



Beta Presentation

Generating Mapping Insights Using AI

The Capstone Experience

Team Urban Science

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*From Students...
...to Professionals*

Project Overview

- Visualize and test new dealership locations on an interactive map while viewing key performance metrics
- Instant AI guidance on legal risks and market impact
- Enables users to plan dealerships with confidence



Team Member's Technical Tasks

Technical Tasks Assigned

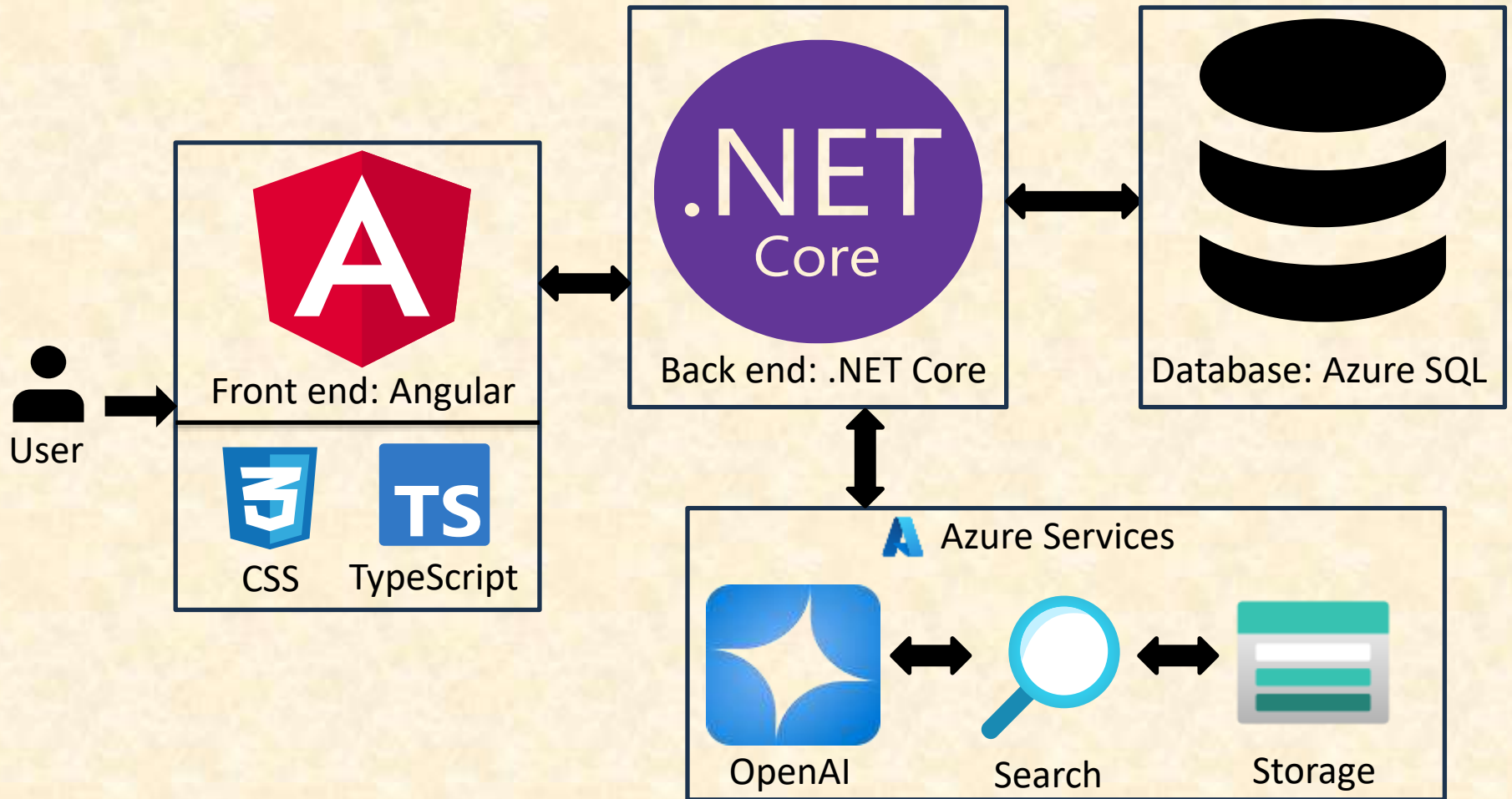
- Steven Spencer
 - Rag System on Azure (Researching legal documents) | OpenAI deployments
 - Initial UI for map page | Chat history and saving chats | Prompt engineering
 - Adding data to database | Initial database schema
- Abdulrahman Almazrouei
 - KPI heatmaps; for sales change and market share change with date filtering
 - Backend APIs; 3 endpoints for sales, market share, and vehicle data
 - Vehicle filter with brand/model filter
 - Created three interactive graphs and added summary cards to each graph
- Julia Mawi
 - Filters (Zip Code, Market Share, Demographic, Dealership Search)
 - Data Visualization Page (UI, Three interactive graphs, Pop up)
 - Creating some of the tables in database
- Anas Shaaban
 - AI pipeline / Azure setup / LLM prompt engineering / context management
 - AI Chat Streaming, RAG system citations viewing
 - Legal radius feature and detection of dealerships within radius
 - Displaying saved chats for each dealership feature
- Gabe McGuire
 - Implemented territory assignment logic for dealerships based on air distance, and color code GUs
 - Air distance calculations for dealership protest radii based upon county populations
 - Implement server-side request caching for KPIs
- Harjap Khabra
 - Setup Mapbox & all dealership functionality frontend, backend, db (add, delete, update, persistency, popup, etc)
 - Projects feature frontend, backend, db (creating proj, proj-wizard, crud, etc)
 - Scenarios feature frontend, backend, db (persistency b/w scenarios, crud, etc)
 - Compare scenarios with toggle feature

Technical Tasks Completed

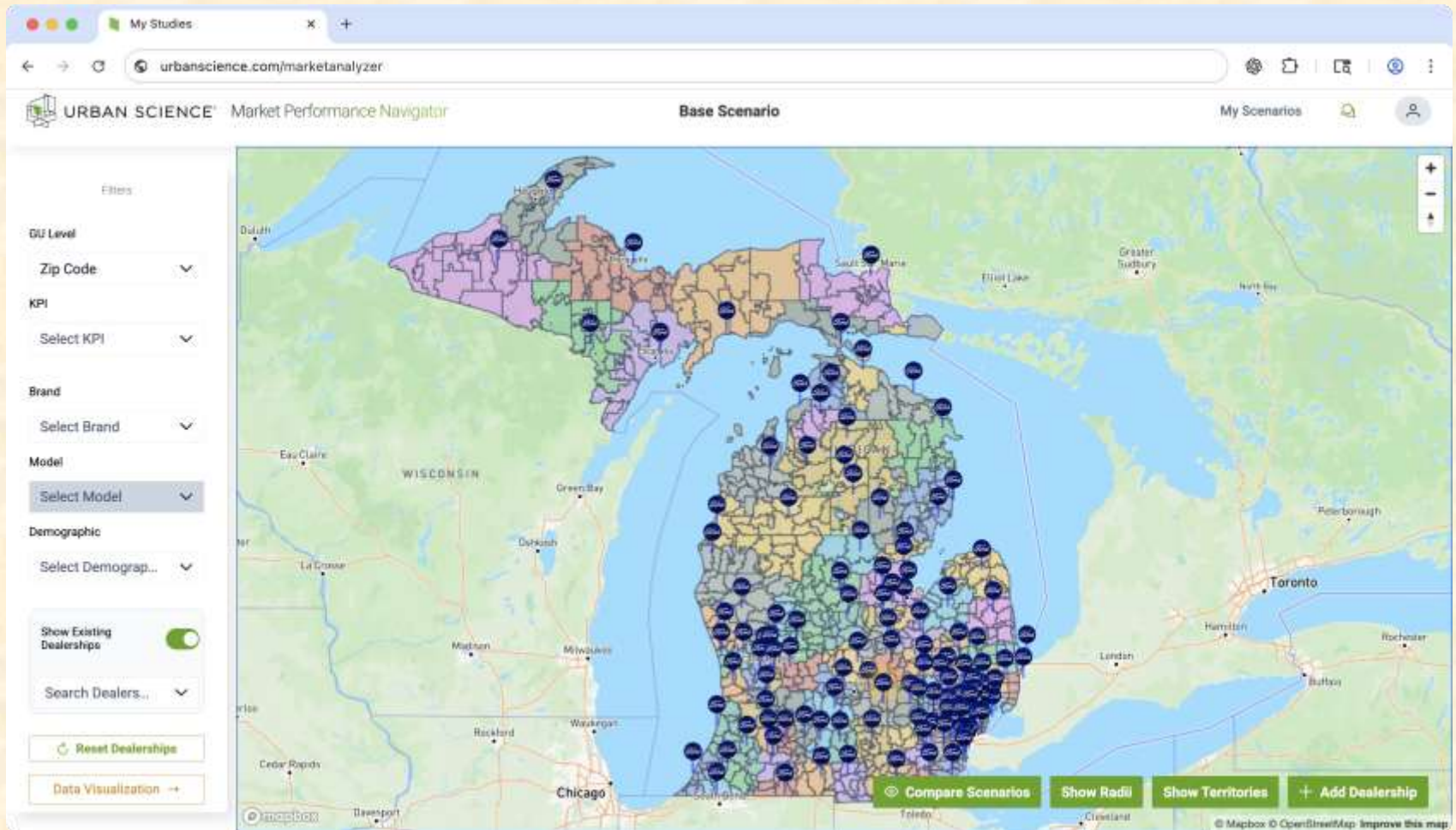
- Steven Spencer
 - Azure RAG System (legal documents/Implementation) | OpenAI deployments
 - Initial UI for map page | Chat history and saving chats | Prompt engineering
 - Majority of database management (adding data | managing models/schema)
- Abdulrahman Almazrouei
 - KPI heatmaps; for sales change and market share change with date filtering
 - Backend APIs; 3 endpoints for sales, market share, and vehicle data
 - Vehicle filter with brand/model filter | Reduced API load time by caching
 - Created three interactive graphs and added summary cards to each graph
- Julia Mawi
 - Filters (Zip Code, Market Share, Demographic, Dealership Search)
 - Data Visualization Page (UI, Three interactive graphs, Pop up)
 - Creating some of the tables in database
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 - AI pipeline / Azure setup / LLM prompt engineering / context management
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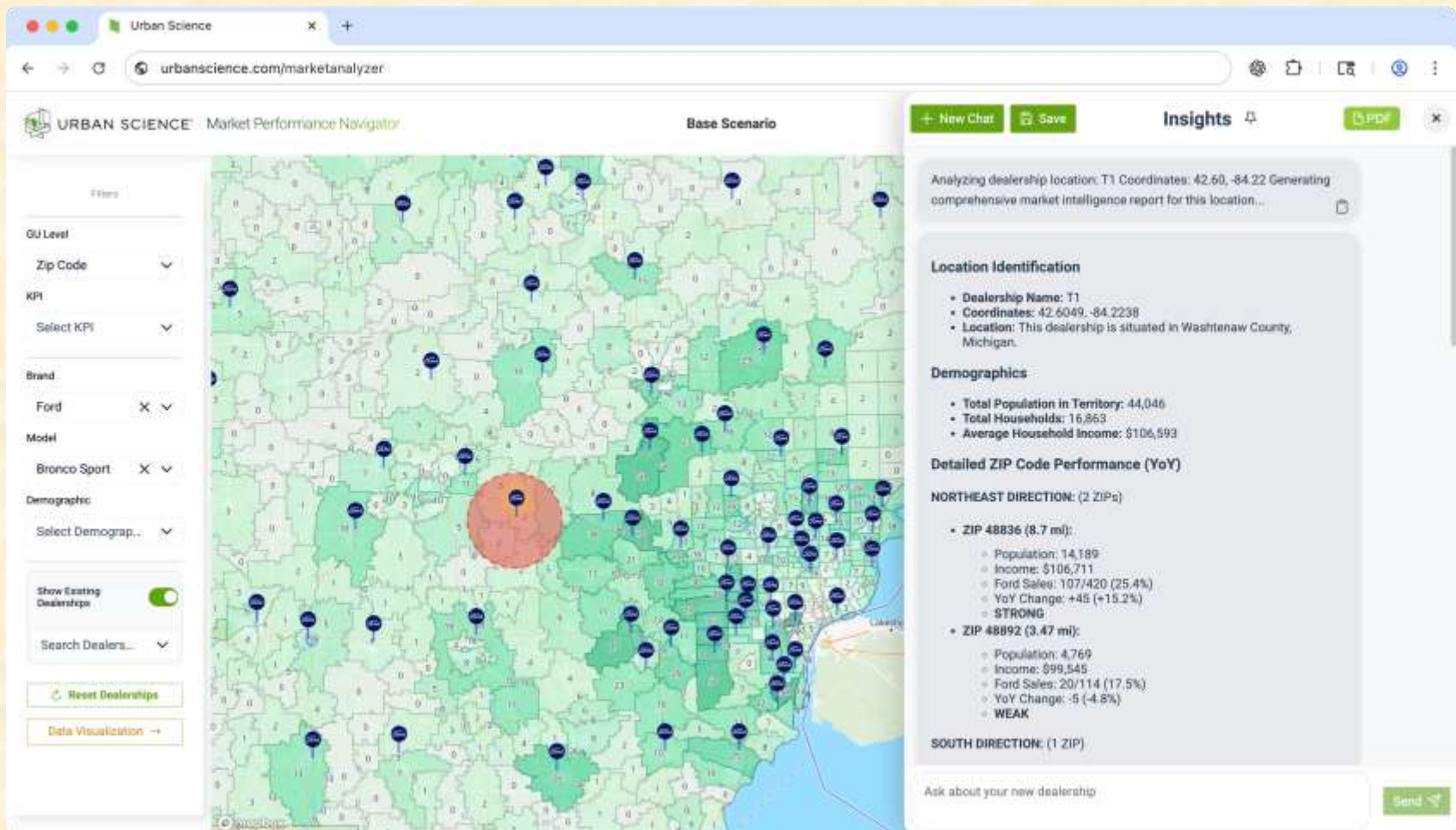
System Architecture



Map/Landing



AI Insights & Heatmap



Scenario Comparison

The screenshot displays the Urban Science Market Performance Navigator web application. The browser address bar shows `urbanscience.com/marketanalyzer`. The page title is "URBAN SCIENCE Market Performance Navigator". A "My Scenarios" section at the top includes a search bar, a "Sort: Updated" dropdown, and buttons for "Compare Scenarios" and "New Scenario". Below this, two scenario cards are visible: "MI Expansion" and "Base Scenario", both created and updated on Nov 10, 2025. The "MI Expansion" card indicates 132 Dealers, while the "Base Scenario" card indicates 121 Dealers. A "Scenario Comparison" modal is open, showing a side-by-side comparison of the two scenarios. The "MI Expansion" side lists two new dealers, T9 (43.0103, -83.7875) and T8 (45.0099, -83.9605). The "Base Scenario" side lists one new dealer, T1 (42.0049, -84.7238). A third panel on the right, titled "AI Comparison Summary", provides a detailed analysis of the differences between the scenarios, highlighting the strategic advantages of the MI Expansion scenario.

My Scenarios

Search scenarios... Sort: Updated Compare Scenarios New Scenario

MI Expansion 132 Dealers
Created: Nov 10, 2025
Updated: Nov 10, 2025
[Click to open scenario](#)

Base Scenario 121 Dealers
Created: Nov 10, 2025
Updated: Nov 10, 2025
[Click to open scenario](#)

Scenario Comparison

MI Expansion
Created: 11/10/25, 7:49 PM

New Dealers (2)

T9
43.0103, -83.7875

T8
45.0099, -83.9605

Base Scenario
Created: 11/10/25, 1:07 AM

New Dealers (1)

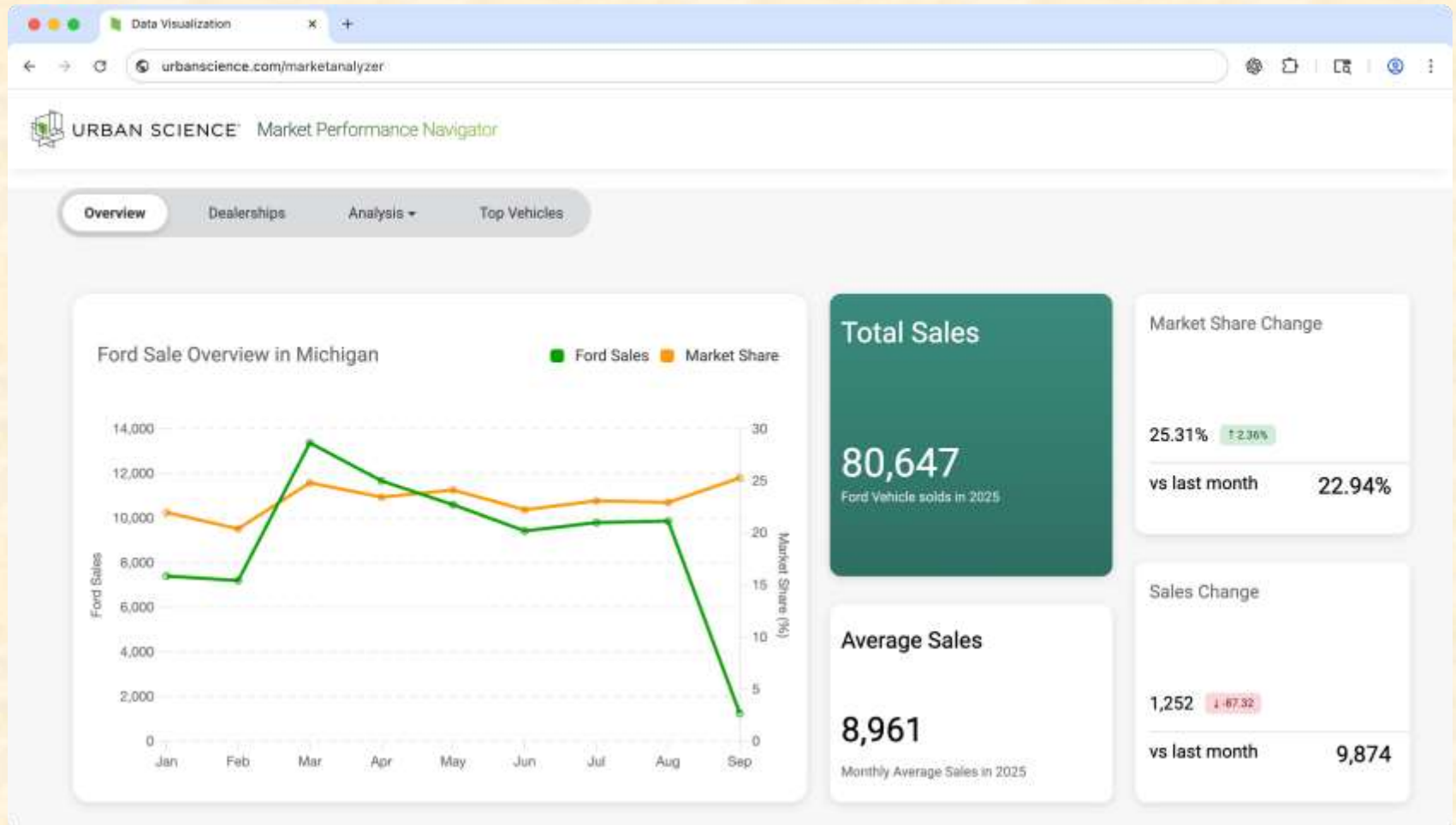
T1
42.0049, -84.7238

AI Comparison Summary
Analysis of scenario differences.

Strategic Advantages: Scenario 1 (MI Expansion) offers a potential strategic advantage through the addition of two new dealers (T9 and T8), which can increase market penetration and brand visibility in Michigan. The locations of T9 and T8 are strategically dispersed—T9 is positioned in the central-west region (near Muskegon), while T8 is in the northeast (near Alpena). This broader geographical coverage may lead to enhanced customer reach and better access to diverse segments of the market compared to Scenario 2 (Base Scenario), which involves just one dealer location (T1) in the south-central region of Michigan. Expanding with multiple dealers can create a competitive edge by developing local partnerships and economies of scale.



Data Visualizations



What's left to do?

- Features
 - No major features
- Stretch Goals
 - Zoning
- Other Tasks
 - Bug fixes
 - Documentation

Questions?

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