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Visualizing Housing Market Trends: An Analysis of Sales Prices and Features using Tableau

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ABSTRACT: Housing price analysis plays a significant role in the real estate sector. This paper presents a data visualization-based approach using Tableau to analyze housing datasets and identify key factors affecting property prices. The dataset includes attributes such as area, location, number of bedrooms, and price. Various visualizations such as bar charts, line graphs, and dashboards are created to understand patterns and trends. The results indicate that location and area have a strong impact on housing prices. The proposed system helps users make data-driven decisions in real estate.

KEYWORDS: Housing Price Analysis, Tableau, Data Visualization, Real Estate, Dashboard

I. INTRODUCTION

The real estate sector is an important part of the economy, where housing prices vary based on factors such as location, area, and number of bedrooms. Analyzing these price variations is essential for buyers, sellers, and investors to make informed decisions.

Traditional methods of analysis are often time-consuming and not suitable for handling large datasets. With the advancement of data visualization tools like Tableau, it has become easier to analyze and understand complex housing data through interactive charts and dashboards.

This study focuses on analyzing housing price data using Tableau to identify key patterns and trends. The objective is to understand how different factors influence housing prices and to present the insights in a clear and visual manner.

II. LITERATURE SURVEY

Several studies have been conducted on housing price analysis using data analytics and machine learning techniques. Many researchers have used algorithms such as Linear Regression and Decision Trees to predict housing prices based on features like area, location, and number of bedrooms.

Research published in journals such as IJRSET and IEEE highlights that data-driven approaches improve accuracy in real estate analysis. These studies show that location and area are the most significant factors influencing housing prices.

In addition to machine learning, data visualization tools like Tableau have been widely used to analyze housing data. Visualization helps in identifying trends, patterns, and relationships in an easy and interactive manner.

III. METHODOLOGY

However, many existing studies focus more on prediction models and less on visual analysis. Therefore, this work focuses on using Tableau dashboards to provide clear and interactive insights into housing price trends.

The proposed methodology focuses on analyzing housing price data using Tableau. The process begins with data collection from a housing dataset containing attributes such as area, location, number of bedrooms, and price.

In the next step, data preprocessing is performed to handle missing values, remove inconsistencies, and ensure data accuracy. Additional calculated fields such as price per square foot and house age are created to improve the analysis.

After preprocessing, the data is imported into Tableau for visualization. Various charts are created to represent different aspects of the data, including:

- Bar charts for location-wise price comparison
- Line charts for analyzing trends
- Scatter plots for studying the relationship between area and price

These visualizations are combined into interactive dashboards that allow users to explore the data effectively. The methodology provides a simple and efficient way to analyze housing prices and identify key influencing factors.

IV. EXPERIMENTAL RESULTS

The results obtained from the analysis using Tableau provide clear insights into housing price patterns. The visualizations help in identifying relationships between different variables affecting house prices.

From the dashboard analysis, it is observed that:

- Housing prices increase as the area of the property increases
- Properties located in prime or urban areas have higher prices compared to other locations
- Houses with a higher number of bedrooms tend to have higher prices

The bar charts and scatter plots clearly show the variation in prices across different locations and property sizes. The interactive dashboards allow users to filter and compare data easily, making the analysis more effective.

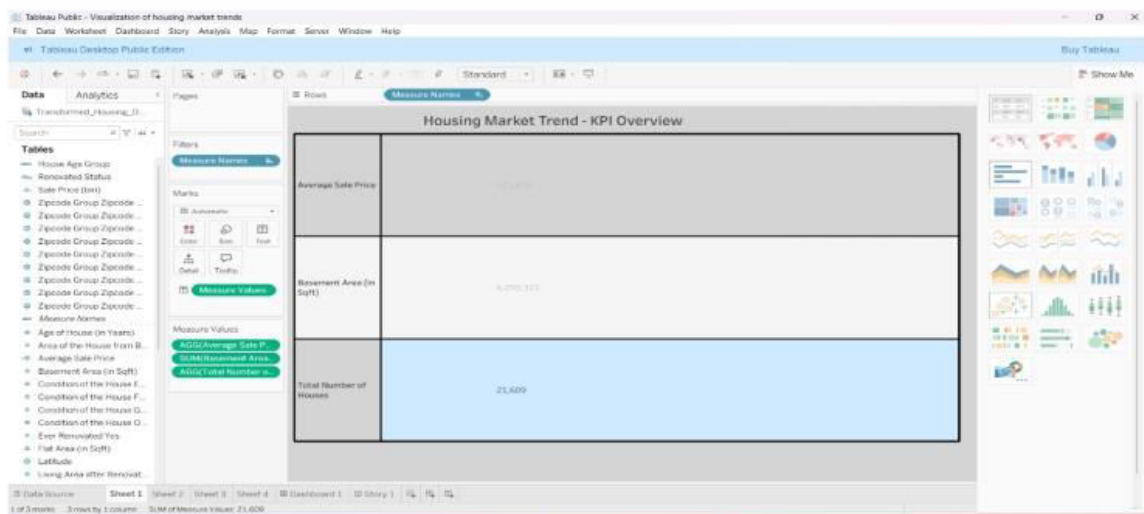


Fig 1: Housing Market Trend – KPI Overview

The above dashboard created using Tableau provides a summary of key performance indicators related to the housing market. It displays important metrics such as average sale price, total basement area, and total number of houses.

From the dashboard, it can be observed that the average sale price is approximately 511,619, indicating the general pricing trend in the dataset. The total number of houses is 21,609, which represents the size of the dataset used for analysis. The visualization helps in quickly understanding the overall housing market trends and key statistics.



Fig 2: Impact of Renovation on Sales Price

The above chart created using Tableau shows the impact of renovation on housing sale prices. The data is grouped into different price ranges, and the count of houses is displayed for both renovated and non-renovated properties.

From the visualization, it can be observed that the majority of houses fall within the mid-price range, and non-renovated houses dominate the dataset. However, renovated houses are more visible in higher price ranges, indicating that renovation positively influences property value.

This analysis clearly shows that renovation plays a significant role in increasing housing prices and can be considered an important factor in real estate decision-making.

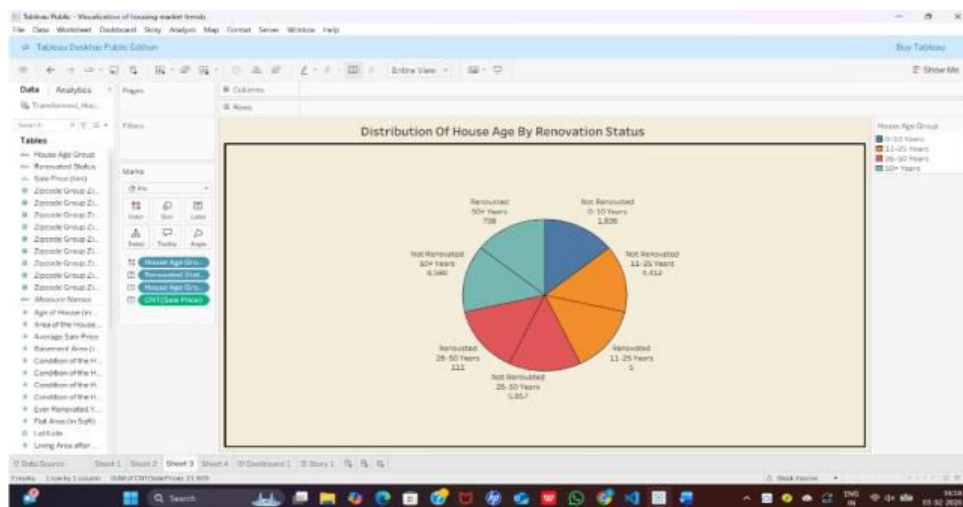


Fig 3: Distribution of House Age by Renovation Status

The above pie chart created using Tableau represents the distribution of houses based on age groups and renovation status. The houses are categorized into different age groups such as 0–10 years, 11–25 years, 26–50 years, and above 50 years.

From the visualization, it is observed that the majority of houses fall under the non-renovated category, especially in the higher age groups such as 26–50 years and above 50 years. Renovated houses are comparatively fewer, indicating that many older properties have not been updated.

This analysis shows that house age and renovation status are closely related, and older houses have a higher need for renovation, which can impact their market value.

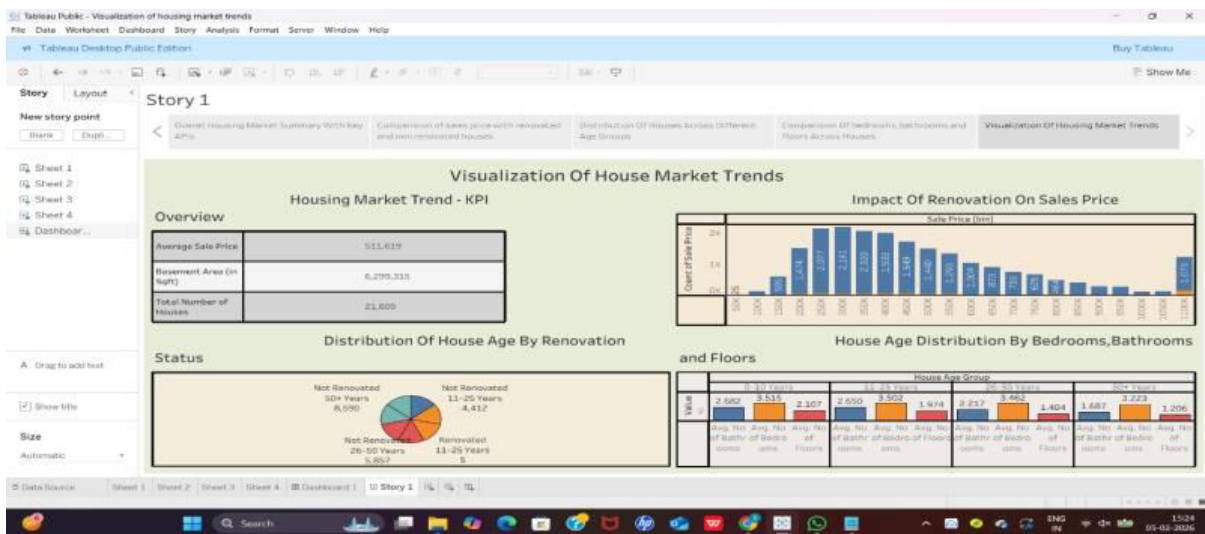


Fig 4: Visualization of Housing Market Trends Story

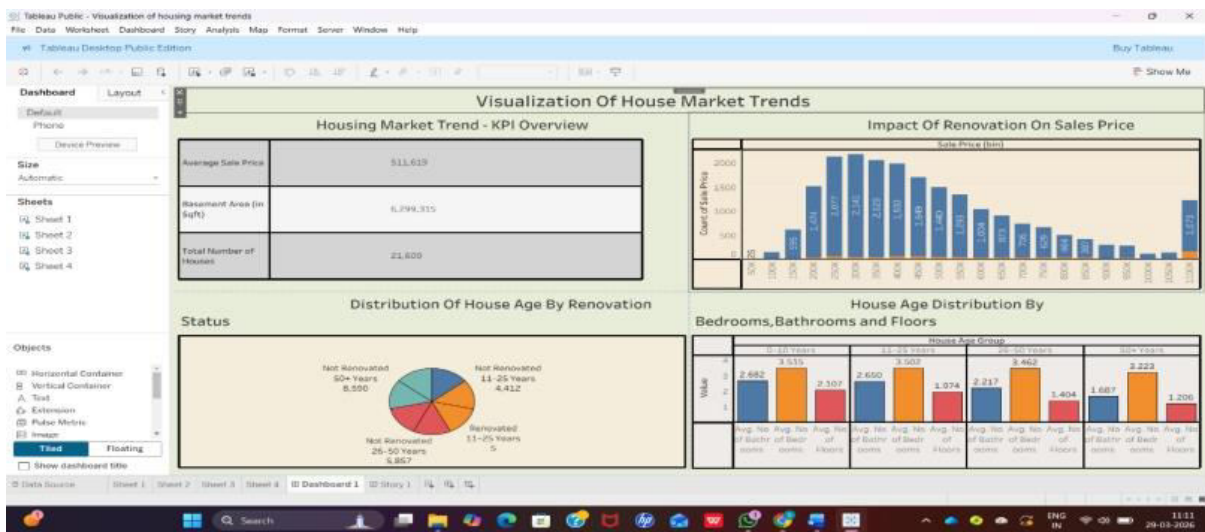


Fig 5: Visualization of Housing Market Trends Dashboard

The above dashboard created using Tableau provides a comprehensive overview of housing market trends by combining multiple visualizations into a single interface. It includes key performance indicators such as average sale

price, total number of houses, and basement area, along with detailed charts showing the impact of renovation on sales price and the distribution of house age.

The dashboard enables users to analyze multiple aspects of housing data simultaneously, making it easier to identify patterns and relationships between different factors such as price, renovation status, and house age. It provides an interactive and user-friendly approach to understanding the housing market.

Overall, this visualization enhances decision-making by presenting complex data in a clear and structured format.

Overall, the results demonstrate that data visualization techniques can effectively reveal important patterns and trends in housing price data.

V. CONCLUSION

This study presents an effective approach for analyzing housing price data using Tableau. The developed dashboards provide clear insights into important factors such as area, location, house age, and renovation status that influence housing prices.

The results show that housing prices increase with area and are higher in prime locations. It is also observed that renovated houses tend to have higher prices compared to non-renovated ones. Additionally, older houses are less likely to be renovated, which may affect their market value.

The use of interactive dashboards makes it easier to understand complex data and supports better decision-making for buyers, sellers, and investors.

In future work, advanced techniques such as machine learning can be integrated to improve prediction accuracy and provide more detailed analysis.

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