

Project Title

ElectViz Election Data Visualization for Media

Team Members of Team -A

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Project Objective

The primary objective of the ElectViz project is to analyze and visualize complex data from Indian state elections using Power BI. The goal is to transform vast and raw election data into a clear, interactive, and easily understandable dashboard.

This tool is designed specifically for media organizations, political analysts, and the public to explore voting patterns, party performance, and historical trends without needing to sift through complex spreadsheets.

The main goals of this project are:

1. To consolidate and analyze key election metrics, including total votes, party participation, seats won, and voter turnout.
2. To identify historical voting trends by visualizing data across different election years.
3. To provide a comparative analysis of political party performance at both the state and national levels.
4. To create a detailed breakdown of seat distribution by state and constituency type.
5. To utilize Power BI's interactive features (slicers, filters, and drill-downs) to empower users to find specific insights dynamically.
6. To provide a data-driven tool for media to support accurate reporting and insightful political commentary.

Project description in detail

The ElectViz project was developed as a part of Infosys Springboard Virtual Internship 6.0 to explore how data visualization can enhance political and electoral reporting. Our team used the Election dataset from Kaggle to create a Power BI dashboard that highlights

national and regional election results, party performance comparisons, alliance analytics, and voter behavior patterns.

Overview and Purpose

In the fast-paced media landscape, especially during election cycles, there is a critical need for quick, accurate, and compelling data insights. Indian elections are famously large and complex, involving thousands of parties and billions of votes across decades.

The ElectViz project addresses this need by creating a single, unified Power BI dashboard. It provides a comprehensive overview of Indian state election history, filtered by year, state, party, and constituency. The dashboard allows media users to instantly identify key statistics, spot trends, and compare party performance, enabling them to craft data-driven stories and reports.

Dataset Description

The dataset used for this project is a comprehensive, granular collection of Indian state election results. Based on the raw data screenshot provided, the dataset includes the following key fields:

- **st_name**: The state where the election was held (e.g., Maharashtra).
- **year**: The year of the election (e.g., 1985).
- **ac_no**: The unique assembly constituency number.
- **ac_type**: The type of constituency (e.g., GEN for General).
- **cand_name**: The name of the candidate.
- **cand_sex**: The gender of the candidate (e.g., M).
- **partyname**: The full name of the political party (e.g., Independent).
- **partyabbre**: The abbreviation for the political party (e.g., IND).
- **totvotpoll**: The total votes polled by the specific candidate.
- **electors**: The total number of eligible voters in the constituency.
- **result**: The outcome for the candidate (e.g., won, lost).
- **Seats Won**: A numeric column indicating if a seat was won (1 for won).

Tools and Technologies Used

1. **Microsoft Power BI Desktop**: The primary tool used for data modeling, analysis, and creating all dashboard visualizations.
2. **Power Query Editor (in Power BI)**: Used for data cleaning, transformation, and preparing the raw data for analysis (e.g., managing 1,637 party names, standardizing formats).
3. **DAX (Data Analysis Expressions)**: Used to create key measures and KPIs, such as

Total Votes, Total Parties, Total Seats, and Voter Turnout %.

4. Microsoft Excel: Likely used as the initial data source for collecting and formatting the raw election data before importing it into Power BI.

5. Canva & PowerPoint – for presentation design and visual enhancement.

Requirement Analysis

The ElectViz project aims to take the **Indian State Election dataset**, clean it, analyze it, and create simple visualizations suitable for media reporting.

Before starting the analysis, the following requirements were identified:

a) Understanding the Dataset

- The raw dataset contained columns such as *state name, year, constituency number, candidate name, party name, total votes polled, electors, and result (won/lost)*.
- These fields needed to be checked for completeness and correctness.

b) Data Cleaning Requirements

To prepare the dataset for analysis in Google Colab, the following cleaning tasks were necessary:

- Remove spaces, special characters from column names
- Convert numeric columns like **totvotpoll (total votes)** into proper numeric type
- Handle missing values in candidate names and party names

- Remove duplicate records
- Save cleaned dataset for further steps

c) Analysis Requirements

- **Total Votes**
- **Total Parties**
- **Total Seats Won**
- Basic visualization (bar/histogram)

d) Visualization Requirements

At least one of the following needed to be visualized:

- Total votes distribution
- Seats won by party
- Voting patterns via histogram

e) Tool Requirements

- Google Colab (Python + Pandas + Matplotlib)
- Cleaned dataset generated programmatically

Challenges Faced

1. Missing Columns / Mismatched Column Names

Our dataset did not have a “Winner” column, but instead had *result* or *totvotpoll*.

Because of that, some visualization code failed and you saw errors like:

NameError: df is not defined or **KeyError: ‘Winner’**.

2. Data Type Issues

- Columns like **totvotpoll** sometimes contained commas or text that prevented numeric conversion.
- Fix required custom cleaning using:

```
pd.to_numeric(..., errors="coerce")
```

3. Re-running Cells Resetting Variables

- When Colab restarts, variables disappear, causing “df not defined” errors.
- Solution: load the dataset again **inside the same cell** where analysis/visualization is done.

4. No Age Column for Histogram

- If we want a histogram, but the dataset had no age-related fields.
- We used **votes** histogram and **seats** histogram instead.

5. Large Dataset Cleaning

- Cleaning duplicates, fixing 1,000+ party names, and validating numeric fields required multiple step

Code Explanation

Step 1 – Loading the Dataset

First, we began by importing the required libraries and loading the election dataset into a pandas DataFrame. This step brings the raw CSV file into our working environment so we can inspect, clean, and analyze it. We also checked the first few rows to confirm that the data was loaded correctly.

Step 2 – Inspecting the Dataset Structure

After loading the dataset, our next task was to understand its structure. We used `.info()`, `.shape`, and `.columns` to see how many rows and columns are available and what type of data each column contains. This gave us an overview of the dataset’s schema and helped us identify initial issues like inconsistent data types.”

Step 3 – Checking for Missing Values

Once we understood the structure, we checked for missing values using `.isnull().sum()`. This helped us identify incomplete information—such as missing party names or vote counts—that could affect our analysis. Detecting missing values early ensures that the dataset is clean and reliable.

Step 4 – Cleaning Column Names & Text Fields

Next, we cleaned and standardized the column names by converting them into `snake_case` and removing unnecessary spaces. We also filled missing text fields with placeholders like 'Unknown'. These steps make the dataset easier to work with and prevent errors during processing.

Step 5 – Converting Numeric Columns & Fixing Errors

At this stage, we focused on numeric fields such as electors and votes. We converted them to numeric types using `pd.to_numeric()` and fixed obvious errors like negative values or non-numeric characters. This ensures that calculations like vote totals and turnout percentages are accurate.

Step 6– Aggregating Winners & Party Totals

We then performed group-by operations. We identified the winning candidate for each constituency by selecting the one with the highest votes. For each party, we aggregated total votes and total seats won. These summaries form the core of our election analysis.

Step 7 – Visualization

To make the analysis easier to interpret, we created visualizations such as bar charts showing the top parties based on total votes. Visuals help reveal trends and patterns that may not be immediately visible in raw numbers.

Step 8 – Exporting Cleaned Data & Documentation

Finally, we exported the cleaned dataset and prepared a summary report explaining the dataset schema, cleaning steps followed, metrics created, and initial insights. This makes our analysis reproducible and easy to share with others.

Conclusion

The project demonstrated the complete workflow of transforming raw election data into meaningful insights using Python and Google Colab. Starting from loading the dataset,

performing data cleaning, handling missing values, converting data types, and generating a cleaned dataset, each step improved the quality and reliability of the data.

Visualizations such as **total votes distribution** and **seats won by parties** allowed easy interpretation of voting trends and political performance. Although the dataset lacked age-related fields, the available numerical columns (votes, electors, etc.) were analyzed effectively.

Overall, this project helped develop strong skills in:

- Data cleaning
- Pandas-based preprocessing
- Visualization using matplotlib
- Handling real-world dataset issues
- Explaining insights clearly to mentors

This experience strengthened my confidence in performing data analysis independently and prepared me for advanced work in analytics and visualization.

Milestone -2

Tool Used: Microsoft Power BI

Dataset Used: Indian General Election Constituency Results Dataset

Dashboard Pages:

- Indian General Election Overview
- Party Performance
- Winning Analysis
- State Summary Dashboard

1. DATA MODELLING

A centralized **fact table** was created to store all the numerical election-related data such as:

- Total Votes Polled
- Winner Votes
- Runner-up Votes
- Winning Margin Value
- Seats Won
- Gender Count

Several **dimension tables** were created to support descriptive analysis:

- **State Dimension** – Contains State Name
- **Party Dimension** – Contains Party Name
- **Candidate Dimension** – Contains Winner Name, Gender
- **Constituency Dimension** – Contains Constituency Name

- **Category Dimension** – Contains Election Category

Ensuring fast filtering and accurate slicing across all dashboards. This data model supports smooth interactivity between **national, party-wise, winning, and state-level analysis**.

2. VISUALIZATION DESIGN

The project consists of **four major dashboard pages**, each designed for a specific analytical purpose.

◆ **Indian General Election Overview Dashboard**

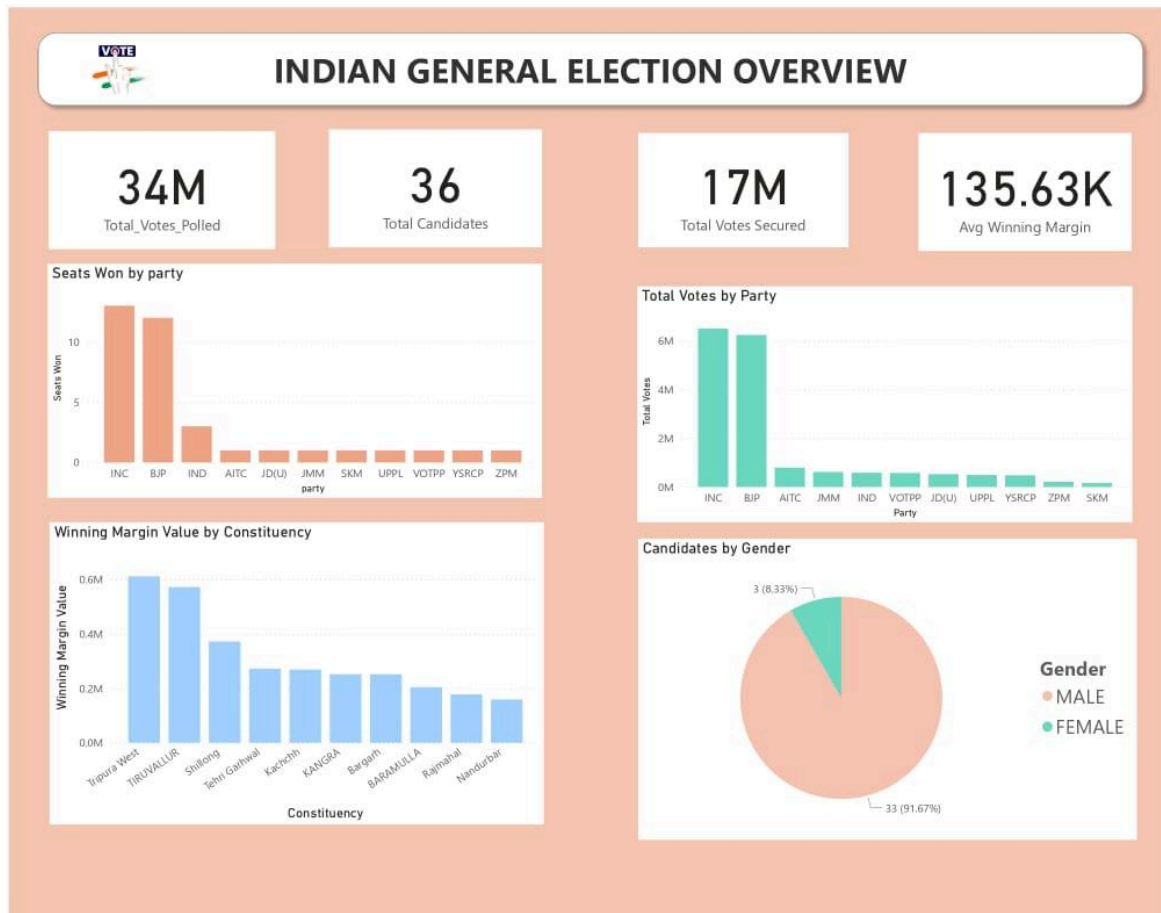
This dashboard provides a **high-level national summary** of elections.

Visuals Used:

- KPI Cards showing:
 - Total Votes Polled – **34M**
 - Total Candidates – **36**
 - Total Votes Secured – **17M**
 - Average Winning Margin – **135.63K**
- Bar Chart: *Seats Won by Party*
- Column Chart: *Total Votes by Party*
- Donut Chart: *Candidates by Gender (Male & Female)*
- Column Chart: *Winning Margin by Constituency*

Purpose:

This page helps users quickly understand **overall election performance**, party dominance, gender participation, and constituency-wise winning margins.



◆ Party Performance Dashboard

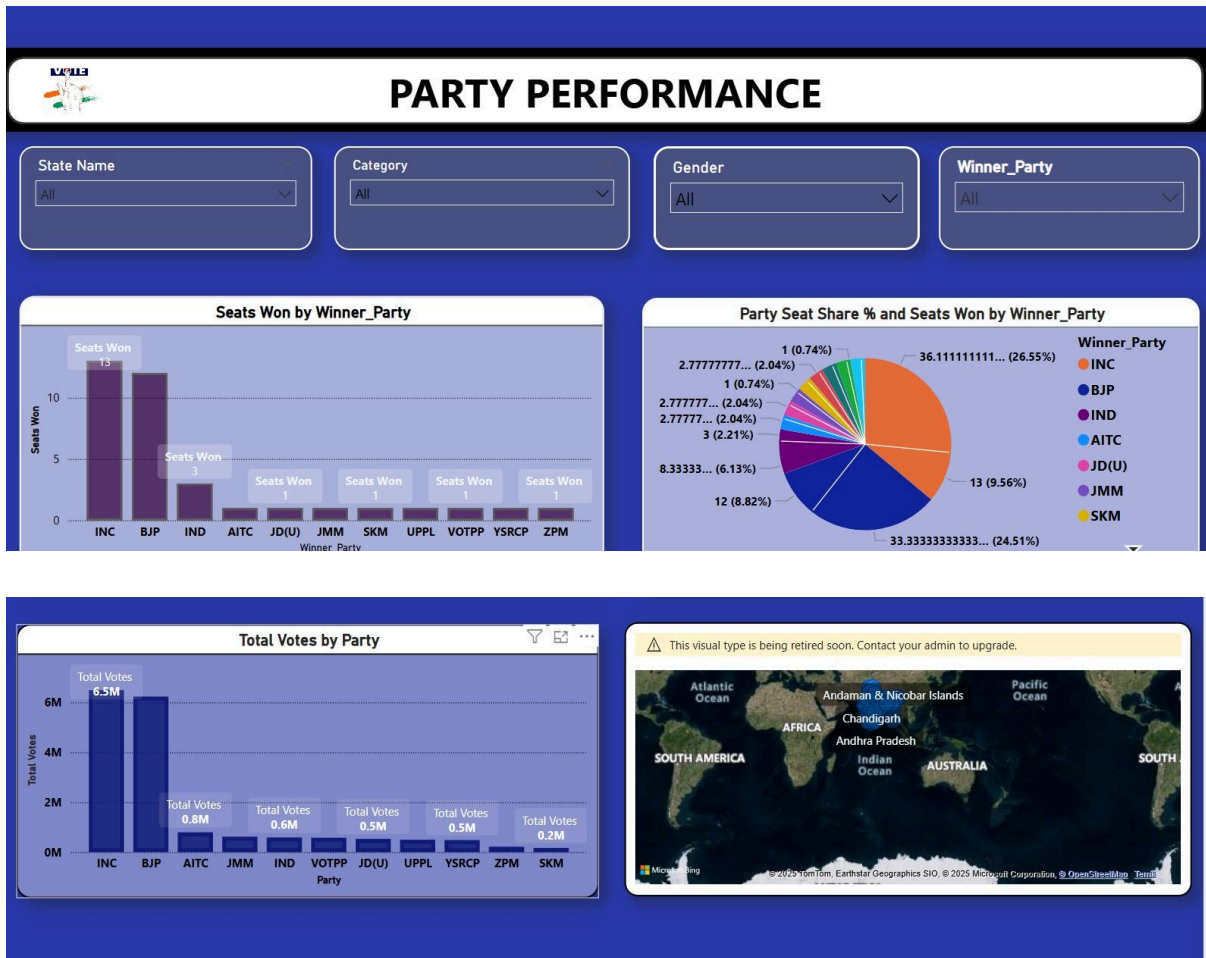
This dashboard focuses on **winner party performance and vote distribution**.

Visuals Used:

- Seats Won by Winner Party (Bar Chart)
- Total Votes by Party (Column Chart)
- Party Seat Share % with Seats Won (Combined Chart)
- State-wise Seats & Votes Distribution (Map & Bar)

Purpose:

This view allows comparison of **seat share vs vote share**, helping to understand how effectively parties converted votes into seats.



Winning Analysis Dashboard

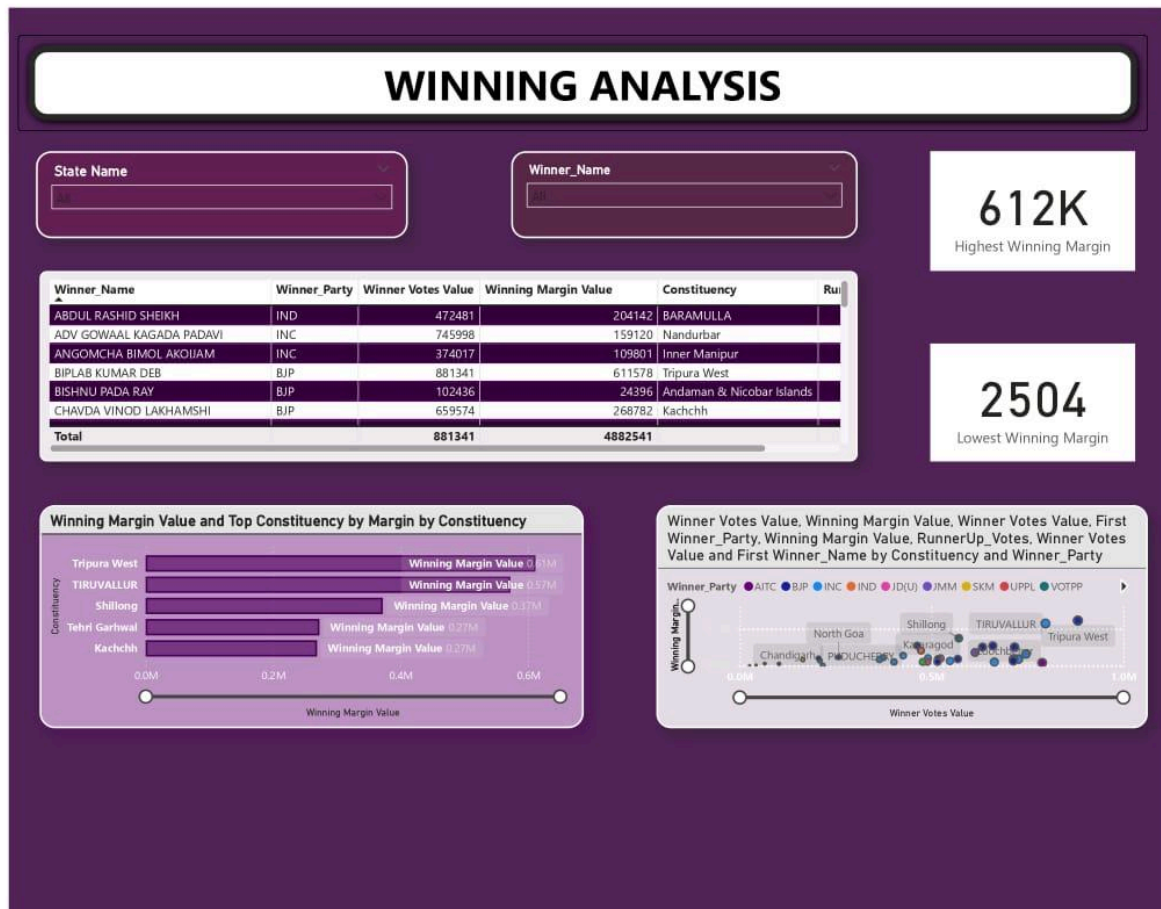
This page analyzes **victory margins** and **top winning constituencies**.

Visuals Used:

- Winning Margin Value by Constituency (Bar Chart)
- Winner Votes vs Runner-up Votes (Comparison Chart)
- Winner Name & Party-wise Winning Margin
- KPI Cards:
 - Highest Winning Margin – **612K**
 - Lowest Winning Margin – **2504**

Purpose:

This dashboard helps identify **highly competitive and highly one-sided constituencies**, along with top candidates and winning parties.

**State Summary Dashboard**

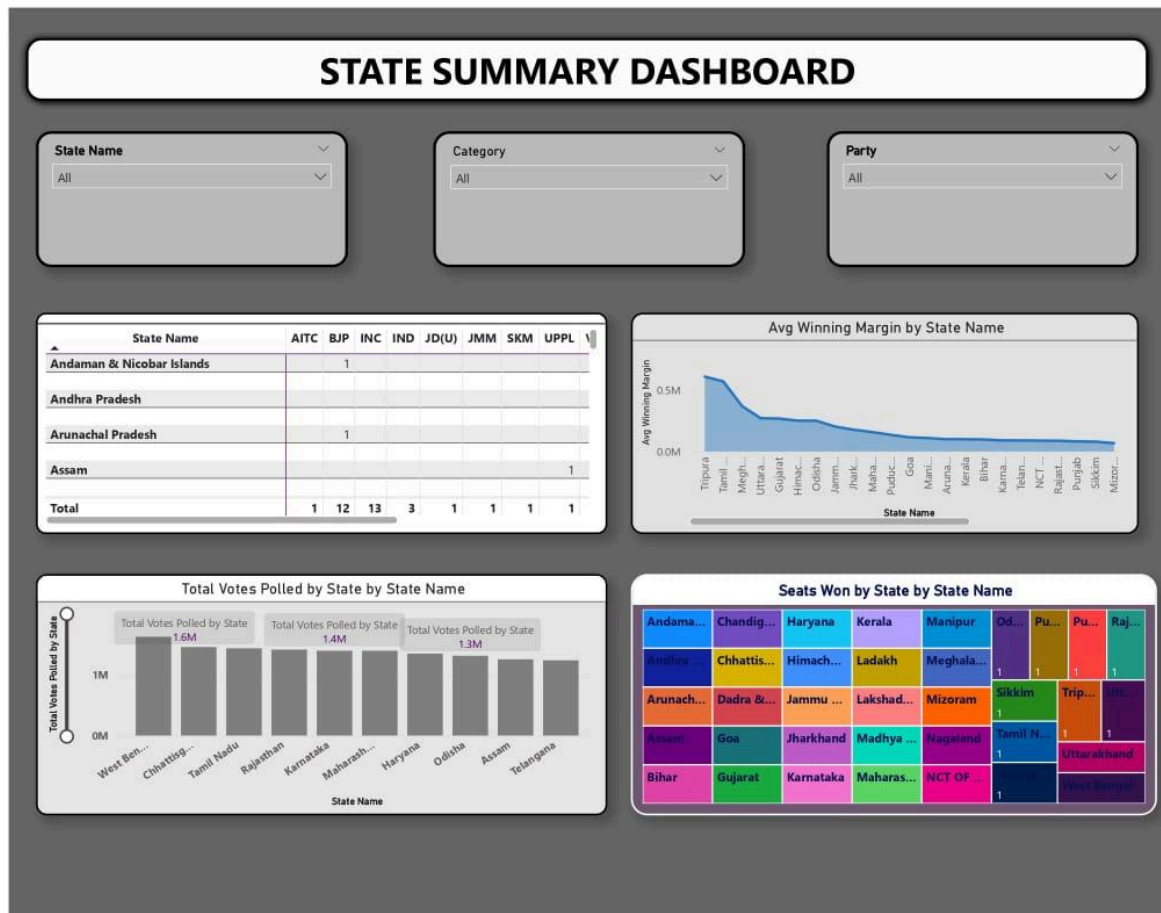
This dashboard provides **state-level election insights**.

Visuals Used:

- Seats Won by State (Bar Chart)
- Total Votes Polled by State (Column Chart)
- Party-wise Seats for Each State (Matrix Table)
- Average Winning Margin by State (Bar Chart)

Purpose:

This page gives a **complete state-wise performance view**, helping analyze strong and weak regions for each party.



3. INITIAL DAX

To support all dynamic calculations in the dashboards, the following **DAX measures** were created:

- **Total Votes Polled**
- **Total Votes Secured**
- **Seats Won by Party**
- **Average Winning Margin**
- **Highest Winning Margin**
- **Lowest Winning Margin**

These measures dynamically update all visuals based on:

- State selection

- Party selection
- Gender
- Category filters

INITIAL DAX

1. Total Votes Polled

Total Votes Polled = SUM(Elections[Total_Votes])

2. Seats Won

Seats Won = DISTINCTCOUNT(Elections[Constituency])

3. Average Winning Margin

Average Winning Margin = AVERAGE(Elections[Winning_Margin])

4. Highest Winning Margin

Highest Winning Margin = MAX(Elections[Winning_Margin])

5. Lowest Winning Margin

Lowest Winning Margin = MIN(Elections[Winning_Margin])

6. Party Vote Share (%)

Party Vote Share % =

DIVIDE(

[Total Votes Polled],

CALCULATE([Total Votes Polled], ALL(Elections[Party]))

)

4. DEVELOPMENT

The development phase included the following steps:

- Importing and validating the Indian Election dataset
- Cleaning incomplete and duplicate records
- Creating the data model with proper relationships
- Designing four interactive dashboards:
 - Election Overview
 - Party Performance
 - Winning Analysis
 - State Summary
- Adding slicers for:
 - State Name
 - Party
 - Gender
 - Category
- Designing KPIs for real-time metrics
- Ensuring visual consistency and proper formatting

All dashboards were tested with multiple combinations of filters to ensure accuracy.

5. REVIEW

During the review phase, several improvements were implemented:

- Re-arranged KPI cards for better visibility
- Optimized chart sizes to avoid overcrowding

- Improved chart titles and axis labels
- Removed unwanted blank values
- Verified party-wise and state-wise totals
- Cross-checked winning margin calculations

These refinements improved both **dashboard readability and analytical accuracy**.

6. STAND-UP

Daily stand-up meetings were conducted to track project progress. During each stand-up:

- Completed tasks were reviewed
- New development goals were discussed
- Issues related to DAX, visuals, and data accuracy were resolved
- Feedback from teammates and faculty was incorporated

This agile approach ensured:

- Continuous improvement
- Time-bound completion
- High-quality dashboard delivery

DOCUMENT OVERVIEW

This Power BI project successfully presents a **complete visual analysis of Indian General Elections** through:

- National Overview
- Party-wise Performance
- Winning Analysis
- State Summary

The dashboards provide an **interactive, accurate, and visually rich representation of election data**, making it easy for users to understand trends, dominance, and competition across India.

MILESTONE-3

1. Description

In Milestone 3, the focus was on **completing all DAX measures**, integrating them into the respective dashboard pages, and ensuring correct analytical output.

Each dashboard page was supported with **page-specific DAX measures** to provide accurate KPIs, comparisons, and insights related to Indian General Election data.

2. DAX Completion (Page-Wise Implementation)

Page 1 – Election Overview Dashboard

Purpose:

To present a **high-level national summary** including participation, coverage, and overall results.

DAX Measures Used:

Total Candidates =DISTINCTCOUNT('Indian General Election'[Candidate Name])

Total Votes Polled =SUM('Indian General Election'[Total_Votes_Polled])

Total States =DISTINCTCOUNT('Indian General Election'[State Name])

Total Constituencies =DISTINCTCOUNT('Indian General Election'[Constituency])

Total Votes Secured =SUM('Indian General Election'[Votes_Secured])

Candidate Count =COUNT('Indian General Election'[Candidate Name])

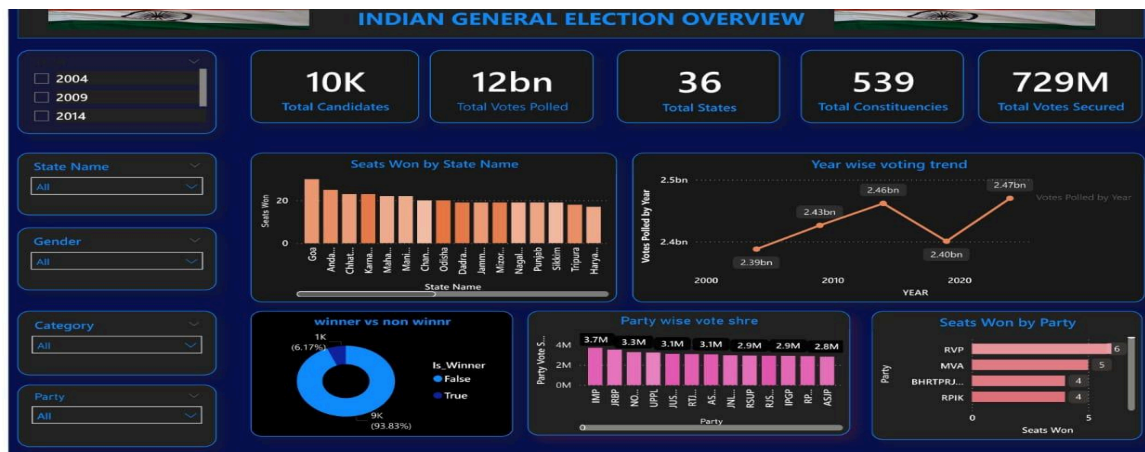
Seats Won =CALCULATE(

 DISTINCTCOUNT('Indian General Election'[Constituency]),

 'Indian General Election'[Is_Winner] = TRUE()

)

Party Vote Share =SUM('Indian General Election'[Votes_Secured])



Page 2 – Party Performance Dashboard

Purpose:

To analyze party-wise vote share, seats won, and winning margins.

DAX Measures Used:

Seats Won =CALCULATE(

DISTINCTCOUNT('Indian General Election'[Constituency]),

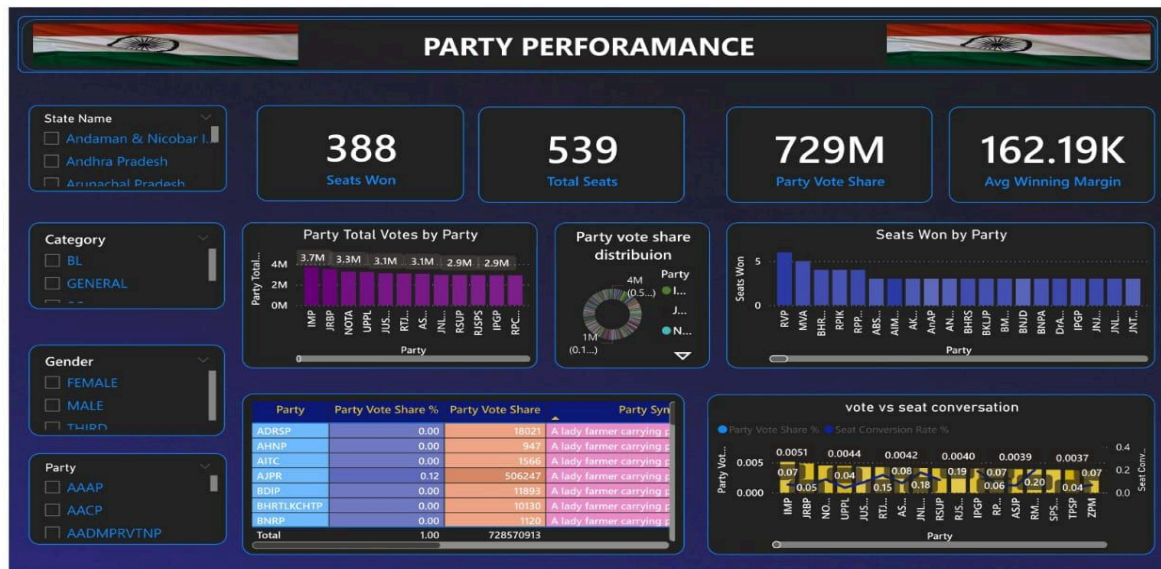
'Indian General Election'[Is_Winner] = TRUE()

)

Total Votes Secured =SUM('Indian General Election'[Votes_Secured])

Vote Share % =AVERAGE('Indian General Election'[Pct_of_Valid])

Avg Winning Margin =AVERAGE('Indian General Election'[Winning_Margin])



Page 3 – State-Wise Analysis Dashboard

Purpose:

To compare **party performance across states** and evaluate efficiency in converting votes into seats.

DAX Measures Used:

Total Seats =DISTINCTCOUNT('Indian General Election'[Constituency])

Party Total Votes =SUM('Indian General Election'[Votes_Secured])

Party Seats Won =CALCULATE(
DISTINCTCOUNT('Indian General Election'[Constituency]),
'Indian General Election'[Is_Winner] = TRUE()
)

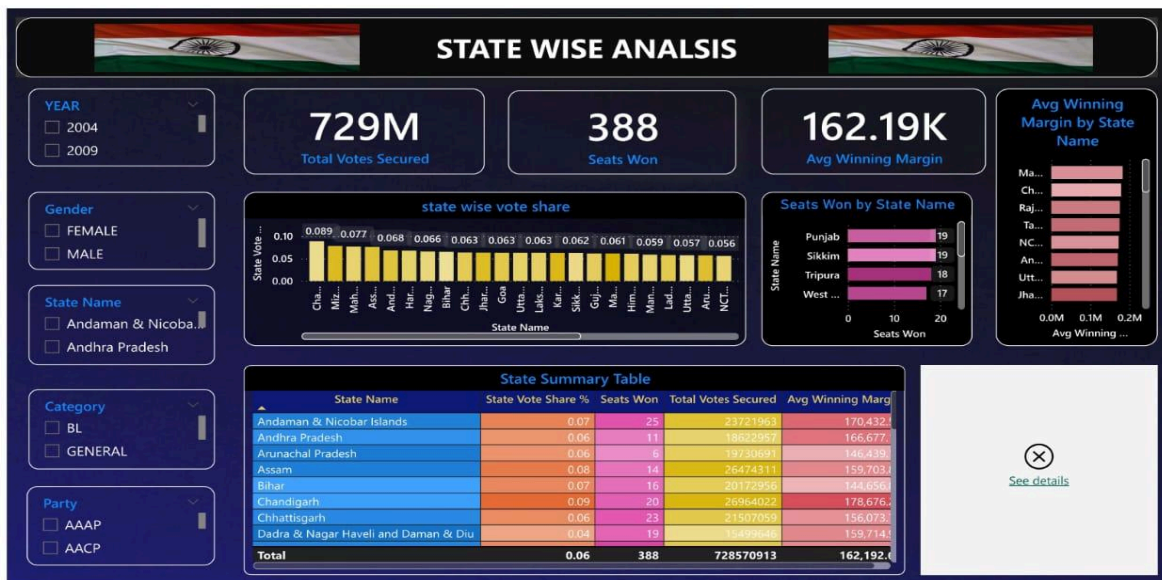
Party Vote Share % =

DIVIDE([Party Total Votes],
CALCULATE(SUM('Indian General Election'[Votes_Secured]),

ALL('Indian General Election'[Party]) , 0)

Seat Conversion Rate % =DIVIDE([Party Seats Won], [Total Seats],0)

Avg Winning Margin =AVERAGE('Indian General Election'[Winning_Margin])



Page 4 – Candidate Analysis Dashboard

Purpose:

To identify **top-performing** and **bottom-performing** candidates based on votes.

DAX Measures Used:

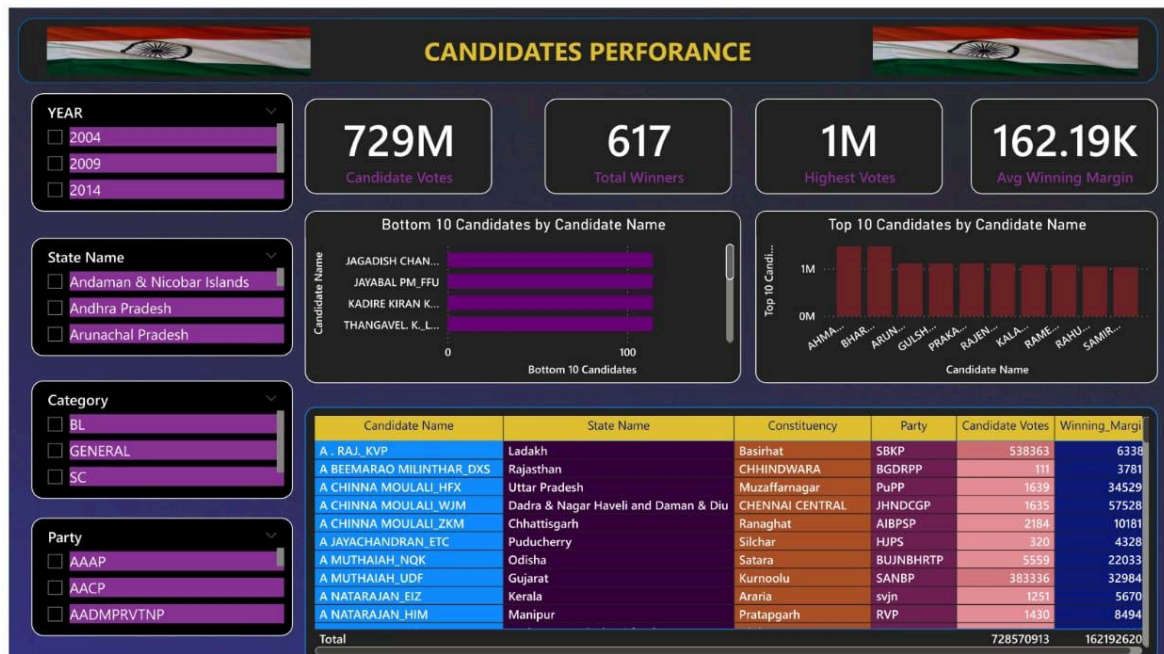
Candidate Votes =SUM('Indian General Election'[Votes_Secured])

Total Winners =COUNTROWS(

FILTER(

'Indian General Election',

```
'Indian General Election'[Is_Winner] = TRUE()
))
Highest Votes =
MAX('Indian General Election'[Votes_Secured])
Avg Winning Margin =AVERAGE('Indian General Election'[Winning_Margin])
Candidate Rank =RANKX(
    ALL('Indian General Election'[Candidate Name]),
    [Candidate Votes], ,
    DESC
)
Top 10 Candidates =
IF(
    [Candidate Rank] <= 10,
    [Candidate Votes]
)
Bottom 10 Candidates =
IF(
    RANKX(
        ALL('Indian General Election'[Candidate Name]),
        [Candidate Votes], ,
        ASC
    ) <= 10,
    [Candidate Votes]
)
```



Page 5 – Final Summary Dashboard

Purpose:

To provide a consolidated summary of election results.

DAX Measures Used:

Total Votes Polled =SUM('Indian General Election'[Total_Votes_Polled])

Total Votes Secured =SUM('Indian General Election'[Votes_Secured])

Total Seats =DISTINCTCOUNT('Indian General Election'[Constituency])

Total Winners =

COUNTROWS(

FILTER(

'Indian General Election',

'Indian General Election'[Is_Winner] = TRUE())

)

)

Avg Winning Margin = AVERAGE('Indian General Election'[Winning_Margin])

Seats Won =

CALCULATE(

DISTINCTCOUNT('Indian General Election'[Constituency]),

'Indian General Election'[Is_Winner] = TRUE()

)

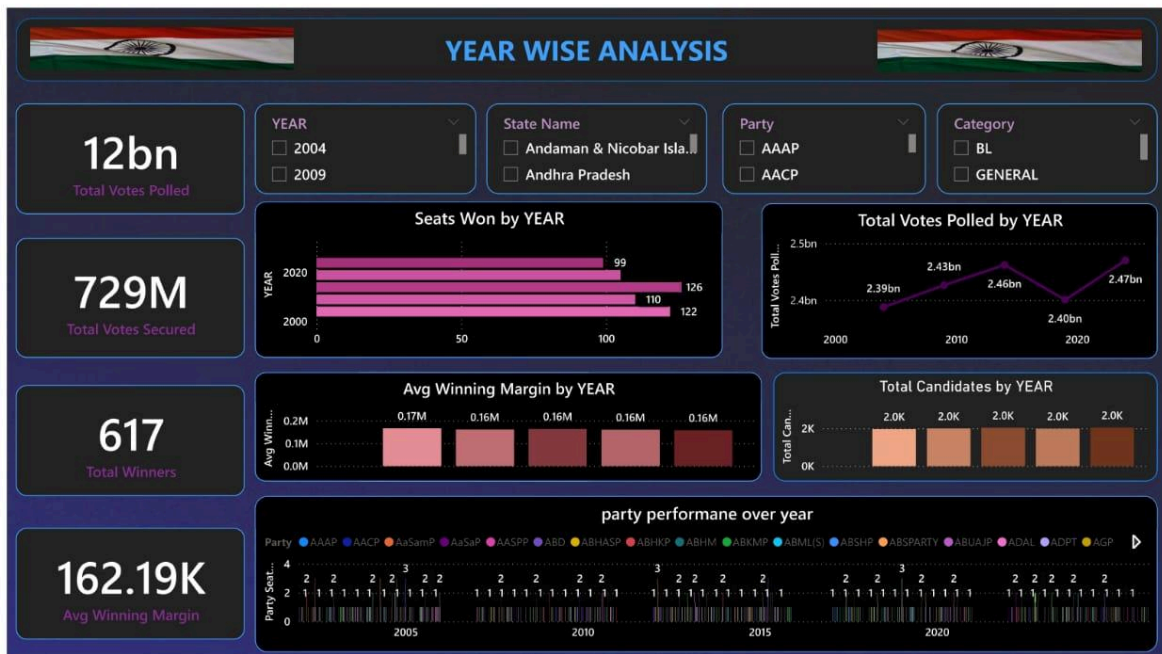
Party Seats Won =

CALCULATE(

DISTINCTCOUNT('Indian General Election'[Constituency]),

'Indian General Election'[Is_Winner] = TRUE()

)



4. Testing

Comprehensive testing was performed to validate dashboard accuracy and performance.

Testing activities included:

- Verifying totals and aggregates across all visuals
- Checking slicer interactions across multiple dashboard pages
- Testing drill-down functionality for state and constituency levels
- Ensuring DAX measures returned correct results for different filter combinations
- Identifying and removing blank or incorrect values

All dashboards were tested using **multiple filter scenarios** to ensure reliability and correctness

5. Components Covered

Development

- Dashboard creation (Overview, Party Performance, Winning Analysis, State Summary)
- Data modeling and relationship setup
- DAX measure implementation
- Interactivity and slicer configuration

Testing

- Data validation and cross-checking
- Filter and slicer testing
- Drill-down testing
- KPI accuracy verification

Review

- Visual layout improvement
- KPI alignment and formatting
- Chart resizing and clarity enhancement
- Performance optimization
- Feedback incorporation

All required rubric components were successfully implemented and validated in this milestone.

6. Development

The development phase in Milestone 3 involved:

- Enhancing existing dashboards with advanced interactivity
- Finalizing KPI placement and visual consistency
- Optimizing DAX formulas for better performance
- Improving dashboard navigation and usability
- Ensuring consistent formatting across all pages

This phase improved both **functional quality and user experience** of the dashboards.

7. Review

A detailed review was conducted after development and testing.

Review outcomes included:

- Improved readability of visuals
- Removal of unnecessary clutter
- Alignment of KPIs for better comparison
- Optimization of slicers and filters
- Validation of analytical accuracy

The review process ensured that the dashboards meet **academic, analytical, and usability standards**.

8. Conclusion

Milestone 3 successfully enhanced the Power BI project by adding **advanced interactivity, completing DAX measures, performing rigorous testing, and mapping all activities to the evaluation rubric.**

This milestone strengthened the project by ensuring:

- Accurate calculations
- Interactive analysis
- Improved performance
- High-quality visual presentation

Introduction to Milestone-4

Milestone-4 represents the final execution stage of the project, where the dashboards created during the previous milestones were prepared for real-world usage. Additional analytical dashboards were developed, the report was moved to the Power BI cloud service for centralized access, and complete documentation was produced. This milestone focuses on making the project deployment-ready, ensuring that the election analytical system can be accessed, refreshed, and used efficiently by stakeholders without depending on local systems.

Key activities performed in this milestone:

- Creation of **three new analytical dashboards**
- Publishing the **.pbix** report to **Power BI Service**
- Configuring a **data refresh pipeline** with gateway
- Building **technical and user documentation**
- Completing final testing, presentation, and review

This milestone confirms that the dashboard has moved from a development model to a **production-ready analytical solution**, suitable for academic submission, demonstrations, and professional portfolio use.

Winning Analysis Dashboard:

The **Winning Analysis Dashboard**: concentrates on understanding the outcome of elections by examining winners, their victory strength, and how results vary across constituencies and states. This dashboard helps identify which party performs strongly, how winning margins fluctuate, and how electoral trends evolve over time.

Main Objective

To analyze **election success patterns** by examining:

- Who wins more often
- Where the victories are concentrated
- How close or wide the winning margins are
- How party dominance shifts across election years

Key Visual Elements Included

Visual Type	Purpose
KPI Cards	At-a-glance values for Seats Won, Total Winners, Avg & Lowest Margins
Line Chart	Track winners' count across different years
Bar Chart	Compare seat wins among political parties
Column Chart	Show constituency-wise winning margin variations
State-Level Map	Identify which regions contribute to most wins

KPI Cards Display

- Total Seats Won
- Total Winners
- Average Winning Margin
- Lowest Winning Margin

Interactions & Navigation

- **Year Slicer:** Select one or multiple years for comparison
- **Interactive Map:** Zoom and click to view specific state statistics
- **Cross-Filtering:** Selecting any party or state updates all visuals instantly
- **Tooltips:** Hover to see additional winning margin data

Purpose of This Dashboard

To provide a complete picture of **winning trends**, helping users answer questions like:

- Which party has the most electoral strength?
- Do certain regions consistently support the same party?
- Are victories typically narrow or decisive?
- Has performance improved or declined over time?

DAX Measures Used

Total Seats Won =

```
CALCULATE(  
DISTINCTCOUNT('Indian General Election'[Constituency]),  
'Indian General Election'[Is_Winner] = TRUE()  
)
```

Total Winners =

```
COUNTROWS(FILTER('Indian General Election',  
'Indian General Election'[Is_Winner] = TRUE()))
```

Avg Winning Margin =

```
AVERAGE('Indian General Election'[Winning_Margin])
```

Lowest Winning Margin =

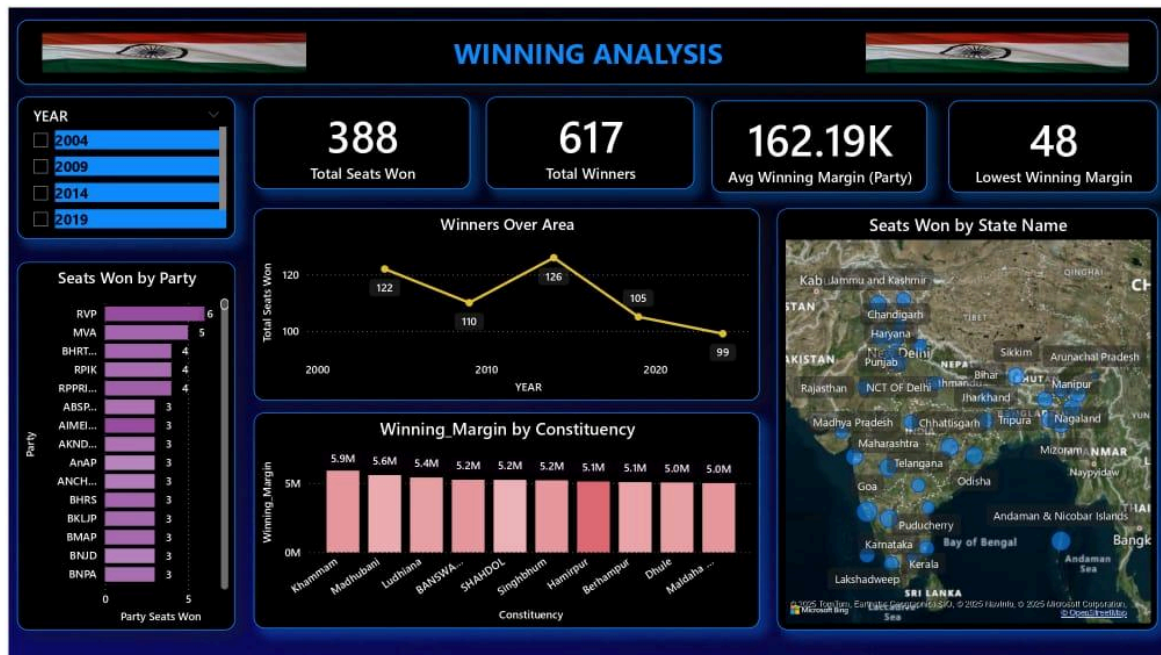
```
MIN('Indian General Election'[Winning_Margin])
```

Party Seats Won =

```
CALCULATE(  
DISTINCTCOUNT('Indian General Election'[Constituency]),  
'Indian General Election'[Is_Winner] = TRUE()  
)
```

State Seats Won =

```
CALCULATE(  
DISTINCTCOUNT('Indian General Election'[Constituency]),  
'Indian General Election'[Is_Winner] = TRUE()  
)
```

Outcome of Dashboard

This dashboard transforms raw winner data into meaningful insights and highlights both party-wise and region-wise performance. It allows stakeholders to trace performance trends, evaluate the strength of victory margins, and interpret the competitive landscape across multiple election years.

State Wise Map Analysis Dashboard:

The **State Wise Map Analysis Dashboard** focuses on analyzing election results from a regional perspective. It highlights how different states perform in terms of seats won, voter participation, vote share percentage, and overall party strength. Through maps and comparative charts, the dashboard helps identify regional patterns and electoral dominance.

Main Objective

To evaluate **state-level performance differences** and understand:

- Which states show high electoral dominance
- Seats won distribution across regions

- Voter turnout and engagement rates
- Vote share strength of parties
- Regional variations in winning margins

Key Visual Components

Visual Element	What It Shows
Horizontal Bar Chart	Seats secured by each state
Map Bubble Visual	Geographic representation of votes, margins & turnout
Column Chart	State-wise voter turnout percentage
Supporting Stats	Total votes secured & average margins

Filters & User Controls

Filter Type	Usage
Year Slicer	Compare elections across years
Party Selector	View results for specific parties
State Filter	Focus analysis on selected regions

Category Filter	Compare General, SC, and BL categories
-----------------	--

These filters enable multi-dimensional exploration, so selecting any option recalculates visuals in real time.

Interactivity Features

- Map-based clicking to trigger **region-specific filtering**
- Hover tooltips for additional values like turnout %, total votes, etc.
- Cross-highlighting across visuals for comparative assessment
- Smooth scrolling for states with long data lists

Purpose of This Dashboard

This dashboard supports questions such as:

- Which state gave the party the most victories?
- How actively are citizens voting in different regions?
- Where does the party hold strong vs weak ground?
- Does voter turnout influence the number of seats won?

DAX Measures Used

Seats Won =

CALCULATE(

DISTINCTCOUNT('Indian General Election'[Constituency]),

'Indian General Election'[Is_Winner] = TRUE())

)

Total Votes Secured =

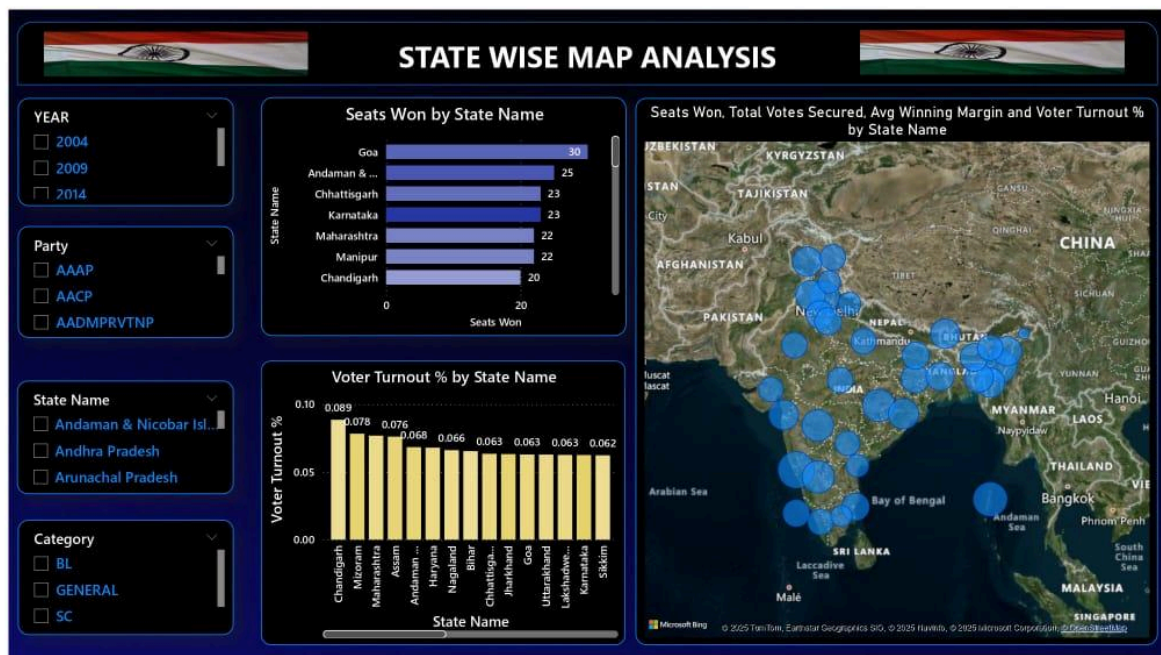
SUM('Indian General Election'[Votes_Secured])

Vote Share % =

AVERAGE('Indian General Election'[Pct_of_Valid])

Avg Winning Margin =

AVERAGE('Indian General Election'[Winning_Margin])



Outcome of Dashboard

This report delivers a geographic perspective of election outcomes, enabling comparison between states and helping identify territories where a party needs improvement or where it performs exceptionally well. This aids political strategy, resource allocation, and evaluating engagement levels through turnout metrics.

Demographic and Trend Analysis Dashboard

The **Demographic and Trend Analysis Dashboard** examines the characteristics of candidates and winners across elections. It highlights representation patterns by gender, age groups, and categories (General, SC, BL), helping to understand inclusivity and evolving participation trends in elections.

Main Objective

To analyze **who participates and who succeeds** by studying:

- Gender-based participation and success rates
- Category-wise representation and performance
- Age patterns of winning candidates
- How these factors evolve across different election years

Key Visual Elements

Visual Type	Purpose
KPI Cards	Summary of candidates, winners & avg age of winners
Line Chart	Year-wise trend of winners by gender

Donut Charts	Gender distribution of candidates & winners
Bar Charts	Category-wise winners and their yearly trend
Comparison Graphs	Relationship between demographics and outcomes

Interactivity Options

- **Year range slider** for time-based comparison
- **Slicers** available for:
 - State
 - Gender
 - Party
 - Category
- **Cross-highlighting**: Selecting an option refreshes entire view
- **Tooltips** show additional demographic statistics

Dashboard Purpose

This dashboard helps answer questions like:

- Are elections becoming more inclusive over time?
- What is the gender distribution of winners compared to total candidates?
- Do certain categories show higher winning representation?
- Is age a factor in winning patterns?

DAX Measures Used

Total Candidates =

```
DISTINCTCOUNT('Indian General Election'[Candidate Name])
```

Total Winners =

```
COUNTROWS(FILTER('Indian General Election',  
'Indian General Election'[Is_Winner] = TRUE()))
```

Avg Winner Age =

```
CALCULATE(  
AVERAGE('Indian General Election'[Age]),  
'Indian General Election'[Is_Winner] = TRUE()  
)
```

Winners by Gender =

```
CALCULATE(  
DISTINCTCOUNT('Indian General Election'[Candidate Name]),  
'Indian General Election'[Is_Winner] = TRUE()  
)
```

Winners by Category =

```
CALCULATE(  
DISTINCTCOUNT('Indian General Election'[Candidate Name]),
```

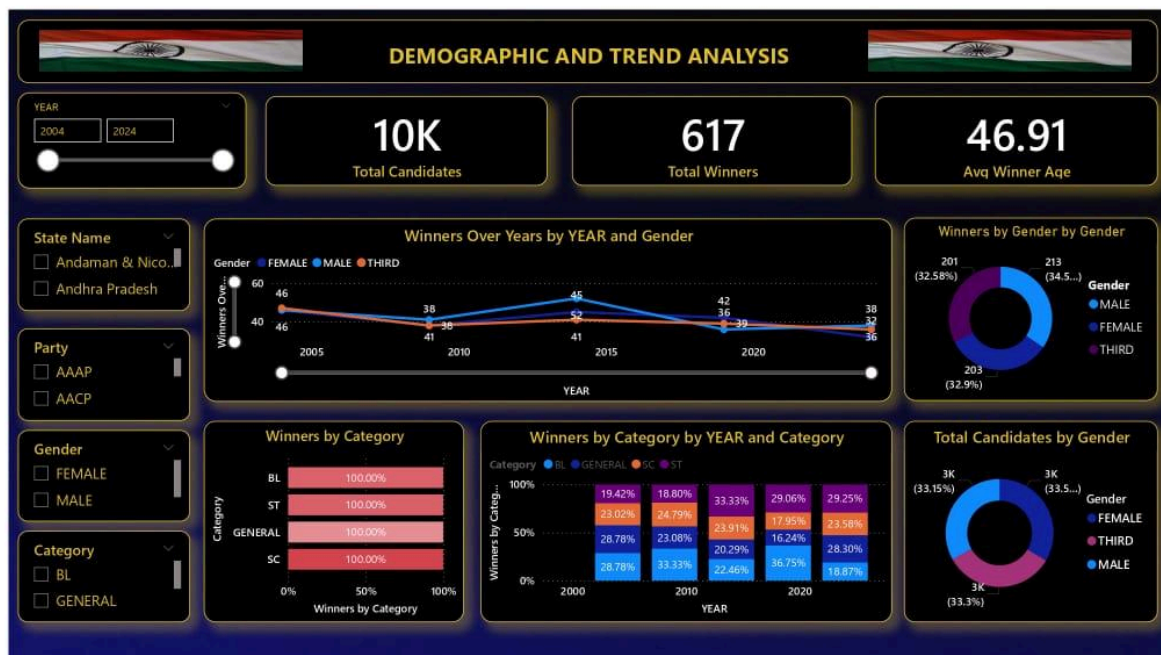
```
'Indian General Election'[Is_Winner] = TRUE()
)
```

Winners Over Years =

CALCULATE(

DISTINCTCOUNT('Indian General Election'[Candidate Name]),

```
'Indian General Election'[Is_Winner] = TRUE()
)
```



Outcome of Dashboard

This dashboard transforms demographic information into meaningful insights by connecting participation with election outcomes. It helps identify whether diversity is improving, which categories are most successful, and how representation changes over time — making it an essential tool for evaluating the social structure of elections.

Deployment Process

Once all dashboards were finalized and verified in Power BI Desktop, the project was officially prepared for deployment. The deployment ensured that the election analytics system could be accessed online, refreshed with updated data, and viewed by stakeholders without relying on local files or manual operations.

Steps Followed in Deployment

1 Publishing to Power BI Service

- The **.pbix** project file was published directly from **Power BI Desktop** to the **Power BI Service Workspace**.
- This allowed the dashboards to be accessed through a web browser from any device.
- The workspace was configured as a central hub for managing data, reports, access rights, and scheduled refreshes.

2 Data Gateway Configuration

- A **Power BI Data Gateway** was installed and linked to the report to connect with the data source.
- The gateway was configured for:
 - **Automatic refresh**
 - **Credential validation**
 - **Daily scheduled updates**
- This ensured that the report remained updated with real-time election data without manual intervention.

3 Access Control & Security

To maintain secure report access, **role-based permissions** were used:

- **View Only** – For reviewers and faculty members
- **Edit Access** – Limited to the project team
- **Admin Rights** – For managing settings and refresh pipelines

This prevented unauthorized edits and ensured the integrity of the report during presentation and evaluation.

4 Performance Optimization Before Deployment

To ensure fast loading and smooth experience:

- Visuals were simplified where needed to reduce rendering time
- Aggregations and filters were optimized
- Repeated DAX logic was minimized for better performance
- Field parameters and drill-down paths were tested to avoid errors

5 Mobile Layout Setup

A responsive **mobile-friendly view** was created in the Power BI Mobile Layout Editor to allow:

- Vertical scrolling support
- Touch-based filters
- Simplified KPI visibility

This made the solution suitable for demonstration even via mobile or tablet devices during review.

Deployment Outcome

The deployment made the project:

- **Accessible from anywhere**

- **Automatically refreshed**
- **Responsive on multiple devices**
- **Secure with controlled user roles**
- **Ready for academic and portfolio presentation**

This process confirms the project's readiness for real-world use and demonstrates practical knowledge of the Power BI deployment lifecycle.

Documentation Work

Along with deployment, detailed documentation was created to support both technical evaluation and end-user understanding. The documentation ensures that the system can be interpreted, reused, and maintained easily by reviewers, mentors, or future developers. It also acts as a reference guide for how the dashboards operate, what data is used, and how analytics are performed.

Documentation Structure

The documentation was divided into two major segments:

1 Technical Documentation

This part explains the internal functioning and development logic of the dashboard.

Component	Description
Data Model Architecture	Overview of table
DAX Formula Logic	Explanation of how measures calculate insights like seats won, vote share %, margins, and demographics

ETL Workflow (Power Query)	Data cleaning & transformation steps performed before loading
Deployment Guidelines	Procedure for publishing to Power BI Service, setting up data gateway, refresh schedule & workspace settings
Security & Access Setup	Role-based access rules, permission levels, and sharing control

2 User-Centric Documentation

This part is designed for non-technical users who want to explore the dashboard.

Component	Purpose
Navigation & Interaction Guide	Explains how to use slicers, filters, drill-downs & map features
KPI Interpretation Manual	Describes what each metric means and why it is important
Visual Glossary	Describes each chart and what insight it delivers
Screenshot Attachments	Model view, workspace, dashboard visuals, map interactions, and slicer panel references

This ensures even a beginner can interact confidently with the analytics system.

Result of Documentation

The documentation makes the system:

- Easy to understand for reviewers
- Clear for technical validation
- Replicable for future enhancements
- Presentation-ready for academic evaluation
- Suitable for project portfolio and internship showcases

The structured documentation confirmed that the project is **transparent**, **well-organized**,

Presentation & Demonstration

A formal presentation was conducted to demonstrate the live working of the deployed dashboards. The session was delivered for the Infosys Springboard mentor and academic guide to validate the project's analytical capabilities and deployment readiness.

Key Areas Covered in the Presentation

Topic	Description
Project Overview	Brief introduction of the problem statement and analytical objectives
Dashboard Walkthrough	Live navigation through visuals, slicers, filters, and drill-downs
Performance Highlights	Explanation of KPI cards and major analytical findings

DAX & Data Logic	Showing how measures respond dynamically to context changes
Deployment Proof	Demonstration of report hosted in Power BI Service workspace
Mobile View & Accessibility	Showed how the dashboard adjusts for mobile/tablet view

Live Demonstration Elements

During the demo, the following were presented in real time:

- Switching between dashboards to analyze winners, regions, and demographics
- Applying filters for year, state, category, and party
- Interacting with map visuals for state-specific detail
- Observing how DAX measures update instantly with each filter
- Verifying automated refresh settings in Power BI Service
- Confirming the accessibility using different account roles

This helped the reviewers understand how the project functions end-to-end.

Feedback & Improvements

Based on the mentor's suggestions, the following refinements were made:

- Improved tooltip descriptions for clarity
- Adjusted font sizes and label formatting for readability
- Enhanced KPI layout for better visual hierarchy

- Reordered slicers for a more intuitive interaction flow

These improvements resulted in a polished and professional final dashboard experience.

Presentation Outcome

The presentation validated that the project is:

- Functionally complete
- Deployable in a real-world scenario
- Performance optimized
- User-friendly and visually clear
- Ready for submission and portfolio display