

How much would a house sell?

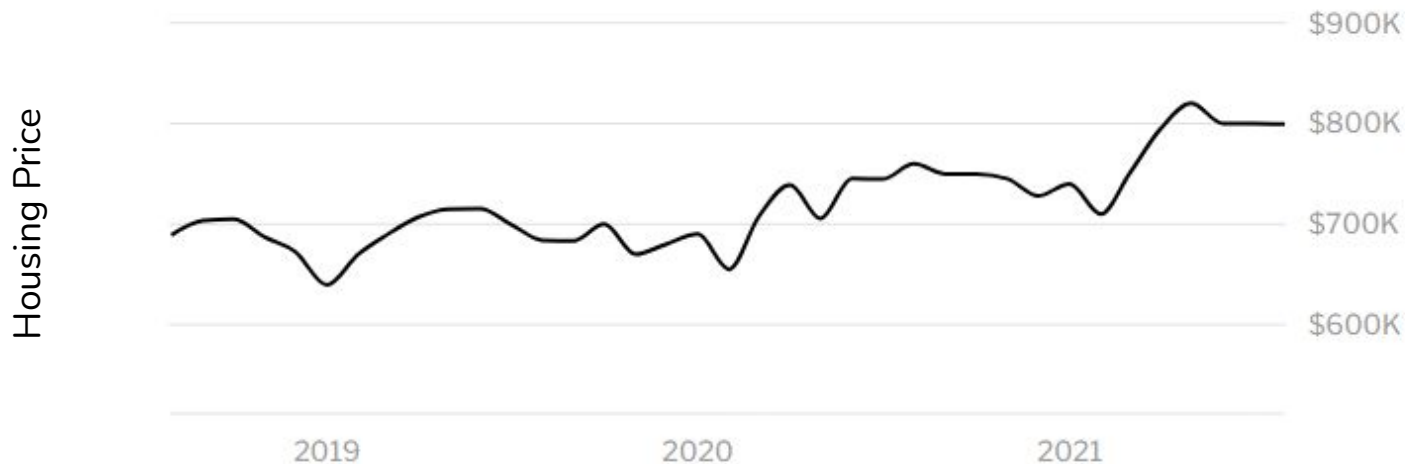
Predicting House Sales Price





Introduction

Seattle housing market is HOT, houses are selling fast, and at a higher price.





Data

- Web-scraped from Redin.com search result
- Combined four regions from great seattle area
- House sold within last 6 months
- Single family house, townhouse and condo
- 1334 sold houses

REDFIN Seattle X 1-844-759-7732 Buy · Sell · Mortgage · Real Estate Agents · Feed 20 Log In Sign Up

Seattle Homes for Sale See Market Insights

Price No min to No max More Filters 2

Showing 41 of 2300 Homes · House, condos, townhouse, sold 6mo Sort Photos **Table**

SOLD MAY 23, 2021

\$554,850
3510 6th Ave #505
Seattle, WA 98121

1 Bed 1 Bath 596 Sq Ft
Listing provided by NWMLS

View Details

Address	Location	Price	Beds	Baths	Sq Ft	\$/Sq Ft	On Redfin
583 Battery St., Denny Triangle		\$1,720,000	2	2	1270	\$1,354	23 days
2510 6th Ave #...	Balltown	\$554,950	1	1	596	\$931	23 days
417 27th Ave E	Arboretum	\$2,650,000	4	3.5	3,270	\$810	26 days
425 23rd Ave S...	Judkins	\$318,000	1	1	568	\$560	26 days
319 Summit Av...	Capitol Hill	\$545,000	2	2	876	\$622	26 days
1605 5th Ave...	Queen Anne	\$660,000	2	2	1275	\$518	26 days
1430 1st Ave N...	Queen Anne	\$645,000	2	2	883	\$730	26 days
Average for Seattle:		\$760,000	2	2	1212	\$625	88 days

Viewing page 1 of 9 (Download All)

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Redfin · Washington · Seattle



Framework

- Outcome: predict the sales price for a house based on existing features
- Features:
 - Bed
 - Bath
 - Sqft
 - Location
 - Region of Great Seattle Area



Methodology

Baseline Model

R^2 63.3%

Not overfitting

Model: Linear
Regression

Input: Numeric
feature only

+ Feature engineer

R^2 73.1%

Overfitting

Input:
1. Add interaction terms:
bed/bath
2. Bucket location data, add
as dummy variables ★
3. Add deviation feature: sqft
in region ★

+ Regularization

R^2 73.3%

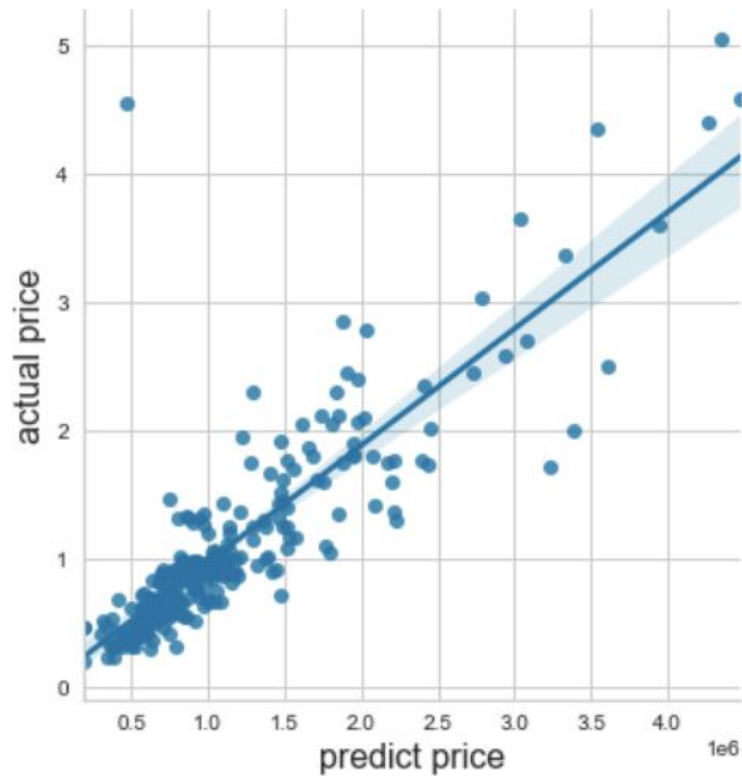
Reduce overfitting

Model: Lasso Regression



Result

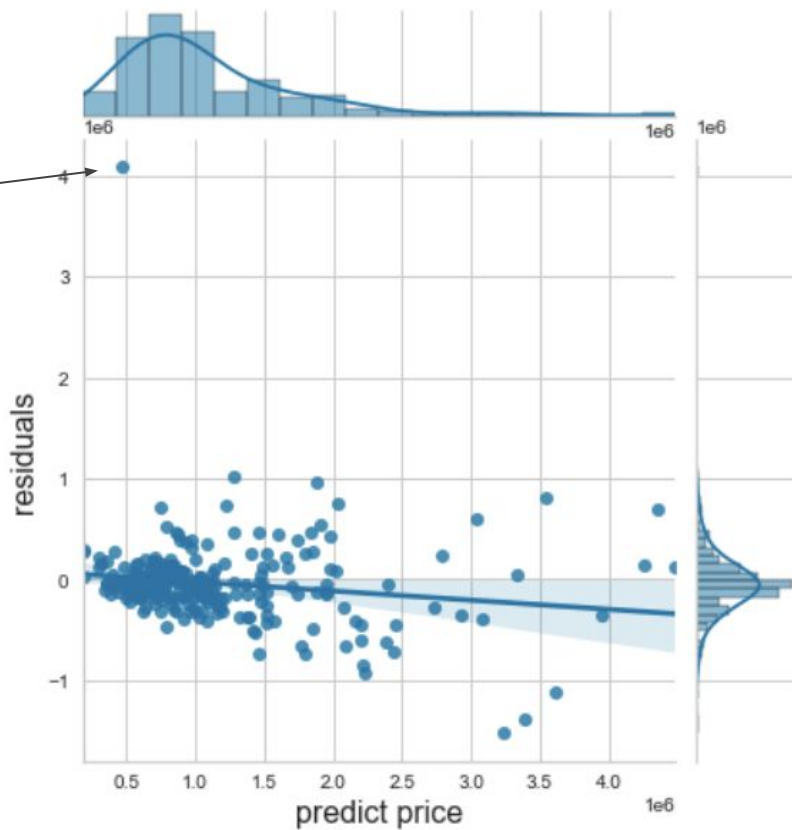
R^2 73.3%





Residual

What's going on here?



Worst Prediction

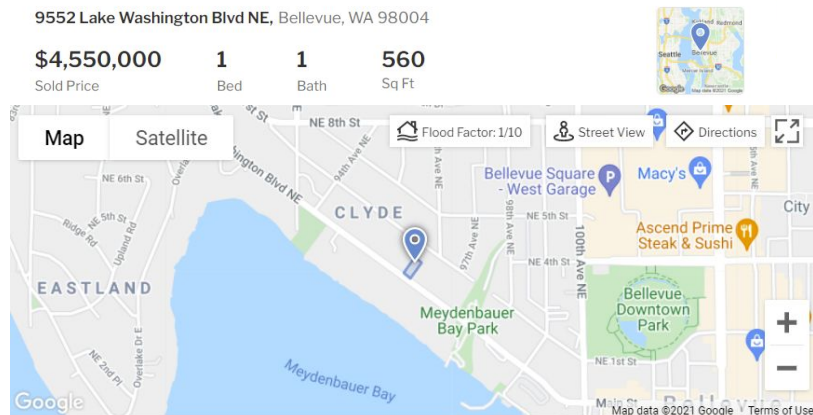
1. Predict price is 1/10 of actual price.
2. Poor Data Quality:
 - ❖ Wrong bed, bath number, sqft
 - ❖ Land miscategorized as SFH
3. Great view: not captured in data
4. Great location: close to downtown
5. Top school district



Listing provided courtesy of COMPASS. Sold by Realogics Sotheby's Int'l Rlty.

9552 Lake Washington Blvd NE, Bellevue, WA 98004

\$4,550,000 **1** **1** **560**
Sold Price Bed Bath Sq Ft





Good prediction

- Predict price: \$624,912 (-0.6%)
- Townhouse
- Newly developed area
- Recently sold property



Listing provided courtesy of Windermere Real Estate/PSR Inc. Sold by ZL Realty, LLC.

13331 NE 137th Pl, Kirkland, WA 98034

\$629,000

Sold Price

2

Beds

2

Baths

1,140

Sq Ft

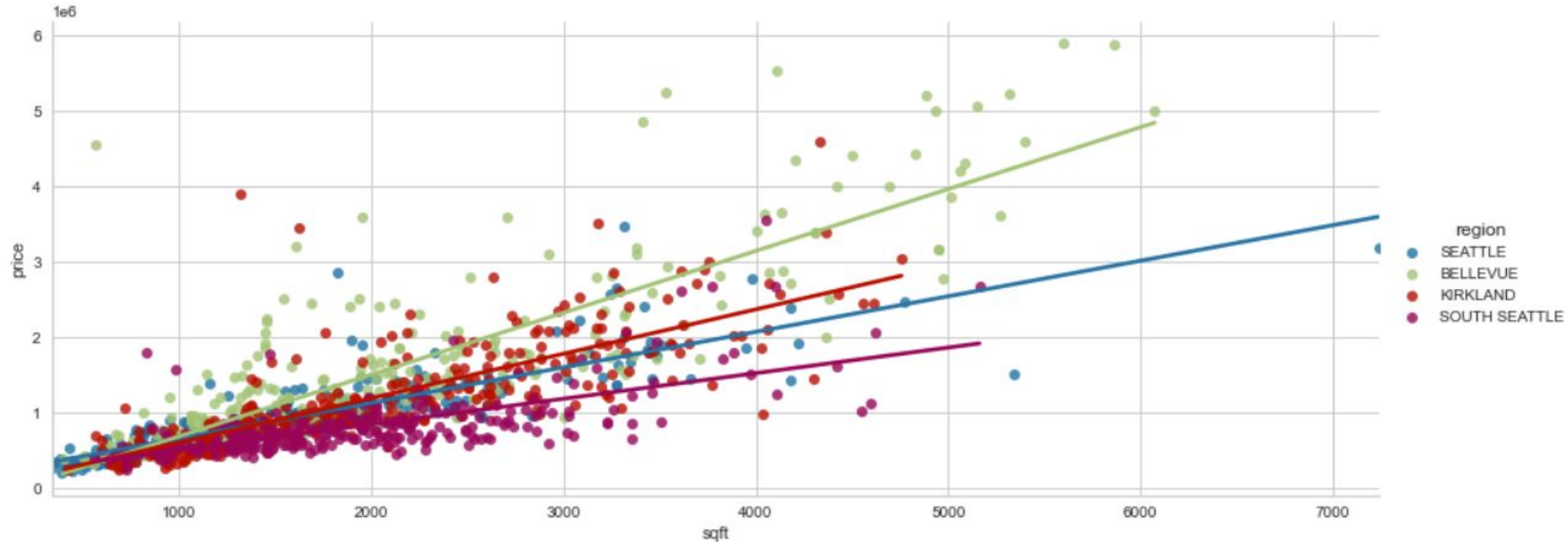




Future work

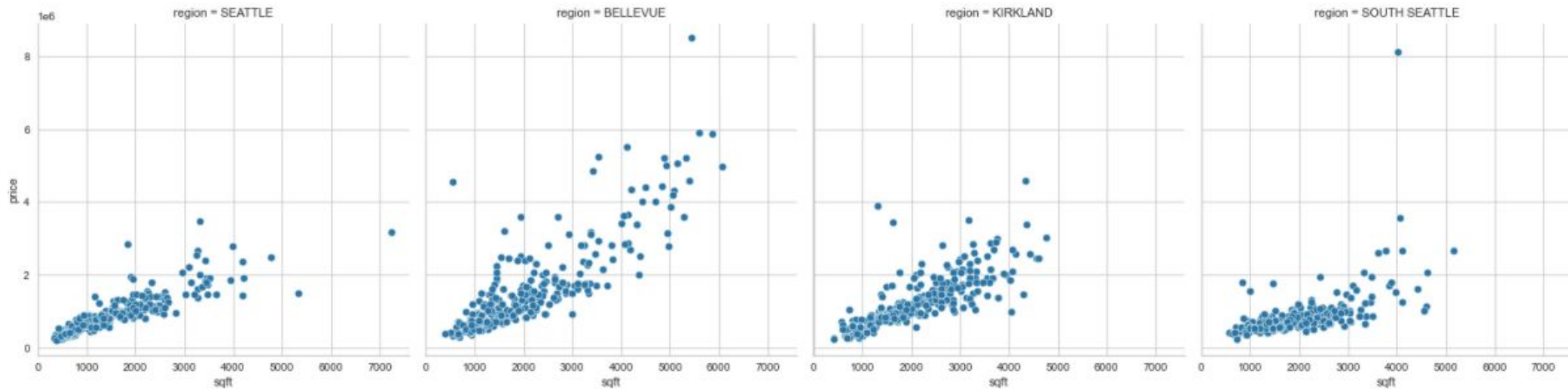
- Improve data quality
- Increase volume: expand web scraping strategy to collect more sold house data
- Explore other features like has_view, type of property, HOA fee, school district

Appendix - Price Trend Per Region



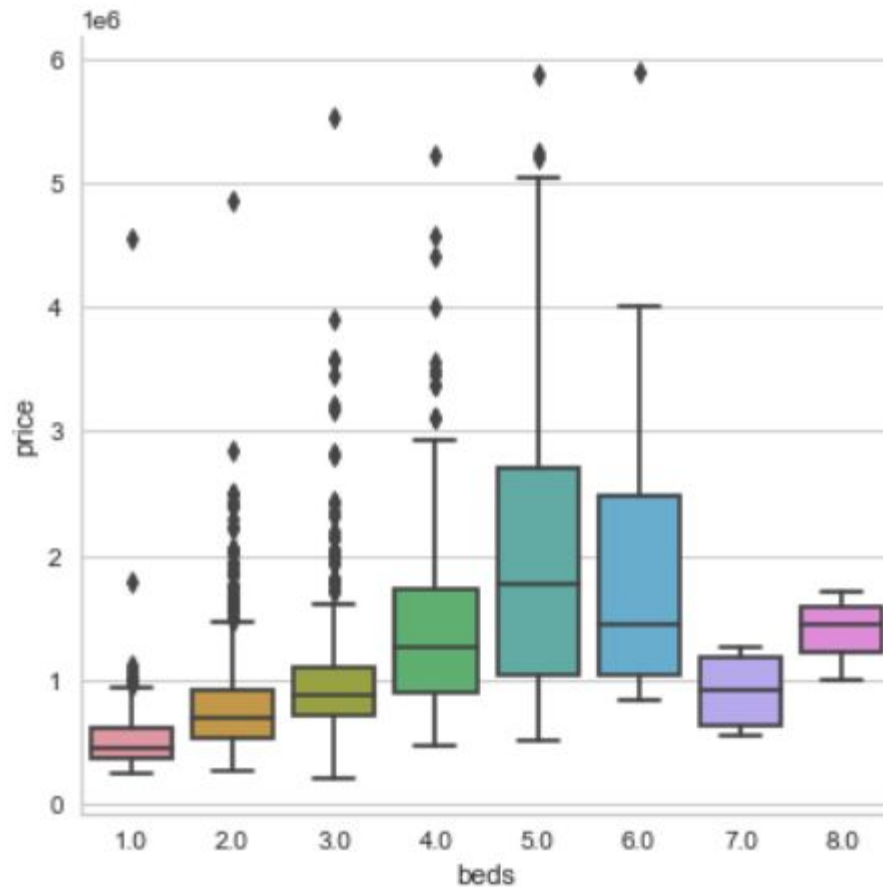


Appendix - Price Trend Per Region





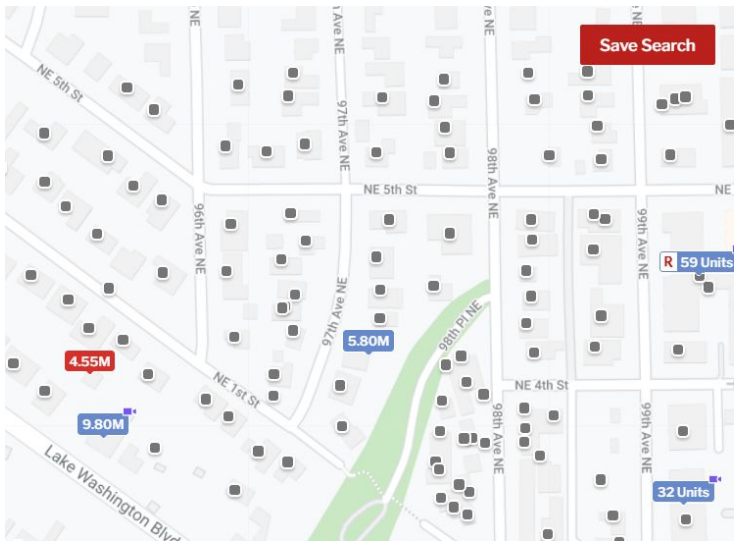
Appendix Price vs Beds



Likely A Data Entry Error

Square foot is wrong: should be 15246 sq ft.

All key features are wrong, which leads to poor prediction.



Map showing streets (NE 5th St, NE 4th St, NE 3rd St, NE 2nd St, NE 1st St, Lake Washington Blvd) and property markers (4.55M, 5.80M, 9.80M, 59 Units, 32 Units). A red 'Save Search' button is visible.


Bellevue Homes for Sale

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Price to [More Filters](#) (1) ▾

Showing 20 Homes · Sold 6mo · [Sort](#)

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SOLD JUL 29, 2021

Rare opportunity for a true legacy estate in the heart of West Bellevue. This sunny, large lot has breathtaking views of...[More](#)

\$/Sq. Ft.	\$8,125	Year Built	1948
On Redfin	48 days	Lot Size	0.35 Acres
HOA	None	Status	Closed

\$4,550,000
9552 Lake Washington ...
Bellevue, WA 98004

Listing provided by NWMLS

1 Bed 1 Bath 560 Sq. Ft.

[View Details](#)

Address	Location	Price	Per Sq. Ft.	Baths	Sq. Ft.	\$/Sq. Ft.	On Redfin
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Appendix - Pair

