



VIRGINIA COMMONWEALTH UNIVERSITY

Statistical analysis and modelling (SCMA 632)

A5 : Visualisation – Perceptual Mapping for Business

GAURI VINOD NAIR

V01110160

Date of Submission: 15-07-2024

TABLE OF CONTENTS

1. Introduction	3
1.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat	
1.2. Plotting the variable 'nontotal_v' on Karnataka state map	
2. Objectives	3
2.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat	
2.2. Plotting the variable 'nontotal_v' on Karnataka state map	
3. Business Significance	4
3.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat	
3.2. Plotting the variable 'nontotal_v' on Karnataka state map	
4. Results and Interpretations	4
4.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat	
4.2. Plotting the variable 'nontotal_v' on Karnataka state map	

1. INTRODUCTION

1.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat

The focus of this study is on the state of Gujarat, using data from the National Sample Survey Office (NSSO) to analyze district-wise consumption patterns. We aim to visualize the distribution of total consumption across districts with a histogram and provide a detailed view of consumption per district using a barplot. The NSSO68 dataset includes comprehensive consumption-related data for both rural and urban sectors.

The analysis involves handling missing values, identifying and removing outliers, and standardizing district and sector names. By summarizing the consumption data regionally and district-wise, we aim to provide valuable insights into consumption patterns within Gujarat. These visualizations will help policymakers and stakeholders understand how consumption varies across different districts, facilitating targeted interventions and promoting equitable development across the state.

1.2. Plotting the variable 'nontotal_v' on Karnataka state map

The focus of this study is on visualizing meat consumption patterns across the state of Karnataka using data from the National Sample Survey Office (NSSO). We aim to plot the variable 'nontotal_v,' which indicates total meat consumption, on the Karnataka state map using the NSSO68 dataset. This visualization will help illustrate the distribution and intensity of meat consumption across different districts in Karnataka.

The NSSO68 dataset provides comprehensive data on various consumption-related aspects for both rural and urban sectors. By mapping the 'nontotal_v' variable, we aim to identify and highlight areas with high and low meat consumption. This analysis will provide valuable insights for policymakers and stakeholders, enabling them to understand regional consumption patterns better and make informed decisions for targeted interventions and resource allocation in Karnataka.

2. OBJECTIVES

2.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat

- Visualize Consumption Distribution
- Detailed District-wise Analysis
- Identify Consumption Patterns

2.2. Plotting the variable 'nontotal_v' on Karnataka state map Identify Distinct Respondent Groups

- Visualize Meat Consumption
- Identify Regional Consumption Patterns

3. BUSINESS SIGNIFICANCE

3.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat

The barplot and histogram tasks showcasing consumption patterns across districts in Gujarat hold significant business implications. They provide critical insights for resource allocation, enabling efficient planning of food supplies and infrastructure development based on district-specific consumption needs. Businesses can leverage this data to tailor marketing strategies and product offerings, effectively targeting consumer preferences across different districts. Additionally, understanding consumption disparities supports optimized supply chain management, ensuring products are distributed efficiently to meet varying demand levels. Policymakers benefit by formulating targeted interventions aimed at promoting balanced consumption and improving public health outcomes. These visualizations also facilitate competitive analysis, helping businesses identify market opportunities and gaps for strategic market entry and positioning. Overall, the analysis of consumption patterns aids in socioeconomic impact assessment and supports initiatives aimed at fostering healthier eating habits and lifestyle choices across Gujarat.

3.2. Plotting the variable 'nontotal_v' on Karnataka state map

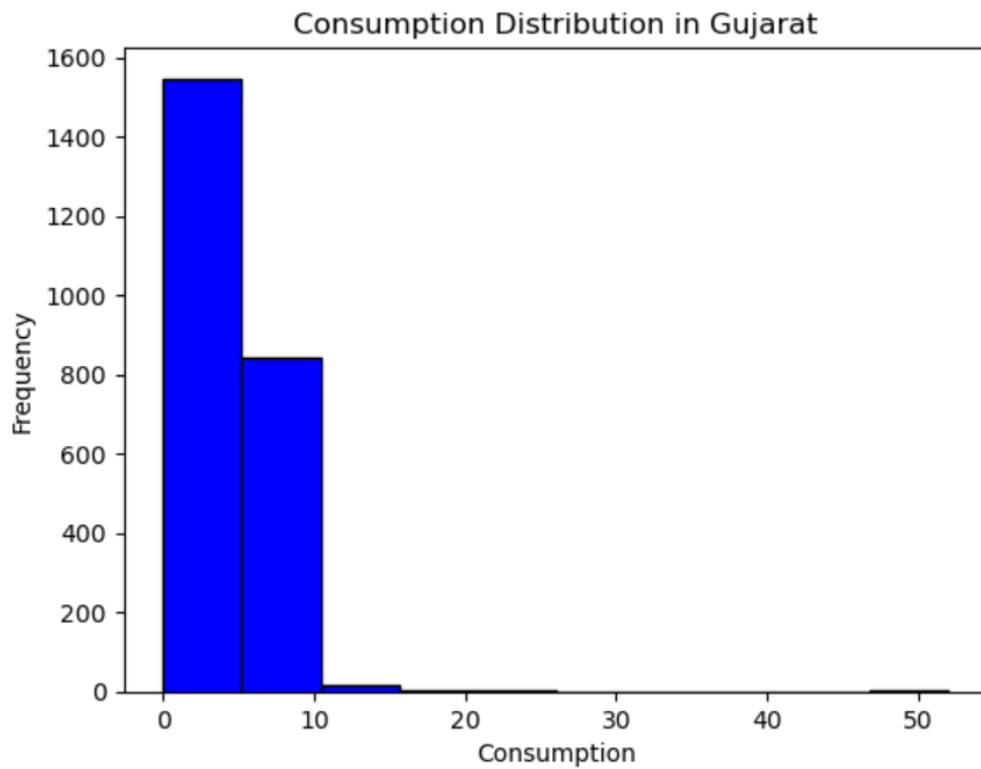
This carries substantial business significance. It provides valuable insights into regional consumption patterns, aiding businesses in strategic decision-making and resource allocation. By visualizing meat consumption on a map, businesses can identify areas with high demand and adjust supply chains accordingly, ensuring efficient distribution and minimizing logistical costs. This data also supports market segmentation efforts, enabling businesses to tailor marketing strategies and product offerings based on district-specific preferences. Moreover, the map helps policymakers assess dietary trends and health implications, guiding initiatives to promote balanced nutrition and public health awareness. Overall, the geo map task facilitates informed business strategies, enhances market competitiveness, and supports efforts towards sustainable development and consumer welfare in Karnataka. Multidimensional Scaling.

4. RESULTS AND INTERPRETATIONS

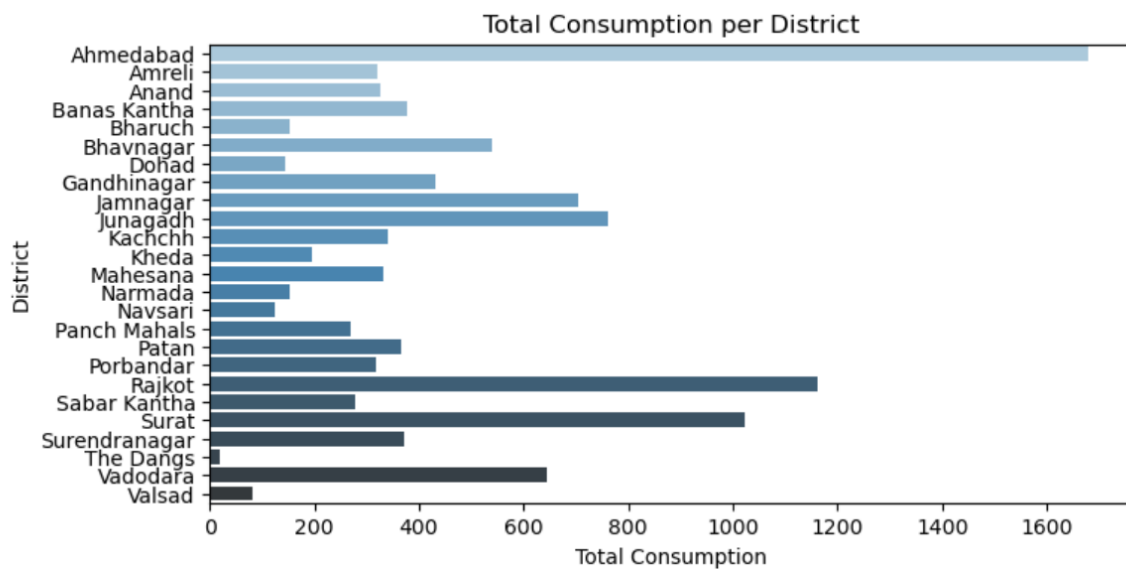
4.1. Histogram and Barplot to indicate the consumption district-wise for Gujarat

⇒ Python

```
# Plot histogram of total consumption
plt.hist(gujnew["total_consumption"], bins=10, color='blue', edgecolor='black')
plt.xlabel("Consumption")
plt.ylabel("Frequency")
plt.title("Consumption Distribution in Gujarat")
plt.show()
```

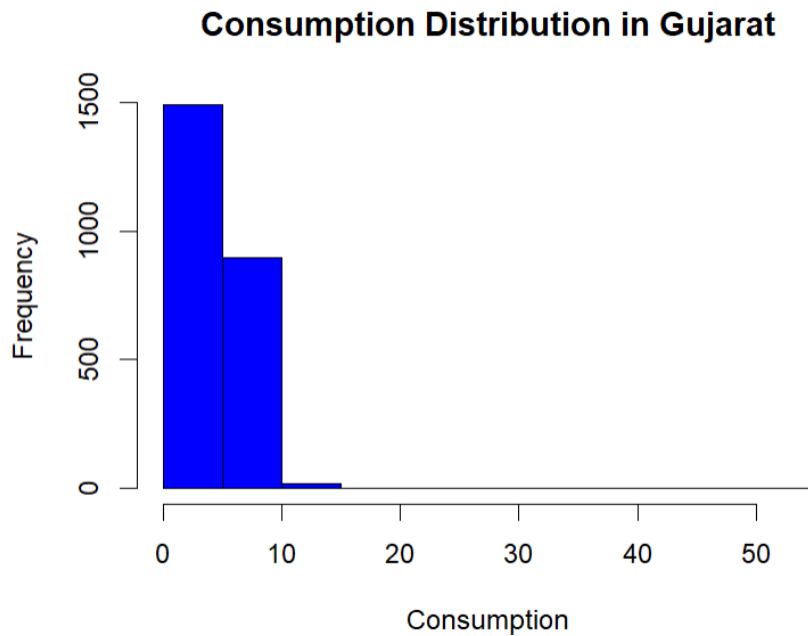


```
# Plot bar chart of total consumption per district
GUJ_consumption = gujnew.groupby("District")["total_consumption"].sum().reset_index()
plt.figure(figsize=(10, 6))
sns.barplot(x='total_consumption', y='District', data=GUJ_consumption, palette="Blues_d")
plt.xlabel("Total Consumption")
plt.ylabel("District")
plt.title("Total Consumption per District")
plt.show()
```

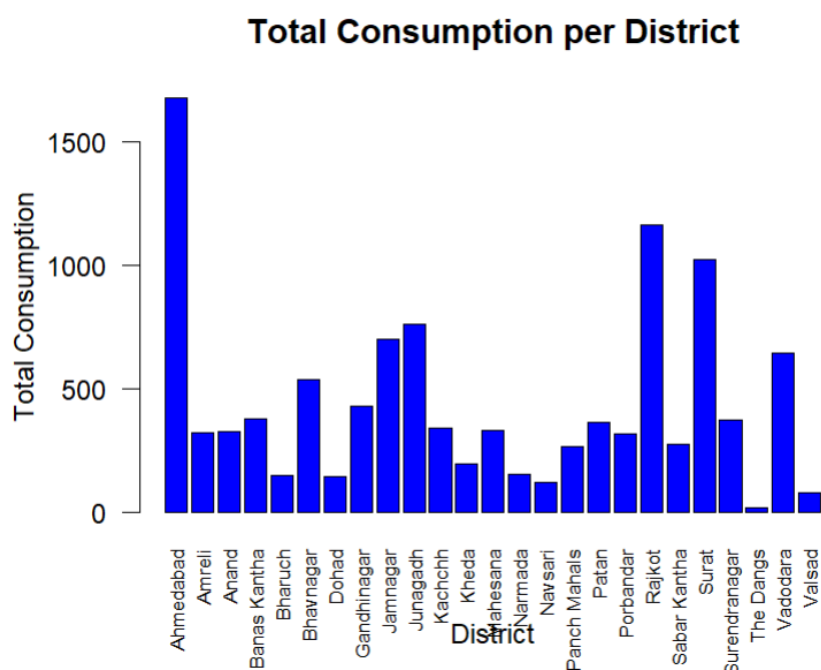


⇒ R

```
> hist(gujnew$total_consumption, breaks = 10, col = 'blue', border = 'black',  
+      xlab = "Consumption", ylab = "Frequency", main = "Consumption Distribution in G  
ujarat")
```



```
> barplot(GUJ_consumption$total_consumption,  
+         names.arg = GUJ_consumption$District,  
+         las = 2, # Makes the district names vertical  
+         col = 'blue',  
+         border = 'black',  
+         xlab = "District",  
+         ylab = "Total Consumption",  
+         main = "Total Consumption per District",  
+         cex.names = 0.7) # Adjust the size of district names if needed
```

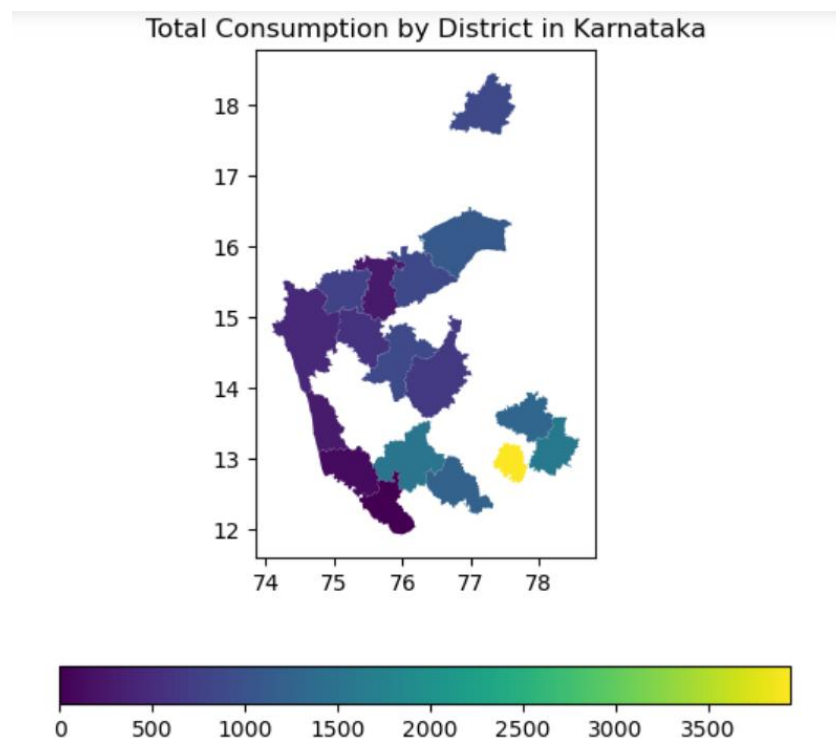


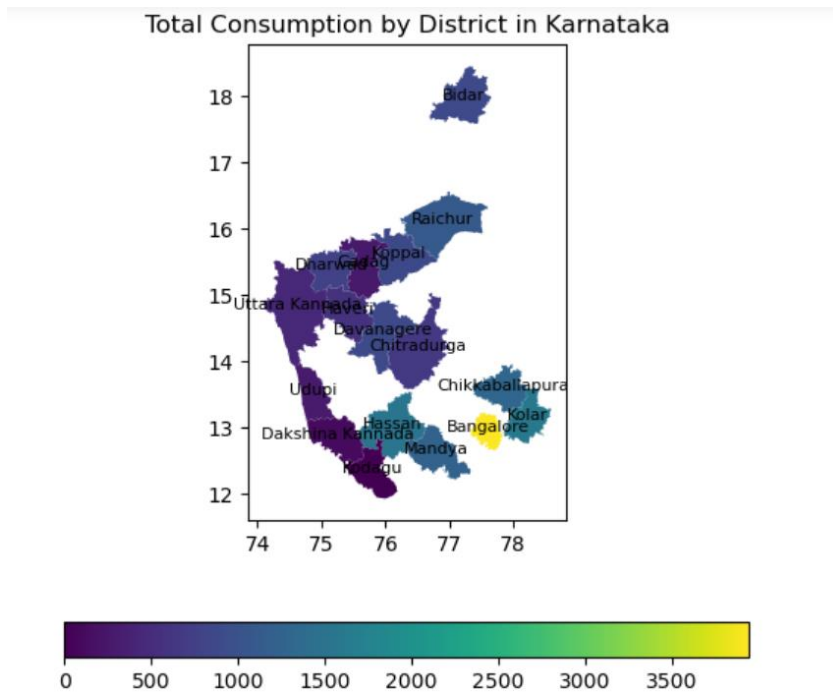
Interpretation

The barplot illustrates significant variations in consumption levels across districts in Gujarat based on the NSSO68 dataset. Districts such as Ahmedabad, Rajkot, and Surat emerge as top consumers, showing notably higher levels of total consumption compared to other districts. This suggests that urban centers and industrial hubs might exhibit greater consumption patterns, likely influenced by higher population densities and economic activities. Conversely, districts like Dangs and Vaisad exhibit lower consumption levels, possibly indicating rural areas or those with specific dietary preferences impacting overall consumption rates. Such insights are crucial for policymakers and businesses alike, highlighting opportunities for targeted interventions in areas where consumption levels are lower, and optimizing resource allocation in high-consumption regions to meet demand effectively.

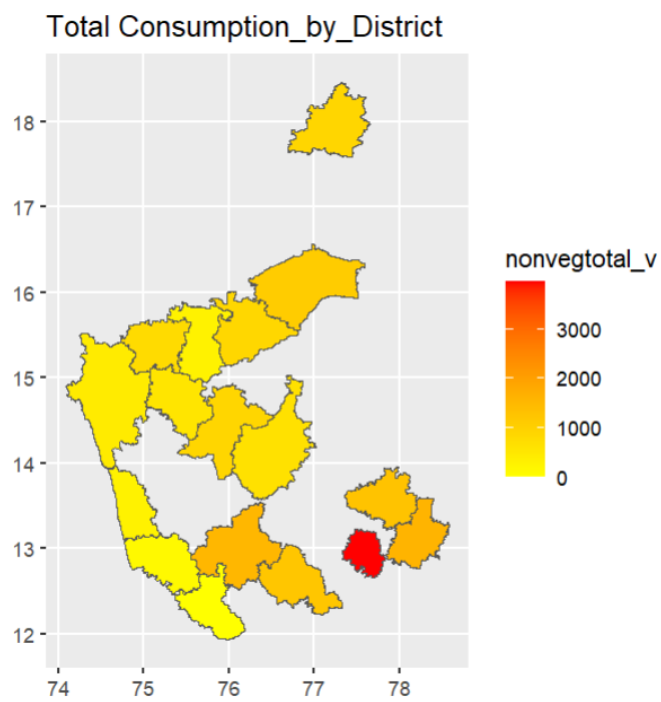
4.2. Plotting the variable 'nontotal_v' on Karnataka state map

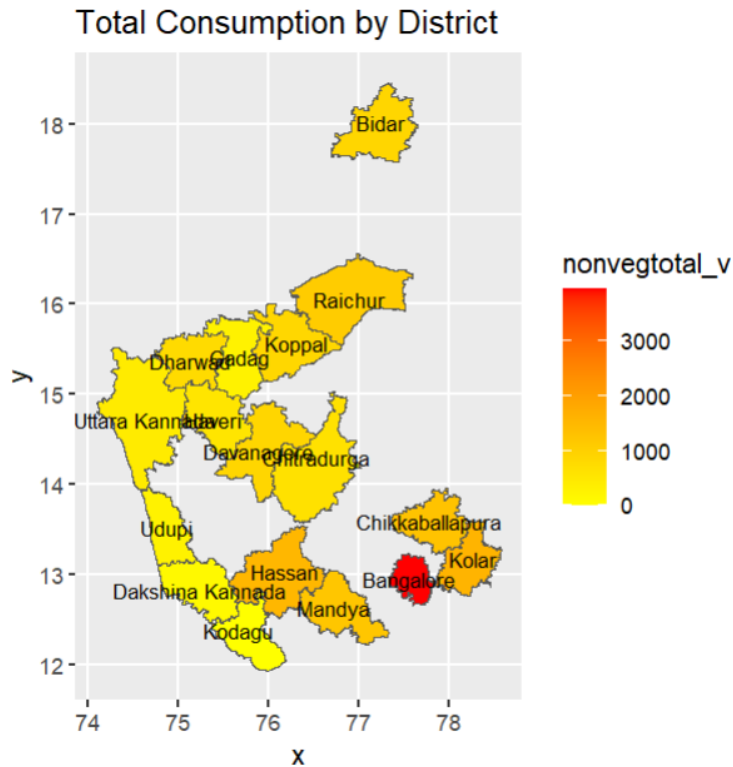
⇒ Python





⇒ R





Interpretation

The map of Karnataka illustrates varying levels of meat consumption ('nontotal_v') across its districts based on the NSSO68 dataset. Districts such as Bangalore, Hassan, and Kolar appear as regions with higher meat consumption, indicated by deeper shades on the map. These districts likely reflect urban centers and regions with higher population densities and economic activities, contributing to increased meat consumption. Conversely, districts like Dakshina Kannada and Kodagu exhibit lighter shades, indicating lower levels of meat consumption.