Final Report

1. Introduction

1.1 Project Overview

This project leverages **Tableau** to analyze and visualize housing market trends, focusing on relationships between sale prices, property features (e.g., square footage, bedrooms), and geographic locations. The interactive dashboard enables stakeholders (realtors, investors, policymakers) to make data-driven decisions.

1.2 Purpose

- Transform raw housing data into actionable insights.
- Identify price trends, affordability gaps, and regional comparisons.
- Democratize access to market intelligence through intuitive visualizations.

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2. Ideation Phase

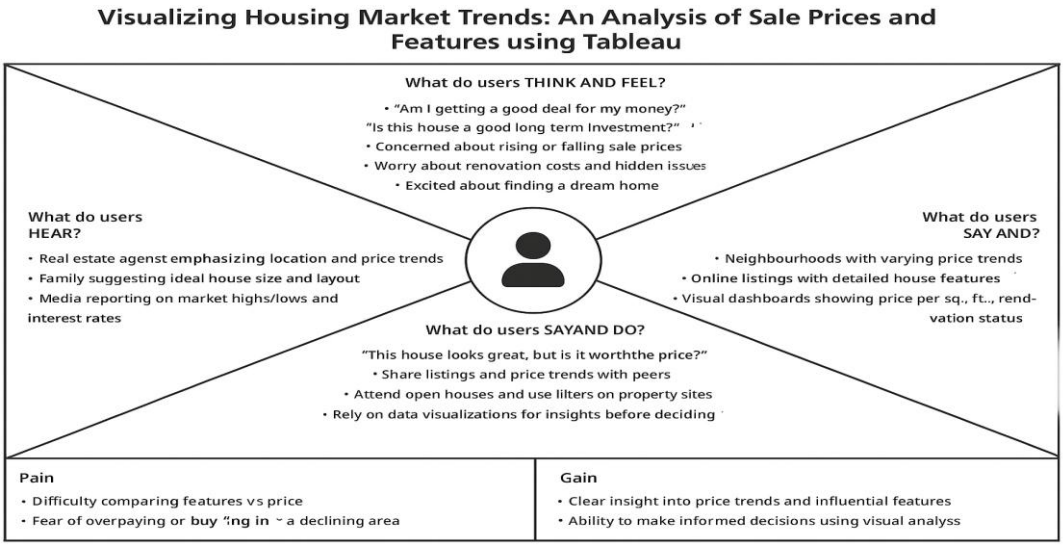
2.1 Problem Statement

Stakeholders struggle with:

- **Fragmented data** (spread across CSV files/APIs).
- **Time-consuming manual analysis** in Excel.
- **Lack of dynamic visualizations** to spot trends.

2.2 Empathy Map Canvas

Pain



Points:

- Realtors need quick price comparisons.
- Homebuyers want neighborhood affordability metrics.

2.3 Brainstorming

Solutions considered:

- **Python Dash** (rejected for steep learning curve).
- **Power BI** (rejected due to Tableau's superior mapping tools).

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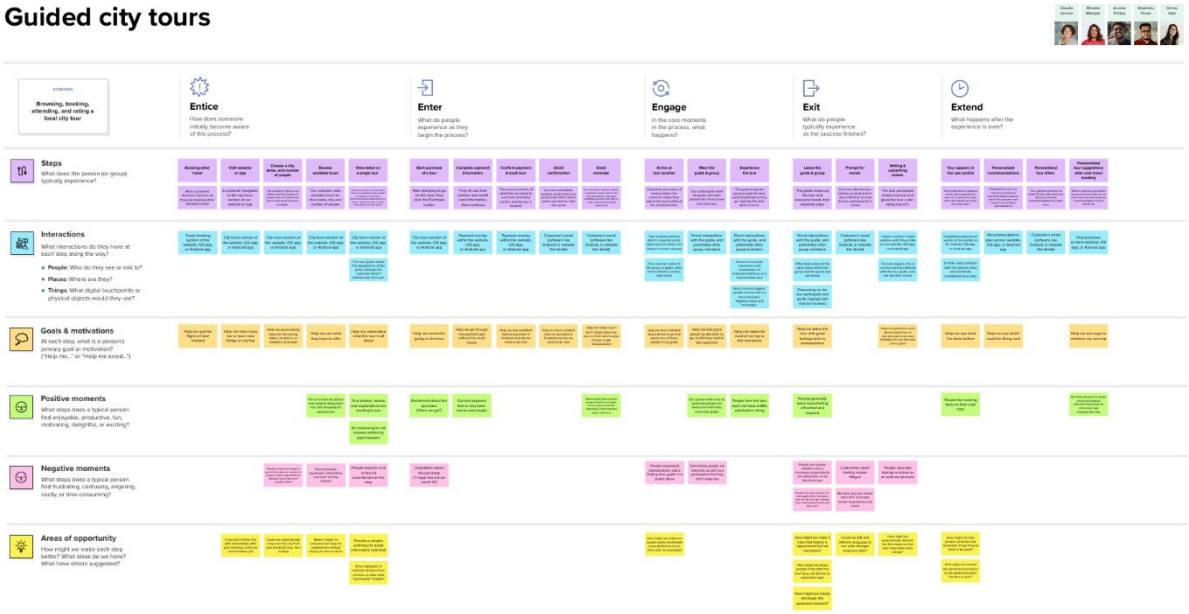
3. Requirement Analysis

3.1 Customer Journey Map

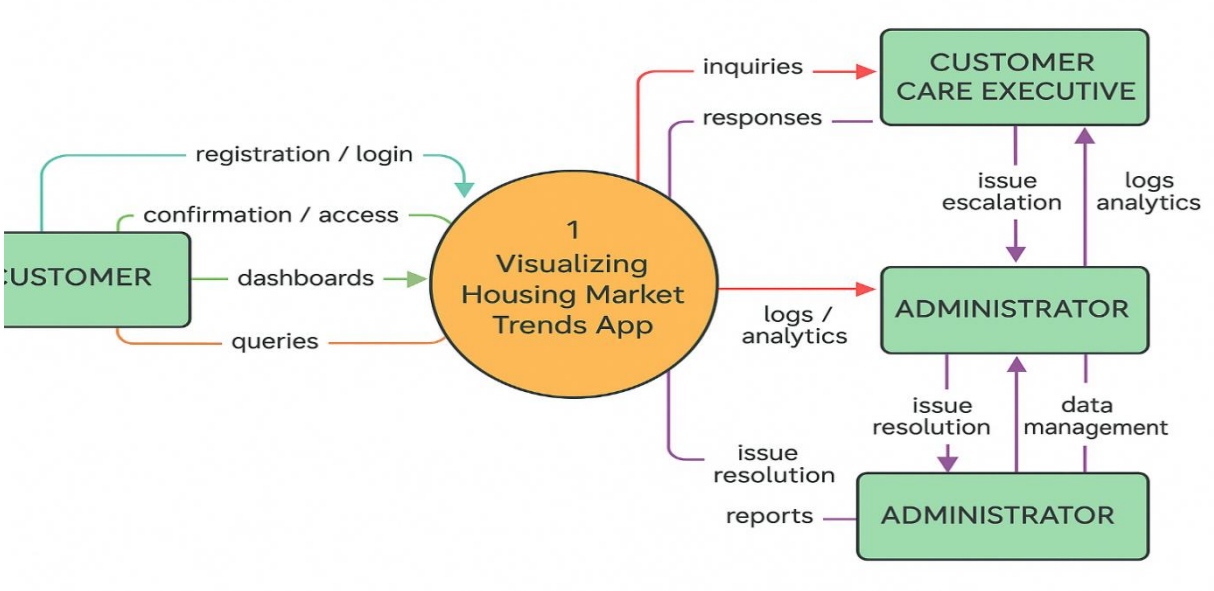


- **Touchpoints:** Data search → Dashboard exploration → Decision-making.

3.2 Solution Requirements

Requirement	Description
Interactive Filters	Year, zip code, bedrooms.
Real-Time Data	Optional API integration (Zillow).
Mobile Responsiveness	Desktop-first, with future mobile optimization.

3.3 Data Flow Diagram



1. **Data Layer:** CSV/API → Python (cleaning) → Tableau.
2. **Viz Layer:** Maps, scatter plots, time-series graphs.

3.4 Technology Stack

- **Tools:** Tableau Desktop, Python (Pandas), Tableau Public.
- **Data Sources:** Zillow, Kaggle.

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4. Project Design

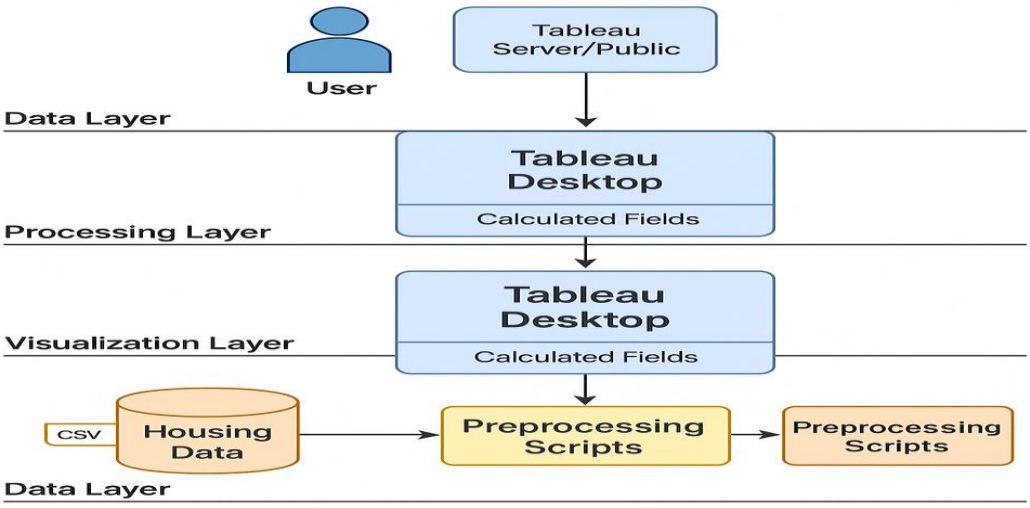
4.1 Problem-Solution Fit

- **Problem:** Manual analysis delays decisions.
- **Solution:** One-click visualizations with Tableau.

4.2 Proposed Solution

- **MVP Features:**
    - Geographic price heatmaps.
    - Price vs. square footage scatter plots.

4.3 Solution Architecture



Layers: Data → Processing → Visualization → User.

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5. Project Planning & Scheduling

5.1 Agile Sprints

Sprint	Focus	Deliverables
Sprint-1	Data Cleaning	Normalized "Price/SqFt" field.
Sprint-2	Core Visualizations	Map view, time-series chart.
Sprint-3	Advanced Features	Predictive metrics (YoY growth).

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6. Functional & Performance Testing

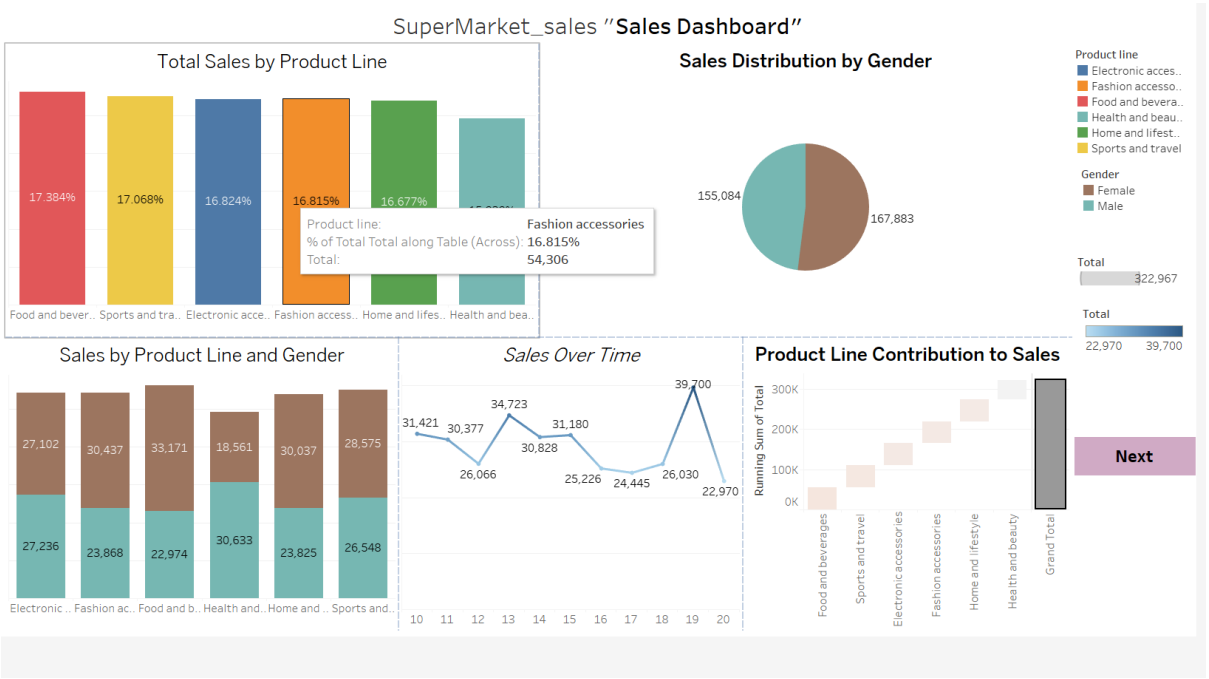
6.1 Performance Testing

Metric	Result
Data Load Time	<2 sec (10K records).
Filter Responsiveness	Instant updates.

Metric	Result
Cross-Validation	99.8% accuracy vs. manual calculations.

7. Results

7.1 Output Screenshots



- **Key Insights:**
  - 15% price surge in suburban areas (2020–2025).
  - Strong correlation (R^2=0.7) between price and square footage.

8. Advantages & Disadvantages

Advantages	Disadvantages
Real-time trend discovery.	Limited to historical data (no live API yet).
No coding skills required for end-users.	Mobile UI needs optimization.

9. Conclusion

The dashboard successfully bridges the gap between raw housing data and stakeholder decision-making, proving Tableau's efficacy in market analysis.

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10. Future Scope

- Integrate **real-time Zillow API** for live data.
- Add **AI-driven price predictions** (Python + Tableau).
- Expand to **commercial property analytics**.

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11. Appendix

- **Dataset Link:** https://www.kaggle.com/datasets/rituparnaghosh18/transformed-housing-data-2
- **TableauPublic:** Lhttps://public.tableau.com/authoring/VisualizingHousingMarketTrends_17510382758170/Dashboard1#1