

PROJECT REPORT

1.INTRODUCTION:

1.1 Project Overview:

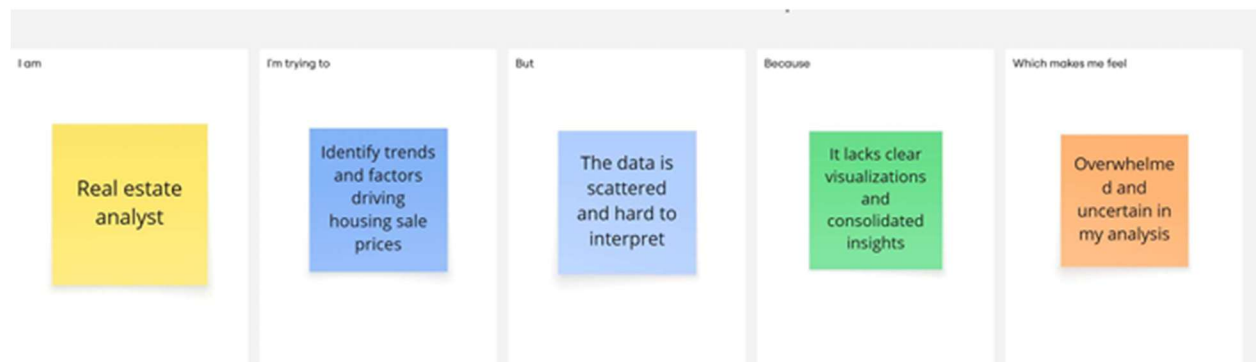
This project leverages Tableau to explore and visualize housing market trends by analyzing historical sales data. The goal is to uncover patterns and insights related to house prices in connection with key features such as square footage, location, number of bedrooms, and construction year. Through interactive dashboards and visual analytics, this project aims to support data-driven decision-making for buyers, sellers, and real estate professionals by highlighting the factors that most significantly influence property values.

1.2 Project Purpose:

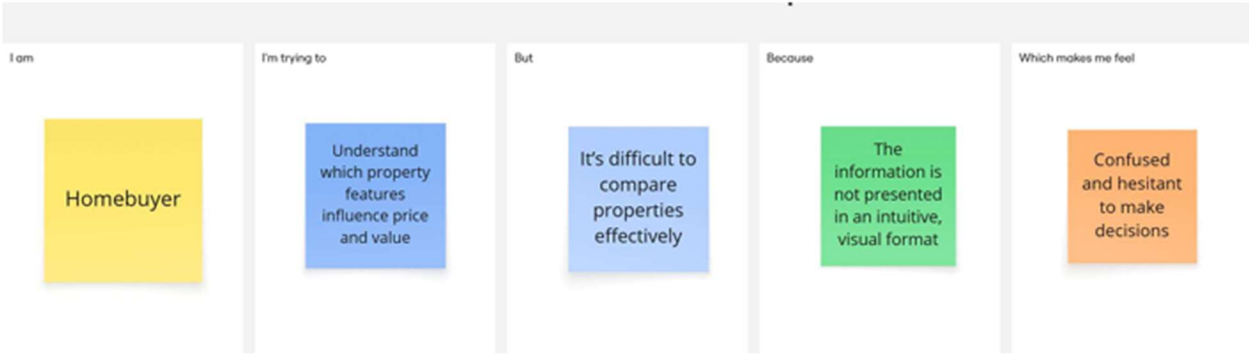
The purpose of this project is to analyze and visualize housing market data to identify the key factors influencing property sale prices. By using Tableau to create interactive and insightful dashboards, the project aims to help stakeholders — including potential buyers, sellers, and real estate agents — better understand market trends, make informed decisions, and anticipate pricing patterns based on various housing features and location attributes.

2.IDEATION PHASE:

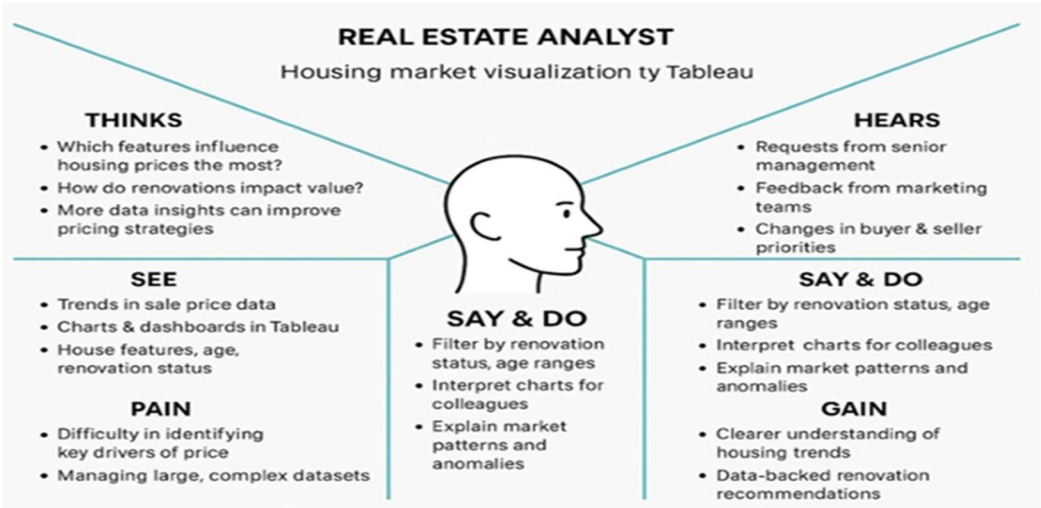
2.1 Problem statement:



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Problem Statement (PS)	I am (Customer)	I’m trying to	But	Because	Which makes me feel
PS-1	Real estate analyst	Identify trends and factors driving housing sale prices	The data is scattered and hard to interpret	It lacks clear visualization s and consolidated insights	Overwhelmed and uncertain in my analysis
PS-2	Homebuyer	Understand which property features influence price and value	It’s difficult to compare properties effectively	The information is not presented in an intuitive, visual format	Confused and hesitant to make decisions



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2.2 Brainstorming & Ideation:

Template



Brainstorm & idea prioritization

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

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

Problem Statement

"To visualize and analyze how property features influence housing sale prices using Tableau to uncover trends and pricing insights."

2

Key rules of brainstorming

To run a smooth and productive session

Stay in topic.

Encourage wild ideas.

Defer judgment.

Listen to others.

Go for volume.

If possible, be visual.

Need some inspiration?

Get a random selection of this template to help inspire your ideas.

Open inspiration

3

Prioritize

Now it's time to get on the same page about what's important. Review the ideas and place them on this grid to determine which ideas are important and which are feasible.

10 minutes



After you collaborate

You can export this report as an image or pdf. Invite other members of your company who might find it helpful.

Quick actions

Share the report

Export the report

Keep meeting momentum

Meeting Minutes

Export the template

Export the report

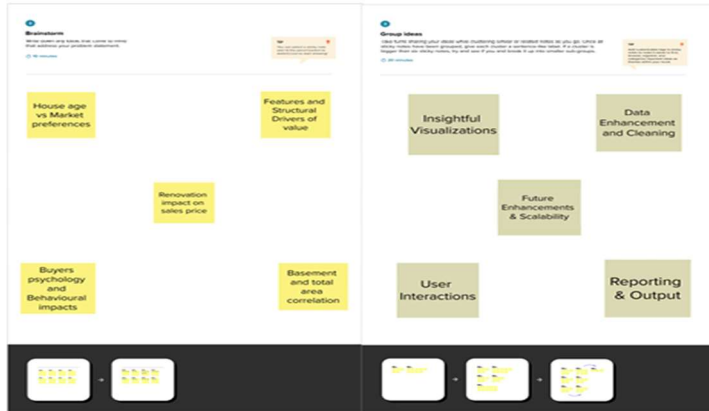
Export the report



TEAM ID: LTVIP2025TMID49628

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Step-2: Brainstorm, Idea Listing and Grouping



3.REQUIREMENT ANALYSIS:

3.1:Customer Journey Map:

Scenario: [Existing experience through a product or service]	Enter How does someone become aware of this product?	Engage What do people experience as they begin the process?	Exit What do people expect to experience as the process finishes?	Extend What happens after the experience is over?
Experience steps What does this person go through at the current and the next step of the experience in each step?	Hear about this dashboard online or via agents	Access Tableau dashboard	Explore trends, compare features	Save or export reports
Interactions What interactions do they have at each step along the way? • People Who can they reach out to? • Places Where and how? • Things What digital tools, hardware or physical objects do they use?	See posts, ads, or recommendations	Click through charts, maybe talk to a realtor	Share findings with others	Present to clients or team
Goals & motivations At each step, what is a person's primary goal or motivation? (What is the "why" behind the action?)	Learn about price trends	Find price drivers	Validate decisions	Act with confidence
Positive moments What steps does a person perceive as enjoyable, useful, fun, fast, easy, satisfying, delightful, or surprising?	Excited by clear, simple visuals	Easy filtering	Discover insights	Feel informed
Negative moments What steps does a person perceive as frustrating, tedious, slow, boring, or stressful?	Unsure how to start	Too much data all once	Data slow or missing	Hard to export
Areas of opportunity How might we create each step better? What do we know? What have others suggested?	Offer demos or quick guides	Add onboarding tooltips	Improve speed, fill data gaps	Simplify report sharing

3.2:Solution Requirement:

Functional Requirements:

FR NO	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Collection and Import	System must allow importing housing dataset from Excel/CSV.

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FR-2	Data Cleaning and Transformation	Must calculate house age and years since renovation; handle missing or invalid data
FR-3	Visualization of Key Metrics	Dashboard must display KPIs such as average price, total houses, and basement area.
FR-4	Sales Analysis by Renovation	Create a histogram that groups total sales based on years since renovation.
FR-5	Feature-based House Age Distribution	Display grouped bar charts showing house age versus bathrooms, bedrooms, and floors.
FR-6	Renovation Status Visualization	Show proportion of renovated vs. non renovated houses using pie charts.
FR-7	Dashboard Interactivity	Enable users to filter dashboard by house age, renovation status, bedrooms, bathrooms, and floors.
FR-8	Reporting and Export	Allow export of visualizations in PDF or image format for reporting and presentations.

Non-Functional Requirements:

FR NO	Non-Functional Requirement	Description
NFR-	Usability	Dashboard must be intuitive and easy to navigate for non technical stakeholders.
NFR-2	Security	Only authorized users should be able to access or modify the dashboard if published to a secure server.
NFR-3	Accessibility	Visuals must be readable on standard desktop and tablet screens.
NFR-4	Performance	Dashboard should load within 5 seconds with a dataset of up to 10,000 records.

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NFR-5	Maintainability	The solution must be easily updatable if new scenarios or charts are added.
NFR-6	Scalability	The system should be able to accommodate additional features or larger datasets in the future.

3.3:Data Flow Diagram:



3.4:Technology stack:

Component	Technology Used	Description
Data Source	Microsoft Excel / CSV / Google Sheets	Easily accessible and widely used formats for structured housing datasets.
Data Cleaning	Tableau Prep / Excel Formulas / Power Query	Quick transformation, field derivation, and cleaning within a visual interface.

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Data Analysis & Viz	Tableau Desktop / Tableau Public	Drag-and-drop analytics with grouped bar charts, pie charts, histograms, etc.
Optional Backend	Python with Pandas (Jupyter Notebooks)	For deeper pre-processing or model based analytics if needed in the future
Hosting	Tableau Public (Free) or Tableau Server (Enterprise)	Shareable dashboards, secure access control, and collaboration support.
Export / Reporting	Built-in PDF/Image Export from Tableau	Simplifies reporting and snapshot sharing with stakeholders.

4.PROJECT DESIGN:

4.1:Problem Solution Fit:

1. CUSTOMER SEGMENT(S) CS Real estate analysts, company executives, housing investors, and marketing teams looking to understand trends in house pricing and renovations.	6. CUSTOMER CONSTRAINTS CC Time-consuming manual reports, lack of technical Tableau knowledge, limited access to interactive dashboards, inconsistent data sources
2. JOBS-TO-BE-DONE / PROBLEMS J&P Understand factors influencing house prices Analyze how renovations affect value Identify buyer trends by house features Optimize sales and marketing strategies	7. PROBLEM ROOT CAUSE RC Analyze Excel data, consult real estate reports, use intuition or experience. Some use static visualizations or external consultants
3. TRIGGERS TR Rising real estate competition Renovation surge in urban areas Market demand for data-driven decisions Competitor firms adopting dashboards	10. YOUR SOLUTION SL Create an interactive Tableau dashboard that visualizes house sales by age, renovation status, and features. Enables real-time filtering, stakeholder-specific insights and scalable decision support.
4. EMOTIONS: BEFORE / AFTER EM BEFORE: Uncertain, reactive, slow decision-making AFTER: Confident, data-driven, predictive insights	8. CHANNELS OF BEHAVIOUR CH 8.1 ONLINE: Tableau dashboards, public visualizations, online property platforms

4.2:Proposed Solution:

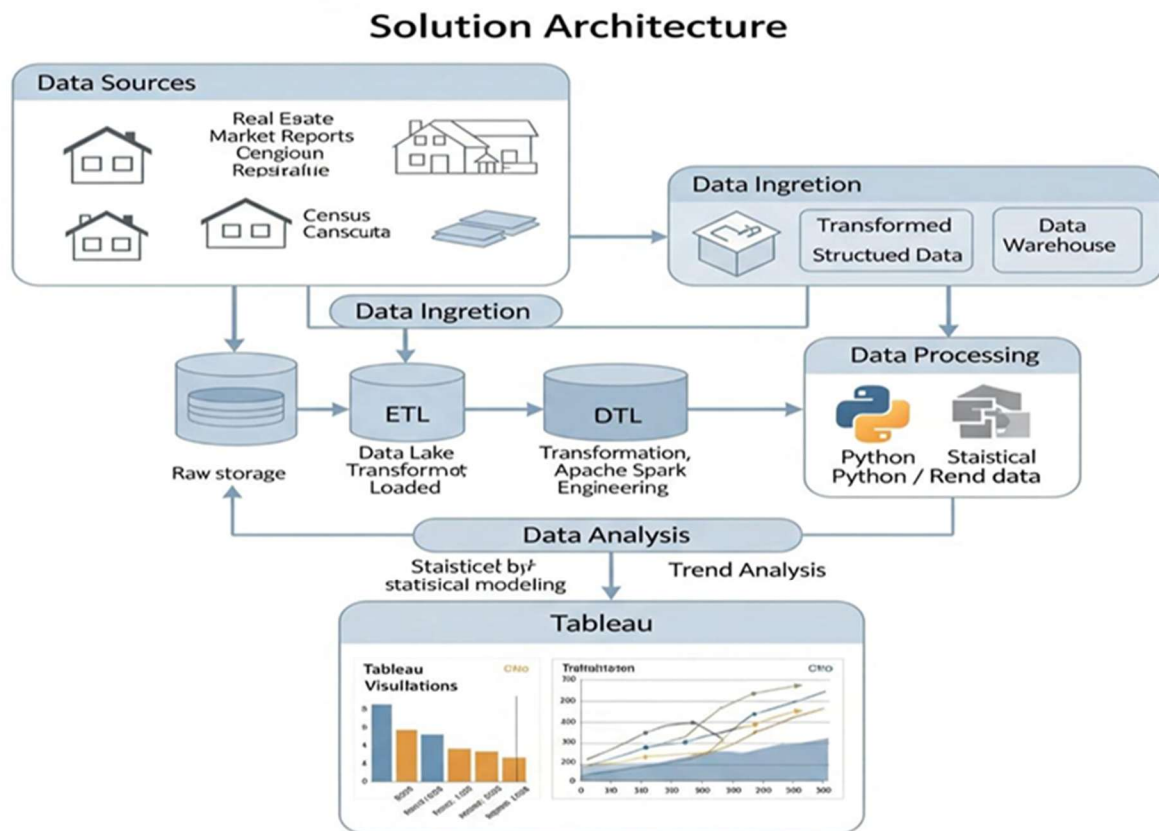
S.NO	Parameter	Description
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1.	Problem statement	Lack of clear ,visual insights into housing market trends and pricing makes it difficulty for buyers ,sellers, and analysts to make informed decisions
2.	Idea/Solution description	Develop interactive Tableau dashboards to visualize housing sales data, including sale price trends ,property features, and neighborhood analysis .This solution enables users to explore and filter data easily ,understand market dynamics and identify patterns.
3.	Novelty/Uniqueness	The project combines multiple visualization techniques in a single dynamic dashboard ,offering a comprehensive ,user friendly tool that updates automatically with new data inputs.
4.	Social impact/Customer Satisfaction	By making market data transparent and accessible ,the solution empowers home buyers and sellers to make informed choices ,reduces reliance on intermediate ,and promotes fair pricing practices ,ultimately increasing trust and satisfaction .
5.	Business Model(Revenue model)	The dashboard can be offered as a subscription base service for real estate agencies and financial institutions .

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4.2:Solution Architecture:



5.PROJECT PLANNING&SCHEDULING:

5.1:Project Planning:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Registration	USN-1	Import housing sales dataset	2	High
Sprint-1	Registration	USN-2	Clean and preprocess data	1	High

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Sprint-1	Registration	USN-3	Create initial data visualizations	2	Low
Sprint-2	Login	USN-4	Develop filters for dashboards	2	Medium
Sprint-2	Dashboard	USN-5	Configure calculated fields	1	High

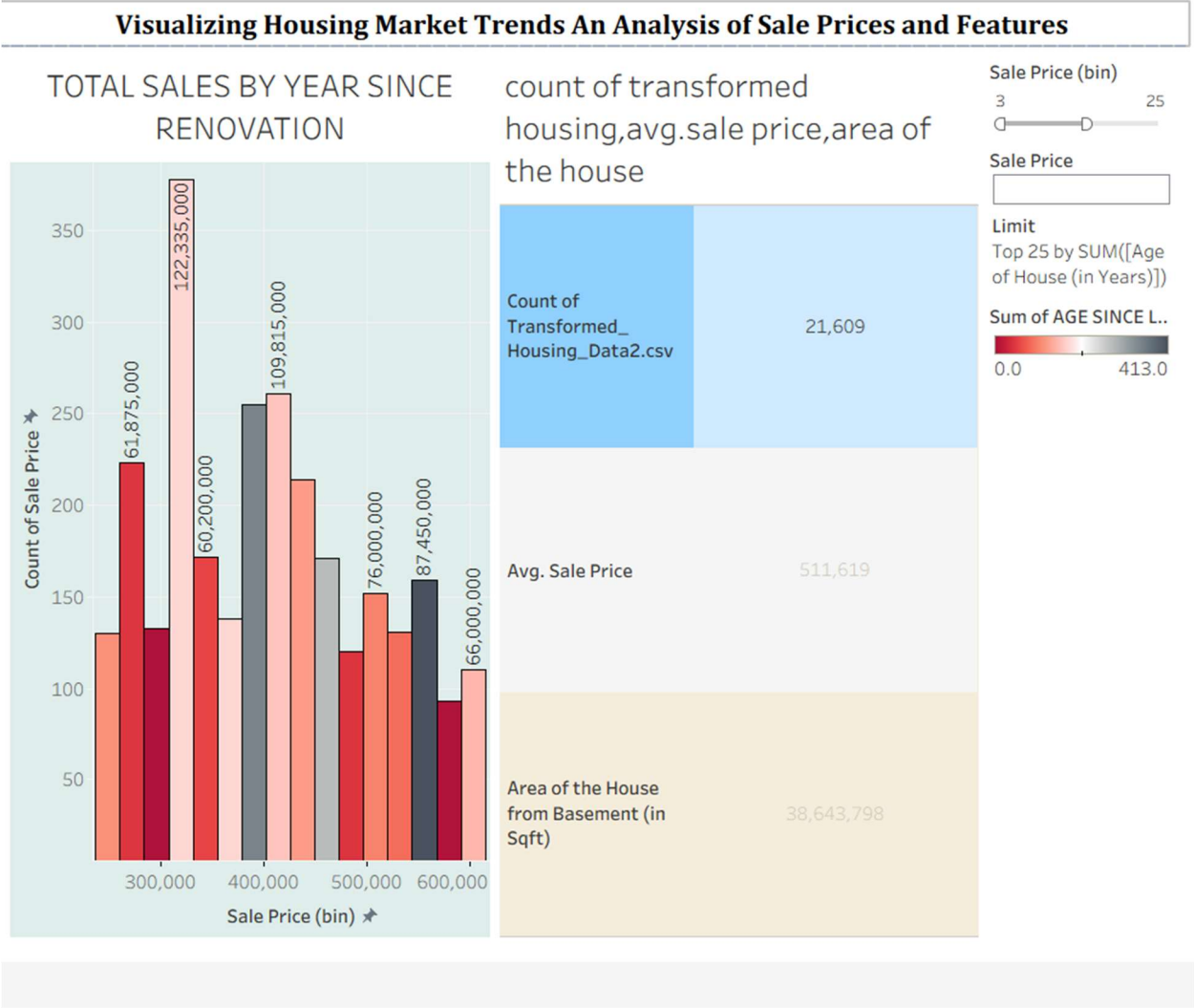
6.FUNCTIONAL &PERFORMANCE TESTING:

S.NO	Parameter	Screenshot/Values
1.	Data Rendered	21,609 records successfully loaded into Tableau 31 columns, including numeric, categorical, and calculated fields No data truncation or errors
2.	Data Preprocessing	Null values handled in relevant columns (e.g., bathrooms, renovations) Derived fields like House Age, Years Since Renovation, and flags generated
3.	Utilisation of Filters	Filters applied: Bedrooms, Bathrooms, Floors, Renovation Status, House Age ranges Interactivity verified across all dashboard scenarios
4.	Calculation fields used	House Age (in Years), Years Since Renovation, Renovated Flag (Yes/No) Grouped bins for visualization e.g., price ranges, age groups
5.	Dashboard design	No of Visualisations / Graphs – 4 • KPI Cards (Avg Price, Total Houses, Basement Area) • Pie Chart • Histogram • Grouped Bar Chart
6.	Story Design	No of Visualisations / Graphs -Each dashboard scenario visualized as a story step 4 story points: • Overview • Sales by Renovation • Renovation vs Age • Age by Features

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7.RESULTS:

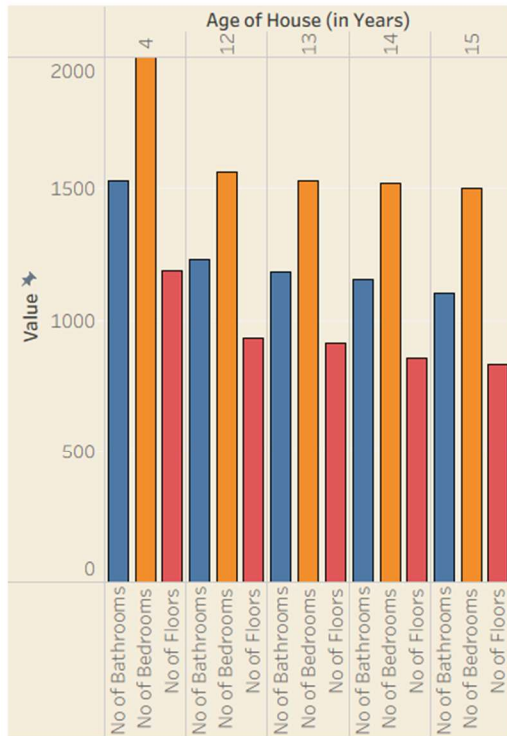
7.1:Output Screenshots:



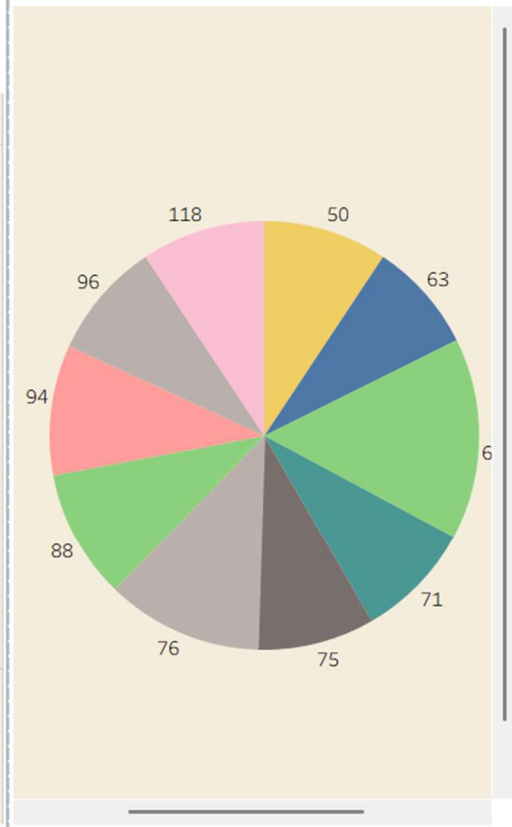
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Visualizing Housing Market Trends An Analysis of Sale Prices and Features

HOUSE AGE DISTRIBUTION BY
NUMBER OF
BATHROOMS,BEDROOMS AND
FLOORS



DISTRIBUTION OF HOUSE AGE
BY RENOVATION STATUS



Age of House (in Ye..

50

63

68

71

75

76

88

94

96

118

Ever Renovated Yes

204

Measure Names

No of Bathrooms

No of Bedrooms

No of Floors

8.ADVANTAGES & DISADVANTAGES:

Advantages:

- Interactive and easy-to-use visual analysis
- Supports data-driven real estate decisions
- Saves time compared to manual analysis
- Easy to share insights with others

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Disadvantages:

- Requires Tableau skills or training
- May depend on data quality and freshness
- Can be overwhelming for first-time users
- Needs regular updates to stay relevant

9.CONCLUSION:

Conclusion

This project demonstrates how Tableau can effectively visualize housing market trends, making complex data accessible and actionable. By analyzing sale prices and property features, stakeholders can gain valuable insights to support smarter real estate decisions. While there are some challenges, such as the need for user training and consistent data updates, the benefits of interactive, data-driven analysis far outweigh these limitations, enabling more confident and informed choices in the housing market.

10.FUTURE SCOPE:

Future Scope

- Integrate real-time housing market data feeds
- Add predictive analytics and forecasting features
- Expand to include rental market trends
- Incorporate more demographic and economic factors

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11.APPENDIX:

Dataset link:

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

Project demo link:

https://drive.google.com/file/d/1riucpFHBd2BkPZp0vzdl8oKgWexbzhQM/view?usp=drive_link