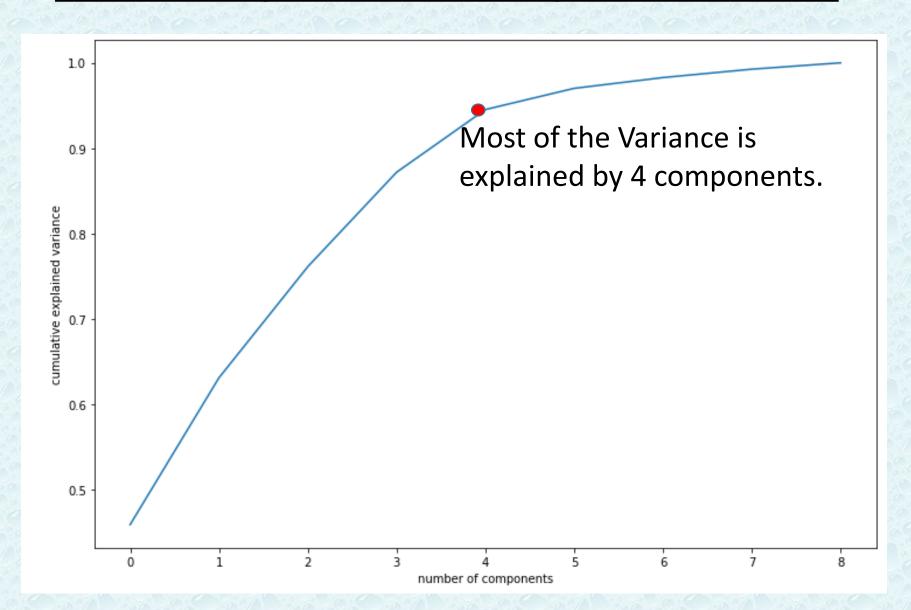# Introduction

❑ 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.

❑ Categorizing the countries using some socio-economic and health factors that determine the overall development of the country and to suggest the countries which the CEO needs to focus on the most.
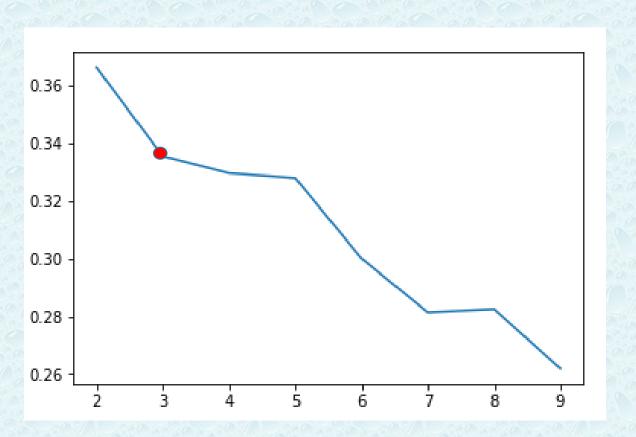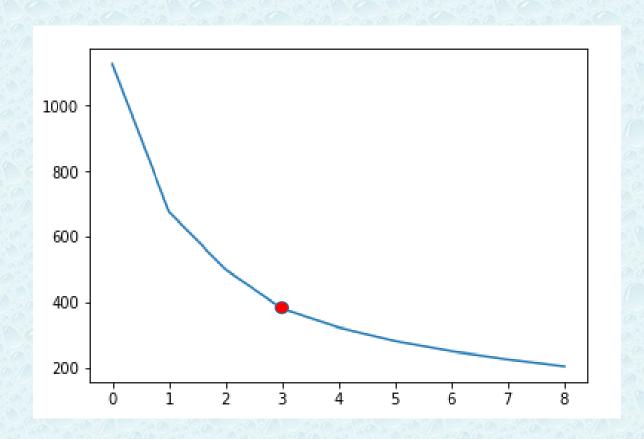
Analysis Approach

❑ Data Preparation and Pre-processing

❑ Standardization

❑ Principle Component Analysis

❑ Clustering (K-Means and Hierarchical Clustering)

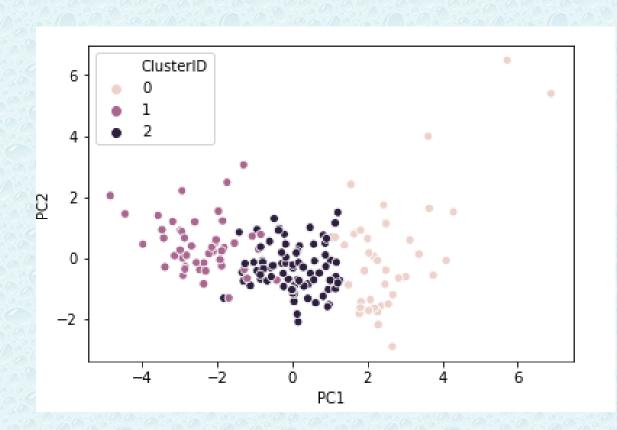❑ Reporting 5 countries which are in direst need of aid.

Principal Components

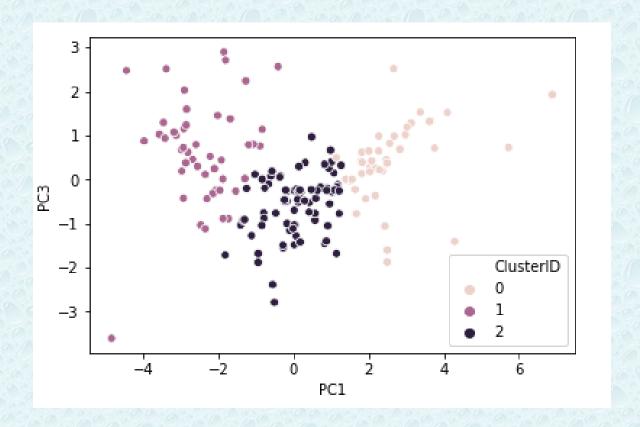Most of the Variance is explained by 4 components.

K-Means Clustering

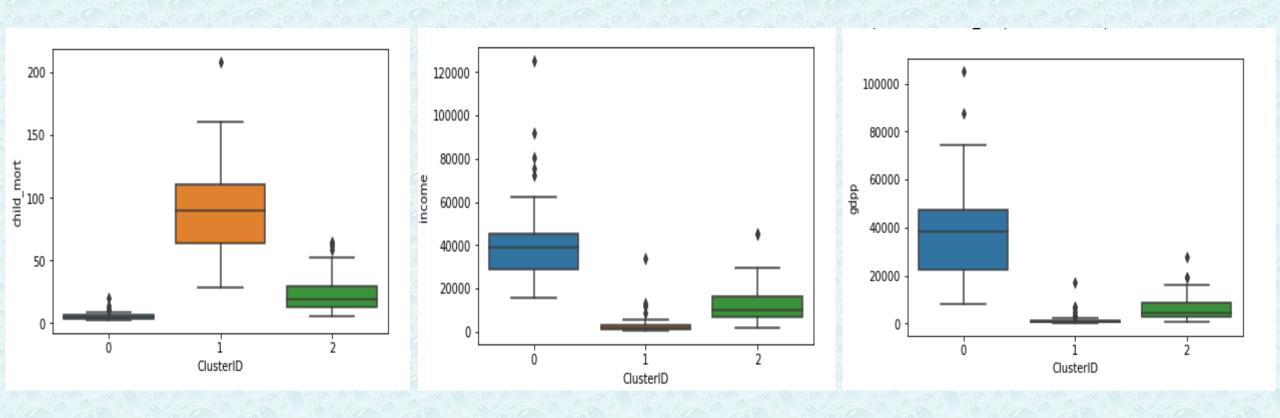
❑ Distinct Bend at around 3 clusters. Hence choose K=3

Clusters across PC's

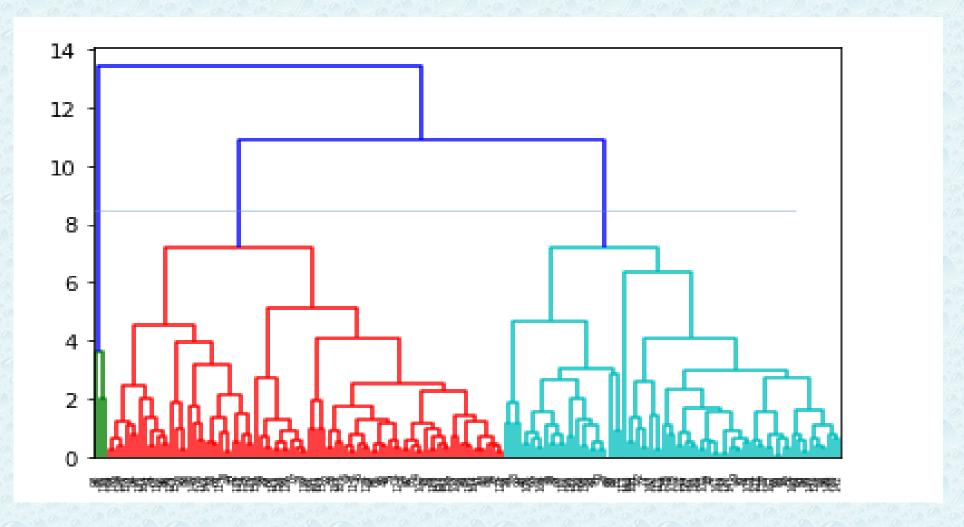
❑ Distinct Clusters distribution across Principal Components

Inferences from K-Means

❑ Consider Cluster-ID 1 to focus on

Inferences from Hierarchical clustering

❑ Complete Linkage Dendrogram
❑ Cut somewhere in between 8-10 (Height) to get 3 clusters

Final List of Countries

Country	GDPP	Country	Income	Country	Child Mortality
Burundi	231	Congo, Dem. Rep.	609	Haiti	208
Congo, Dem. Rep.	334	Burundi	764	Sierra Leone	160
Niger	348	Niger	814	Chad	150
Sierra Leone	399	Central African Republic	888	Central African Republic	149
Mozambique	419	Mozambique	918	Mali	137

❑ **Burundi, Congo Democratic Republic, Niger, Sierra Leone, Mozambique, Central African Republic, Haiti, Chad, Mali**