

Problem Statement

HELP International is an international humanitarian NGO that is committed to fighting poverty and providing the people of backward countries with basic amenities and relief during the time of disasters and natural calamities. It runs a lot of operational projects from time to time along with advocacy drives to raise awareness as well as for funding purposes.

After the recent funding programmes, they have been able to raise around \$10 million. Now the CEO of the NGO needs to decide how to use this money strategically and effectively. The significant issues that come while making this decision are mostly related to choosing the countries that are in the direst need of aid.

And this is where you come in as a data analyst. Your job is to categorise the countries using some socio-economic and health factors that determine the overall development of the country. Then you need to suggest the countries which the CEO needs to focus on the most.

Analysis Approach

- Step 1 :- Data Reading and Understanding
- Step 2 :- Performing Exploratory Data Analysis
- Step 3 :- Prepare the data for Modelling
- Step 4 :- Modelling
- Step 5 :- Final Analysis

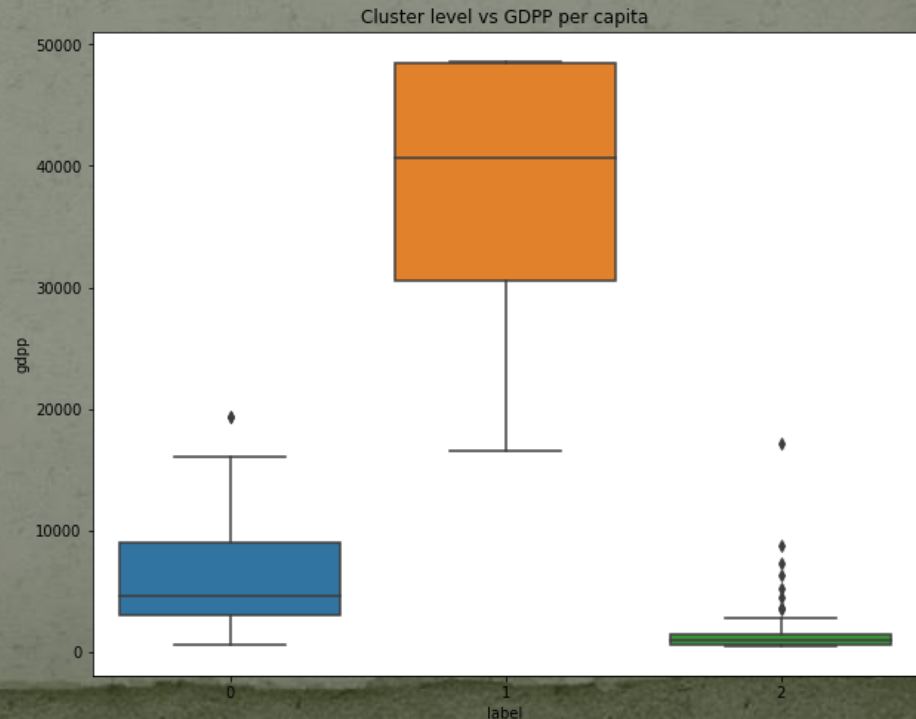
Analysis Approach

- Start off with the necessary data inspection and EDA tasks suitable for this dataset - data cleaning, univariate analysis, bivariate analysis etc.
- Outlier Analysis and Treatment of Outliers.
- Feature Scaling using StandardScaler.
- After that we find out the optimal number of clusters using elbow curve method and the silhouette score
- Then we apply K-Means Clustering algorithm to find out Cluster Labels
- Then we apply Hierarchical Clustering algorithm to find out Cluster Labels

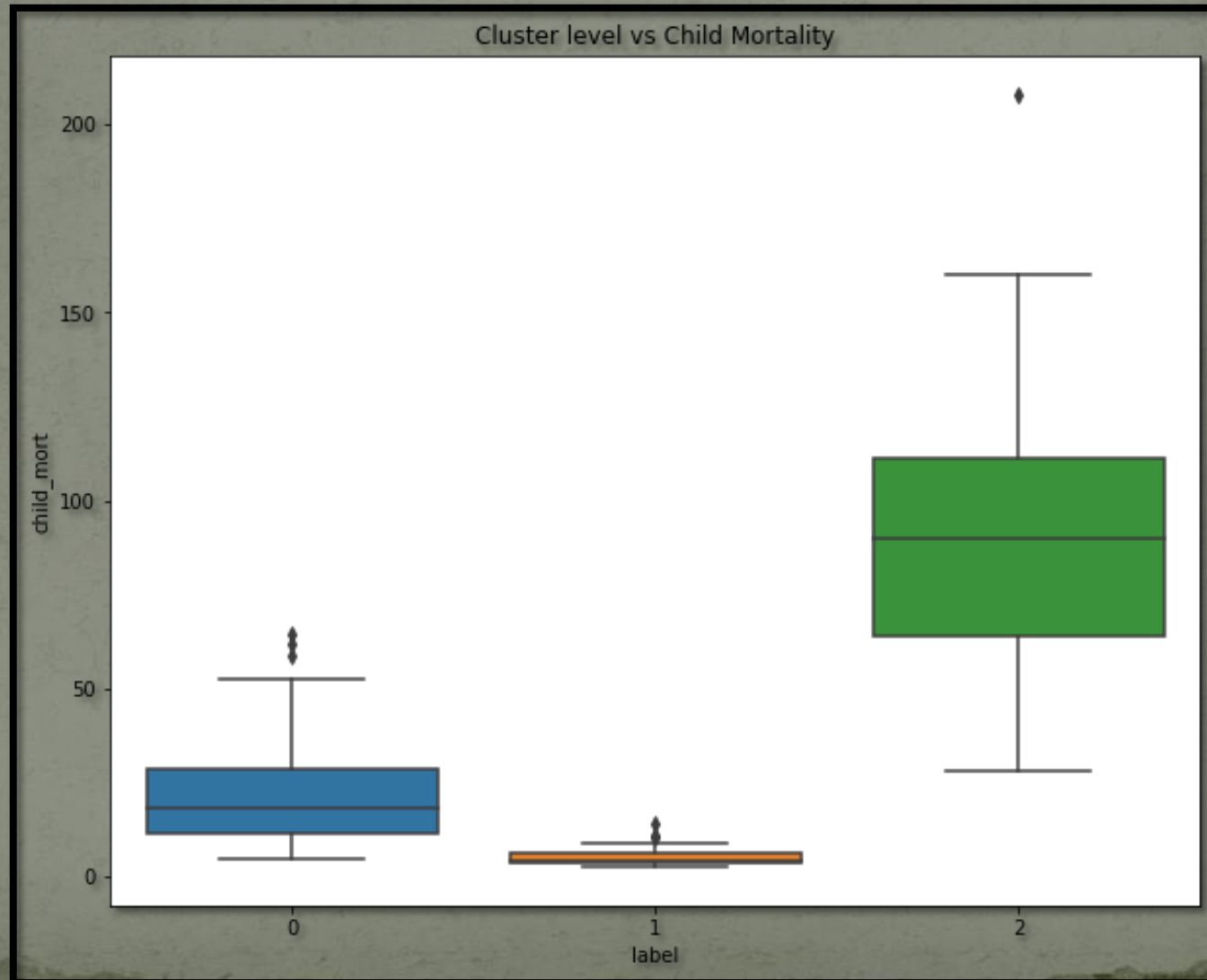
Results Of Model

1) K-Means :-

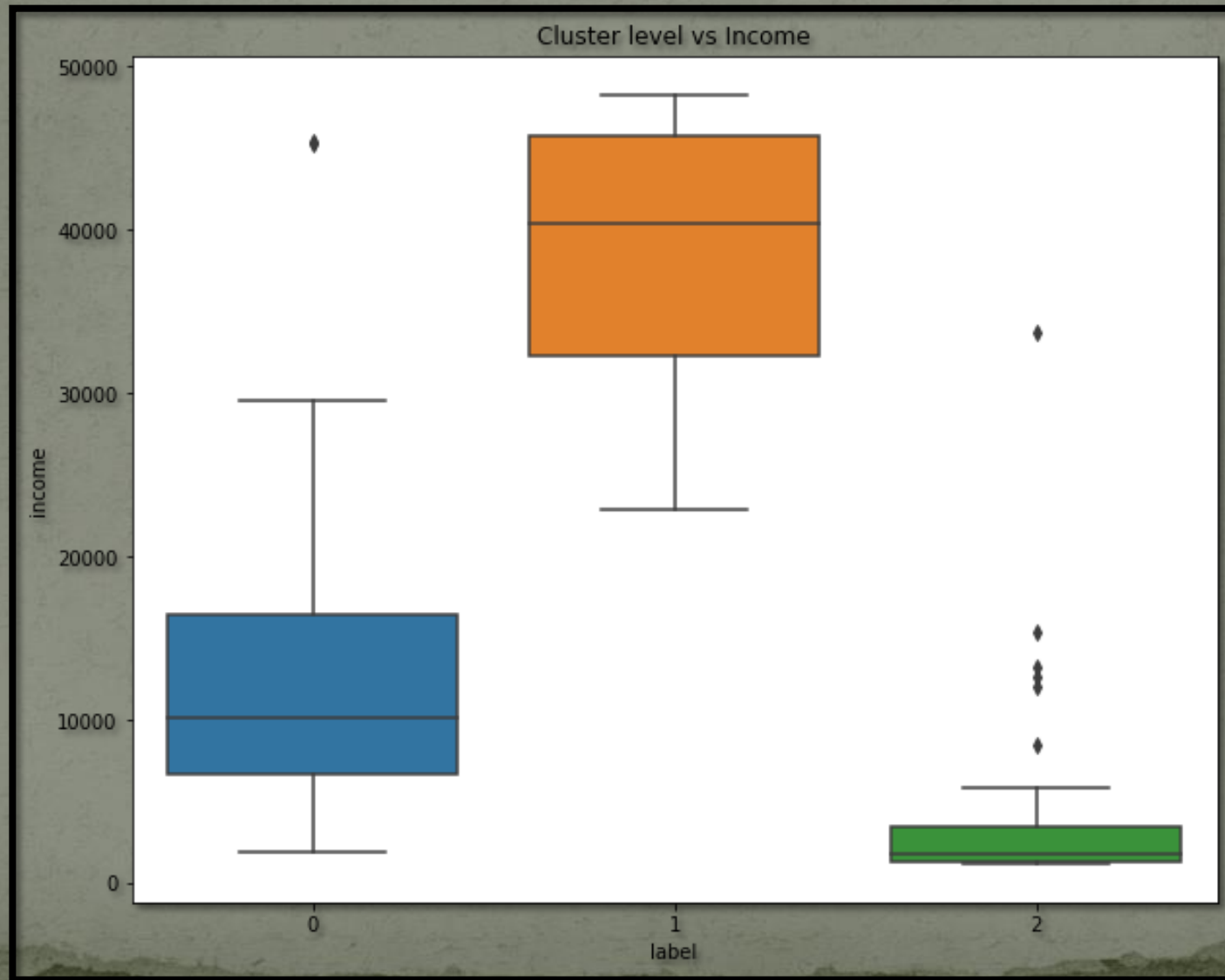
- 1) We Create three Clusters to make inferences.
- 2) When we plot Cluster level Vs GDPP, we see Cluster number 2 is having very low GDPP indicates to have urgent need of aid.



- 3) When we plot boxplot between Cluster level Vs Child_mort , we see Cluster 2 is having very high Child Mortality.
- 4) This means Cluster 2 consist of high Child Mortality Rate

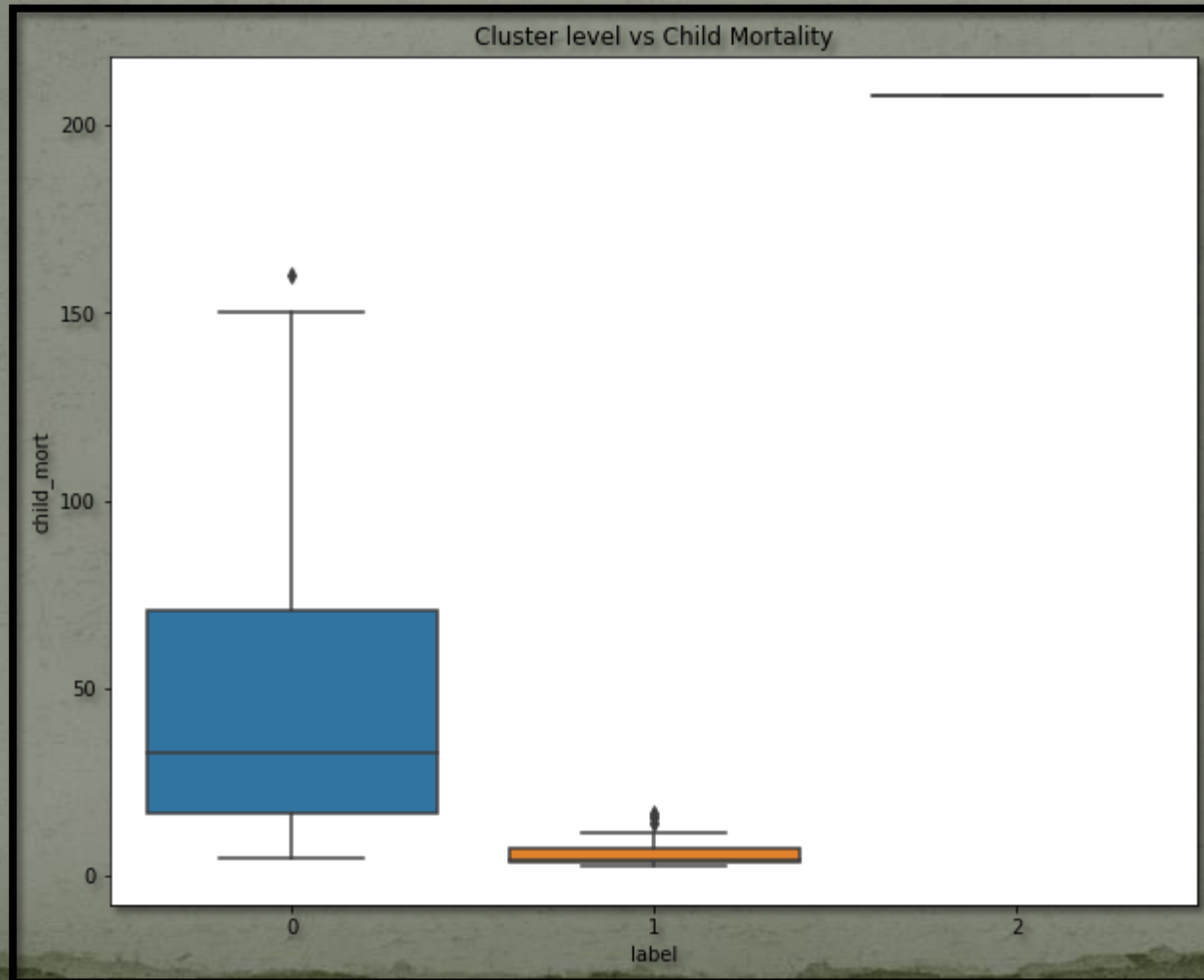


- 5) When we plot boxplot between Cluster level Vs Income , we see Cluster 2 is having very low Income.
- 4) This means Cluster 2 consist of very low Income .

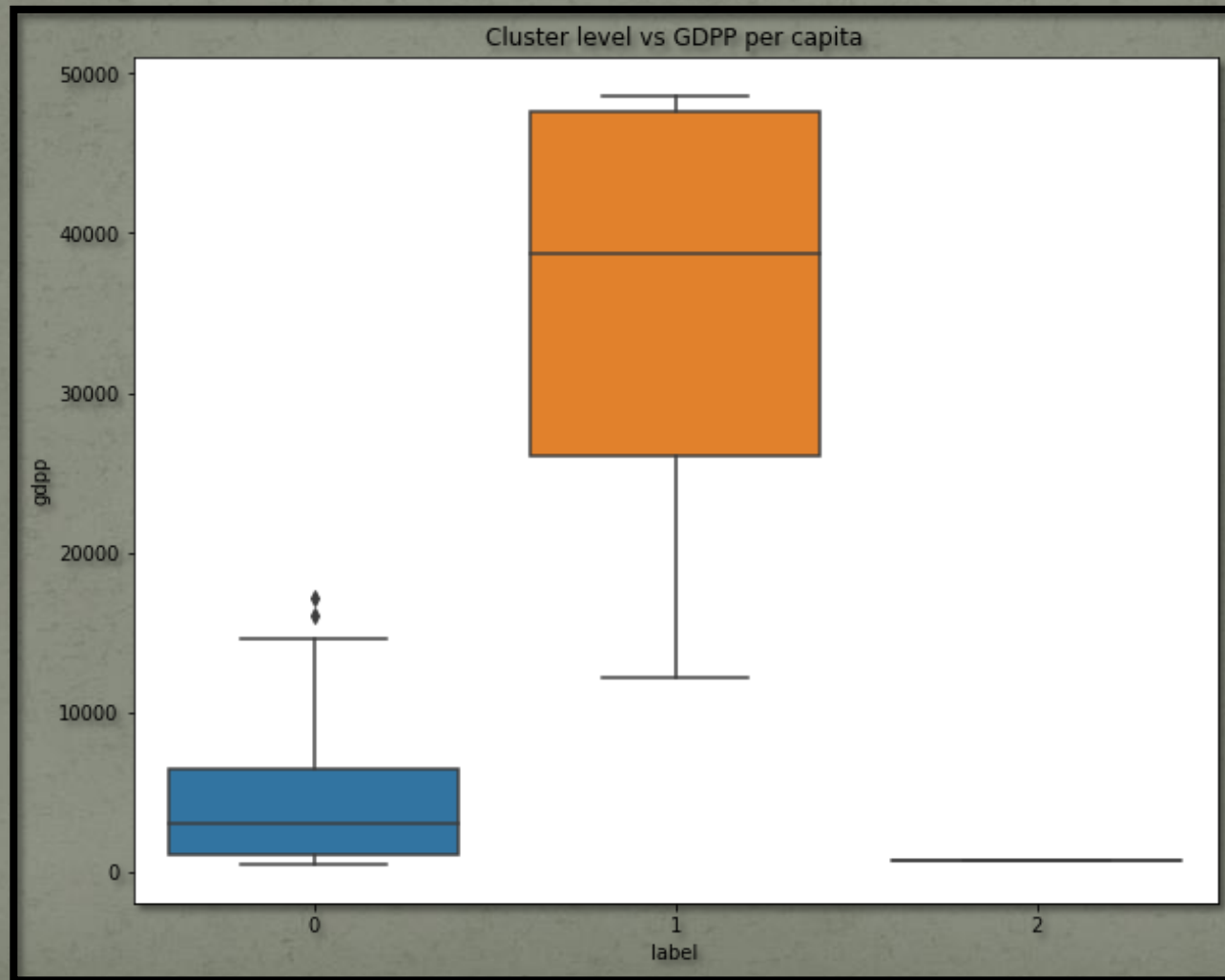


2) Hierarchical Clustering :-

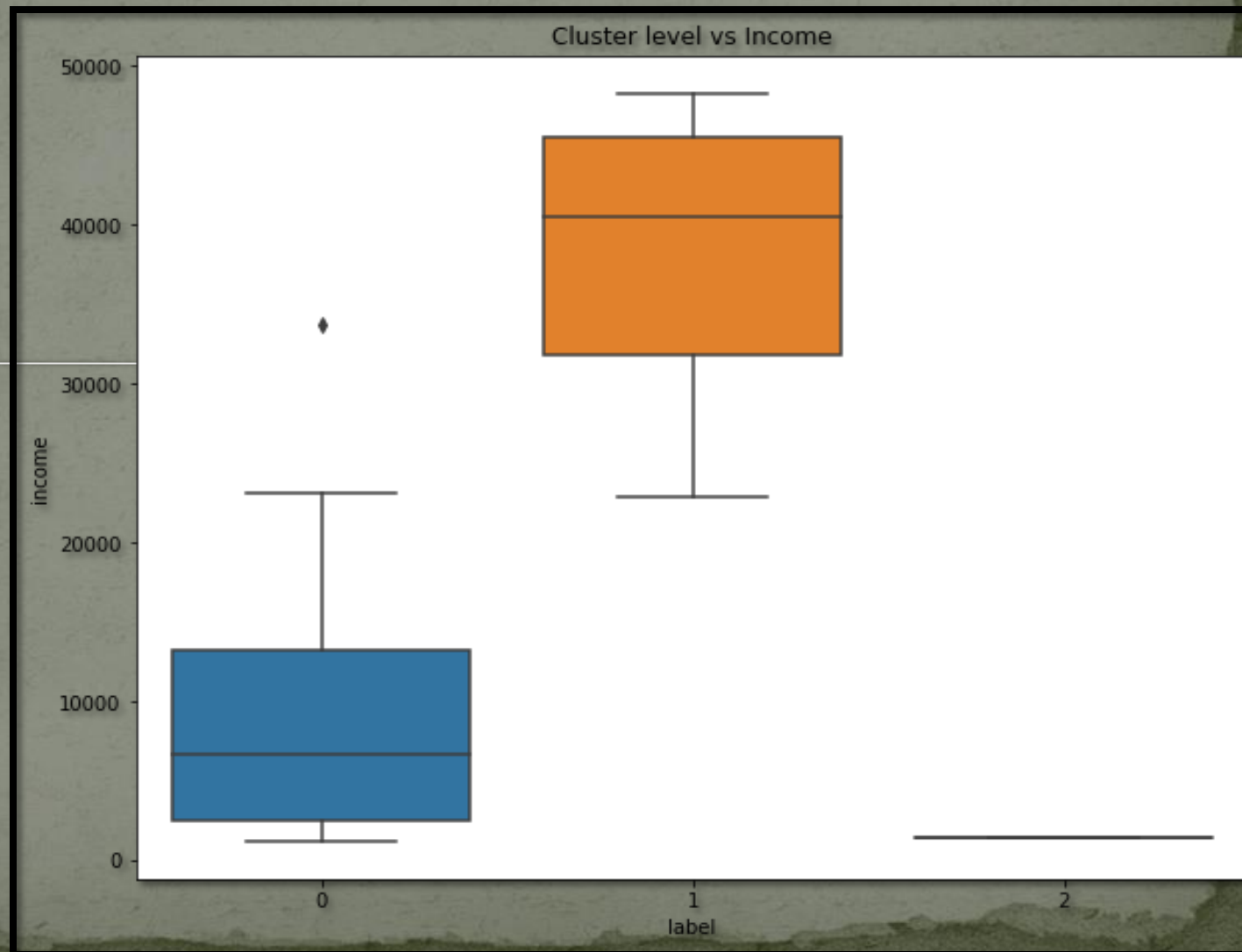
- When we plot boxplot between Cluster level Vs Child_mort , we see Cluster 1 is having very high Child Mortality.



- When we plot Cluster level Vs GDPP, we see Cluster number 2 is having very low GDPP indicates to have urgent need of aid



- When we plot boxplot between Cluster level Vs Income , we see Cluster 2 is having very low Income.



List of Countries

(From K-Means Clustering)

- ['Haiti', 'Sierra Leone', 'Chad', 'Central African Republic', 'Mali', 'Nigeria', 'Niger', 'Angola', 'Congo, Dem. Rep.', 'Burkina Faso', 'Guinea-Bissau', 'Benin', 'Cote d'Ivoire', 'Equatorial Guinea', 'Guinea', 'Cameroon', 'Mozambique', 'Lesotho', 'Mauritania', 'Burundi', 'Pakistan', 'Malawi', 'Togo', 'Afghanistan', 'Liberia', 'Comoros', 'Zambia', 'Uganda', 'Gambia', 'Lao', 'Sudan', 'Ghana', 'Tanzania', 'Senegal', 'Congo, Rep.', 'Gabon', 'Rwanda', 'Kiribati', 'Timor-Leste', 'Madagascar', 'Kenya', 'Yemen', 'Namibia', 'Eritrea', 'South Africa', 'Botswana', 'Iraq', 'Solomon Islands']

List of Countries

(From Hierarchical clustering)

- ['Sierra Leone', 'Chad', 'Central African Republic', 'Mali', 'Nigeria', 'Niger', 'Angola', 'Congo, Dem. Rep.', 'Burkina Faso', 'Guinea-Bissau', 'Benin', 'Cote d'Ivoire', 'Equatorial Guinea', 'Guinea', 'Cameroon', 'Mozambique', 'Lesotho', 'Mauritania', 'Burundi', 'Pakistan', 'Malawi', 'Togo', 'Afghanistan', 'Liberia', 'Comoros', 'Zambia', 'Uganda', 'Gambia', 'Lao', 'Sudan', 'Ghana', 'Tanzania', 'Senegal', 'Myanmar', 'Congo, Rep.', 'Gabon', 'Rwanda', 'Kiribati', 'Timor-Leste', 'Madagascar', 'Kenya', 'Turkmenistan', 'India', 'Yemen', 'Namibia', 'Eritrea', 'South Africa', 'Botswana', 'Tajikistan', 'Bangladesh', 'Nepal', 'Bolivia', 'Cambodia', 'Bhutan', 'Micronesia, Fed. Sts.', 'Azerbaijan', 'Guyana', 'Iraq', 'Uzbekistan', 'Guatemala', 'Dominican Republic', 'Morocco', 'Indonesia', 'Philippines', 'Kyrgyz Republic', 'Vanuatu', 'Egypt', 'Solomon Islands', 'Algeria', 'Cape Verde', 'Mongolia', 'Ecuador', 'Paraguay', 'Fiji', 'Suriname', 'Vietnam', 'Kazakhstan', 'Jordan', 'St. Vincent and the Grenadines', 'Peru', 'Brazil', 'Panama', 'Iran', 'El Salvador', 'Turkey', 'Samoa', 'Belize', 'Colombia', 'Armenia', 'Jamaica', 'Tonga', 'Tunisia', 'Moldova', 'Venezuela', 'Albania', 'Georgia', 'China', 'Mauritius', 'Thailand', 'Grenada', 'Argentina', 'Seychelles', 'Barbados', 'Maldives', 'Ukraine', 'Romania', 'Sri Lanka', 'Bulgaria', 'Uruguay', 'Macedonia, FYR', 'Lebanon', 'Antigua and Barbuda', 'Costa Rica', 'Russia', 'Chile', 'Malaysia', 'Latvia', 'Serbia', 'Bosnia and Herzegovina', 'Montenegro', 'Lithuania', 'Poland', 'Hungary', 'Belarus', 'Croatia', 'Estonia']

THANK YOU