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

1. INTRODUCTION

1.1 Project Overview:

This project aims to provide a detailed visual analysis of housing market trends for ABC Company using Tableau. The analysis focuses on key features such as renovation history, house age, number of bedrooms, bathrooms, and floors, to better understand their impact on house sale prices and trends.
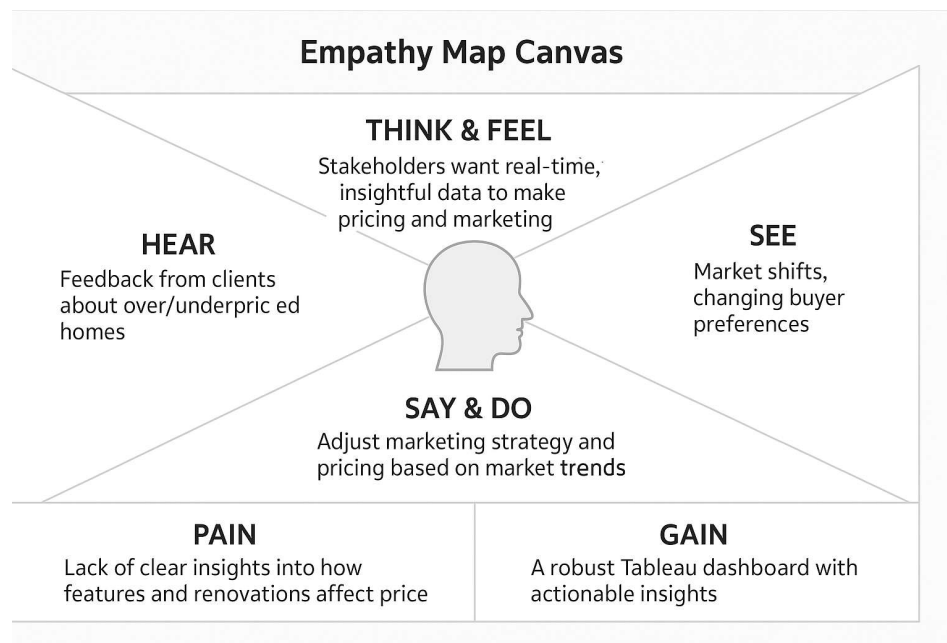
1.2 Purpose:

The purpose of this project is to equip stakeholders—real estate analysts, marketing teams, and company executives—with data-driven insights to enhance strategic decision-making, pricing optimization, and market competitiveness.

2. IDEATION PHASE

2.1 Problem Statement:

ABC Company faces challenges in understanding how property features and renovation status influence sales trends and prices. There is a need for visual analytics to extract meaningful patterns from housing data.
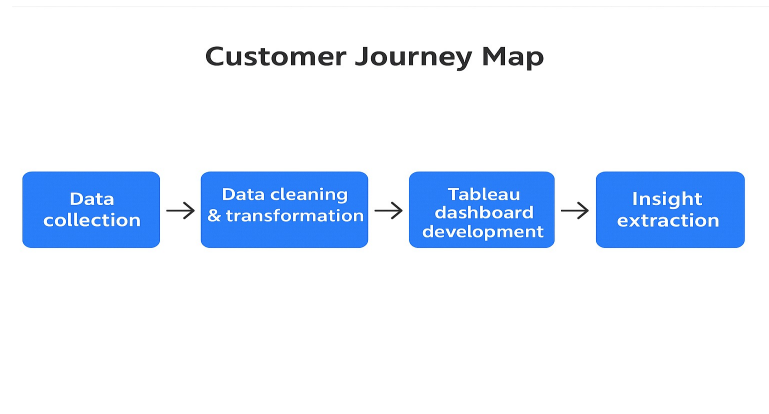
2.2 Empathy Map Canvas:

Empathy Map Canvas

THINK & FEEL
Stakeholders want real-time, insightful data to make pricing and marketing

SEE
Market shifts, changing buyer preferences

HEAR
Feedback from clients about over/underpric ed homes

SAY & DO
Adjust marketing strategy and pricing based on market trends

PAIN
Lack of clear insights into how features and renovations affect price

GAIN
A robust Tableau dashboard with actionable insights

2.3 Brainstorming:

- Analyze sale price trends over time.
- Evaluate the impact of years since renovation.
- Study feature-wise distribution (bathrooms, bedrooms, floors).
- Build interactive dashboards for scenario-based insights.
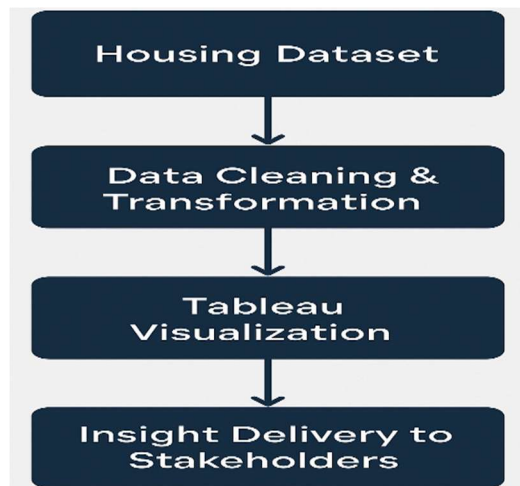
3. REQUIREMENT ANALYSIS

3.1 Customer Journey map:

Customer Journey Map

Data collection → Data cleaning & transformation → Tableau dashboard development → Insight extraction

3.2 Solution Requirement:

- Clean and structured housing dataset
- Tableau Desktop for visualization
- Basic statistical methods for summarization
- Domain understanding in real estate

3.3 Data Flow Diagram:

Housing Dataset
↓
Data Cleaning & Transformation
↓
Tableau Visualization
↓
Insight Delivery to Stakeholders

3.4 Technology Stack:

Tools: Tableau, Excel

Languages: Python (for preprocessing, if applicable)

Data: Housing dataset with features such as price, renovation year, bathrooms, bedrooms, etc.

4. PROJECT DESIGN

4.1 Problem Solution Fit:

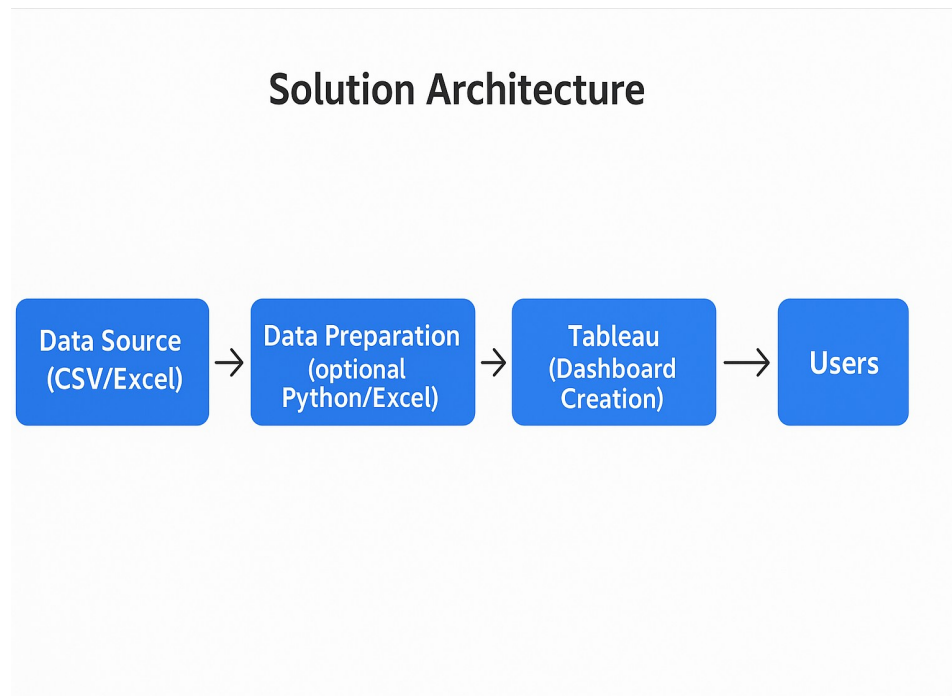**Problem:** Stakeholders lack visibility into key factors affecting house prices.
Solution: Interactive Tableau dashboards showcasing trends by renovation, house age, and features.

4.2 Proposed Solution:

Create multiple scenario-based visualizations to demonstrate:

- Overall data insights
- Sales trends by renovation
- House age distribution by renovation
- House age relation to bathrooms, bedrooms, and floors

4.3 Solution Architecture:

Solution Architecture

Data Source (CSV/Excel) → Data Preparation (optional Python/Excel) → Tableau (Dashboard Creation) → Users

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning:

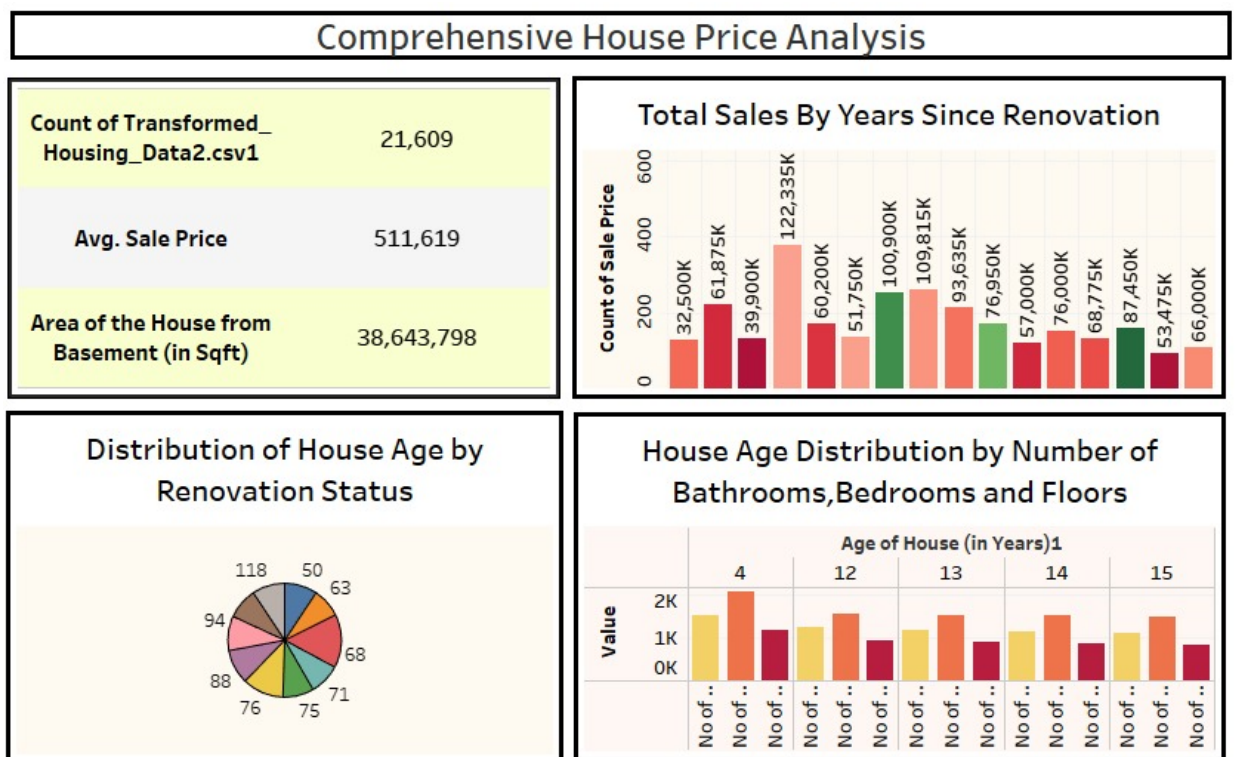| Phase	Tasks	Duration
Data Preparation	Cleaning, formatting	1 Week
Scenario Development	Build visualizations	2 Weeks
Dashboard Integration	Assemble and refine	1 Week
Review and Testing	Stakeholder feedback	1 Week

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing:

- **Load Time**: Dashboards optimized to load under 3 seconds
- **Interactivity**: Filters and tooltips tested for responsiveness
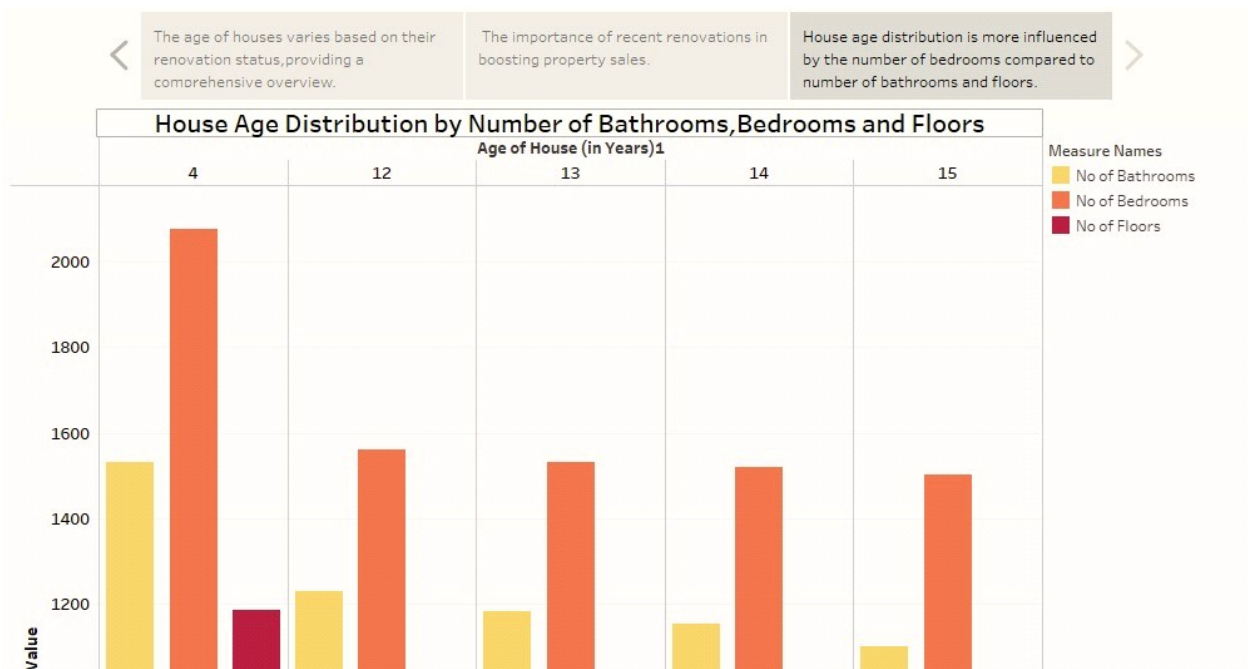- **Scalability**: Capable of handling larger datasets with minimal lag
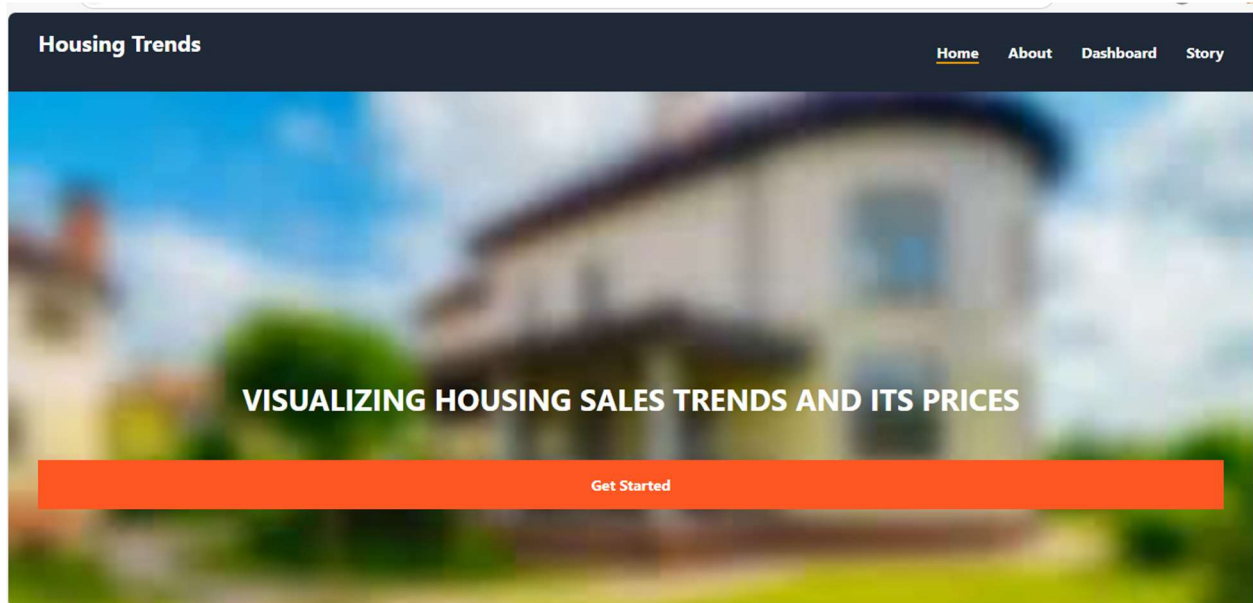
7. RESULTS

7.1 Output Screenshots:

➢ **Dashboard**

➢ **Story**

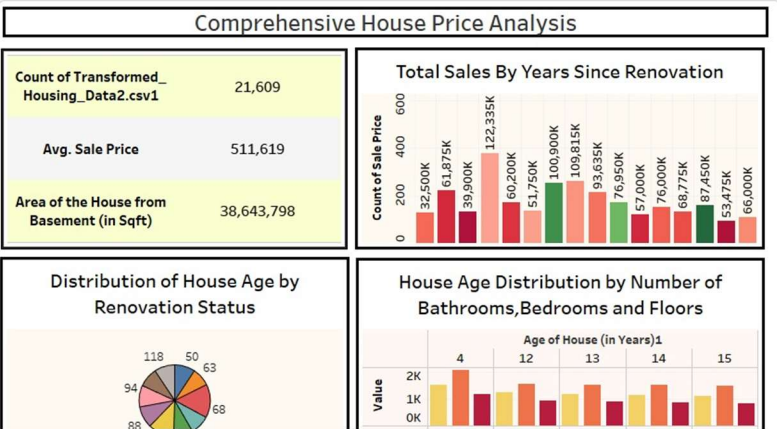➢ **Dashboard and Story embed with UI With Flask**

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- The goal is to address challenges in understanding the factors that influence house prices and sales trends.
- By analysing comprehensive housing data, including the total sales by years since renovation, house age distribution by the number of bathrooms, bedrooms, and floors, and the impact of renovations on house age, the company aims to uncover key insights.
- Utilizing Tableau for this analysis, the objective is to visualize and interpret patterns in the housing market to inform strategic decisions, optimize pricing strategies, and enhance overall market competitiveness.

Housing Data Dashboard

Comprehensive House Price Analysis

Count of Transformed_ Housing_Data2.csv1	21,609
Avg. Sale Price	511,619
Area of the House from Basement (in Sqft)	38,643,798

Total Sales By Years Since Renovation

Count of Sale Price: 0, 200, 400, 600

32,500K 61,875K 39,900K 122,335K 60,200K 51,750K 100,900K 109,815K 93,635K 76,950K 57,000K 76,000K 68,775K 87,450K 53,475K 66,000K

Distribution of House Age by Renovation Status

118 50 63
94   68
88

House Age Distribution by Number of Bathrooms, Bedrooms and Floors

Age of House (in Years)1

4   12   13   14   15

Value: 2K, 1K, 0K

8. ADVANTAGES & DISADVANTAGES

Advantages:

- Intuitive visuals for non-technical users
- Clear insights into pricing and renovation impact
- Interactive filtering enables dynamic exploration

Disadvantages:

- Dependent on quality and completeness of data
- Tableau dashboards can become complex with too many filters
- Static exports lose interactivity

9. CONCLUSION

This project successfully visualizes complex housing market dynamics and provides ABC Company with actionable insights into pricing trends and house features. By leveraging Tableau, the analysis is both accessible and powerful, supporting data-driven decision-making in real estate.

10. FUTURE SCOPE

- Integrate live real estate listings for real-time trends
- Incorporate machine learning for price prediction
- Enable geospatial analysis using maps
- Automate data refreshes using Tableau Server

11. APPENDIX

Source Code(if any): N/A(Tableau Project)

Dataset Link:

https://www.kaggle.com/datasets/rituparnaghosh18/transformed-housing-data-2

GitHub & Project Demo Link:

GitHub Link:

https://github.com/neelima-9876/Visualizing-Housing-Market-Trends

Project Demo Link:

https://youtu.be/fXV5biz2vk8?si=uy4I6Rfg-5bV4KlU