

```
In [2]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [3]: raw_dataset = pd.read_csv(r'Downloads\raw_data.csv')
```

```
In [5]: df=pd.DataFrame(raw_dataset,
                        columns=['iso_code','location','date','total_cases','total_deaths','stringency_index','population','gdp_per_cap:
print(df)
```

	iso_code	location	date	total_cases	total_deaths	\
0	AFG	Afghanistan	2019-12-31	0.0	0.0	
1	AFG	Afghanistan	2020-01-01	0.0	0.0	
2	AFG	Afghanistan	2020-01-02	0.0	0.0	
3	AFG	Afghanistan	2020-01-03	0.0	0.0	
4	AFG	Afghanistan	2020-01-04	0.0	0.0	
...	...	...	...	...	...	
50413	ZWE	Zimbabwe	2020-10-15	8055.0	231.0	
50414	ZWE	Zimbabwe	2020-10-16	8075.0	231.0	
50415	ZWE	Zimbabwe	2020-10-17	8099.0	231.0	
50416	ZWE	Zimbabwe	2020-10-18	8110.0	231.0	
50417	ZWE	Zimbabwe	2020-10-19	8147.0	231.0	

	stringency_index	population	gdp_per_capita	human_development_index
0	0.00	38928341	1803.987	0.498
1	0.00	38928341	1803.987	0.498
2	0.00	38928341	1803.987	0.498
3	0.00	38928341	1803.987	0.498
4	0.00	38928341	1803.987	0.498
...	...	...	...	...
50413	76.85	14862927	1899.775	0.535
50414	76.85	14862927	1899.775	0.535
50415	76.85	14862927	1899.775	0.535
50416	76.85	14862927	1899.775	0.535
50417	76.85	14862927	1899.775	0.535

[50418 rows x 9 columns]

```
In [6]: totalall_deaths =df['total_deaths'].sum()
print(totalall_deaths)
```

```
totalall_cases =df['total_cases'].sum()  
print(totalall_cases)
```

```
total_popltn =df['population'].sum()  
print(total_popltn)
```

```
116851104.0  
3133760956.0  
2143572206036
```

## Top 10 Countries with Highest Covid Cases

```
In [7]: top_10= raw_dataset.groupby('location').agg({'total_cases': 'sum'}).sort_values(by=['total_cases'],ascending=False).reset_index()  
top_10.style.background_gradient(cmap='cubehelix')
```

Out[7]:

	location	total_cases
0	United States	746014098.000000
1	Brazil	425704517.000000
2	India	407771615.000000
3	Russia	132888951.000000
4	Peru	74882695.000000
5	Mexico	74347548.000000
6	Spain	73717676.000000
7	South Africa	63027659.000000
8	Colombia	60543682.000000
9	United Kingdom	59475032.000000
10	Iran	52421884.000000
11	Chile	51268034.000000
12	Italy	50752853.000000
13	France	50084335.000000
14	Argentina	47155234.000000
15	Germany	42447678.000000
16	Turkey	41431948.000000
17	Saudi Arabia	38585191.000000
18	Pakistan	37738077.000000
19	Bangladesh	35266178.000000
20	Iraq	25280332.000000
21	Philippines	22409936.000000
22	China	21632319.000000
23	Indonesia	21570149.000000

	location	total_cases
24	Canada	20902374.000000
25	Qatar	16351440.000000
26	Israel	16202474.000000
27	Ukraine	15805665.000000
28	Belgium	15192468.000000
29	Ecuador	14408757.000000
30	Kazakhstan	13194863.000000
31	Netherlands	13026629.000000
32	Egypt	12422845.000000
33	Sweden	11910109.000000
34	Bolivia	11858838.000000
35	Romania	10672859.000000
36	Dominican Republic	10649646.000000
37	Kuwait	10622205.000000
38	Belarus	10595186.000000
39	Panama	10371724.000000
40	United Arab Emirates	10247326.000000
41	Oman	10060093.000000
42	Portugal	9266263.000000
43	Poland	9239657.000000
44	Singapore	8191161.000000
45	Morocco	7839270.000000
46	Japan	7659484.000000
47	Guatemala	7644426.000000

	location	total_cases
48	Switzerland	7552067.000000
49	Bahrain	6549995.000000
50	Honduras	6545499.000000
51	Nigeria	6107371.000000
52	Armenia	5474629.000000
53	Nepal	5243653.000000
54	Ireland	5239798.000000
55	Czech Republic	5213980.000000
56	Afghanistan	5126433.000000
57	Austria	4909197.000000
58	Ghana	4900649.000000
59	Algeria	4893999.000000
60	Ethiopia	4876417.000000
61	Venezuela	4839834.000000
62	Moldova	4632482.000000
63	Costa Rica	4631835.000000
64	Uzbekistan	4421215.000000
65	Kyrgyzstan	4287847.000000
66	Azerbaijan	4236782.000000
67	Serbia	3984174.000000
68	Puerto Rico	3586463.000000
69	South Korea	3333075.000000
70	Kenya	3277734.000000
71	Palestine	3249458.000000

	location	total_cases
72	Denmark	3030088.000000
73	Australia	3012377.000000
74	El Salvador	2573206.000000
75	Cameroon	2476502.000000
76	Paraguay	2265640.000000
77	Lebanon	2220699.000000
78	Bosnia and Herzegovina	2200057.000000
79	Cote d'Ivoire	2132883.000000
80	Norway	1985889.000000
81	Bulgaria	1890380.000000
82	Libya	1817274.000000
83	Malaysia	1774181.000000
84	Macedonia	1724220.000000
85	Hungary	1708798.000000
86	Sudan	1663545.000000
87	Senegal	1586747.000000
88	Finland	1458484.000000
89	Madagascar	1443321.000000
90	Greece	1421470.000000
91	Kosovo	1345940.000000
92	Croatia	1314031.000000
93	Democratic Republic of Congo	1271391.000000
94	Guinea	1195836.000000
95	Luxembourg	1146724.000000

	location	total_cases
96	Zambia	1129913.000000
97	Tajikistan	1117391.000000
98	Albania	1071951.000000
99	Gabon	1031803.000000
100	Haiti	1023155.000000
101	Tunisia	1000626.000000
102	Maldives	844040.000000
103	Mauritania	799222.000000
104	Slovakia	798665.000000
105	Djibouti	781771.000000
106	Jordan	716514.000000
107	Namibia	681299.000000
108	Montenegro	675912.000000
109	Thailand	655703.000000
110	Myanmar	644209.000000
111	Zimbabwe	593699.000000
112	Central African Republic	593048.000000
113	Cuba	581546.000000
114	Equatorial Guinea	557355.000000
115	Slovenia	547075.000000
116	Malawi	536447.000000
117	Nicaragua	524410.000000
118	Mozambique	510578.000000
119	Somalia	491145.000000

	location	total_cases
120	Lithuania	488057.000000
121	Congo	473368.000000
122	Cape Verde	463888.000000
123	Uganda	448728.000000
124	Sri Lanka	446643.000000
125	Estonia	445402.000000
126	Swaziland	444238.000000
127	Georgia	431689.000000
128	Iceland	421210.000000
129	Mali	390637.000000
130	Rwanda	388775.000000
131	Jamaica	370890.000000
132	Suriname	358632.000000
133	South Sudan	333500.000000
134	Guinea-Bissau	306564.000000
135	Angola	304005.000000
136	Sierra Leone	268396.000000
137	Syria	267902.000000
138	Latvia	255964.000000
139	New Zealand	253203.000000
140	Malta	251261.000000
141	Benin	245893.000000
142	Uruguay	239884.000000
143	Bahamas	237908.000000



	location	total_cases
144	Cyprus	236673.000000
145	Burkina Faso	231452.000000
146	Gambia	229521.000000
147	Yemen	228925.000000
148	Trinidad and Tobago	225550.000000
149	Andorra	223576.000000
150	Aruba	215110.000000
151	Botswana	205758.000000
152	Niger	199978.000000
153	Togo	169903.000000
154	Guyana	166917.000000
155	Guam	160975.000000
156	Liberia	159880.000000
157	Chad	154173.000000
158	San Marino	134994.000000
159	Vietnam	122618.000000
160	Sao Tome and Principe	121909.000000
161	Lesotho	107948.000000
162	Belize	106383.000000
163	United States Virgin Islands	98536.000000
164	Taiwan	97074.000000
165	French Polynesia	95388.000000
166	Tanzania	91526.000000
167	Mauritius	69524.000000

	location	total_cases
168	Jersey	66777.000000
169	Isle of Man	64935.000000
170	Faeroe Islands	56893.000000
171	Comoros	52437.000000
172	Guernsey	49814.000000
173	Burundi	49745.000000
174	Sint Maarten (Dutch part)	48026.000000
175	Gibraltar	45340.000000
176	Turks and Caicos Islands	44432.000000
177	Mongolia	42465.000000
178	Eritrea	40026.000000
179	Cambodia	39539.000000
180	Papua New Guinea	35966.000000
181	Cayman Islands	33173.000000
182	Brunei	30140.000000
183	Bermuda	28876.000000
184	Barbados	24998.000000
185	Bhutan	22847.000000
186	Monaco	21511.000000
187	Liechtenstein	19885.000000
188	Curacao	19777.000000
189	Seychelles	14701.000000
190	Antigua and Barbuda	12619.000000
191	Saint Vincent and the Grenadines	7824.000000

	location	total_cases
192	Northern Mariana Islands	7784.000000
193	Bonaire Sint Eustatius and Saba	5080.000000
194	Fiji	4742.000000
195	Timor	4697.000000
196	British Virgin Islands	4605.000000
197	New Caledonia	4495.000000
198	Grenada	4470.000000
199	Saint Lucia	4450.000000
200	Laos	4039.000000
201	Dominica	3977.000000
202	Saint Kitts and Nevis	3246.000000
203	Greenland	2678.000000
204	Falkland Islands	2467.000000
205	Vatican	2415.000000
206	Montserrat	2383.000000
207	Anguilla	614.000000
208	Solomon Islands	11.000000
209	Hong Kong	0.000000

```
In [78]: df4=top_10.head(10)
print(df4)
```

	location	total_cases
0	United States	746014098.0
1	Brazil	425704517.0
2	India	407771615.0
3	Russia	132888951.0
4	Peru	74882695.0
5	Mexico	74347548.0
6	Spain	73717676.0
7	South Africa	63027659.0
8	Colombia	60543682.0
9	United Kingdom	59475032.0

```
In [75]: fig=plt.figure(figsize=(16,9))
```

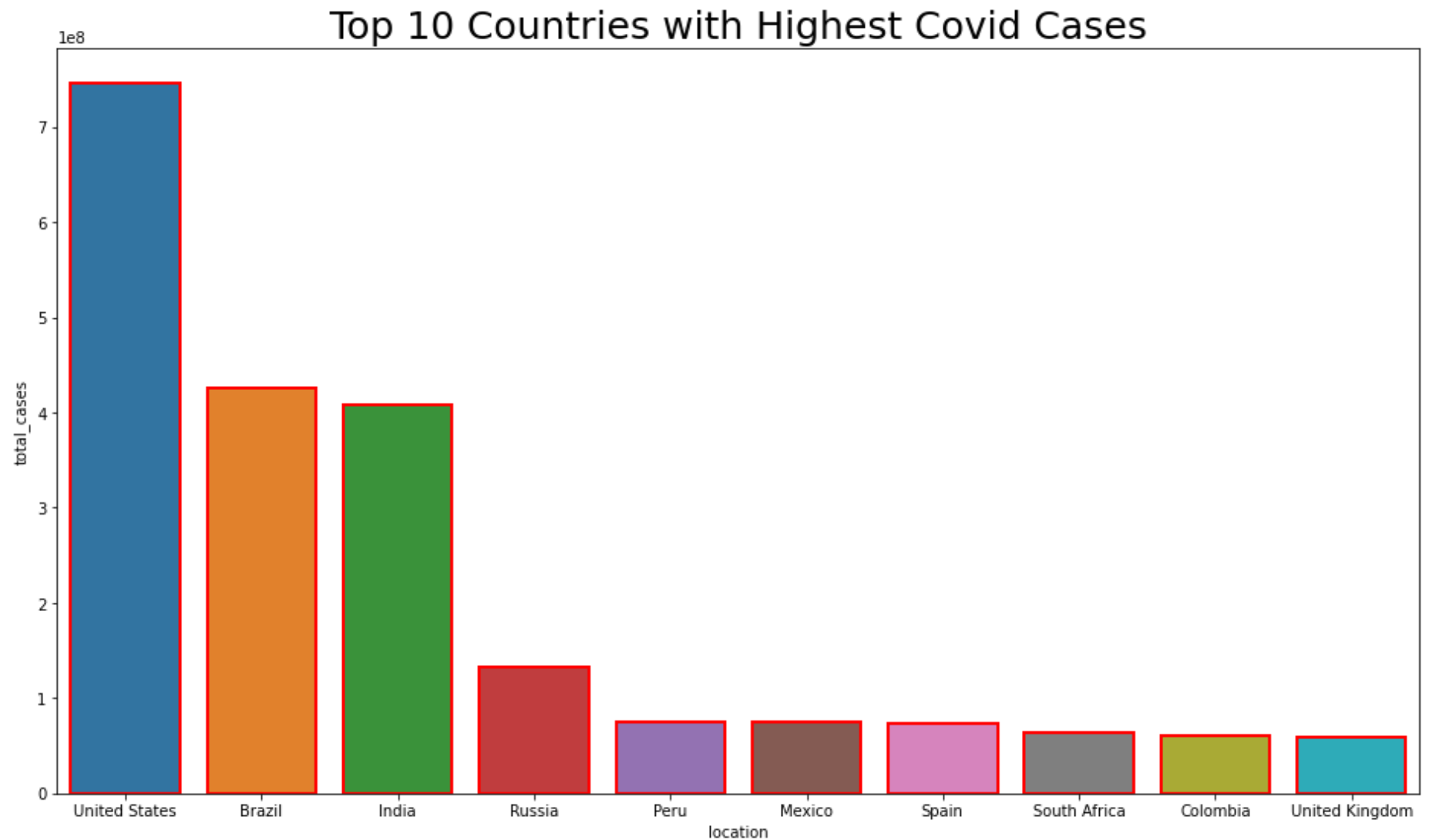
```
<Figure size 1152x648 with 0 Axes>
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [101... top_10= raw_dataset.groupby('location').agg({'total_cases':'sum'}).sort_values(by=['total_cases'],ascending=False).reset_index()
top_10.head(10)
fig=plt.figure(figsize=(16,9))
plt.title('Top 10 Countries with Highest Covid Cases',size=25)
ax=sns.barplot(data=df4.iloc[:10],y='total_cases',x='location',linewidth=2,edgecolor='red')
plt.show()
```



**Total number of deaths among the countries with the highest number of covid-19 cases**

```
In [9]: total_death= raw_dataset.groupby('location').agg({'total_deaths':'sum'}).sort_values(by=['total_deaths'],ascending=False).reset_  
print(total_death)
```

	location	total_deaths
0	United States	26477574.0
1	Brazil	14340567.0
2	Mexico	7295850.0
3	United Kingdom	7249573.0
4	India	7247327.0
..	...	...
205	Saint Kitts and Nevis	0.0
206	Saint Lucia	0.0
207	Saint Vincent and the Grenadines	0.0
208	Seychelles	0.0
209	New Caledonia	0.0

[210 rows x 2 columns]

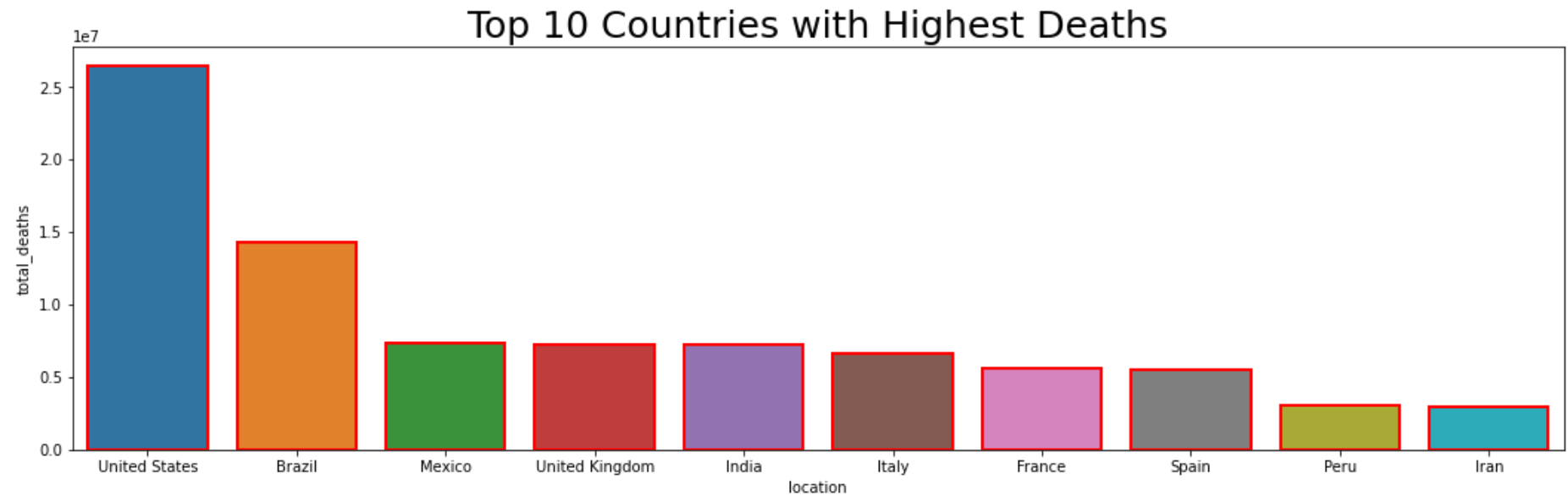
In [6]: `total_death.head(10)`

Out[6]:

	location	total_deaths
0	United States	26477574.0
1	Brazil	14340567.0
2	Mexico	7295850.0
3	United Kingdom	7249573.0
4	India	7247327.0
5	Italy	6664225.0
6	France	5633444.0
7	Spain	5510624.0
8	Peru	3020038.0
9	Iran	2914070.0

In [103]:

```
total_death= raw_dataset.groupby('location').agg({'total_deaths':'sum'}).sort_values(by=['total_deaths'],ascending=False).reset_index()
total_death.head(10)
fig=plt.figure(figsize=(18,5))
plt.title('Top 10 Countries with Highest Deaths',size=25)
ax=sns.barplot(data=total_death.head(10).iloc[:10],y='total_deaths',x='location',linewidth=2,edgecolor='red')
plt.show()
```



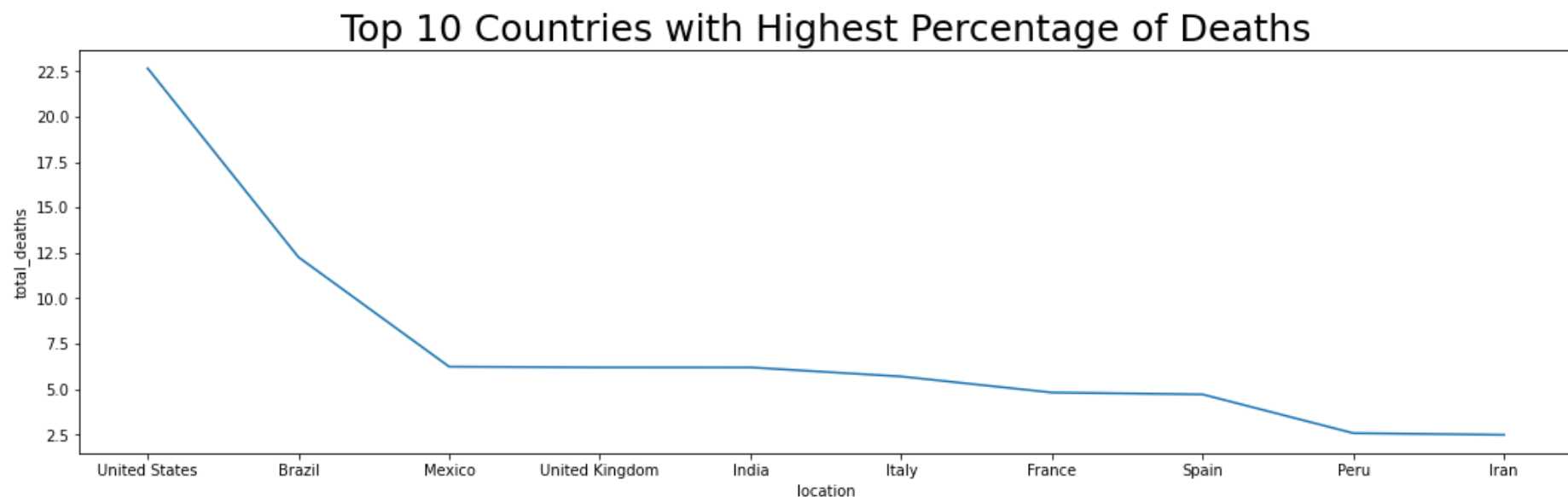
Percentage of total deaths among all the countries with the highest number of covid-19 cases

```
In [112... #per_total_death =(raw_dataset.groupby('Location').agg({'total_deaths':'sum'}))/(116851104.0)*100
#print(per_total_death)
df7=per_total_death.sort_values(by=['total_deaths'],ascending=False)
print(df7)
```

location	total_deaths
United States	22.659242
Brazil	12.272513
Mexico	6.243715
United Kingdom	6.204112
India	6.202190
...	...
Saint Kitts and Nevis	0.000000
Saint Lucia	0.000000
Saint Vincent and the Grenadines	0.000000
Seychelles	0.000000
New Caledonia	0.000000

[210 rows x 1 columns]

```
In [113... per_total_death =(raw_dataset.groupby('location').agg({'total_deaths':'sum'}))/(116851104.0)*100
per_total_death.sort_values(by=['total_deaths'],ascending=False)
df6=df7.head(10)
fig=plt.figure(figsize=(18,5))
plt.title('Top 10 Countries with Highest Percentage of Deaths',size=25)
ax=sns.lineplot(data=df6.iloc[:10],y='total_deaths',x='location')
plt.show()
```





# Percentage of total Cases among all the countries with the highest number of covid-19 cases

```
In [114... #per_total_cases =(raw_dataset.groupby('location').agg({'total_cases': 'sum'}))/(3133760956.0)*100

#print(per_total_cases)
df8= per_total_cases.sort_values(by=['total_cases'],ascending=False)
print(df8)
```

location	total_cases
United States	2.380571e+01
Brazil	1.358446e+01
India	1.301221e+01
Russia	4.240558e+00
Peru	2.389547e+00
...	...
Vatican	7.706395e-05
Montserrat	7.604281e-05
Anguilla	1.959307e-05
Solomon Islands	3.510159e-07
Hong Kong	0.000000e+00

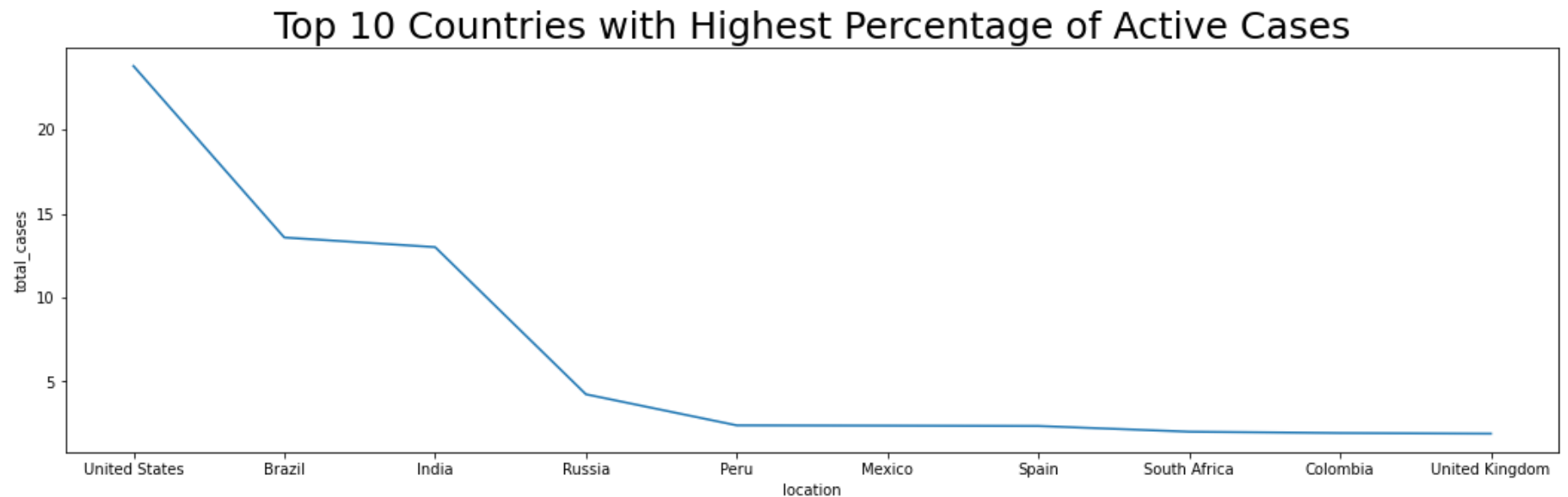
[210 rows x 1 columns]

```
In [117... df9=df8.head(10)
print(df9)
```

location	total_cases
United States	23.805712
Brazil	13.584460
India	13.012212
Russia	4.240558
Peru	2.389547
Mexico	2.372470
Spain	2.352371
South Africa	2.011247
Colombia	1.931982
United Kingdom	1.897880

```
In [118... per_total_cases =(raw_dataset.groupby('location').agg({'total_cases': 'sum'}))/(3133760956.0)*100
df9=df8.head(10)
```

```
fig=plt.figure(figsize=(18,5))
plt.title('Top 10 Countries with Highest Percentage of Active Cases',size=25)
ax=sns.lineplot(data=df9.iloc[:10],y='total_cases',x='location')
plt.show()
```



## The death rate of Covid-19 cases

```
In [35]: death_rate =(raw_dataset.groupby('location').agg({'population':'sum'}))/(2143572206036)*100
print(death_rate)
```

location	population
Afghanistan	0.533919
Albania	0.030207
Algeria	0.601436
Andorra	0.000815
Angola	0.325048
...	...
Venezuela	0.290518
Vietnam	1.335040
Yemen	0.268543
Zambia	0.184391
Zimbabwe	0.147688

[210 rows x 1 columns]

## Countrywise Stringency Index

```
In [10]: Country_Stringency_Index= df.groupby('location').agg({'stringency_index':'mean'}).sort_values(by=['stringency_index'],ascending=False)
print(Country_Stringency_Index)
```

	location	stringency_index
0	Honduras	93.455488
1	Eritrea	91.230849
2	Bolivia	88.676215
3	Palestine	86.163535
4	Libya	85.909696
..	...	...
205	Sao Tome and Principe	NaN
206	Sint Maarten (Dutch part)	NaN
207	Solomon Islands	NaN
208	United States Virgin Islands	NaN
209	Vatican	NaN

[210 rows x 2 columns]

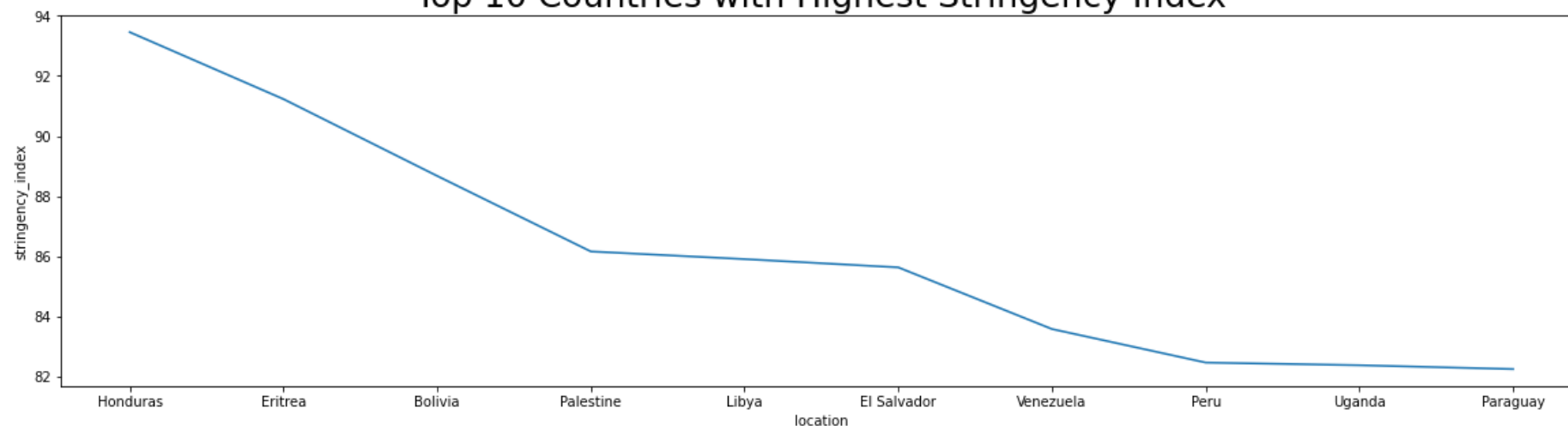
```
In [11]: Country_Stringency_Index.head(10)
```

Out[11]:

	location	stringency_index
0	Honduras	93.455488
1	Eritrea	91.230849
2	Bolivia	88.676215
3	Palestine	86.163535
4	Libya	85.909696
5	El Salvador	85.634626
6	Venezuela	83.584651
7	Peru	82.470085
8	Uganda	82.381085
9	Paraguay	82.253380

```
In [120... Country_Stringency_Index= df.groupby('location').agg({'stringency_index':'mean'}).sort_values(by=['stringency_index'],ascending=False)
Country_Stringency_Index.head(10)
fig=plt.figure(figsize=(20,5))
plt.title('Top 10 Countries with Highest Stringency Index',size=25)
ax=sns.lineplot(data=Country_Stringency_Index.head(10).iloc[:10],y='stringency_index',x='location')
plt.show()
```

## Top 10 Countries with Highest Stringency Index



## Top 10 Countries - GDP per capita

```
In [12]: country_gdp = df.groupby('location').agg({'gdp_per_capita': 'mean'}).sort_values(by=['gdp_per_capita'], ascending=False).reset_index()
print(country_gdp)
```

	location	gdp_per_capita
0	Qatar	116935.600
1	Luxembourg	94277.965
2	Singapore	85535.383
3	Brunei	71809.251
4	Ireland	67335.293
..	...	...
205	Syria	NaN
206	Taiwan	NaN
207	Turks and Caicos Islands	NaN
208	United States Virgin Islands	NaN
209	Vatican	NaN

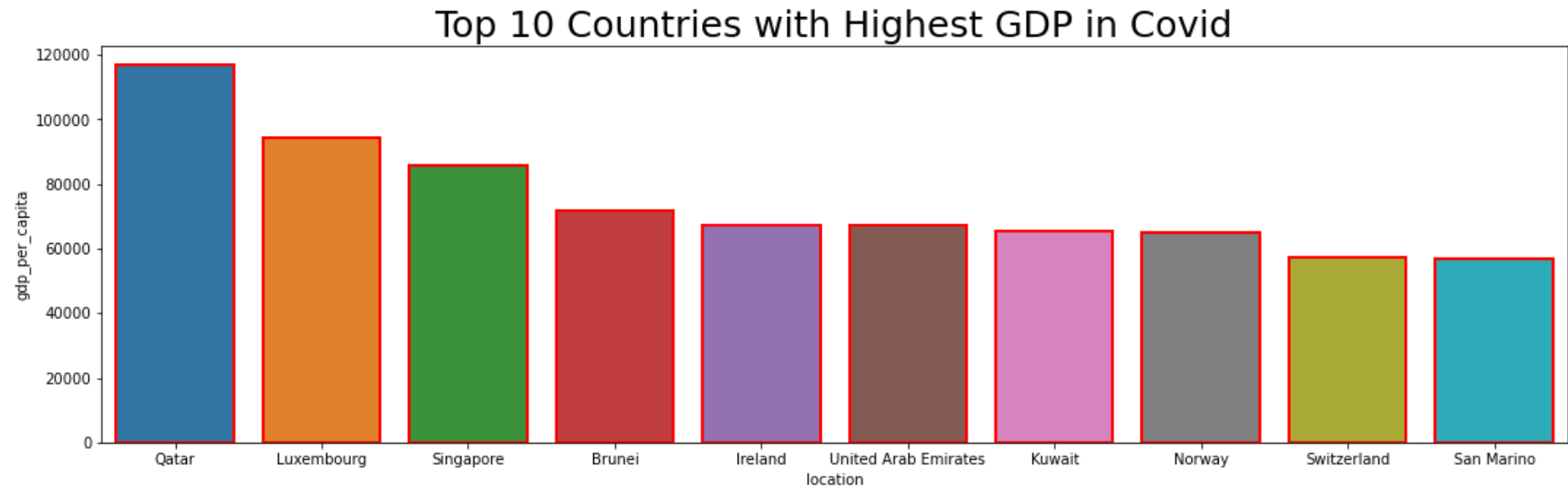
[210 rows x 2 columns]

```
In [13]: country_gdp.head(10)
```

Out[13]:

	location	gdp_per_capita
0	Qatar	116935.600
1	Luxembourg	94277.965
2	Singapore	85535.383
3	Brunei	71809.251
4	Ireland	67335.293
5	United Arab Emirates	67293.483
6	Kuwait	65530.537
7	Norway	64800.057
8	Switzerland	57410.166
9	San Marino	56861.470

```
In [122... country_gdp = df.groupby('location').agg({'gdp_per_capita': 'mean'}).sort_values(by=['gdp_per_capita'], ascending=False).reset_index()
country_gdp.head(10)
fig=plt.figure(figsize=(18,5))
plt.title('Top 10 Countries with Highest GDP in Covid',size=25)
ax=sns.barplot(data=country_gdp.head(10).iloc[:10],y='gdp_per_capita',x='location',linewidth=2,edgecolor='red')
plt.show()
```



## GDP per capita during covid-19.

```
In [64]: gdp_of_country= df.groupby('location')['gdp_per_capita'].mean()
print(gdp_of_country)
df1= gdp_of_country.sort_values(ascending=False)
```

```
location
Afghanistan    1803.987
Albania        11803.431
Algeria        13913.839
Andorra         NaN
Angola         5819.495
...
Venezuela     16745.022
Vietnam        6171.884
Yemen         1479.147
Zambia         3689.251
Zimbabwe       1899.775
Name: gdp_per_capita, Length: 210, dtype: float64
```

```
In [65]: df1.head(10)
```

```
Out[65]: location
Qatar      116935.600
Luxembourg 94277.965
Singapore  85535.383
Brunei     71809.251
Ireland    67335.293
United Arab Emirates 67293.483
Kuwait     65530.537
Norway     64800.057
Switzerland 57410.166
San Marino 56861.470
Name: gdp_per_capita, dtype: float64
```

## Human Development Index

```
In [67]: human_dev_index= df.groupby('location')['human_development_index'].mean()
print(human_dev_index)
df2= human_dev_index.sort_values(ascending=False)
```

```
location
Afghanistan    0.498
Albania        0.785
Algeria        0.754
Andorra        0.858
Angola         0.581
...
Venezuela     0.761
Vietnam       0.694
Yemen         0.452
Zambia        0.588
Zimbabwe      0.535
Name: human_development_index, Length: 210, dtype: float64
```

```
In [134... df2.head(10)
```



```
Out[134]: location
          Norway      0.953
          Switzerland 0.944
          Australia   0.939
          Ireland     0.938
          Germany     0.936
          Iceland     0.935
          Hong Kong   0.933
          Sweden      0.933
          Singapore   0.932
          Netherlands 0.931
          Name: human_development_index, dtype: float64
```

```
In [ ]:
```

```
In [ ]:
```