APPLIED DATA SCIENCE - I

ASSIGNMENT – 1

STATISTICS AND TRENDS

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Data set: https://data.worldbank.org/topic/climate-change

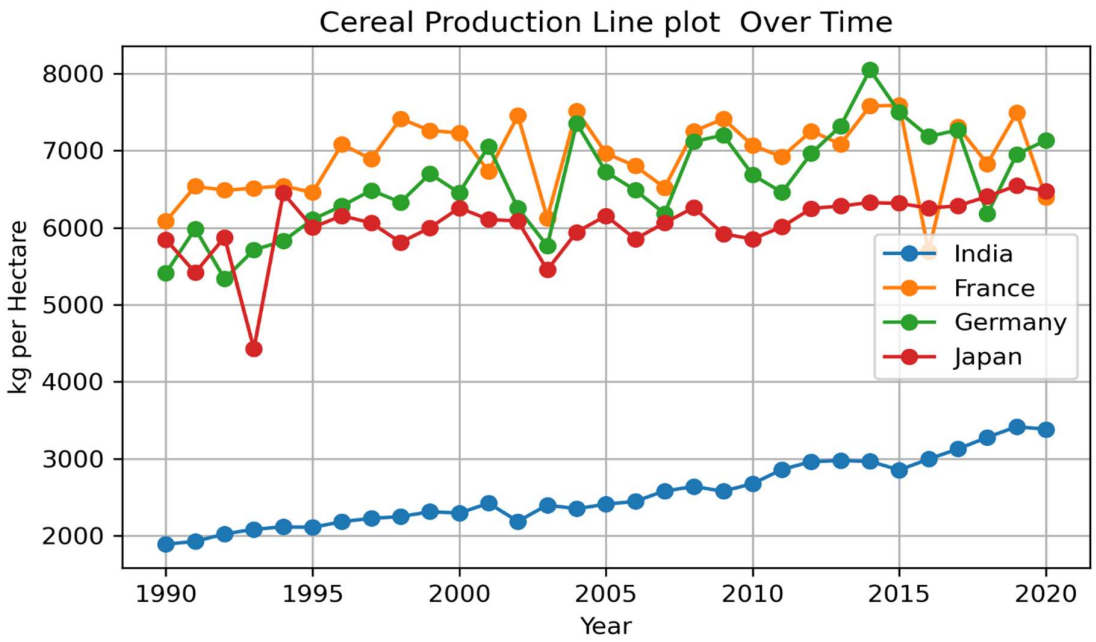
Abstract:

This analysis investigates cereal production trends in India, Germany, France, and Japan using line, bar, and box plots. India and Germany exhibit consistent growth, France displays stability with occasional deviations, and Japan demonstrates pronounced fluctuations. These findings offer insights into global cereal production dynamics and distinct economic patterns among the nations studied.

Introduction:

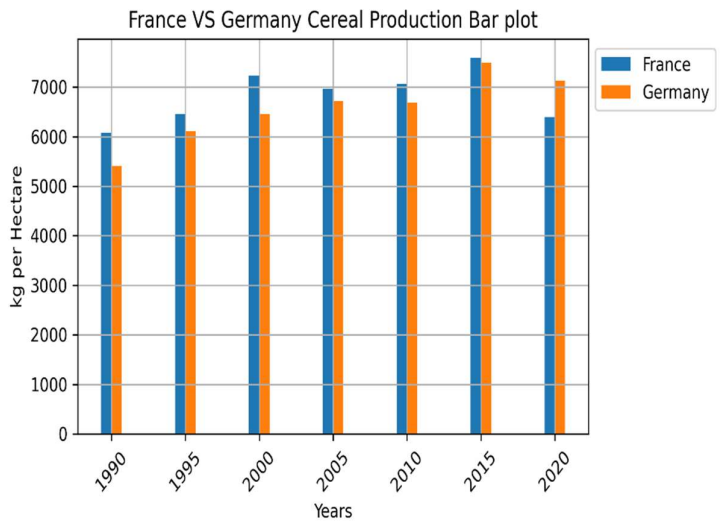
This study examines cereal production trends in India, Germany, France, and Japan using line, bar, and box plots. Through comprehensive analysis, the research seeks to reveal economic trajectories and fluctuations in cereal production. Understanding these trends is pivotal for grasping global agricultural dynamics and addressing issues in food security and distribution.

Line plot:



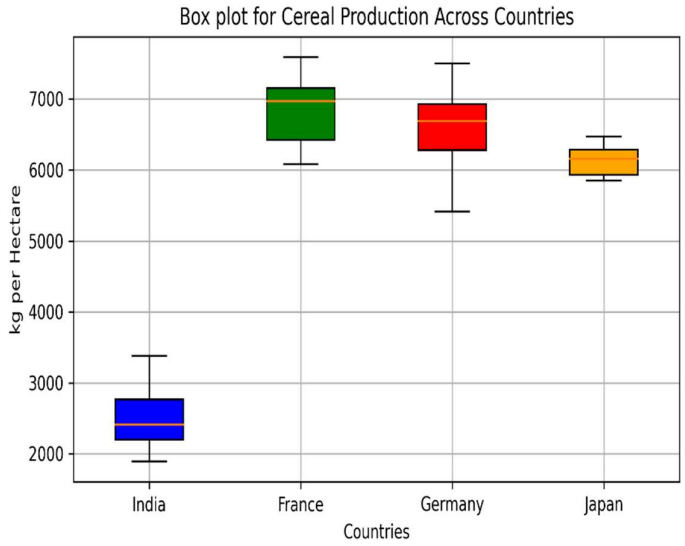
India and Germany both exhibit broad development tendencies, with India exhibiting consistent growth, particularly after 2011, and Germany going through significant upswings. While France's data shows consistent development with sporadic deviations, Japan's data shows instability with obvious peaks and troughs. In general, Japan exhibits more notable fluctuations over time, France continues to be reasonably stable, and the economic paths of Germany and India both show increasing inclinations.

Bar plot:



From 1990 to 2020, France consistently outpaced Germany in cereal production, with notable years including a dip in the mid-1990s and stable production levels since 2010. Germany experienced fluctuations, with a significant increase in the mid-2000s but generally lower production levels compared to France. Recent years (2015-2020) saw both countries maintaining relatively stable production, with France continuing to lead.

Box plot:



The box plot analysis of cereal production from 1990 to 2020 highlights Germany and France's relatively stable production trends, with narrower interquartile ranges and fewer outliers. India exhibits the widest interquartile range, indicating greater variability in production levels over the years. France stands out with a notable outlier in 2014, while Japan shows a significant outlier in 2016, suggesting fluctuations in production. Overall, the box plot underscores differences in production consistency and variability among the four countries.

Conclusion:

In the end, the growing trajectories of Germany and India are distinguished by Germany's oscillations and India's continuous rise since 2011. France exhibits modest stability, whereas Japan exhibits significant instability. The box plot highlights the different economic situations in these countries by emphasizing Japan's considerable variety, Germany's chaotic patterns, France's stability, and India's growing unpredictability.