

# House Prices in King County

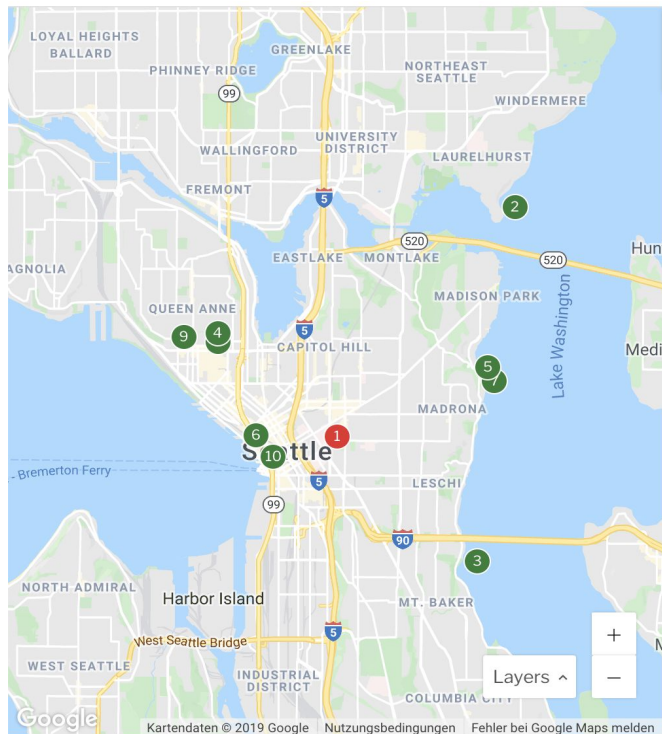
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11/11/19

# Structure

1. Introduction
2. Methodology
3. Results + recommendations
4. Conclusion
5. Future work

# 1. Introduction



← See Seattle homes for sale

## 1 61819 CD Undisclosed



**\$15,885,000**

4 Beds 5 Baths 6918 Sq. Ft.

61819 CD Undisclosed, Seattle, WA 98104

Listing courtesy of: Kathryn Hughes & Terry Allen, Coldwell Banker Bain



[https://www.redfin.com/city/16163/WA/Seattle/most-expensive-homes?utm\\_source=google&utm\\_medium=ppc&utm\\_term=dsa-599130426649&utm\\_content=391086689024&utm\\_campaign=1017235&gclid=EAlalQobChMI5qjQo4DT5QIVReJ3Ch3BlgADEAAYASAAEglpofD\\_BwE](https://www.redfin.com/city/16163/WA/Seattle/most-expensive-homes?utm_source=google&utm_medium=ppc&utm_term=dsa-599130426649&utm_content=391086689024&utm_campaign=1017235&gclid=EAlalQobChMI5qjQo4DT5QIVReJ3Ch3BlgADEAAYASAAEglpofD_BwE)

# 1. Introduction

150k USD  
Hot price!



<https://patch.com/washington/seattle/cheapest-house-seattle-150k-cash-only>

## 2. Methodology

1. Data Understanding (21.597 houses and 20 features)
2. Data Cleaning (NaNs, spikes ...)
3. Data Visualization (histograms, scatter plots, heatmaps ...)
4. Modelling (multiple linear regression with best correlated/significant features)

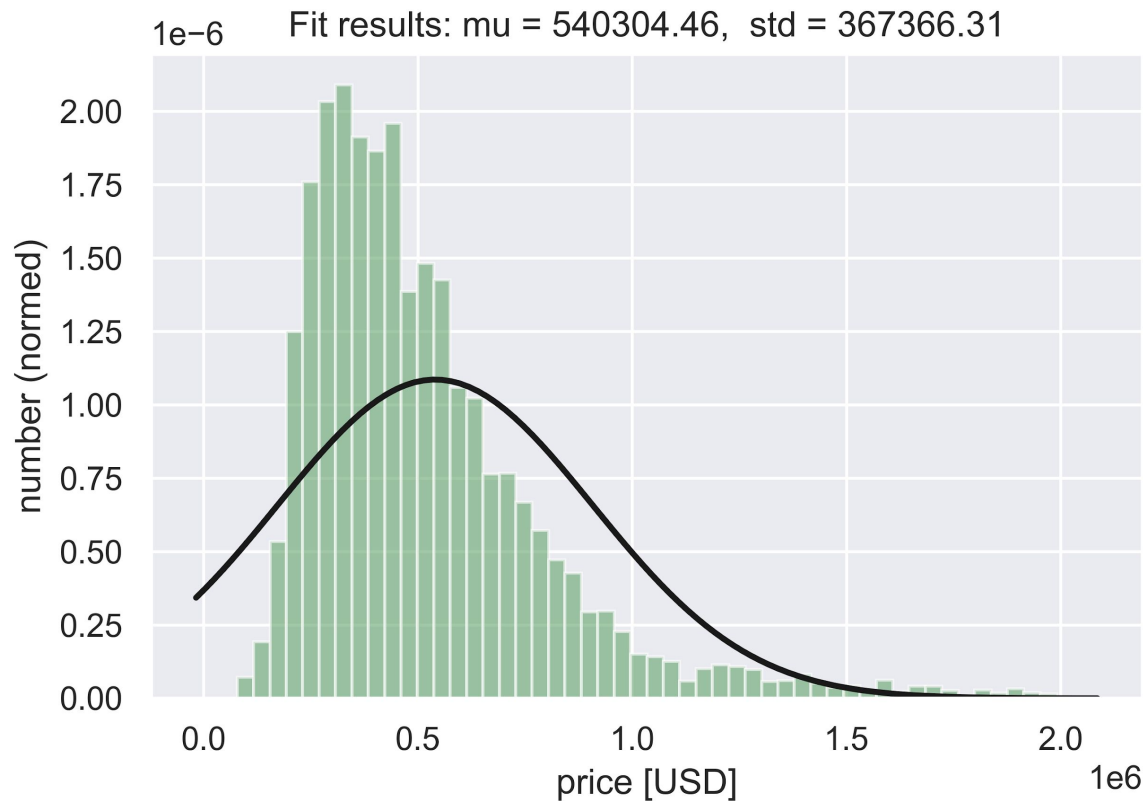
$R^2 = 0.784$  with no. bathrooms, living area, grade, square footage of house above, square footage of the living area of the 15 nearest neighbors and zip code

### 3. Results

House price distribution  
under 2 mio. USD

Mean price = 540k

Most houses < 500k



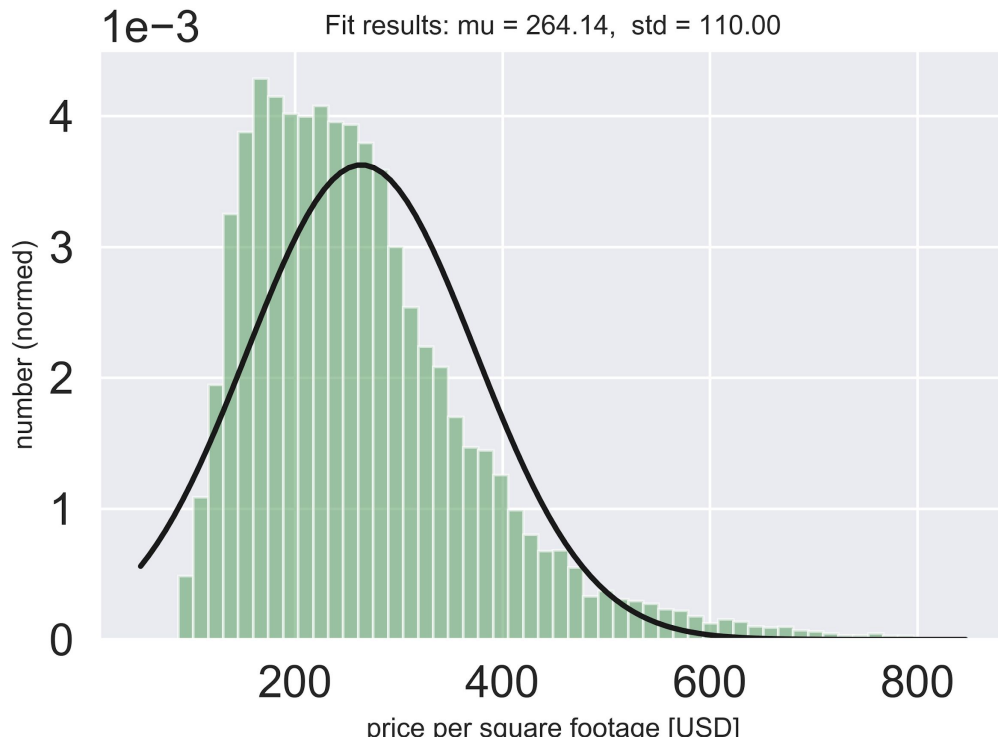
### 3. Results

Similar to house price  
distribution

Mean price per sqft = 264 USD

Max price/sqft = 810 USD

Most < 300 USD



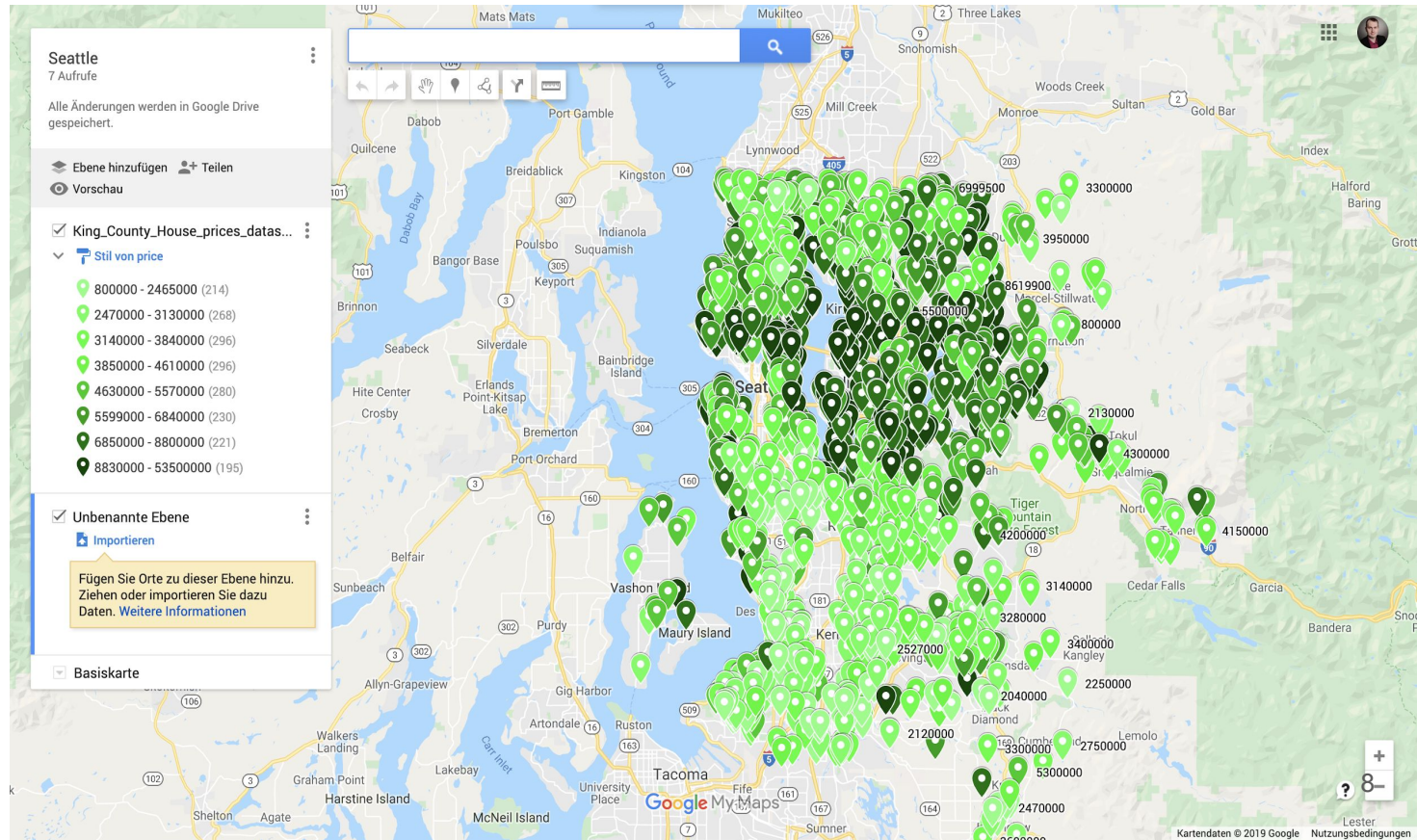
# 3. Results

- Distribution of 21.597 houses, sold in 2014 and 2015

- the most expensive houses are located around Lake Washington

- the cheapest in the south

- price range: 78k to 7.7mio.





### 3. Results

Well correlation with  
ethnicity!

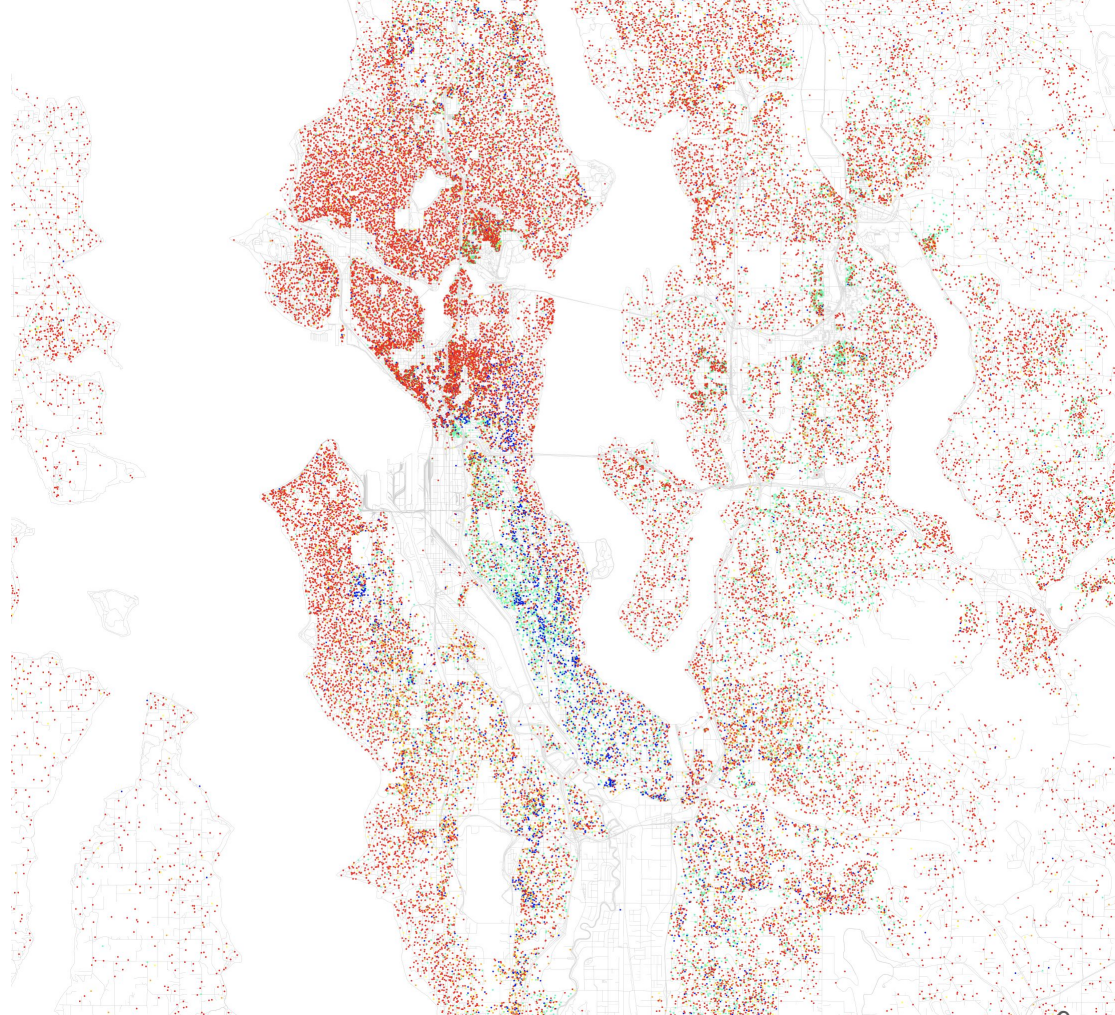
Date: 9/12/10

Red: white

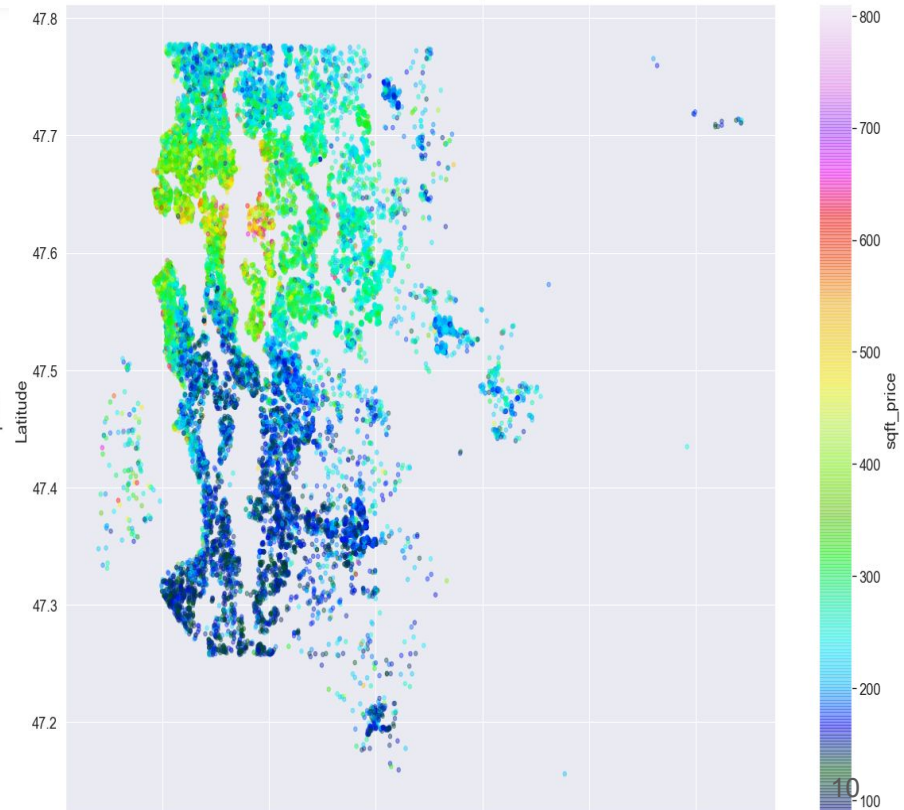
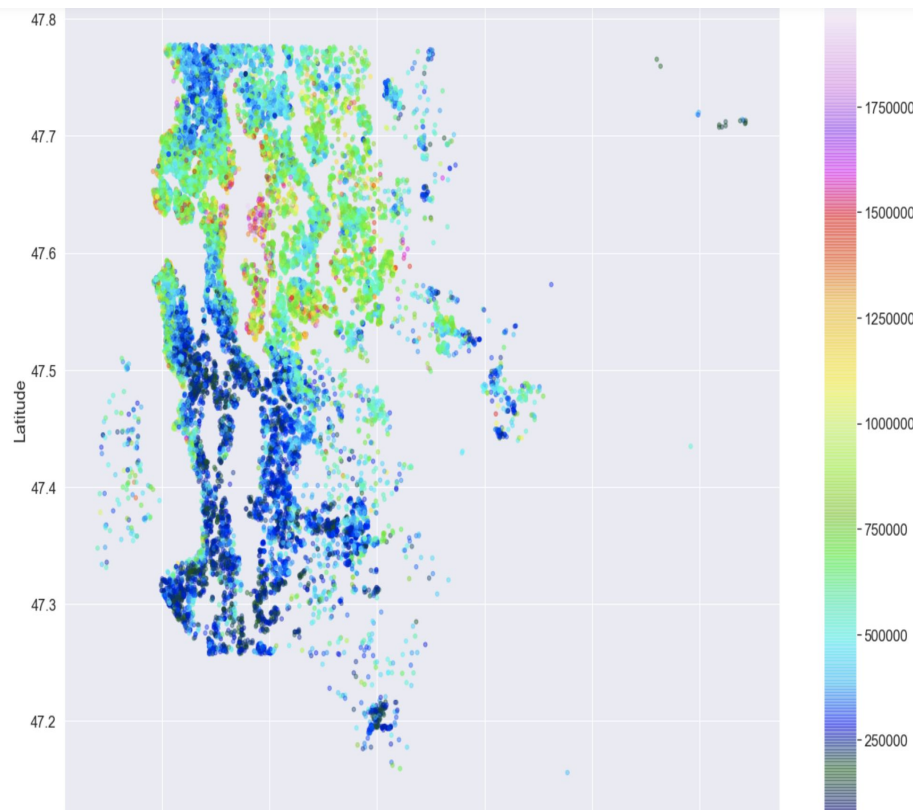
Green: asian

Blue: black

Yellow: hispanic



### 3. Results



# 3. Results

**Recommendation 1: For buyers:** choose the right location for your budget!

as close as possible to more expensive areas!

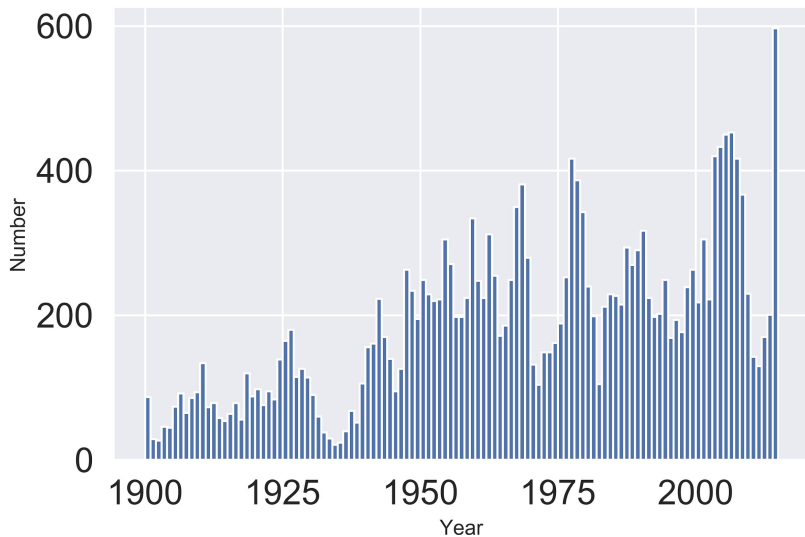
**For sellers:** demand the highest possible price in your area

in dependence on your house properties

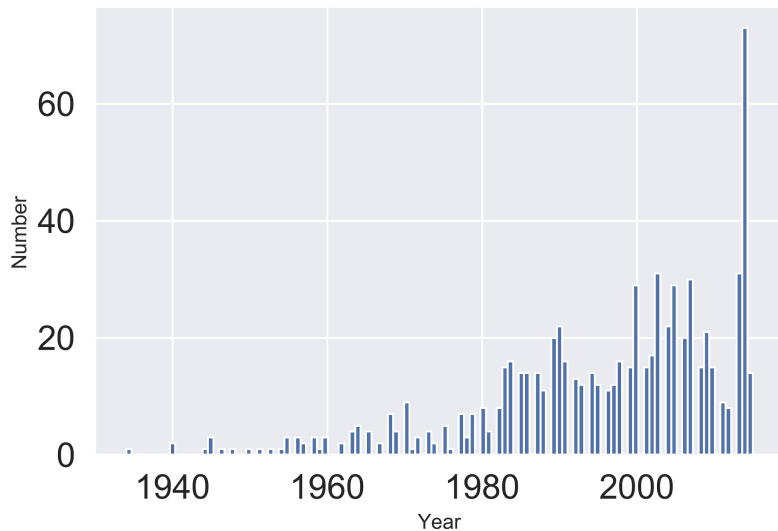
(size of house, lot area ect)

### 3. Results

Number of built houses each year between 1900 and 2015



Number of renovations each year between 1900 and 2015



- Number of built houses per year varies extremely (depends on historical events? Migration from rural to urban (Seattle)?)
- Only 744 houses of 21597 have information about renovation year (before 1934 no renovations were made or it is a lack of documentation)

# 3. Results

Renovated houses with same living area are more expensive!

## Recommendation 2:

If you are a seller then maybe renovate the house before sale (depends on renovation costs)

If you are a buyer then choose a not renovated house with highest possible grade (condition)



# 3. Results

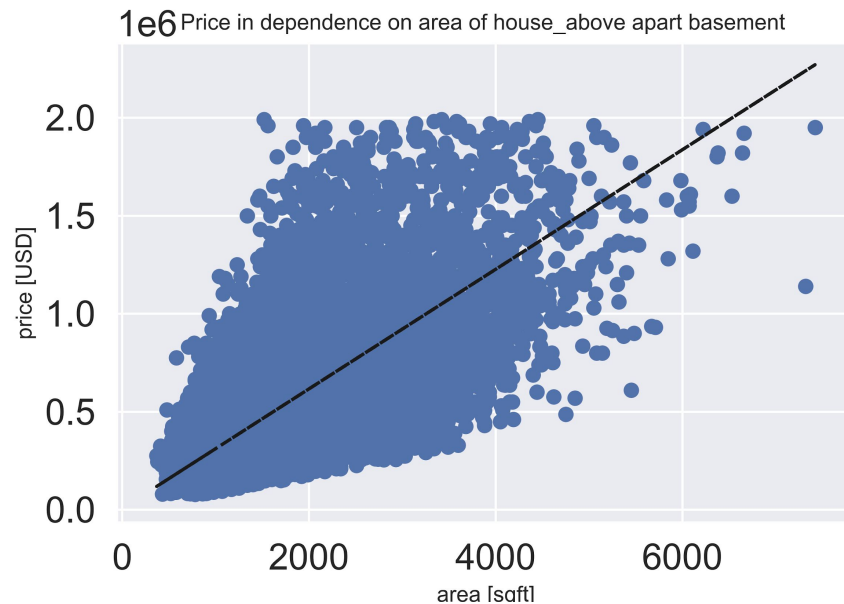
## Recommendation 3:

Increase area of house above ground  
( $\approx 21.100$  USD/100 sqft\_above)

Houses with an existing basement are much more expensive when adding additional square footage of living area

$\approx 23.700$  USD/100 sqft\_living - with basement

$\approx 21.300$  USD/100 sqft\_living - without basement



## 4. Conclusion

### **If you are a buyer:**

1. Choose right location
2. Think about renovation
3. Think about a basement and living area

### **If you are a seller:**

1. Try to maximize profit by comparing house prices in your location
2. If your house has a large living area do renovation first (depends on costs)
3. House with a basement increases the house price! (+2k/100 sqft)

## 5. Future work

- Gain more knowledge about the dataset (Feature Engineering)
- Find more additional data to generate a more robust prediction (ethnicity, crime rate, transport connection....)



# THE END

**Thank you for your attention!**

Special thanks to NeueFische-DataScience  
team for supporting this project!