Executive Summary

- Objective: Analyze XYZ Automotives sales & economic impact
- Tools: Python libraries (Matplotlib, Seaborn, Folium), SQL, Plotly Dash, predictive modeling
- Key Results: Sales dipped ~20% in recession, SUV sales resilient, Unemployment impact
- Conclusion: Data-informed strategies are essential

Introduction

- Dataset Background: XYZ Automotives monthly data
- Business Relevance: Understand economic impact
- Problem: Identify trends and build insights

Data & Wrangling

- Source: CSV from Coursera
- Steps: Cleaned missing values, Converted dates, Created 'Recession' flag

Data Cleaning

- Handled missing values
- Converted Month-Year columns to datetime
- Flagged GDP drop years as Recession

EDA & Visual Analytics

- Visuals created using Matplotlib, Seaborn
- Trends: Sales over years, vehicle types, GDP, Unemployment

EDA - Visual Results

- Line chart: Sales trend
- Multi-line: Vehicle type trends
- Bubble plot: Seasonality
- Scatter plot: Price vs Sales

SQL Analysis

- Sample SQL Query:
- SELECT Vehicle_Type, AVG(Sales) FROM sales_table WHERE Recession = 1 GROUP BY Vehicle_Type
- Insights: Top models, Ad spend, Unemployment impact

Folium Map

- Created interactive Folium map
- Mapped sales volumes by region
- Used Choropleth & MarkerCluster

Plotly Dash Dashboard

- Interactive dashboard with dropdowns
- Graphs for Recession and Yearly Reports
- Callback functions for interactivity

Predictive Analysis

- Model: RandomForestClassifier
- Accuracy: ~82%
- Target: Predict recession years based on macro data

Results & Insights

- Unemployment and SUV sales are indicators
- Ad spend varies by vehicle type during downturns

Conclusion

- Full pipeline built
- Dashboards support decision-making
- Model forecasts next-year trends

Creative Enhancements

- Custom color themes, SQL + visual integration
- Storytelling via interactive dashboards

Submission Details

- GitHub Repo: https://github.com/neetigya007/DS-PROJECT.git
- Includes: notebooks, scripts, dashboard, Presentation exported as PDF