Project Report Format

1. **INTRODUCTION**

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1.1 Project Overview

The aim is to deliver a comprehensive **data-driven analysis** of housing market trends, exploring how sale prices interact with property attributes—like bedrooms, lot size, and location—and seasonal factors. Using Tableau, the project visualizes patterns and informs decisions for homeowners, real estate professionals, and analysts.

1.2 Purpose

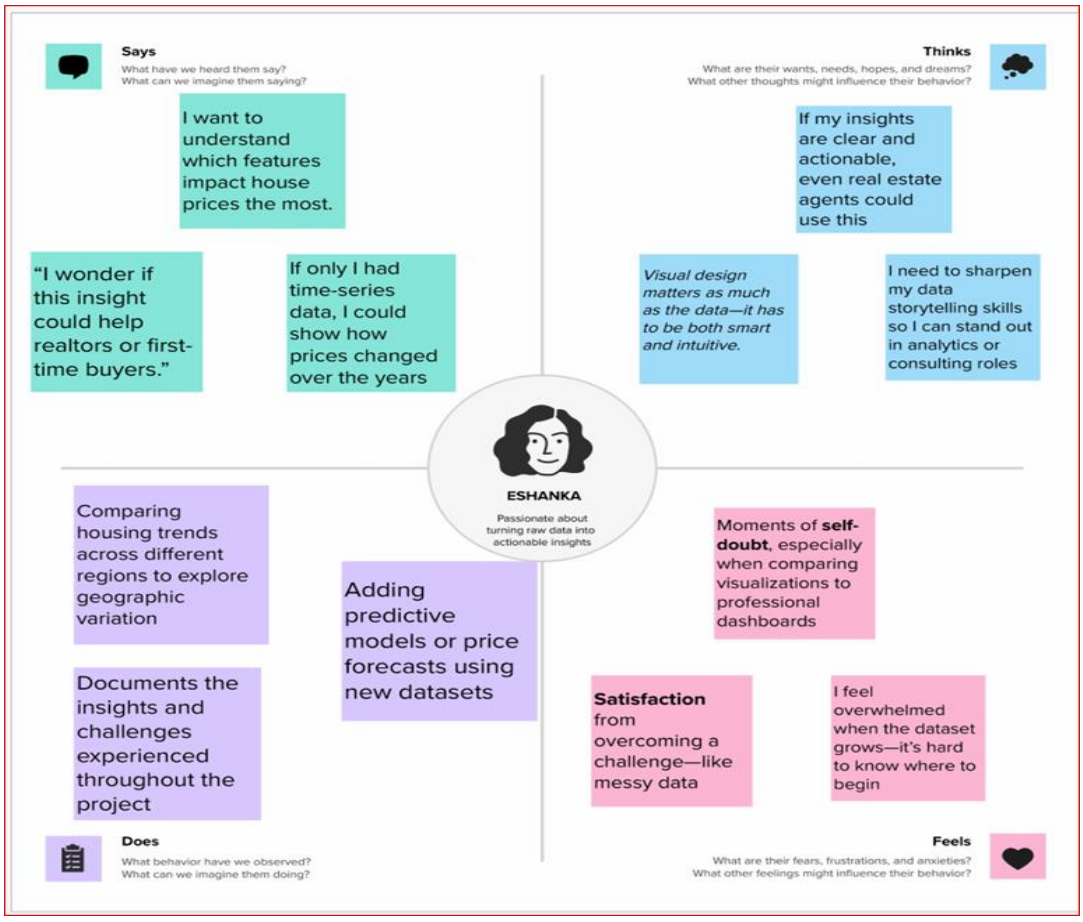
1. Reveal temporal trends in housing prices (e.g., median price growth).
2. Measure feature-driven price premiums, including seasonal effects.
3. Spot value opportunities across geography using maps and regional comparisons.
4. Empower stakeholders—buyers, sellers, and investors—with clear, filterable visuals to support informed decisions .

2. **IDEATION PHASE**

2.1 Problem Statement

How might we turn raw Housing data into interactive visuals that clearly show how property features affect sale prices across time and regions?

2.2 Empathy Map Canvas



2.3 Brainstorming

Brainstormed scenarios included pricing impact by renovation, house age distributions, and how features like bathrooms or floors affect sales.

3. REQUIREMENT ANALYSIS

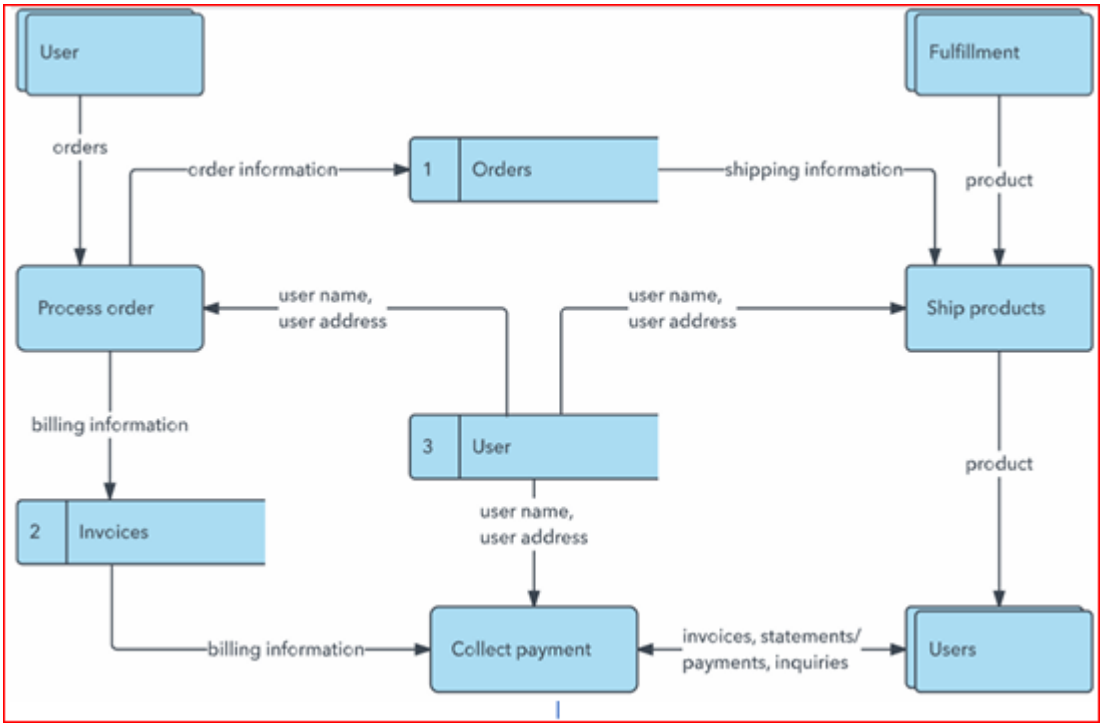
3.1 Customer Journey map

1. **Persona** – A focused user profile detailing goals, background, and needs.
2. **Stages** – High-level journey phases (e.g., Awareness → Exploration → Insight → Action → Feedback).
3. **Touchpoints & Actions** – Specific interactions and behaviors within each stage.
4. **Emotions & Thoughts** – User feelings (e.g., curiosity, excitement, confusion).
5. **Pain Points** – Barriers or friction in the experience.
6. **Opportunities** – Ways to enhance usability, understanding, or engagement.
7. **Channels**, **KPIs**, or **Ownership** – Track overall effectiveness and responsibilities

3.2 Solution Requirement

*** Purpose & Audience**
*** Data Preparation & Modeling**
*** Dashboard Layout & Visual Design**
*** Interactivity & User Guidance**
*** Performance & Optimization**
*** Responsiveness & Accessibility**
*** Exporting & Sharing**
*** Testing & Feedback**
*** Maintenance & Monitoring**

3.3 Data Flow Diagram



3.4 Technology Stack

"Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau," the chosen technology stack combines intuitive visualization with powerful data-handling tools to provide meaningful insights into real estate patterns.

4. PROJECT DESIGN

4.1 Problem Solution Fit

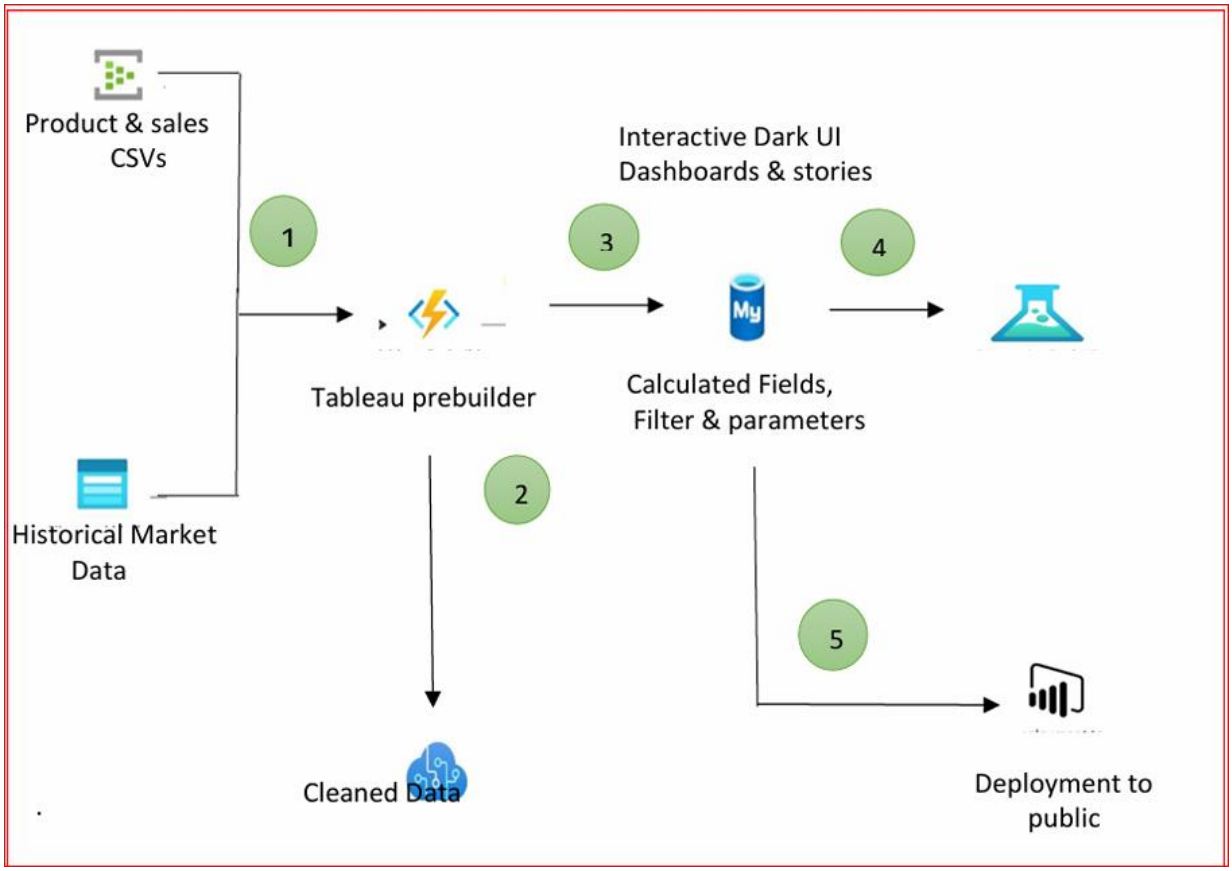
Real estate data is massive, messy, and often hard for stakeholders to decode. Buyers, sellers, and analysts need quick, meaningful insights to make informed decisions—but raw data alone doesn't help.

This project bridges that gap with **interactive Tableau dashboards** that turn numbers into intuitive visuals. By transforming sale prices and housing features into trends and patterns, the solution gives users a clear edge in understanding market behavior. It simplifies analysis, enhances clarity, and supports smarter decisions—all without needing advanced technical skills.

4.2 Proposed Solution

To address the complexity of understanding housing market dynamics, we propose an interactive Tableau dashboard that transforms raw property data into clear, actionable insights.

4.3 Solution Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Week 1: Data collection and cleaning

Week 2: Exploratory analysis and dashboard planning

Week 3: Dashboard development in Tableau

Week 4: Testing, refinement, and documentation

6. FUNCTIONAL AND PERFORMANCE TESTING

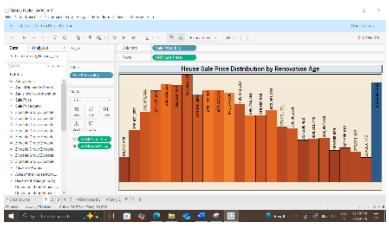
6.1 Performance Testing

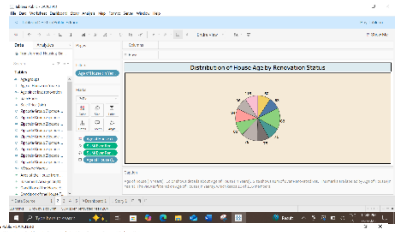
The Tableau dashboards were evaluated for responsiveness, interactivity, and stability under different usage scenarios.

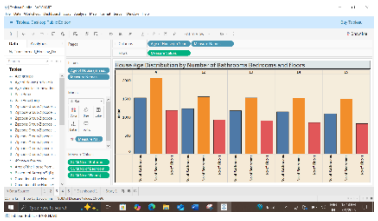
- **Load Time**
- **Filter Responsiveness**
- **Cross-device Compatibility**
- **Data Volume Handling**

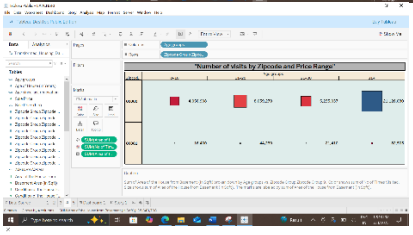
7. RESULTS

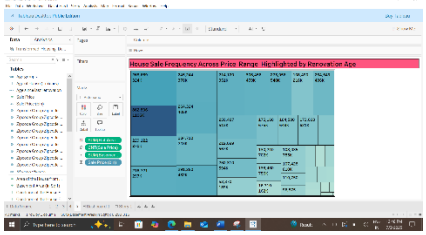
7.1 Output Screenshots











8. ADVANTAGES

Geospatial Insights	**-Pinpoint neighborhoods with rising/falling prices**
Interactivity	**-Users can explore datasets tailored to their criteria**
Data Blending	**-Combine sale data with demographics or school ratings**
Forecasting	**-Anticipate market trends, seasonality effects**
High Performance	**-Handle large datasets from MLS or public records**
Data Storytelling	**-Simplify complex statistical relationships visually**
Collaboration	**-Shareable dashboards unite teams and stakeholders**
Custom Analytics	**-Measure feature-specific value (e.g. garage, lot size)**

9. DISADVANTAGES

High Cost	**-Limits software access for smaller teams**
Learning Curve	**-Steep ramp-up time for analysts**

Performance Bottlenecks	**-Slow with large MLS and time-series data**
Poor Data Prep	**-Requires external cleaning tools**
Customization Limits	**-Restricted dashboard design flexibility**
Weak Versioning & Collab	**-Hard to maintain and scale work**

10. CONCLUSION

By leveraging Tableau to analyze sale prices and property features, this project empowers stakeholders with clear, data-driven insights into real estate dynamics:

- Interactive dashboards highlight influences of property characteristics—like bedrooms, lot size, zoning, and condition—on sale prices, making it easy to spot key value drivers.
- Geographic visualizations (maps and filled choropleths) reveal spatial pricing patterns and identify market hotspots, aiding location-specific decisions.
- Temporal charts (e.g., price and revenue line graphs) track seasonal trends and revenue shifts over time, supporting forecasting and strategic planning .
- User-powered exploration—through filters, drill-downs, and tooltips—enables end-users to tailor the analysis to their own criteria (e.g., bedrooms, ZIP code, year), fostering self-guided discovery.
- Tool synergy: Tableau seamlessly integrates multiple data sources—such as listings, revenue and demographics—without heavy manual ETL, even on large datasets**.**

11. FUTURE SCOPE

12. • **AI-powered insights & forecasting**: Augmented analytics (Ask Data, Explain Data) will enable automated trend detection, anomaly spotting, and predictive modeling—making analysis faster, smarter, and more accurate .
13. • **Real-time, customizable dashboards**: Live data feeds and API connections will deliver up-to-the-minute market visuals that users can tailor on the fly .
14. • **Immersive AR/VR and 3D mapping**: Interactive 3D neighborhood visualizations or virtual walkthroughs will offer deeper spatial context and engagement .
15. • **Multimodal ML valuation models**: Integrating text, images, and structured data in valuation models will enhance accuracy and interpretability

16. APPENDIX

Dataset Link:

https://www.kaggle.com/d

atasets/rituparnaghosh18/tr

ansformed-housing-data-2

GitHub & Project Demo Link: kalyani9705/SMARTBRIDGE-PROJECT-: DATA ANALYTICS WITH TABLEAU