PRESENTATION ON "COUNTRY WISE AVERAGE"

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Problem Statement

- The dataset contains a detailed set of Country wise average and the main problem statement here is to determine the dataset that should related to wasting and its accumulation are becoming a critical problem around the globe due to continuous increase of the world population.

- The data pre-processing is help to extract the useful information to classify the stunning, overweight, underweight, wasting and severe wasting from the dataset.

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Introduction

- The dataset is based on wasting which is related to the malnutrition condition around to the poor people (majorly children's) and it's effected by improper nutrition.
- **The availability of data is:-**

✓ *Wasting*- is also known as **'acute malnutrition'**. Wasting is caused by extremely low energy intake, nutrition losses due to infection and combination of low intake and high loss.

✓ *Stunting*- is the **impaired growth and development** that people experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation.

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- ✓ *Severely wasting*- children are more **likely to die** because their immunity to infections is weakened by a lack of nutrients.

- ✓ *Underweight*- Weight is easy to measure; hence, this is the indicator of **mortality risk** is increased in children who are even mildly underweight, and the risk is even greater in severely underweight children.

- ✓ *Overweight*- Overweight and obesity may raise your risk for **certain health problems** such as high blood pressure.

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Before we get started, let's install and import all the relevant python packages which we would use for performing our analysis.

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
import plotly.graph_objs as go
```

use for Linear algebra

Use for Data processing

It is use to plot a graph

It is use to plot attractive graph

It is use to plot map graph

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- Let’s analyze the dataset and take a closer look at its content. The aim here to find the total number of data, which will easy to help us to understand the dataset.

```
data = pd.read_csv('country-wise-average.csv')
```

```
data.shape
```

```
(152, 8)
```

```
data.head()
```

	Country	Income Classification	Severe Wasting	Wasting	Overweight	Stunting	Underweight	US Population
0	AFGHANISTAN	0	3.033333	10.350000	5.125000	47.775000	30.375000	4918.561500
1	ALBANIA	2	4.075000	7.760000	20.800000	24.160000	7.700000	232.859800
2	ALGERIA	2	2.733333	5.942857	12.833333	19.571429	7.342857	3565.213143
3	ANGOLA	1	2.400000	6.933333	2.550000	42.633333	23.600000	3980.054000
4	ARGENTINA	2	0.200000	2.150000	11.125000	10.025000	2.600000	3613.651750

read_csv function load the entire data file into Python environment.

Shape function return the total number of columns(8) and rows(152)

Head function returns the first 5 entries of the dataset.

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Data Pre-processing

- We use isnull() function, it help to retrieve the total number of null values from the dataset. It is useful for data cleaning process.
- In severe wasting, wasting, overweight, stunting, and underweight, we find the null values so we drop that rows from the dataset because they have less than 10% null.
- Use fillna() function for more than 10% null with ‘0’.
- Now are data is clear to analysis.

Output:-

```
Country                0
Income Classification  0
Severe Wasting         12
Wasting                2
Overweight             3
Stunting               1
Underweight            2
Population             0
dtype: int64
```

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Outliers

- After dealing with null values, we have to handle the outliers from the dataset.

- We have to treat outliers because it can be problematic at the time of creating a visualization and due to outliers the prediction can be affected that’s why we have to treated the outliers.

- By finding IQR and Upper or lower limit, we detect and reduce the outliers from the dataset.

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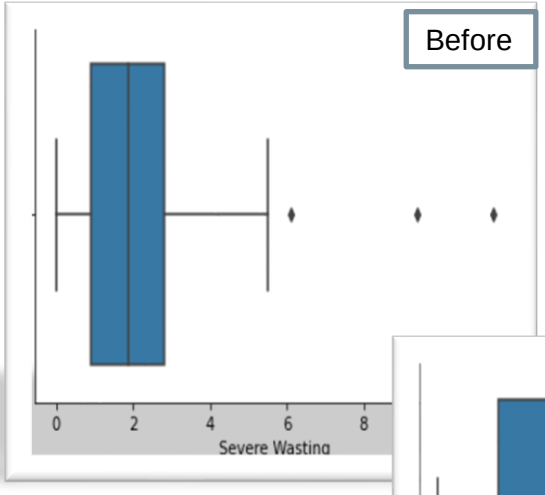
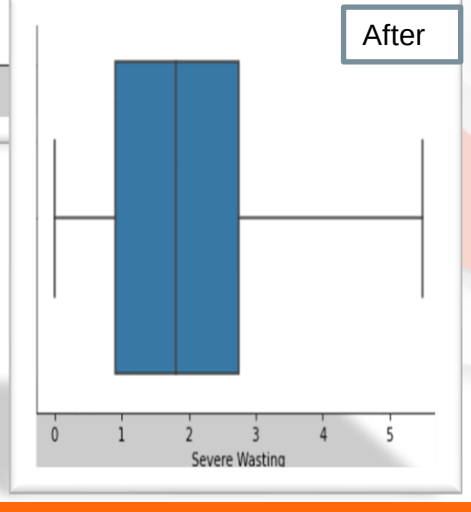
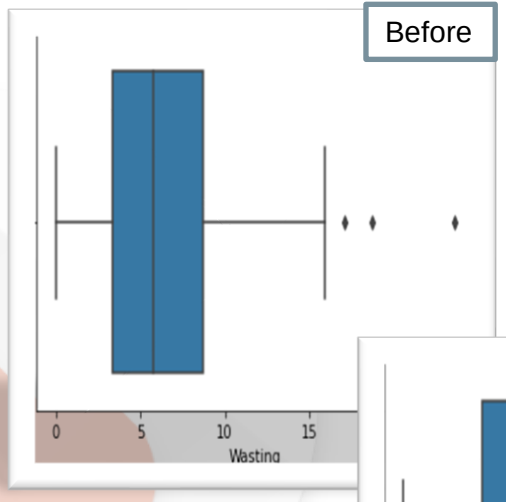
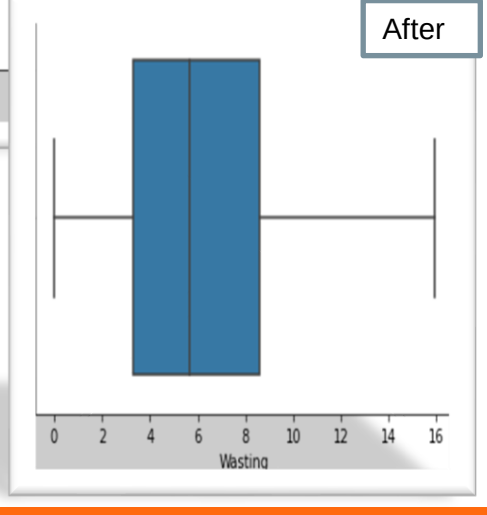
Severe Wasting





Wasting





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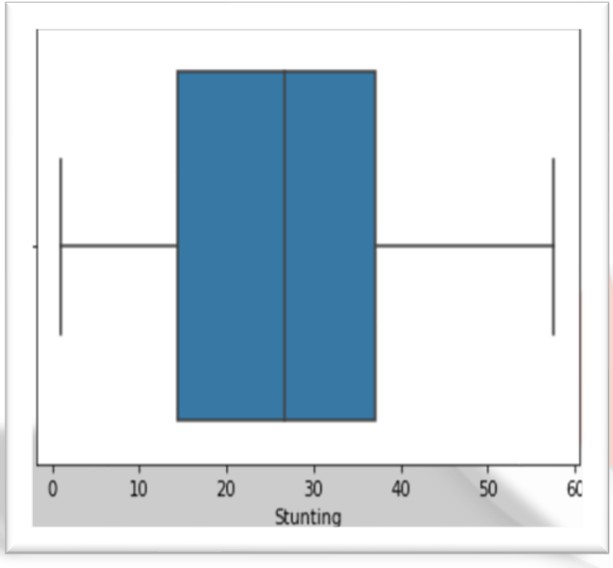
Stunting



- In ‘stunting column’ there is no outlier, as we can see in the graph of box plot.
- So there is no need to clear it, we directly analyse the data of Stunting column.

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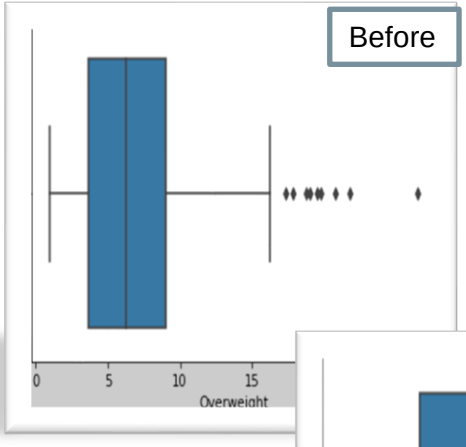
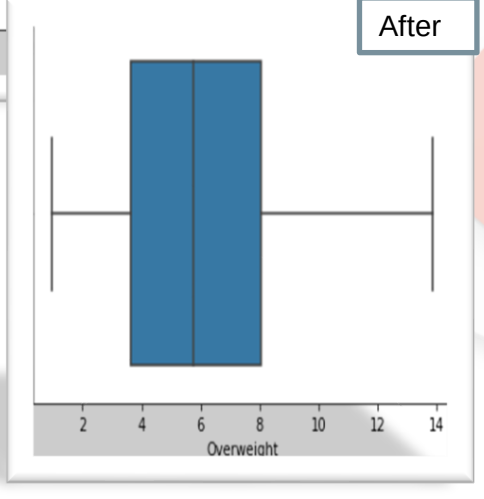
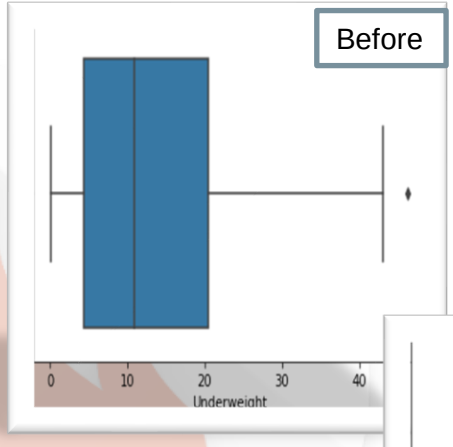
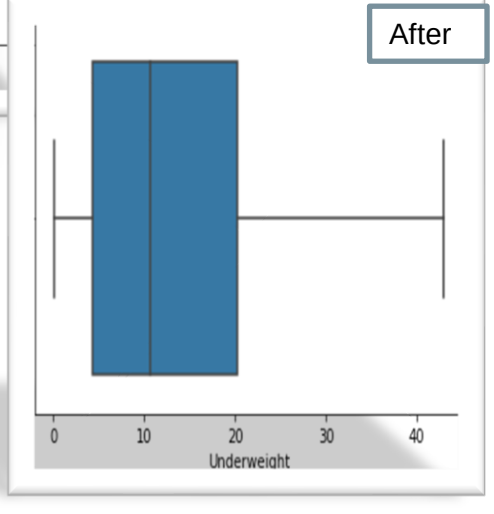
Overweight





Underweight





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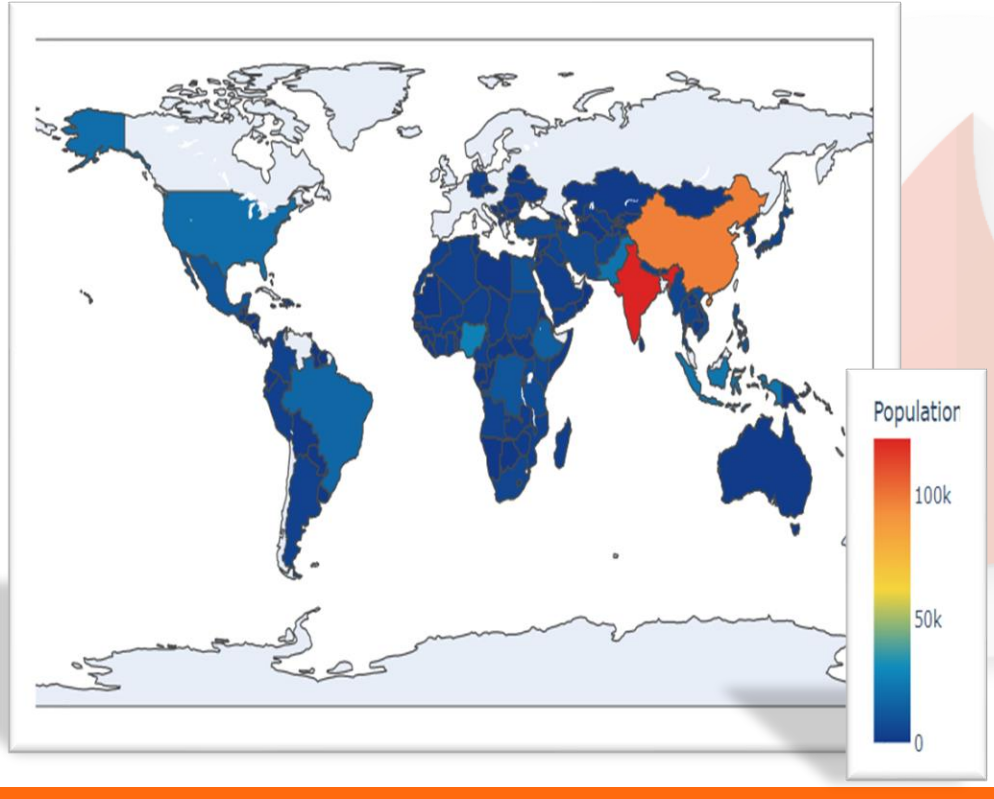
Population around the world



- According to the map graph, it is represent the population countries wise. the amount of population is shown in colour. The red colour shows the highest and blue shows the lowest rate of population.
- As we observe, India highest in population, then China as compare to other countries.
- The population growth affects the nutrition portion of country indirectly, because population directly affects the income and availability of goods in country.

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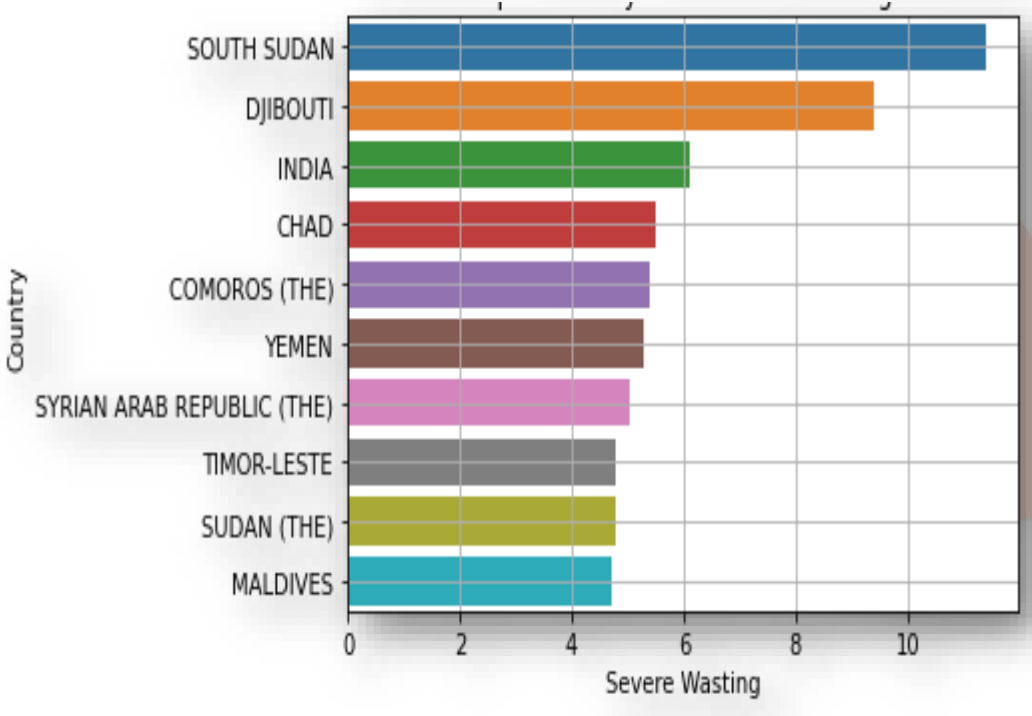
Top 10 Countries from Severe Wasting



- In the bar graph, Y-axis represent Countries and X-axis represent Severe Wasting in counts.
- From the bar graph we find the top ten regions had very high severe wasting.
- The ‘South Sudan’ has very high death and major issues from the malnutrition as compare to other countries.

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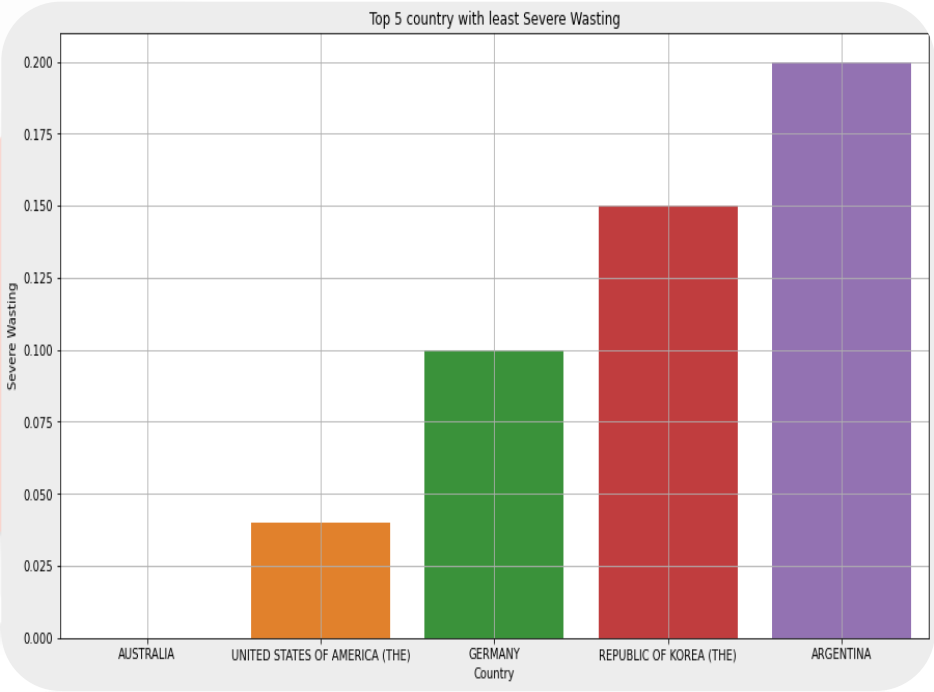
Least 5 countries from Severe Wasting

- In the bar graph, X- axis represent Countries and Y-axis represent Severe Wasting in count.
- From the bar graph, lowest survivor from severe wasting in country wise.
- As we observe, the ‘Australia’ is lowest majority of disease as compare to other countries.
- That means they controlling the population and income of country systematically, that’s indirect affects the proper diet of people of this country and its helps to deal with diseases.



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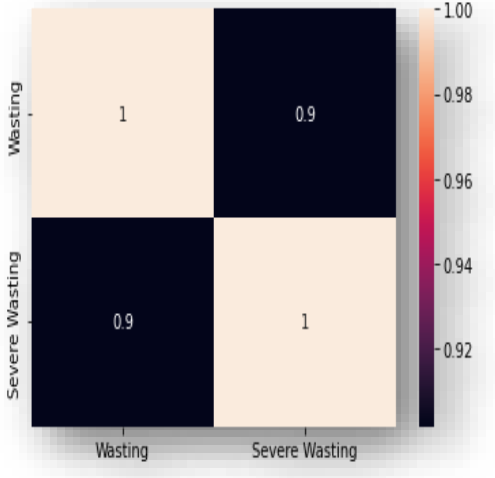
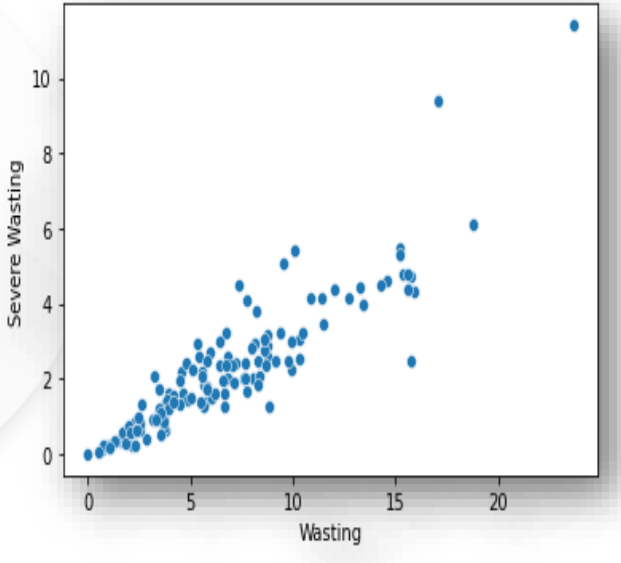
Correlation between Wasting and Severe Wasting



- From the heat map and scatter graph, we can easy find the relation between the Wasting and Severe Wasting.
- As we can observe the map and graph, there are only positive value. It means both Wasting and Severe Wasting is have correlation between them.
- In short, where the malnutrition children's are increasing, the ratio of death and serious cases is also increasing.



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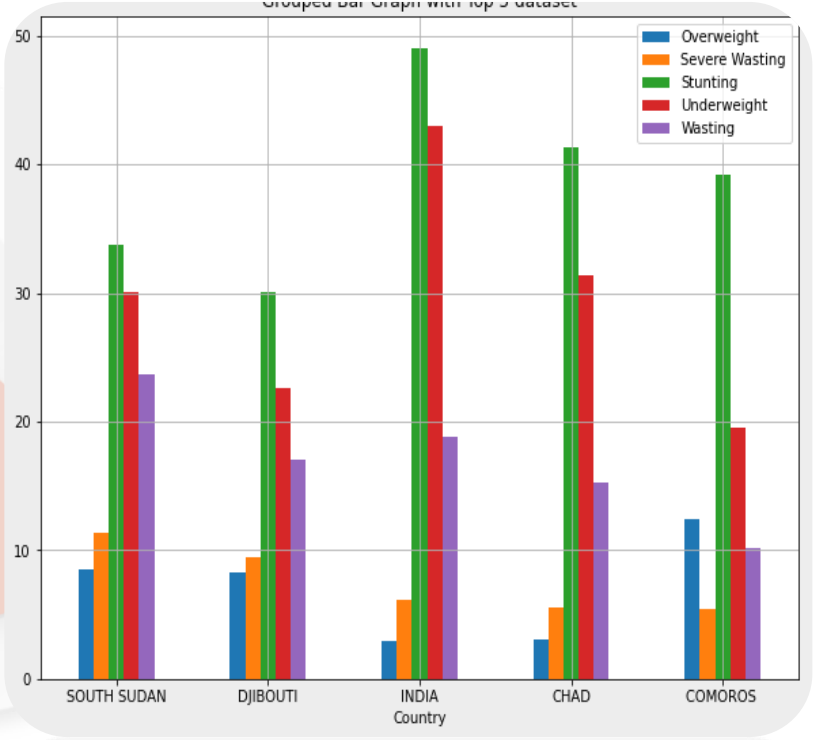
Top affected Countries analysis

- According to the graph, X-axis represent the Country column and Y-axis is represent the count. The colour of graph represent the data like Blue- Overweight, Orange- Severe Wasting, Green- Stunting, Red- Underweight, and Purple- Wasting.

- The observation of graph shows India's growth high in Wasting disease with underweight children's and death issues from the malnutrition is high in South Sudan.



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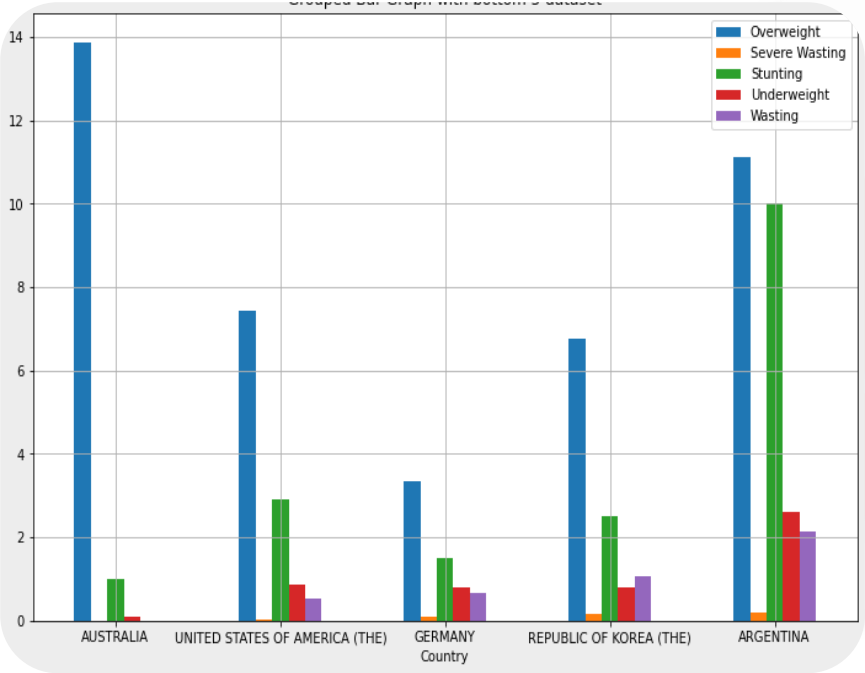
Least affected Countries analysis



- According to the graph, X-axis represent the Country and Y-axis represent the counts. The colour of pillar is represent the analysis like Blue-Overweight, Orange-Severe Wasting, Green-Stunting, Red-Underweight, and Purple-Wasting.
- The graph show's the lowest countries which is least affected from the Malnutrition along with minor and major case of overweight and underweight children's.
- Australia is high in Overweight and obesity persons, Argentina is high in Stunting but there is no death cases from malnutrition and they are least affect country as compare to other from list.

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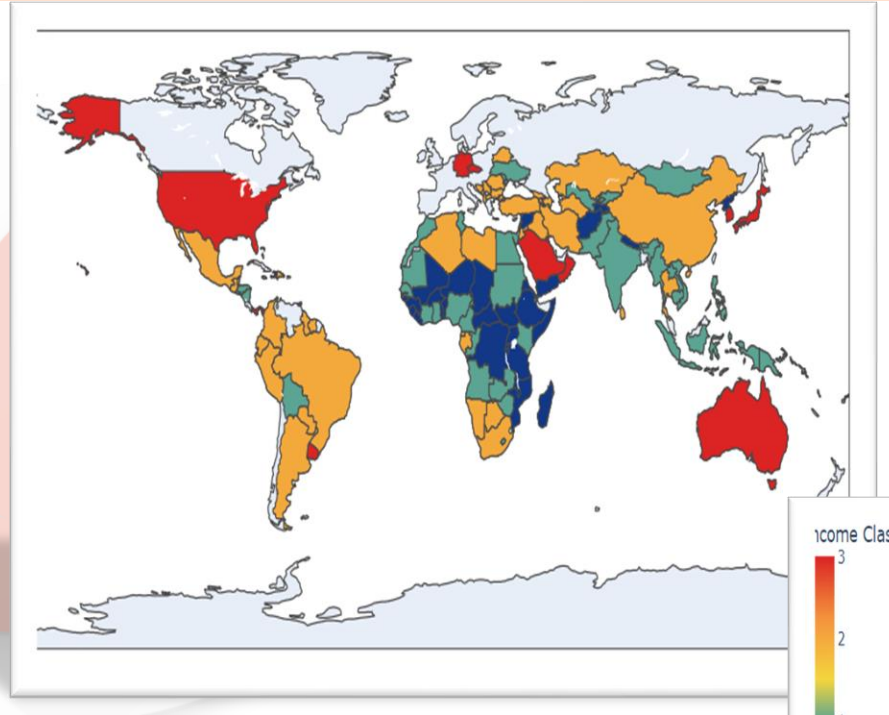
Countries with Income Classification

- The map show's countries with income classification.
- The lowest income of country has been consistently associated with poorer diet quality. Food purchases may be an important intervention target to improve diet quality among low income populations.
- Lower income households purchase less healthful foods compared with higher income households. This healthy food is the affect the Malnutrition.



✓ *i.e Low income = 0, Lower middle income = 1, Upper middle income = 2, High income = 3*

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Conclusion

- The above findings help to indicate the countries are have measure issues from the wasting (malnutrition), some are likely to die (severe wasting) or some are have impaired growth(stunting), from these impaired growth its affect under weight or over weight health issues.
- The further findings with the help of visualization, indicate that death issues and growth of the disease high child under-nutrition, it is very important to control them, it is most necessary to address maternal nutrition, improve food security, and reduce poverty status, this are all is indirectly affected from the income of country.

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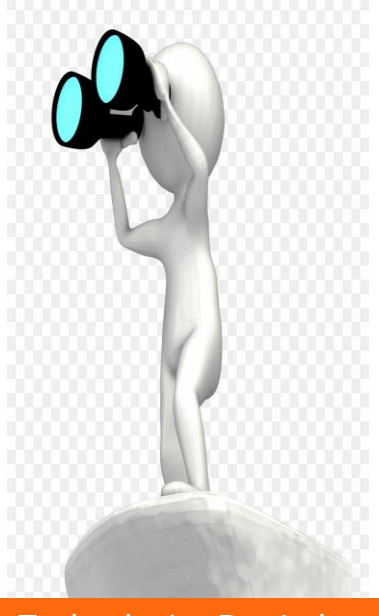
Future Scope

- Therefore, the current study aimed to assess the prevalence and associated factors with malnutrition (wasting, stunting, and underweight) among children's.
- Further research is needed to understand how the nutritional quality of foods purchased can be improved on a limited income.



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