ANALYZING HOUSE SALES IN KING COUNTY

A MULTIPLE LINEAR REGRESSION APPROACH

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INTRODUCING

- Nyika Developers aims to provide accurate and data-driven insights on property values to empower homeowners.
- They have commissioned a project to analyze house sales in King County using multiple linear regression modeling, an approach allows for a thorough examination of factors influencing sale prices.
- By identifying the relationships between these factors and sale prices, Nyika Developers can offer informed guidance to homeowners.
- Homeowners can make informed decisions to maximize their homes' value and explore long-term investment opportunities.

CONTENT

STATEMENT OF THE PROBLEM

Nyika Developers aims to:

- Provide accurate and data-driven advice on renovations and property value.

- Provide comprehensive analysis of house sales data using multiple linear regression modeling.

- Identify key features influencing sale prices.

- Assess the impact of location on property value.

- Guide construction plans, pricing strategies, and investments for maximizing profitability.

DATA UNDERSTANDING

DATE

Date the house was sold.

BEDROOMS

Number of bedrooms.

BATHROOMS

Number of bathrooms.

LAT & LONG

Coordinates of the region the house is located

CONDITION

Well-being of the house.

SQFT_LIVING

Square footage of living room

VIEW

Indicator of view from the house.

Price

Price house was sold.

DATA ANALYSIS

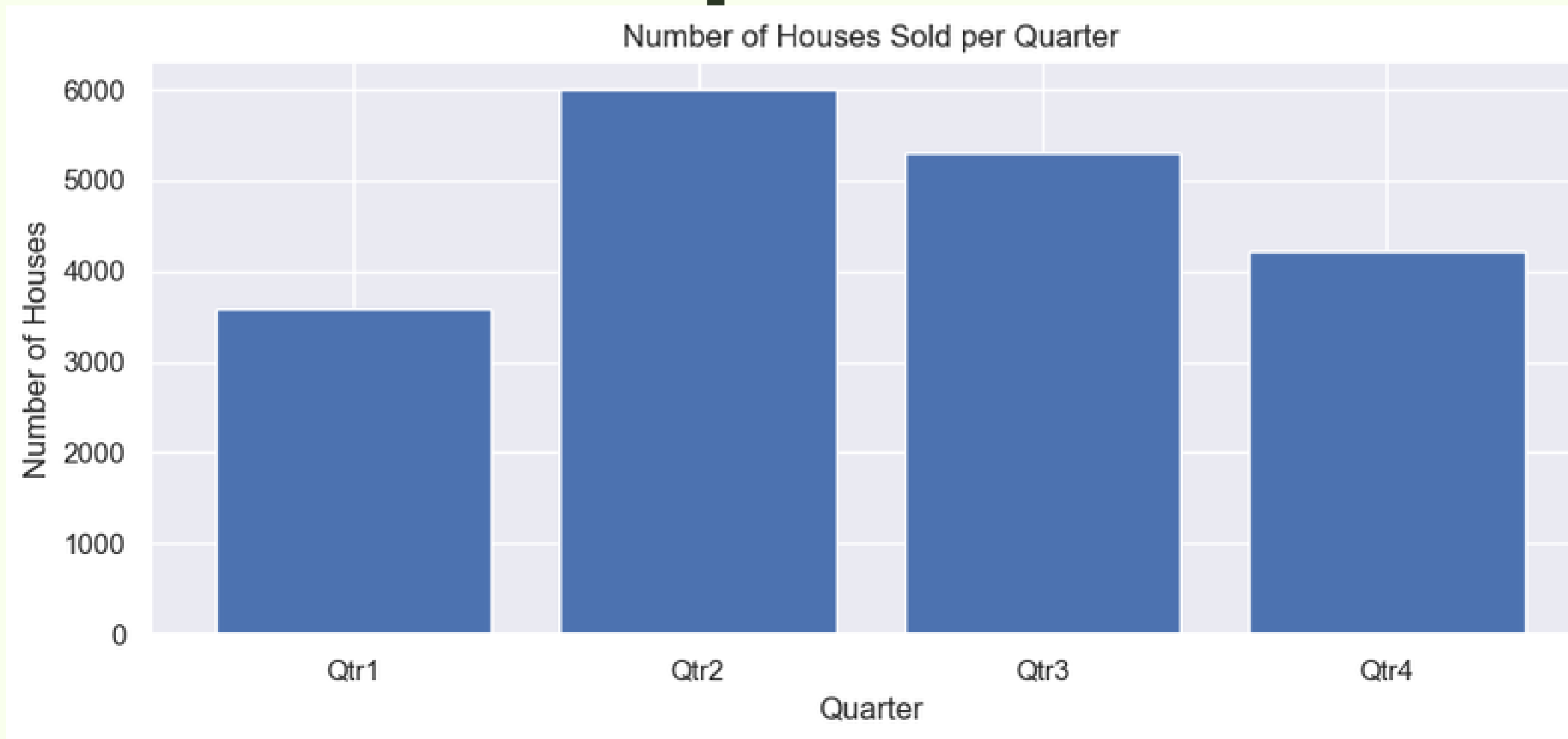## 80%

of the collected data was used.

House Sales per Quarter

Number of Houses Sold per Quarter

Houses sold in the 2nd quarter (April, May and June) have the highest price and the trend shows seasonality of house sales.

Mapping

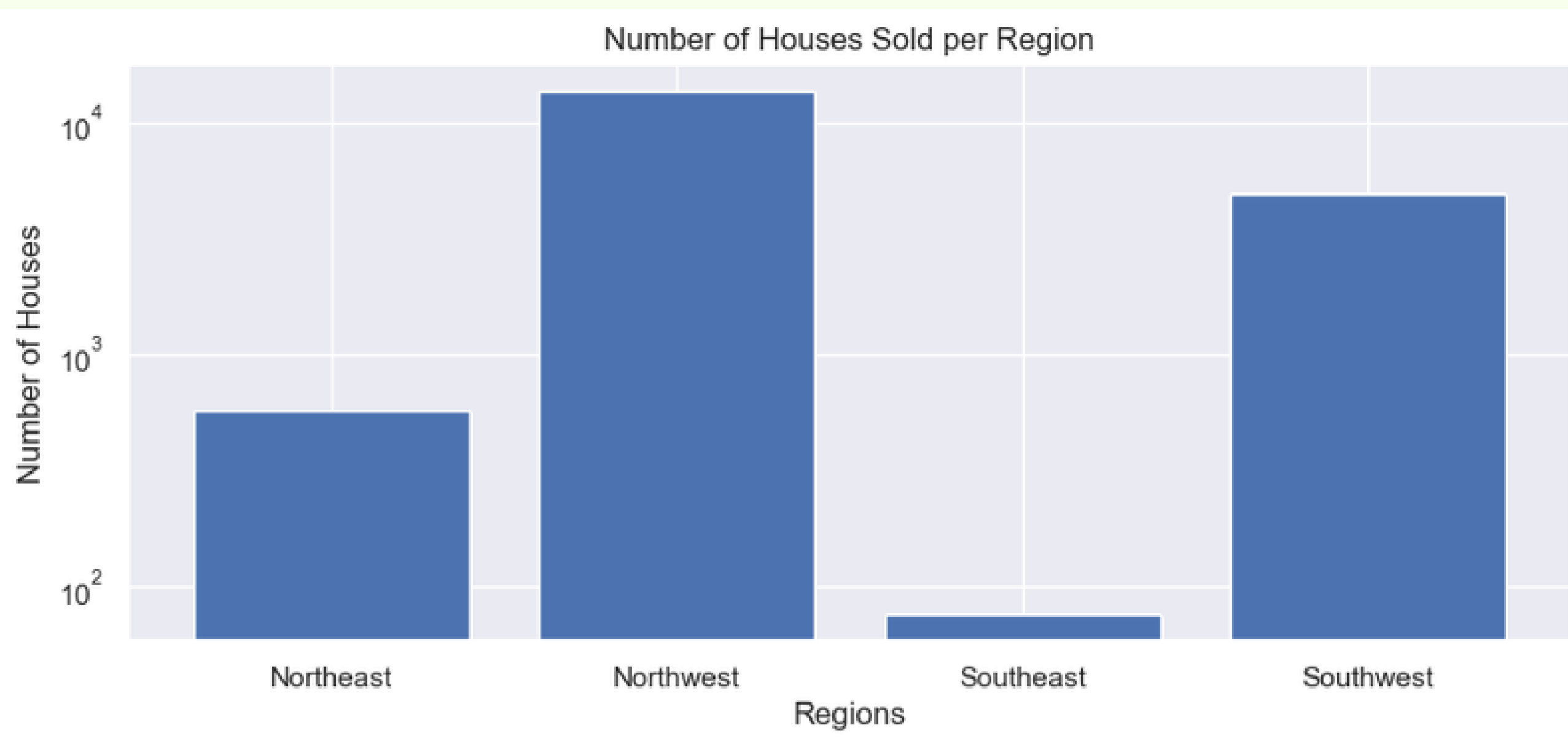The King County data is divided into four regions:
- Northwest
- Northeast
- Southwest
- Southeast

House Sales per Region

Number of Houses Sold per Region

Northwest and Southwest region which is the region surrounding Seattle has the highest number of houses on sale.

Distribution of Prices

Price Distribution

- The prices were normally distributed.
- There are more low priced houses than highly priced ones.

Condition vs. Price

Average Price of Property Based on the Condition of the Property

Houses with a very good condition have higher prices. Thus, keeping property in a good condition will result to a higher valuation.
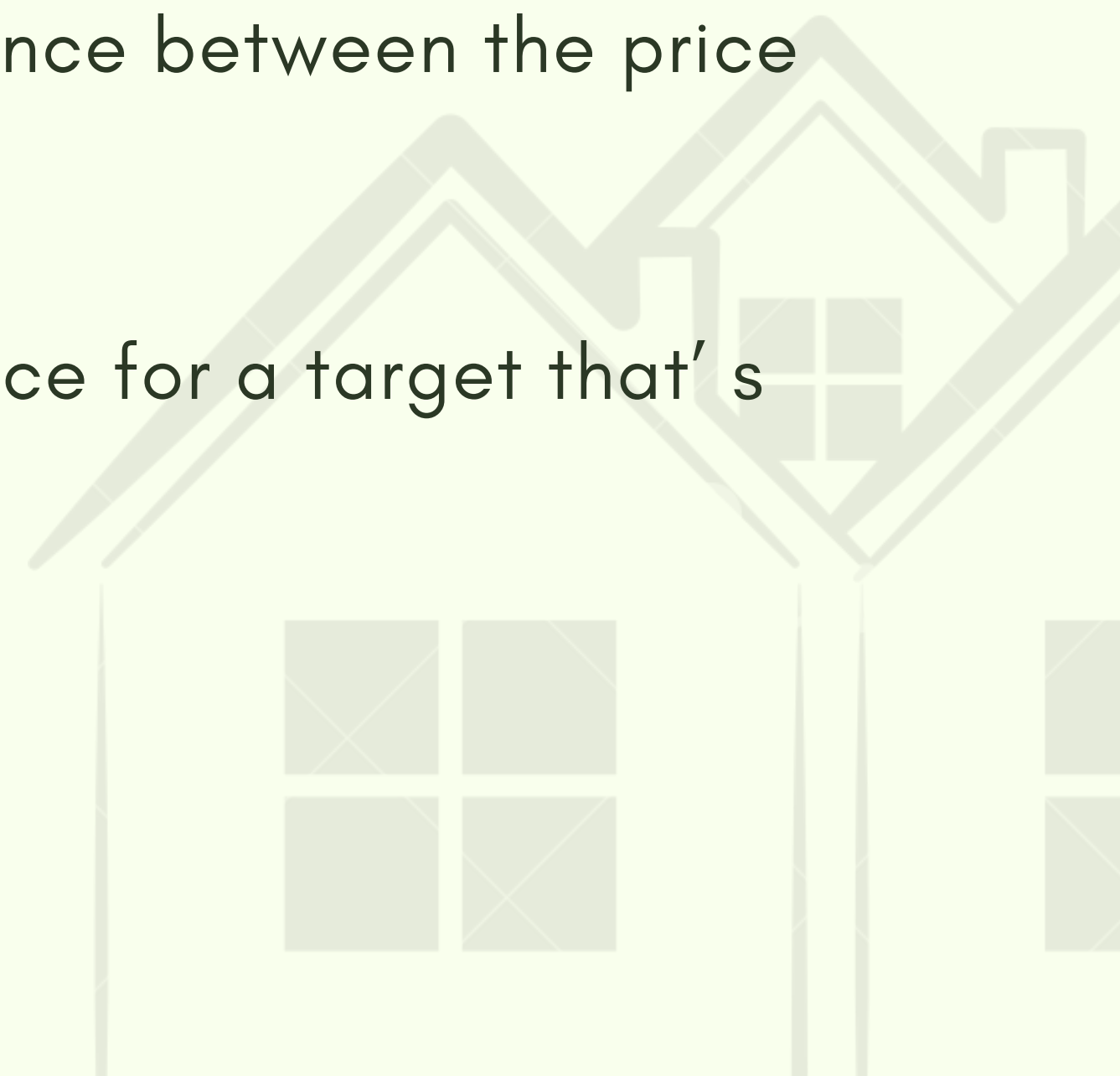
MODELLING

- **The Mean Absolute Error (MAE)** gives the difference between the price and the mean price.

The lower the MAE the better the model.

- **R-squared** represents the proportion of the variance for a target that's explained by a predictor in a regression model.

The higher the R-squared the better.

Baseline Model

- **R-squared**

The square footage of the living room only explained 36.3% of variation in price.

- **Mean Absolute Error (MAE)**

Our final model was off in predicting price by USD 130,224.

An increase of 1 square foot of living space will result in an increase in house price by $171.29.
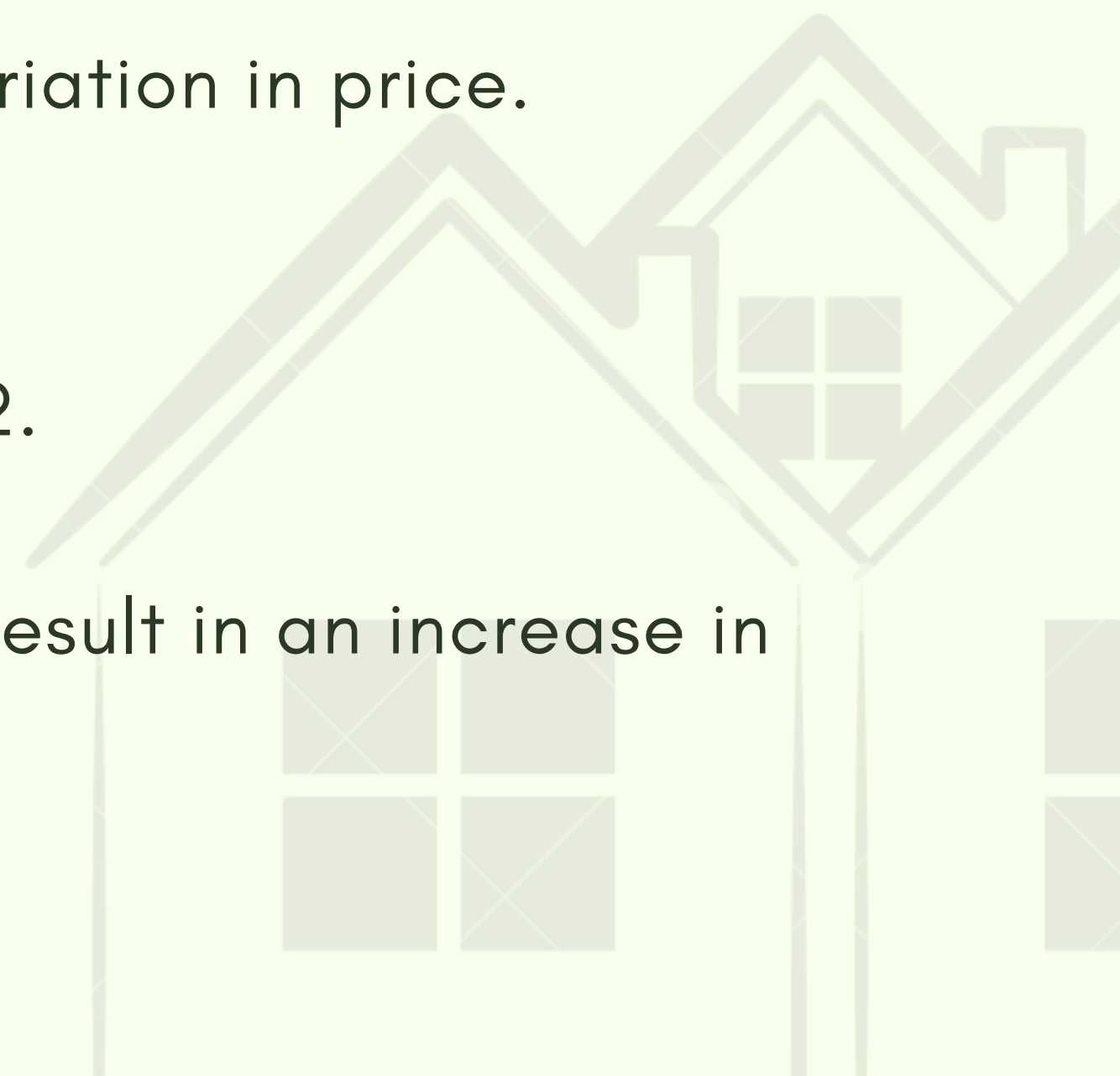
Iterated Model

- **R-squared**

The final of the living room only explained 60.8% of variation in price.

- **Mean Absolute Error (MAE)**

Our final model was off in predicting price by $95,232.

An increase of 1 square foot of living room space will result in an increase in house price by $176.

CONCLUSION

- **Feature**

The number of bedrooms, number of bathrooms, and square footage of the living area are all important features that significantly affect the price of the house.

- **Location**

Location of the house is important, with different regions having different associated increases or decreases in price especially the north-west region

- **Condition and View**

Better house conditions and those with a scenic view generally fetch higher prices.

RECOMMENDATIONS

- **Focus on important features**

Nyika Developers should keep in mind the importance of the number of bedrooms and bathrooms, and square footage of the living area when determining a property's value.

- **Highlight desirable locations**

Nyika Developers should pay attention to the regional location of a property. They need to inform clients that different regions have different associated increases or decreases in price.

- **Emphasize on condition and view**

Nyika Developers need to emphasize the importance of the condition of the property and the view from the property as they affect the prices.

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