Data Visualization

Project Title: Global Food Production Trends and Analysis (1961–2023)

Story: Unlocking Global Food Production Trends (1961–2023)

In today's world, food security and agricultural sustainability are among the most pressing global challenges. Understanding what crops are produced, where they are grown, and how production has evolved over time is crucial for policymakers, farmers, researchers, and businesses alike.

This project set out with a clear mission:
To analyze global food production trends from 1961 to 2023 and uncover key insights into top commodities, leading producers, and regional specialties using interactive Power BI dashboards.

The Beginning: The Data

The journey started with raw data from the Food and Agriculture Organization (FAO), sourced via Kaggle. The dataset contained over six decades of production records across countries and commodities. However, it was not immediately ready for analysis.

The raw data was messy — with missing values, inconsistent country names, duplicate codes, and unstructured commodity listings. Before insights could be drawn, the data needed to be cleaned, reshaped, and organized.

Using Power Query in Power BI, the dataset was transformed:

- Null and irrelevant records were removed.
- Commodity items were grouped into categories like Cereals, Fruits, Oilseeds, Root Crops, and Cash Crops.
- Production volumes were converted into billions of tonnes for readability.
- Dates were standardized, ensuring analysis strictly covered 1961–2023.

The result: A reliable, structured dataset ready to reveal the hidden patterns of global agriculture.

The Transformation: From Data to Dashboards

With the foundation in place, the focus shifted to answering the big questions:

- Which crops dominate global food production?
- How has food production evolved over 60+ years?
- Who are the top-producing countries, and what are their specialties?
- How do commodities like sugarcane, cereals, or coffee behave over time?

Two interactive dashboards were developed to bring these questions to life:

Dashboard 1: Global Production Overview

A high-level snapshot highlighting commodity contributions, global production leaders, and time-series trends. Users can drill down by year, country, or commodity to explore food output patterns.

Dashboard 2: Analytical Report View

A more detailed report-style page, combining visual charts with textual insights. Here, the focus is on storytelling with data — identifying dominant crops (e.g., Sugarcane), regional specialties (e.g., Asia in Rice, South America in Coffee), and long-term growth trajectories.

The Discoveries: Insights Gained

The dashboards uncovered several striking patterns:

- Sugarcane emerged as the largest contributor to global food production, with over 621 billion tonnes produced between 1961–2023.
- Cereals and Root Crops form the backbone of global diets, consistently dominating production volumes.
- Coffee, Tea, and Cocoa, while smaller in volume, highlight the economic importance of cash crops across specific regions.
- Regional specialization became evident: Rice in Asia, Coffee in Latin America, Oilseeds in North America, and Cocoa in Africa.
- The long-term trend reveals steady global growth in food production, reflecting technological advances, agricultural expansion, and population needs.

👩‍💻 The Contribution: My Role

Throughout this project, I was responsible for:

- Importing, cleaning, and structuring the FAO dataset.
- Designing and developing dashboards in Power BI.
- Creating DAX measures to enable interactive KPIs and dynamic filtering.
- Structuring business questions and mapping them to visual solutions.
- Ensuring design clarity with a clean brown-themed layout, balancing readability and aesthetics.

The Impact: Why This Matters

The final dashboards are more than just visuals — they are decision-making tools.

They empower:

- Researchers to study long-term agricultural patterns.
- Policymakers to identify food security priorities.
- Businesses to understand commodity trends and trade opportunities.
- General users to interactively explore global food data like never before.

By turning raw FAO data into insightful stories, this project bridges the gap between data science and real-world agricultural strategy.

In summary, this project demonstrates how data visualization can unlock decades of historical information, transforming it into actionable knowledge that supports global food sustainability and strategic decision-making.