

# Visualizing Housing Market Trends: An Analysis of Sale Prices and Features

## Objective

Develop an interactive data visualization dashboard to analyze housing market trends, identify key factors influencing sale prices, and provide actionable insights for buyers, sellers, and real estate analysts.

---

## Data Collection

Data Sources include real estate transaction datasets, government housing records, and property listing platforms. Key features collected include Sale Price, Location, Property Size, Bedrooms, Bathrooms, Year Built, Lot Size, Property Type, Amenities, and Date of Sale.

---

## Data Preprocessing

Handle missing values, remove outliers, convert categorical variables, perform feature engineering (price per square foot, property age), and normalize numerical features.

---

## Analytical Approach

Perform Exploratory Data Analysis including distribution analysis, correlation studies, trend analysis over time, and location-based comparisons. Apply regression modeling, comparative analysis, and time-series forecasting techniques.

---

## Visualization Strategy

Dashboard visualizations include Histogram (price distribution), Line Chart (price trends), Heatmap (feature correlation), Bar Charts (average price by neighborhood), Scatter Plot (square footage vs price), and Geographic Map visualization.

---

## Dashboard Features

Interactive filters (Location, Price Range, Year, Property Type), drill-down analysis, comparative insights, and KPI indicators such as Average Price, Median Price, Growth Rate, and Most Expensive Neighborhood.

---

## Expected Outcomes

Identify key factors affecting housing prices, detect growth/decline trends, discover high-demand neighborhoods, and provide data-driven investment recommendations.

---

## Tools & Technologies

Data Cleaning: Python (Pandas, NumPy) Visualization: Tableau / Power BI / Matplotlib Statistical Analysis: Scikit-learn Database: SQL

---

## Conclusion

This solution leverages visualization and statistical techniques to uncover meaningful housing market patterns and support informed real estate decisions.

---