KING COUNTY HOUSE PRICE PREDICTIONS

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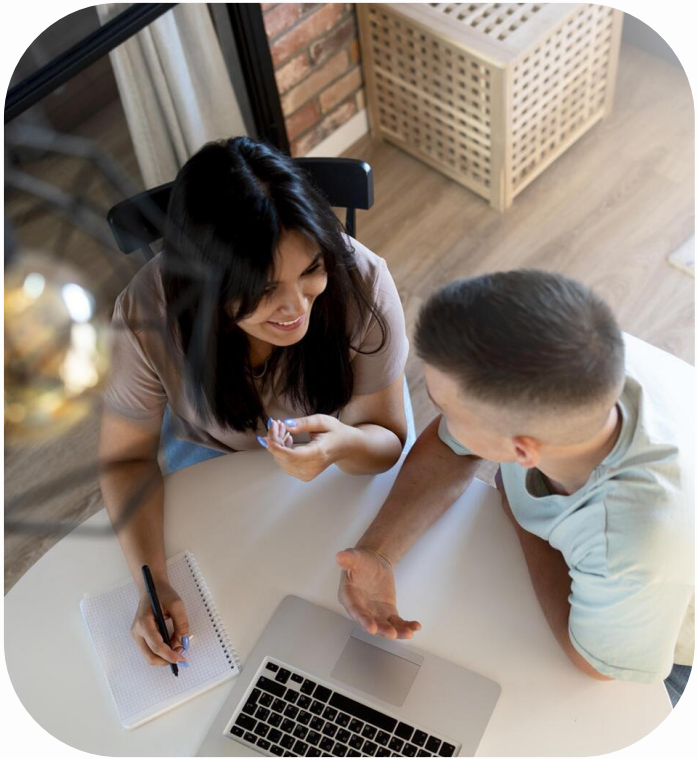
Business Problem

BUSINESS PROBLEM

The real estate agency wants to provide homeowners with advice on how home renovations can potentially increase the estimated value of their homes and by what amount. The agency aims to offer valuable insights to homeowners, helping them make informed decisions about renovation projects that can maximize their return on investment when selling their properties.

Introduction



As an employee for a real estate agency, I am analyzing information from the Kings County House Sales dataset. Given several factors from the dataset, I aim to provide advice to my agency on how home features will increase the values of homes in Kings County; more specifically, I aim to determine which home factors are the most lucrative. By understanding which factors increase a home's value, my agency will be able to successfully help homeowners sell their homes for a maximized profit.

03

OBJECTIVES

OBJECTIVES

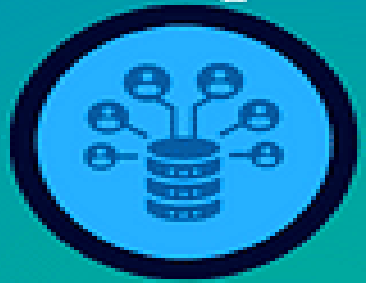
1. To determine how much would adding an extension to the lot area of the home likely increase sale price?
2. To examine how much would adding an additional bathroom likely increase sale price?
3. To determine how much would adding an extension to the living area of the home likely increase sale

OBJECTIVES

4. To examine how much would adding an additional bedroom to a house likely increase sale price?
5. To determine how much would adding an additional bathroom to a house likely increase sale price?

Data Analysis Process

Business Problem Definition



Inventory and Data Collection

Data Clea

Data Analysis

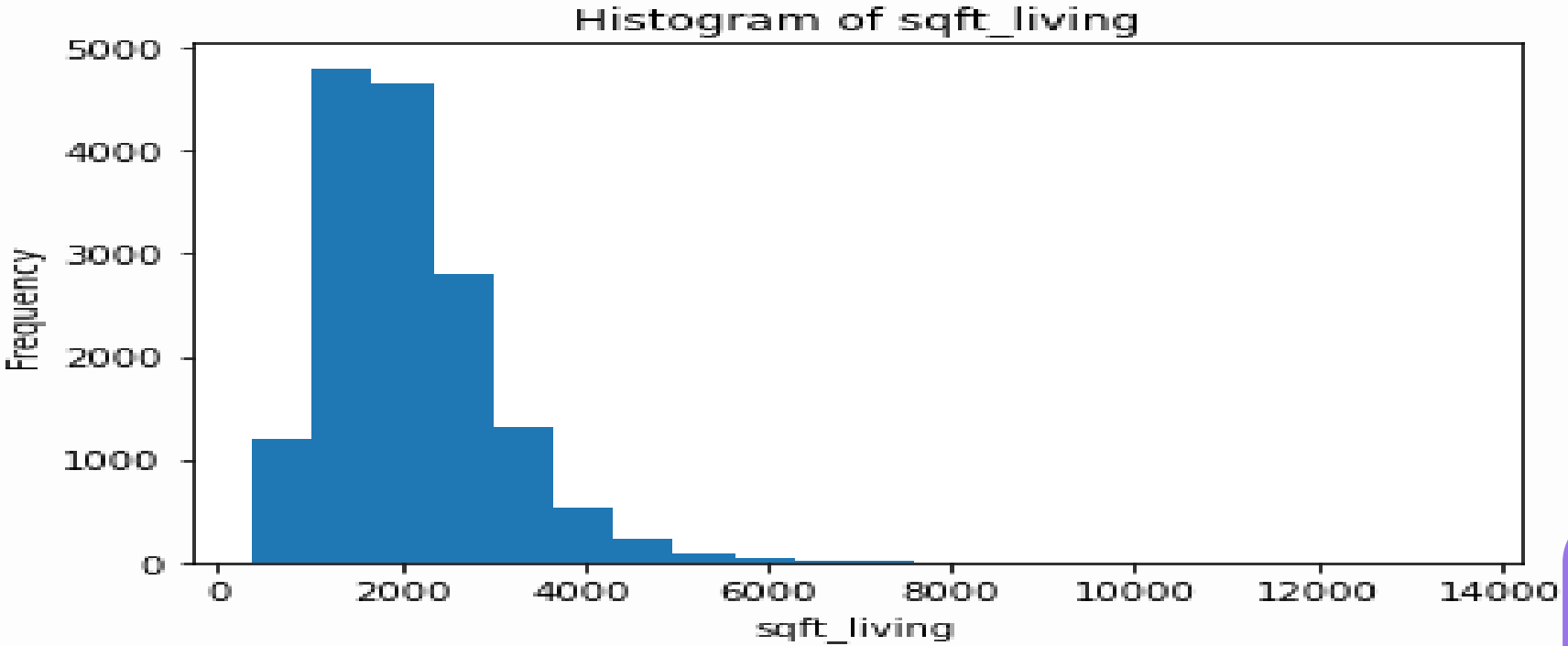
Result Communication & Eventual Readjustment

Choose The Rig

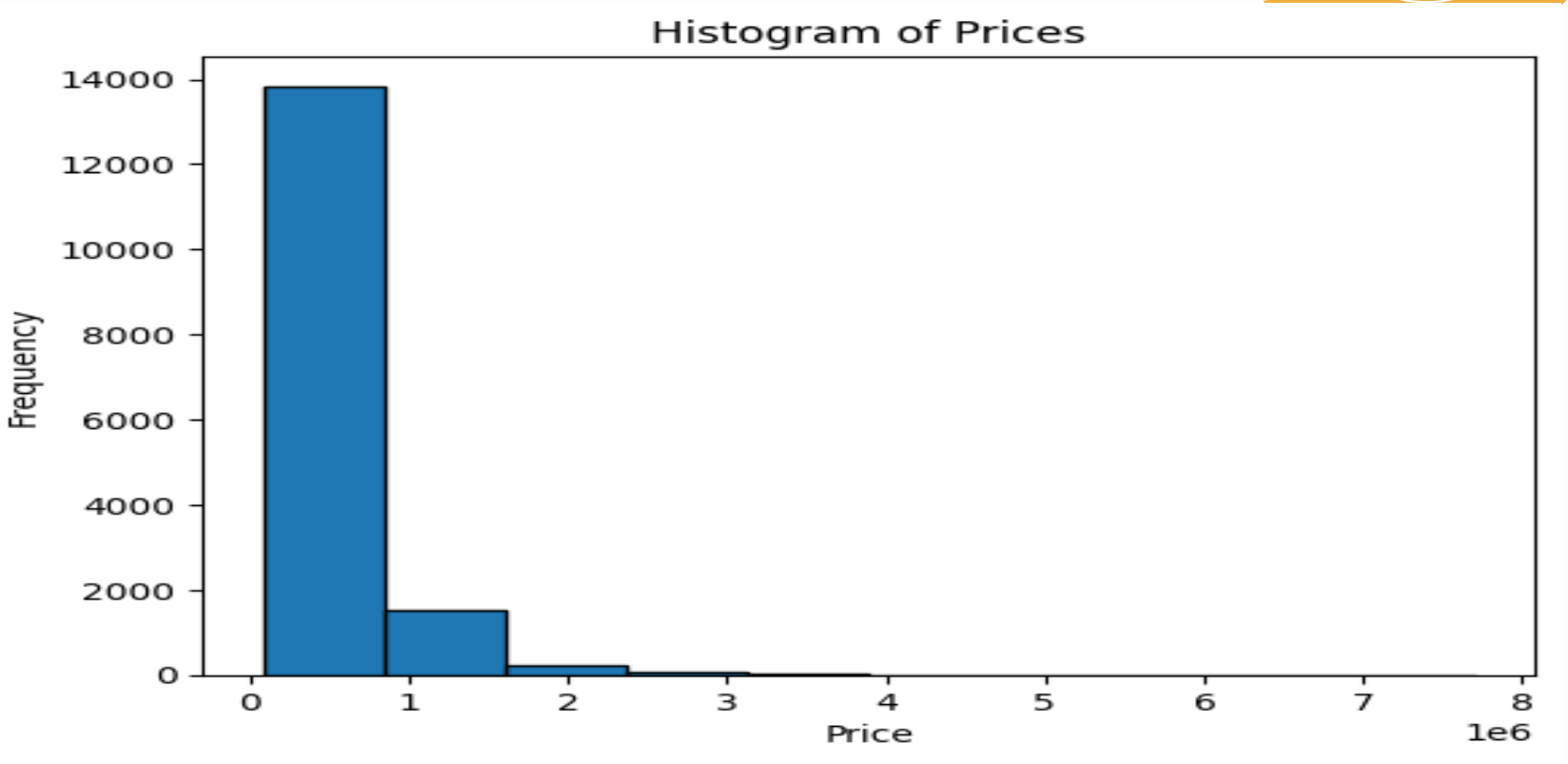
Data Understanding

The data columns used were:

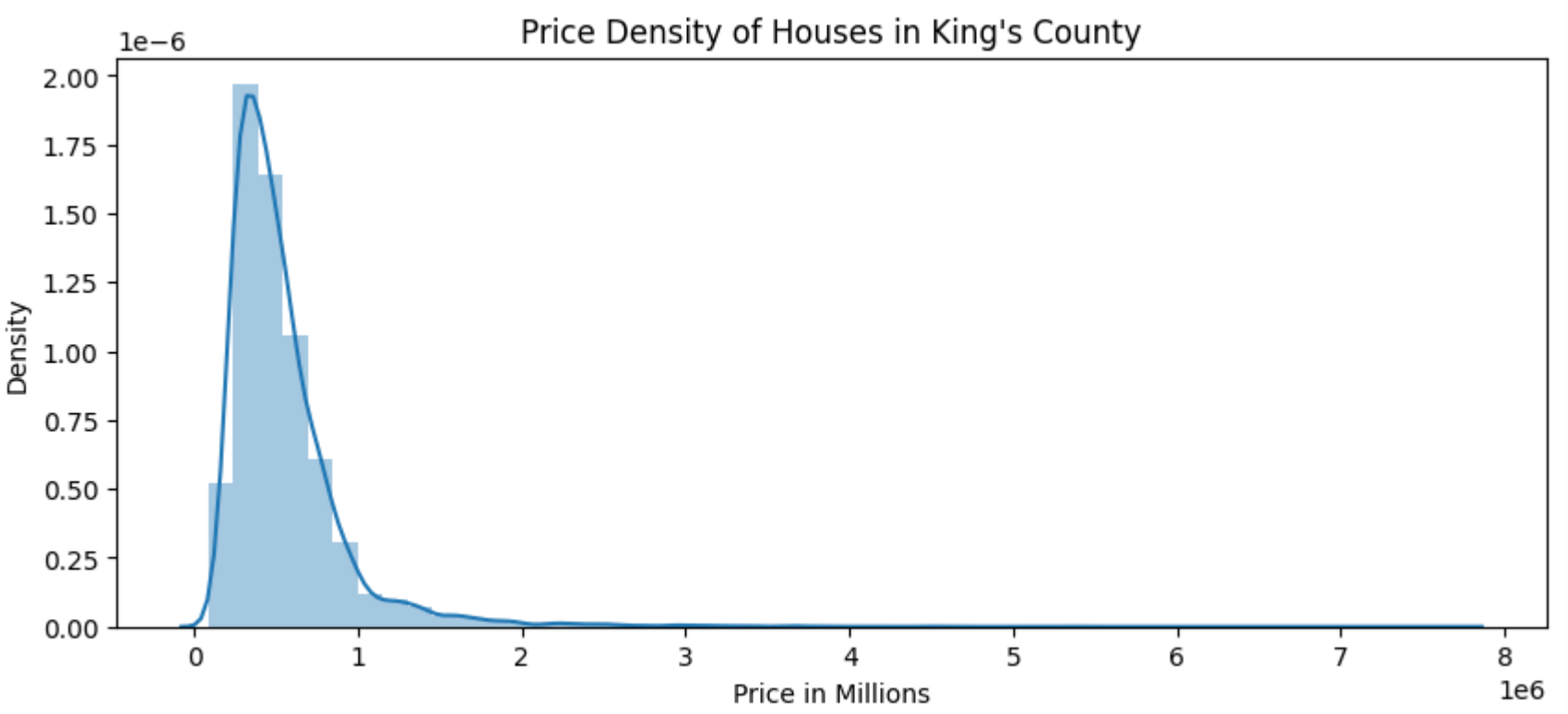
1. Bedrooms Number of bedrooms.
2. Bathrooms Number of bathrooms
3. Condition How good the overall condition of the house is.
4. Grade Overall grade of the house. Related to the construction and design of the house.
5. Price This is the selling price of a house.
6. Sqft_lot This is the square footage of the lot where a house is built on.
7. Sqft_living Square footage of living space in the home
8. Sqft_above Square footage of house apart from basement

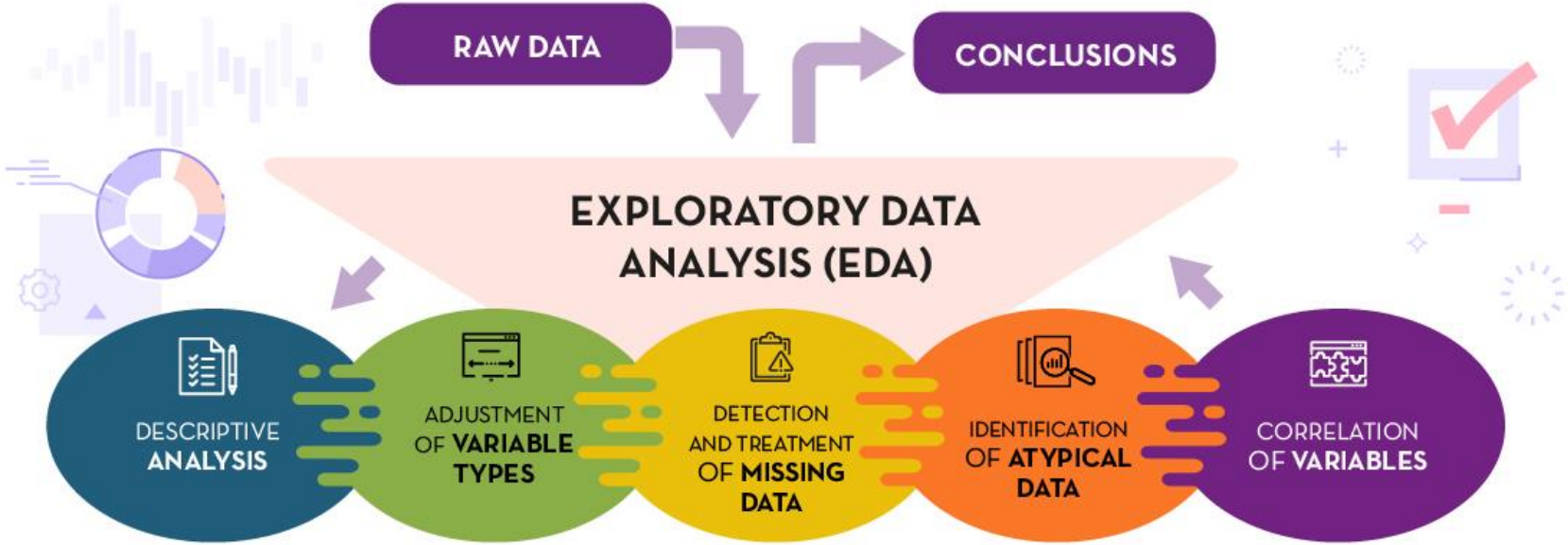


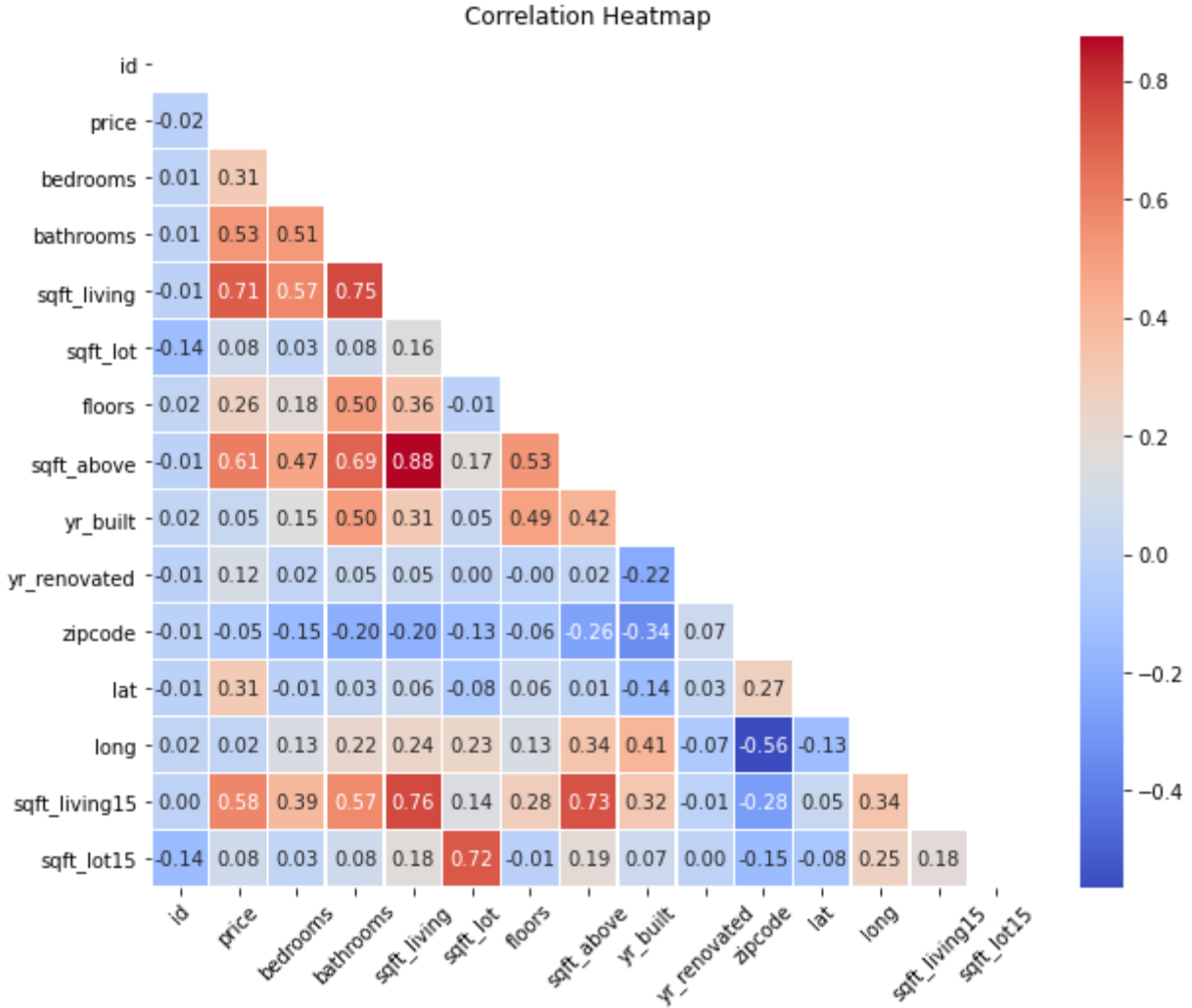
Most of the houses Square footage of living space lies between 2000 to 4000 square feet’s


Histogram of Prices
Frequency
14000
12000
10000
8000
6000
4000
2000
0
0
1
2
3
4
5
6
7
8
Price
1e6

The Distribution Of House Is Right Skewed



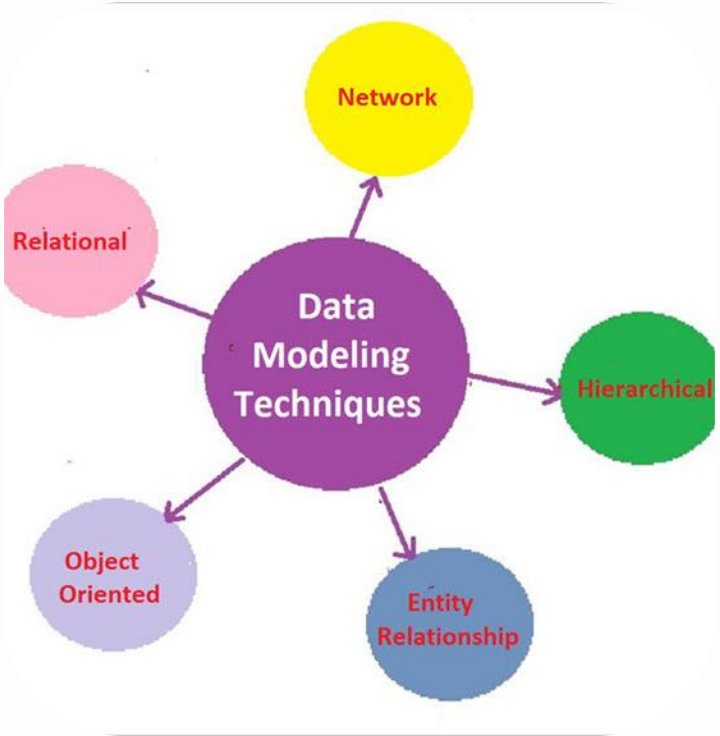

RAW DATA
CONCLUSIONS
EXPLORATORY DATA ANALYSIS (EDA)
DESCRIPTIVE ANALYSIS
ADJUSTMENT OF VARIABLE TYPES
DETECTION AND TREATMENT OF MISSING DATA
IDENTIFICATION OF ATYPICAL DATA
CORRELATION OF VARIABLES

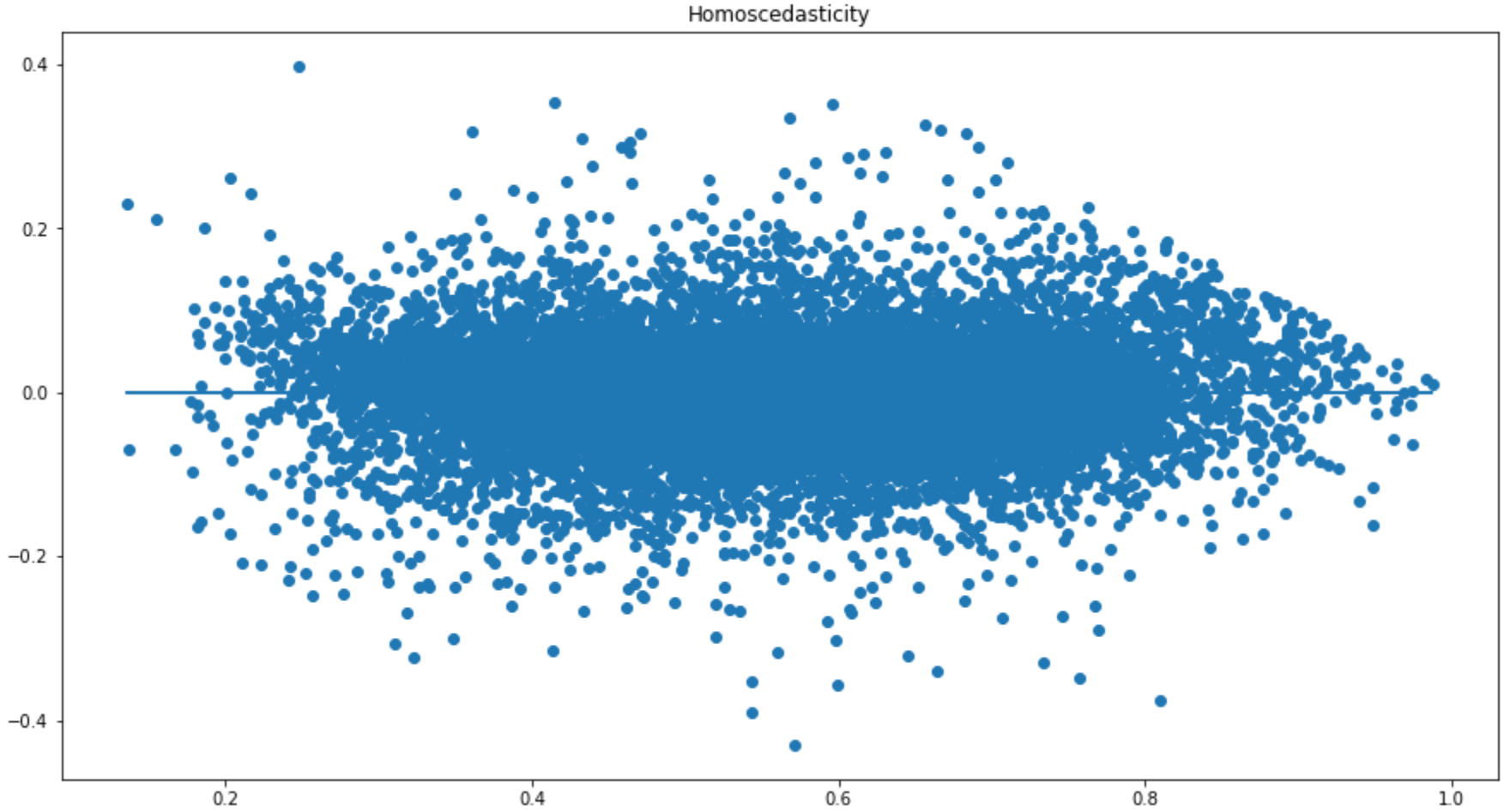

Correlation Heatmap
id
price
bedrooms
bathrooms
sqft_living
sqft_lot
floors
sqft_above
yr_built
yr_renovated
zipcode
lat
long
sqft_living15
sqft_lot15
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4

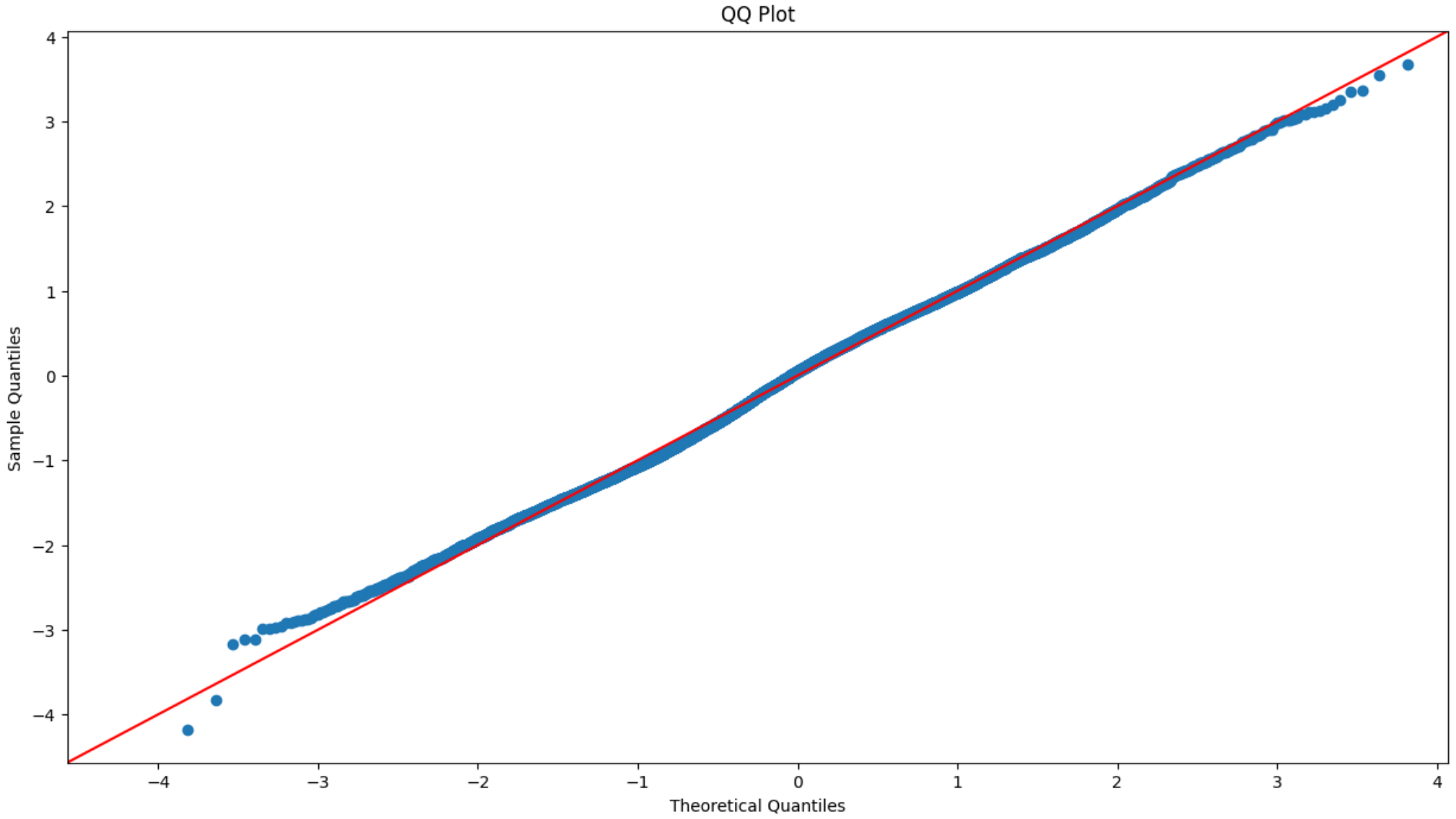
DATA

MODELING

1. Simple Linear Regression We created a model to predict price using Sqft ft living.
2. Multiple Linear Regression We created another model to predict price using Sqft_living 15,bedrooms,bathrooms,sq ft lot15,floors,sq_ft above, grade number and basement.
3. Model created with outliers removed from features
4. Model created with features log transformed
5. Model created with onehotencode of zipcodes




Homoscedasticity
0.4
0.2
0.0
−0.2
−0.4
0.2
0.4
0.6
0.8
1.0


QQ Plot
Sample Quantiles
Theoretical Quantiles
4
3
2
1
0
−1
−2
−3
−4
−4
−3
−2
−1
0
1
2
3
4

CONCLUSIONS

1. The model is generally statistically significant with an F-statistic p_value of 0.0 at a significance level of 0.05.

2. The R-squared value is 0.833, indicating that approximately 83.3% of the variation in the price can be explained by the model. This value indicates a great improvement from the previous model.

3. Also, of great importance to note is that the mean RMSE is approximately 0.06465. Then the RMSE in original scale is 0.1135. This means that our model is off by about 0.1135 when making an average prediction, indicating that it is a good model.

CONCLUSIONS

4. The coefficients represent the expected change in the price for a one-unit change in the corresponding predictor variable, assuming other variables are held constant.
•ZIPCODE--is a strong predictor of a homes value, the saying "Location, Location, Location" holds true, as even in a similar area the location plays a huge factor in the value of a home.

5. The plot to test for homoscedasticity reveals that the residuals are now homoscedastic because they are converging and appear to be having an equal variance. So this assumption remains satisfied.

6. The QQ-plot is used to test for normality of residuals. In this case, the residuals appear to be almost normal as they are following along the line almost neatly, except for the ends where it indicates there could be some skewness in the data.

RECOMENDITIONS

1. The real estate agency should explore properties that occupy a large square foot of the lot since most people would rather source a relatively large proportion of land .

2. As per our EDA we see that houses with more bathrooms and floors are likely to be more in demand which in turn generates more revenue from purchasing and renting, therefore the agency should check on property managers who are investing on the property architectural design.

3. The real estate agency should look into properties with more square foot of living since more people are likely to occupy them.

KINGS COUNTY HOUSES

Thanks!

Github: https://github.com/JaelAkech

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