

VIRGINIA COMMONWEALTH UNIVERSITY

Statistical analysis and modelling (SCMA 632)

A5-Visualization - Perceptual Mapping for Business

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INTRODUCTION

In this analysis, we aim to understand the consumption patterns across different districts in West Bengal using data from the 68th round of the National Sample Survey Office (NSSO) survey. By visualizing the distribution of total consumption and analyzing district-wise consumption, we seek to uncover significant trends and insights that can inform economic planning and policy-making. This analysis leverages histogram and bar plot visualizations, alongside geographic mapping, to provide a comprehensive view of the consumption landscape in West Bengal.

OBJECTIVES

Visualize Consumption Distribution: To create a histogram showing the distribution of total consumption across various districts in West Bengal.

Analyze District-wise Consumption: To generate a bar plot that visualizes the total consumption per district, annotated with district names.

Geographic Mapping: To plot the consumption patterns on a geographic map of West Bengal, highlighting the spatial distribution of consumption.

BUSINESS SIGNIFICANCE

Understanding consumption patterns at the district level has several significant implications:

Economic Planning: Accurate insights into consumption patterns help in the efficient allocation of resources and budget planning at the state and district levels.

Policy Making: Detailed consumption data can aid in designing and implementing targeted economic and social policies that address specific needs of different districts.

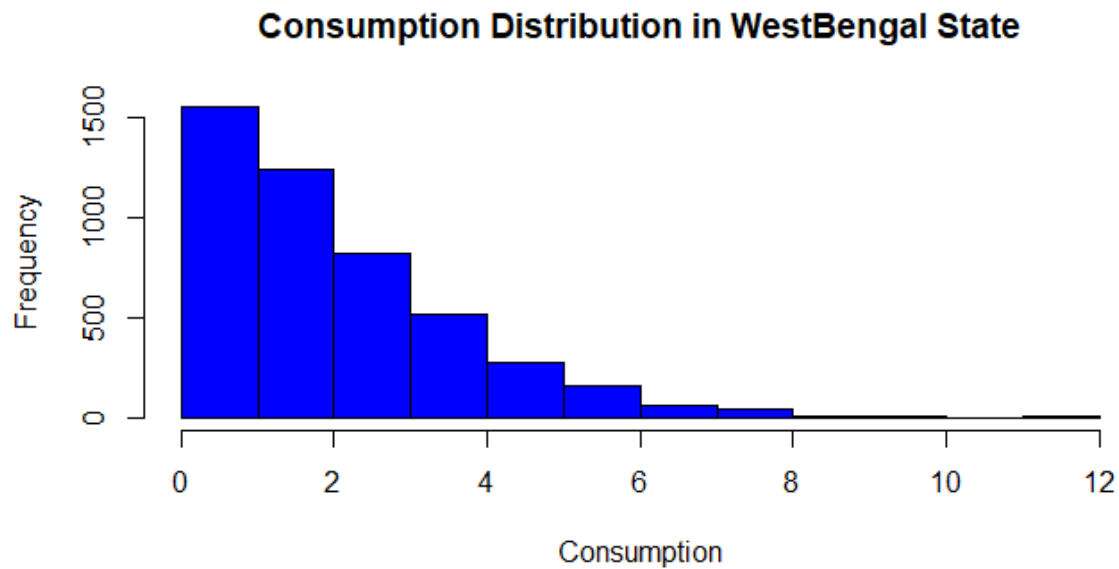
Market Analysis: Businesses can utilize this information to identify high-consumption areas, enabling them to focus their marketing efforts and optimize supply chain logistics.

Investment Decisions: Investors can pinpoint regions with higher economic activity and growth potential, leading to more informed investment strategies.

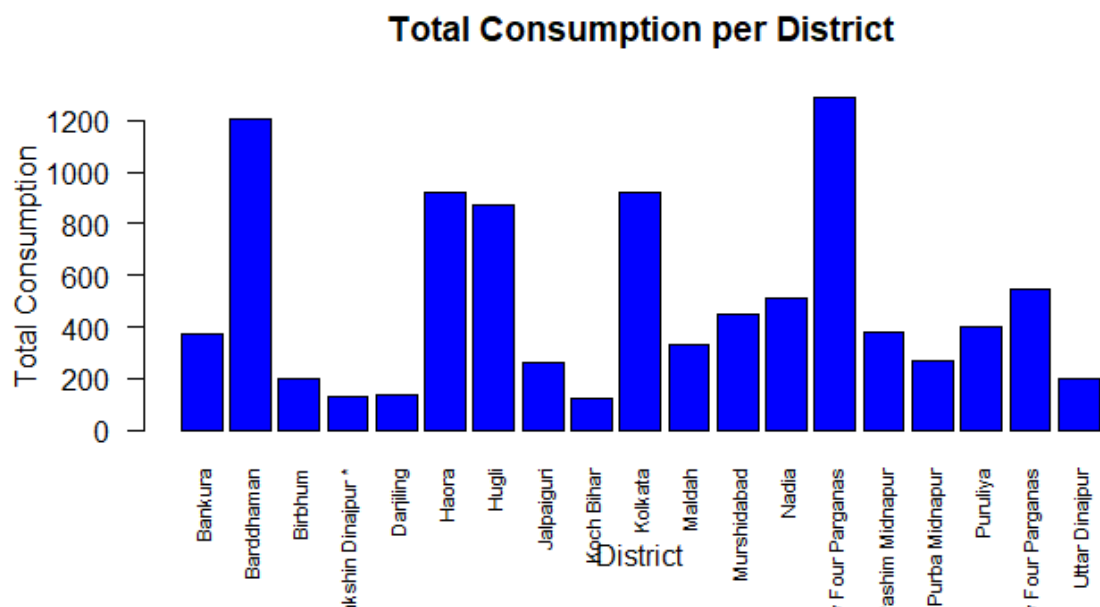
Social Development: Understanding consumption can also highlight areas needing social interventions, such as poverty alleviation and infrastructure development.

RESULTS

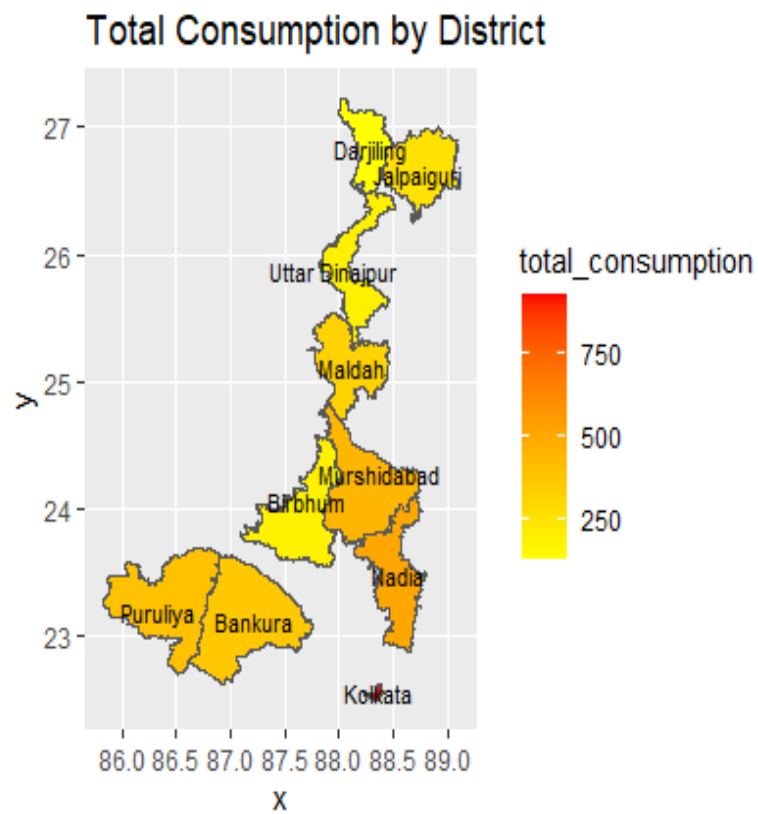
USING R



#The above Histogram shows the consumption distribution in West Bengal state



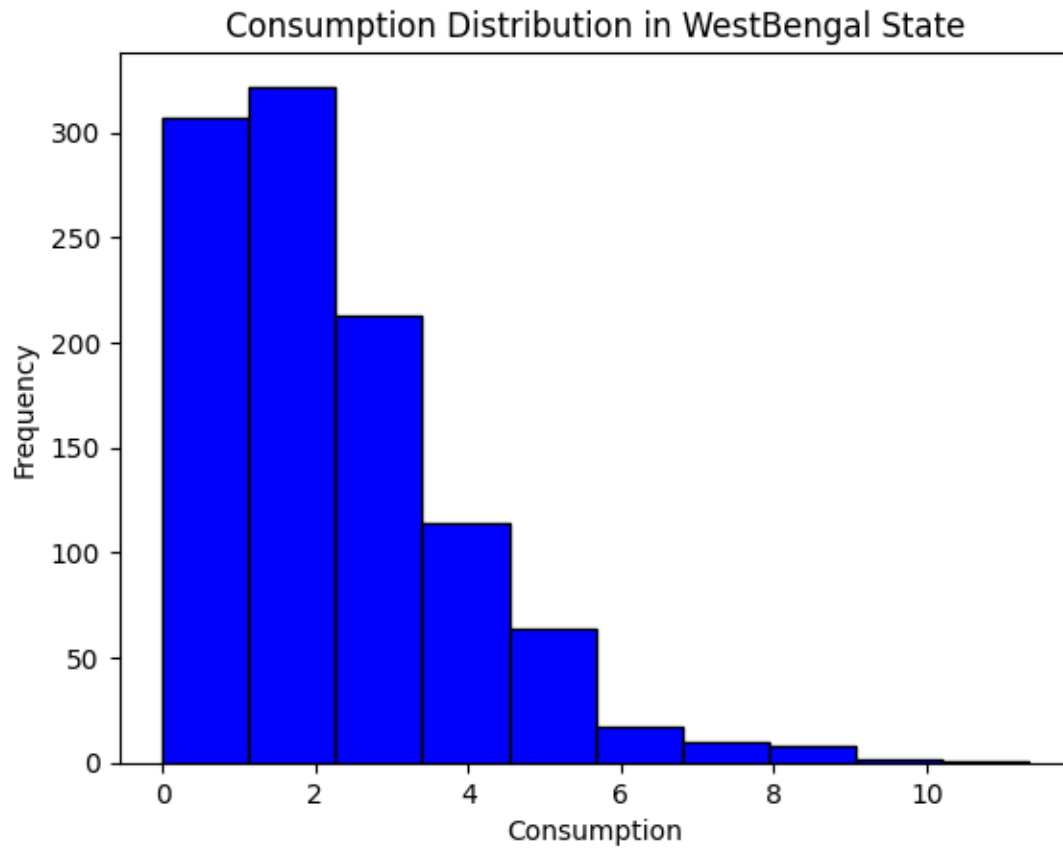
#The above bar plot shows the consumption per district of West Bengal



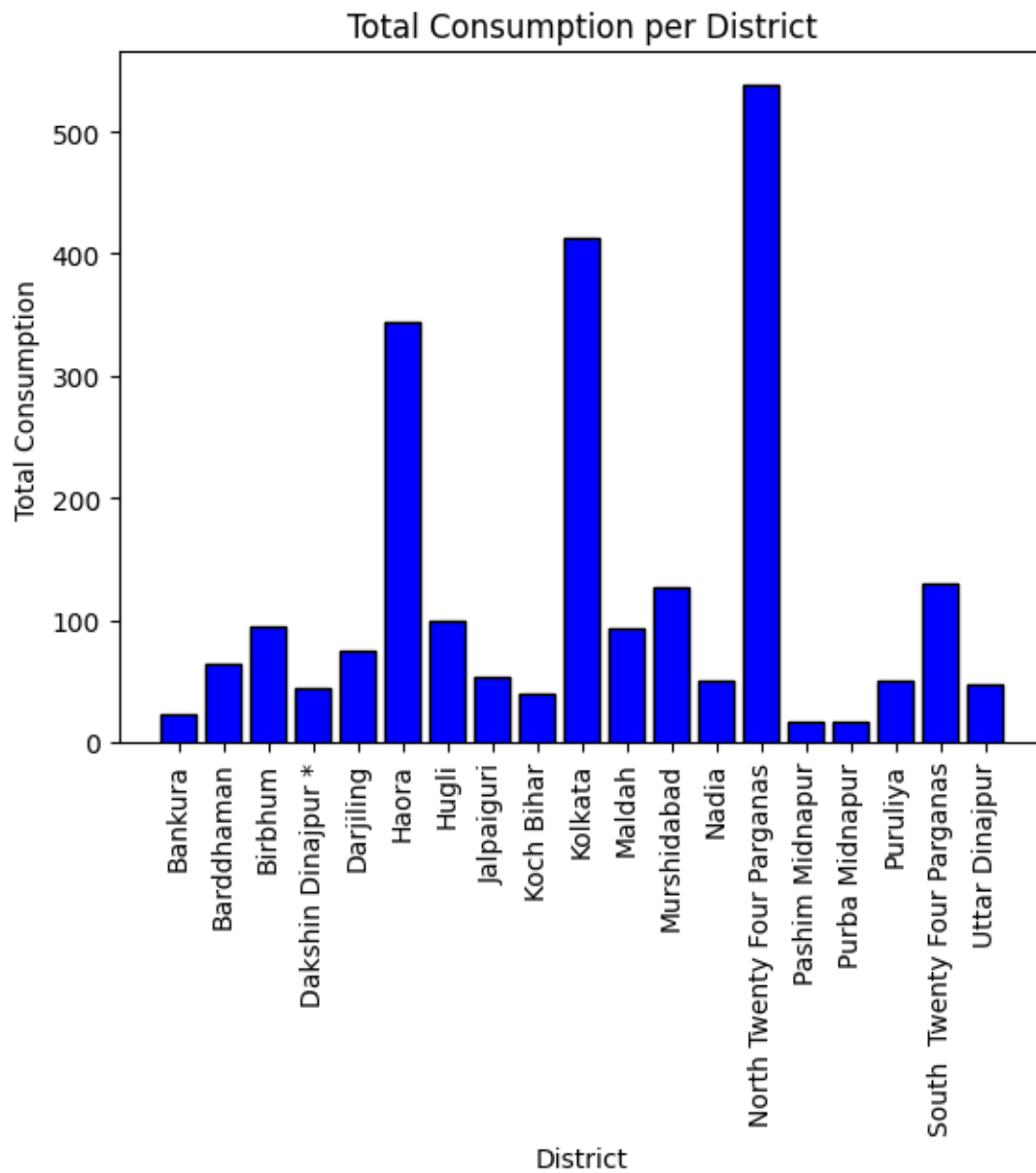
#The above map shows the consumption pattern of various districts in West Bengal

RESULTS

USING PYTHON

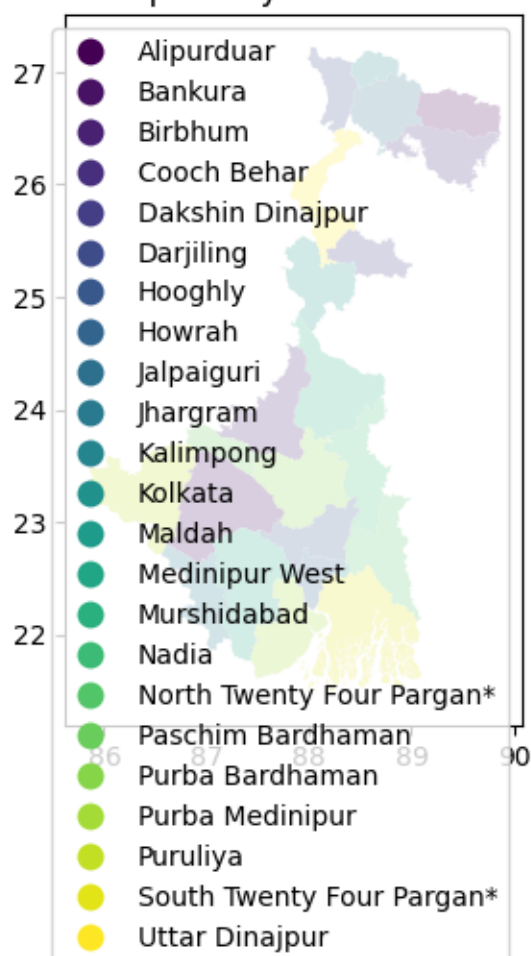


#The above Histogram shows the consumption distribution in West Bengal state



#The above bar plot shows the consumption per district of West Bengal

Total Consumption by District in West Bengal



#The above map shows the consumption pattern of various districts in West Bengal

INTERPRETATIONS

Histogram of Consumption Distribution in West Bengal State:

- **Overview:**
 - This histogram shows the frequency distribution of consumption levels across the state.
 - The x-axis represents different consumption levels, and the y-axis shows the frequency of districts falling into each consumption level.
- **Interpretation:**
 - Most districts have a consumption level between 0 and 4, indicating that the majority of districts have low to moderate consumption.
 - Very few districts have consumption levels above 6, showing that high consumption is concentrated in a few areas.

Bar Chart of Total Consumption per District:

- **Overview:**
 - This bar chart provides a detailed comparison of total consumption across different districts.
 - The x-axis lists the districts, and the y-axis shows the total consumption.
- **Notable Observations:**
 - **North Twenty Four Parganas:**
 - Highest total consumption, indicating significant economic activity.
 - **Howrah and Cooch Behar:**
 - Also have relatively high consumption, suggesting they are major economic centers.
 - **Bankura, Bardhaman, and Birbhum:**
 - Have lower total consumption, which may reflect lower industrial activity or smaller populations.

Map of Total Consumption by District in West Bengal:

- **Overview:**
 - This map uses color coding to represent different districts in West Bengal.
 - Each district is labeled, and the color gradient indicates the level of total consumption.
 - Darker colors represent higher consumption, while lighter colors represent lower consumption.
- **Interpretation:**
 - The map visually highlights regional disparities in consumption levels.
 - Districts with darker colors (e.g., North Twenty Four Parganas) are areas of high economic activity and possibly greater population density.
 - Lighter-colored districts may be more rural or less economically developed.

Summary:

- **High Consumption Districts:**
 - North Twenty Four Parganas
 - Howrah
 - Cooch Behar
- **Low Consumption Districts:**
 - Bankura
 - Barddhaman
 - Birbhum
- **General Trend:**
 - Most districts have low to moderate consumption levels, with a few districts showing significantly higher consumption.

RECOMMENDATIONS

1. **For High Consumption Districts:**
 - **North Twenty Four Parganas, Howrah, and Cooch Behar:**
 - **Infrastructure Development:**
 - Continue to invest in infrastructure to support ongoing economic activities.
 - **Sustainable Practices:**
 - Promote sustainable consumption practices to ensure long-term economic stability.
 - **Resource Management:**
 - Enhance resource management strategies to balance consumption with available resources.
2. **For Low Consumption Districts:**
 - **Bankura, Barddhaman, and Birbhum:**
 - **Economic Development:**
 - Implement policies to stimulate economic growth, such as incentives for businesses to set up operations.
 - **Skill Development:**
 - Invest in education and skill development programs to improve employment opportunities.
 - **Agricultural Support:**
 - Provide support to agricultural sectors to increase productivity and local consumption levels.
3. **General Recommendations:**
 - **Data-Driven Policies:**

- Use detailed consumption data to tailor policies that address specific needs of each district.
- **Balanced Growth:**
 - Aim for balanced regional development to reduce disparities in consumption levels.
- **Monitor Trends:**
 - Regularly monitor consumption trends to quickly identify and address emerging issues.
- 4. **Further Research:**
 - Conduct studies to understand the underlying factors driving consumption patterns in different districts.
 - Explore the impact of external factors such as migration, industrial growth, and policy changes on consumption levels.

CONCLUSION

The analysis of total consumption by district in West Bengal reveals significant disparities, with districts such as North Twenty Four Parganas, Howrah, and Cooch Behar exhibiting high consumption levels, indicative of robust economic activity and infrastructure. In contrast, districts like Bankura, Bardhaman, and Birbhum show lower consumption, highlighting the need for targeted economic and developmental interventions. The general trend of predominantly low to moderate consumption levels across the state underscores the necessity for balanced regional development strategies. Implementing policies to stimulate economic growth, improve infrastructure, and promote sustainable practices in both high and low consumption districts will be crucial for fostering equitable and sustained economic progress across West Bengal.