▾ CHILD MALNUTRITION_COUNTRY WISE

Data Analysis *By ANKIT SHARMA*

Introduction

There are three key physiological measures of undernourishment and undernutrition in children. The measures discussed in the sub-sections below are:

● Stunting – being too short for one's age;

● Wasting – being dangerously thin for one's height;

● Underweight – low weight-for-age in children.

● Overweight - more weight for-age

1. Too little height-for-age: Stunting

Children who are stunted are determined as having a height which falls two standard deviations below the median height-for-age of the World Health Organization's Child Growth Standards.

Stunting is an indicator of severe malnutrition. Unlike wasting and low weight-for-age, the impacts of stunting on child development are considered to be largely irreversible beyond the first 1000 days of a child's life. It can have severe impacts on both cognitive and physical development throughout an individual's life.

Stunting can be caused by a range of compounding factors including nutritional intake of the child, as well as the mother during pregnancy, the recurrence of infectious diseases and infections from poor hygiene practices.

The global map of the prevalence of childhood stunting is shown as the share of the under-5 population who are defined as stunted. Note that many countries report stunting prevalence through periodic health and demographic surveys, meaning that this data is often not available on an annual basis. The year of the latest published estimates vary by country so you may have to use the time scrollbar to find the most up-to-date figure for a given country.

2. Too little weight-for-height: Wasting

Wasting is defined as being dangerously thin for one's height, and is generally a sign (especially in children) of rapid weight loss. A child is classified as wasted if his or her weight-for-height is more than two standard deviations below the median for the international reference population ages 0-59 months. The factors which contribute to this weight loss are associated with measures related to both diet and nutrition, and infection. As a result, wasting is often compounded by conditions of poor nutrition, feeding practices as well as inadequate sanitary conditions.

Unlike stunting, wasting can be treated through improved nutritional intakes, healthcare interventions and treatment of infection.

In 2015, South Sudan experienced the highest prevalence of wasting, with 22.7 percent of under-5s defined as wasted. The prevalence of wasting is typically highest across Sub-Saharan Africa and South Asia, with countries such as India, Sri Lanka, Djibouti, Sudan and Niger recording some of the highest levels (greater than 15 percent).

The share of children suffering from wasting has been declining. If we compare our global map in the early 2000s to a decade later, we see the number of countries with a prevalence greater than 15 percent has fallen. However, the nature of wasting- exemplified often by rapid weight loss-means that particular short-term events which impact food supplies can disrupt long-term trends. This is particularly prevalent in countries with poor political stability; for example, we see a large spike in childhood wasting in the Democratic Republic of Congo during the late 1990s-early 2000s during the Second Congo War.

3. Underweight children

Undernourishment, or the incidence of being underweight for age, can include children who are stunted, wasted or suffering from insufficient energy intake over a longer period of time.

In the dataset we see the share of children under-5 who are defined as underweight for their age across world regions since 1990. Overall, we see a steady decline at the global level, falling from around 25 percent in 1990 to 15 percent in 2015.

South Asia- despite having the highest regional prevalence- has made significant progress over the last few decades, reducing undernourishment by 20 percentage points from 1990-2017. The rate of undernourishment in Sub-Saharan Africa has also fallen notably, from 30 percent in 1990 to below 20 percent in 2017. Rates in East Asia, Latin America, North Africa and the Middle East are notably

lower than South Asia and Sub-Saharan Africa, but have also seen significant declines, each more than halving the prevalence of undernourishment since 1990.

4. Overweight children

Moderate and severe: % aged 0-59 months who are above two standard deviations from median weight-for-height

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
#4th dataset
df = pd.read_csv("/country-wise-average.csv")
df
```

	Country	Income Classification	Severe Wasting	Wasting	Overweight	Stunting	Underwei
0	AFGHANISTAN	0.0	3.033333	10.350000	5.125000	47.775000	30.375
1	ALBANIA	2.0	4.075000	7.760000	20.800000	24.160000	7.700
2	ALGERIA	2.0	2.733333	5.942857	12.833333	19.571429	7.342
3	ANGOLA	1.0	2.400000	6.933333	2.550000	42.633333	23.600
4	ARGENTINA	2.0	0.200000	2.150000	11.125000	10.025000	2.600
...	...	...	...	...	...	...	
147	VENEZUELA (BOLIVARIAN REPUBLIC OF)	2.0	NaN	4.333333	5.409524	16.957143	4.242
148	VIET NAM	1.0	2.331250	8.661905	3.317647	34.922727	22.918
149	YEMEN	0.0	5.300000	15.242857	4.842857	51.900000	37.785
150	ZAMBIA	1.0	2.042857	5.542857	7.228571	48.137500	17.885
151	ZIMBABWE	1.0	1.388889	4.166667	5.788889	30.455556	10.710

152 rows × 8 columns

Stunting

```
import plotly.express as px
```
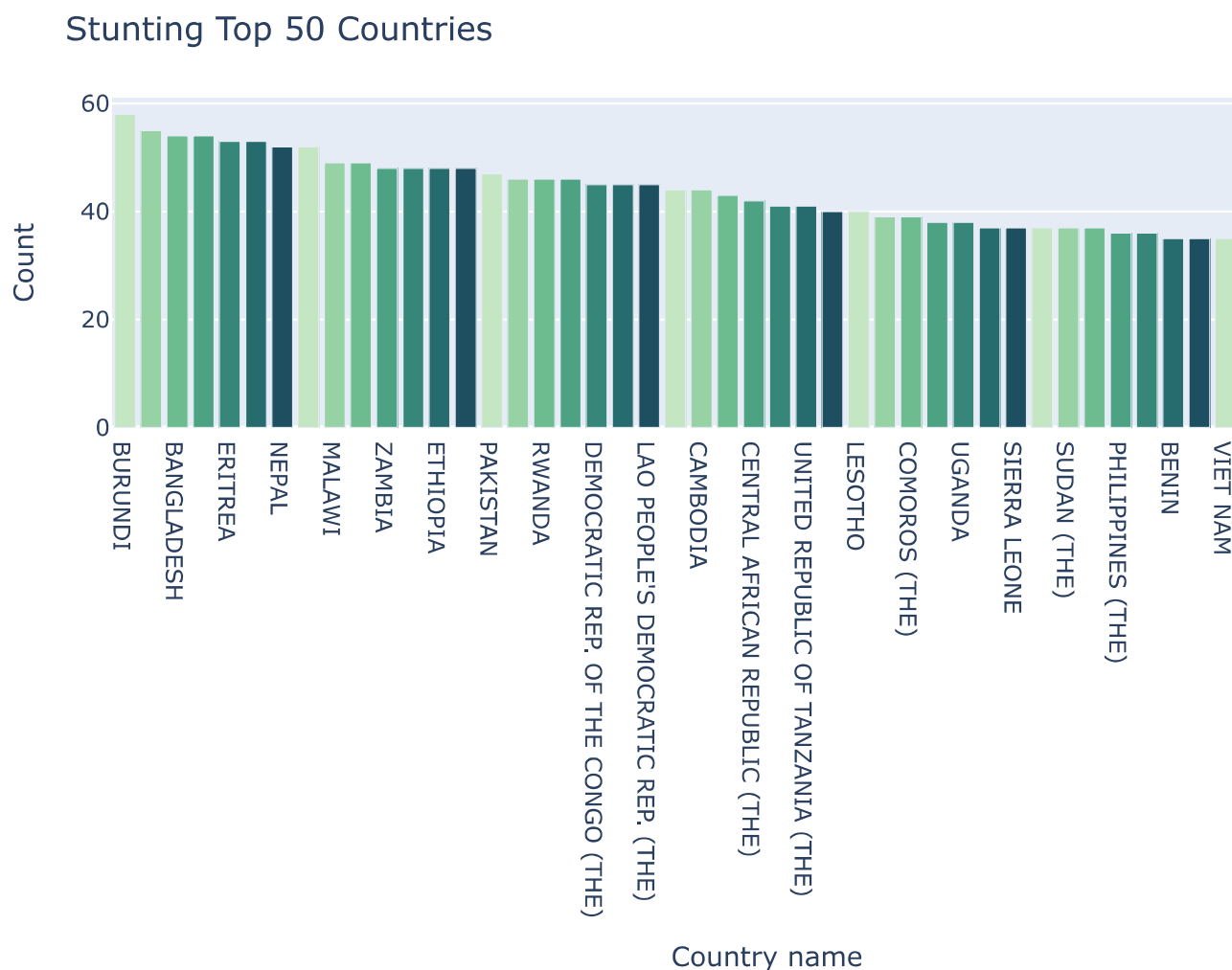
```
name = df.groupby("Country")["Stunting"].mean().sort_values(ascending=False).index[:50]
yax = df.groupby("Country")["Stunting"].mean().sort_values(ascending=False).round()[:50]

fig = px.bar(df, y=yax, x=name, color = name, color_discrete_sequence=px.colors.sequential.B]
fig.update_layout(
    title="Stunting Top 50 Countries",
    xaxis_title="Country name",
    yaxis_title="Count"

)

fig.show()
```
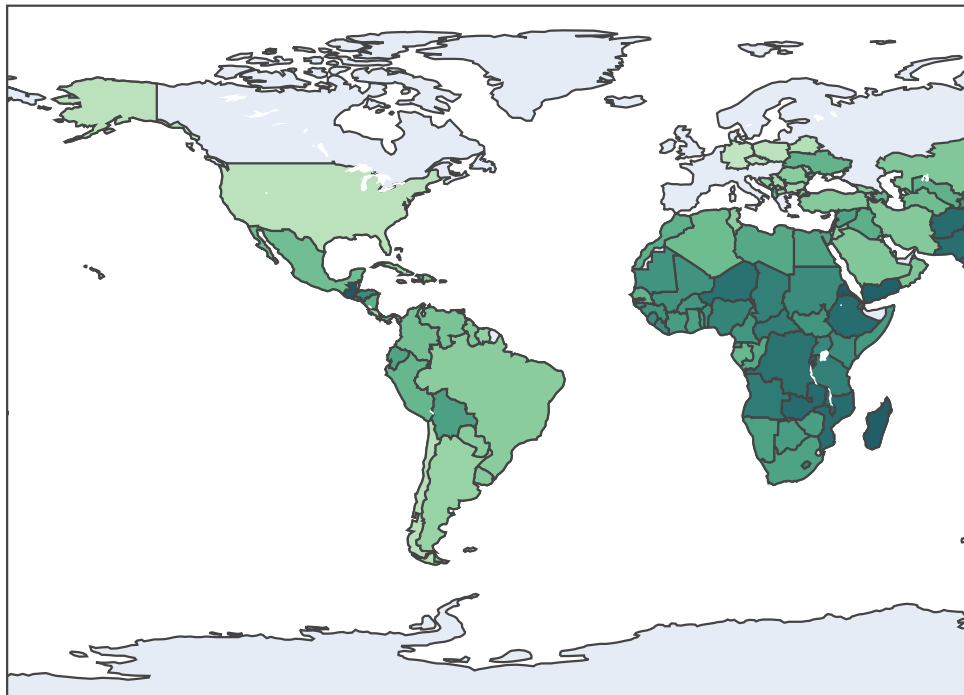

Stunting Top 50 Countries

```
import plotly.graph_objs as go
x = df.groupby(["Country"])["Stunting"].mean()
layout = dict(geo = {'scope':'world'},title="Stunting percentage")
map = go.Figure(data = [dict(type = 'choropleth',
            locations = x.index,
            locationmode = 'country names',
            colorscale= px.colors.sequential.Blugrn,
            text= x.index,
            z=x,
```

```
        colorbar = {'title':'stunting %' })],layout = layout)


map.show()
```
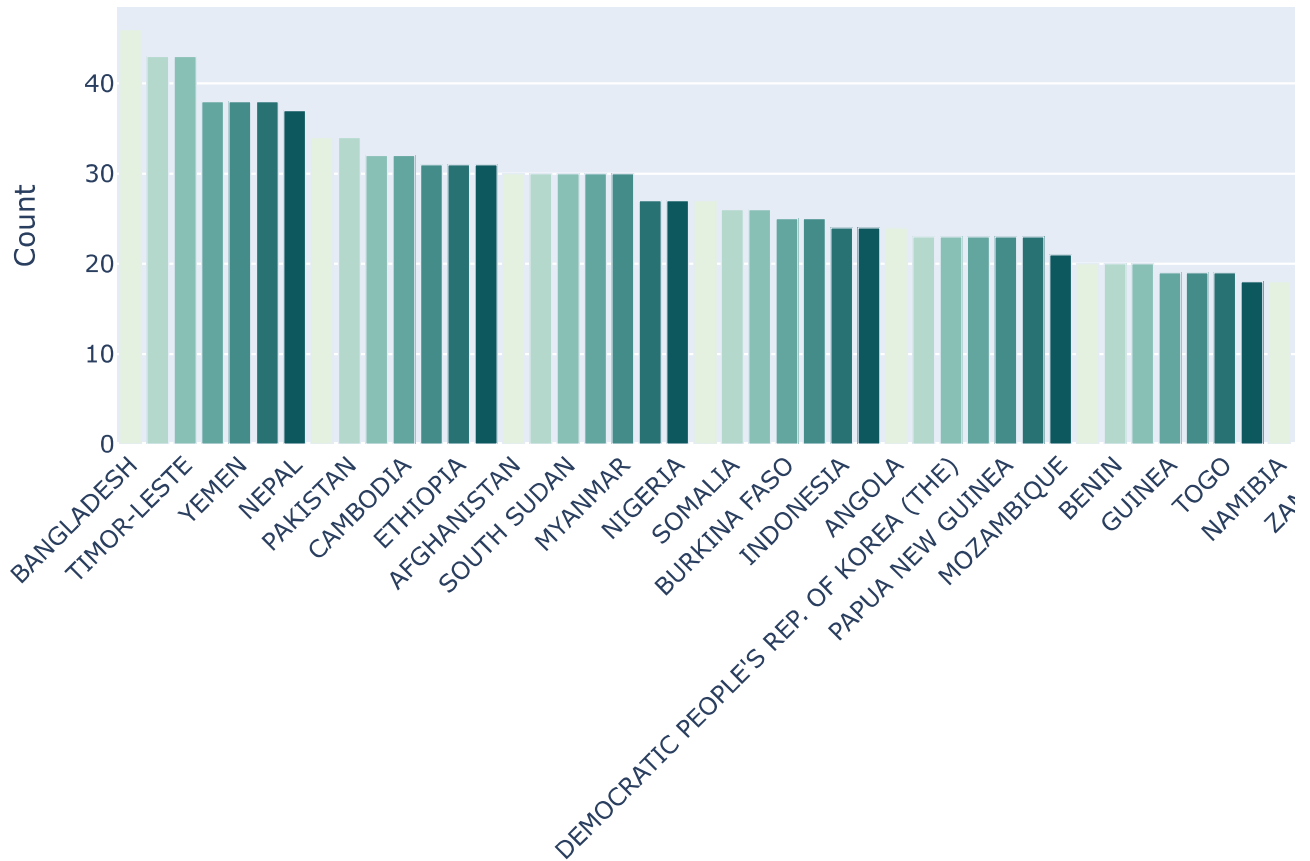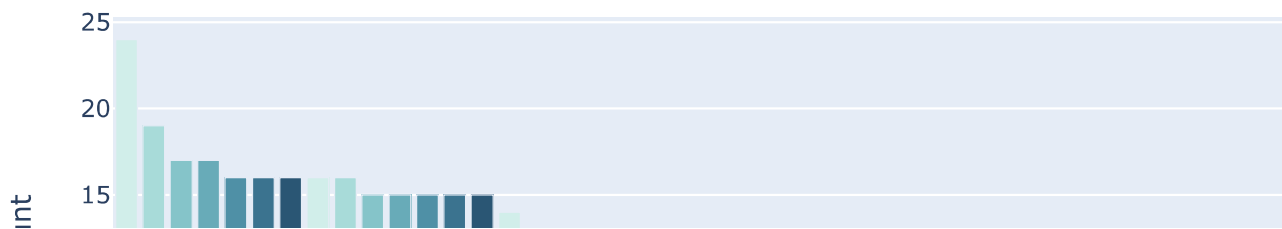
Stunting percentage

Underweight

```
name1 = df.groupby("Country")["Underweight"].mean().sort_values(ascending=False).index[:50]
yax1 = df.groupby("Country")["Underweight"].mean().sort_values(ascending=False).round()[:50]

fig = px.bar(df, y=yax1, x=name1, color = name1, color_discrete_sequence=px.colors.sequential
fig.update_layout(
    title="Underweight Top 50 Countries",
    xaxis_title="Country name",
    yaxis_title="Count"
)
fig.update_xaxes(tickangle=-45)

fig.show()
```

Underweight Top 50 Countries


```
x = df.groupby(["Country"])["Underweight"].mean()
layout = dict(geo = {'scope':'world'},title="Underweight Percentage")
map = go.Figure(data = [dict(type = 'choropleth',
            locations = x.index,
            locationmode = 'country names',
            colorscale= px.colors.sequential.Mint,
            text= x.index,
            z=x,
            colorbar = {'title':'stunting %' })],layout = layout)
map.show()
```

Underweight Percentage

Underheight (Wasting)

```python
name2 = df.groupby("Country")["Wasting"].mean().sort_values(ascending=False).index[:50]
yax2 = df.groupby("Country")["Wasting"].mean().sort_values(ascending=False).round()[:50]

fig = px.bar(df, y=yax2, x=name2, color = name2, color_discrete_sequence=px.colors.sequential
fig.update_layout(
    title="Wasting Top 50 Countries",
    xaxis_title="Country name",
    yaxis_title="Count"
)
fig.update_xaxes(tickangle=-45)

fig.show()
```
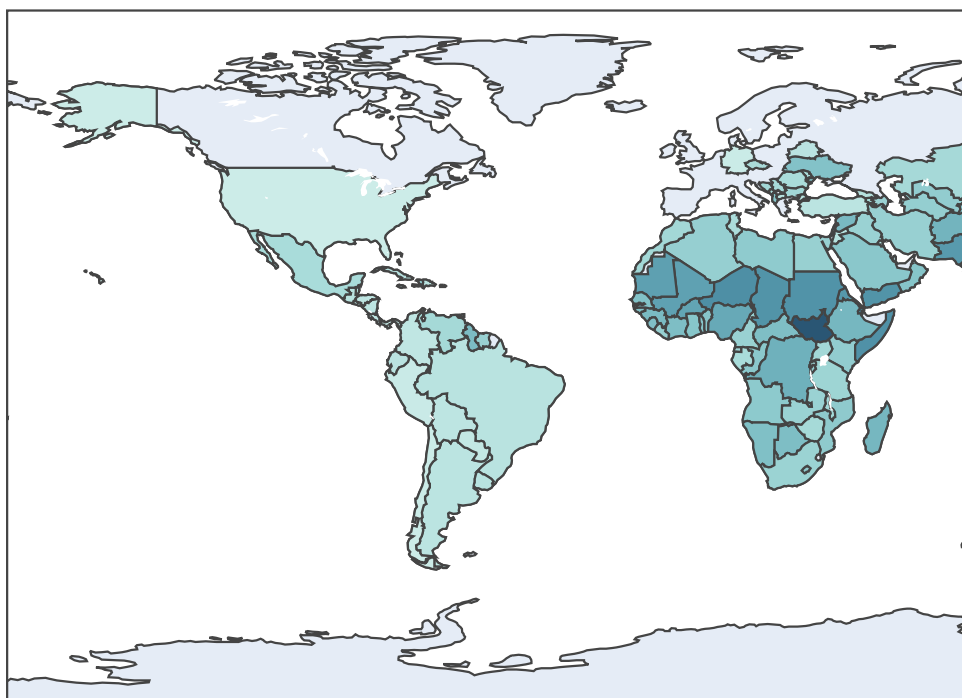
Wasting Top 50 Countries


```
x = df.groupby(["Country"])["Wasting"].mean()
layout = dict(geo = {'scope':'world'},title="Wasting percentage")
map = go.Figure(data = [dict(type = 'choropleth',
            locations = x.index,
            locationmode = 'country names',
            colorscale= px.colors.sequential.Teal,
            text= x.index,
            z=x,
            colorbar = {'title':'stunting %' })],layout = layout)
map.show()
```
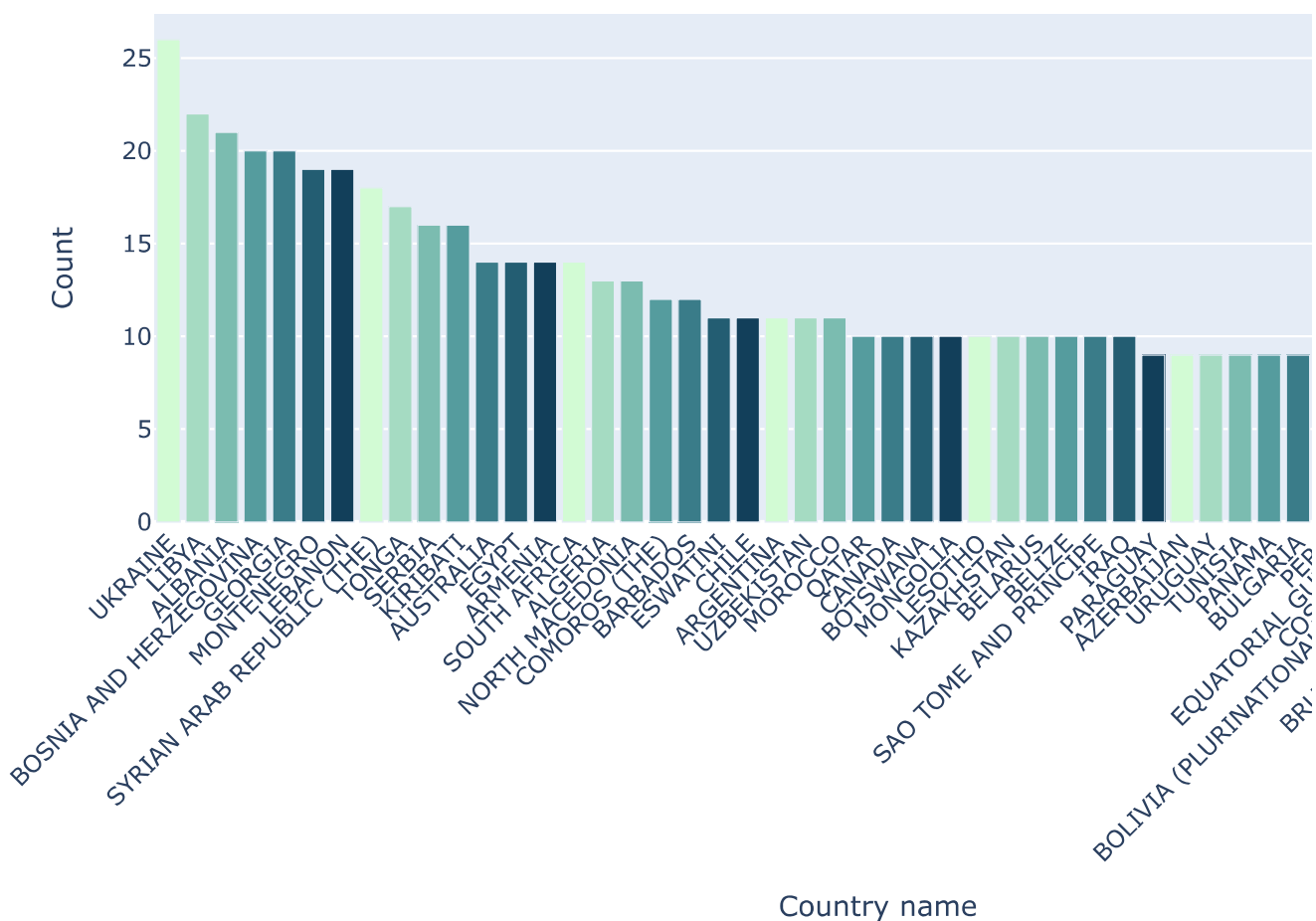
Wasting percentage

Overweight

```
name3 = df.groupby("Country")["Overweight"].mean().sort_values(ascending=False).index[:50]
yax3 = df.groupby("Country")["Overweight"].mean().sort_values(ascending=False).round()[:50]

fig = px.bar(df, y=yax3, x=name3, color = name3, color_discrete_sequence=px.colors.sequential
fig.update_layout(
    title="Overweight Top 50 Countries",
    xaxis_title="Country name",
    yaxis_title="Count"
)
fig.update_xaxes(tickangle=-45)

fig.show()
```

Overweight Top 50 Countries


```
x = df.groupby(["Country"])["Overweight"].mean()
layout = dict(geo = {'scope':'world'},title="Overweight Percentage")
map = go.Figure(data = [dict(type = 'choropleth',
            locations = x.index,
            locationmode = 'country names',
            colorscale= px.colors.sequential.Darkmint,
            text= x.index,
```
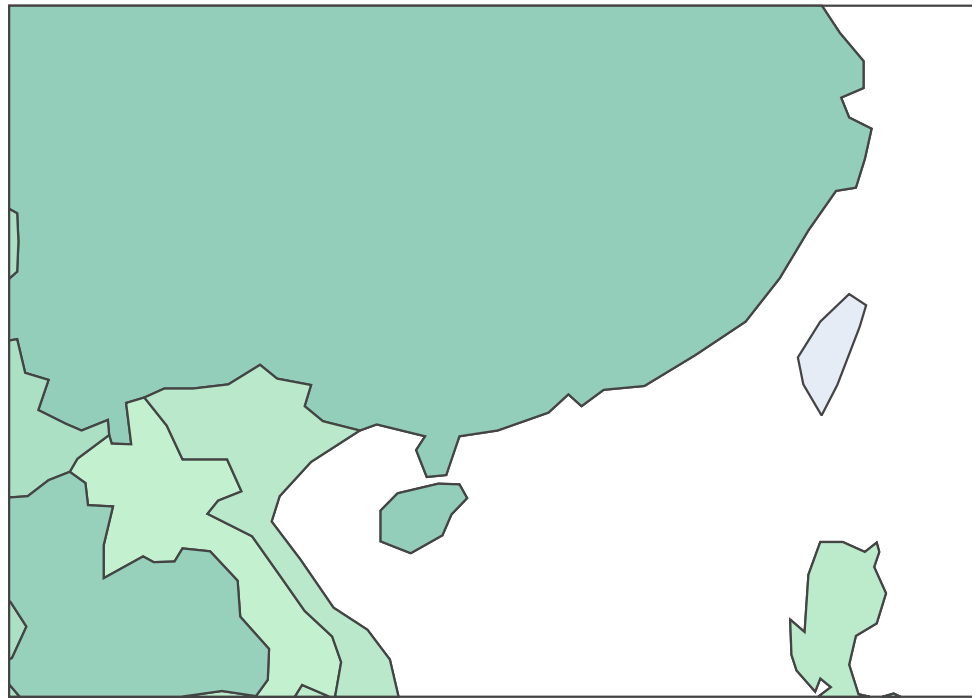
```
            z=x,
            colorbar = {'title':'stunting %' })],layout = layout)
map.show()
```

Overweight Percentage

Top 10 Country with Childhood Malnutrition

Lastly we will see which 10 countries which has highest average of four symptoms

```
df['Average'] = df.Overweight + df.Underweight + df.Wasting + df.Stunting / 4


name3 = df.groupby("Country")["Average"].mean().sort_values(ascending=False).index[:10]
yax3 = df.groupby("Country")["Average"].mean().sort_values(ascending=False).round()[:10]

fig = px.bar(df, y=yax3, x=name3, color = name3, color_discrete_sequence=px.colors.sequential
fig.update_layout(
    title="Top 10 Countries",
    xaxis_title="Country name",
    yaxis_title="Count"
)
fig.update_xaxes(tickangle=-45)
```
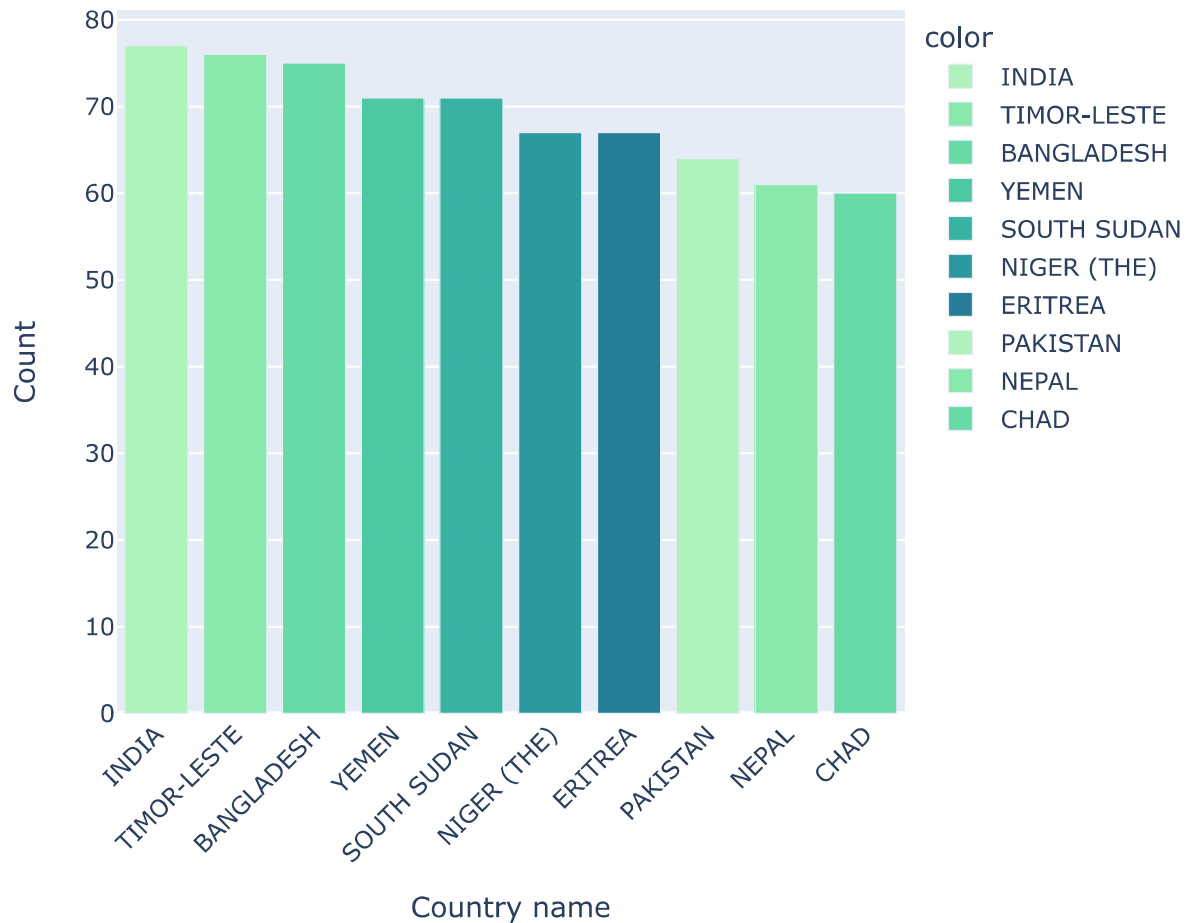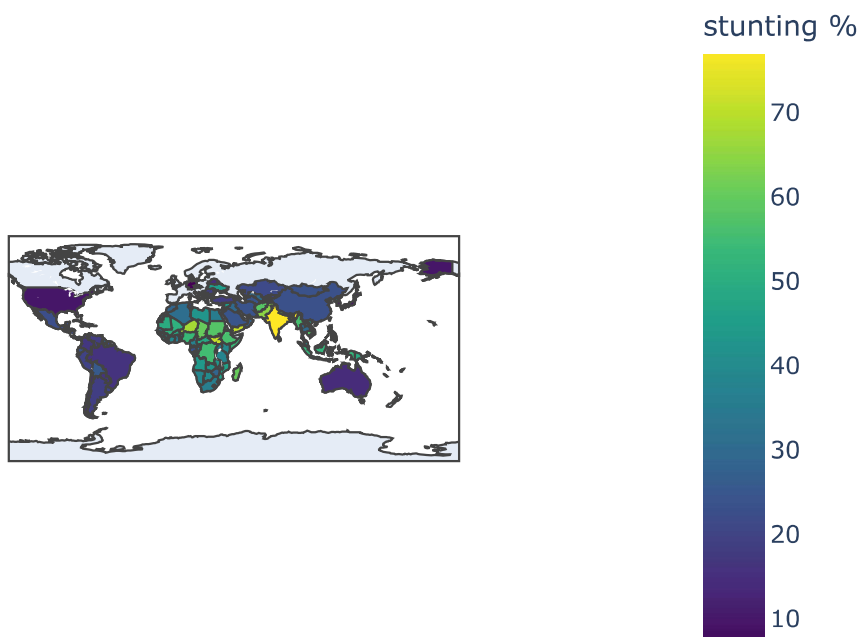
```
fig.show()
```

Top 10 Countries


```
x = df.groupby(["Country"])["Average"].mean()
layout = dict(geo = {'scope':'world'},title="Overall Percentage")
map = go.Figure(data = [dict(type = 'choropleth',
            locations = x.index,
            locationmode = 'country names',
            colorscale= px.colors.sequential.Viridis,
            text= x.index,

            z=x,
            colorbar = {'title':'stunting %' })],layout = layout)
map.show()
```

Overall Percentage

Conclusion

India is having highest Childhood malnutrition after which comes Timor Leste (right to Indonesia in the map).

While we get access to everything, there are many children who cannot even afford to eat one meal a day so let us pray for them and help them maximum as we can 🙏🙏

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