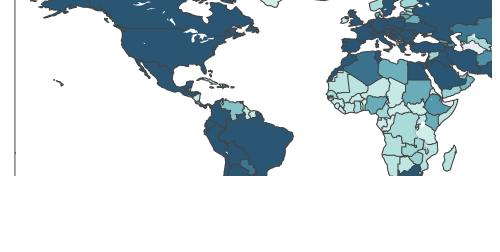
```
In [1]:
         import pandas as pd
          import numpy as np
          import matplotlib.pyplot as plt
         import seaborn as sns
         import plotly.express as px
In [2]: | df=pd.read_csv('covid19_rawdata.csv')
In [3]: | df.head()
Out[3]:
                                                                 Last
             SNo ObservationDate Province/State Country/Region
                                                                      Confirmed Deaths Recovered
                                                               Update
                                                             1/22/2020
                                                                                   0.0
               1
                       01/22/2020
                                               Mainland China
                                                                                              0.0
                                        Anhui
                                                                            1.0
                                                                17:00
                                                             1/22/2020
          1
               2
                       01/22/2020
                                               Mainland China
                                                                           14.0
                                                                                   0.0
                                                                                              0.0
                                        Beijing
                                                                17:00
                                                             1/22/2020
          2
               3
                       01/22/2020
                                               Mainland China
                                                                            6.0
                                                                                   0.0
                                                                                              0.0
                                     Chongqing
                                                                17:00
                                                             1/22/2020
          3
               4
                       01/22/2020
                                        Fujian
                                               Mainland China
                                                                            1.0
                                                                                   0.0
                                                                                              0.0
                                                                17:00
                                                             1/22/2020
                                                                                   0.0
                       01/22/2020
                                               Mainland China
                                                                            0.0
                                                                                              0.0
                                        Gansu
                                                                17:00
In [4]: df.info()
         <class 'pandas.core.frame.DataFrame'>
         RangeIndex: 306429 entries, 0 to 306428
         Data columns (total 8 columns):
                                   Non-Null Count
               Column
                                                       Dtype
          0
               SNo
                                   306429 non-null int64
          1
               ObservationDate 306429 non-null
                                                       object
                                   228329 non-null
                                                       object
               Province/State
          3
               Country/Region
                                   306429 non-null object
          4
               Last Update
                                   306429 non-null object
          5
                                   306429 non-null float64
               Confirmed
          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]:
                                                                    Last
                    SNo ObservationDate Province/State
                                                                          Confirmed Deaths Reco
                                                        Country
                                                                  Update
                                                        Mainland 1/22/2020
                      1
                              01/22/2020
                                                Anhui
                                                                                1.0
                                                                                       0.0
                                                          China
                                                                    17:00
                                                        Mainland 1/22/2020
               1
                      2
                              01/22/2020
                                               Beijing
                                                                               14.0
                                                                                       0.0
                                                          China
                                                                    17:00
                                                        Mainland 1/22/2020
               2
                      3
                              01/22/2020
                                            Chongqing
                                                                                6.0
                                                                                       0.0
                                                          China
                                                                    17:00
                                                        Mainland 1/22/2020
               3
                      4
                              01/22/2020
                                               Fujian
                                                                                1.0
                                                                                       0.0
                                                          China
                                                                    17:00
                                                        Mainland 1/22/2020
                              01/22/2020
                                               Gansu
                                                                                0.0
                                                                                       0.0
                                                          China
                                                                    17:00
                                                                 2021-05-
                                            Zaporizhia
                              05/29/2021
          306424 306425
                                                         Ukraine
                                                                      30
                                                                           102641.0 2335.0
                                                                                              95
                                               Oblast
                                                                 04:20:55
                                                                 2021-05-
          306425 306426
                              05/29/2021
                                                                                     245.0
                                              Zeeland Netherlands
                                                                      30
                                                                            29147.0
                                                                 04:20:55
                                                                 2021-05-
                                                        Mainland
          306426 306427
                              05/29/2021
                                             Zhejiang
                                                                      30
                                                                             1364.0
                                                                                       1.0
                                                          China
                                                                 04:20:55
                                                                 2021-05-
                                             Zhytomyr
          306427 306428
                              05/29/2021
                                                         Ukraine
                                                                      30
                                                                            87550.0 1738.0
                                                                                              83
                                               Oblast
                                                                 04:20:55
                                                                 2021-05-
                                          Zuid-Holland Netherlands
                                                                           391559.0 4252.0
          306428 306429
                              05/29/2021
                                                                      30
                                                                 04:20:55
         306429 rows × 8 columns
In [6]: world = df.groupby("Country")[['Confirmed', 'Recovered', 'Deaths']].sum().
         world.head()
Out[6]:
                        Confirmed Recovered
                                               Deaths
                Country
              Azerbaijan
                               1.0
                                         0.0
                                                  0.0
          1 ('St. Martin',)
                               2.0
                                         0.0
                                                  0.0
          2 Afghanistan 17026442.0 13464399.0 669075.0
                 Albania 19768869.0 13945256.0 375955.0
                 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()
                                                                               6,049,145,667
                 US
                                                   3,226,768,088
               India
                                              2,653,587,540
               Brazil
                             930,548,849
              Russia
                            855,188,962
              France
          Country
                            783,794,384
                 UK
                          649,111,763
               Spain
                          636,694,305
                Italy
                          618,940,956
              Turkey
                         524,166,833
            Germany
                                                                               le9
                                               Confirmed
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()
                                                                              123,803,762
               US
                                                     72,624,610
             Brazil
                                        44,424,723
              India
                                       43,005,509
            Mexico
                                29,171,984
               UK
          Country
                               26,000,702
              Italy
                             22,720,818
            France
                            19,065,104
             Spain
                           18,363,719
             Russia
                          15,744,407
              Iran
                                                                 1.0
                 0.0
                           0.2
                                     0.4
                                              0.6
                                                        0.8
                                                                           1.2
                                                                              1e8
                                               Deaths
In [9]: figure = px.choropleth(world, locations='Country', locationmode='country')
          names', color='Deaths', hover_name='Country', color_continuous_scale='t
          eal', range_color=[1,1000000], title='Countries with Maximum number of De
         aths')
         figure.show()
                Countries with Maximum number of Deaths
```

1



```
### 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['Countr
                plot.text(value,i-0.05,f'{value:,.0f}',size=10)
           plt.show()
                                                                                   2,900,589,824
                 India
                                                                       2,313,677,028
                 Brazil
                                       790,705,716
                Russia
                                  564,170,558
                Turkey
                                 503,370,956
                   US
            Country
                                 487,799,849
                  Italy
                                468,747,010
              Colombia
                                453,383,253
              Germany
                               438,750,295
              Argentina
                              361,780,181
                Mexico
                                          1.0
                                                               2.0
                                                                                    3.0
                               0.5
                                                    1.5
                                                                          2.5
                     0.0
                                                  Recovered
                                                                                    le9
In [11]: figure = px.choropleth(world, locations='Country', locationmode='country')
```

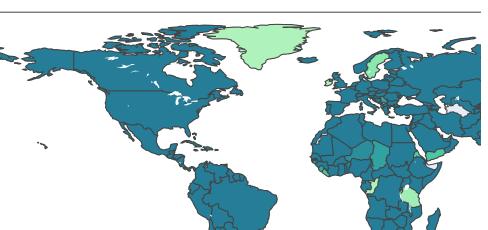
In [10]: ### Top 10 countries with maximum number of recovered cases

top_d10 = world.sort_values(by=['Recovered'], ascending=False).head(10)

='tealgrn', range_color=[1,1000000], title='Recovery Rates') figure.show()

names', color='Recovered', hover_name='Country', color_continuous_scale

Recovery Rates



In []: