**HERE IS THE LINK FOR FOLDER Q1(place cursor in folder icon):** [**Q1.TDS**](https://drive.google.com/drive/folders/1zE_TGzS-4H_GcBZU2_7Uh2Z-eaS7ivba?usp=sharing)

**Analysis of Candidate Vote Distribution in Assam Elections (1951-2021)**

**1. Data Visualization Overview**

**1.1. Box Plot with Outliers ( Using Matplotlib)\*\*** : [BOX PLOT WITH OUTLIERS (MATPLOTLIB).png](https://drive.google.com/file/d/1Mk67G1qoCnNmhGDMS3htx3hUbCFVnvNC/view?usp=drive_link)

This plot provides a clear view of the distribution of votes across different election years, highlighting the range and variability, as well as the presence of outliers.

**1.2. Violin Plot (Using matplotlib )\*\***

[**VIOLIN PLOT (MATPLOTLIB).png**](https://drive.google.com/file/d/11zVp-rEd7xXsLTdBwdzD2MwwZ4E96Ggv/view?usp=drive_link)

The violin plot complements the box plot by showing the distribution's density, giving insight into the shape and spread of vote counts over time.

**1.3. Box Plot Highlighting Outliers (Using Altair )**

[**BOX PLOT(ALTAIR).png**](https://drive.google.com/file/d/1oIOfHM7gxjh2_dx7f9UZijD7yCXglfGD/view?usp=drive_link)

This version of the box plot emphasizes outliers more prominently, offering a focused view on exceptional vote counts.

**2. Key Observations**

**2.1. Increasing Vote Counts**

- There's a noticeable upward trend in both the maximum and median vote counts over the years.

- A significant surge in vote counts is evident from 2001 onwards.

**2.2. Growing Variability**

- The interquartile range (IQR) has widened over time, reflecting increased variability.

- Vote distributions have shifted from being compact to more spread out.

**2.3. Emergence of High-Performing Outliers**

- The number of outliers has increased notably from 2001.

- Particularly extreme outliers are observed in the 2016 and 2021 elections.

**2.4. Evolution of Vote Distribution**

- Earlier years show symmetrical and compact vote distributions.

- More recent years exhibit skewed distributions with long upper tails, indicating a complex electoral landscape.

**3. Temporal Analysis**

**3.1. 1951-1983**

- The vote distributions during this period were relatively stable and compact.

**3.2. 1985-2000**

- There was a gradual increase in both variability and vote counts.

**3.3. 2001-2021**

- This period saw dramatic shifts in distribution patterns, with notable changes in outliers and maximum vote counts.

**4. Implications**

**4.1. Increased Electoral Competitiveness**

- The range between the highest and lowest vote counts has widened.

- More candidates are now securing high vote counts, reflecting greater electoral competition.

**4.2. Changing Political Landscape**

- The rise of strong regional parties might be contributing to these changes.

- Shifts in voter preferences and behavior could be influencing these trends.

**4.3. Demographic Factors**

- Population growth and increased voter turnout are likely factors contributing to the observed changes.

**5. Data Quality Considerations**

**5.1. Improved Data Collection**

- Data collection and reporting have improved over the years, enhancing the accuracy of the information.

**5.2. More Detailed Distributions**

- Recent elections provide more detailed distributions, reflecting advancements in data reporting.

**6. Comparative Analysis of Visualizations**

**6.1. Box Plots (Image 1 vs. Image 3)**

- Differences in color schemes and emphasis on outliers highlight various aspects of the data.

- The choice between simplicity and detail impacts how trends are perceived.

**6.2. Violin Plot (Image 2)**

- Unlike box plots, the violin plot offers density information, illustrating changes in vote distribution shapes over time.

**Conclusion**

The analysis highlights a notable transformation in Assam's electoral patterns from 1951 to 2021. Trends include rising vote counts, increasing variability, and the appearance of high-performing outliers, especially in recent decades. These observations suggest a more dynamic and competitive political environment, likely shaped by demographic changes, evolving political dynamics, and improved electoral processes.

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