# PROJECT NAME:

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

1. INTRODUCTION :
   1.1 OVERVIEW:

This project titled **"Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau"** was undertaken to identify insights in the real estate market using visual analytics. It focuses on understanding how features such as house age, number of bedrooms, bathrooms, floors, and renovation status affect sale prices. The analysis helps ABC Company and stakeholders make informed decisions to improve pricing strategy and customer targeting.

1.2 PROPOSE:

The purpose of this project is to:

- Visualize and interpret large-scale housing data using Tableau.
- Identify trends and patterns affecting house sale prices.
- Explore the relationship between house features and market behaviour.
- Help business stakeholders optimize real estate pricing and marketing.

2. IDEATION PHASE:

2.1 PROBLEM STATEMENT:

ABC Company, a real estate firm, lacks a clear understanding of how various property features impact housing prices and sales trends. This project aims to solve the problem by analysing housing data and visualizing the trends in sale prices based on features like house age, number of bedrooms, bathrooms, floors, and renovation history. A data-driven visual solution will assist in developing better pricing strategies and targeting customers more effectively.

2.2 EMPATHY MAP:

The empathy map helps to understand the user's perspective — in this case, real estate analysts and company decision-makers.

- **Says:** We need to understand what's impacting our sales.
- **Thinks:** Are we pricing houses correctly?
- **Does:** Analyses historical sales, compares market reports.
- **Feels:** Pressured to perform, wants data clarity.

2.3 BRAINSTORM IDEA:

The team brainstormed ideas around the features affecting house sales. Based on group discussion:

- House Age and Renovation impact perception and pricing.
- Bedroom/Bathroom/Floor count defines comfort.
- Sales price trends are time-sensitive.

3. REQUIREMENT ANALYSIS:

3.1 CUSTOMER JOURNEY MAP:

The customer journey map tracks how users interact with the housing market data visualization platform — from entry to decision-making.

| Stage | Experience Steps | Interactions | Goals & Motivation | Positive Moments | Negative Moments | Areas of Opportunity |
|---|---|---|---|---|---|---|
| Enter | Landing on Dashboard | Filter housing options | Gain market insights | Intuitive filtering | Overloaded visuals | Simple, clean design |
| Engage | Exploring charts | Hover on pie/bar/line visuals | Understand sale price patterns | Dynamic charts | Confusing legends | Use consistent color coding |
| Exit | Decision making | Use summary KPI data to decide | Apply insights to pricing/marketing | Clear summary metrics | None | Exportable insights (screenshot/pdf) |

3.2 SOLUTION REQUIREMENT:

**Functional Requirements:**

- Visualize KPIs (total houses, avg sale price, total basement area).
- Display bar/pie/grouped charts for feature comparison.
- Enable filter interactivity for better analysis.

**Non-functional Requirements:**

- Dashboard responsiveness.
- Fast rendering with extract.
- User-friendly UI.

3.3 DATA FLOW DIAGRAM:

The DFD shows how data moves through the system — from loading the dataset to rendering outputs via Tableau dashboards and stories.

Load dataset → Analyse data→ Remove unnecessary data→ Connect dataset to tableau → Create visualizations → Dashboard& story.

3.4 TECHNOLOGY STACK:

The following tools and platforms were used:

- **Tableau Public:** For creating all visualizations, dashboards, and stories.
- **Microsoft Excel:** For converting and pre-processing the CSV dataset.
- **GitHub:** For storing project files, screenshots, and documentation.
- **YouTube:** For hosting the final video demonstration.

4. PROJECT DESIGN:

4.1 PROBLEM SOLUTION FIT:

The core challenge was understanding the influence of housing features on sale prices to better strategize pricing and marketing.
The proposed solution, using Tableau visualizations, directly addresses this by transforming raw data into interactive dashboards, enabling stakeholders to easily interpret trends and patterns.

4.2 PROPOSED SOLUTION:

| Parameter | Description |
|---|---|
| Problem Statement | Lack of clear understanding of house pricing based on features |
| Idea / Solution | Tableau dashboards to visualize patterns in house features and sale prices |
| Novelty / Uniqueness | Interactive data visualizations tailored for ABC Company |
| Social Impact | Supports fair pricing and better customer satisfaction |
| Business Model | Can be integrated into ABC Company's sales and marketing analytics tools |
| Scalability | Solution can be expanded with additional datasets and updated housing features in the future |

4.3 SOLUTION ARCHITECTURE:

The architecture for this project follows a simple flow:

- **Data Source:** Housing CSV/Excel file.
- **ETL & Cleaning:** Data prepared and binned in Excel.
- **Visualization Layer:** Tableau Public.
- **Output:** Dashboard, Story, and shareable Tableau Public or YouTube link.

5. PROJECT PLANNING:

5.1 Project Planning

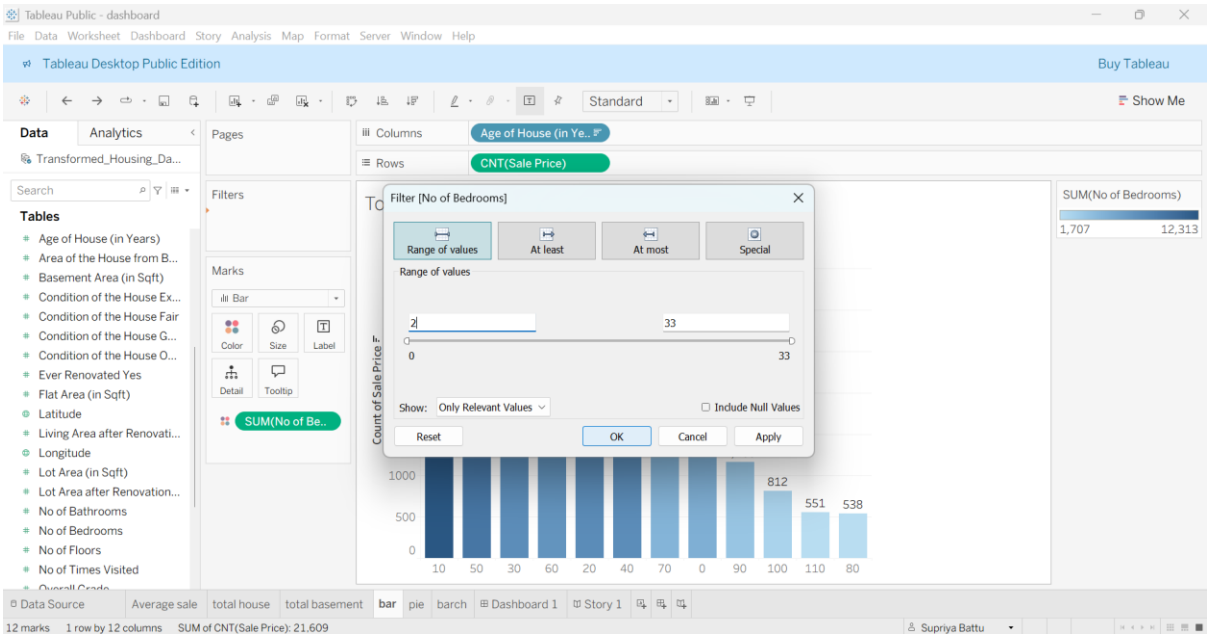
The project was planned using agile-inspired methods, broken into sprints with clear deliverables for each phase. Tasks included data collection, pre-processing, visualization design, dashboard assembly, story creation, and testing.

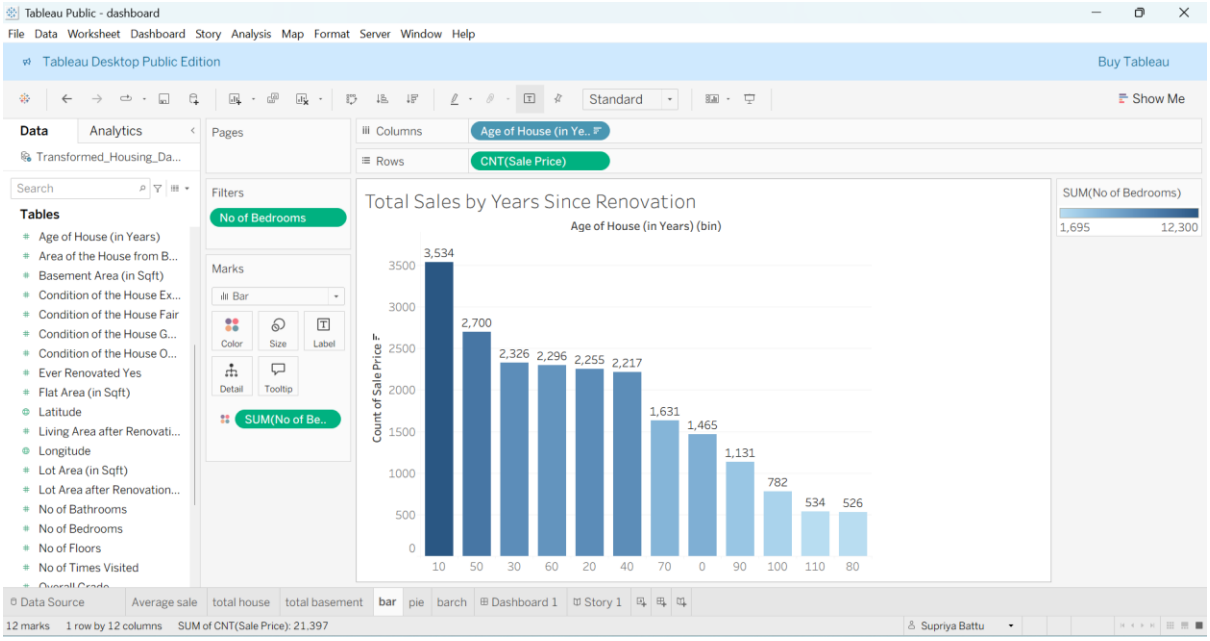
| Sprint | Duration | Tasks covered |
|---|---|---|
| 1 | 24/6 – 25/6 | Data loading, cleaning, age bin creation, initial chart prototypes |
| 2 | 26/6 – 27/6 | Final visual dashboard build, story build, performance testing, documentation |

## 6. FUNCTIONAL AND PERFORMANCE TESTING:

| Parameter | Screenshot / Values |
|---|---|
| **Data Rendered** | Displayed Age of House, Bedrooms, Bathrooms, Floors, Sale Price, Basement Area, Years Since Renovation. Include a screenshot of the full dashboard. |
| **Data Pre-processing** | Removed blanks, converted to Excel, created Age bins, checked data types. |
| **Utilization of Filters** | Applied Bedrooms, Bathrooms, Floor filters in Tableau and demonstrated in Story. |
| **Calculation Fields Used** | Count of records, Average Sale Price, Sum of Basement Area, Age bins. |
| **Dashboard Design** | 6 unique visualizations including KPIs, bar, pie, grouped bar, filters, and dashboard. |
| **Story Design** | 4 visual scenes with captions explaining scenarios. |

**Utilization of Filters**:




Filter utilization was demonstrated in the dashboard to verify functionality.

7. RESULTS:

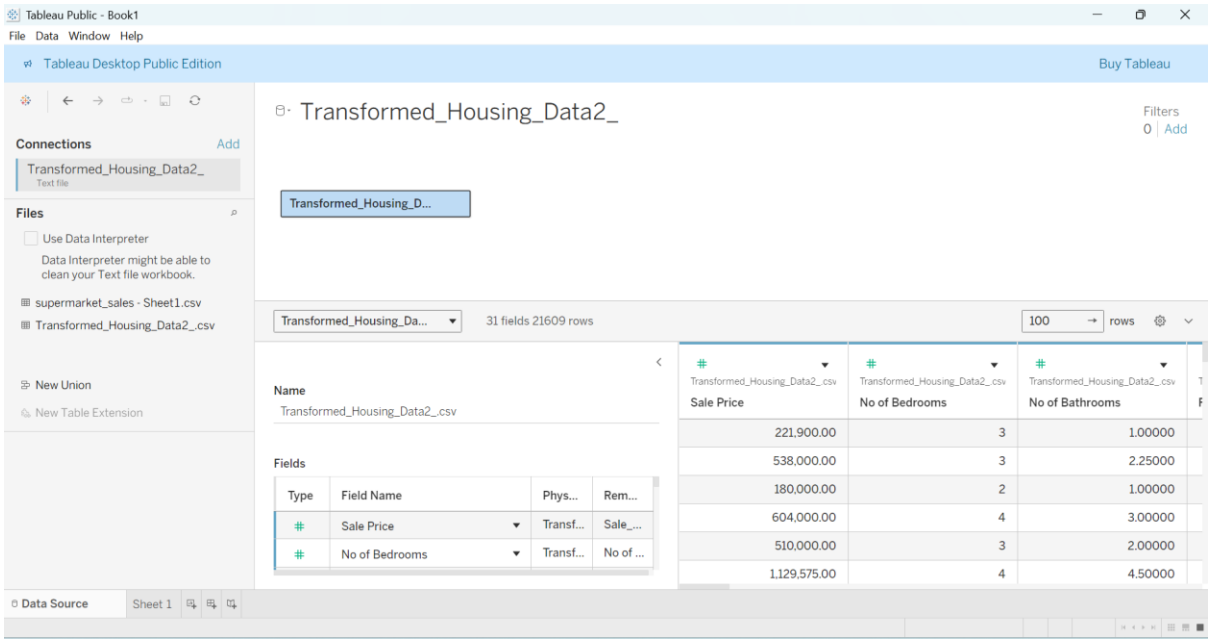
The project successfully visualized the housing market trends for ABC Company using Tableau. The key results are summarized below:

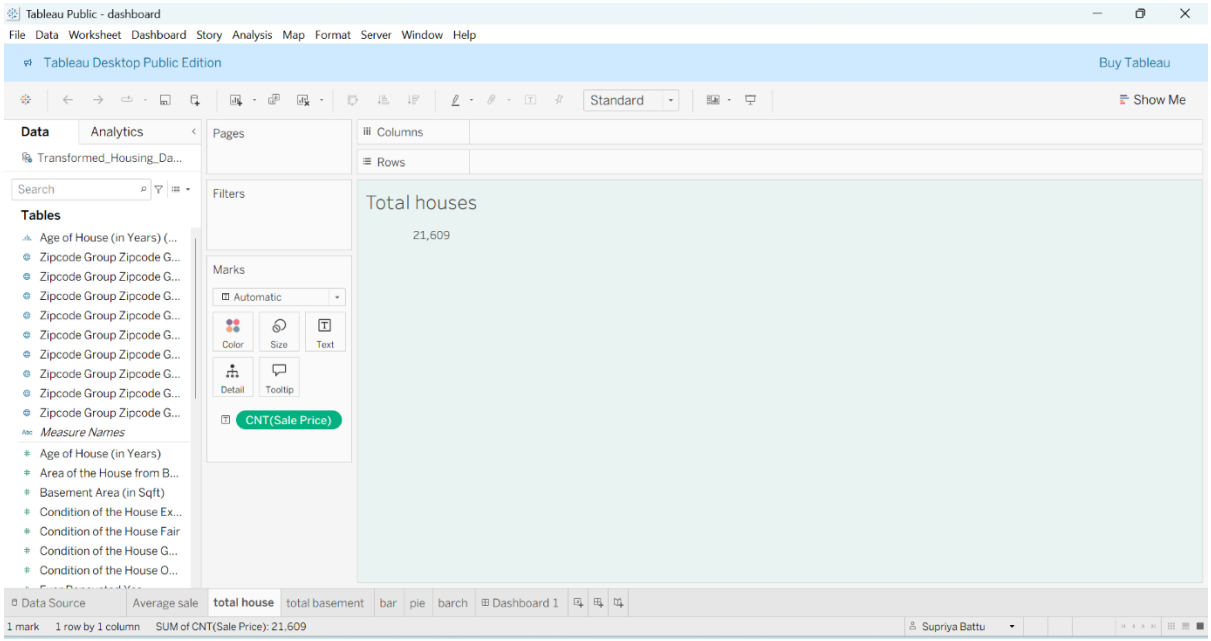
- Houses with 3–4 bedrooms showed higher sales counts.
- Houses aged between 5–20 years had the most active transactions.
- Renovated houses showed better sale prices compared to non-renovated ones.

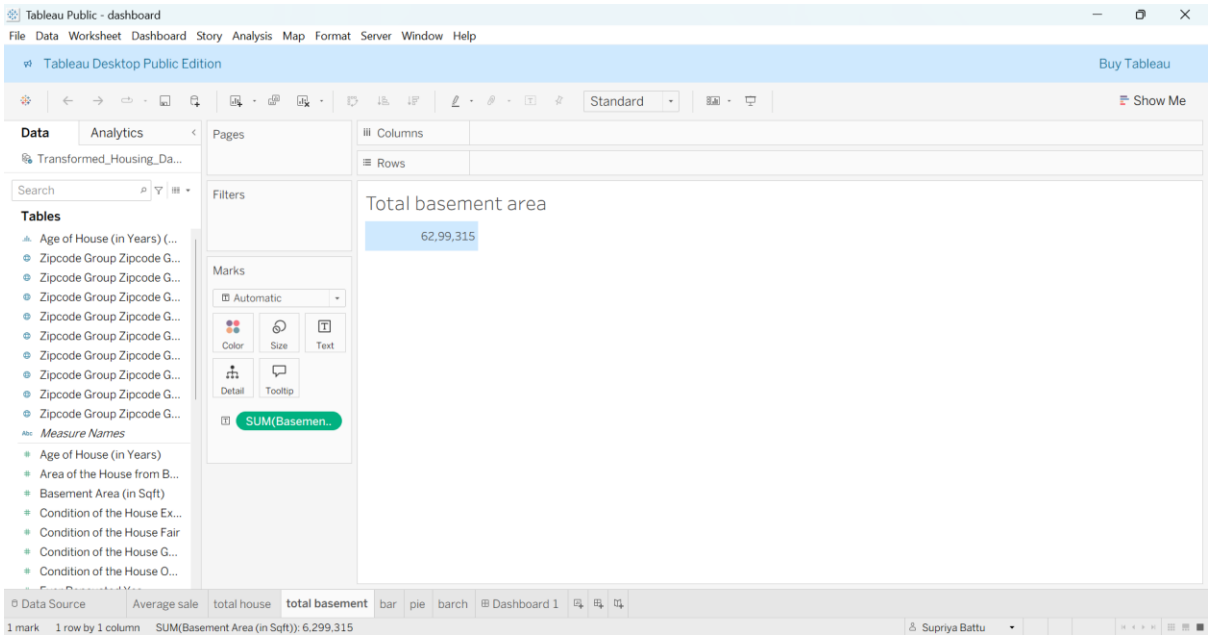
•The majority of houses had 2–3 bathrooms and 1–2 floors.

•The interactive filters provided deeper insights for custom queries.

SCREENSHOTS OF OUTPUT:

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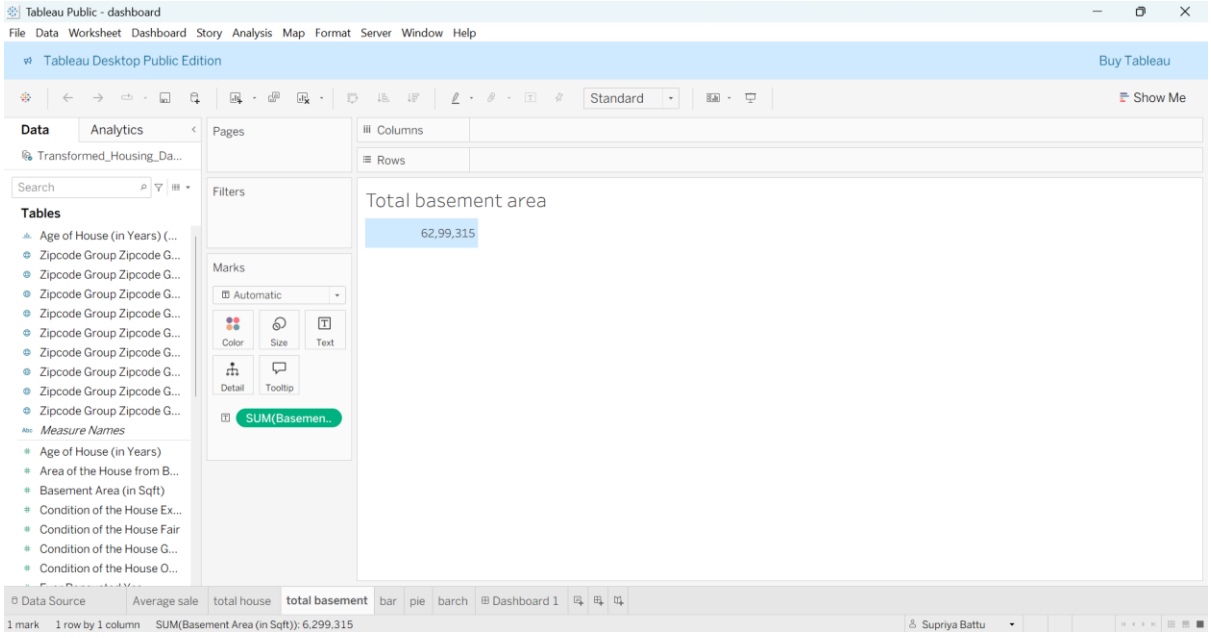
Supriya Battu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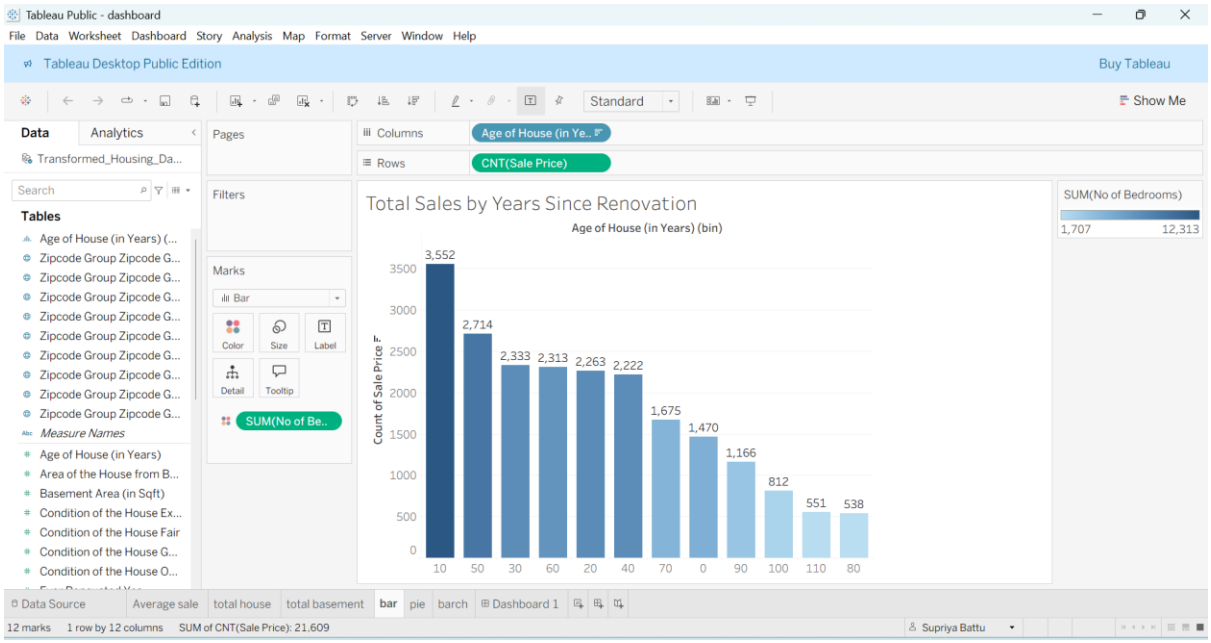
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Age of House (in Years) (bin)
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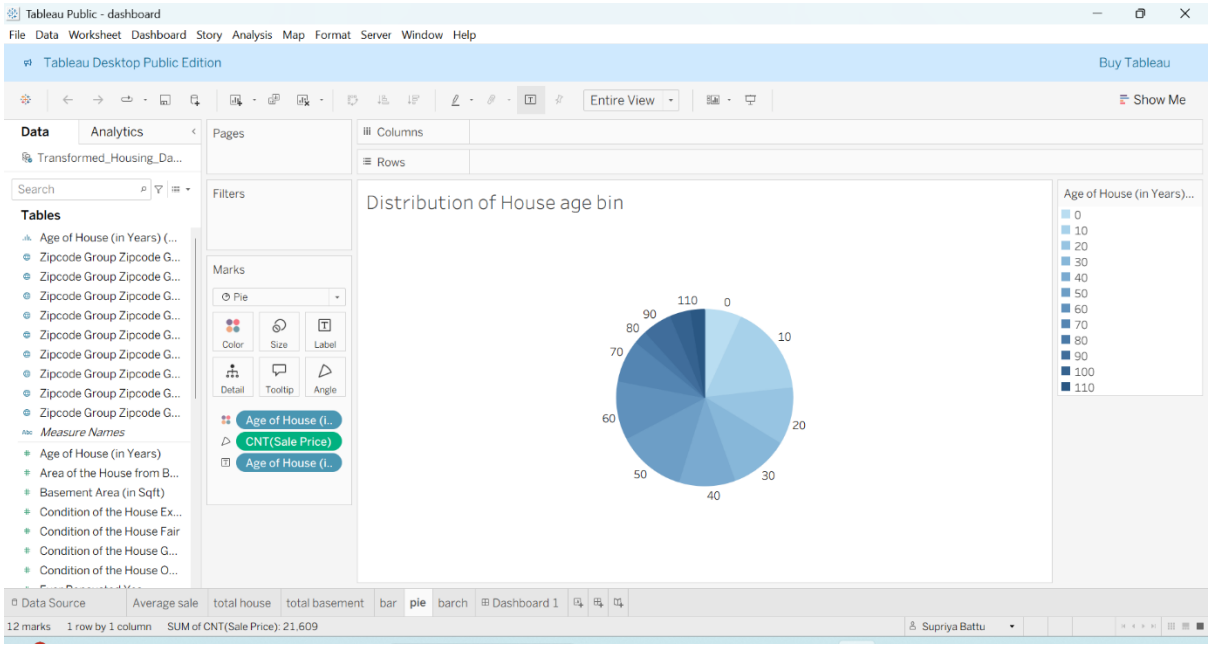
SUM of CNT(Sale Price): 21,609
Supriya Battu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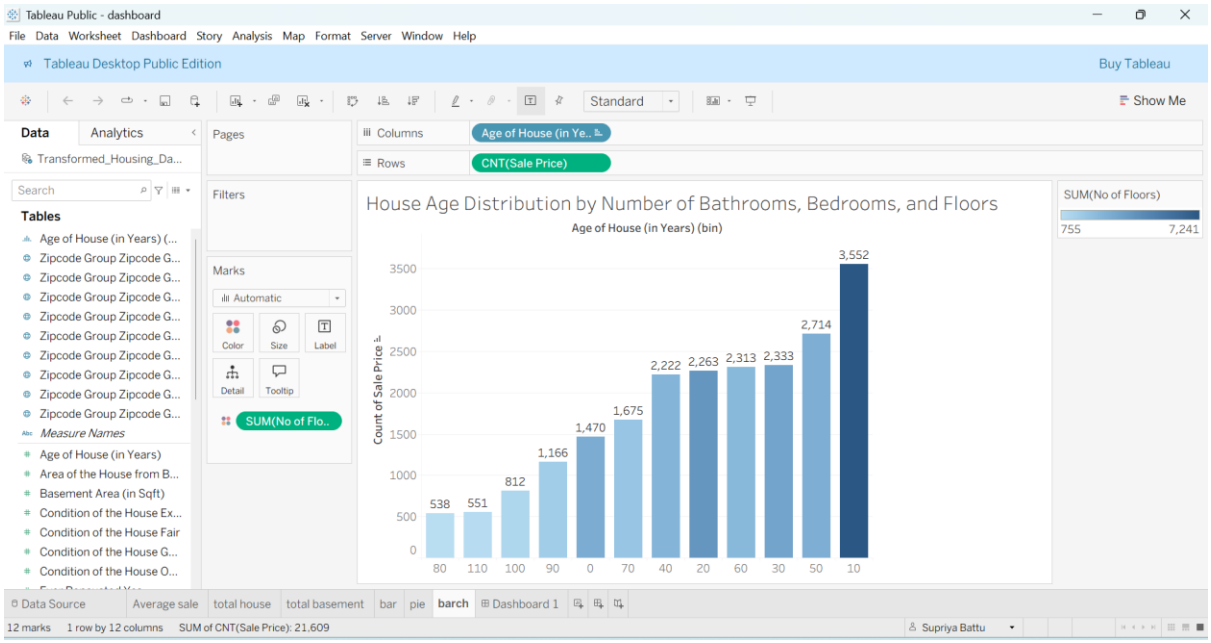
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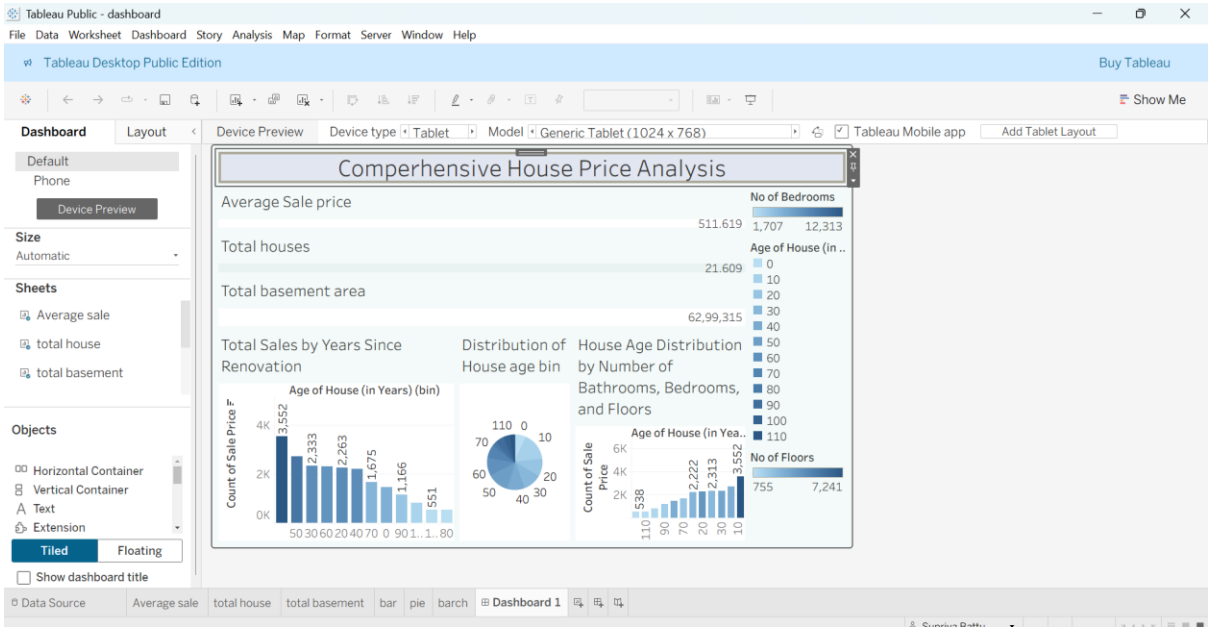
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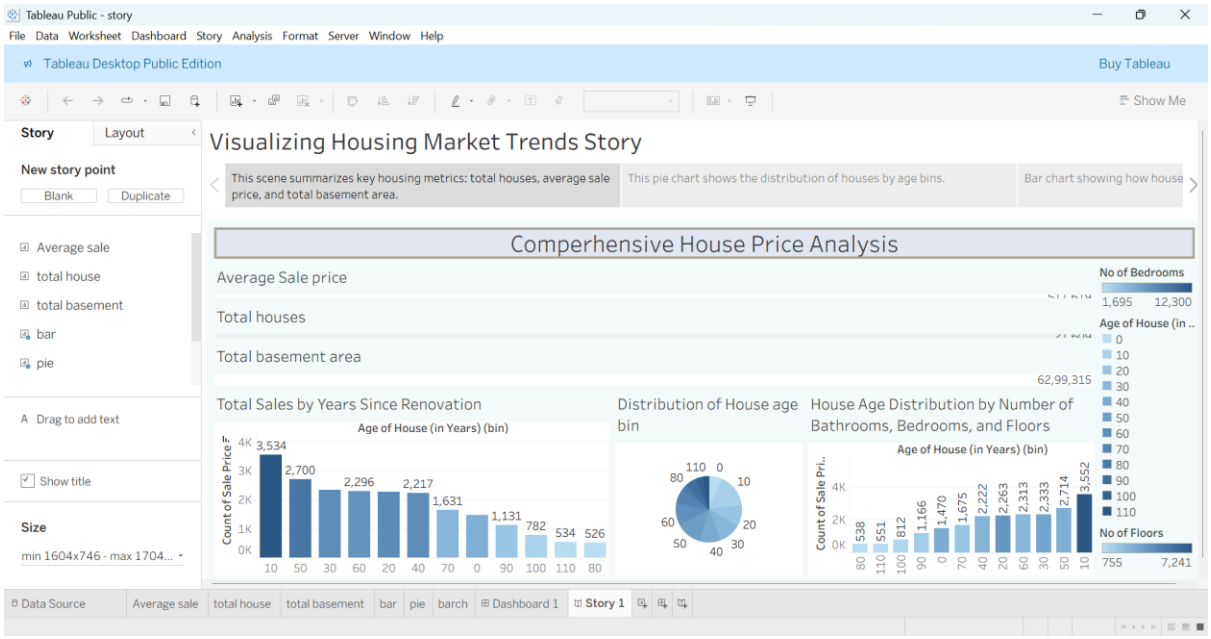
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This pie chart shows the distribution of houses by age bins.
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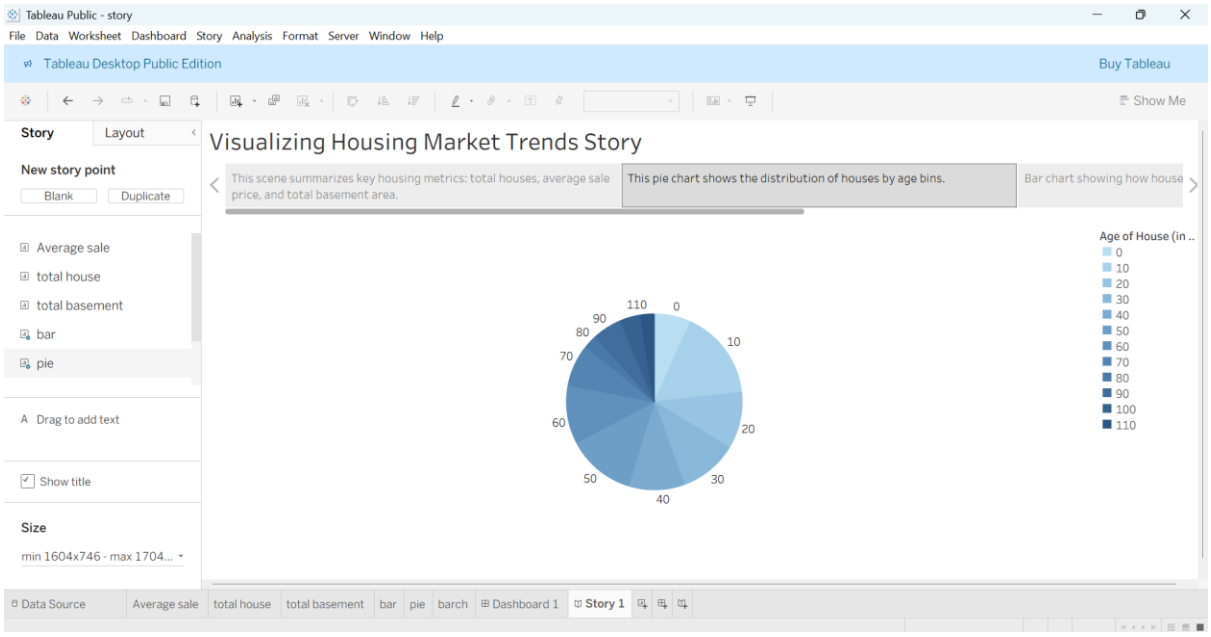
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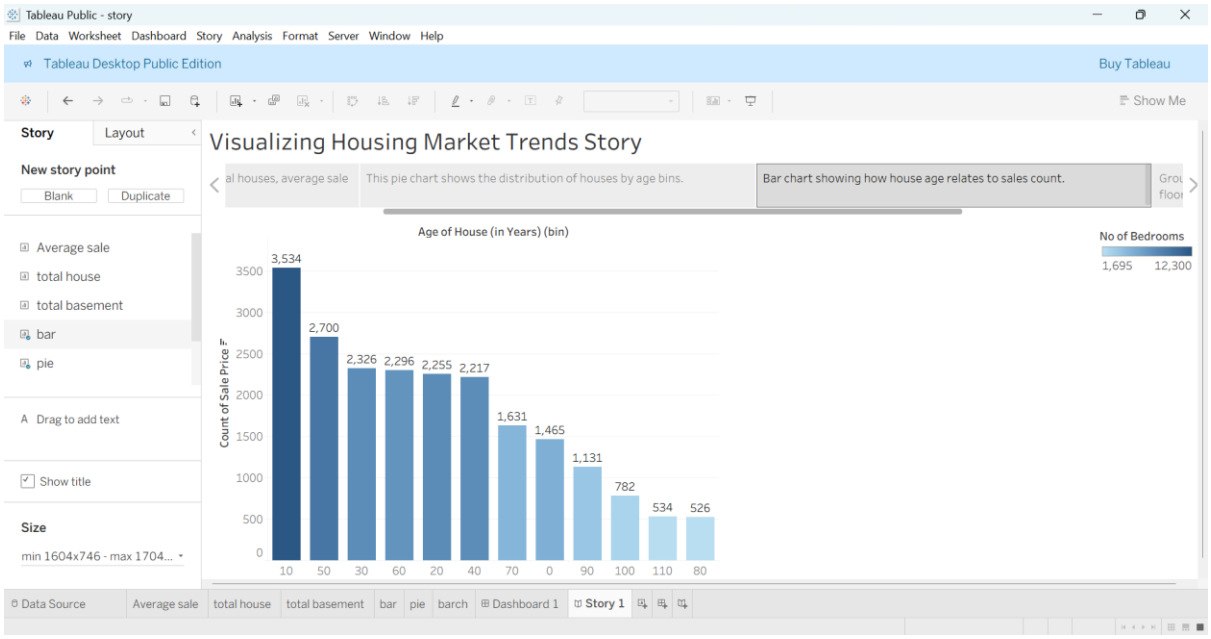


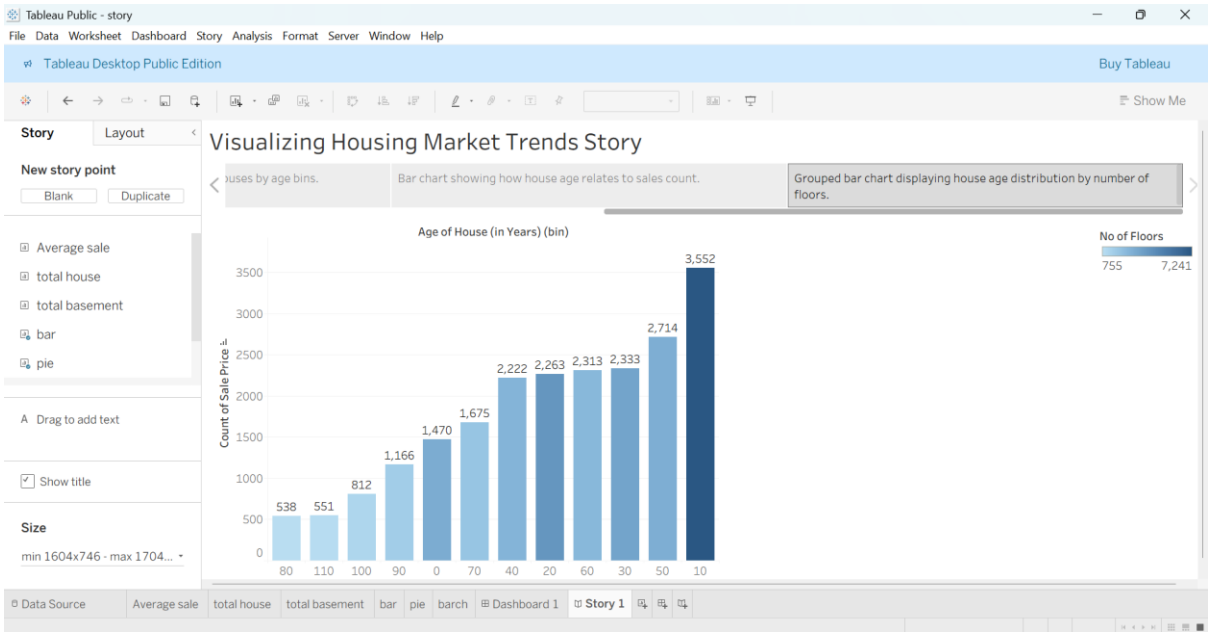


## 8. ADVANTAGES & DISADVANTAGES:

Advantages:

- Tableau dashboards are highly interactive and easy to use.
- Filters and drill-down features allow customized exploration of housing data.
- Visualizations help decision-makers quickly identify pricing trends.
- Easy to share dashboards through Tableau Public and video demonstration.
- Flexible design supports adding new data in the future.

Disadvantages:

- Tableau Public requires a working internet connection for publishing.
- Large datasets might cause performance slowdowns.

- The dashboard depends on correct data formatting and preparation.
- Limited customization in Tableau Public compared to Tableau Desktop Pro.

9. CONCLUSION:

This project successfully achieved its objective of analysing housing market trends for ABC Company. Using Tableau's interactive dashboards and story features, the project highlighted how factors such as house age, renovations, bedrooms, bathrooms, and floors influence sale prices and buyer preferences. The insights from these visualizations can support more data-driven pricing strategies and improve marketing effectiveness. Overall, the project demonstrates how visual analytics can transform raw housing data into meaningful, actionable business intelligence.

10. FUTURE SCOPE:

In the future, this project can be expanded with additional features and datasets to further enhance its value:

- Integrate real-time housing market feeds to update dashboards dynamically.
- Add advanced machine learning models to predict future house prices.
- Incorporate location-based analysis using GIS maps in Tableau.
- Extend the analysis to include rental data alongside sales.
- Automate periodic data refresh for continuous monitoring.

These improvements could provide even deeper insights for real estate decision-making and broaden the project's impact.

11. APPENDIX:

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

➔ Github link: https://github.com/Supriya-Battu/Visualizing-Housing-Market-Trends-An-Analysis-of-Sale-Prices-and-Features-using-Tableau