REAL ESTATE PRICE

ANALYSIS

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BUSINESS UNDERSTANDING

Understanding the variables that affect home prices is one way that real estate agents can profit from regression analysis. They can find important aspects to emphasize in real estate listings, give their clients more precise price estimates, and advise sellers and buyers based on well-informed information by using the regression model. We might also take into account sellers and homeowners who can assess the prospective value of their homes using the regression model. By taking into account the influencing elements They can determine the effect of certain upgrades or renovations on the property's price and make well-informed decisions about pricing and marketing tactics by taking into account the significant characteristics found in the regression study.

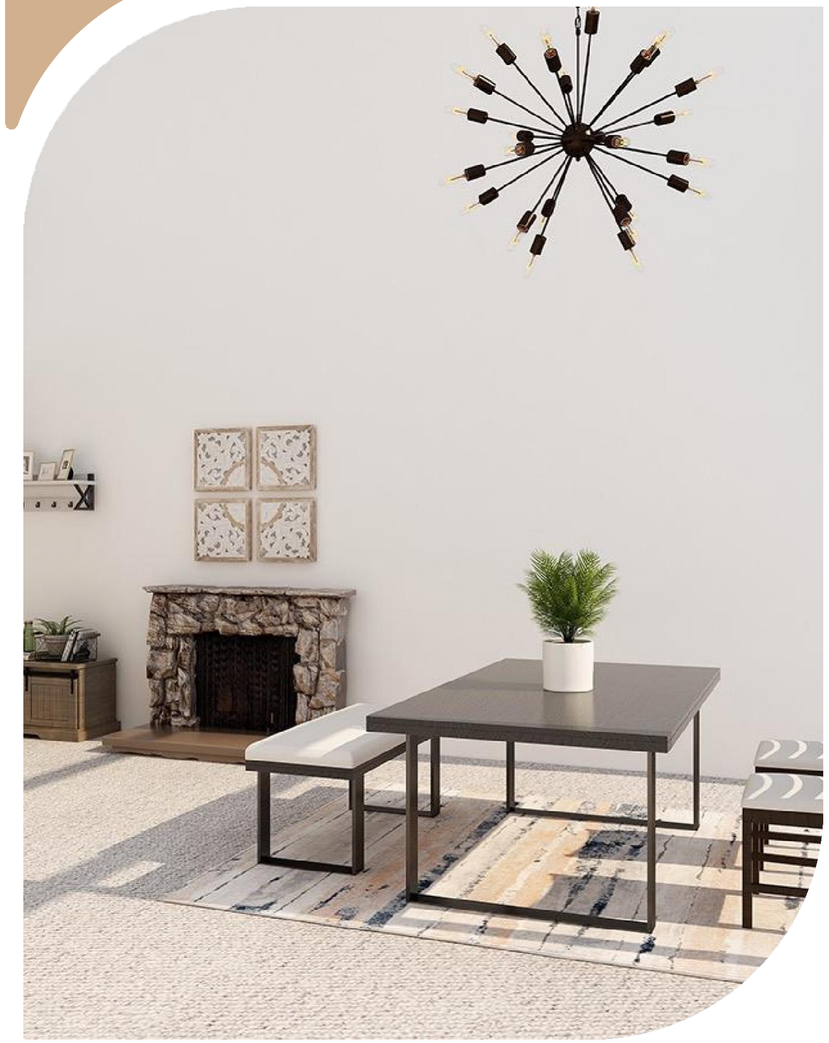
DATA UNDERSTANDING

The dataset in this project has info on factors affecting housing prices such as;

- **sqft_above - Square footage of house apart from basement**
- **View - Quality of view from house.**
- **sqft_basement - Square footage of the basement.**
- **bedrooms - Number of bedrooms.**
- **bathrooms - Number of bathrooms.**

TARGET AUDIENCE

- ❑ Real Estate Agencies
- ❑ Property Investors
- ❑ Homeowners
- ❑ Anyone keen on gaining insights into the housing market of King County.



OBJECTIVES

- To choose relevant data variables for the data regression model by exploring the dataset.
- To create a multiple regression model to predict house prices and check model assumptions to ensure a good fit.
- To analyze the coefficient of independent variables to find the most influential factors affecting house prices and describe their effects.
- To check the model's performance to ensure accuracy and reliability.
- To offer practical insights and recommendations for real estate investors and policymakers to make informed decisions and understand market trends.

PROBLEM STATEMENT

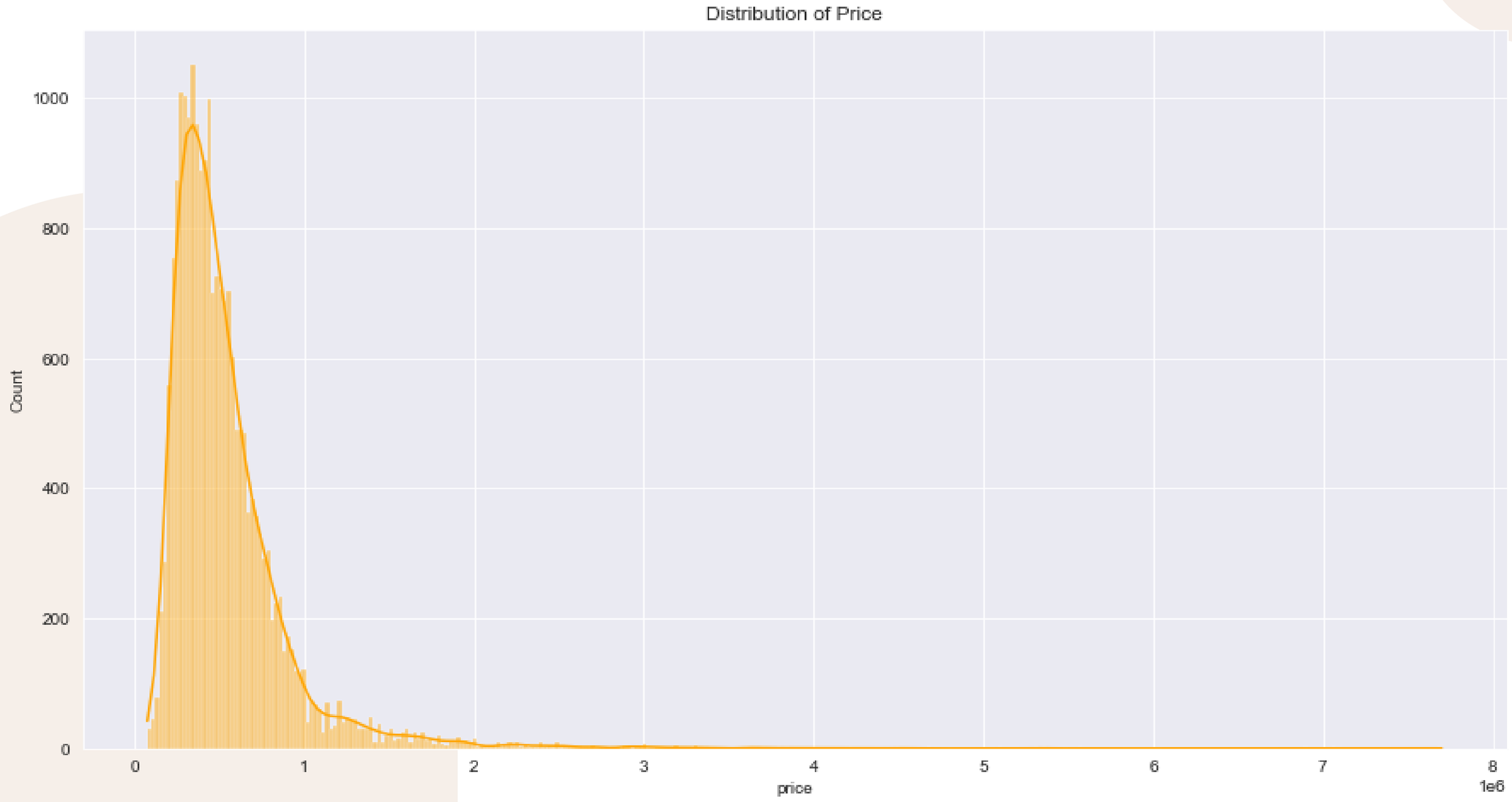
Understanding house price determinants is vital. Conventional methods lack reliability in predicting price changes. Our approach advocates utilizing multiple regression models on housing sales data, revealing the interplay between various factors, enabling a comprehensive understanding of house price dynamics.

DATA ANALYSIS

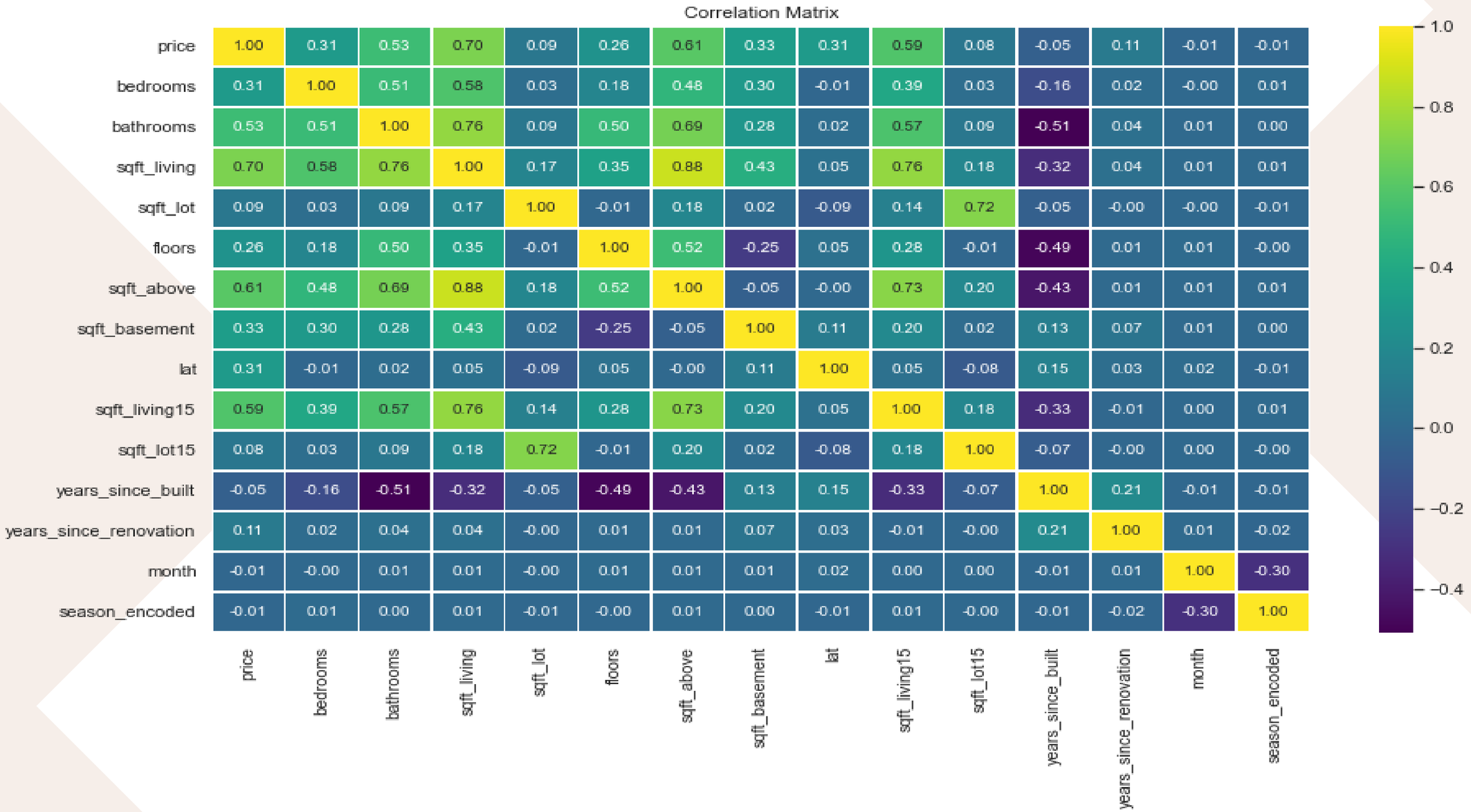
Exploratory Data Analysis

The EDA in this project involved checking dataset shape and info, exploring descriptive stats, visualizing price distribution, and examining correlations. Categorical data was encoded, and relevant columns were added for years since construction and renovation.

The Price Distribution of Houses



Correlation Matrix between Price and Other Variables



MODELING

REGRESSION RESULTS

MODEL	MSE	RMSE	R-SQUARED
BASELINE MODEL	52663832111.65159	-	0.600602336481185 7
MULTI-LINEAR	0.016873337173246593	-	0.665847641505516 1
RANDOM FOREST	0.010078859753977676	0.10039352446237594	0.820040569418264 1

CONCLUSION

The Random Forest model excels with a notably low Mean Squared Error (MSE) of 0.010 and Root Mean Squared Error (RMSE) of 0.100, outperforming the baseline and multilinear models. Its higher R-squared score of 0.82 indicates superior predictive accuracy, capturing around 82% of the data variability. These results collectively demonstrate the Random Forest model's stronger performance in predicting the price compared to the other models used.

RECOMMENDATIONS

- Consider enhancing or upgrading the features that positively affect house prices. For example, increasing the square footage of the living area, improving the overall grade of the property, or adding more bathrooms can potentially increase the value of the house.
- Analyze the relationship between the independent variables and house prices to identify market segments or specific buyer preferences. For instance, if higher-grade houses tend to have higher prices, it may indicate a market segment of luxury or high-end properties.
- Enhancing a property's exterior with landscaping, a well-kept garden, or better outdoor living areas (like decks, patios, or swimming pools) can raise the value of a home.
- Preserve and highlight the historical or unique features of the property. Promote these aspects in your marketing to appeal to buyers who value distinctive and culturally significant homes. This can lead to higher property values and may cater to a niche market segment.

NEXT STEPS

- ❑ Perform additional exploratory data analysis and feature engineering to uncover additional patterns and insights.
- ❑ Consider examining correlations, visualizing distributions, or conducting hypothesis testing to deepen the understanding of the data.
- ❑ Consider about gathering more relevant data that might increase the regression model's accuracy. This could involve elements like neighborhood features, property age, accessibility to facilities, and location-specific aspects.

Thank You !!!