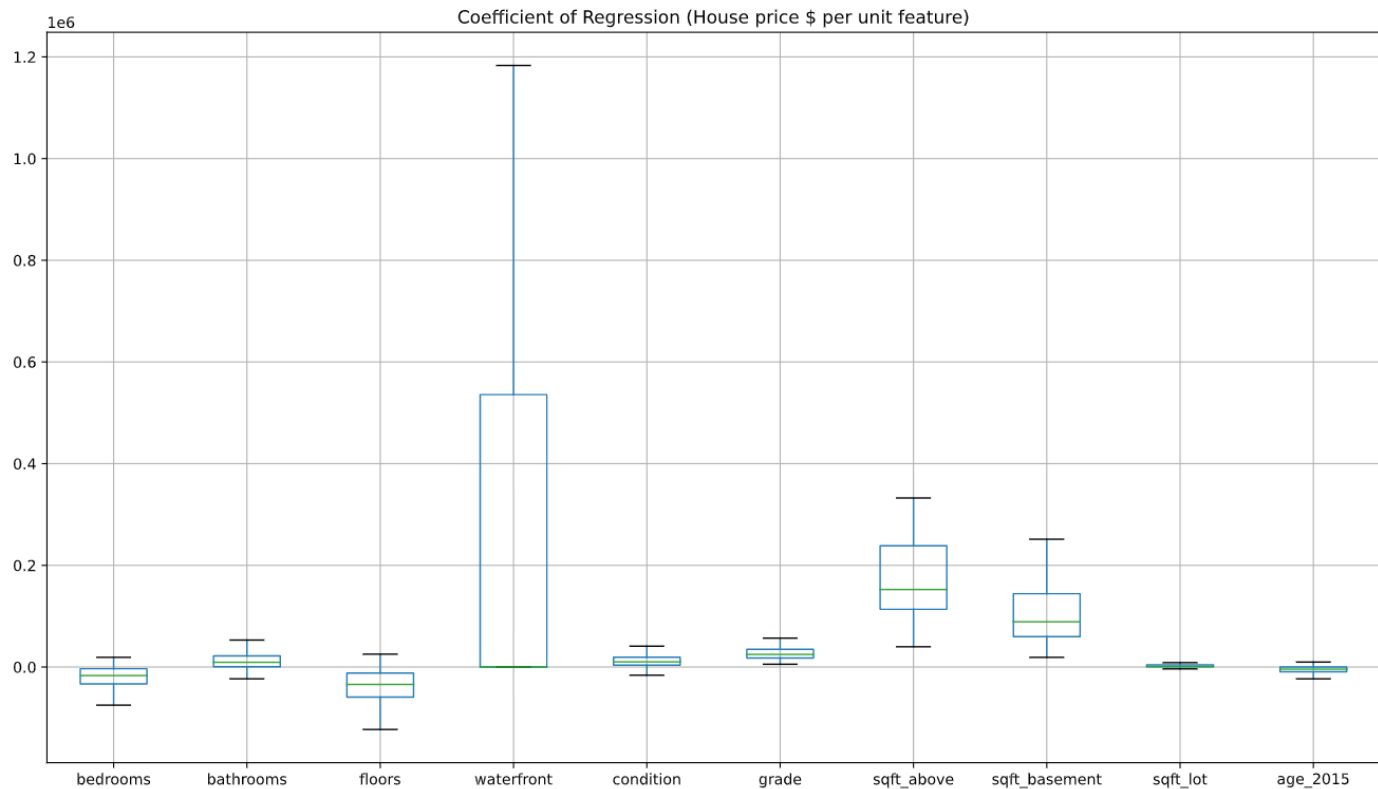
# Model Fit

- Model features down selection:
  - From: id, date, bedrooms, bathrooms, sqft\_living, sqft\_lot, floors, waterfront, view, condition, grade, sqft\_above, sqft\_basement, yr\_built, yr\_renovated, zipcode, lat, long, sqft\_living15, sqft\_lot15
  - To: bedrooms, bathrooms, waterfront, view, condition, sqft\_above, sqft\_basement, sqft\_lot, age (as of 2015), and zipcode
- Target: price
- A multi-variate linear regression is made for each zipcode.
- The coefficient of determinants for all the zipcodes are above .947.



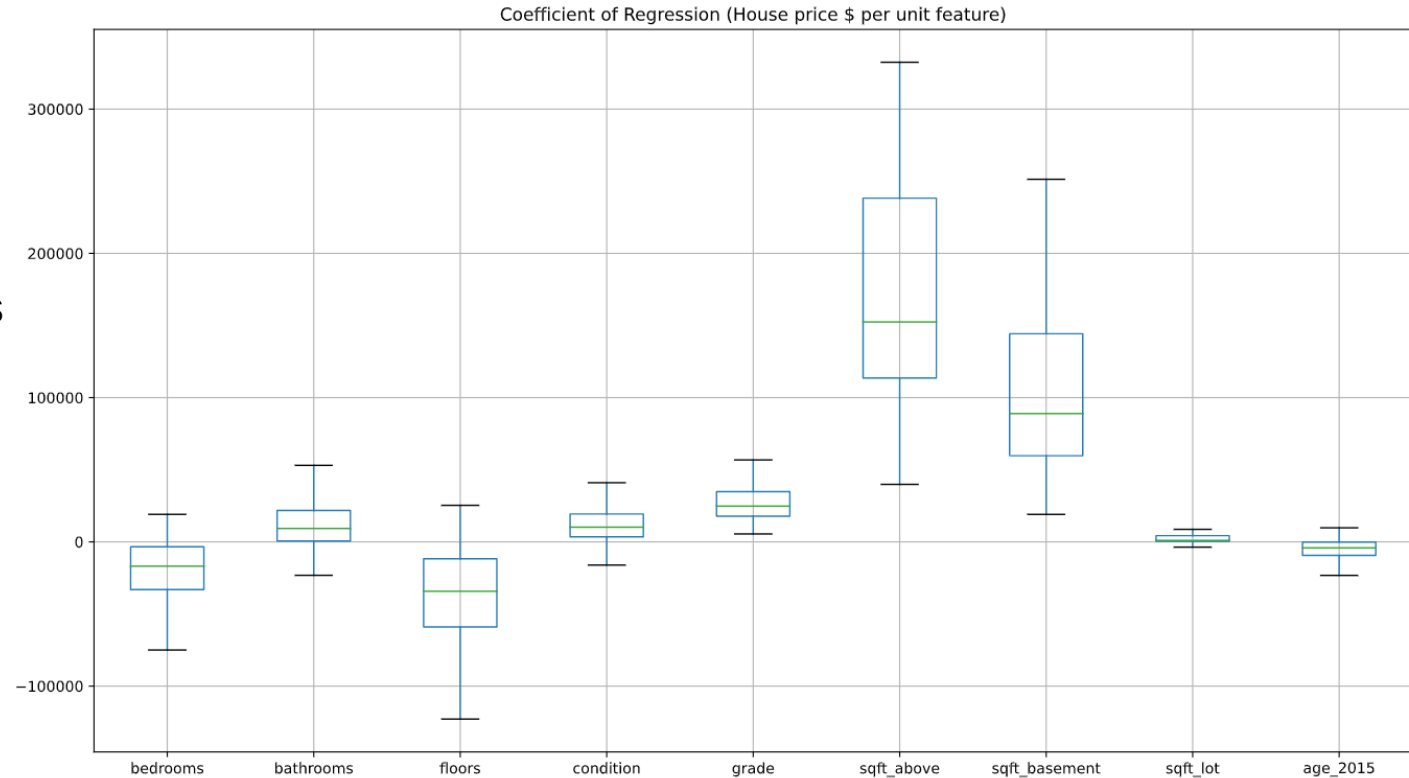
# Regression Coefficients

- Note:
  - sqft\_above, sqft\_basement, sqft\_lot are in units of 1000 sqft.
  - age\_2015 is in units of 10 years.
- Increases house sales value:
  - Bathrooms
  - Waterfront
  - Condition
  - Grade
  - Square footage
- Decreases house sales value:
  - Bedrooms
  - Floors
  - Age



# Recommendations

- Note:
  - sqft\_above, sqft\_basement, sqft\_lot are in units of 1000 sqft.
  - age\_2015 is in units of 10 years.
- Expand above ground square footage.
- Improve condition.
- Improve grade.



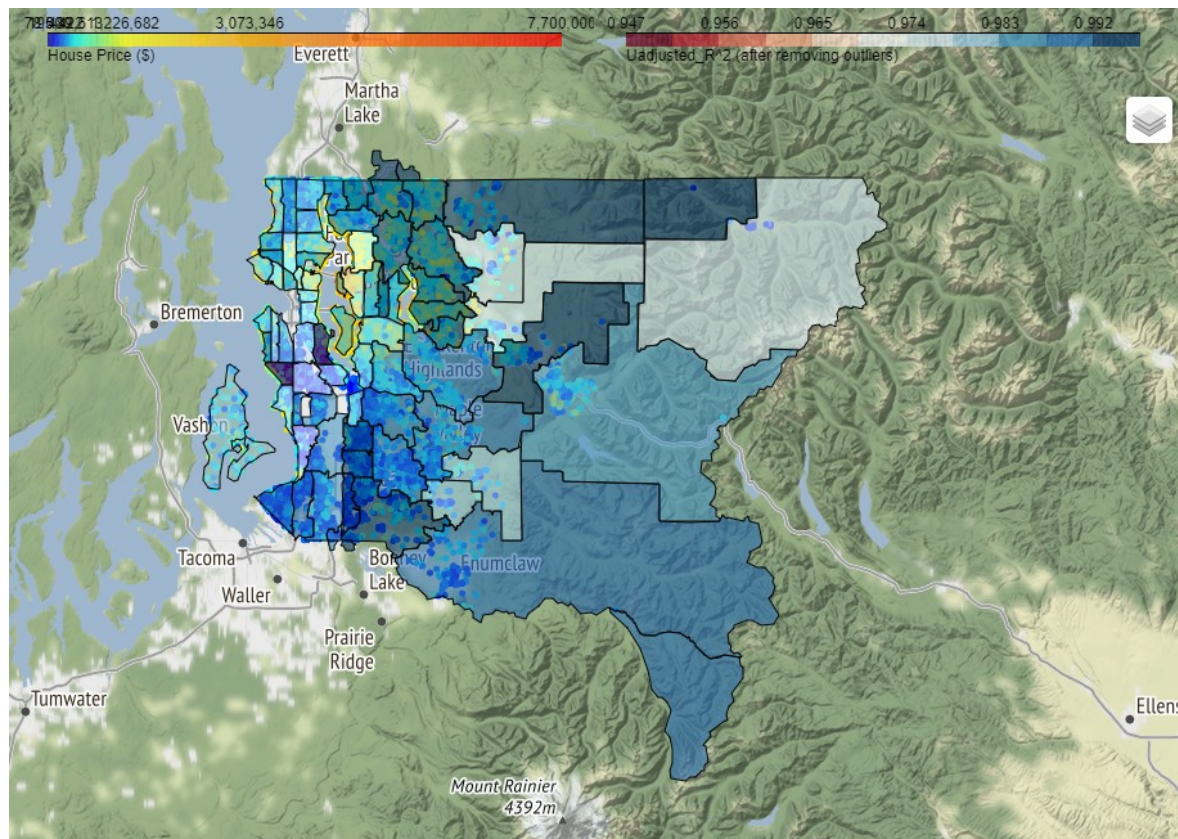


# Summary

- Data:
  - May 2014 to May 2015 King County, WA house sales.
- Model:
  - Multi-variate linear regression.
  - Target: Price
  - Features: bedrooms, bathrooms, waterfront, view, condition, sqft\_above, sqft\_basement, sqft\_lot, age (as of 2015), and zipcode
- Recommendations:
  - Expand above ground square footage.
  - Improve condition.
  - Improve grade.

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# Future Work

- Create a continuously updated model
- Add neighborhood to features
- Add sale type to features, i.e. foreclosure, sale by owner, sale by agent.
- Add house type to features, i.e. co-op, condo, single family home, multi-family home, HOA, etc.

Thank you for you attention!

Any questions?

