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Analyzing the Cause of Global Hunger and Proposing Effective Solutions

KEY FACTORS CONTRIBUTING TO GLOBAL HUNGER

MUHAMMAD HAZIQ BIN CHE ROSE

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2 EXECUTIVE SUMMARY

This report aims to analyze and address global undernourishment and its relation to economic and literacy factors. The report examines undernourishment rates for 2021, highlighting the world's highest rates. To investigate the correlation between undernourishment, GDP per capita, and literacy rates, and offer suggestions for combatting global hunger. Key findings are: Higher undernourishment rates are prevalent in parts of Africa, South Asia, Southeast Asia, and Latin America. There is a moderate negative correlation between GDP per capita and the rate of undernourishment. There is a strong negative correlation between literacy rates and undernourishment rates. Economic growth and higher literacy levels are associated with a lower undernourishment rate. To tackle undernourishment, we must consider economic conditions, literacy rates, healthcare, and agriculture as part of a multifaceted approach. Policymakers should focus on improving education, economic opportunities, and healthcare infrastructure and allocate resources efficiently to areas with the highest undernourishment rate.

3 INTRODUCTION

The report focuses on the issue of the undernourishment rate in 2021 and highlights the regions and countries mostly affected by the undernourishment. The report aims to comprehensively analyze global undernourishment rates and identify key factors contributing to high levels of undernourishment. By understanding these factors, the report aims to inform policymakers and international aid organizations about effective strategies for reducing undernourishment. The report analyses the undernourishment rates, identifies the top affected country examines the correlation with GDP and literacy rates, and provides policy recommendations. The report will include geographic analysis, correlation analysis, and the top 10 countries with high undernourishment rates, along with their literacy rates and economies, overall implications, and recommendations for international aid and policy intervention to reduce undernourishment.

4 METHODOLOGY

4.1 GOAL

The objective of this project is to identify the cause of hunger and suggest ways to reduce it

4.2 DATA COLLECTION AND REVIEW

Data sources:

- Prevalence of undernourishment (% of the population) from the World Bank (CSV format)
- List of countries by literacy rate from Wikipedia (web scraping)
- Literacy rates, adults total (% of people aged 15 and above) from the World Bank (CSV format)

Review Dataset

- Ensure the data covers 10 years period and includes all countries indexed for hunger

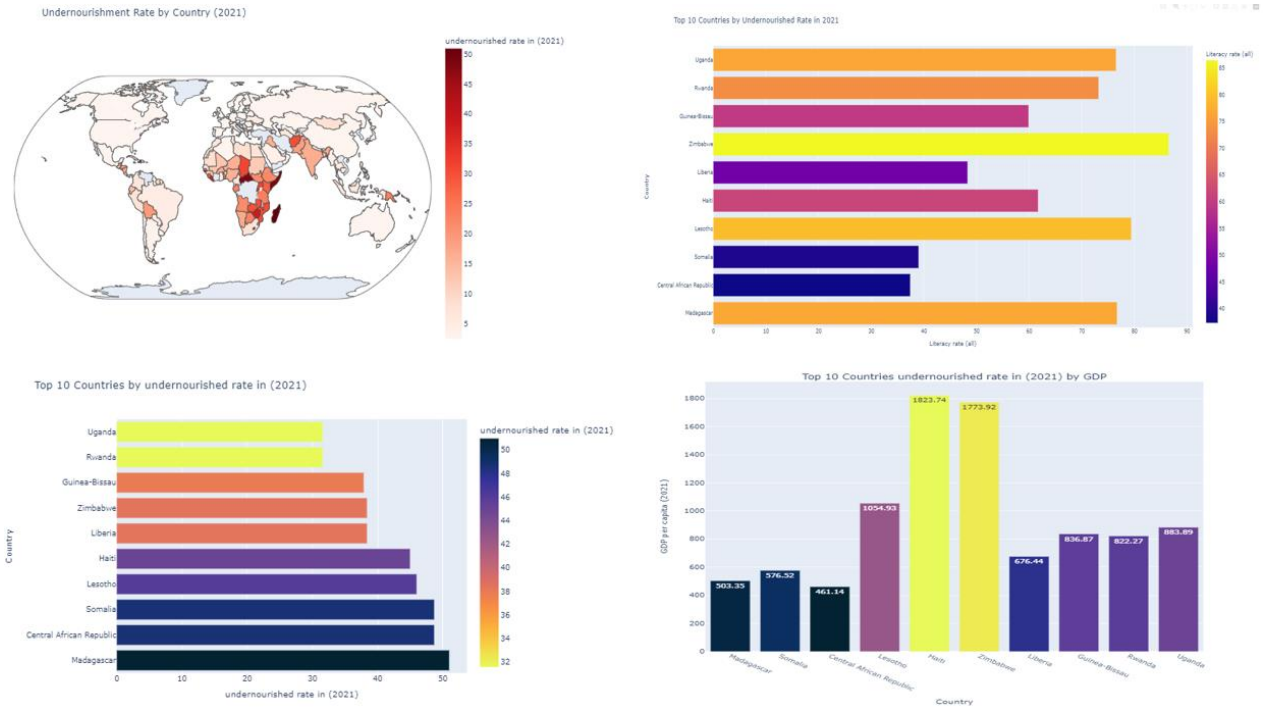
4.3 DATA ANALYSIS

1. Explanatory Data Analysis (EDA): Analyze the relationship between undernourishment and other variables such as GDP and education
2. Statistical analysis: Apply regression analysis to identify significant predictors of hunger

3. Correlation analysis: Apply correlation analysis to identify correlations between undernourishment and other variables such as GDP and education
4. Visualization: Create a visualization using Plotly to highlight trends and insights

5 RESULTS

5.1 STATIC DASHBOARD 1



5.1.1 Findings

Global Undernourishment Distribution (Top left map)

- The map highlighted the highest number of undernourishment rates in 2021
- The undernourishment rate prevails in parts of Africa, South Asia, and a few regions in Southeast Asia and Latin America.

Top 10 countries by undernourishment rate (Top Right Bar charts)

- The countries with the highest undernourishment rates are predominantly in Africa and few in Latin America in Asia.
- Uganda, Rwanda, Madagascar, and Liberia are among the top 10 countries with the highest rate of undernourishment.
- Literacy rates vary amongst these countries, with some having relatively high literacy rates despite high undernourishment.

Top 10 Countries by Undernourishment Rate in 2021 with Literacy (Bottom Left map)

- The bar shows the top 10 countries with high undernourishment rates, focusing on the literacy rates alongside it.
- The relationship between literacy rates and undernourishment is not straightforward, indicating that other factors might influence undernourishment beyond literacy levels.

Top 10 Countries by Undernourishment Rate with GDP (Bottom Right map)

- This chart highlights the GDP per capita of the top 10 countries with the highest undernourishment rate.
- There is a significant variation in GDP per capita among these countries.
- Haiti and Zimbabwe have higher GDP per capita compared to other countries with high undernourishment rates, suggesting economic factors alone do not explain undernourishment.

5.1.2 Overall Implications

- Focus on helping countries with high undernourishment rates first. Provide customized aid and programs since each country has different causes.
- Tackling undernourishment by looking at economic conditions, literacy rates, healthcare, and farming
- Creating a program that improves education and economic opportunities can be more effective in reducing the undernourishment rate
- Resource should be allocated efficiently, focusing on areas with the highest undernourishment rate
- International aid should address both immediate and nutritional needs and long-term socio-economic development of these countries
- Policymakers should focus on creating policies that address the root causes of undernourishment. Investing in education and health care infrastructure is important, as these can have long-term benefits in reducing undernourishment.
- Regularly check the undernourishment rate and the effectiveness of the intervention program
- Use data to improve strategies for reducing undernourishment

5.2 STATIC DASHBOARD 2

GDP per capita vs Undernourishment rate

When comparing GDP with the undernourishment rate, there is a moderate negative correlation between GDPs per capita and the undernourishment rate. The correlation coefficient is -0.40. This suggests that as GDP per capita increases, hunger rates tend to decrease. Higher GDP per capita is associated with lower levels of hunger.

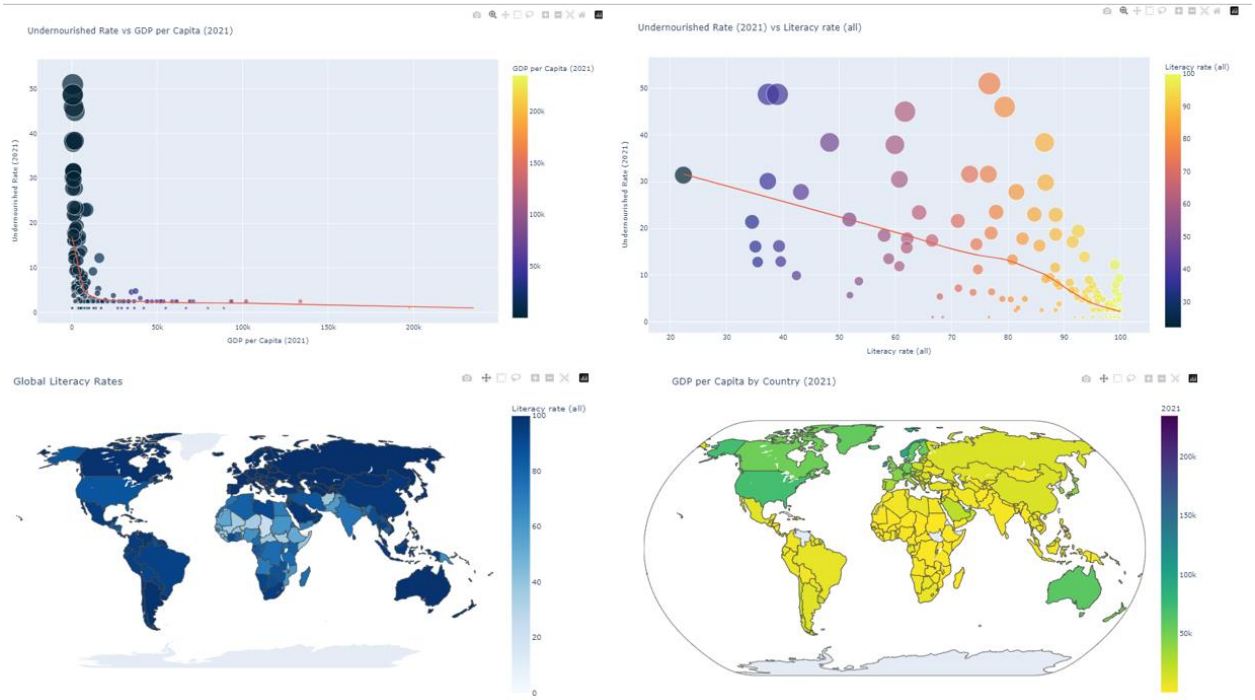
Literacy rates vs Undernourishment rates

When comparing literacy rates with undernourishment rates, there is a strong negative correlation. The correlation coefficient is -0.65. This indicates that as the literacy rate increases, the hunger rate tends to decrease. Higher literacy rates are associated with lower levels of hunger.

Overall implication

- A moderate negative relationship suggests that wealthier countries tend to have lower hunger rates.
- A strong negative correlation suggests that countries with higher literacy rates tend to have lower undernourishment rates.

5.3 STATIC DASHBOARD 3



5.3.1 Findings

Undernourishment rate vs GDP Per Capita

- There is an inverse relationship between undernourishment rates and GDP per capita. Higher GDP per capita correlates with lower undernourishment rates.
- Economic growth can help reduce the undernourishment rate. Policymakers should create policies aimed at increasing GDP per capita to combat undernourishment.

Undernourished Rate vs Literacy Rate

- There is a negative correlation between literacy rates and undernourishment rates. Higher literacy rates can reduce hunger.

- Improving literacy rates might contribute to reducing hunger. It shows the importance of education as it can reduce global hunger.

Global literacy rates

- Literacy rates vary significantly across different countries. Higher literacy rates are found in more developed countries.
- Regions with lower literacy rates may need educational intervention to improve their well-being and reduce hunger.

GDP per Capita by Country

- GDP per capita shows substantial global variation, with higher values in developed countries
- Economic policies should be tailored to the specific economic contexts of each country, aiming to boost GDP per capita where it is low to address hunger and improve living standards.

5.3.2 Implication

- There is a clear link between economic development and hunger rates. Investing in economic growth can have a positive impact on reducing undernourishment.
- Literacy and education are essential in the fight against hunger. Policies that enhance educational opportunities can lead to reducing the hunger rate.
- Regions with low literacy and GDP per capita should be prioritized for development assistance to address economic and education deficits.
- Combating hunger requires a combination of economic policies, better education, and targeted regional support.

5.4 DASHBOARD LINK

Global Hunger Dash App. (2024). *Global Hunger Dashboard*. Retrieved from https://global-hunger-dash-app.onrender.com/

6 DISCUSSIONS

The analysis provides insight into the global distribution of undernourishment rates, focusing on the region with the highest rate in 2021. It analyses the top ten countries with the highest undernourishment rates, considering the country's literacy rates and GDP per capita to gain a

comprehensive understanding of undernourishment and its underlying factors. The results show that there are high levels of undernourishment in Africa, South Asia, and parts of Southeast Asia and Latin America. This underscores the importance of focused efforts to address this issue.

The result shows a significant relation between the undernourishment rate, GDP per capita, and literacy rate. A moderate negative correlation of -0.40 between GDP per capita and the undernourishment rate suggests that as a country's economic performance improves, the rate of undernourishment decreases. Similarly, a strong negative correlation between literacy rates and undernourishment rates (-0.64) reveals that higher literacy is linked to lower levels of hunger. These findings suggest that economic development and education are essential in combating undernourishment rates.

Understanding the relationship between undernourishment rates, GDP per capita, and literacy rate is crucial for creating effective intervention programs. The finding highlights the need for tailored aid programs that address specific causes of hunger in each country. By addressing economic conditions, literacy rates, healthcare, and communication practices, policymakers can develop a strategy to relieve hunger.

The analysis provides valuable insight, but it has limitations. The correlation between GDPs per capita, undernourishment rates, and literacy does not imply causation. Note that this analysis does not include other potential factors influencing undernourishment. Additionally, the data is limited to the annual period of 2020 and does not consider trends over time.

Future studies should focus on regional case studies by conducting case studies of specific countries and regions to understand the local context and tailor intervention programs, evaluating the effectiveness of existing policies aimed at reducing undernourishment to identify best practices and areas for improvement. Other factors such as political stability, agricultural productivity, and access to healthcare provide a more comprehensive understanding of undernourishment.

7 CONCLUSION

Undernourishment continues to be a global challenge, predominantly impacting regions in Africa, Southeast Asia, South Asia, and Latin America. The analysis underscores the correlation between undernourishment rates, literacy levels, and GDP per capita. The undernourishment rates in countries like Uganda, Rwanda, Madagascar, and Liberia are among the highest in the world.

Key points are:

- High rates of undernourishment are focused on Africa, South Asia, and parts of Southeast Asia and Latin America.
- There is a strong negative correlation between literacy rates and undernourishment rates, suggesting that higher literacy rates are associated with lower levels of undernourishment.
- A negative correlation exists between GDP per capita and the undernourishment rate, indicating that wealthier countries tend to have a lower hunger rate.
- The connection between GDP per capita, literacy level, and undernourishment is quite complex, emphasizing the need for a comprehensive intervention approach.

These findings highlight the importance of implementing targeted interventions to effectively address undernourishment. Economic growth is necessary but not sufficient; improving literacy and education is essential in the fight against hunger. Policymakers and international aid organizations should prioritize a comprehensive approach that encompasses healthcare, education, agriculture, and economic development. By efficiently allocating resources and creating targeted programs, we can address both the immediate and long-term causes of undernourishment.

Addressing global hunger requires a coordinated and comprehensive approach. Investing in education, economic opportunities, and healthcare is crucial to ensure a future free from undernourishment. By constantly collecting and analyzing data, we can improve our strategies to ensure that each person has the opportunity to lead a healthy and well-nourished life.

8 REFERENCES

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