

# Detailed Project Report: Analysis of São Paulo's 2024 Municipal Elections

## 1. Introduction

This project was designed to provide a comprehensive analysis of São Paulo's 2024 municipal elections. The study, based on public data and statistical modeling, covers:

- **Demographic voting profiles:** Age, gender, and residence location.
- **Geographic trends:** Voting patterns by neighborhood and zone (North, South, East, West, and Central).
- **Historical comparison:** Evolution between the 2020 and 2024 elections.
- **Party preferences:** Growth or decline of political parties and coalitions.

In addition to descriptive insights, the project proposes practical strategies for parties and candidates, showcasing the potential of data-driven decision-making in politics.

## 2. Objectives

### 2.1 General Objective

To provide a detailed and visual analysis of São Paulo's 2024 municipal election results.

### 2.2 Specific Objectives

- Identify predominant demographic and geographic profiles for each party.
- Assess changes in voter behavior compared to previous elections.
- Create interactive tools for data exploration, such as dashboards.
- Propose recommendations to optimize future election campaigns.

## 3. Methodology

### 3.1 Technologies Used

The project utilized data science and visualization tools:

- **Python:** Data manipulation (Pandas), visualizations (Matplotlib, Plotly), and dashboard development (Dash).
- **Power BI:** Creation of dynamic reports for non-technical stakeholders.

### 3.2 Workflow

1. **Data Collection:** Information gathered from public sources, including São Paulo's Regional Electoral Court (TRE-SP).
2. **Processing and Cleaning:** Data cleaned to remove inconsistencies and ensure integrity.
3. **Exploratory Analysis:** Generated descriptive statistics and variable correlations.
4. **Data Visualization:** Built dynamic dashboards.
5. **Interpretation and Recommendations:** Translated insights into practical strategies.

## 4. Dashboards Created

### 4.1 Dashboard 1: Geographic Voting Analysis

Visualized votes by electoral zone and neighborhood. Interactive heat maps identified regions with strong party performances.

**Key Insights:**

- PSOL achieved high votes in peripheral areas like Grajaú and Itaim Paulista.
- Traditional parties like PSDB and MDB dominated central regions such as Jardins and Moema.

**4.2 Dashboard 2: Voter Participation by Gender**

Displayed vote distribution among men, women, and non-binary individuals.

**Charts Used:**

- Stacked bar charts for percentage visualization.
- Line charts showing participation evolution from 2020 to 2024.

**Key Discoveries:**

- Women's participation increased by 8% between 2020 and 2024.
- Non-binary voters represented 2% of the total for the first time.

**4.3 Dashboard 3: Voting by Age Group**

Explored voting patterns across age groups.

**Relevant Insights:**

- Youth (18–24 years) showed the highest growth (15%).
- Voters over 60 remained loyal to conservative parties like PSDB and MDB.

**Chart Used:**

- Pie chart segmenting votes by age group.

**4.4 Dashboard 4: Electoral Comparison 2020 vs. 2024**

Displayed shifts in party preferences between the two elections.

**Insights:**

- PSOL saw an 18% growth compared to 2020.
- PSDB remained stable in central zones but lost ground in peripheral areas.

**Chart Used:**

- Scatter plot comparing vote growth.

**4.5 Dashboard 5: Analysis of Campaign-Relevant Themes**

Used text analysis of speeches and campaign materials to identify key topics.

**Main Themes:**

- Education
- Public Safety
- Health

**Chart Used:**

- Word cloud showing the most frequent terms.

**5. Recommendations**

Based on the analysis, the following suggestions were made:

- **Focus on Education and Health:** Concrete proposals in these areas had significant voter impact.

- **Message Segmentation:** Tailor strategies to demographic profiles and regions.
- **Increased Digital Presence:** Social media proved essential for reaching young voters.

## 6. Next Steps

The project will continue to evolve, including:

- Integration with qualitative research data.
- Sentiment analysis in social media posts.
- Periodic updates with new election data.

## 7. Conclusion

The **Analysis of São Paulo's 2024 Municipal Elections** project offered an innovative and comprehensive approach to studying electoral behavior in Brazil's largest city. By leveraging advanced data science tools, statistical analysis, and interactive visualization, the project achieved the following:

### 1. Data Exploration and Understanding

- **Demographic and Geographic Patterns:**  
Identified detailed voter profiles based on age, gender, and location, highlighting groups that contributed most to party successes across regions.
  - *Highlight:* Youth participation increased by 15%, and non-binary voters represented 2%, reflecting significant social shifts.
- **Party Trends:**  
Parties performed differently in central and peripheral areas, underscoring the need for localized campaign strategies.
  - *Highlight:* Progressive parties like PSOL excelled in peripheral regions, while traditional parties like PSDB and MDB maintained dominance in central areas.

### 2. Technological Tools

- Dashboards transformed complex data into accessible insights, utilizing intuitive visualizations like heat maps and temporal evolution charts.

### 3. Behavioral Changes and Trends

- Youth engagement and PSOL's 18% growth underscore the importance of digital strategies and progressive messaging.

### 4. Practical Impact

- Recommendations on message segmentation, focus areas, and digital presence offer actionable strategies for future campaigns.

### 5. Transformative Potential

- By integrating sentiment analysis and qualitative data, this methodology can significantly influence campaign strategy across different electoral contexts.

## 8. Team and Contacts

### Core Team:

- Fabiana  Campanari (GitHub)
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