Impact of Global Income Disparities on the Cost and Affordability of Healthy Diets: An Analysis of Dietary Choices among Income Groups and Their Correlation with Obesity.

Project One – Group 3

October 22, 2024

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01 Introduction

“"It is health that is real wealth and not pieces of gold and silver."

–Mahatma Gandhi

Team Members – Group 3

Sunil

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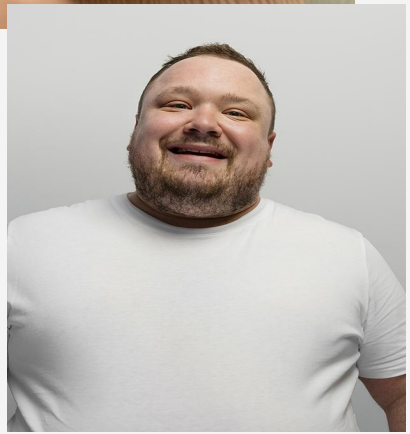
02 Objective

Objective

This project aims to explore the relationship between population GDP and the cost and affordability of healthy diets, and analyze variations across different income groups.



Furthermore, it will investigate the correlation between these dietary choices and obesity across different regions. The ultimate goal is to provide insights for policymakers to promote healthier eating habits.

Note that images used on this slide have been properly obtained and reference properly made to source

03

Research Questions

Research Questions

01 How does the affordability of healthy diets vary by income group?

02 What is the relationship between global income levels and the cost of healthy diets?

Research Questions

03 How do the costs of different dietary choices vary among high, middle, and low-income populations in 2017?

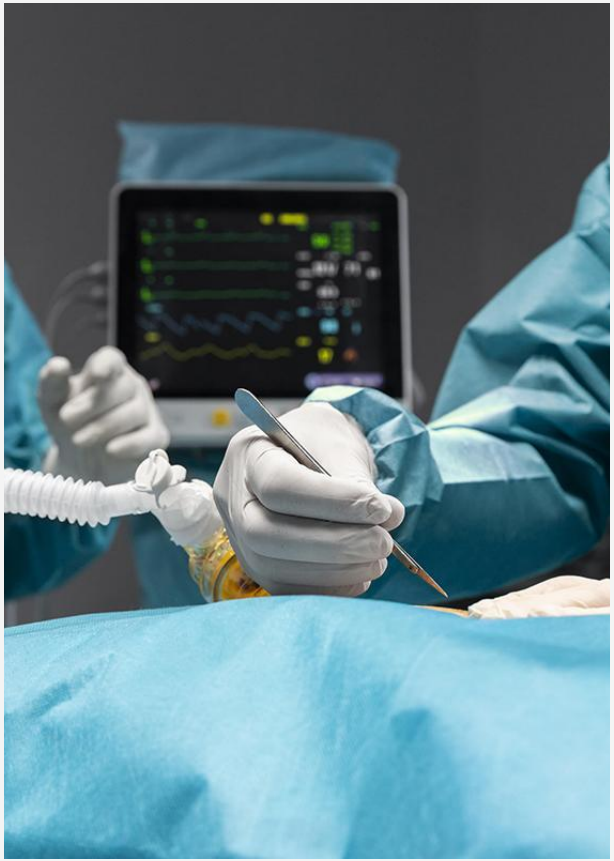
04 How does a person's income level influence the types and amounts of food they typically consume?

Research Questions

05 Is there a significant correlation between the unaffordability of healthy diets and the prevalence of obesity rates in different countries?

06 Is there a correlation between global income levels and obesity rates?

04
Methodology



Methodology

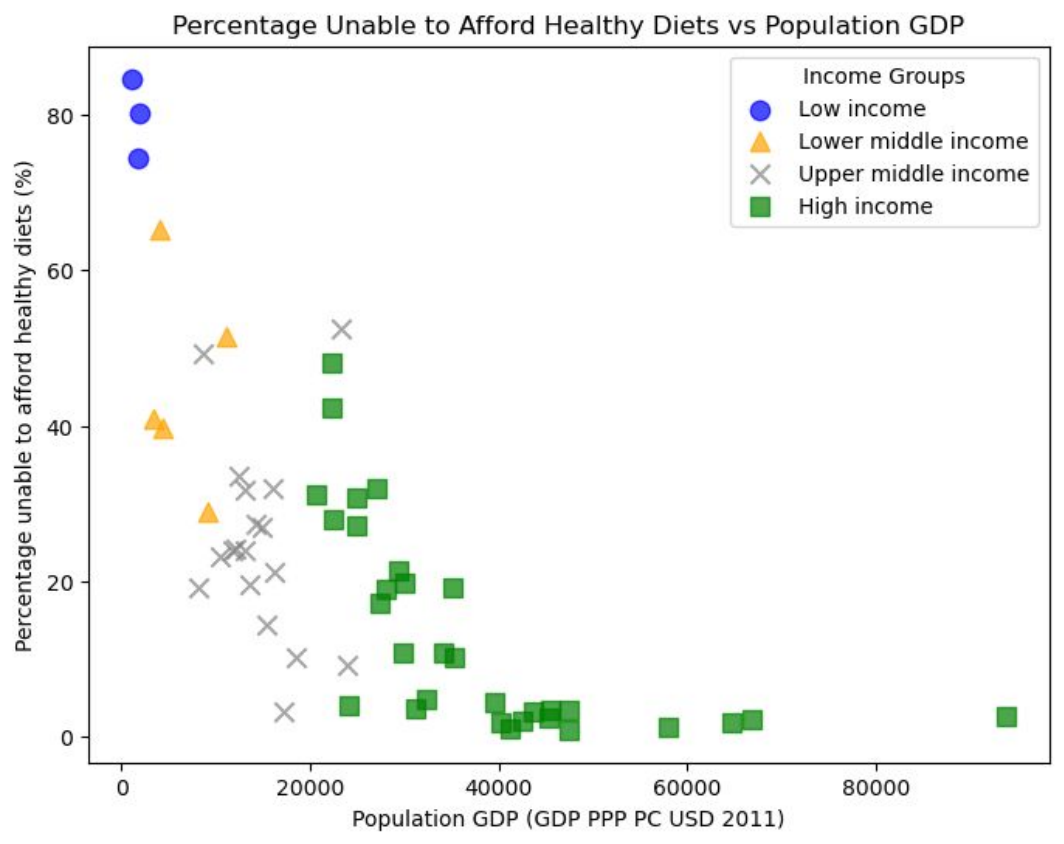
- Data Collection (Datasets)
  - Global income statistics
  - Cost and Affordability of a Healthy Diet - FAOSTAT
  - Obesity - WHO NCD Data Portal
- Data Integration
  - Datasets 1 & 2 merged through lists (Country and Income Group)
- Visualization and Analysis
- Data Cleaning and Preparation
  - Missing Values
  - Dropna
  - Created DataFrames
  - Eliminated and Renamed Columns
  - Data Standardization

05 Analysis

Visualization and Analysis

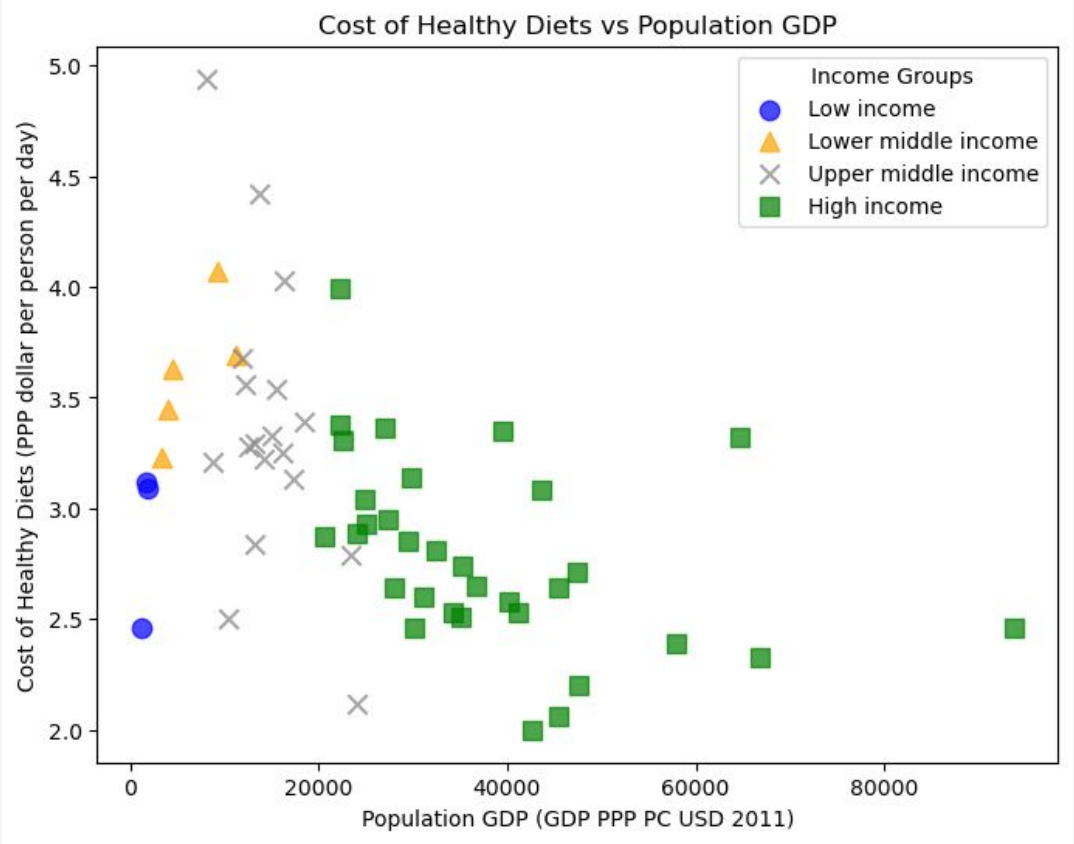
Q1: How does the affordability of healthy diets vary by income group?

- As the population's GDP increases
- The percentage of the population unable to afford healthy diets decreases
- More people can afford healthy diets in high-income countries
- The r^2-value is 0.481
- Moderate correlation



Q2: What is the relationship between global income levels and the cost of healthy diets?

- Considerable variation in the cost across different countries, even within the same income group
- The cost of healthy diets tends to be a relatively smaller part of people's income in high-income countries
- The r^2-value is 0.277
- Weak correlation

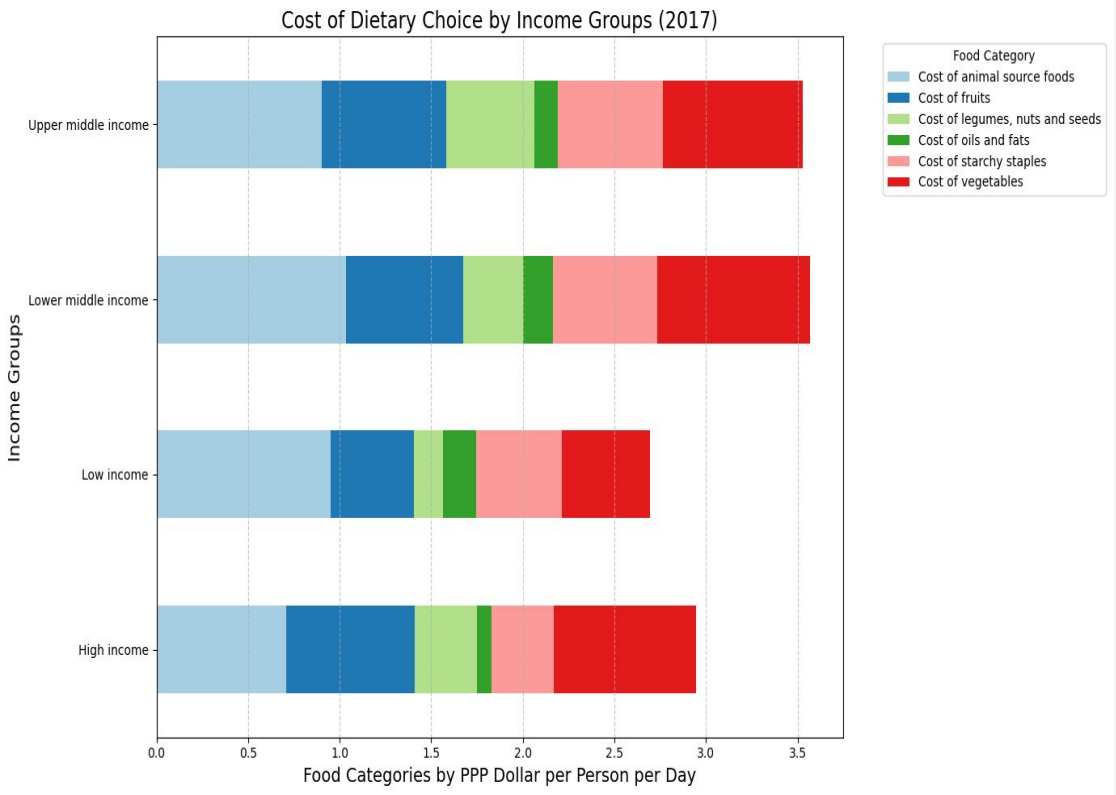


Q3: How do the costs of different dietary choices vary among high, middle, and low-income populations in 2017?

- Shows dietary choices by Income groups using the Purchasing Power Parity [PPP] Dollar per Person per day factor

Key Observations:

- Cost of animal source of foods takes up a significant portion of LMI
- Cost of vegetables takes up a smaller portion of the spending from Lower income countries

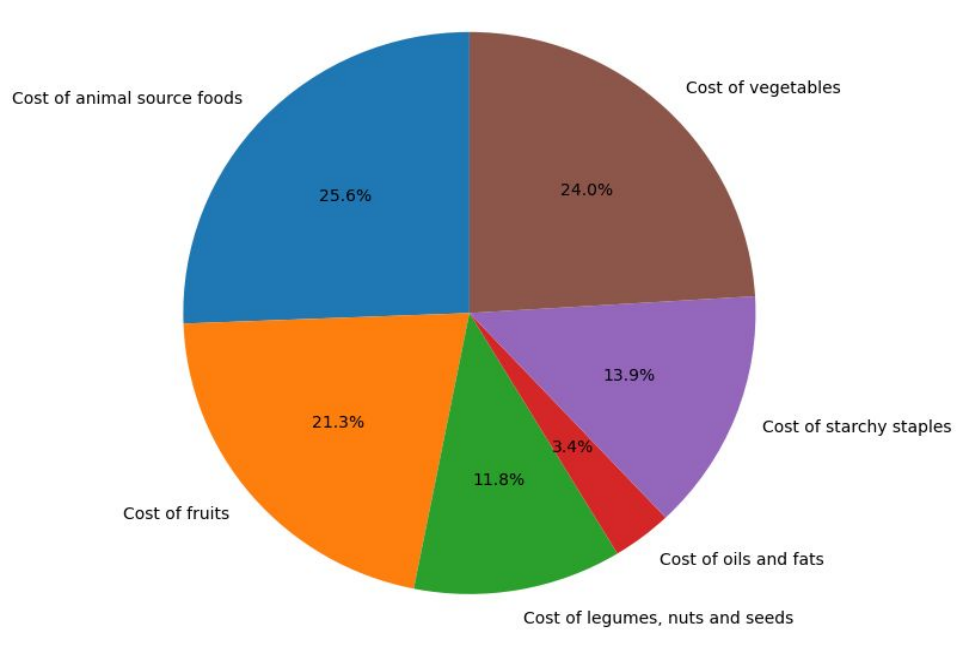


Q4: How does a person's income level influence the types and amounts of food they typically consume?

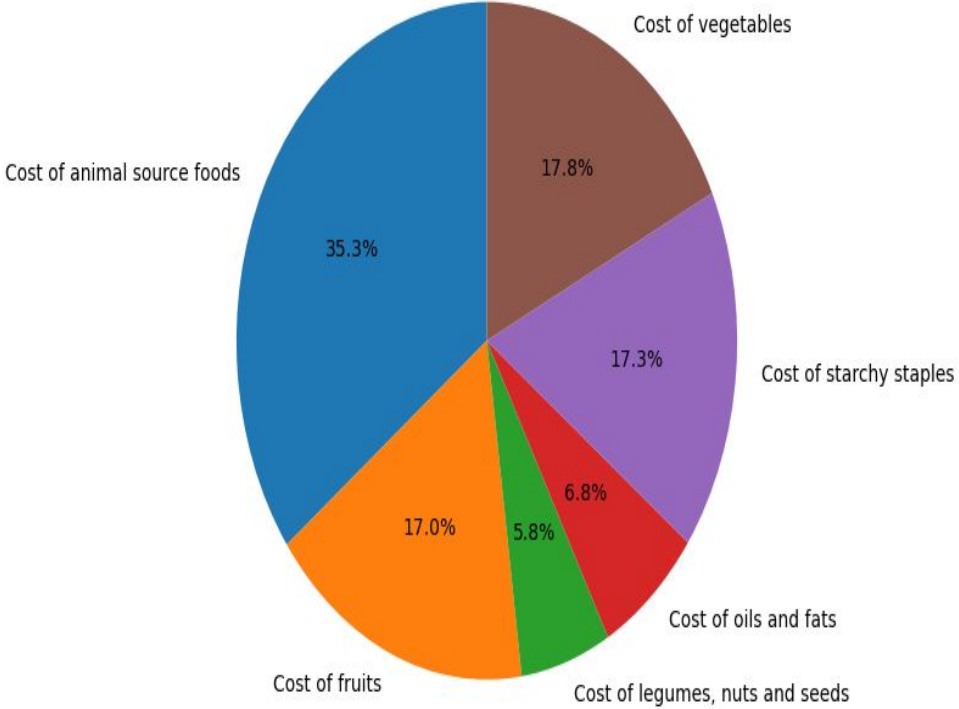
- It does affect in a several way where the consumer decision is based on budget and not with a nutritional focus.

- The cost impact of animal-based foods on household food budgets worldwide is also highlighted by this data, along with the significance of a balanced diet on a global scale.

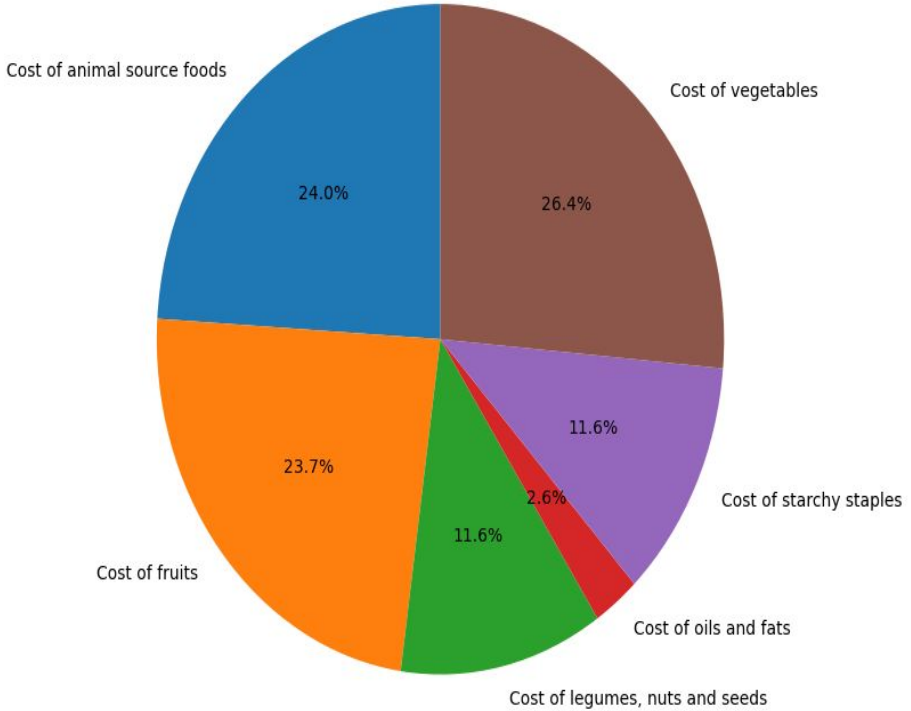
GENERAL DISTRIBUTION OF FOOD COSTS 2017



LOW INCOME



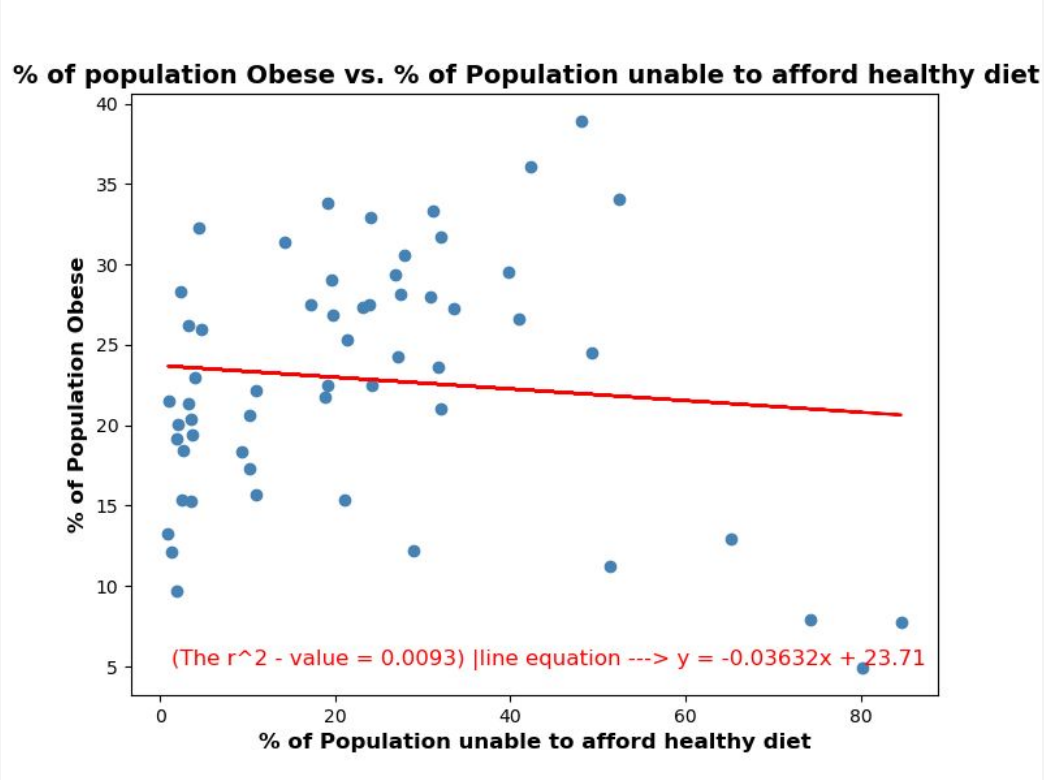
HIGH INCOME



This data shows the difference between low income food consumption distribution and high income consumption distribution. It shows how the money is the main factor at the time to choose a diet.

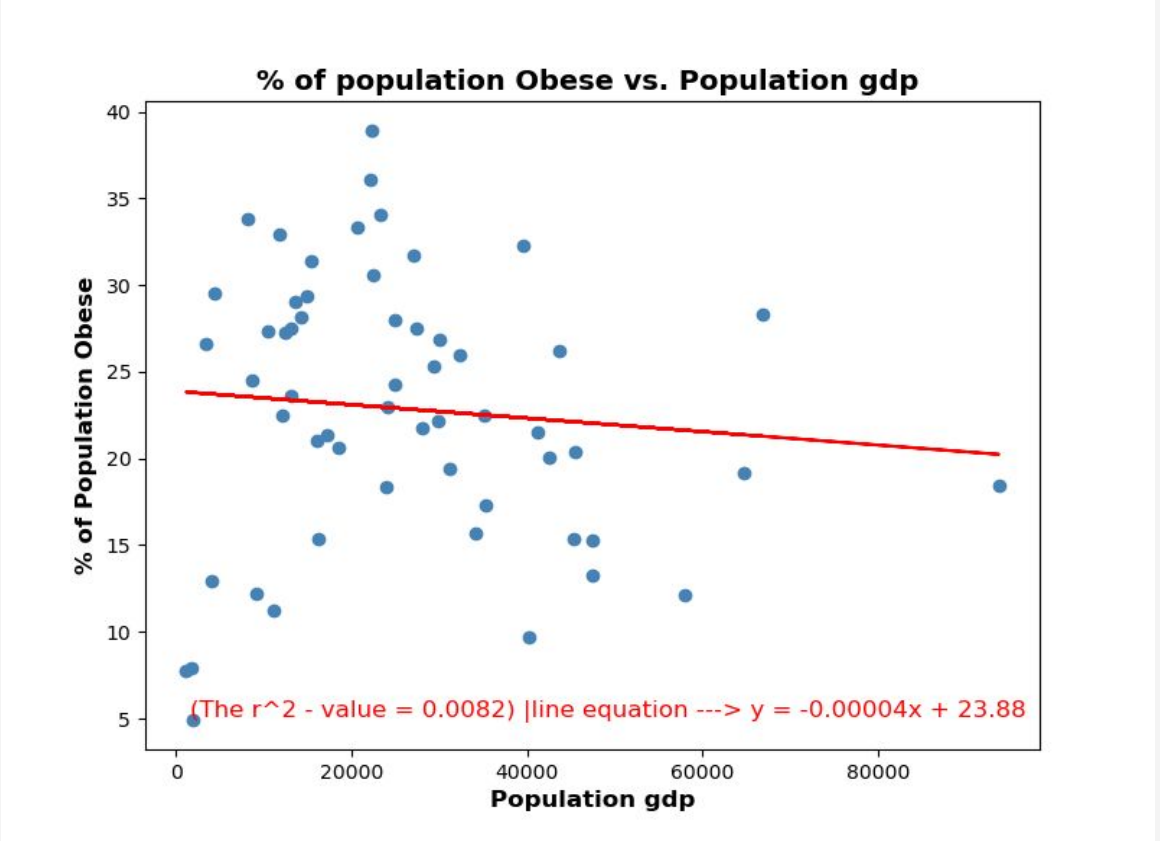
Q5: Is there a significant correlation between the unaffordability of healthy diets and the prevalence of obesity rates in different countries?

The analysis indicates that there is no significant correlation between the unaffordability of healthy diets and the prevalence of obesity rates in different countries based on the r^2 value of 0.009.

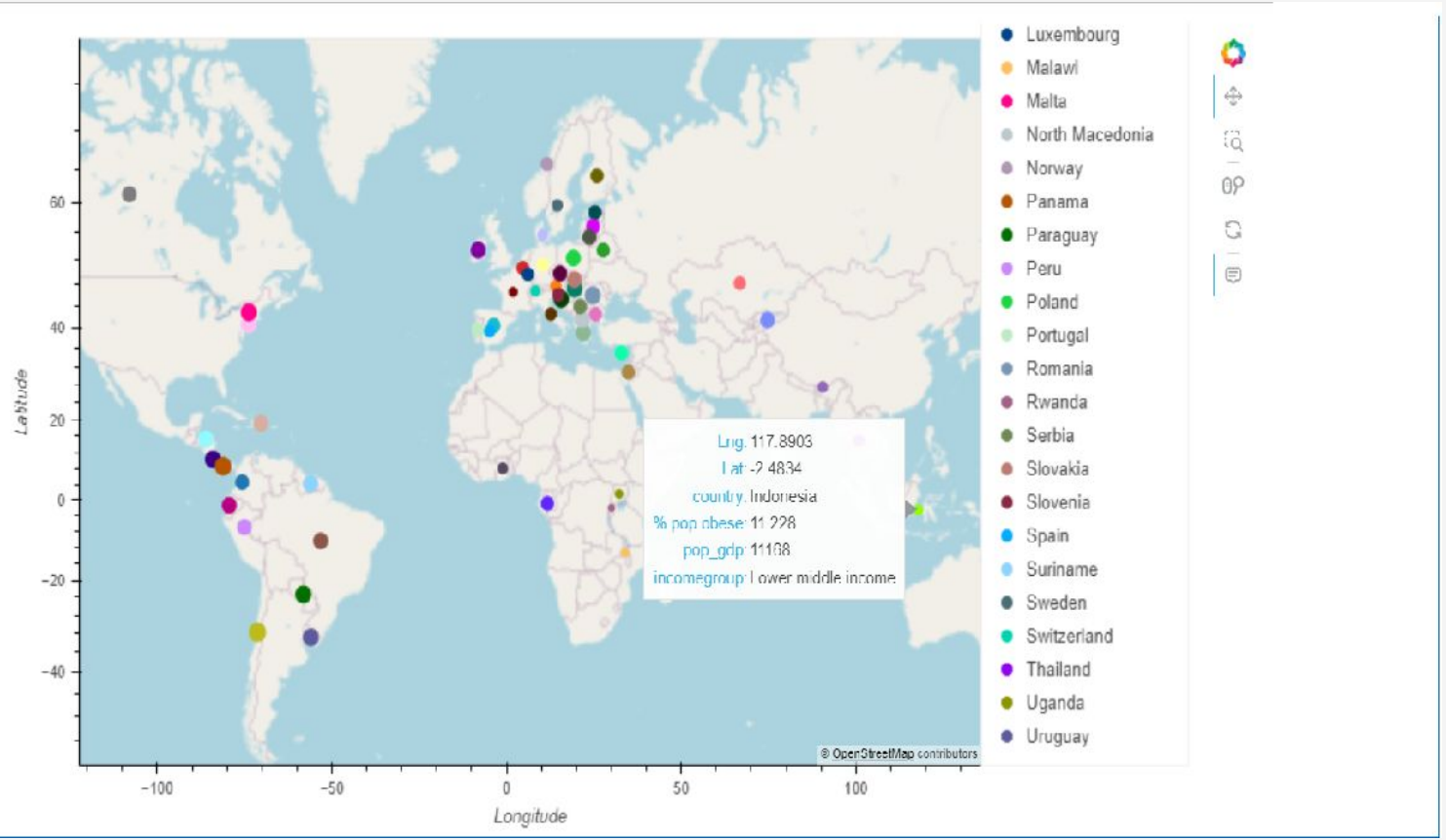


Q6: Is there a correlation between global income levels and obesity rates?

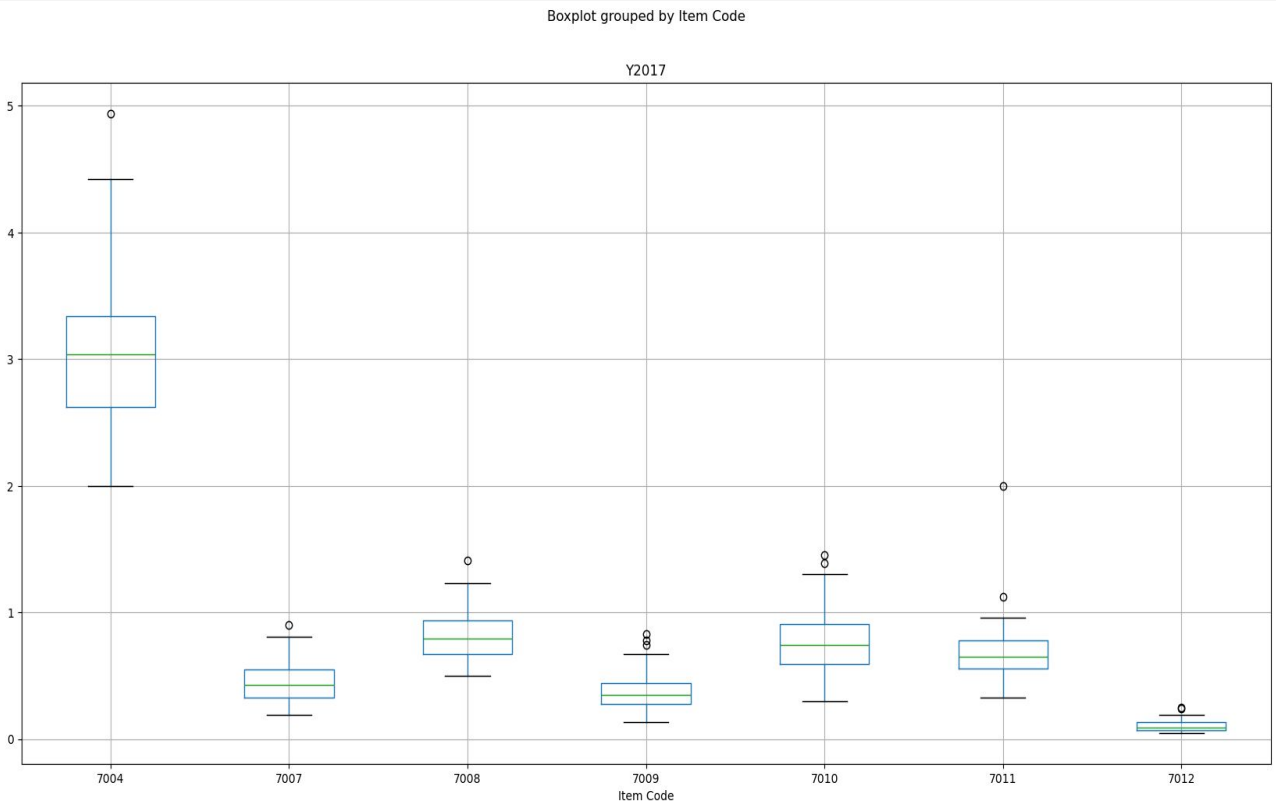
The scatter plot analysis yields an r^2 value of 0.008, indicating no significant correlation between global income levels (GDP) and obesity rates. This suggests that income alone is not a strong predictor of obesity, and a more nuanced analysis that includes additional factors is needed to understand the relationship between economic conditions and obesity.



Map showing prevalence of obesity globally



Statistical tests (ANOVA)



- F-statistics: 727.28, very large, substantial differences in the average costs of the different food types.
- p-value: 1.0984e-213, close to zero, the differences between the groups are statistically significant.

Hypothesis Testing using ANOVA

We decided to test an hypothesis using ANOVA to evaluate whether variations in the varying costs of food categories significantly impact the overall cost of a healthy diet.

NULL HYPOTHESIS:
There is no significant difference in the cost of a healthy diet concerning the various food categories.

The ‘means’ of the costs associated with these food categories are equal, indicating that the cost of a healthy diet does not depend on the type of food category considered.

06 Conclusion

Conclusion

- Income disparities significantly impact the affordability of healthy diets, with higher-income countries showing a lower percentage of populations unable to afford healthy diets and lower costs associated with these diets.

- However, the cost of animal-based foods remains a considerable burden for lower-income groups, particularly in low- and middle-income countries.

- While income is a key factor influencing dietary choices, it only has a weak correlation with obesity rates, suggesting that other factors, such as lifestyle and culture, may also influence obesity prevalence.

- Further research is needed to explore the broader determinants of obesity and dietary choices across income groups.

Bibliographical references

1. Global income statistics https://www.kaggle.com/datasets/konradb/global-income-statistics
2. Cost and Affordability of a Healthy Diet (CoAHD) https://www.fao.org/faostat/en/#data/CAHD
3. NCD Data Portal - WHO http://ncdportal.org/
4. Slidesgo - https://slidesgo.com/faqs and https://slidesgo.com/slidesgo-school

Thanks!

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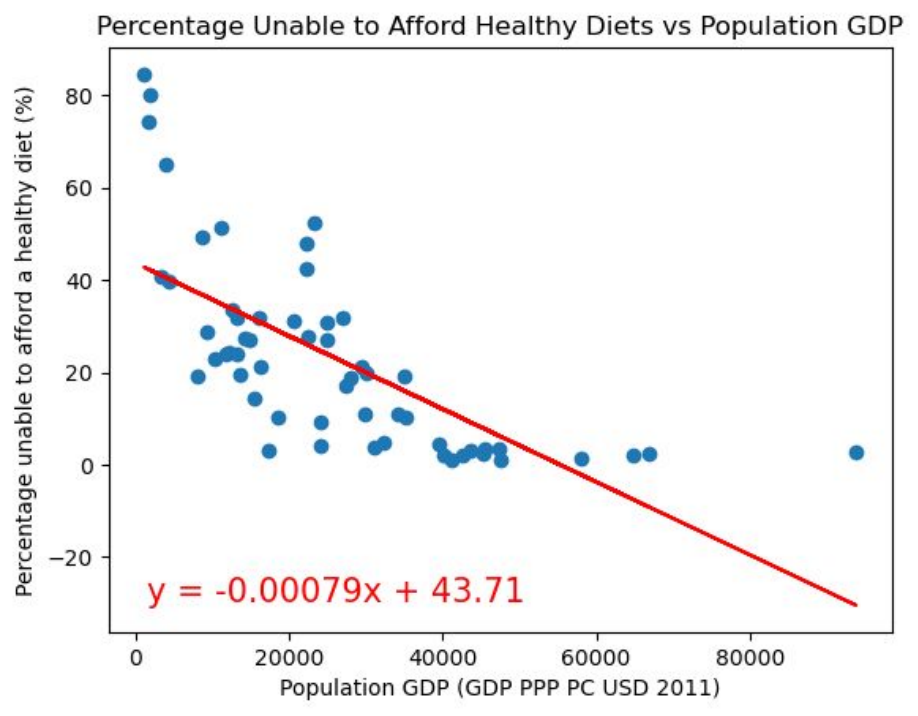
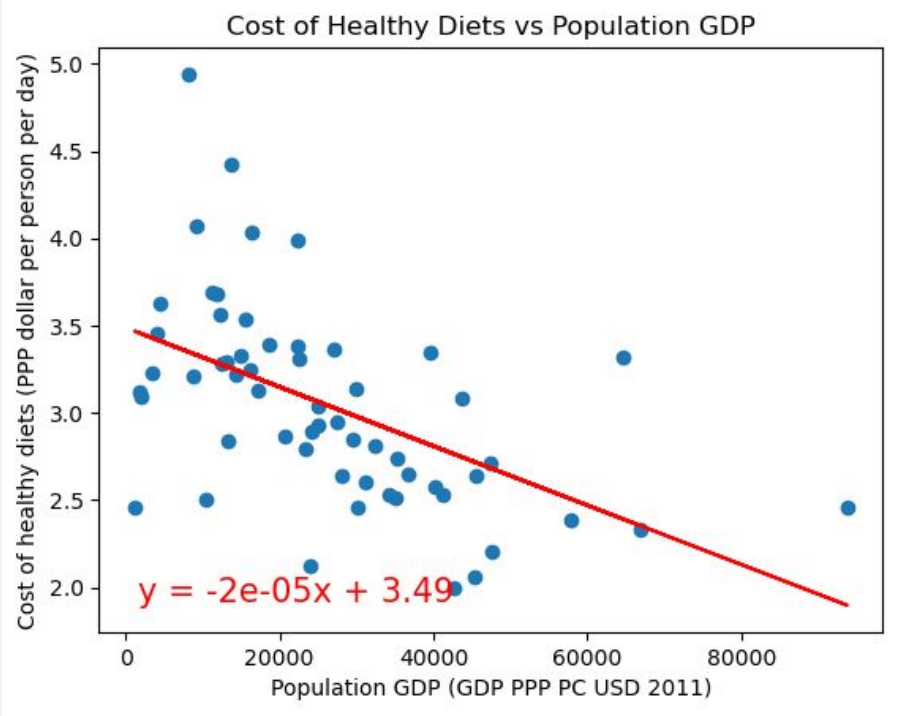


The r^2-value is 0.481



The r^2-value is 0.277

Resources

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Photos

- Real food pyramid assortment
- Real food pyramid assortment 1
- Top view real food pyramid
- Real food pyramid assortment top view
- Real food pyramid arrangement still life
- Plus-size woman eating at a restaurant alone
- Plus-size woman eating at a restaurant alone 1
- Plus-size female friends spending time together at a restaurant
- Side view woman with banana slices
- Close up smiley woman and man at restaurant
- Woman eating a lettuce salad
- Afro american woman eating vegan salad
- Senior woman making dish with figs in the kitchen

Icons

- Icon Pack: Healthy Food | Lineal