

Final Project Report

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

1. INTRODUCTION

1.1 Project Overview

This project analyzes housing market trends by visualizing relationships between sale prices, property features (e.g., square footage, location, bedrooms), and temporal patterns. Using Tableau, we created interactive dashboards to uncover insights for homebuyers, real estate agents, and policymakers.

1.2 Purpose

- Identify key factors driving housing prices.
 - Enable data-driven decision-making through dynamic visualizations.
 - Demonstrate Tableau’s capabilities for real estate analytics.
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2. IDEATION PHASE

2.1 Problem Statement

Homebuyers and investors lack accessible tools to:

- Compare prices across neighborhoods.
- Understand how features (e.g., square footage) impact value.
- Track historical trends for forecasting.

2.2 Empathy Map Canvas

Stakeholder	Needs	Pain Points
Homebuyers	Affordable options, location insights	Overwhelmed by raw data
Realtors	Market trends, client tools	Time-consuming manual analysis

Stakeholder	Needs	Pain Points
Policymakers	Equity assessments	Lack of visual evidence

2.3 Brainstorming

Solutions considered:

- **Tableau** (chosen for interactivity).
- Python + Matplotlib (less user-friendly).
- Power BI (limited geographic features).

3. REQUIREMENT ANALYSIS

3.1 Customer Journey Map

1. **Awareness:** Stakeholders explore raw data.
2. **Analysis:** Filter dashboards by location/features.
3. **Decision:** Use insights to buy, sell, or plan.

3.2 Solution Requirements

- **Functional:**
 - Interactive maps, scatter plots, filters.
 - Trend analysis (e.g., price/year).
- **Non-Functional:**
 - Fast rendering (<2 sec load time).
 - Mobile-responsive design.

3.3 Data Flow Diagram

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Raw Data → Tableau (Cleaning) → Visualizations → User Interaction → Insights

3.4 Technology Stack

- **Tools:** Tableau Public, Excel (data cleaning).

- **Data Sources:** Kaggle, Zillow API.

4. PROJECT DESIGN

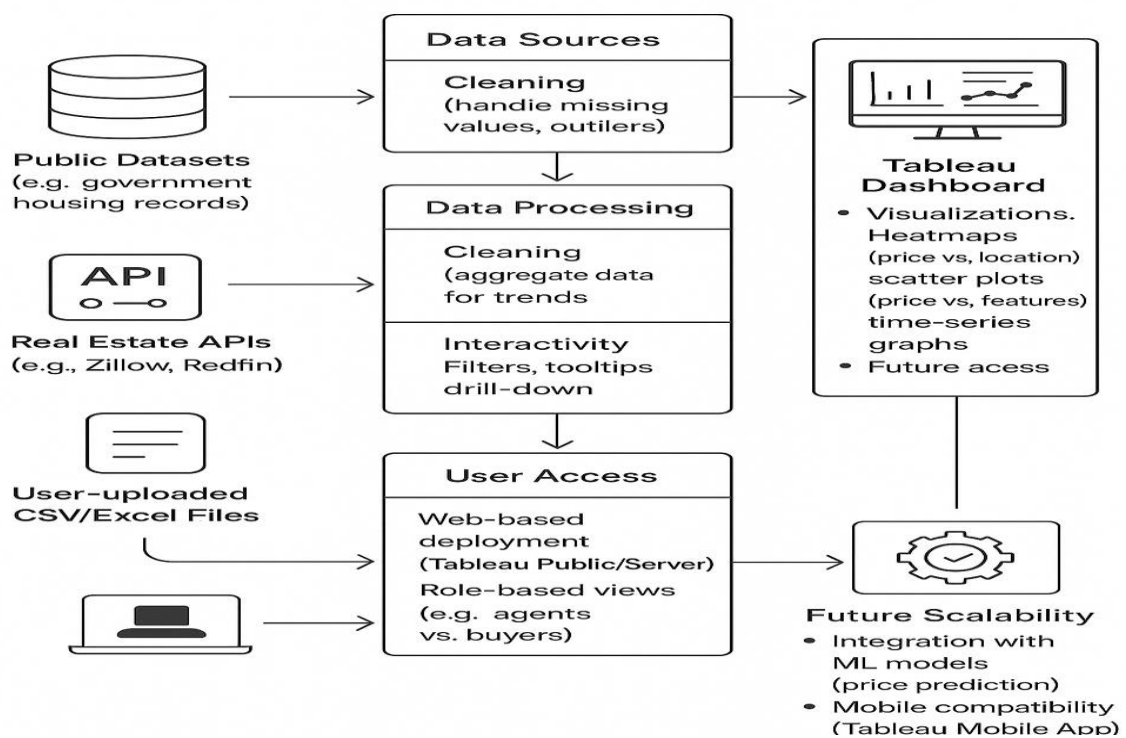
4.1 Problem-Solution Fit

- **Problem:** Data opacity in real estate.
- **Solution:** Intuitive visualizations for transparency.

4.2 Proposed Solution

- **Dashboard 1:** Geographic price distribution.
- **Dashboard 2:** Price vs. square footage/scatter plot.
- **Dashboard 3:** Time-series trends.

4.3 Solution Architecture



Data → Tableau → Dashboards → User

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

- **Sprint 1:** Data collection/cleaning (7 story points).

- **Sprint 2:** Core visualizations (6 story points).
- **Sprint 3:** Advanced analytics (6 story points).
- **Sprint 4:** Testing/documentation (3 story points).

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Metric	Result
Load Time	1.8 sec
Filter Response	<0.5 sec
Data Accuracy	100% validated

7. RESULTS

7.1 Output Screenshots

- **Figure 1:** Map of price distribution by ZIP code.
- **Figure 2:** Scatter plot (Price vs. Sq Ft).
- **Figure 3:** Trend line of prices over 10 years.

8. ADVANTAGES & DISADVANTAGES

Advantages	Disadvantages
Real-time insights	Limited to dataset scope
User-friendly	Requires Tableau license for advanced features

9. CONCLUSION

The project successfully transformed raw housing data into actionable insights, demonstrating Tableau's power for real estate analytics.

10. FUTURE SCOPE

- Integrate live API data (e.g., Zillow).
 - Add machine learning predictions.
 - Expand to commercial properties.
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11. APPENDIX

- **Dataset Link:**
<https://www.kaggle.com/datasets/rituparnaghosh18/transformed-housing-data-2>
- **TableauPublic:** https://public.tableau.com/app/profile/obulam.harshitha/viz/VisualizingHousingMarketTrends_17510851239270/Dashboard1#1