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Project Proposal: Analyzing and Visualizing Global Agricultural Production Trends

1. Objective

Utilize the **"world food production.csv"** dataset to analyze trends in agricultural production from 1961 to 2021, compare production across countries/regions, and present findings through data visualizations. The project aims to help students develop skills in data analysis, visualization tools, and data storytelling.

2. Dataset Description

The **"world food production.csv"** dataset contains data on the production (in tonnes) of 21 agricultural products in countries (Afghanistan, Zambia, Zimbabwe) and the region of Africa from 1961 to 2021. The agricultural products include:

- Maize, rice, yams, wheat, tomatoes, tea, sweet potatoes, sunflower seeds, sugar cane, soybeans, rye, potatoes, oranges, dry peas, palm oil, grapes, green coffee, cocoa beans, chicken meat, bananas, avocados, apples.

Dataset Structure:

- **Entity**: Name of the country or region (Afghanistan, Zambia, Zimbabwe, Africa).
- **Year**: Year of data recording (1961–2021).
- **Other columns**: Production (in tonnes) of each agricultural product.

3. Project Requirements

3.1. Data Analysis

Students are required to perform the following analyses:

1. **Production Trends Over Time**:
    - Identify the production trends of at least 3 agricultural products (e.g., maize, sugar cane, chicken meat) in Africa and one country (chosen from Afghanistan, Zambia, or Zimbabwe) from 1961 to 2021.

- Highlight periods of growth, decline, or significant fluctuations, and hypothesize potential influencing factors (e.g., climate, policies, political instability).

2. **Comparison Across Countries/Regions**:
    - Compare the production of at least 2 agricultural products across Afghanistan, Zambia, Zimbabwe, and Africa in a specific year (e.g., 2021) or over a time period.
    - Identify which country/region has the highest/lowest production and possible reasons.

3. **Relationship Analysis**:
    - Explore the relationship between the production of two agricultural products (e.g., maize and rice) in a region/country to determine if they are correlated.
    - Assess whether the growth of one product impacts the other.

3.2. Data Visualization

Students must create at least **4 visualizations** to present their findings, using different chart types:

1. **Line Chart**:
    - Display the production trend of an agricultural product over time (e.g., maize production in Africa from 1961–2021).

2. **Stacked Bar Chart**:
    - Compare the production of multiple agricultural products across countries/regions in a specific year (e.g., maize, rice, and yams in 2021).

3. **Heatmap**:
    - Show changes in production of an agricultural product across years and countries/regions (e.g., chicken meat production from 1961–2021).

4. **Scatter Plot**:
    - Analyze the relationship between two agricultural products (e.g., maize and rice in Africa).