# World Countries Clustering

An Unsupervised
Machine Learning Project

# About country dataset

**Source : kaggle.com**

## Child Mortality

Death of children under 5 years of age per 1000 live births

## Health

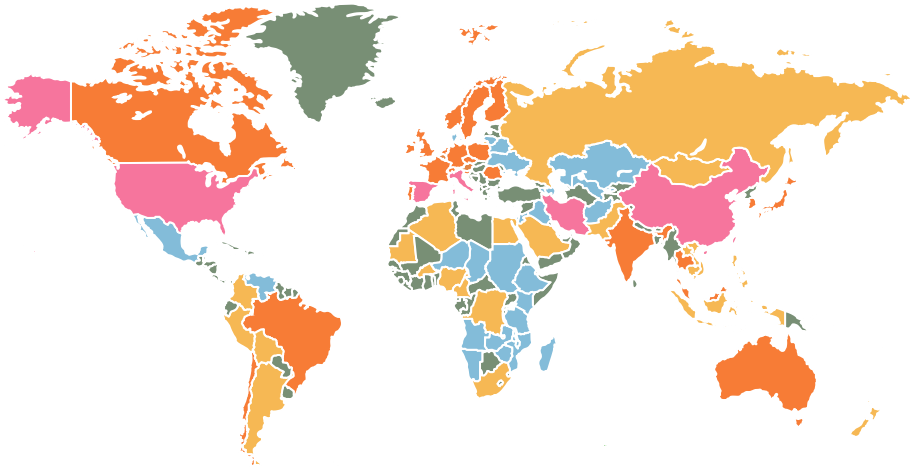
Total health spending per capita. Given as %age of GDP per capita

## Life Expectancy

The average number of years a newborn child would live if the current mortality patterns are to remain the same

## Total Fertility

The number of children that would be born to each woman if the current age-fertility rates remain the same.



## GDPP

The GDP per capita. Calculated as the Total GDP divided by the total population.

## Income

Net income per person

## Inflation

The measurement of the annual growth rate of the Total GDP

## Imports

Imports of goods and services per capita. Given as %age of the GDP per capita

## Exports

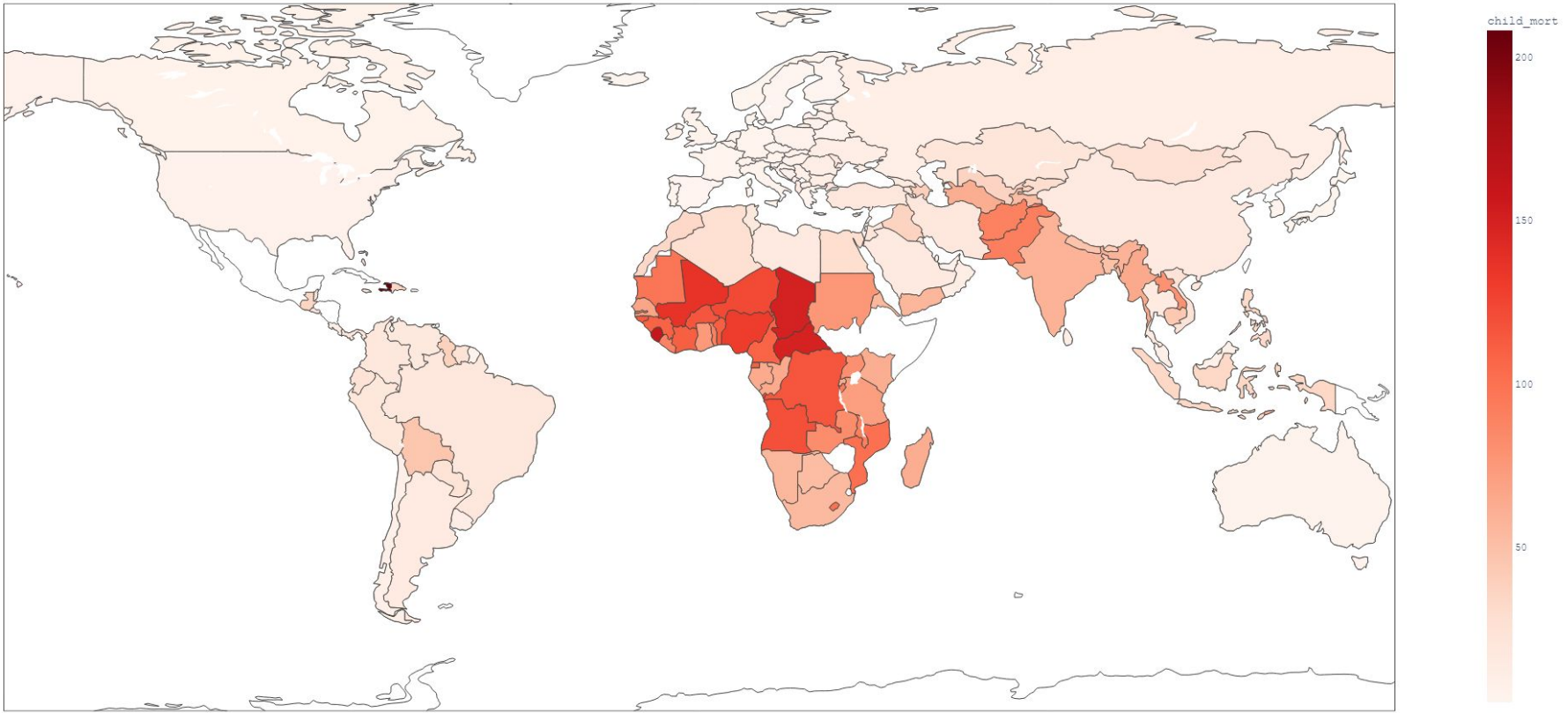
Exports of goods and services per capita. Given as %age of the GDP per capita

## Number of States: 167

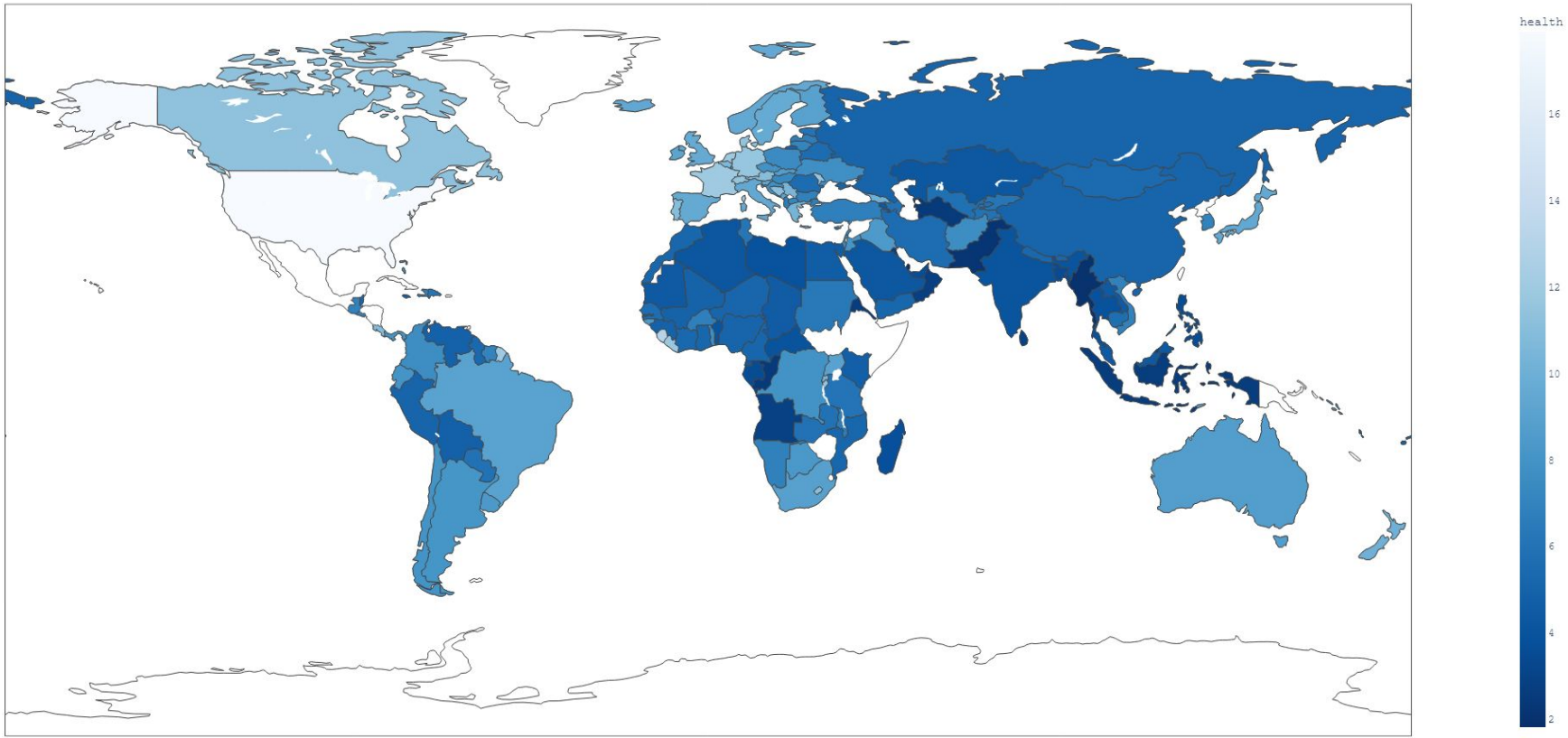
# Methodology

| | | |
|---|---|---|
| 1 | **EDA** | Exploring and understanding the dataset with graphs |
| 2 | **Clustering** | Kmeans Method for clustering |
| 3 | **Characterization** | Finding out what characterize each cluster |
| 4 | **Conclusion** | Questions and discussion |

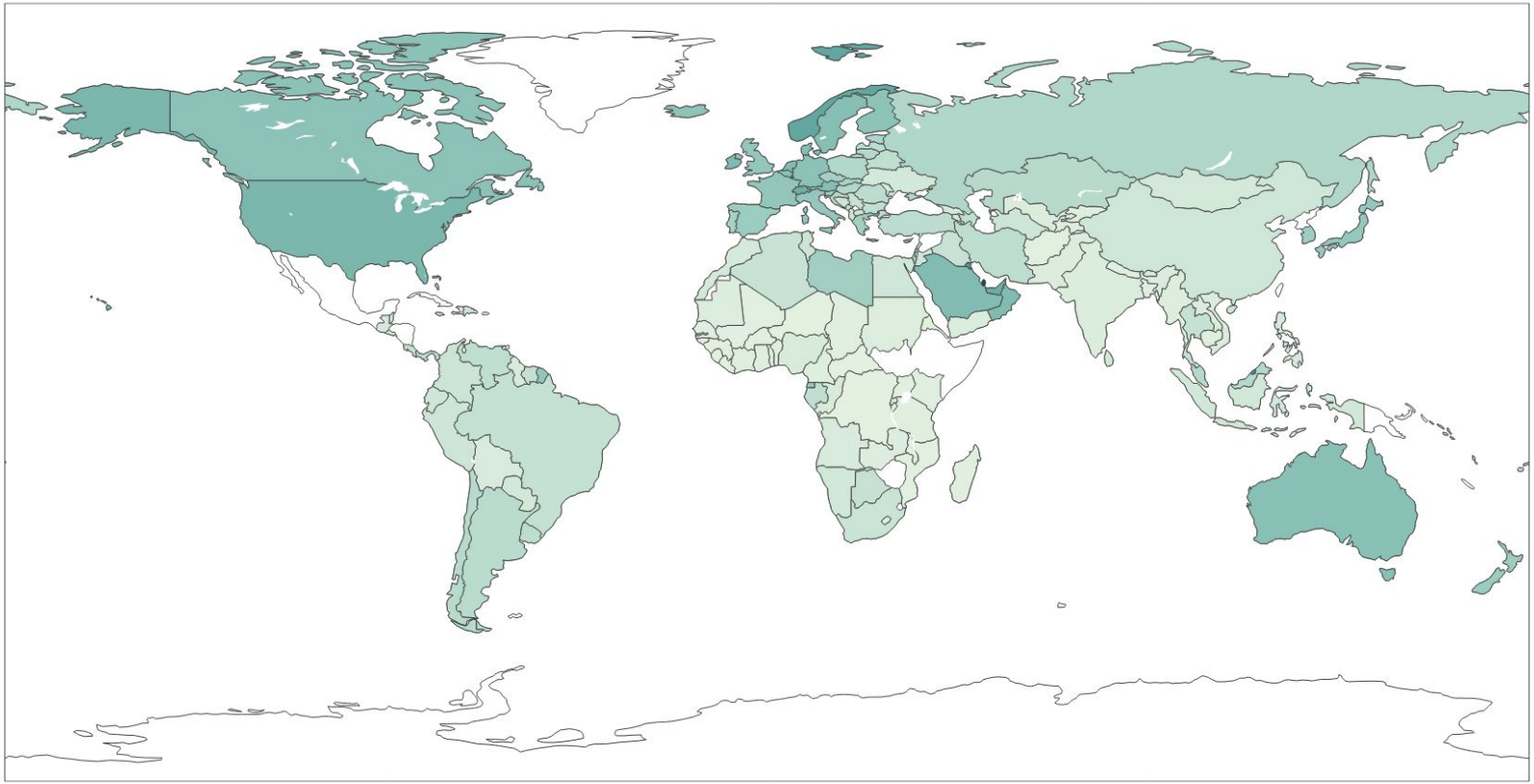
# Death of children under 5 years of age per 1000 live births



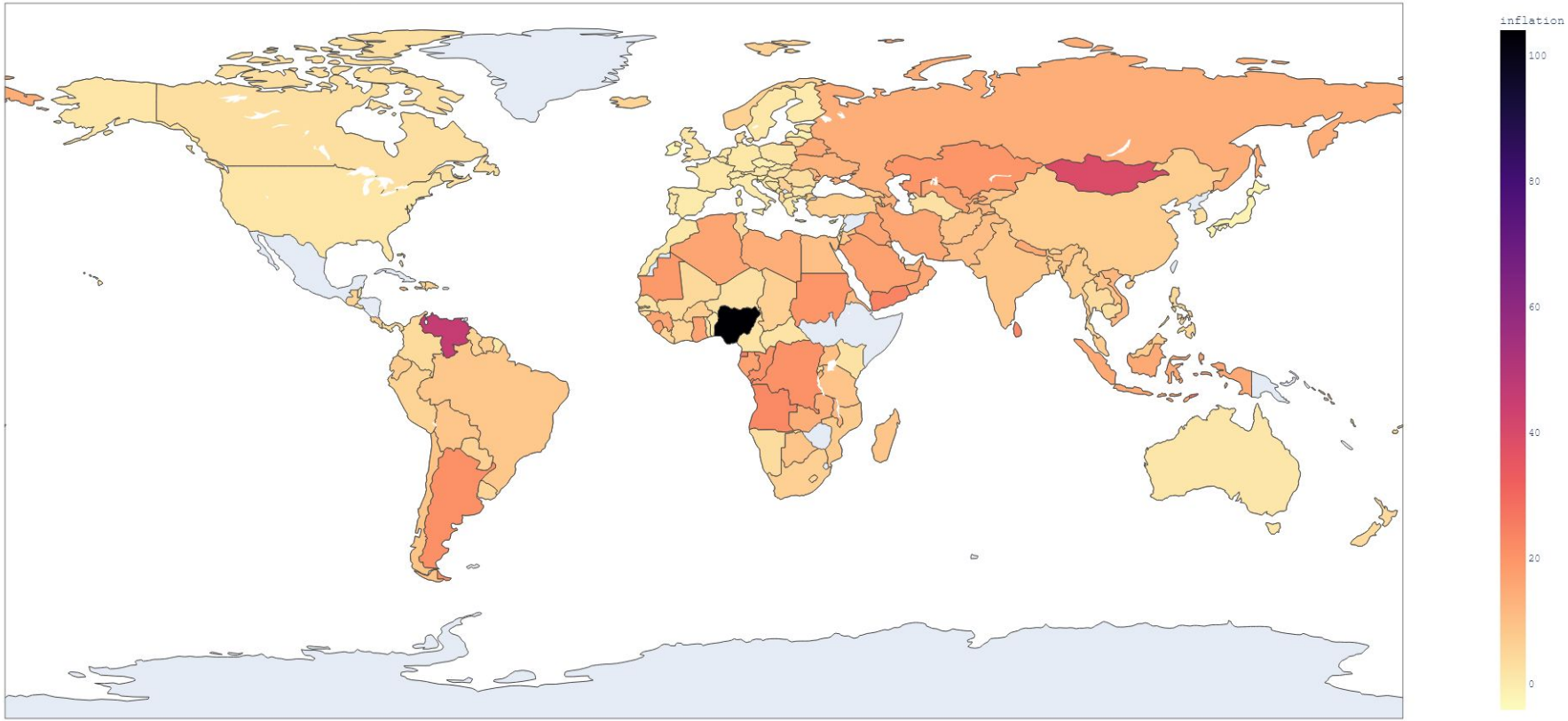
# Total health spending per capita



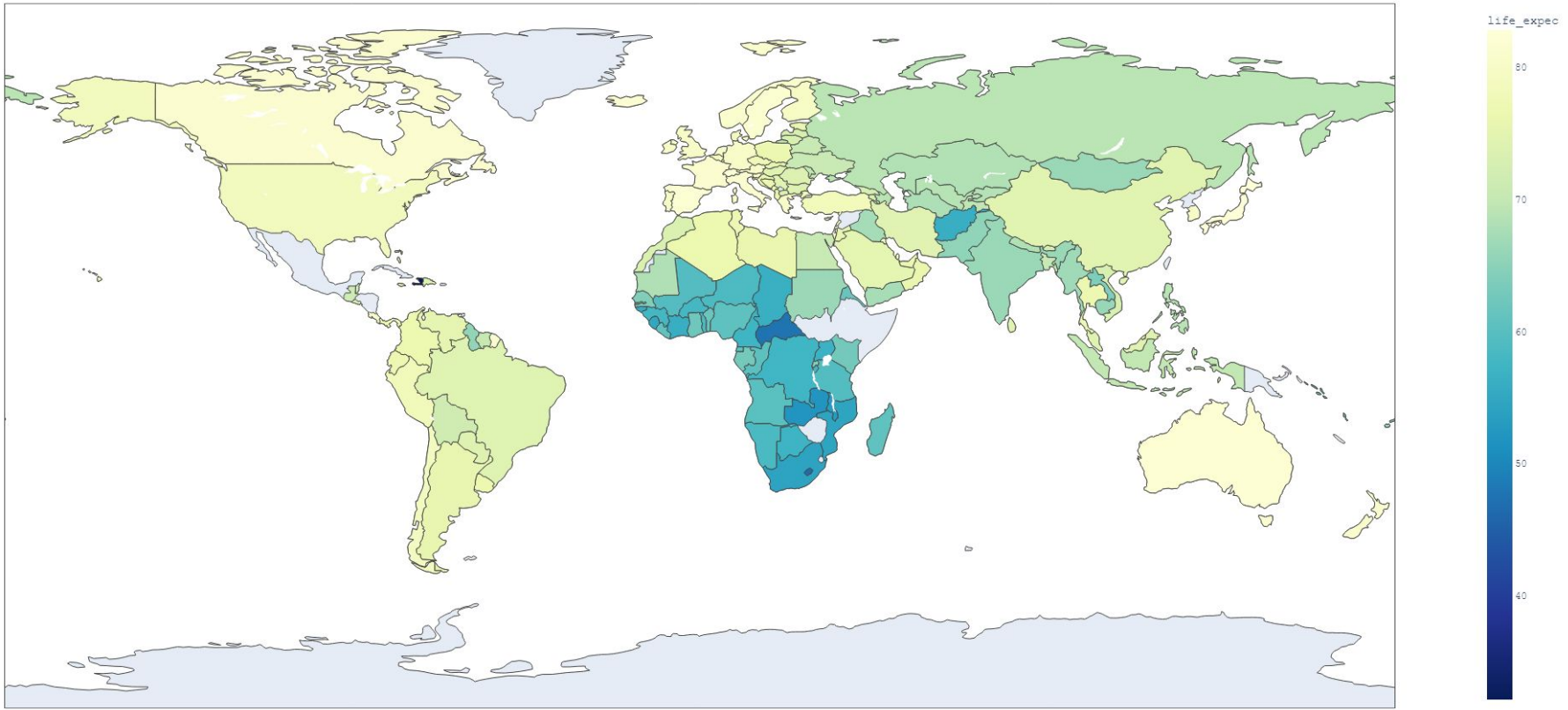
# Net income per person



# Inflation - The measurement of the annual growth rate of the Total GDP



# Life expectancy



# Unsupervised Learning

## 1. KMeans Method

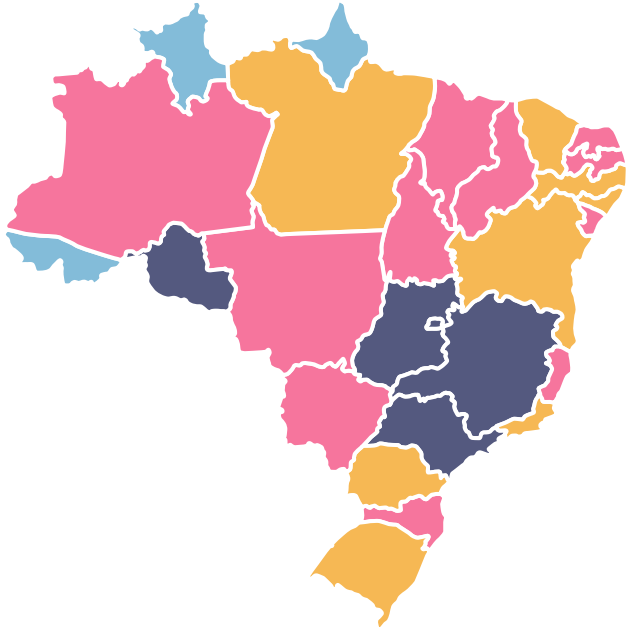
Kmeans method  for clustering.
Silhouette Score for 3 clusters : 0.700

## 2. Standard Scaler

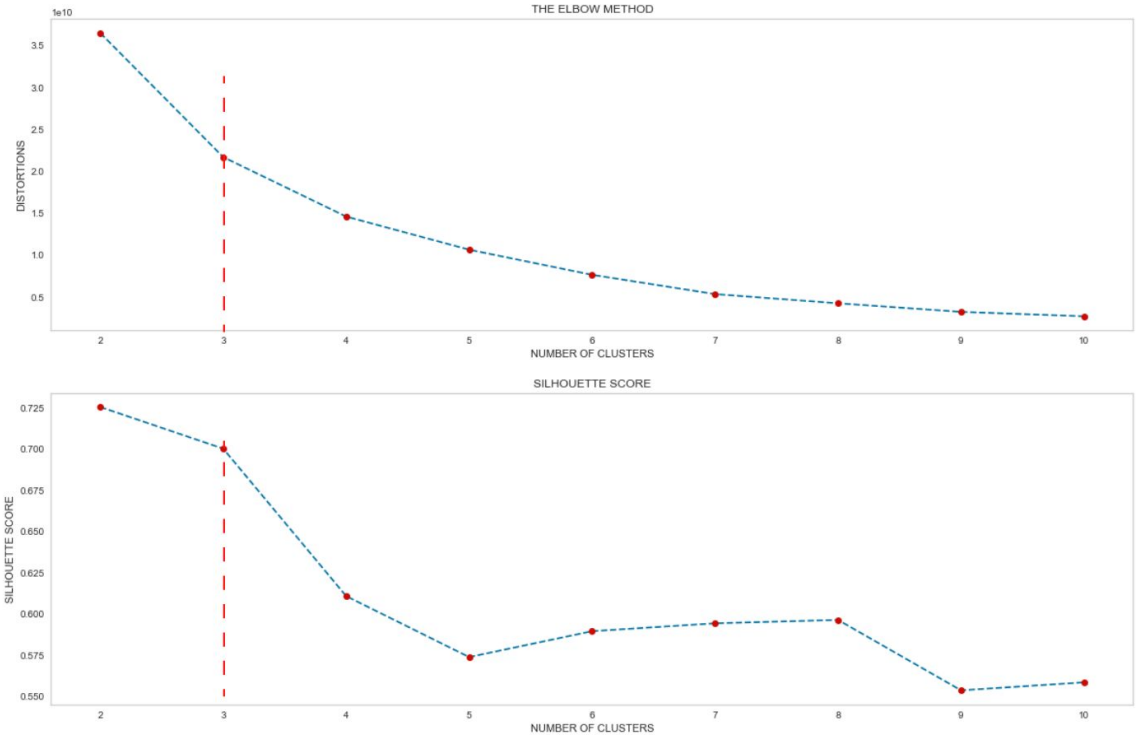
In order to optimize the clustering.

## 3. Elbow Method

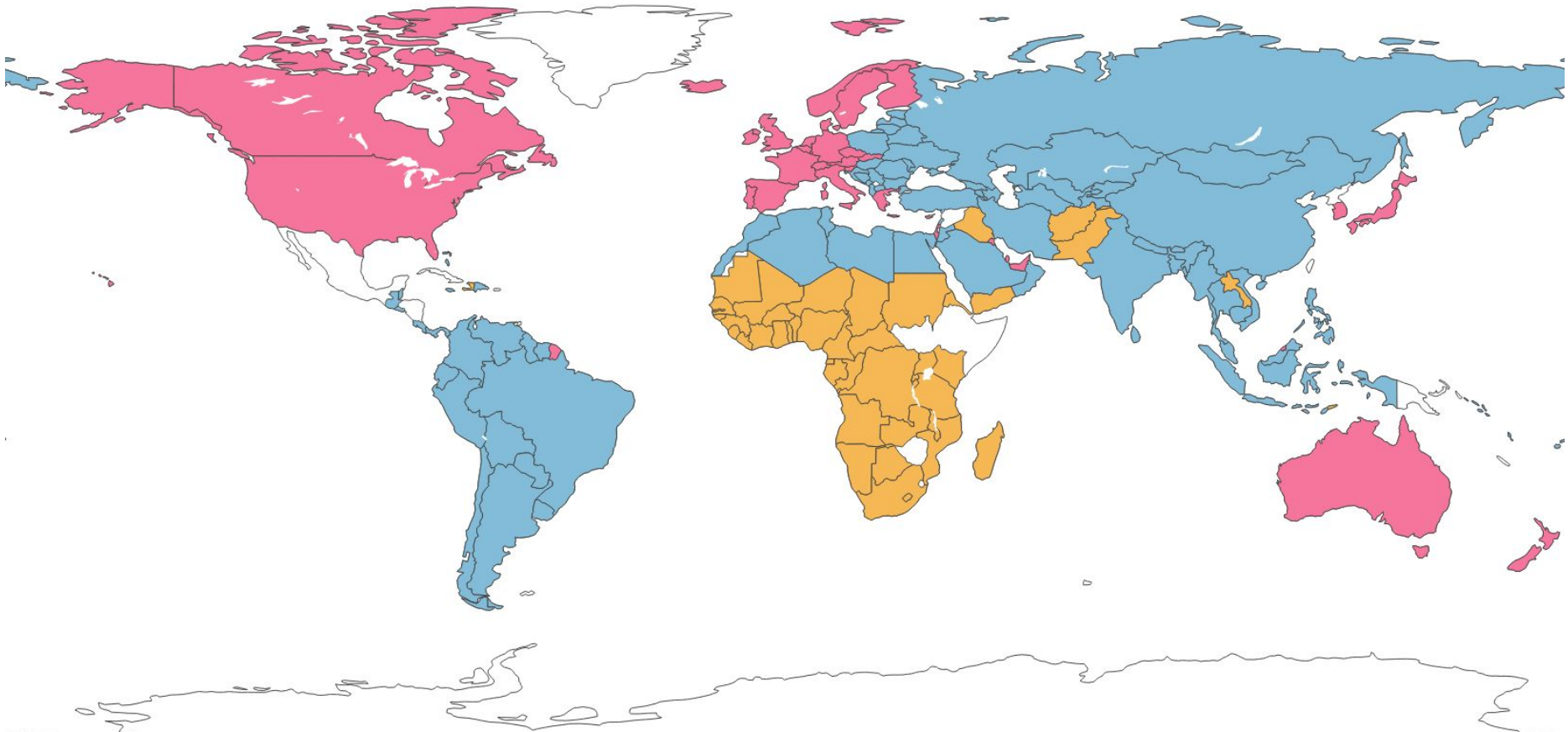
The number of clusters is selected based on the elbow method and silhouette score



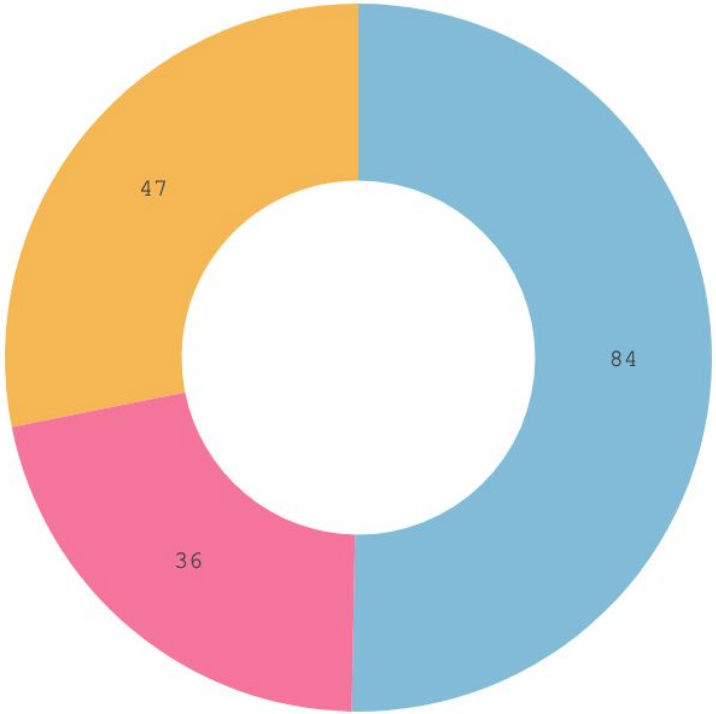
# Elbow and Silhouette Score



# Distribution of countries in groups



# Count of Countries in each cluster

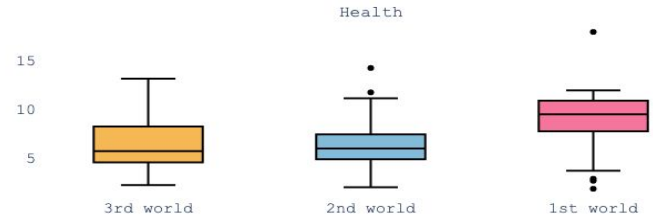


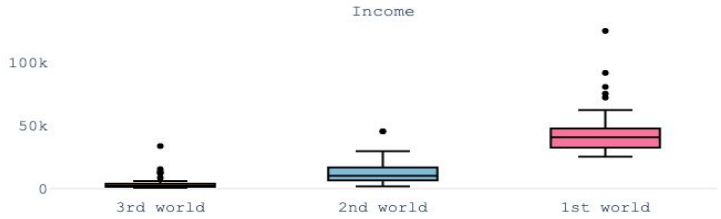

50.3% Second World Countries

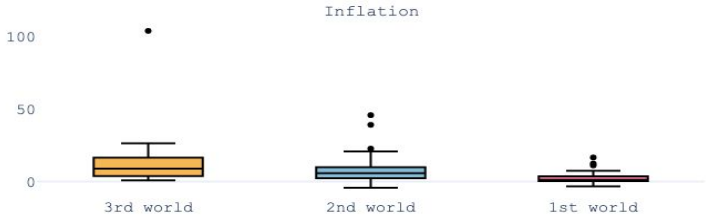
28.1% Third World Countries

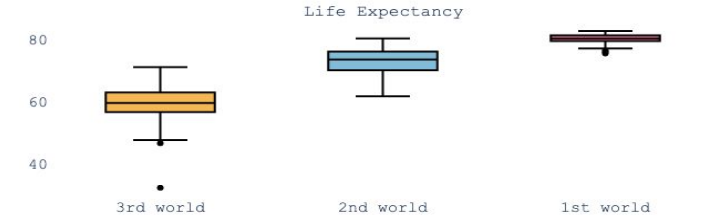
21.6% First World Countries

# Characteristics of the Clusters

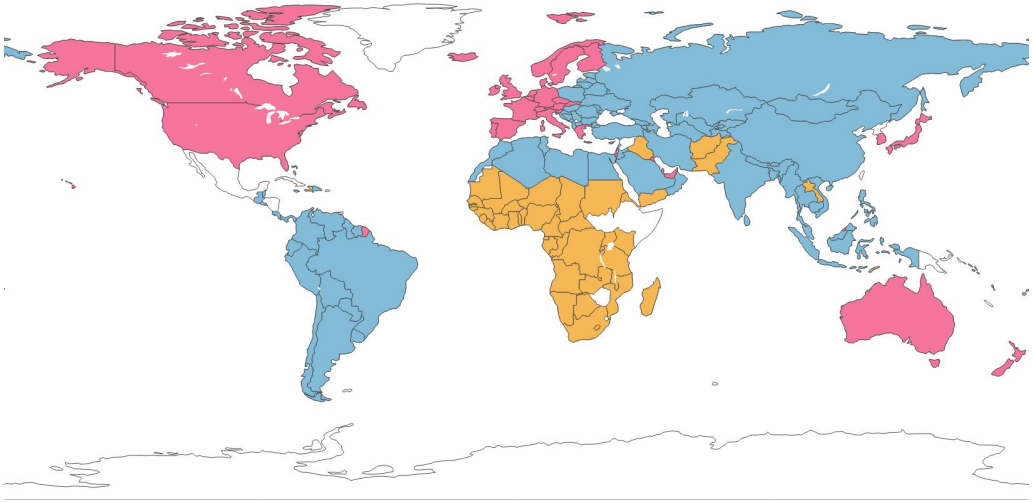




# Conclusions



- Satisfactory clustering performance of KMeans method
- Distinct division into three groups of countries
- Fewer failures in clustering (Example: South Africa)
- Providing more data may have contributed to a better performance