In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
```

In [2]:
```
df=pd.read_csv('covid19_rawdata.csv')
```

In [3]:
```
df.head()
```

Out[3]:

	SNo	ObservationDate	Province/State	Country/Region	Last Update	Confirmed	Deaths	Recovered
0	1	01/22/2020	Anhui	Mainland China	1/22/2020 17:00	1.0	0.0	0.0
1	2	01/22/2020	Beijing	Mainland China	1/22/2020 17:00	14.0	0.0	0.0
2	3	01/22/2020	Chongqing	Mainland China	1/22/2020 17:00	6.0	0.0	0.0
3	4	01/22/2020	Fujian	Mainland China	1/22/2020 17:00	1.0	0.0	0.0
4	5	01/22/2020	Gansu	Mainland China	1/22/2020 17:00	0.0	0.0	0.0

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 306429 entries, 0 to 306428
Data columns (total 8 columns):
 #   Column            Non-Null Count   Dtype  
---  ------            --------------   -----  
 0   SNo               306429 non-null  int64  
 1   ObservationDate   306429 non-null  object 
 2   Province/State    228329 non-null  object 
 3   Country/Region    306429 non-null  object 
 4   Last Update       306429 non-null  object 
 5   Confirmed         306429 non-null  float64
 6   Deaths            306429 non-null  float64
 7   Recovered         306429 non-null  float64
dtypes: float64(3), int64(1), object(4)
memory usage: 18.7+ MB
```

In [5]:
```
df.rename(columns={'Country/Region': "Country"}, inplace=True)
df
```

Out[5]:

	SNo	ObservationDate	Province/State	Country	Last Update	Confirmed	Deaths	Recove
0	1	01/22/2020	Anhui	Mainland China	1/22/2020 17:00	1.0	0.0	
1	2	01/22/2020	Beijing	Mainland China	1/22/2020 17:00	14.0	0.0	
2	3	01/22/2020	Chongqing	Mainland China	1/22/2020 17:00	6.0	0.0	
3	4	01/22/2020	Fujian	Mainland China	1/22/2020 17:00	1.0	0.0	
4	5	01/22/2020	Gansu	Mainland China	1/22/2020 17:00	0.0	0.0	
...	...	...	...	...	...	...	...	
306424	306425	05/29/2021	Zaporizhia Oblast	Ukraine	2021-05-30 04:20:55	102641.0	2335.0	95
306425	306426	05/29/2021	Zeeland	Netherlands	2021-05-30 04:20:55	29147.0	245.0	
306426	306427	05/29/2021	Zhejiang	Mainland China	2021-05-30 04:20:55	1364.0	1.0	1
306427	306428	05/29/2021	Zhytomyr Oblast	Ukraine	2021-05-30 04:20:55	87550.0	1738.0	83
306428	306429	05/29/2021	Zuid-Holland	Netherlands	2021-05-30 04:20:55	391559.0	4252.0	

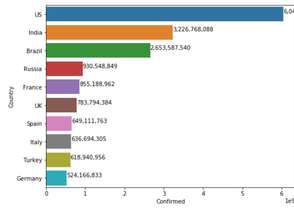
306429 rows × 8 columns

In [6]:
```
world = df.groupby("Country")[['Confirmed','Recovered','Deaths']].sum().reset_index()
world.head()
```

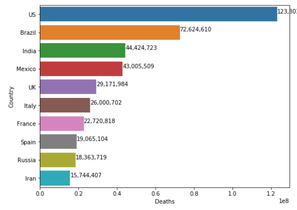
Out[6]:

	Country	Confirmed	Recovered	Deaths
0	Azerbaijan	1.0	0.0	0.0
1	('St. Martin',)	2.0	0.0	0.0
2	Afghanistan	17026442.0	13464399.0	669075.0
3	Albania	19768869.0	13945256.0	375955.0
4	Algeria	27684358.0	18959299.0	834464.0

In [7]:
```
### Top 10 countries with maximum number of confirmed cases
top_10 = world.sort_values(by=['Confirmed'], ascending=False).head(10)
### Barplot
plt.figure(figsize=(8,6))
plot = sns.barplot(top_10['Confirmed'], top_10['Country'])
for i,(value,name) in enumerate(zip(top_10['Confirmed'],top_10['Country'])):
    plot.text(value,i-0.05,f'{value:,.0f}',size=10)
plt.show()
```

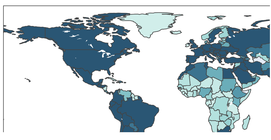


In [8]:
```
### Top 10 countries with maximum number of deaths
top_d10 = world.sort_values(by=['Deaths'], ascending=False).head(10)
### Barplot
plt.figure(figsize=(8,6))
plot = sns.barplot(top_d10['Deaths'], top_d10['Country'])
for i,(value,name) in enumerate(zip(top_d10['Deaths'],top_d10['Country'])):
    plot.text(value,i-0.05,f'{value:,.0f}',size=10)
plt.show()
```

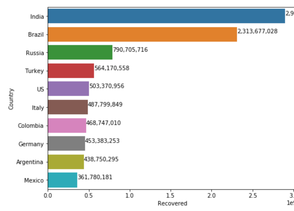


In [9]:
```
figure = px.choropleth(world,locations='Country', locationmode='country names', color='Deaths', hover_name='Country', color_continuous_scale='teal', range_color=[1,1000000],title='Countries with Maximum number of Deaths')
figure.show()
```

Countries with Maximum number of Deaths



In [10]:
```
### Top 10 countries with maximum number of recovered cases
top_d10 = world.sort_values(by=['Recovered'], ascending=False).head(10)
### Barplot
plt.figure(figsize=(8,6))
plot = sns.barplot(top_d10['Recovered'], top_d10['Country'])
for i,(value,name) in enumerate(zip(top_d10['Recovered'],top_d10['Country'])):
    plot.text(value,i-0.05,f'{value:,.0f}',size=10)
plt.show()
```



In [11]:
```
figure = px.choropleth(world,locations='Country', locationmode='country names', color='Recovered', hover_name='Country', color_continuous_scale='tealgrn', range_color=[1,1000000],title='Recovery Rates')
figure.show()
```

Recovery Rates

In [ ]: