TITLE: UNDERSTANDING AGRICULTURAL TRENDS IN VARIOUS COUNTRIES

Objectives:

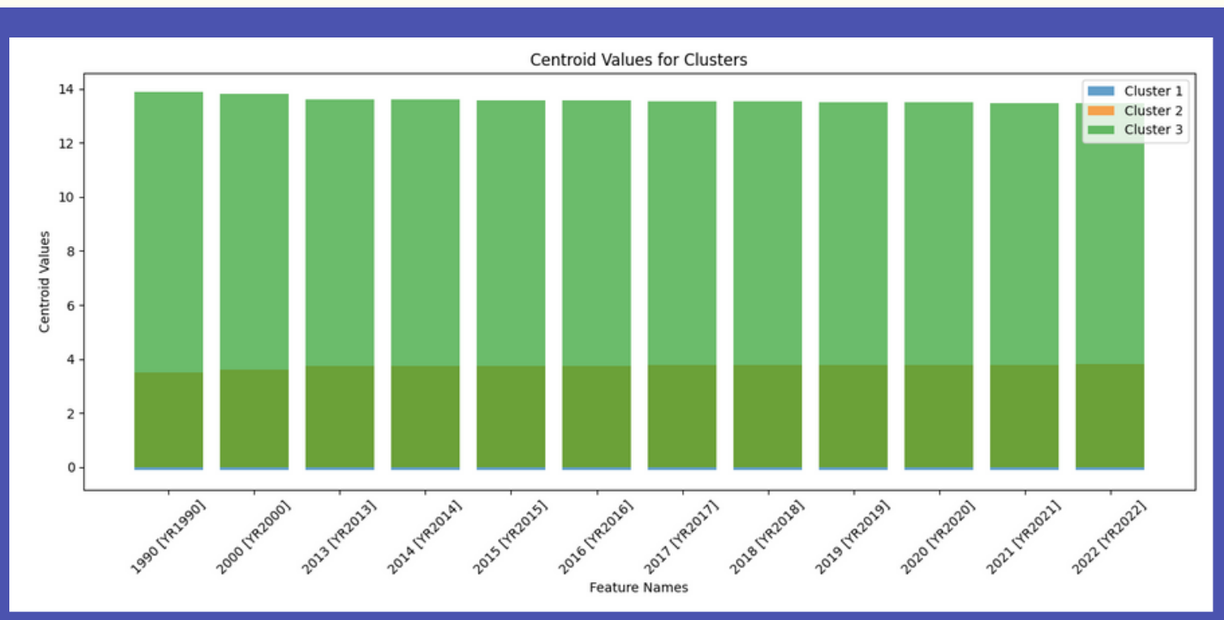
- Analyze agricultural land data across multiple countries and years. Identify clusters of countries based on agricultural trends. Compare trends between regions and income groups.
- Visualize and interpret key findings for easy understanding.

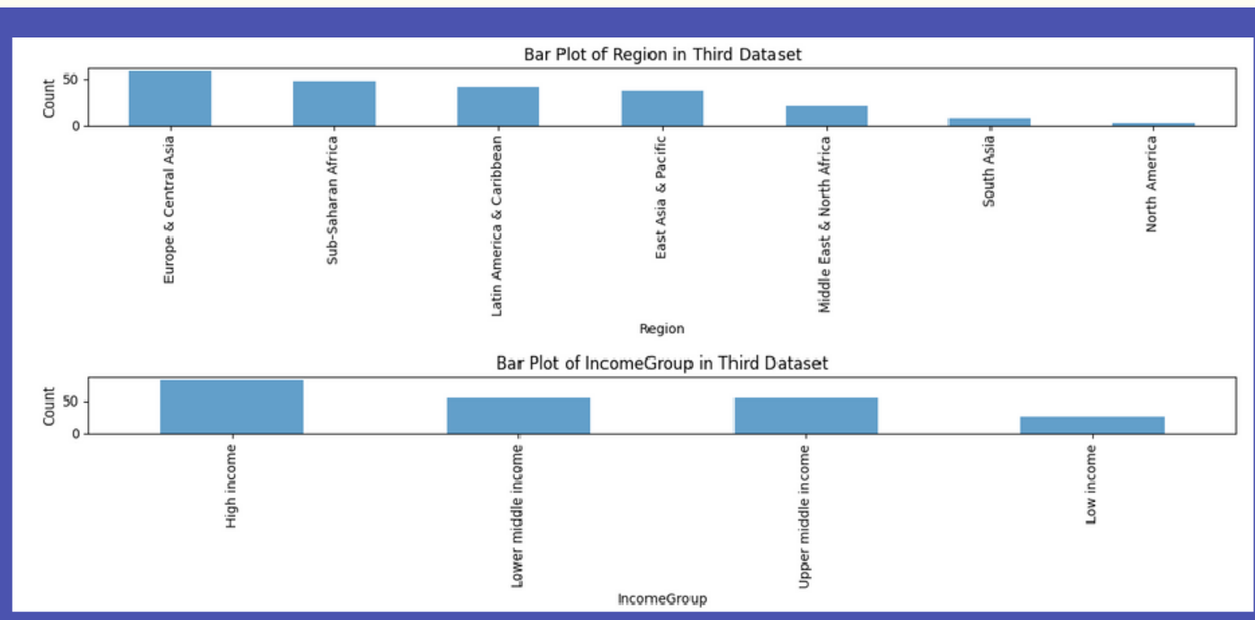
Abstract

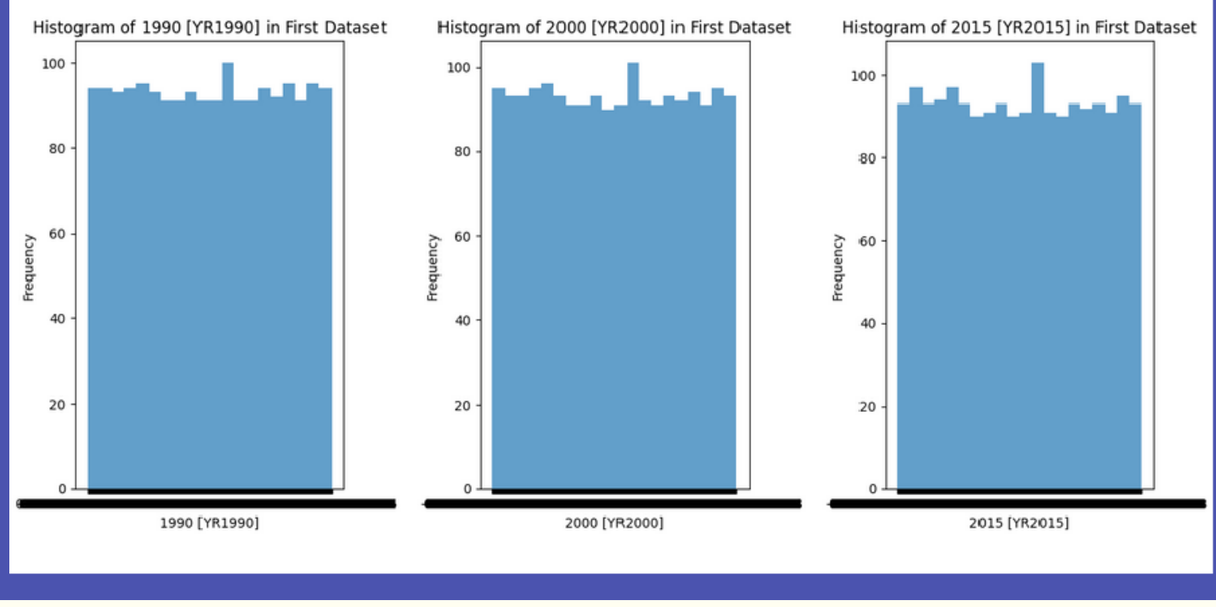
This study employs K-Means clustering to analyze global agricultural trends. Cluster centroids reveal significant variations in practices and development. Comparative analysis across regions and income groups provides additional insights. Polynomial curve fitting highlights trends in agricultural land from 1990 to 2013. Our findings offer a concise understanding of complex global agricultural dynamics.

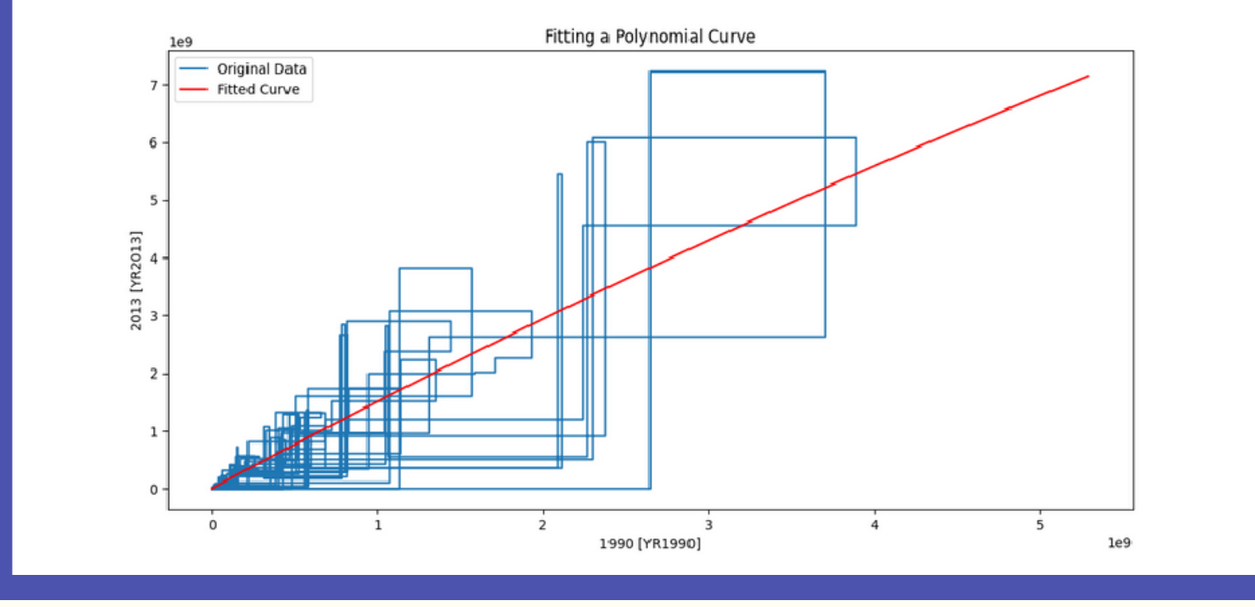
Introduction:

Our study delves into the dynamics of agricultural land across countries, aiming to understand trends, variations, and clusters in agricultural data. The dataset encompasses several years, enabling an in-depth exploration of changes in agricultural land.









Visualizations and Graphs

Cluster Analysis of Agricultural Trends

- First we display cluster centroids differences in agricultural trends between clusters.
- The implications of these variations on agricultural practices and development.

Comparative Analysis between Regions and Income Groups

- Histograms depicting the distribution of agricultural features across selected years.
- Bar plots illustrating the frequency of regions and income groups, highlighting variations.

Trend Analysis: Fitting a Polynomial Curve

- Fitted polynomial curve to depict the relationship between agricultural land in 1990 and 2013.
- Pattern and trend revealed by the fitted curve.

Clustering Technique Used

K-Means Clustering

The data was clustered using the K-Means algorithm, dividing the dataset into distinct groups (clusters). Centroids were calculated for each cluster, representing the mean values of agricultural features. Bar graphs were plotted to display the centroid values for each cluster across these features.

Conclusion:

In conclusion, our study identifies country clusters, showcasing agricultural trend variations. Comparative analyses **and** polynomial curve fitting enhance insights, guiding informed decisions for sustainable global agricultural development.

Student Name: Hamza Arif Syed **Student ID: 22046270**