WEEK 2 INTERNSHIP REPORT: ANALYSIS OF GLOBAL FOOD SECURITY AND ECONOMIC TRENDS

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Focus Data Analysis and Visualization of Global Food Security Indicators

Tools Python (Pandas, Matplotlib, Seaborn), SQL (PostgreSQL via PgAdmin 4), Excel, Tableau, PowerBi, & R

1. Overview of Weekly Activities

This week focused on performing advanced data analysis and visualization to identify global trends in food security, economic development, and agricultural productivity. The primary objective was to extract, process, and visualize key metrics related to GDP per capita, undernourishment rates, and crop yields to provide data-driven insights.

2. Analysis Results and Visualizations

Two distinct datasets were analyzed: a time series trend of global average GDP per capita versus undernourishment rates (`gdp_undernourishment_trend.csv`) and a list of countries by their average crop yield (`top_crop_yield.csv`).

2.1 Global Trend: Average GDP per Capita vs. Undernourishment

The analysis tracked the average global GDP per capita and the average number of undernourished people (represented by the `avg_undernourishment` value) from 2019 to 2023.

Year	Avg_gdp	Avg_undernourishment
2019	11262.89	4719930.00
2020	11067.42	4764403.49
2021	12530.81	4947037.53
2022	13111.93	5112828.35
2023	13686.45	5005790.33

Visualization:

The line plot clearly illustrates the change in both metrics over the period…..Figure 1

2.2 Top Countries by Average Crop Yield

This analysis identified the top 10 countries based on the aggregated average yield across the tracked crops, measured in kilograms per hectare.

country	avg_yield
China	1.27E+08
India	61226705
Brazil	53009985
Nigeria	27886988
Argentina	25132338
Indonesia	22818306
Bangladesh	20183095
Thailand	17201364
Viet Nam	14570977
Ukraine	12256829

Visualization:

The horizontal bar chart provides a clear comparison of the yield magnitude between the top-performing countries….. Figure 2

3. Key Insights Drawn

Based on the visualizations and data analysis, the following professional insights are highlighted:

1. Global GDP per capita has risen steadily from 2020 to 2023 (recovering from a slight dip in 2020), but average undernourishment has also increased, peaking in 2022. This suggests that economic growth, at least at the average global level, has not yet translated into a corresponding, consistent decrease in the number of undernourished people, highlighting persistent inequality and the impact of factors like the COVID-19 pandemic and global conflicts on food supply chains.

2. Highest crop yields are overwhelmingly seen in major global agricultural powerhouses like China, India, and Brazil. These countries benefit from a combination of vast arable land, diverse climates, and significant investment in agricultural technology and policy.

3. The disparity in crop yield between the top country (China) and the second (India) is substantial (more than 2x), indicating China's exceptional scale and efficiency in agricultural production across the tracked crops.

4. Conclusion and Next Steps

This week's analysis effectively utilized the extracted data to visualize critical global trends, providing a foundational understanding of the relationship between economic health and food security.

The next steps will involve drilling down into the regional and country-specific data to identify the precise geographical locations where undernourishment is most acute and cross-referencing this with local factors like conflict, climate vulnerability, and specific crop failures.