

India General Election Results Analysis - 2024

Nikhil Kumar Singh, Dr. Rajendra Singh, Vandana Swami, Tilakraj, Sumit Yadav, Kartik Yadav

School of Engineering and Technology, Raffles University, Neemrana, India

ur.mrnikhil@gmail.com, rajendra.singh@rafflesuniversity.edu.in, vandana.swami@rafflesuniversity.edu.in

tilak301427@gmail.com, raosumityadav088@gmail.com, anilk989258@gmail.com

Abstract: *The Indian General Election 2024 generated a massive volume of electoral data across multiple states, constituencies, and political parties. Analyzing such large-scale datasets through conventional reporting methods is often challenging and time-consuming. This research presents the development of an Interactive Election Analytics Dashboard using Microsoft Power BI to visualize and analyze election results at national, state, and constituency levels. The dashboard integrates state-wise, constituency-wise, and party-wise election datasets into a unified analytical platform. Advanced Business Intelligence techniques, including data modeling, data transformation, DAX calculations, and interactive visualizations, were implemented to provide meaningful insights into electoral outcomes. The dashboard enables users to explore political trends, compare party performances, identify regional voting patterns, and analyze constituency-level results through dynamic filters and drill-down functionalities. The proposed system demonstrates the effectiveness of Business Intelligence tools in transforming raw election data into actionable information for researchers, policymakers, political analysts, and citizens*

Keywords: Power BI, Election Analytics, Business Intelligence, Data Visualization, Indian General Election 2024, Dashboard Development.

I. INTRODUCTION

Elections are fundamental to democratic governance and generate extensive datasets that contain valuable information about voter preferences, political competition, and regional trends. The Indian General Election 2024, being one of the largest democratic exercises globally, produced a vast amount of electoral data across all states and union territories. Traditional methods of election analysis generally rely on spreadsheets and static reports that are insufficient for exploring multidimensional electoral datasets. With the increasing importance of data-driven decision-making, Business Intelligence (BI) platforms such as Microsoft Power BI have become essential tools for transforming raw data into meaningful insights.

This project focuses on designing and implementing a Power BI-based Election Analytics Dashboard capable of analyzing election results from multiple perspectives. The dashboard provides comprehensive insights through state-level analysis, constituency-level exploration, political party performance evaluation, and demographic comparisons. The study demonstrates how interactive visualizations can simplify the interpretation of complex election datasets and support evidence-based analysis.

Objectives

The primary objectives of this research are:

- To develop an interactive election analytics dashboard using Microsoft Power BI.
- To analyze Indian General Election 2024 results at national, state, and constituency levels.
- To visualize political party performance using interactive charts and maps.
- To provide users with dynamic filtering and drill-down capabilities.
- To improve accessibility and interpretation of electoral data.
- To demonstrate the application of Business Intelligence in political analytics.



II. LITERATURE REVIEW

Several researchers have highlighted the importance of data visualization and Business Intelligence systems in transforming large datasets into understandable formats.

Business Intelligence systems combine data collection, transformation, storage, and visualization techniques to support decision-making processes. Election analytics has increasingly adopted BI technologies due to the complexity of modern electoral datasets.

Previous studies indicate that interactive dashboards improve user engagement, analytical accuracy, and information accessibility. Researchers have also demonstrated the effectiveness of Power BI in educational, healthcare, financial, and governmental domains.

In the political domain, visualization tools enable analysts to identify voting patterns, compare party performance, evaluate regional trends, and communicate election outcomes effectively.

This research extends these concepts by applying Power BI techniques to analyze Indian General Election 2024 data through a comprehensive election dashboard.

IV. DATASET DESCRIPTION

The dashboard utilizes multiple interconnected datasets.

4.1 State wise Results

This dataset contains information regarding election performance at the state level. Attributes include: State Name , Total Constituencies, Seats Won , Vote Share , Winning Party

4.2 Constituency wise Results

This dataset provides constituency-level election information. Attributes include:

- Constituency Name
- State Name
- Candidate Name
- Party Name
- Votes Secured
- Winning Margin

4.3 Party wise Results

This dataset stores political party performance metrics. Attributes include: Party Name , Seats Won , Vote Percentage , National Ranking

4.4 Constituency Details

Contains supplementary information related to constituencies and candidates.

4.5 State Demographic Dataset

Includes state-level demographic indicators used for comparative analysis.

V. METHODOLOGY

The project was developed using the CRISP-DM (Cross Industry Standard Process for Data Mining) methodology.

Phase 1: Data Collection

Election data was collected from publicly available election result repositories and structured datasets.

Phase 2: Data Cleaning

The collected data underwent preprocessing to ensure consistency and accuracy. Activities included:

- Removing duplicate records



- Handling missing values
- Correcting formatting issues
- Standardizing names

Phase 3: Data Transformation

Power Query Editor was utilized for:

- Data transformation
- Column creation
- Table merging
- Data aggregation

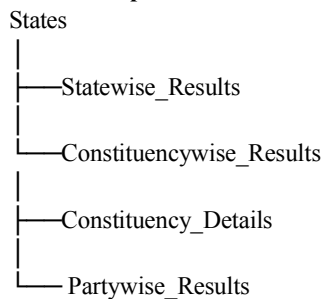
Phase 4: Data Modeling

The Power BI dashboard uses a relational data model to integrate state-wise, constituency-wise, and party-wise election datasets. The model enables efficient analysis, filtering, and visualization of election results across multiple dimensions.

Table 1: Data Model Structure

Table Name	Description	Key Field
States	Contains information about all states and union territories.	State_ID
Statewise_Results	Stores state-level election results and seat distribution.	State_ID
Constituencywise_Results	Contains constituency-wise election outcomes and vote counts.	Constituency_ID
Constituency_Details	Provides detailed information about constituencies and candidates.	Constituency_ID
Partywise_Results	Stores party-wise performance including seats won and vote share.	Party_ID

Relationship Structure



Data Modeling Approach

A relational data model was implemented in Microsoft Power BI to establish connections among election datasets. Relationships were created using common attributes such as State ID, Constituency ID, and Party ID. This model supports cross-filtering, drill-down analysis, and interactive reporting while improving dashboard performance and reducing data redundancy.

Phase 5: Dashboard Development

Microsoft Power BI Desktop was used to create interactive reports and visualizations.



VI. DASHBOARD DESIGN

The dashboard consists of five analytical modules.

6.1 Landing Page

The landing page serves as the navigation interface. Features include:

- Dashboard Overview
- Navigation Buttons
- Project Summary

6.2 Overview Analysis

Provides a high-level summary of election outcomes.

KPIs displayed:

Total Seats, Total Parties, Winning Party, Vote Share Percentage

Visualizations:

KPI Cards, Pie Charts, Bar Charts

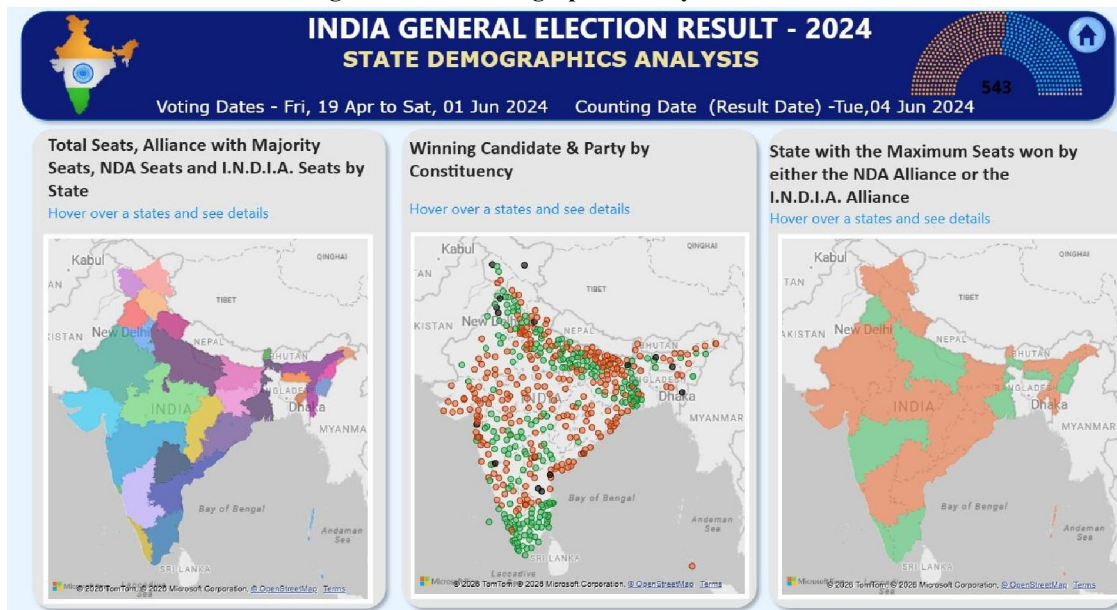
Figure 1: Overview Analysis Dashboard



6.3 State Demographics Analysis



Figure 2: State Demographics Analysis Dashboard



Analyzes election results across states.

Key insights:

- State-wise seat distribution
- Regional performance
- Demographic comparisons

Visualizations:

- Filled Maps
- Clustered Bar Charts
- Comparative Graphs

6.4 Political Landscape by State

Evaluates political competition across regions.

Metrics analyzed:

- Seats Won by Party
- Vote Share
- State-wise Dominance

Visualizations:

- Tree Maps
- Stacked Column Charts
- Party Comparison Reports

6.5 Constituency Analysis

Provides detailed constituency-level insights.

Features:

- Winning Candidate Analysis



- Vote Margin Analysis
- Party Performance Tracking

Visualizations:

- Drill-through Reports
- Detailed Tables
- Interactive Charts

6.6 Details Grid

Displays comprehensive tabular information.

Features:

- Search Functionality
- Dynamic Filtering
- Data Export Options

VII. DAX MEASURES USED

Several DAX measures were implemented to support dashboard analytics.

Total Seats

Total Seats = COUNTROWS(constituencywise_results)

Total Vote

Total Votes = SUM(constituencywise_results[Total Votes])

Total Parties

Total Parties = DISTINCTCOUNT(partywise_results[Party Name])

Winning Margin

Winning Margin = MAX(constituencywise_results[Margin])

These measures enabled dynamic calculation and visualization of key election indicators.

VIII. RESULTS AND FINDINGS

The dashboard successfully transformed complex electoral data into meaningful visual insights.

Major findings include:

Identification of dominant political parties across states.

Recognition of highly competitive constituencies.

Analysis of regional voting patterns.

Comparison of party performance across different geographical regions.

Enhanced understanding of electoral trends through interactive visualizations.

The use of filters and drill-down reports significantly improved data exploration and analytical efficiency.

IX. ADVANTAGES OF THE PROPOSED SYSTEM

The developed dashboard offers multiple advantages:

- Interactive election analysis.
- Faster information retrieval.
- Improved visualization of electoral data.
- Better decision-making support.
- User-friendly navigation.
- Efficient handling of large datasets.
- Real-time analytical capability when connected to live data sources.



X. FUTURE SCOPE

Future enhancements may include:

- Machine Learning-based election prediction.
- Real-time election result integration.
- Social media sentiment analysis.
- AI-powered insight generation.
- Mobile application deployment.
- Comparative analysis of multiple election years.

XI. CONCLUSION

The Election Analytics Dashboard developed using Microsoft Power BI provides an effective solution for analyzing Indian General Election 2024 data. By integrating state-wise, constituency-wise, and party-wise datasets into a unified platform, the dashboard enables comprehensive exploration of electoral outcomes through interactive visualizations and analytical tools.

The project demonstrates the significant role of Business Intelligence technologies in political data analysis. The developed system enhances accessibility, transparency, and understanding of election results while supporting data-driven decision-making for researchers, policymakers, journalists, and citizens. The successful implementation confirms that Power BI is a powerful platform for electoral analytics and large-scale data visualization.

REFERENCES

1. Election Commission of India Election Results and Statistical Reports.
2. Microsoft Power BI Documentation
3. Han, J., Kamber, M., & Pei, J. *Data Mining: Concepts and Techniques*.
4. Sharda, R., Delen, D., & Turban, E. *Business Intelligence, Analytics and Data Science*.
5. Knaflic, C. N. *Storytelling with Data*.
6. Research articles on Election Analytics and Data Visualization.
7. Government of India Open Data Resources.
8. Academic studies on Business Intelligence Systems.
9. Few, S. *Information Dashboard Design: The Effective Visual Communication of Data*.
10. Microsoft Learn. *Power BI Data Modeling and Visualization Guide*

