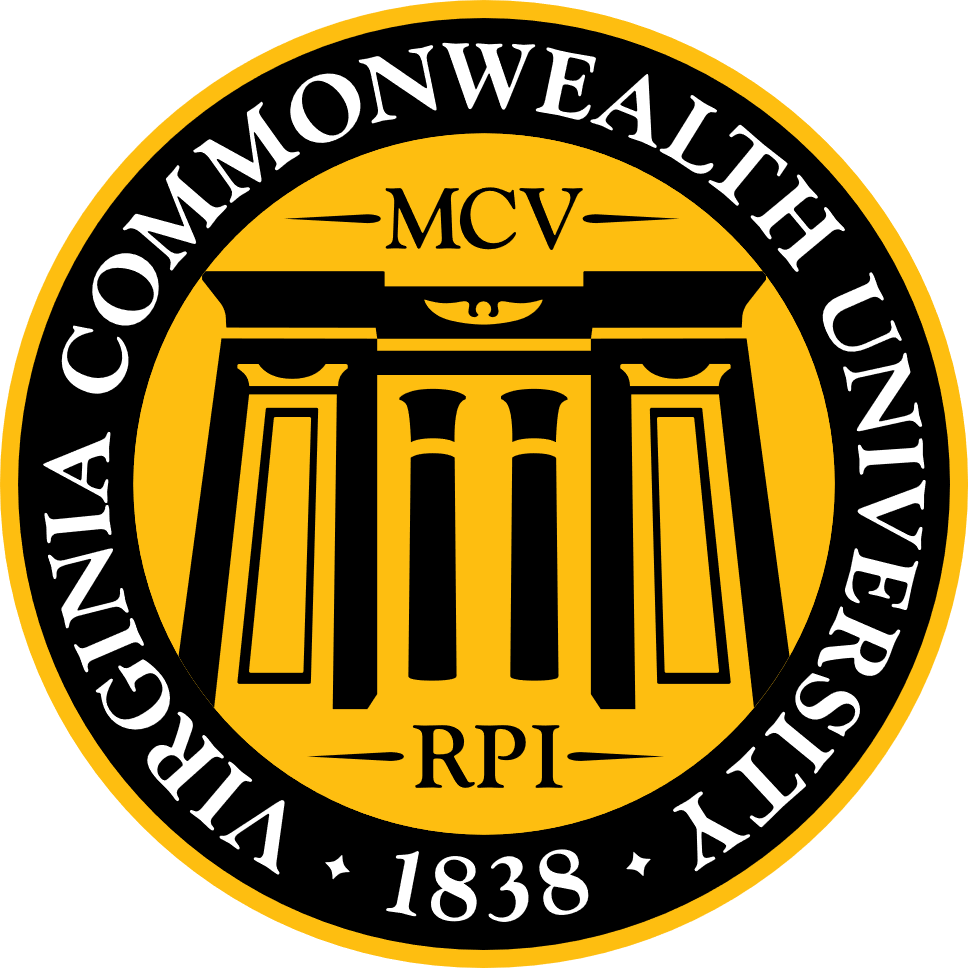
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**VIRGINIA COMMONWEALTH UNIVERSITY**

**Statistical analysis and modelling (SCMA 632)**

**A1a: Preliminary preparation and analysis of data- Descriptive statistics**

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## Introduction

This comprehensive report provides an in-depth analysis of household consumption patterns in the state of Himachal Pradesh (HP), utilizing data from the NSSO 68th round survey. By examining consumption data, this report aims to shed light on key factors influencing consumption trends, identify disparities across districts and regions, and evaluate the differences between urban and rural consumption habits.

### Background

Himachal Pradesh, nestled in the Himalayas, is renowned for its diverse cultural heritage, picturesque landscapes, and unique socioeconomic dynamics. Understanding household consumption patterns in HP is crucial for policymakers, researchers, and stakeholders to develop targeted interventions, ensure equitable resource allocation, and promote sustainable development across the state.

### Objectives

1. **Summarize Consumption Patterns:** Analyze household consumption data to identify prevalent consumption patterns and trends within Himachal Pradesh.
2. **District and Regional Analysis:** Identify top-consuming districts and regions to understand spatial disparities in consumption levels.
3. **Urban vs. Rural Consumption:** Investigate differences in consumption between urban and rural areas to inform policy decisions aimed at addressing urban-rural disparities.

### Methodology

The analysis involves several key steps:

1. **Data Collection:** Utilizing the NSSO 68th round survey data specifically focusing on Himachal Pradesh.
2. **Data Cleaning:** Filtering, imputing missing values, and removing outliers to ensure data quality and reliability.
3. **Analysis:** Summarizing consumption patterns, identifying top-consuming districts and regions, and testing for differences between urban and rural consumption levels.
4. **Interpretation:** Providing insights into the implications of the findings and offering recommendations for policy and resource allocation.

### Report Structure

* **Section 2: Results:** Provides a detailed overview of the dataset, including missing values information, imputation techniques, outlier removal, and key findings.
* **Section 3: Interpretations:** Offers insights into consumption variations, urban-rural consumption disparities, and their implications.
* **Section 4: Recommendations:** Suggests actionable recommendations based on the analysis to address consumption disparities and promote sustainable development.
* **Section 5: Codes:** Provides R code snippets used for data processing, analysis, and visualization.
* **Section 6: References:** Lists the data source and relevant documentation used for the analysis.

## Results

### **Dataset Overview**

After filtering for Himachal Pradesh, the dataset comprises 2,041 observations and 384 variables, providing a comprehensive view of household consumption patterns in the state.

#### **Missing Values**

Several columns exhibit missing values, notably in variables related to land ownership, education, and meal subsidies. Imputation techniques were applied to address missing data, ensuring robust analysis.

#### **Imputation and Outlier Removal**

Missing values in relevant columns were imputed using the mean of the respective variables. Outliers in key consumption-related variables were identified and removed to enhance data reliability.

### **Top Consuming Districts**

The analysis identifies Kangra, Mandi, Shimla, and Sholan as the top-consuming districts in Himachal Pradesh, with Kangra leading in total consumption.

### **Regional Consumption Summary:** Region 1 shows the highest total consumption, indicating potential variations in consumption habits across different regions within Himachal Pradesh.

### **Urban vs. Rural Consumption**

A z-test comparing mean consumptions between urban and rural sectors reveals no significant difference in consumption patterns, suggesting relative parity in consumption habits across these sectors.

### **Interpretations**

#### **Consumption Variation**

Significant variations in total consumption are observed across different districts and regions, highlighting the need for targeted interventions to address consumption disparities.

#### **Urban vs. Rural Disparities**

The absence of significant differences in consumption between urban and rural areas suggests relatively equitable consumption patterns, indicating the need for nuanced policy interventions tailored to specific regional needs rather than broad urban-rural distinctions.

## Recommendations

### **Further Analysis**

Conduct more detailed analyses to understand the specific socio-economic factors driving higher consumption in certain districts and regions.

### **Policy Interventions**

Tailor policy interventions to address consumption disparities, considering district and region-specific dynamics to ensure effective implementation.

### **Resource Allocation**

Develop targeted strategies to optimize resource allocation, focusing on improving food security and promoting sustainable development in regions with lower consumption levels. By leveraging these insights, policymakers and stakeholders can formulate evidence-based strategies to enhance well-being, address inequalities, and promote sustainable development across Himachal Pradesh.

**References**

NSSO 68th round survey

Chatgpt for assistance of codes