



# EDA Project -King County Housing Market

May 2023

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Better Call Ana  
REAL ESTATE ANALYST

# Ask Phase

Client/Stakeholder: Amy Williams

Italian mafiosi, sells several central houses(top 10% most expensive), needs average suburbs houses to hide from the FBI

Purpose:

Sell her houses which are in a range of the 10% most expensive.

With the money raised from the sale of the houses, buy several houses (of a midrange)in the suburbs.

# Prepare Phase

## Content:

This dataset contains house sales prices for King County, covering the houses sold between 2014 and 2015 and houses with construction year from 1900 to 2015.

The dataset includes 1 csv file. Each house has an ID. After analysis, 21420 distinct IDs were identified. There are problems that could lead to biased results, such as the lack of information like rankings based on crime, and local amenities. A ranking based on data from the U.S. Census, like FBI, BLS (Bureau of Labor Statistics), and other sources would be helpful in this analysis considering our stakeholder. Also important is the fact that the dataset is no longer up to date.

# Process Phase

-Python is the programming language used in this work and the following libraries have been used: Pandas, Numpy and Plotly Express.

*The best thing to do with missing data is to not have any-* Gertrude Mary Cox.

-All rows with Nan values were deleted.

*Think first in all exceptions* - Lana Casselman

-Row number 15856 has been identified as a data entry error. It has therefore also been deleted from the dataset.

-Data types were converted into the correct ones.

-Three new variables were created: **sqft price lot**, **center**(considering Seattle as the centre of King County and **location**.

Once the data has been processed and cleaned, we can now check the initial hypotheses:

- Renovated houses were sold for a higher price
- Houses with waterfront were sold for a higher price
- Centrally located houses are more expensive

# Analyse and Share Phase

-For the following analysis:

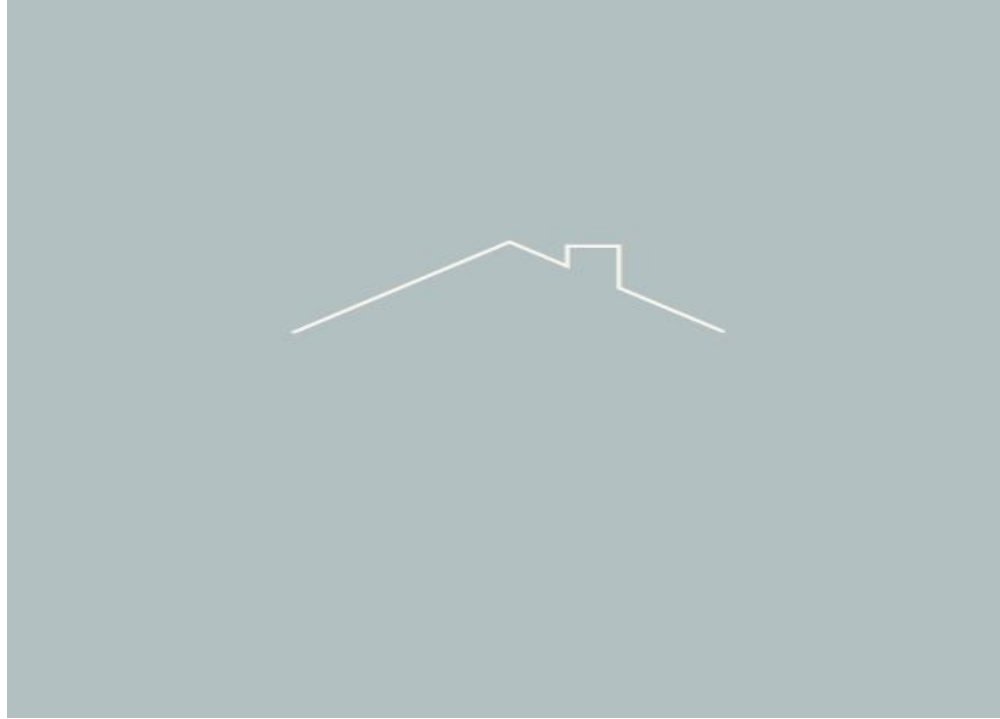
- In a first phase, only houses priced over 1 million dollars were considered.

-In a second phase, only houses priced below 1 million dollars were considered.

Image source: Picasso.com

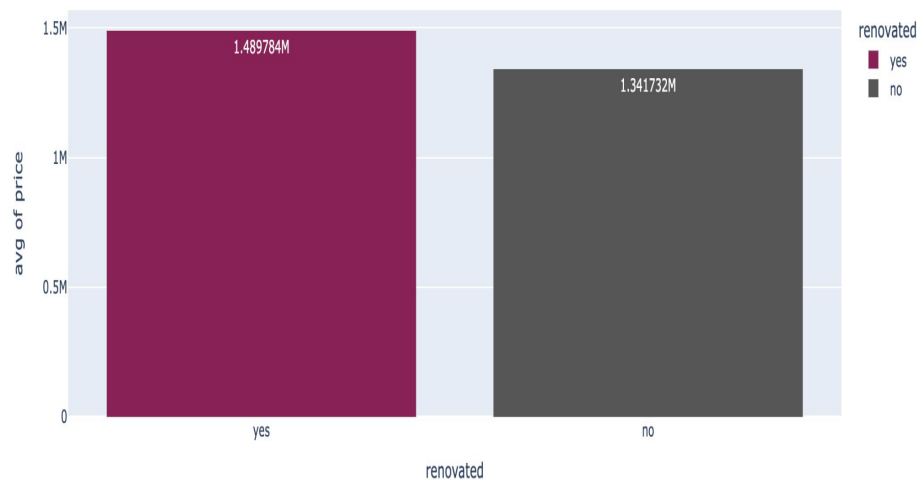


# First Phase



The first hypothesis is confirmed: Renovated houses were sold for a higher price.

Average Total Sale Price (in U.S. dollars) of Renovated and Non-Renovated Houses in Center vs Suburbs

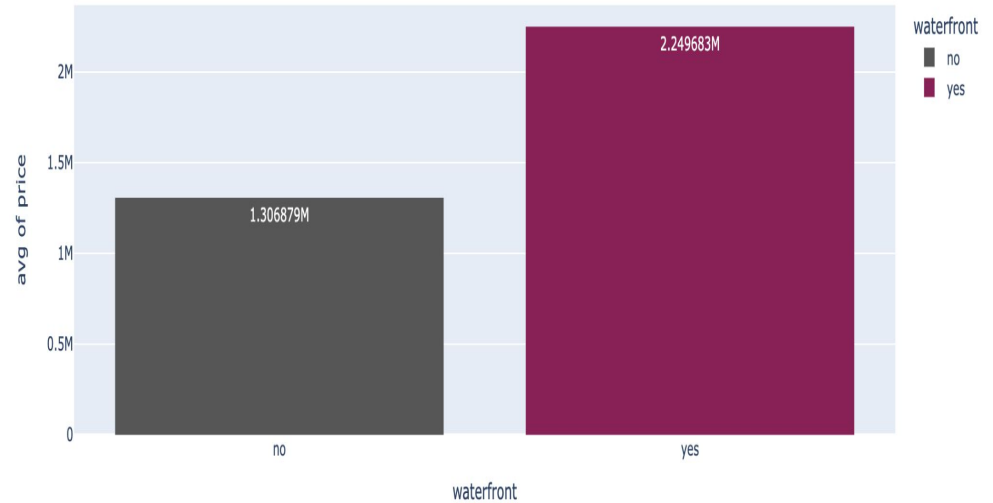




The second hypothesis is confirmed:

Houses with waterfront were sold for a higher price.

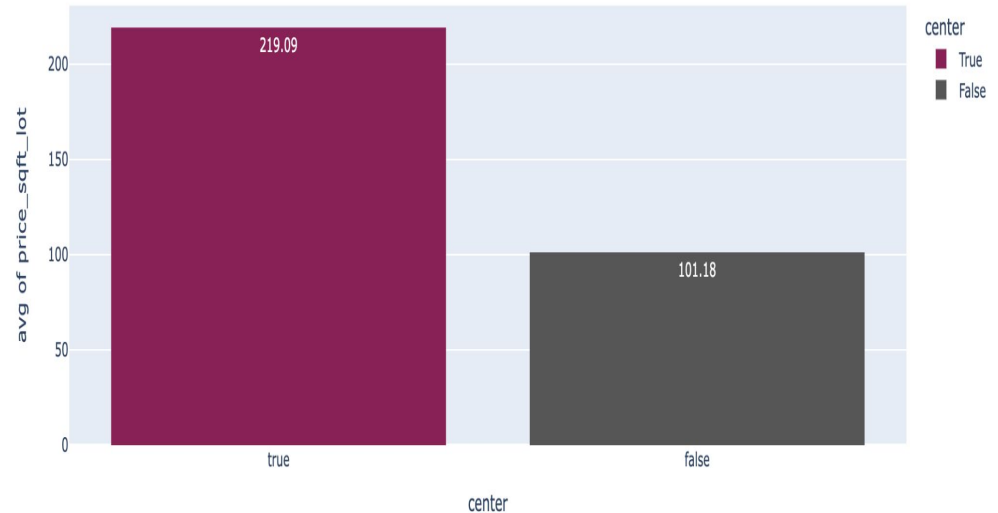
Average Total Sale Price (in U.S. dollars) Comparison of Houses With and Without Waterfront



The third hypothesis is confirmed:

Houses in the centre have the highest square foot price (\$219.09) compared to the suburbs(\$101.18).

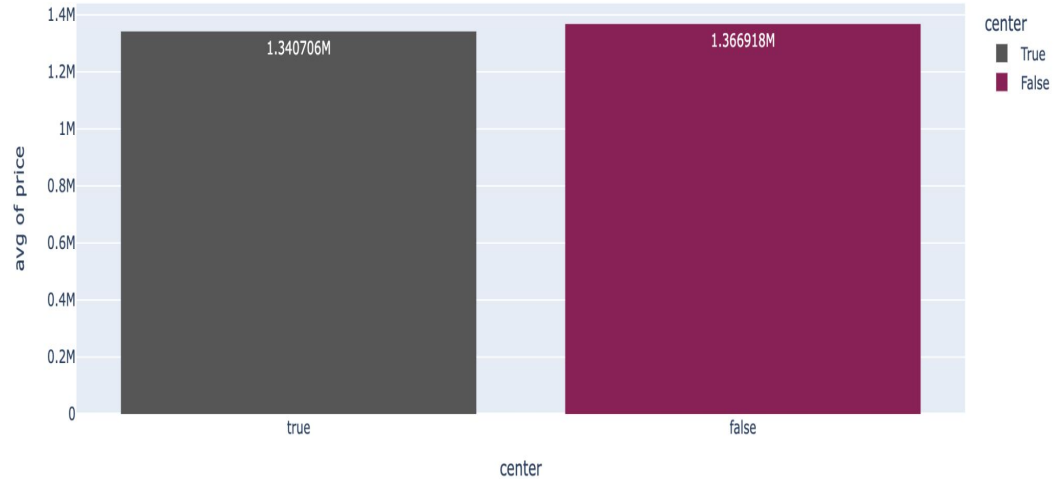
Average Price (in U.S. dollars) per Square Foot of Houses by Location



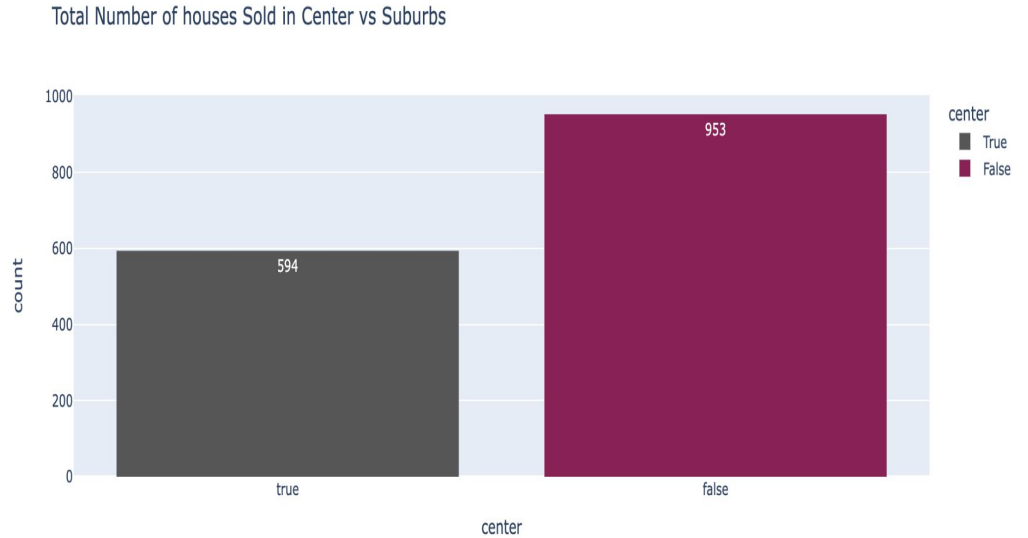
Suburb houses were sold for a higher price because they are bigger than the ones in the center.

Houses in the center were sold for an average price of \$1.340.709M.

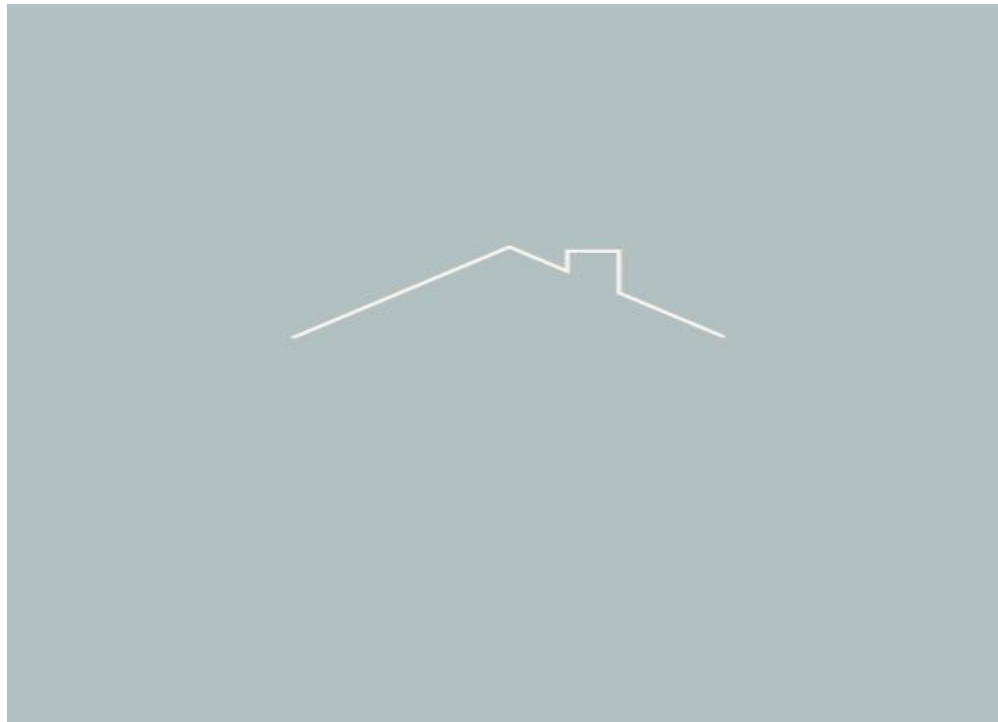
Average Total Sale Price (in U.S. dollars) of Houses in Center vs Suburbs



More houses were sold in the suburbs than in the centre. This can be explained by the lower price per square foot in the suburbs.



## Second Phase



Houses in the suburbs have a square foot price of \$55.86.

Average Price (in U.S. dollars) per Square Foot of Houses in the Suburbs

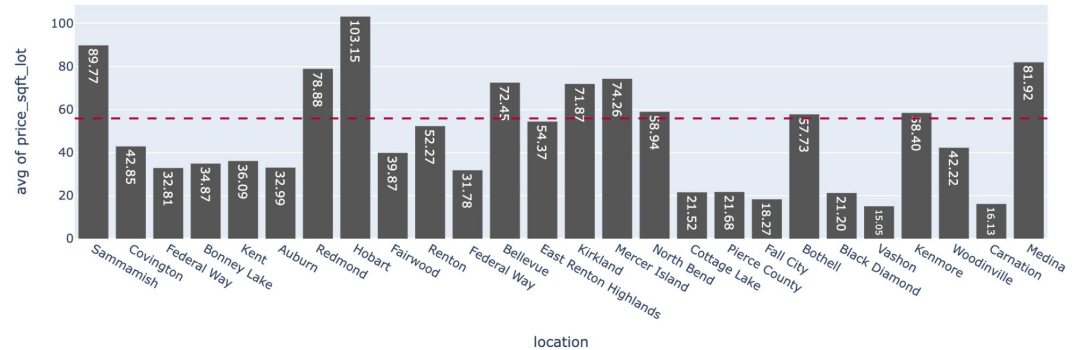


Sammamish, Redmond, Hobart, Bellevue, Kirkland, Mercer Island, North Bend, Bothell, Kenmore and Medina have a mean price per square foot higher than the average (\$55.86).

Hobart has the most expensive price per square foot (\$103.15).

Vashon has the lowest price per square foot.

Average Price (in U.S. dollars) per Square Foot of Houses in the Suburbs by Location



The average price per square foot, considering the 3 conditions taking into account Ms Williams' needs, is \$67.33.

Average Price (in U.S. dollars) per Square Foot of Houses in the Suburbs  
Houses with condition grater than 3, year of construction before 1995 and grade level higher than 7

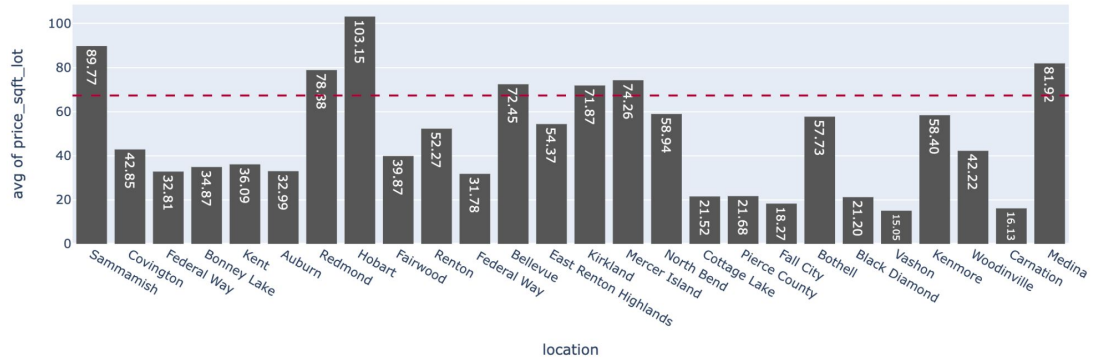




According to the 3 conditions previously identified, these are the locations with a price per square foot is higher than the average (\$67.33):

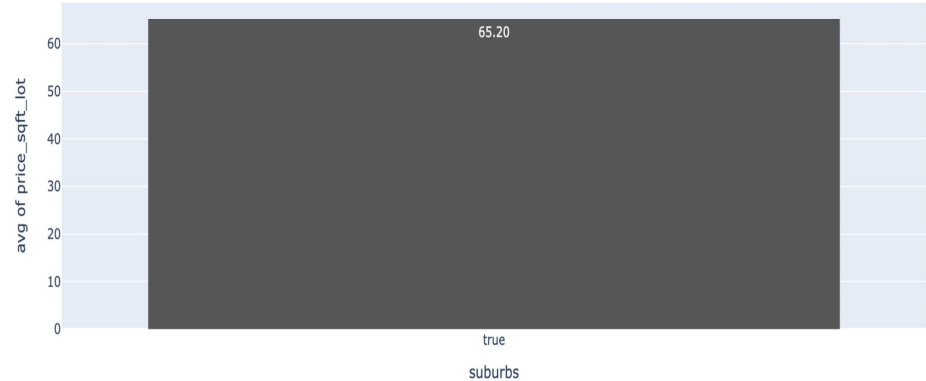
Sammamish, Redmond, Hobart, Bellevue, Kirkland, Mercer Island and Medina

Average Price (in U.S. dollars) per Square Foot of Houses by Location  
Houses with condition greater than 3, year of construction before 1995 and grade level higher than 7

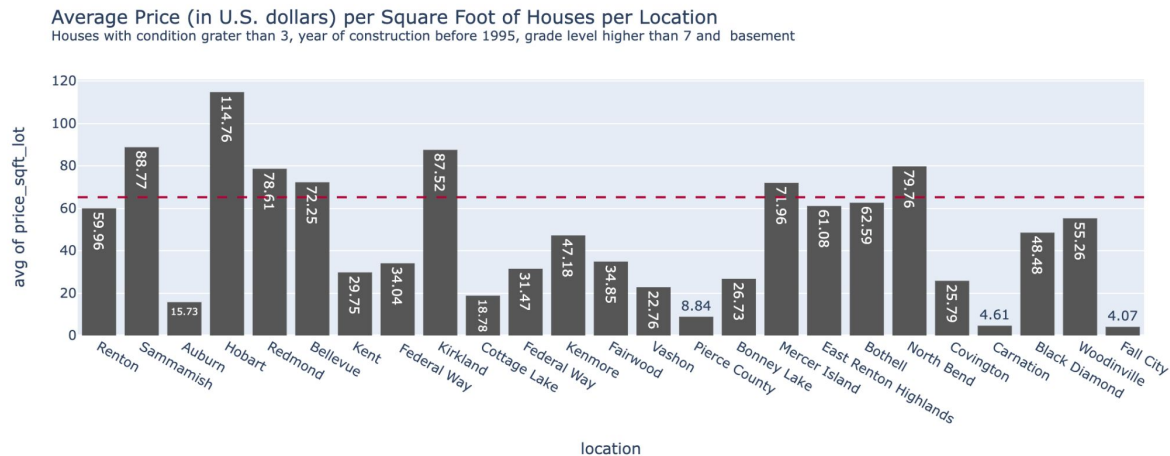


A fourth condition has been added, which is "basement". And the price per square feet is \$65.20.

Average Price (in U.S. dollars) per Square Foot of Houses in Suburbs  
Houses with condition greater than 3, year of construction before 1995, grade level higher than 7 and basement



Houses with the 4 conditions have a higher price per square foot in: Sammamish, Hobart, Redmond, Bellevue, Kirkland, Mercer Island and North Bend.



Houses with the 4 conditions had a total sale price of \$582.481k.

#### Total Price (in U.S. dollars) of Houses in Suburbs

Houses with condition greater than 3, year of construction before 1995, grade level higher than 7 and basement



# Act Phase

Considering the limitations that have already been mentioned at the beginning, I would recommend:

- Up-to-date market price research.
- For an accurate analysis, detailed data is needed on the houses that Amy owns in the city centre. Such as size, number of bedrooms, bathrooms and amenities.
- Research data provided by the FBI, such as crime-based rankings. I would avoid places with high crime rates, which must have a regular police presence.
- In order not to attract the attention of the FBI and considering that Amy is a woman used to a high standard of living, I would recommend only houses with condition 3 or higher (ranking from 1 to 5, where 1 is the lowest and 5 is the highest) and grade between 6 and 10 (ranking from 1 until 13, where 1 is the lowest and 13 is the highest.), with year of construction prior to 1995. An older house draws less attention and although it is not a recent construction, since it has medium/high quality finishes, it will be in better condition. If the house is in poor condition, Amy will probably need to do a renovation, and that means all the apparatus that a construction requires. It would draw not only the attention of the neighbors, but of the police as well.
- I would recommend a research of properties on the market in those locations that have a lower price than average. At a lower price, Amy might even consider buying a larger number of properties.

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### Testimonial

Ana is super professional! And she also speaks Spanish! Highly recommended!



Pablo Escobar

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### Testimonial

Ana was a tireless professional from the beginning. 100% recommended!!!



Toni Soprano

“

### Testimonial

Ana is great! She is my trustworthy analyst.



Michael Corleone