ELECTVIZ - ELECTION DATA VISUALIZATION FOR MEDIA

INFOSYS SPRINGBOARD INTERNSHIP 6.0

PROJECT REPORT

TEAM D

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Table Of Content

Project Overview

The objective of this project is to design an interactive Power BI dashboard that visualizes the 2024 Indian General (Lok Sabha) Election results in a clear and insightful manner. The dashboard goes beyond traditional election reports by transforming raw data into meaningful visual analytics that support quick understanding and exploration.

The project consists of a multi-page dashboard that follows a structured overview-to-constituency analysis flow. It presents alliance-wise seat distribution at the national level, state-wise political dominance using maps and charts, and detailed constituency-level insights including votes, candidates, and election outcomes.

The dashboard is built using the official 2024 Lok Sabha election dataset, which includes information on parties, alliances, EVM and postal votes, vote share, and winning margins. Custom DAX calculations are used to derive key metrics and enable interactive filtering. Overall, the project demonstrates how data visualization can effectively simplify and communicate complex election data.

Project Objectives

1. **Election Data Visualization**
   To clean, standardize, and visualize the 2024 Indian General (Lok Sabha) election data in an interactive dashboard for clear national, state, and constituency-level analysis.
2. **Insight-Driven Metrics**
   To compute and present key analytical measures such as alliance-wise seat share, vote share percentage, total votes, winning margin, and candidate ranking using DAX calculations.
3. **Interactive Political Analysis**
   To enable users to explore voting patterns, regional dominance, and party performance through dynamic filters, maps, and drill-down interactions.
4. **User-Friendly Storytelling**
   To transform complex election numbers into simple, visual stories that help users quickly understand election outcomes and trends.

Requirement and Backlog Analysis

The project followed a structured and iterative development approach, where requirements were clearly identified and prioritized to ensure accurate analysis and effective visualization of the 2024 Indian General (Lok Sabha) Election results. The focus was on transforming complex election data into an intuitive, interactive, and insight-driven dashboard.

1. Data Analysis & Feasibility

Before dashboard development, a detailed analysis of the 2024 Lok Sabha election dataset was conducted, which included information on candidates, parties, alliances, EVM votes, postal votes, total votes, vote share, and winning margins.

- **Gaps Identified:**
  The raw dataset did not directly provide several analytical insights such as alliance-wise seat totals, vote share percentages, candidate rankings, and comparative margins, which were essential for meaningful analysis.
- **Inconsistency Issues:**
  Variations in party and alliance naming were identified and standardized to ensure accurate aggregation and comparison across states and constituencies.
- **Modeling Requirements:**
  A clean data model with proper relationships between party, state, constituency, and results tables was required to support dynamic filtering and drill-down analysis.

2. Key Functional Requirements

The product backlog was organized to support a clear Overview-to-Constituency (Macro-to-Micro) analytical flow:

- **Data Cleaning & Standardization:**
  Ensuring consistent party, alliance, state, and constituency names to maintain data accuracy across visuals.
- **National Overview (Macro Level):**
  Displaying alliance-wise seat distribution using KPI cards and charts to present the overall election outcome at a glance.
- **State-Level Analysis:**
  Enabling users to select a state and instantly view party-wise performance, alliance dominance, and seat share using maps and visuals.
- **Constituency-Level Insights (Micro Level):**
  Providing detailed analysis of individual constituencies, including total votes, EVM votes, postal votes, and winner, runner-up, and second runner-up details.

- **Interactive Exploration:**
  Implementing slicers, filters, and cross-highlighting to allow users to dynamically explore election results.

3. Non-Functional Requirements

To ensure the dashboard delivers a smooth and professional user experience, the following non-functional requirements were addressed:

- **Performance:**
  Optimization of data modeling and DAX calculations to ensure fast loading and responsive interactions.
- **Usability:**
  A clear and intuitive navigation flow guiding users from national-level insights to state and constituency-level details.
- **Visual Consistency:**
  Use of consistent color coding for alliances and parties, along with clean layouts and readable typography, to maintain clarity and professionalism.

System Architecture and Data Modelling

❖ Objective

To design and implement a robust and scalable data model that supports efficient cross-filtering, drill-down, and interactive analysis across national, state, and constituency levels for the 2024 Indian General (Lok Sabha) Election dashboard.

❖ Schema Topology

The dashboard follows a Star Schema–based analytical architecture, optimized for Power BI performance, simplified relationships, and fast query execution during interactive reporting.

Fact Tables (Transactional Data)

1. ConstituencyWiseDetails

This table captures granular candidate-level voting **data** at the constituency level.
It includes:

- Candidate name
- Party
- EVM votes
- Postal votes
- Total votes

- Vote share (%)

This table supports detailed vote distribution and candidate-level analysis.

2. ConstituencyWiseResults

This table stores final constituency-level election outcomes, including:

- Constituency ID and name
- Winning party and alliance
- Winning margin
- Party ID

It acts as the core results table linking detailed votes to party and state-level analysis.

3. StatewiseResults

This table contains aggregated state-level election results, such as:

- State ID
- Parliamentary constituency details
- Leading and trailing candidates
- Margin and election status

It enables state-wise dominance analysis and political landscape visualization.

Dimension Tables (Lookup / Master Tables)

4. PartyWiseResults

Serves as the party master table, containing:

- Party ID
- Party name
- Party alliance

This table ensures consistent party and alliance mapping across all fact tables.

5. States

A standardized reference table containing:

- State ID
- State name

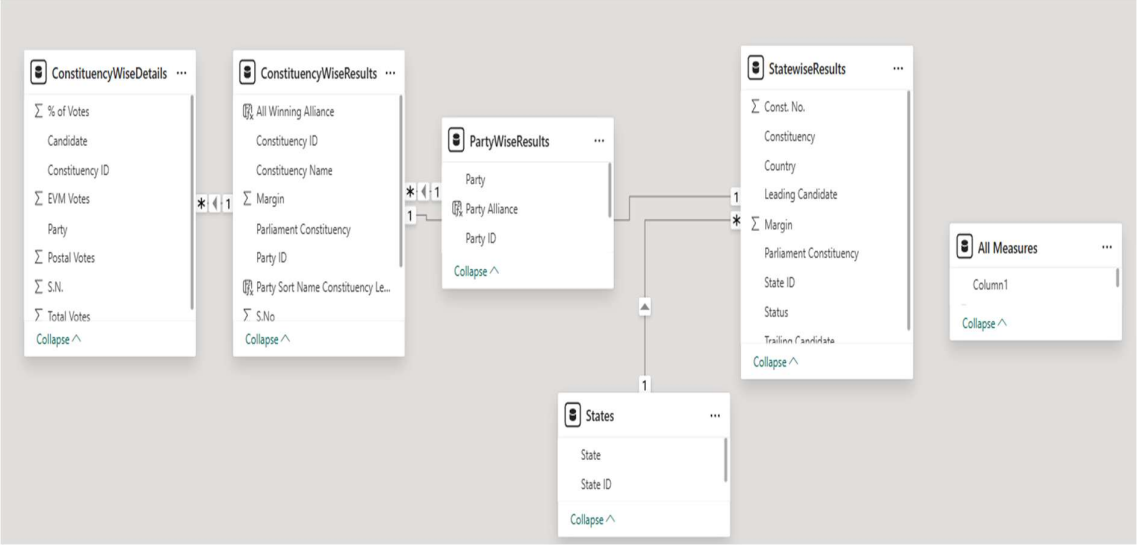
It is used for map-based visuals and state-level filtering.

6. All Measures

A dedicated table created to centrally manage DAX measures, such as:

- Total votes
- Total seats won
- Vote share percentage
- Winning margins

This approach improves model clarity and measure reusability.



Advanced Implementation & Dax Dictionary

MEASURE NAME	DAX FORMULAS
Winning Alliance	VAR NDA_Seat_Count = CALCULATE(COUNT('ConstituencyWiseResults'[Winning Candidate]), 'PartyWiseResults'[Party Alliance] = "NDA") VAR INDIA_Seat_Count = CALCULATE(COUNT('ConstituencyWiseResults'[Winning Candidate]), 'PartyWiseResults'[Party Alliance] = "I.N.D.I.A.") RETURN IF(NDA_Seat_Count >= INDIA_Seat_Count, "NDA", "I.N.D.I.A.")
Selected State Name	CALCULATE(SELECTEDVALUE(states[State], "No State Selected"), FILTER(ConstituencyWiseResults, ConstituencyWiseResults[Constituency ID] = MAX(ConstituencyWiseDetails[Constituency ID])))
Winning Candidate	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Candidate]), 'ConstituencyWiseDetails'[Total Votes] = MaxVotes)
Winning Party Name	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Party]),

	'ConstituencyWiseDetails'[Total Votes] = MaxVotes)
Winning Candidate Total Votes	"Total Votes:" & " " & MAX('ConstituencyWiseDetails'[Total Votes])
Winning Candidate Vote Share %	"Vote Share:" & " " & MAX('ConstituencyWiseDetails'[% of Votes]) & " %"
Runner Up Winning Candidate	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Candidate]), 'ConstituencyWiseDetails'[Total Votes] = SecondMaxVotes)
Runner UP Winning Party	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Party]), 'ConstituencyWiseDetails'[Total Votes] = SecondMaxVotes)
Runner Up Winning Candidate Total Votes	"Total Votes: " & VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(

	FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN IF(ISBLANK(SecondMaxVotes), "No second max", SecondMaxVotes)
Runner Up Winning Candidate Vote Share %	"Vote Share: " & VAR MaxVoteShare = MAX('ConstituencyWiseDetails'[% of Votes]) VAR SecondMaxVoteShare = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[% of Votes] < MaxVoteShare), 'ConstituencyWiseDetails'[% of Votes]) RETURN IF(ISBLANK(SecondMaxVoteShare), "No second max", SecondMaxVoteShare & " %")
2nd Runner Up Winning Candidate	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes), 'ConstituencyWiseDetails'[Total Votes]) VAR ThirdMaxVotes = MAXX(FILTER('ConstituencyWiseDetails',

	'ConstituencyWiseDetails'[Total Votes] < SecondMaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Candidate]), 'ConstituencyWiseDetails'[Total Votes] = ThirdMaxVotes)
2nd Runner Up Winning Party	VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes), 'ConstituencyWiseDetails'[Total Votes]) VAR ThirdMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < SecondMaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN CALCULATE(MAX('ConstituencyWiseDetails'[Party]), 'ConstituencyWiseDetails'[Total Votes] = ThirdMaxVotes)
2nd Runner Up Winning Candidate Total Votes	"Total Votes: " & VAR MaxVotes = MAX('ConstituencyWiseDetails'[Total Votes]) VAR SecondMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < MaxVotes),

	'ConstituencyWiseDetails'[Total Votes]) VAR ThirdMaxVotes = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[Total Votes] < SecondMaxVotes), 'ConstituencyWiseDetails'[Total Votes]) RETURN IF(ISBLANK(ThirdMaxVotes), "No third max", ThirdMaxVotes)
2nd Runner Up Winning Candidate Vote Share %	"Vote Share: " & VAR MaxVoteShare = MAX('ConstituencyWiseDetails'[% of Votes]) VAR SecondMaxVoteShare = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[% of Votes] < MaxVoteShare), 'ConstituencyWiseDetails'[% of Votes]) VAR ThirdMaxVoteShare = MAXX(FILTER('ConstituencyWiseDetails', 'ConstituencyWiseDetails'[% of Votes] < SecondMaxVoteShare), 'ConstituencyWiseDetails'[% of Votes]) RETURN IF(ISBLANK(ThirdMaxVoteShare), "No third max", ThirdMaxVoteShare & " %")

Dashboard Visualization

1st Dashboard : Overview

This dashboard presents a comprehensive overview of the 2024 Indian General (Lok Sabha) Election results in a visually simple and interactive manner. It is designed to help users quickly understand how seats are distributed across alliances and major political parties at the national level.

The top section of the dashboard provides the context of the election, including the voting period (from 19 April to 1 June 2024) and the result declaration date (4 June 2024).
It also highlights the total number of Lok Sabha seats (543), giving users a clear reference point for all further analysis.

Alliance-Wise Seat Distribution

The core of the dashboard focuses on how seats are divided among the three main groups:

- NDA Alliance secured 292 seats, accounting for 54% of the total seats, indicating a clear majority.
- INDIA Alliance won 234 seats, which is 43% of the total, reflecting strong opposition performance.
- Other Parties collectively won 17 seats, contributing 3% of the overall seat share.

These values are displayed using KPI cards, making it easy to compare alliances at a glance.

Party-Wise Contribution Within Alliances

Below the alliance summary, the dashboard breaks down individual party contributions within each alliance:

- In the NDA Alliance, Bharatiya Janata Party (BJP) is the dominant contributor with 240 seats, followed by key partners such as TDP (16 seats) and JD(U) (12 seats). The NDA consists of 14 parties in total, showing a coalition with strong central leadership.
- In the INDIA Alliance, Indian National Congress (INC) leads with 99 seats, while parties like SP (37 seats) and AITC (29 seats) also play significant roles.
  The INDIA Alliance includes 20 parties, highlighting a broad and diverse opposition coalition.

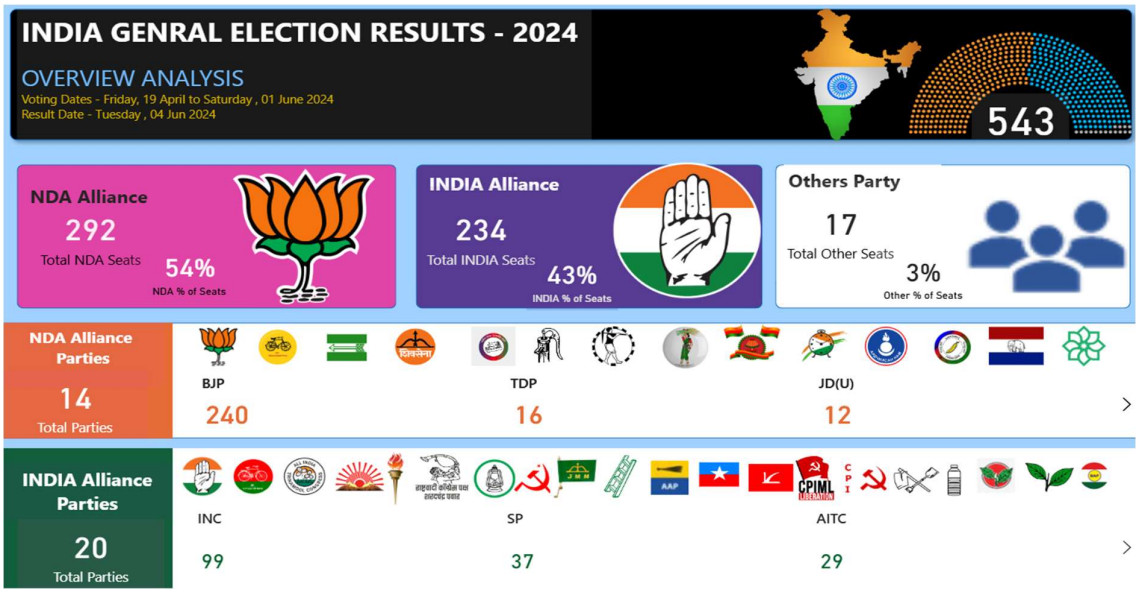
Party logos are used alongside seat counts to improve visual recognition and user engagement.

Key Insights

- The dashboard clearly shows that the NDA Alliance has crossed the majority mark, enabling government formation.
- The INDIA Alliance emerges as a strong opposition, with substantial seat share and wide party participation.
- Smaller and regional parties, grouped under "Others," have limited but potentially influential representation.

Overall Purpose

This dashboard transforms complex election data into easy-to-understand visual insights, making it useful for students, researchers, and the general public. By combining alliance-level summaries with party-level details, it enables users to quickly grasp both the big picture and finer political dynamics of the 2024 Indian General Elections.



2nd Dashboard : State Demographics

The State Demographics dashboard provides a geographical and state-wise analysis of the 2024 Indian General Election results. This page helps users understand how different states and constituencies contributed to the overall performance of major political alliances across India.

State-Wise Seat Distribution

The first map visual displays total seats by state, along with a breakup of seats won by the NDA Alliance and the INDIA Alliance.
By hovering over a state, users can view detailed tooltips showing:

- Total number of Lok Sabha seats in the state
- Which alliance won the majority of seats

- Seats secured by NDA and INDIA alliances

This enables quick comparison of political dominance across states. Users can also click on a state to **drill down** for deeper insights.

Constituency-Level Winning Details

The second map focuses on constituency-level outcomes. Each marker represents a constituency and provides information such as:

- State name
- Winning candidate
- Winning party
- Total votes received
- Margin of victory

This visualization highlights how election results vary even within the same state and allows users to closely analyze local-level voting patterns.

State-Level Winning Alliance Overview

The third map summarizes which alliance won the majority of seats in each state.

- Blue color represents states where the INDIA Alliance won the majority of seats.
- Saffron color represents states where the NDA Alliance secured the majority.

This view gives an instant understanding of regional political dominance across the country and shows how alliances performed geographically.

Interactivity and User Experience

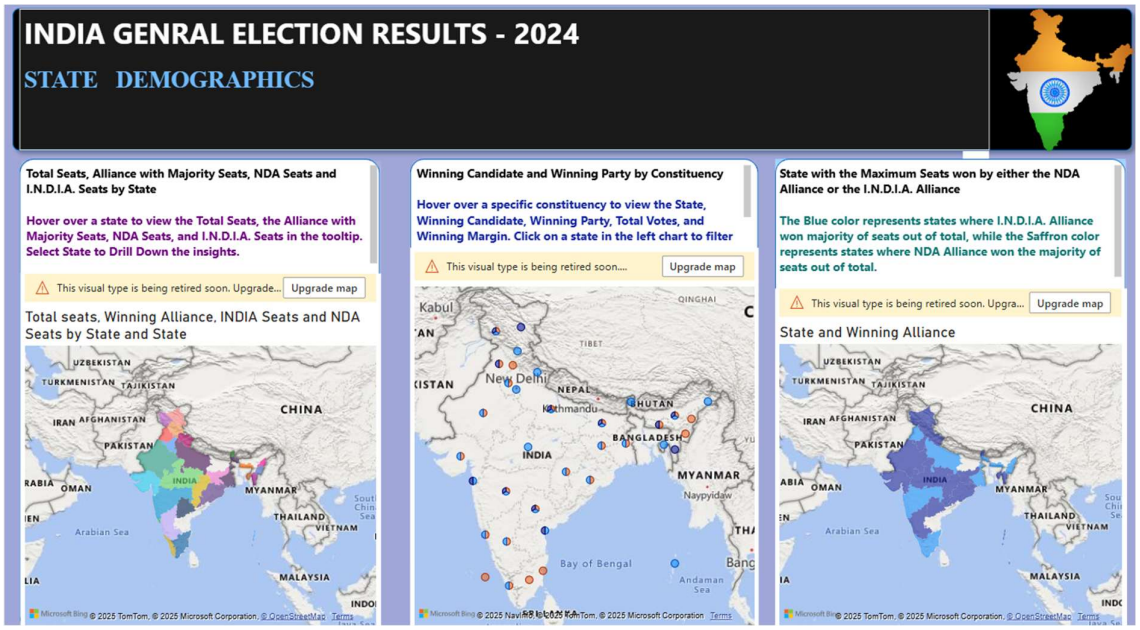
- Hover actions reveal detailed information without overcrowding the visuals
- Clicking on states or constituencies dynamically filters other visuals
- The dashboard supports intuitive exploration from national → state → constituency levels

Key Insights

- Political dominance varies significantly across regions
- Some states show strong single-alliance control, while others are more competitive
- Constituency-level analysis reveals localized voting behavior that may not be visible at the national level

Overall Purpose

This dashboard transforms complex geographical election data into clear visual insights, helping users understand where and how different alliances performed across India. It complements the overview dashboard by adding a strong spatial and demographic perspective to the election analysis.



3rd Dashboard : Constituency Analysis

The Constituency Analysis dashboard provides a detailed, constituency-level view of the 2024 Indian General Election results. This page allows users to focus on a single constituency and clearly understand voting patterns, candidate performance, and election outcomes at the grassroots level.

Constituency Selection

At the top of the dashboard, users can select a constituency using a dropdown filter.
In the current view, the selected constituency is Adilabad (1) in Telangana.
All visuals and metrics on the page update dynamically based on the selected constituency.

Voting Summary KPIs

The KPI cards present key voting statistics for the selected constituency:

- **Total Votes** cast in the constituency
- **Total EVM Votes**, showing votes recorded through Electronic Voting Machines
- **Total Postal Votes**, representing votes received through postal ballots
- **Total Candidates Participating**, indicating the level of electoral competition

These KPIs provide a quick quantitative overview of voter participation.

Winning Candidate Details

The left card highlights the **winning candidate**:

- **Candidate Name:** Godam Nagesh
- **Party:** Bharatiya Janata Party
- **Status:** Won
- **Total Votes:** 568,168
- **Vote Share:** 45.98%

This section clearly shows who won the seat and the strength of their mandate.

Runner-Up and Second Runner-Up

The next two cards display the Runner-Up and Second Runner-Up candidates:

- Runner-Up: Athram Suguna from the Indian National Congress, with 38.65% vote share
- Second Runner-Up: Athram Sakku from the Bharat Rashtra Samithi, with 11.11% vote share

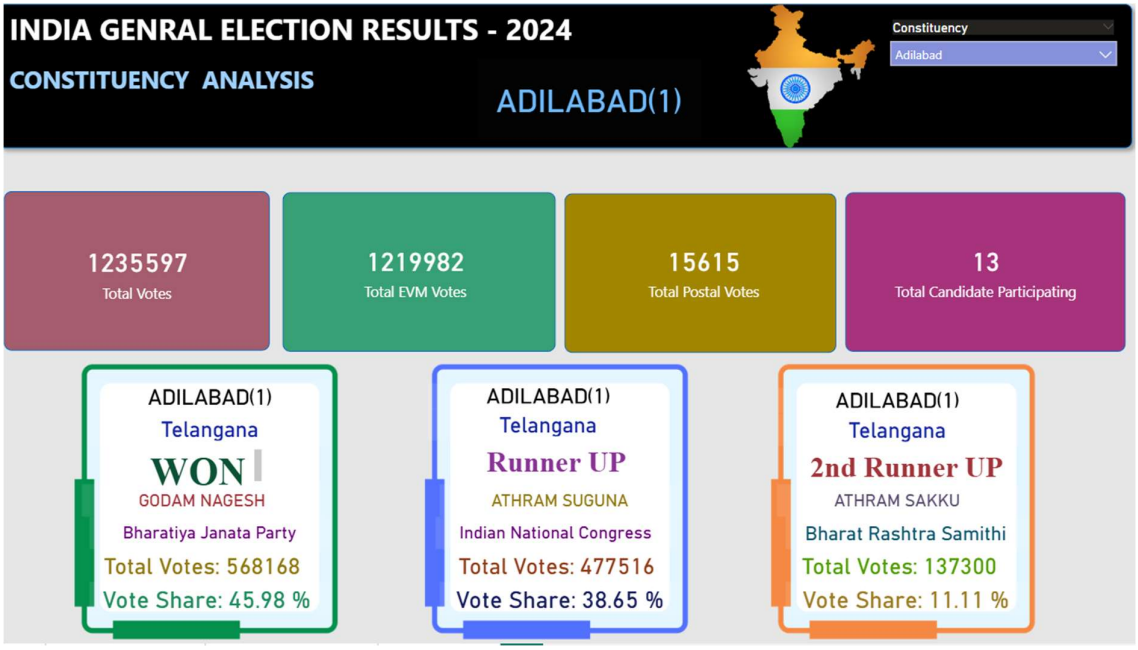
These visuals help compare candidate performance and understand vote distribution among major parties.

Key Insights

- The constituency shows a competitive election, with a relatively narrow gap between the winner and runner-up
- Major national and regional parties had strong participation
- Vote share distribution highlights voter preference trends at the local level

Overall Purpose

This dashboard enables deep micro-level analysis of election results by focusing on individual constituencies. It complements national and state-level dashboards by revealing local political dynamics, voter behavior, and candidate performance, making election data more transparent and meaningful.



4th Dashboard : State Analysis

The State Analysis dashboard focuses on presenting a detailed election outcome for a selected state in the 2024 Indian General Elections. This page helps users understand how different political parties and alliances performed within a particular state.

In the current view, the selected state is Andhra Pradesh.

State-Level Seat Summary

At the top of the dashboard, KPI cards summarize the overall seat distribution by alliance within the state:

- The NDA Alliance secured 21 seats
- Other parties won 4 seats

This provides an immediate understanding of which alliance dominates the state.

Geographical Context

A map visualization places the selected state within the national geographical context, helping users visually locate the state and relate the results spatially. This improves intuitive understanding of regional political patterns.

Party-Wise Result Table

The party-wise results table breaks down performance at the party level, showing:

- Party name
- Alliance affiliation
- Seats won

Key parties visible in the table include:

- **Bharatiya Janata Party (BJP)** – NDA
- **Jana Sena Party (JSP)** – NDA
- **Telugu Desam Party (TDP)** – NDA
- **Yuvajana Sramika Rythu Congress Party (YSRCP)** – Other

This table allows easy comparison of how each party contributed to the overall seat count.

Party-Wise Seats Distribution

The donut chart on the right visually represents the proportion of seats won by each party in the state.
This visualization makes it easy to identify:

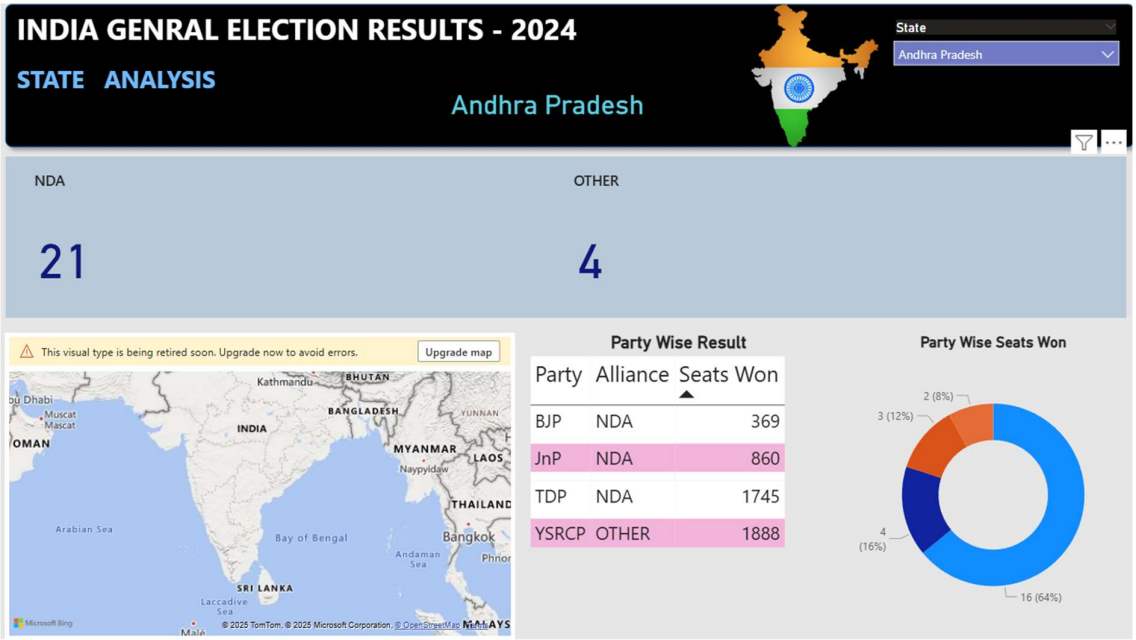
- The dominant party in Andhra Pradesh
- The relative contribution of smaller parties

Key Insights

- Andhra Pradesh shows strong dominance by NDA alliance parties
- Regional parties play a major role in determining state-level outcomes
- Visual comparison highlights how seats are distributed among alliances and parties

Overall Purpose

The State Analysis dashboard provides a focused and detailed view of election performance at the state level. It bridges the gap between national-level summaries and constituency-level details, helping users understand regional political dynamics, alliance strength, and party influence within a single state.



Conclusion

This project successfully transformed the 2024 Indian General Election data into an interactive and easy-to-understand visual analytics system using Power BI. Instead of presenting election results in complex tables, the dashboard approach made the data more accessible, meaningful, and insightful for users.

By designing multiple dashboards—Overview Analysis, State Demographics, State Analysis, and Constituency Analysis—the project enables analysis at different levels, from national trends down to individual constituencies. The use of a well-structured star schema data model, optimized DAX measures, and interactive visuals ensured accurate calculations, smooth cross-filtering, and fast performance.

The dashboards clearly highlight alliance dominance, party-wise contributions, regional voting patterns, and constituency-level competition. Features such as drill-downs, slicers, tooltips, and maps enhance user interaction and help uncover insights that are not easily visible in raw datasets.

Overall, this project demonstrates how data visualization and business intelligence tools can play a crucial role in analyzing large-scale democratic processes. It can be useful for students, researchers, analysts, and the general public to understand election outcomes more intuitively. The project also lays a strong foundation for future enhancements such as voter turnout analysis, historical comparisons, and predictive election insights.