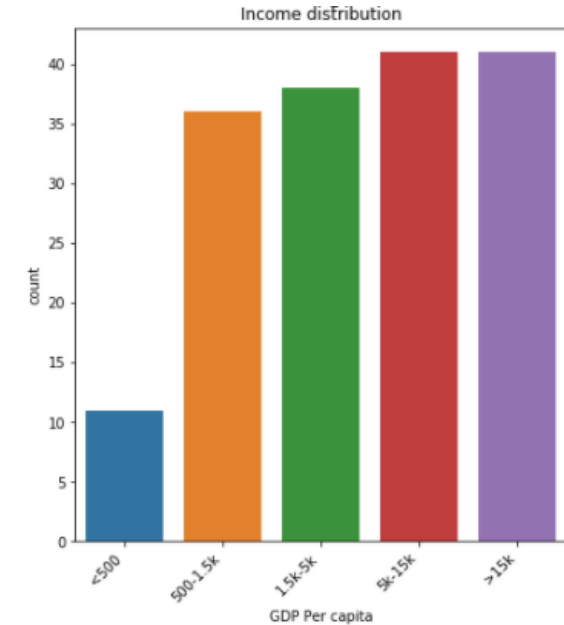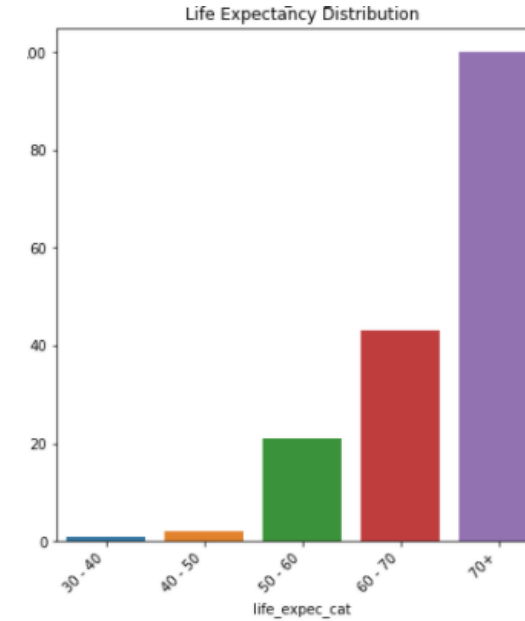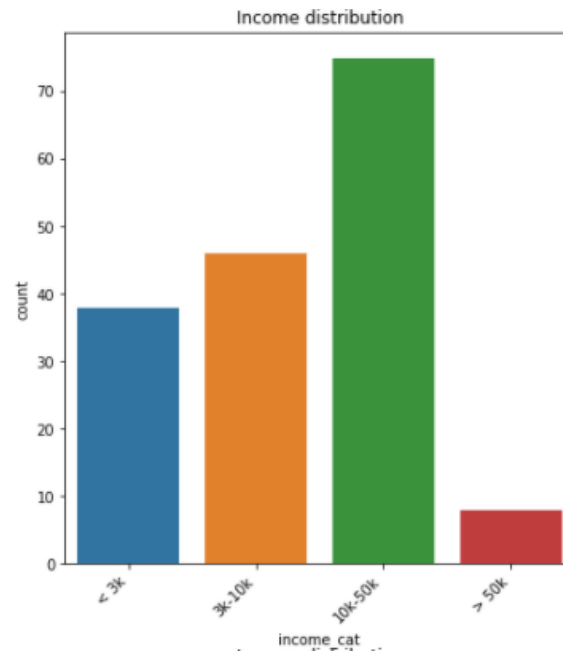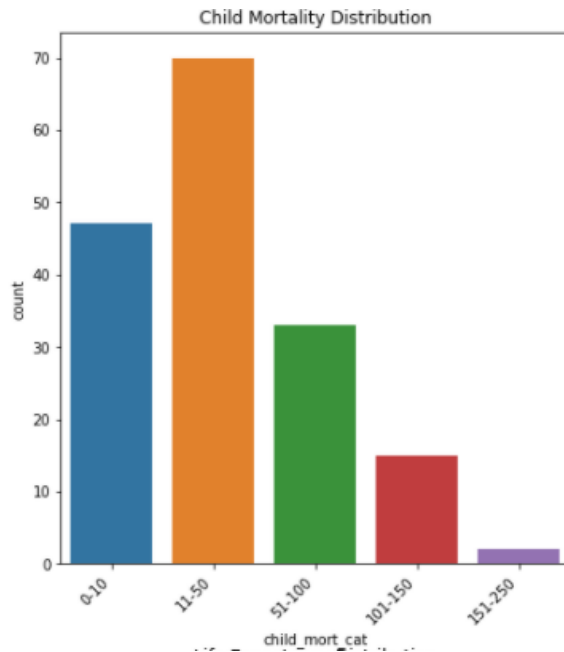# HELP International Analysis

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Data Overview

Overview

- There are 160+ countries data having the GDP per capita, average income, child fertility rate, health expenses, import-export amount etc.
- The child mortality rate of close to 75% of the countries have < 50 mortality rate

- Similarly there are close to 100 countries with Life expectancy of 70+ years
- There are close to 30 countries that have less than $500 GDP Per capita

Data Analysis

Child Mortality Analysis

- The health expenses are inversely related to the child mortality, as the state increases the spending on health expenses, the child mortality rate decreases
- The GDP per capita and income increase contributes to the reduction in the child mortality
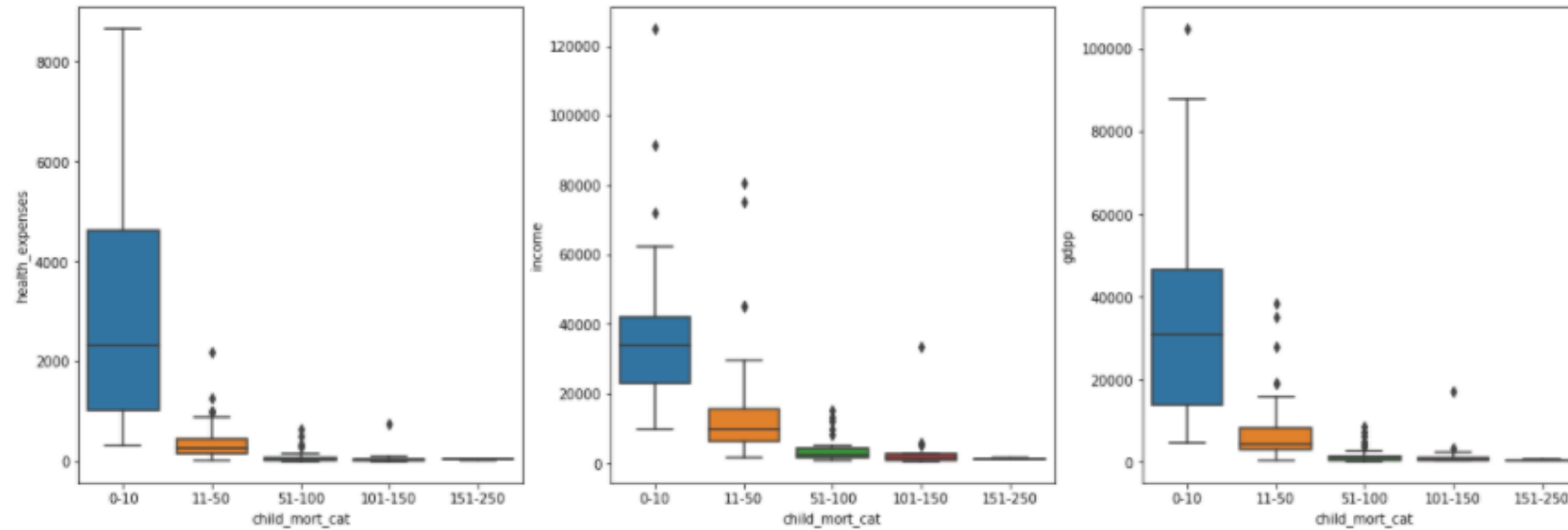
Data Analysis (contd..)

Outlier analysis

- There are quite a few countries that have income above the very high range (8 countries). They have more than $50,000 as their income. They would probably may be self sufficient to manage the child mortality
- There are 3 countries that have more than 150 child mortality rate which are seriously needed to have in-depth analysis on the challenges in handling the high child mortality rate
- There are few countries that have very low life expectancy rate which probably need to have an in-depth look at the reason for the same
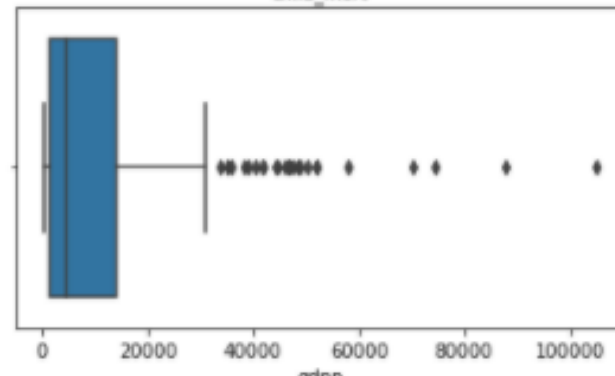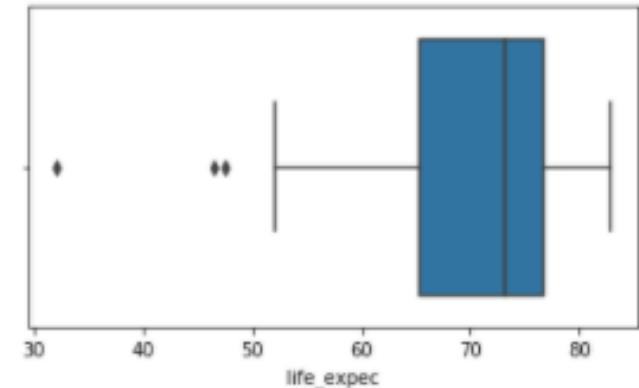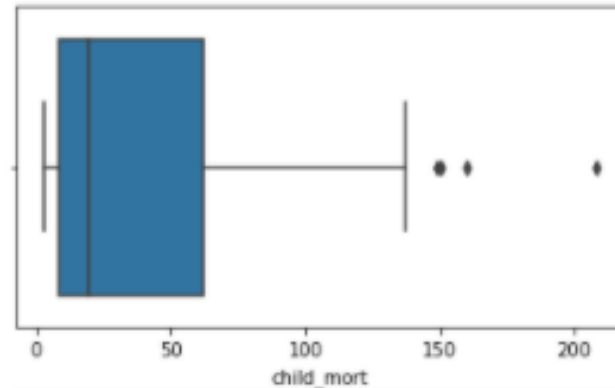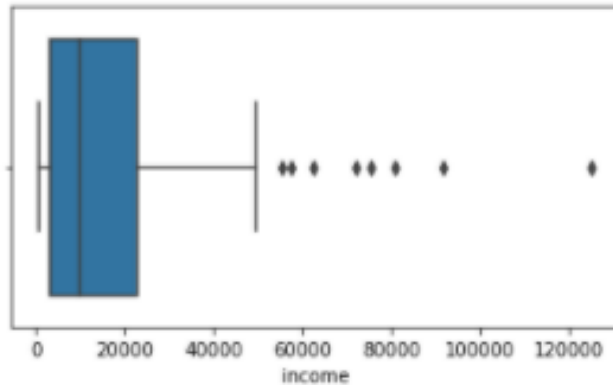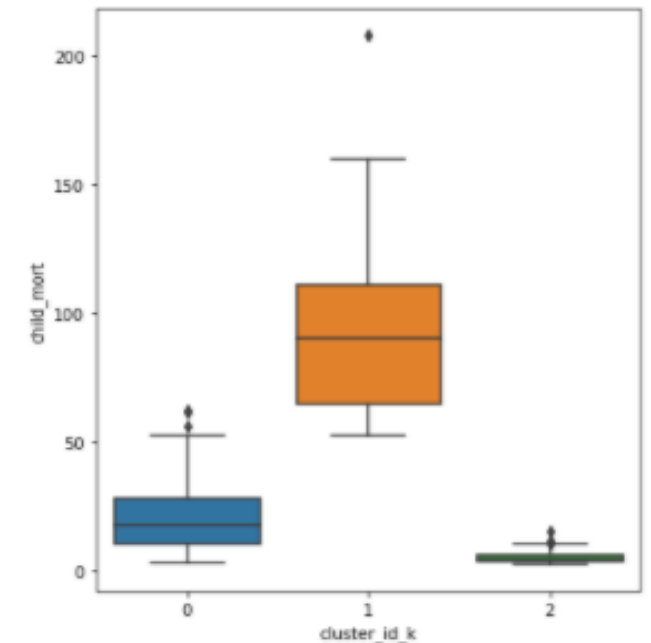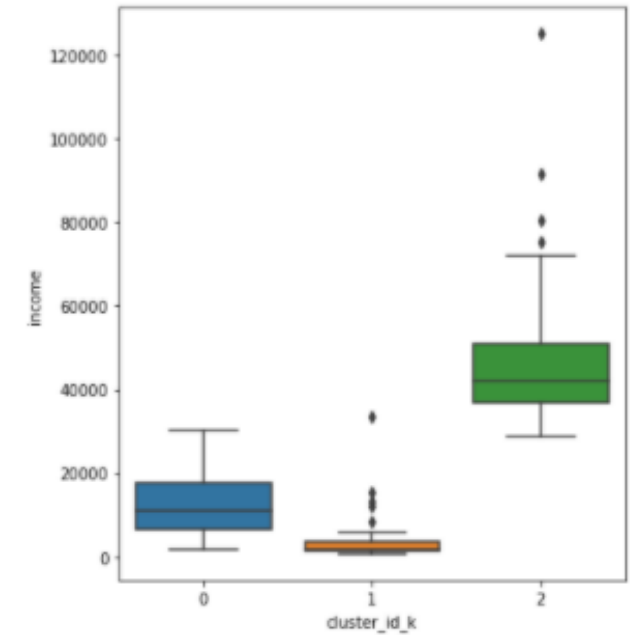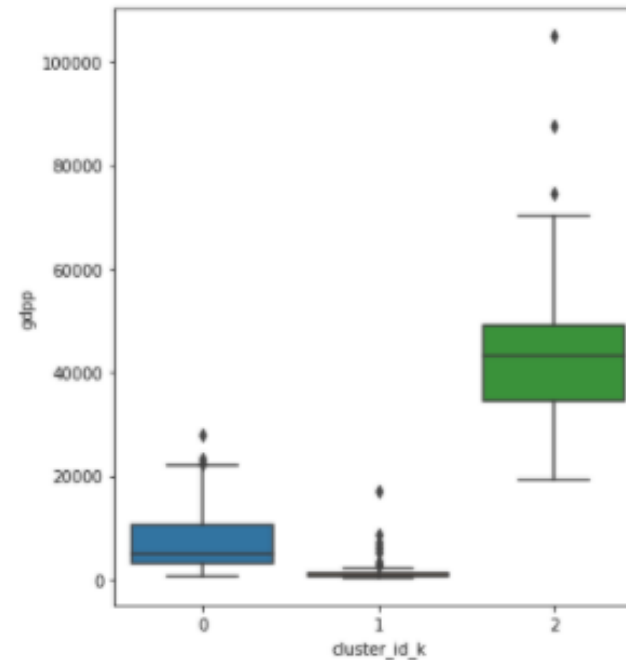
Modelling

Clustering the countries

- Building the model on the data for the countries data, 3 clusters can be formed, and the countries can be categorized into 3 prominent categories
- Modelling considered
  - K-Means clustering
  - Hierarchical clustering (complete)

| Cluster ID	Very Low	Medium	High
Cluster 1	GDP Income Life Expectancy Health Expenses	None	Child Mortality Rate
Cluster 0	None	GDP Income Life Expectancy Health Expenses Child Mortality Rate	None
Cluster 3	Child Mortality Rate	None	GDP Income Life Expectancy Health Expenses

Modelling distribution

Clustering distribution

The 3 clusters built by the model can be represented as below

- Cluster 1 having countries that have high child mortality rate (> 50) with very low income (< $20k) , GDPP (< $5k) and health expenses (< $1k) grouped together
- Cluster 0 having countries that have medium child mortality rate (between 10-50) with income between $5k and $20k , GDPP between $2k and $20k and health expenses between $500 and $2500 grouped together
- Cluster 2 having countries that have very low child mortality rate (<10) with very high income , GDPP and health expenses grouped together
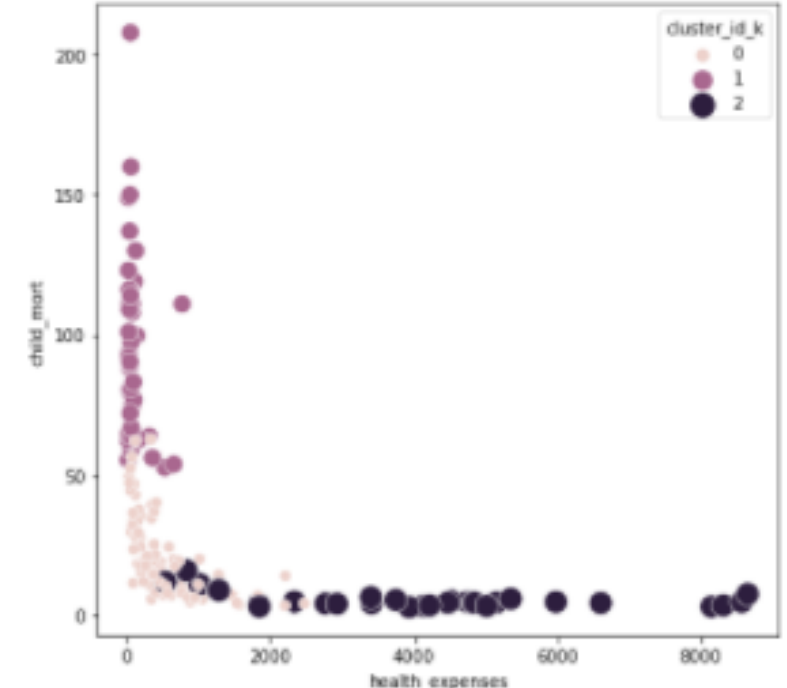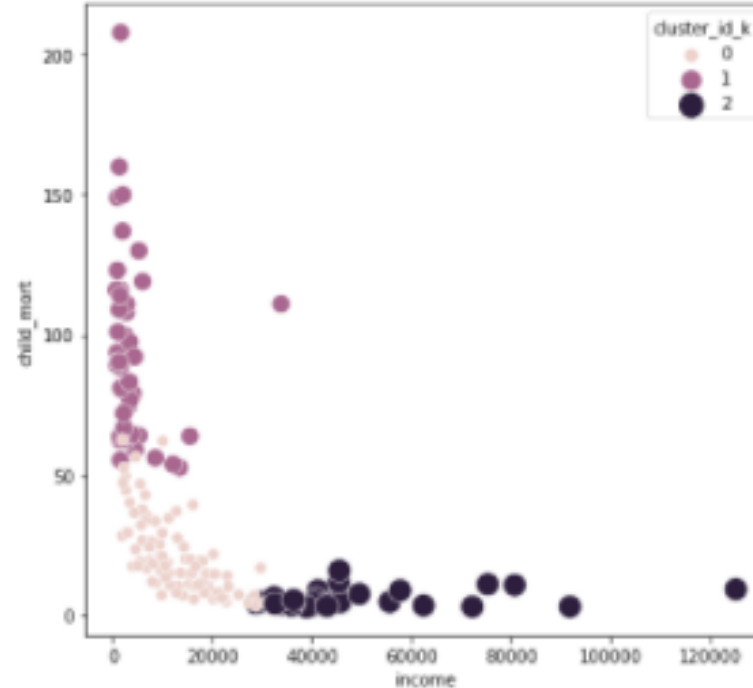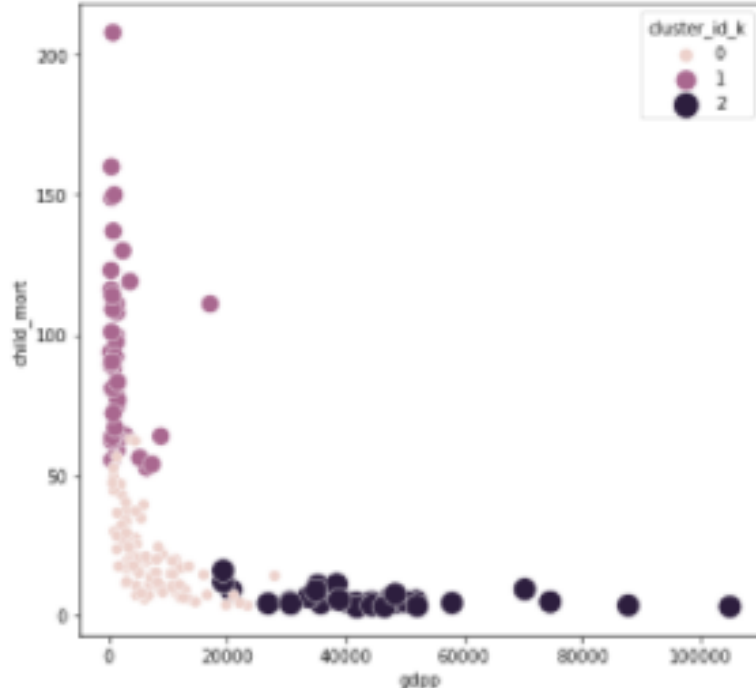
Final Inference

Cluster Profiling

Based on Profiling
- The countries in the cluster 1 has very low GDPP & Income but very high child mortality rate are the ones that are the ones that are in real need of Financial assistance by HELP International.
- Identifying the bottom 5 countries that have lowest GDPP, Income and highest child mortality rate, we get the countries that are shown in the adjacent table
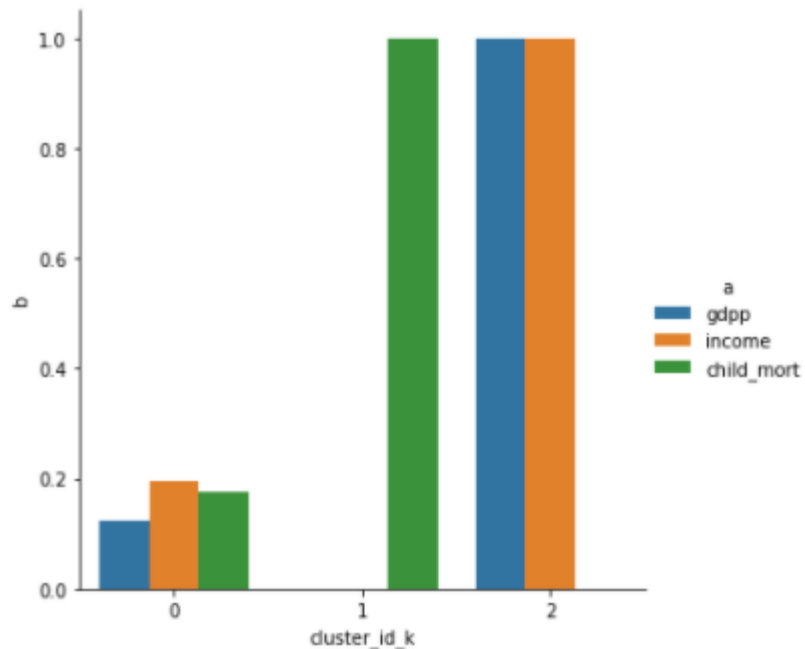
Countries that need assistance

country	gdpp	income	child_mort
Burundi	231	764	93.6
Liberia	327	700	89.3
Congo, Dem. Rep.	334	609	116.0
Niger	348	814	123.0
Sierra Leone	399	1220	160.0