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# DATA ANALYSIS OF KING COUNTY PROPERTY SALES (2014-2015)

## INTRODUCING OUR DATASET

# KING COUNTY, WASHINGTON, U.S.A

### OUR AIM:

TO IDENTIFY THE ATTRIBUTES WHICH INCREASED THE VALUE OF PROPERTIES SOLD IN KING COUNTY. THIS ANALYSIS WOULD BE MOST BENEFICIAL FOR POTENTIAL PROPERTY INVESTORS WHO ARE INTERESTED IN THE MARKET.

### WE ARE INVESTIGATING:

PROXIMITY TO WATERFRONT

TOTAL LIVING SPACE

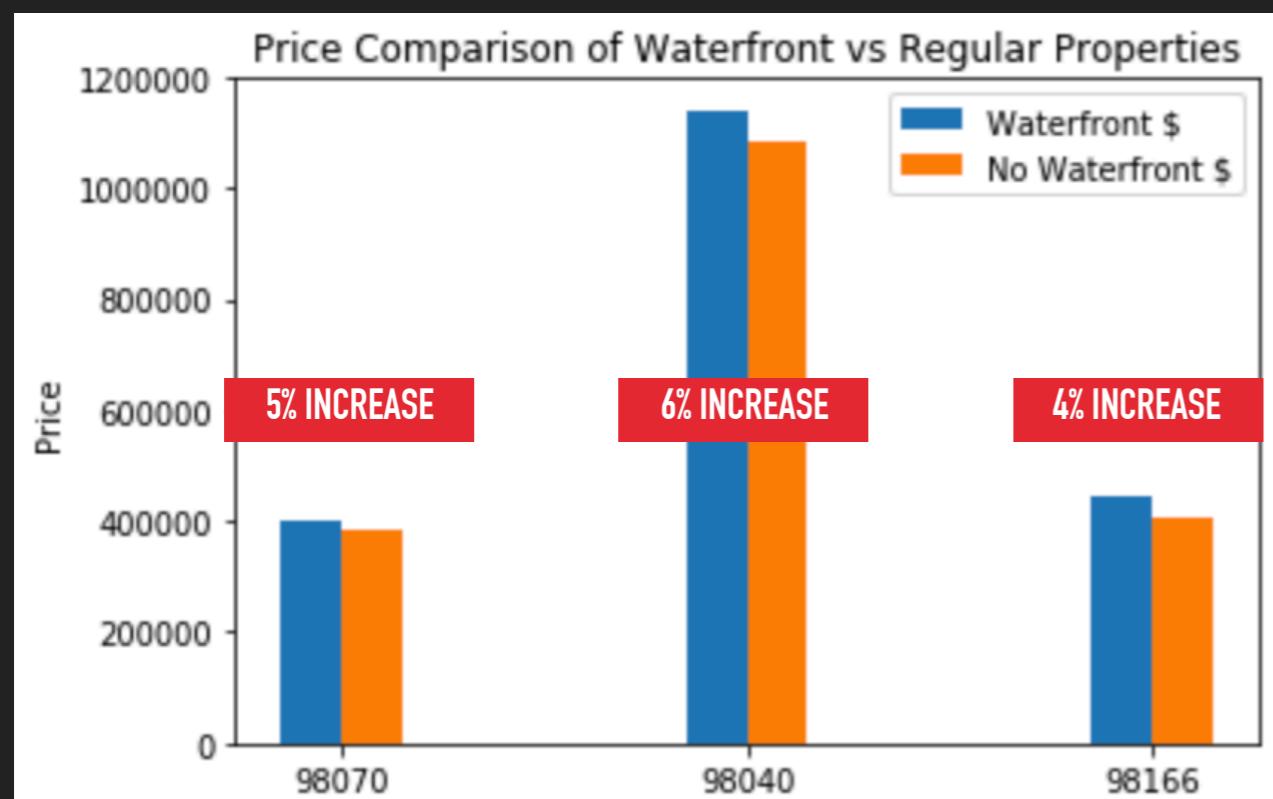
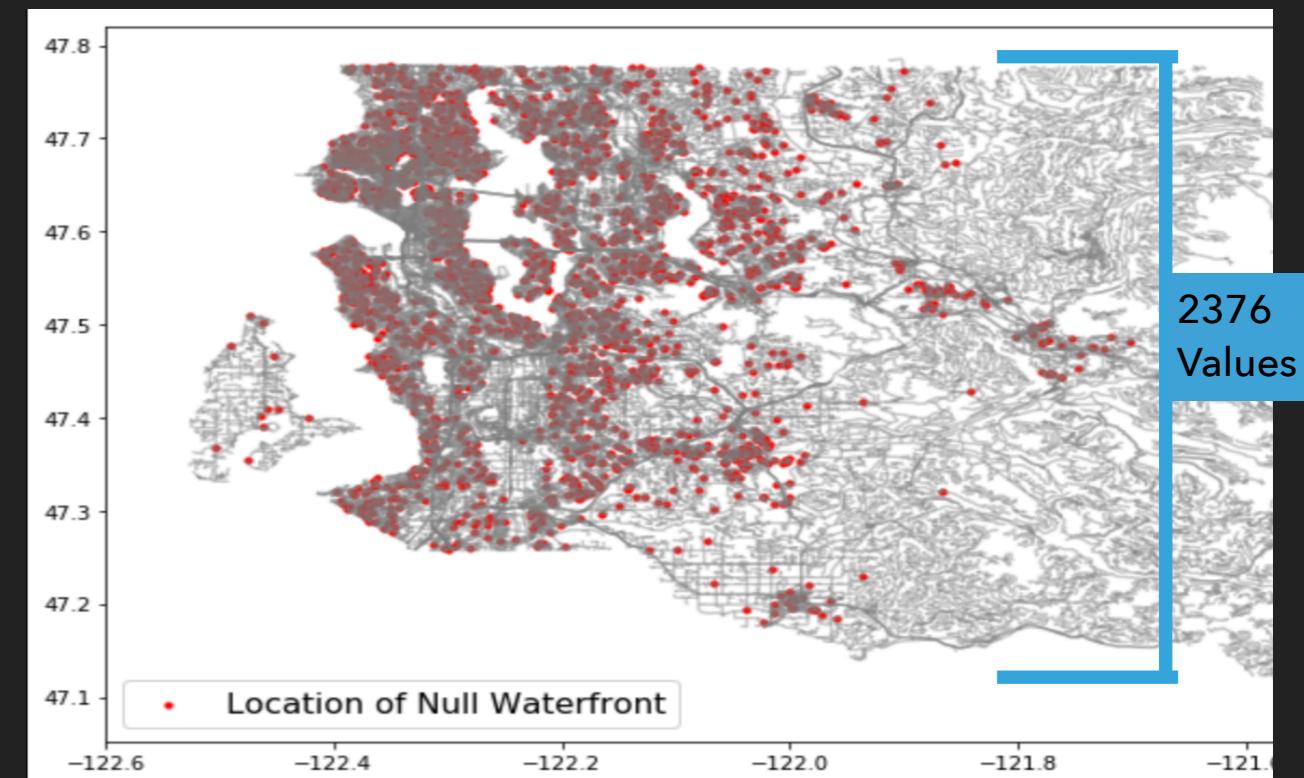
INSIGNIFICANCE OF LOT SPACE

Variable	Description
id	Unique identification number
date	House sale date
price	House sale price
bedrooms	Number of bedrooms
bathrooms	Number of bathrooms (0.5 indicates toilet and sink only)
sqft_living	Square footage of total living area
sqft_lot	Square footage of total lot area
floors	Number of floors
waterfront	A dummy(binary) variable that indicates waterfront view
view	0-4 index on how good the view of the property is
condition	1-5 index on condition of the house
grade	1-13 index - King County house grading system
sqft_above	Square footage of housing space above the ground
sqft_below	Square footage of housing space below the ground
yr_built	Year that house was built
yr_renovation	Year of house's last renovation
zipcode	Zipcode area of the house
lat	Latitude
long	Longitude
sqft_living15	Square footage of total living area for nearest 15 neighbours
sqft_lot15	Square footage of total lot area for nearest 15 neighbours

# PROPERTY VALUES VARY BETWEEN AND WITHIN ZIP CODES DUE TO WATERFRONT PROXIMITY.

We can see the locations of null values in waterfront in the geomap.

We dropped the null values in order to negate any ambiguity.



## Waterfront

Bedrooms



Bedrooms

Bathrooms



Bathrooms

Living Area



Living Area

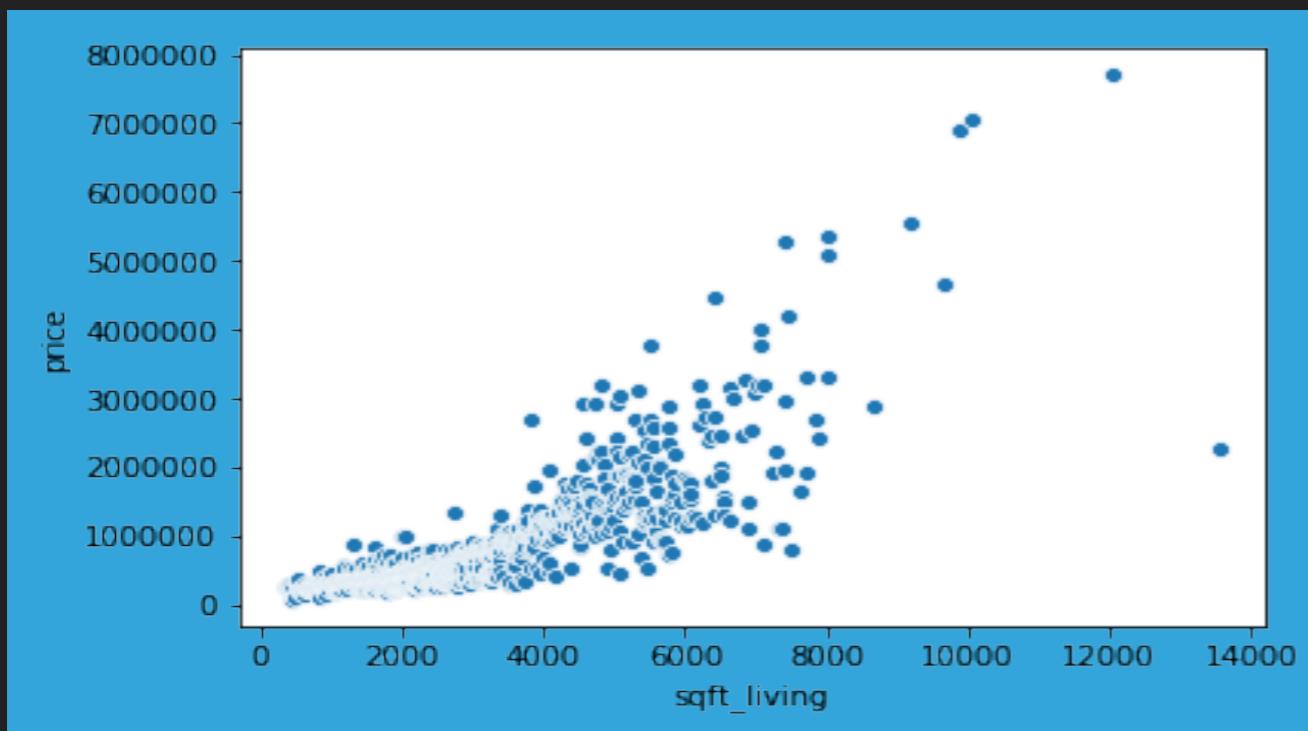
Condition



Condition

Investing in properties which boast a waterfront feature increases value by 4-6 %, compared to identical properties within the same zip code that do not reside on the waterfront.

# SQUARE FOOT LIVING CAUSES AN INCREASE IN PROPERTY VALUE, WHEREAS SQUARE FOOT LOT HAS NO POSITIVE IMPACT.

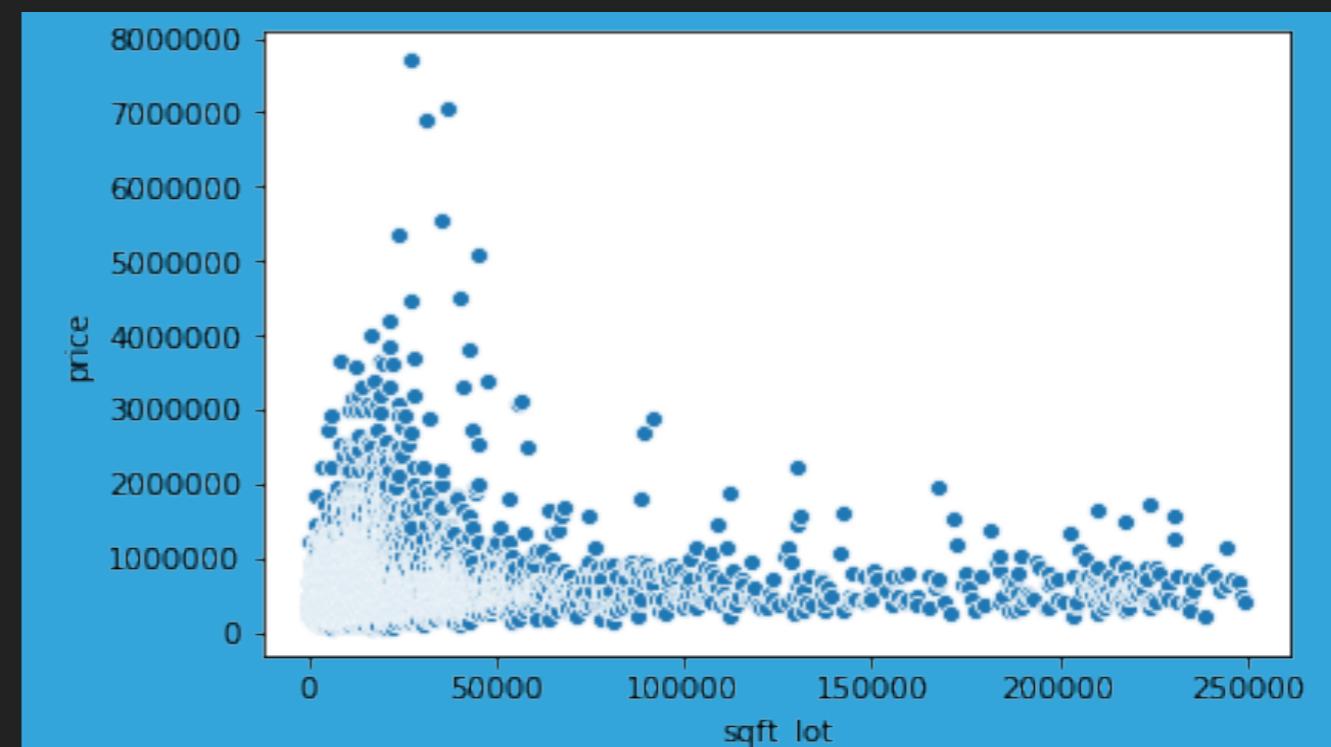


We observe an **exponential relationship** between square foot living and price.

There is **no relationship** between square foot of lot and price.

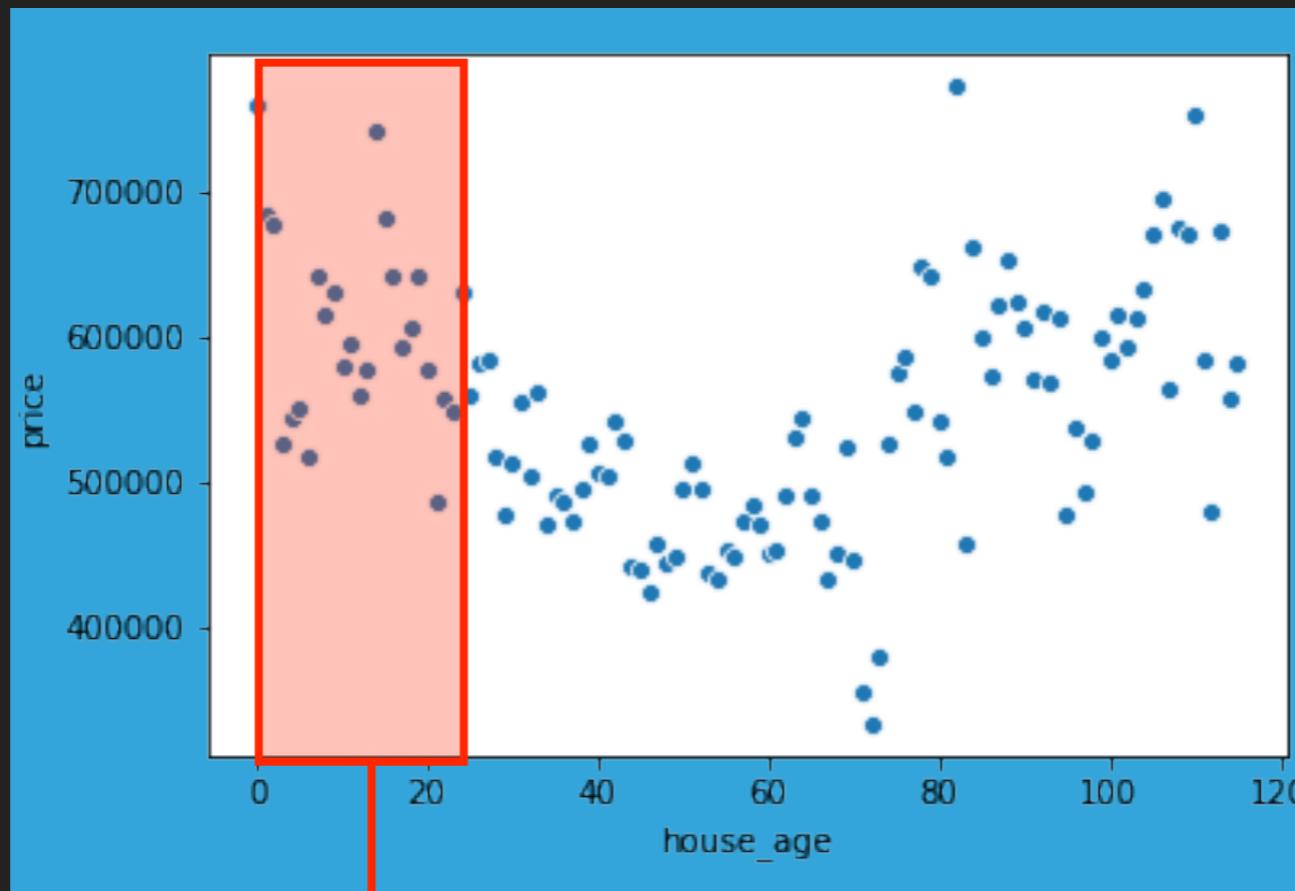
The most expensive properties, are within the lower quartile of square foot lot.

We chose to investigate this further.



## COMPARING HOUSE AGE TO PRICE, ONE SUBSET OF OUR DATA WITH THE MOST VALUE ARE PROPERTIES YOUNGER THAN 25 YEARS.

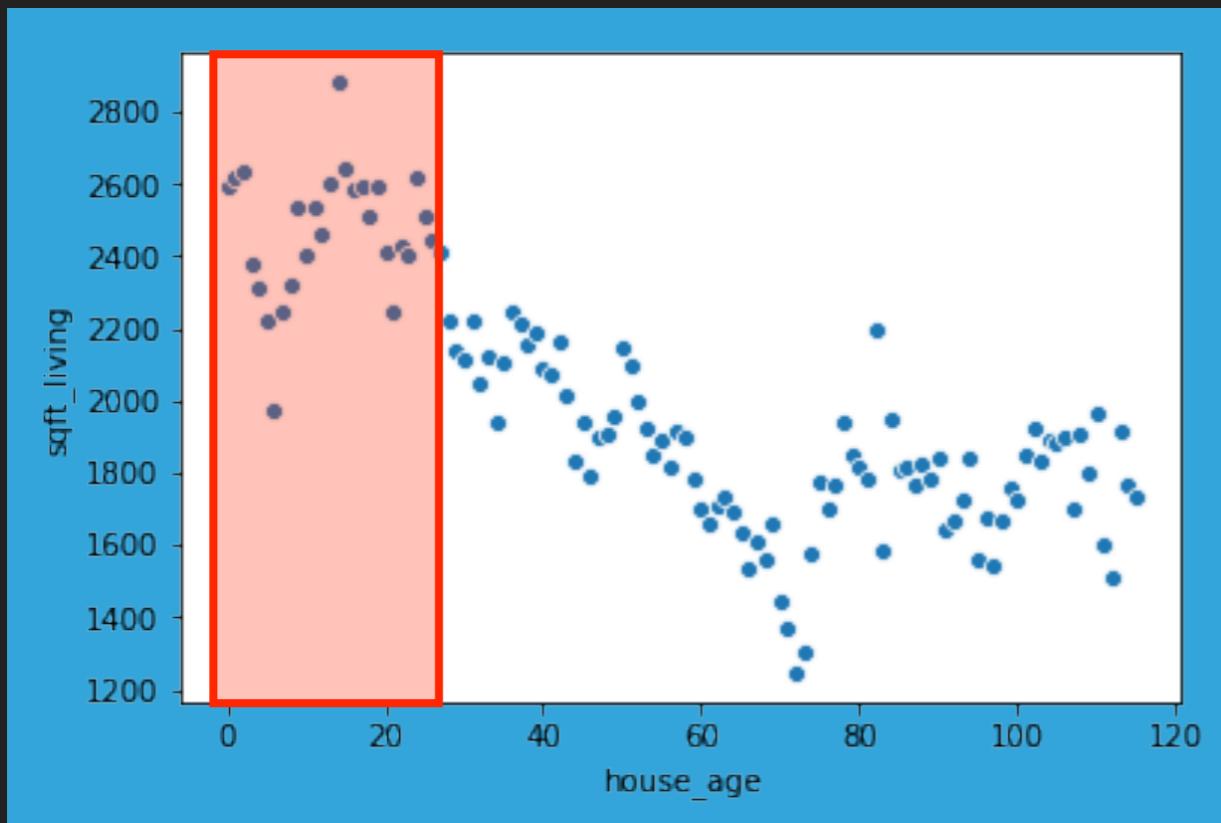
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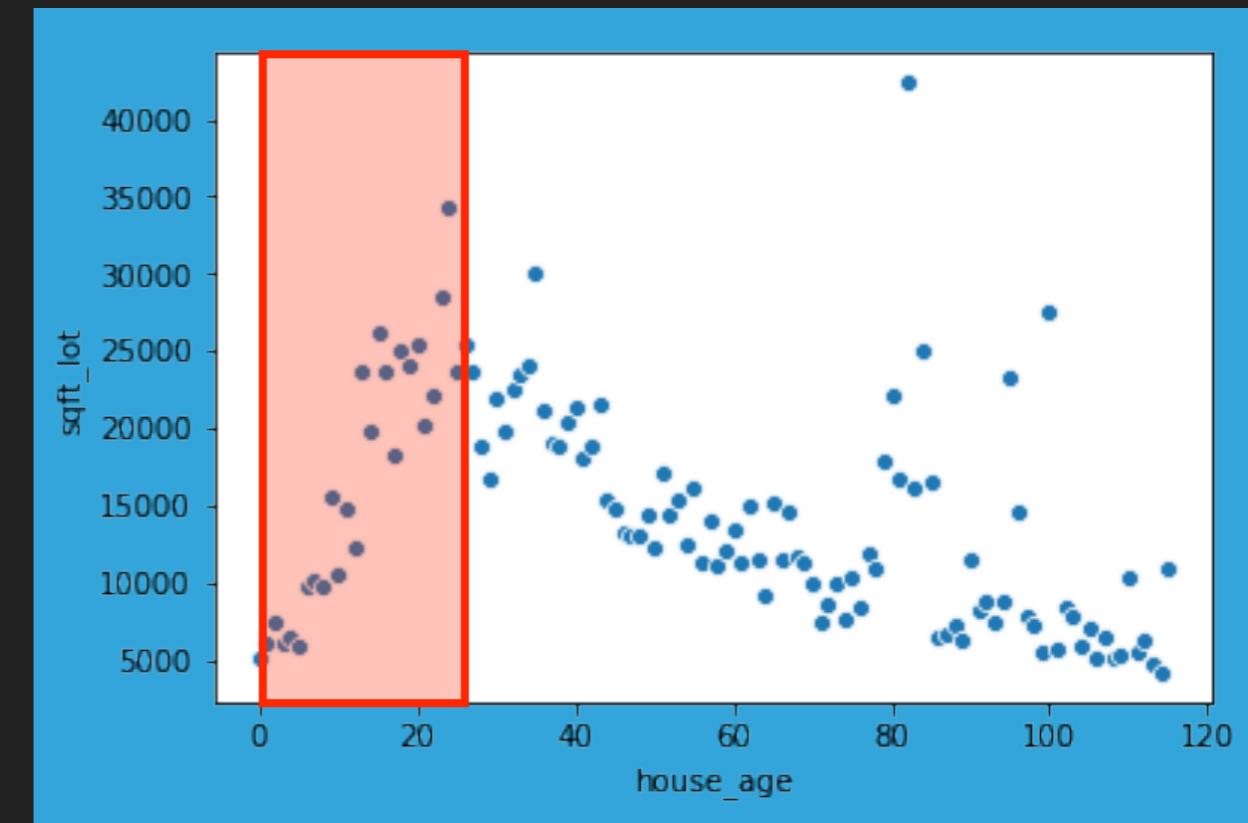
Properties aged < 25 years have some of the highest values.

We wanted to explore why this is.

# THE SQUARE FOOTAGE OF LAND HAS LITTLE TO NO IMPACT ON PRICE, DEPICTING VARIOUS TRENDS IN PROPERTY MARKET.

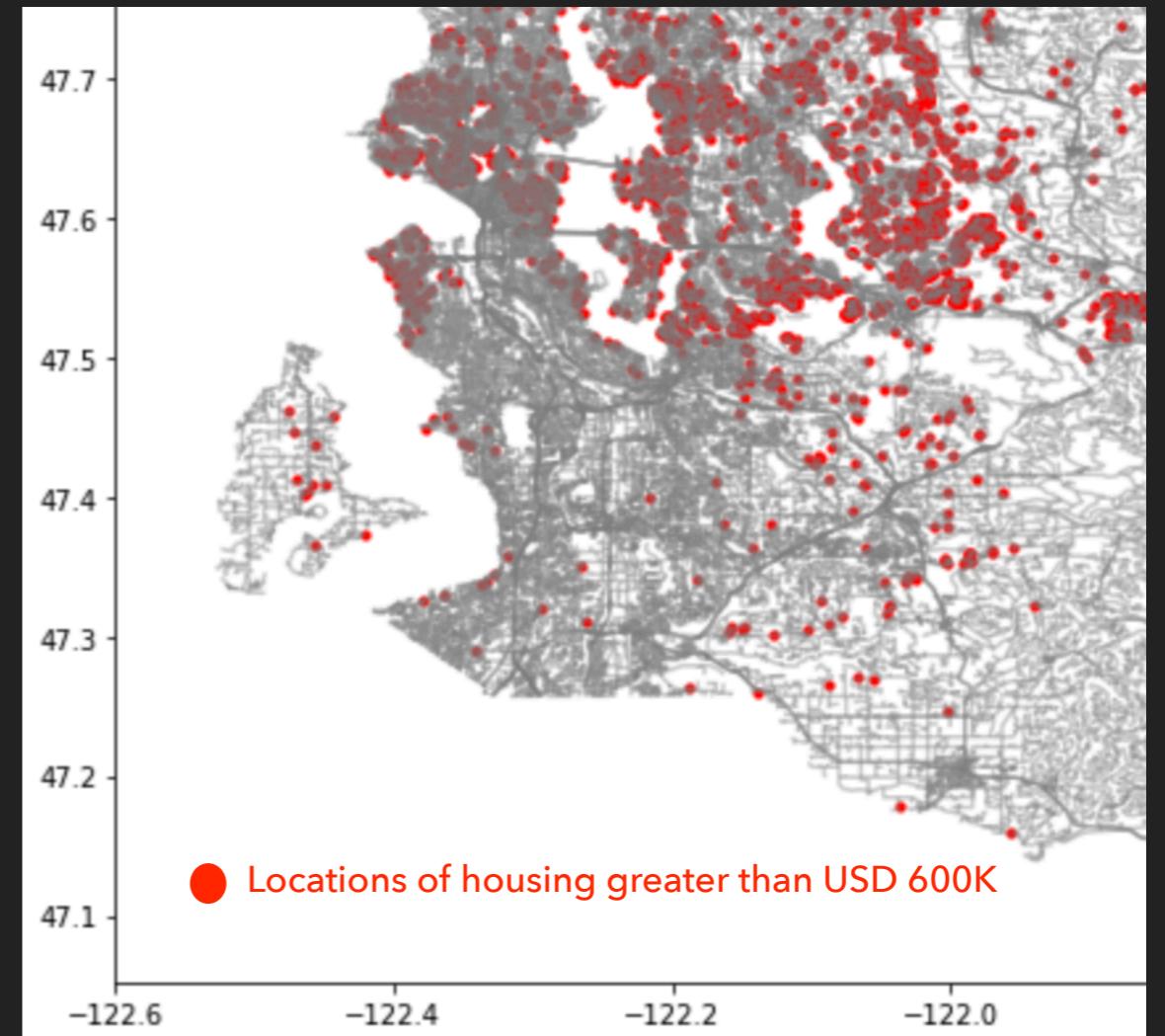
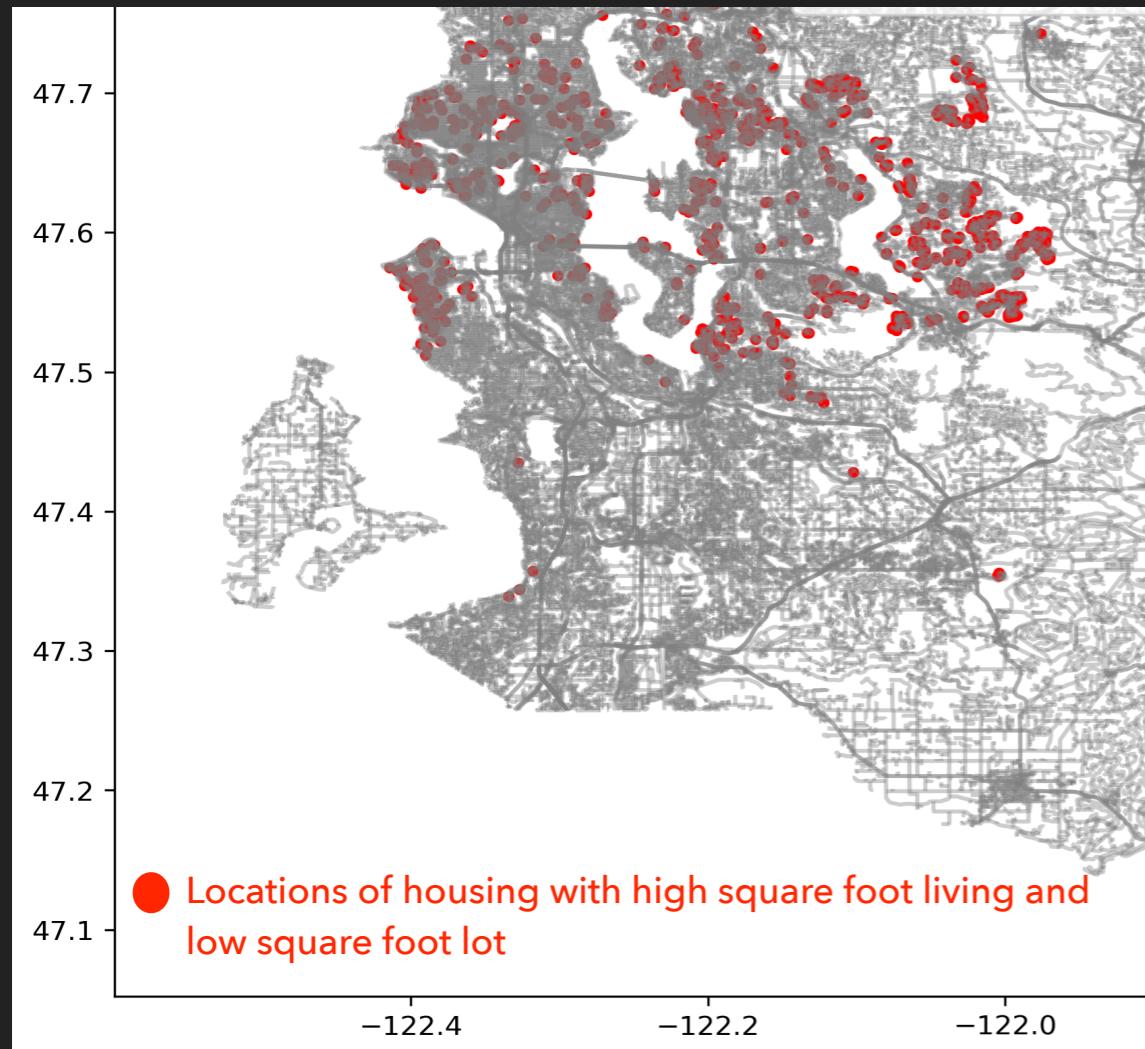


Recently constructed properties have the  
**highest** square foot living.



Recently constructed properties have the  
**lowest** square foot lot.

# GEO-MAPPING OF PROPERTIES WORTH MORE THAN 600'000 USD AND <25 YEARS OLD



We can postulate that **location** is the reasoning behind the significance of square foot living and the insignificance of square foot lot in determining the price.

# PREDICTIVE MODELLING

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## OUR MODEL:

THE AGE OF PROPERTY DETERMINES WHICH FEATURES INCREASE ITS VALUE.

WE SPLIT OUR DATA INTO TWO SUBSETS, PROPERTIES OLDER AND YOUNGER THAN 25 YEARS.

USING THE SEPARATION OF AGES, REGRESSION MODELS BETTER DEPICT WHICH FEATURES INCREASE THE VALUE OF A PROPERTY.

*Regression Results (Houses less than 25 years old)*

Variables	Comments
log(sqft_living)	Significant effect on price. A 1% increase in sqft_living increases property price by 0.84%. Double log makes interpretation of coefficient as an elasticity
waterfront	Significant effect on price. A property on the waterfront is 5.55% higher in price
view	Significant effect on price. One additional view increases property value by 0.10%
lat	Significant effect on price. Moving North by 0.1 latitudinal values increases property value by 1.64%
long	Significant effect on price. Moving East decreases property value by 0.23%

*Regression Results (Houses greater than 25 years old)*

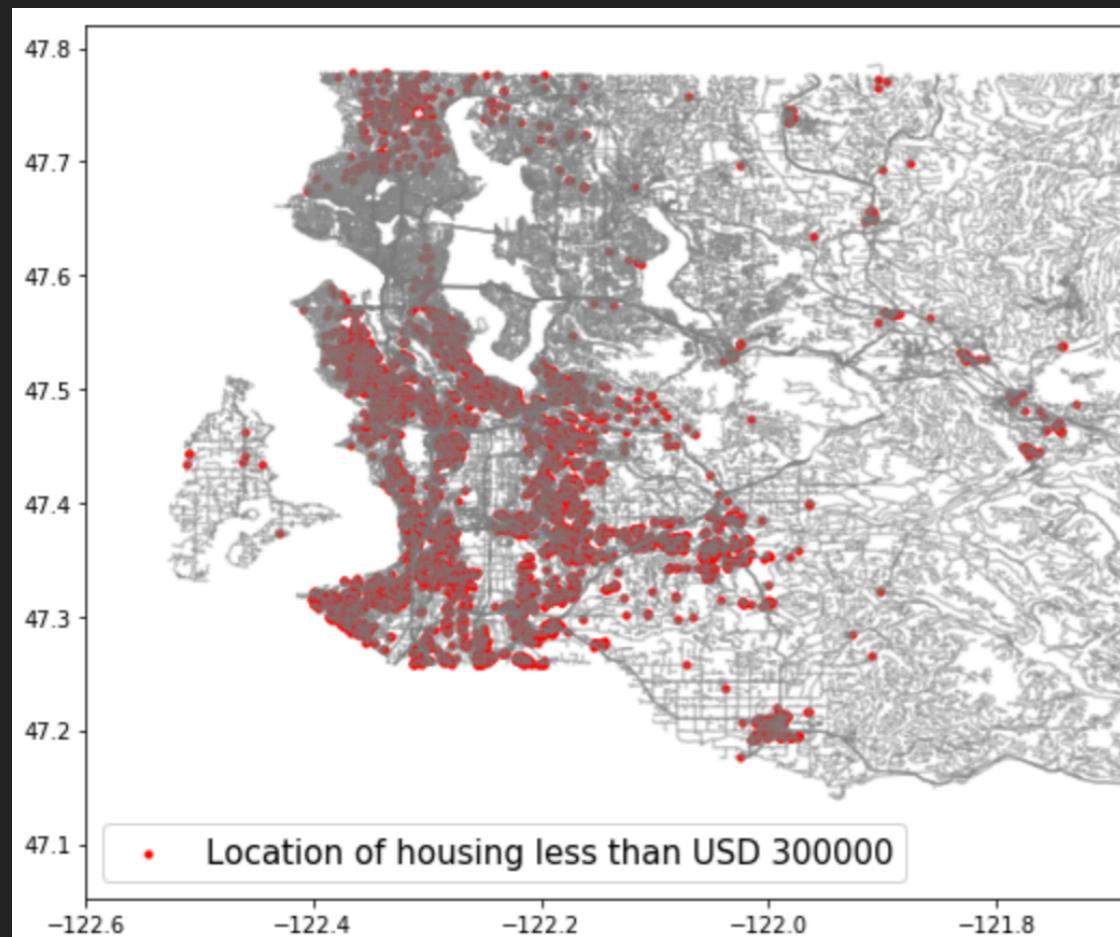
Variables	Comments
log(sqft_living)	Significant effect on price. A 1% increase in sqft_living increases property price by 0.71%. Double log makes interpretation of coefficient as an elasticity
waterfront	Significant effect on price. A property on the waterfront is 3.8% higher in price
view	Significant effect on price. One additional view increases property value by 0.12%
lat	Significant effect on price. Moving North by 0.1 latitudinal values increases property value by 1.71%
long	Significant effect on price. Moving East by 0.1 longitudinal values decreases property value by 0.018%

## RECOMMENDATIONS FOR PROPERTY INVESTORS:

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### PROPERTIES < 25 YEARS

If you wish to invest in properties that are centrally located Kings County, then new builds are more likely to have **high areas of living space** and **low areas of lot space**.



### PROPERTIES > 25 YEARS

For older properties that are centrally located, they follow the trend of **less living space** and **less lot space**, however boast the same value as new builds.

The reasons behind the retained value of old properties is the **central location**.

### WATERFRONT FEATURE

If you wish is to invest in properties that boast a waterfront feature, however location is not a factor in your investment strategy, we suggest you buy a property in the south of King County, as the geomap depicts properties that are in close proximity to the waterfront for less than 300,000 USD.

If you want a property with 2000 square foot living space and a waterfront view, in a given location, a property that was built in the last 25 years is likely to be **1.04 times more expensive** than a property built over 25 years ago with the exact same features.