VIRGINIA COMMONWEALTH UNIVERSITY

Statistical analysis and modelling (SCMA 632)

A6- VISUALISATION-PERPETUAL MAPPING FOR BUSINESS

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CONTENTS

INTRODUCTION

This report studies the visualisation of perpetual mapping for business. By using histogram and barplot on the NSSO68.csv data set conclusions are driven with the help of Python.

OBJECTIVES

- Plot a **histogram** (to show the distribution of total consumption across different districts) and a **barplot** (To visualize consumption per district with district names) of the data in **Assignment A1** to indicate the consumption district-wise for the state assigned to you.
- Plot {'any variable of your choice'} on the **Karnataka** (or the state assigned to you) state map using NSSO68.csv data

RESULTS AND INTERPRETATION

INPUT

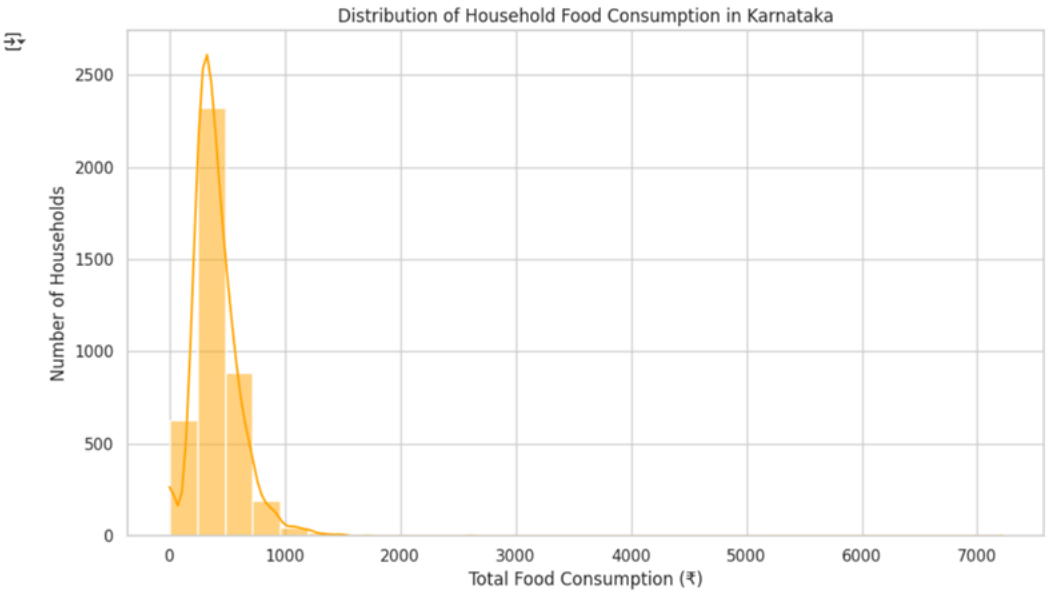
Import libraries

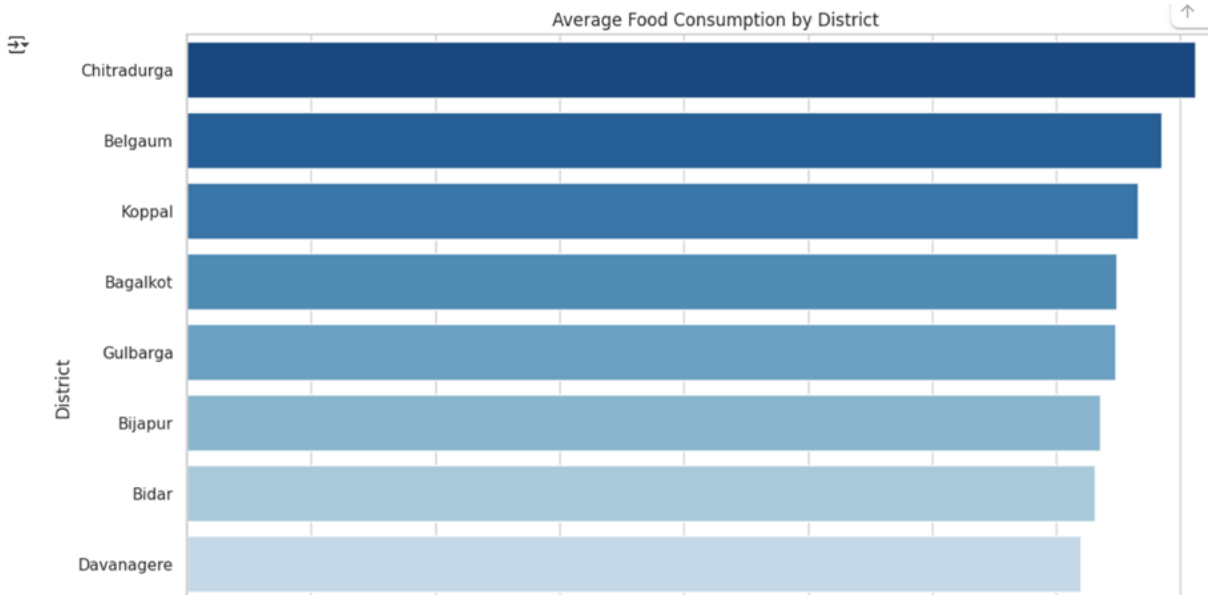
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Set plot style
sns.set(style="whitegrid")

# Load NSSO data
df = pd.read_csv("C:\vcu extra\assignment\data\NSSO68.csv")

# 1. Filter for Karnataka (state code 29)
df_kar = df[df['state'] == 29].copy()

# 2. Rename relevant columns
df_kar.rename(columns={
    'District': 'district_code',
    'MPCE_URP': 'mpce_urp',
    'MPCE_MRP': 'mpce_mrp',
    'cerealtot_v': 'cereal',
    'pulsestot_v': 'pulses',
    'Milktotal_v': 'milk',
    'nonvegtotal_v': 'nonveg',
    'vegtt_v': 'veg'
}, inplace=True)

# 3. Calculate total food consumption
```

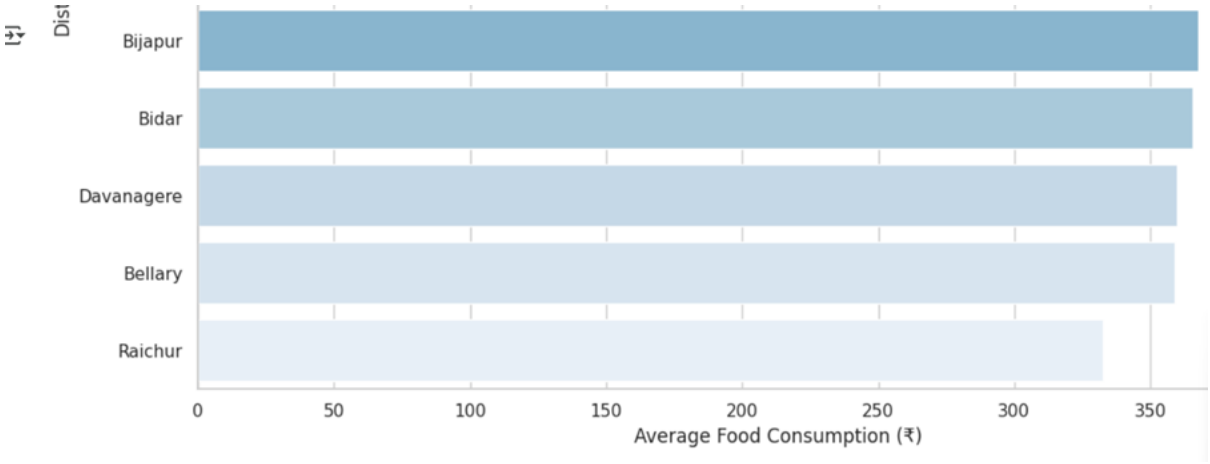
```
df_kar['total_food_consumption'] = df_kar[['cereal', 'pulses', 'milk', 'nonveg',
'veg']].sum(axis=1)

# 4. (Optional) Map district code to district name
district_map = {
    1: "Belgaum", 2: "Bagalkot", 3: "Bijapur", 4: "Bidar", 5: "Raichur",
    6: "Gulbarga", 7: "Koppal", 8: "Bellary", 9: "Chitradurga", 10: "Davanagere",
    # Add full district mappings here if needed
}
df_kar['district_name'] = df_kar['district_code'].map(district_map)

# 5. Create a summary dataframe
district_summary = df_kar.groupby('district_name', dropna=False).agg(
    avg_mpce_urp=('mpce_urp', 'mean'),
    avg_food_consumption=('total_food_consumption', 'mean')
).reset_index()

# 6. Plot: Histogram of food consumption
plt.figure(figsize=(10,6))
sns.histplot(df_kar['total_food_consumption'], bins=30, color='orange', kde=True)
plt.title('Distribution of Household Food Consumption in Karnataka')
plt.xlabel('Total Food Consumption (₹)')
plt.ylabel('Number of Households')
plt.tight_layout()
plt.show()

# 7. Plot: Barplot of average district-wise consumption
plt.figure(figsize=(12,8))
sns.barplot(
```

```
    data=district_summary.sort_values('avg_food_consumption', ascending=False),
    y='district_name', x='avg_food_consumption', palette='Blues_r'
)
plt.title('Average Food Consumption by District')
plt.xlabel('Average Food Consumption (₹)')
plt.ylabel('District')
plt.tight_layout()
plt.show()
```

OUTPUT







INTERPRETATION

Based on the histogram we come to know that most households fall within a moderate range of consumption, while very few has high or low food consumption pattern. The right shewed distribution suggests an inequality in food consumption levels among households.

The barplot illustrates the average food consumption per district. This ranks the districts based on its average consumption, which helps in detecting areas with higher or lower consumption patterns.

In conclusion, the visualisation points gave insights into the consumption pattern across different regions in Karnataka. This valuable information can be used for data driven decisions, efficient resource allocation, management of the scarce resources and regional planning relating to food distribution and welfare programs.

REFERENCES

1.https://github.com/scma-632/scma632-A1/tree/main