

```
In [1]: import numpy as np
import pandas as pd
import seaborn as sns
from matplotlib import pyplot as plt
```

```
In [3]: covid = pd.read_csv("C:\\\\Users\\\\SUBHAJIT\\\\Desktop\\\\My Document\\\\Study Document\\\\Projects\\\\Covid Data Analysis\\\\worldometer_data.csv")
```

```
In [4]: covid.head()
```

```
Out[4]:
```

	Country/Region	Continent	Population	TotalCases	NewCases	TotalDeaths	NewDeaths	TotalRecovered	NewRecovered	ActiveCases	Serious,Critical	Cases/1M pop	Tot Deaths/1M pop	TotalTests	Tests/1M pop	1 Re
0	USA	North America	3.311981e+08	5032179	NaN	162804.0	NaN	2576668.0	NaN	2292707.0	18296.0	15194.0	492.0	63139605.0	190640.0	Ame
1	Brazil	South America	2.127107e+08	2917562	NaN	98644.0	NaN	2047660.0	NaN	771258.0	8318.0	13716.0	464.0	13206188.0	62085.0	Ame
2	India	Asia	1.381345e+09	2025409	NaN	41638.0	NaN	1377384.0	NaN	606387.0	8944.0	1466.0	30.0	22149351.0	16035.0	Si
3	Russia	Europe	1.459409e+08	871894	NaN	14606.0	NaN	676357.0	NaN	180931.0	2300.0	5974.0	100.0	29716907.0	203623.0	Eu
4	South Africa	Africa	5.938157e+07	538184	NaN	9604.0	NaN	387316.0	NaN	141264.0	539.0	9063.0	162.0	3149807.0	53044.0	>

```
In [5]: covid = covid[['Country/Region', 'Population', 'TotalCases', 'TotalDeaths', 'TotalRecovered', 'ActiveCases', 'Serious,Critical']]
```

```
In [6]: covid.head()
```

```
Out[6]:
```

	Country/Region	Population	TotalCases	TotalDeaths	TotalRecovered	ActiveCases	Serious,Critical
0	USA	3.311981e+08	5032179	162804.0	2576668.0	2292707.0	18296.0
1	Brazil	2.127107e+08	2917562	98644.0	2047660.0	771258.0	8318.0
2	India	1.381345e+09	2025409	41638.0	1377384.0	606387.0	8944.0
3	Russia	1.459409e+08	871894	14606.0	676357.0	180931.0	2300.0
4	South Africa	5.938157e+07	538184	9604.0	387316.0	141264.0	539.0

```
In [7]: covid = covid.rename(columns = {'Country/Region':'Country', 'TotalCases':'Cases', 'TotalDeaths':'Deaths', 'TotalRecovered':'Recovered', 'ActiveCases':'Active', 'Serious,Critical':
```

```
In [8]: covid.head()
```

```
Out[8]:
```

	Country	Population	Cases	Deaths	Recovered	Active	RedZone
0	USA	3.311981e+08	5032179	162804.0	2576668.0	2292707.0	18296.0
1	Brazil	2.127107e+08	2917562	98644.0	2047660.0	771258.0	8318.0
2	India	1.381345e+09	2025409	41638.0	1377384.0	606387.0	8944.0
3	Russia	1.459409e+08	871894	14606.0	676357.0	180931.0	2300.0
4	South Africa	5.938157e+07	538184	9604.0	387316.0	141264.0	539.0

```
In [9]: covid.tail()
```

```
Out[9]:
```

	Country	Population	Cases	Deaths	Recovered	Active	RedZone
204	Montserrat	4992.0	13	1.0	10.0	2.0	NaN
205	Caribbean Netherlands	26247.0	13	NaN	7.0	6.0	NaN
206	Falkland Islands	3489.0	13	NaN	13.0	0.0	NaN
207	Vatican City	801.0	12	NaN	12.0	0.0	NaN
208	Western Sahara	598682.0	10	1.0	8.0	1.0	NaN

```
In [10]: covid.shape
```

```
Out[10]: (209, 7)
```

```
In [20]: latest_cases = covid.loc[covid['Country'] == 'India', 'Cases']
```

```
In [21]: latest_cases
```

```
Out[21]: 2    2025409
Name: Cases, dtype: int64
```

```
In [23]: covid.columns
```

```
Out[23]: Index(['Country', 'Population', 'Cases', 'Deaths', 'Recovered', 'Active', 'RedZone'],
              dtype='object')
```

```
In [40]: covid.sort_values(by = 'Cases', ascending = False)
```

```
Out[40]:
```

	Country	Population	Cases	Deaths	Recovered	Active	RedZone
0	USA	3.311981e+08	5032179	162804.0	2576668.0	2292707.0	18296.0
1	Brazil	2.127107e+08	2917562	98644.0	2047660.0	771258.0	8318.0
2	India	1.381345e+09	2025409	41638.0	1377384.0	606387.0	8944.0
3	Russia	1.459409e+08	871894	14606.0	676357.0	180931.0	2300.0
4	South Africa	5.938157e+07	538184	9604.0	387316.0	141264.0	539.0
...
204	Montserrat	4.992000e+03	13	1.0	10.0	2.0	NaN
205	Caribbean Netherlands	2.624700e+04	13	NaN	7.0	6.0	NaN

```

206    Falkland Islands 3.489000e+03    13    NaN    13.0    0.0    NaN
207    Vatican City 8.010000e+02    12    NaN    12.0    0.0    NaN
208    Western Sahara 5.986820e+05    10    1.0    8.0    1.0    NaN

```

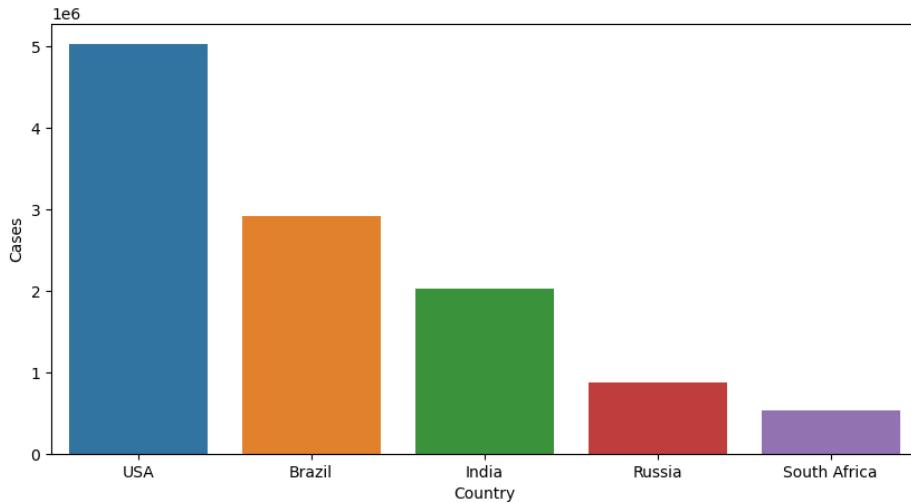
209 rows × 7 columns

```
In [42]: top5 = covid.sort_values(by = 'Cases', ascending = False).head()
```

```
In [43]: top5
```

```
Out[43]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
0      USA  3.311981e+08  5032179  162804.0  2576668.0  2292707.0  18296.0
1     Brazil  2.127107e+08  2917562  98644.0  2047660.0  771258.0  8318.0
2      India  1.381345e+09  2025409  41638.0  1377384.0  606387.0  8944.0
3      Russia  1.459409e+08  871894  14606.0  676357.0  180931.0  2300.0
4   South Africa  5.938157e+07  538184  9604.0  387316.0  141264.0  539.0
```

```
In [48]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Cases", data = top5)
plt.show()
```



```
In [49]: covid.sort_values(by = 'Cases', ascending = True)
```

```
Out[49]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
208    Western Sahara  5.986820e+05    10    1.0    8.0    1.0    NaN
207    Vatican City  8.010000e+02    12    NaN    12.0    0.0    NaN
205  Caribbean Netherlands  2.624700e+04    13    NaN    7.0    6.0    NaN
206    Falkland Islands  3.489000e+03    13    NaN    13.0    0.0    NaN
204    Montserrat  4.992000e-03    13    1.0    10.0    2.0    NaN
...
4      South Africa  5.938157e+07  538184  9604.0  387316.0  141264.0  539.0
3      Russia  1.459409e+08  871894  14606.0  676357.0  180931.0  2300.0
2      India  1.381345e+09  2025409  41638.0  1377384.0  606387.0  8944.0
1     Brazil  2.127107e+08  2917562  98644.0  2047660.0  771258.0  8318.0
0      USA  3.311981e+08  5032179  162804.0  2576668.0  2292707.0  18296.0
```

209 rows × 7 columns

```
In [51]: covid.sort_values(by = 'Cases', ascending = True).head()
```

```
Out[51]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
208    Western Sahara  598682.0    10    1.0    8.0    1.0    NaN
207    Vatican City  801.0     12    NaN    12.0    0.0    NaN
205  Caribbean Netherlands  26247.0    13    NaN    7.0    6.0    NaN
206    Falkland Islands  3489.0    13    NaN    13.0    0.0    NaN
204    Montserrat  4992.0    13    1.0    10.0    2.0    NaN
```

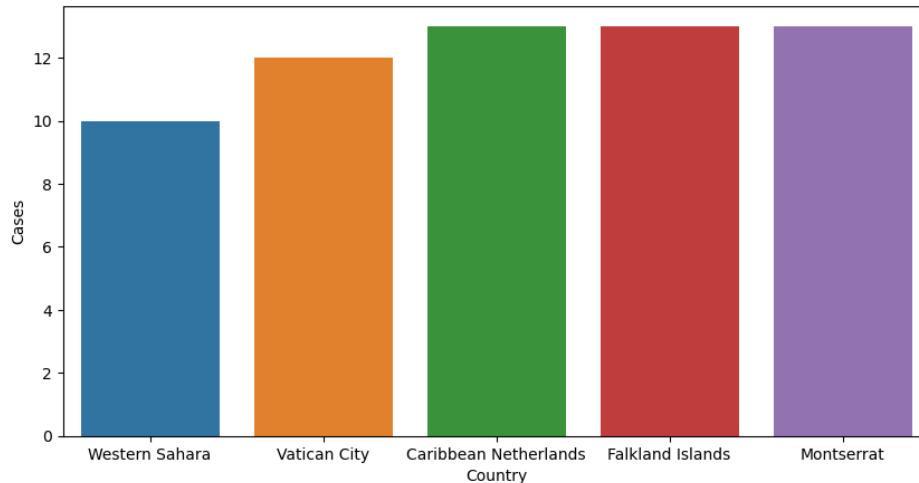
```
In [52]: bot5 = covid.sort_values(by = 'Cases', ascending = True).head()
```

```
In [53]: bot5
```

```
Out[53]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
208    Western Sahara  598682.0    10    1.0    8.0    1.0    NaN
207    Vatican City  801.0     12    NaN    12.0    0.0    NaN
205  Caribbean Netherlands  26247.0    13    NaN    7.0    6.0    NaN
```

```
206    Falkland Islands    3489.0   13   NaN    13.0    0.0    NaN
204    Montserrat        4992.0   13   1.0    10.0    2.0    NaN
```

```
In [56]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Cases", data = bot5)
plt.show()
```



```
In [57]: covid.head()
```

```
Out[57]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
0      USA  3.311981e+08  5032179  162804.0  2576668.0  2292707.0  18296.0
1     Brazil  2.127107e+08  2917562  98644.0  2047660.0  771258.0  8318.0
2      India  1.381345e+09  2025409  41638.0  1377384.0  606387.0  8944.0
3      Russia  1.459409e+08  871894  14606.0  676357.0  180931.0  2300.0
4   South Africa  5.938157e+07  538184  9604.0  387316.0  141264.0  539.0
```

```
In [63]: covid[['Country', 'Cases']].value_counts()
```

```
Out[63]: Country      Cases
Afghanistan  36896    1
Laos          20       1
Myanmar       357      1
Namibia       2652     1
Nepal         21750    1
...
Germany       215210   1
Ghana          39642   1
Gibraltar     190      1
Greece         5123     1
Zimbabwe      4339     1
Name: count, Length: 209, dtype: int64
```

```
In [64]: covid[['Country', 'Cases']].value_counts().head()
```

```
Out[64]: Country      Cases
Afghanistan  36896    1
Laos          20       1
Myanmar       357      1
Namibia       2652     1
Nepal         21750    1
Name: count, dtype: int64
```

```
In [86]: selected_countries = covid[covid['Country'].isin(['India', 'USA', 'Brazil', 'Russia', 'South Africa'])]
```

```
In [87]: cases_counts = selected_country['Deaths'].value_counts()
```

```
In [89]: cases_counts
```

```
Out[89]: Deaths
41638.0    1
Name: count, dtype: int64
```

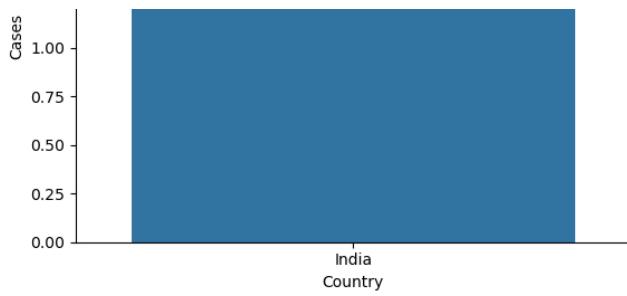
```
In [98]: India = covid[covid['Country'] == 'India']
```

```
In [99]: India
```

```
Out[99]:   Country  Population  Cases  Deaths  Recovered  Active  RedZone
2      India  1.381345e+09  2025409  41638.0  1377384.0  606387.0  8944.0
```

```
In [107]: sns.barplot(x = "Country", y = "Cases", data = India)
plt.show()
```





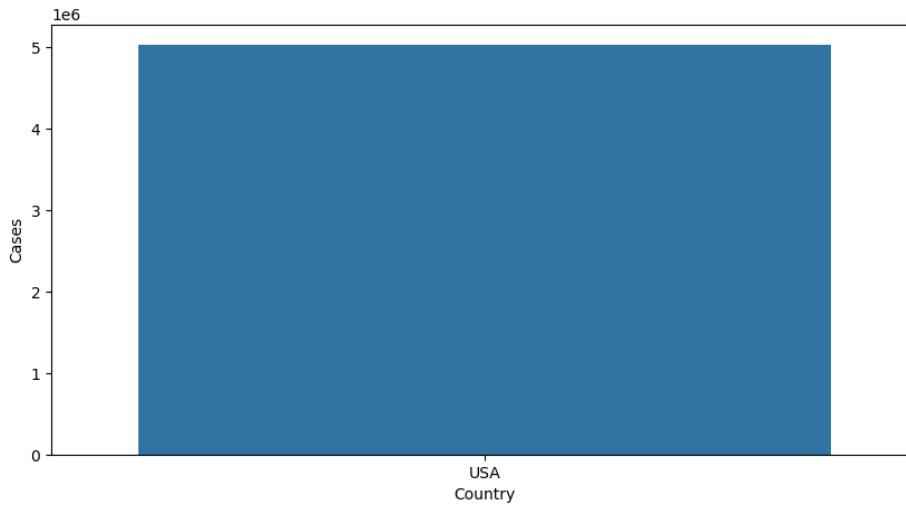
```
In [102]: USA = covid[covid['Country'] == 'USA']
```

```
In [103]: USA
```

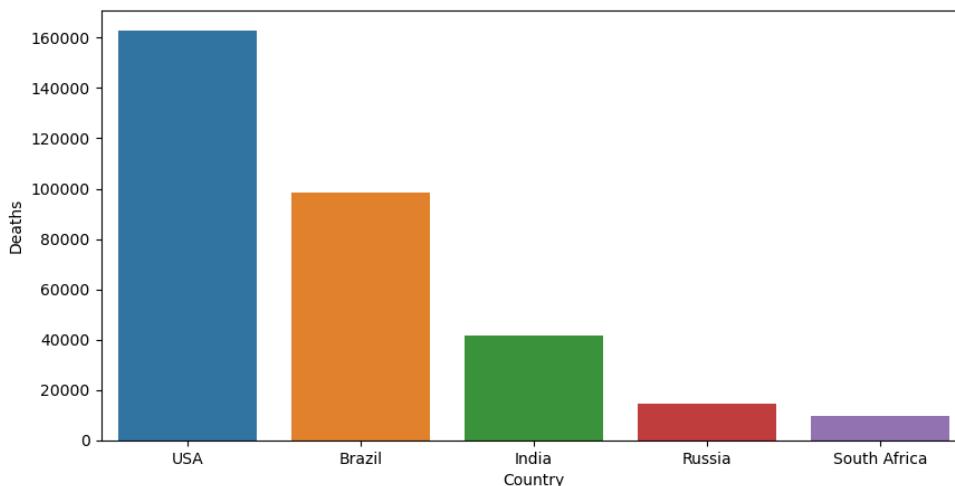
```
Out[103]:
```

	Country	Population	Cases	Deaths	Recovered	Active	RedZone
0	USA	331198130.0	5032179	162804.0	2576668.0	2292707.0	18296.0

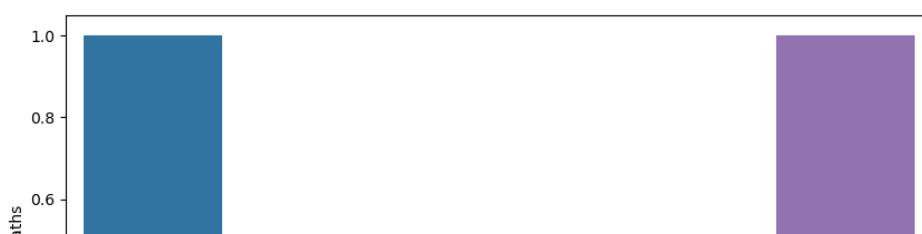
```
In [110]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Cases", data = India)
sns.barplot(x = "Country", y = "Cases", data = USA)
plt.show()
```

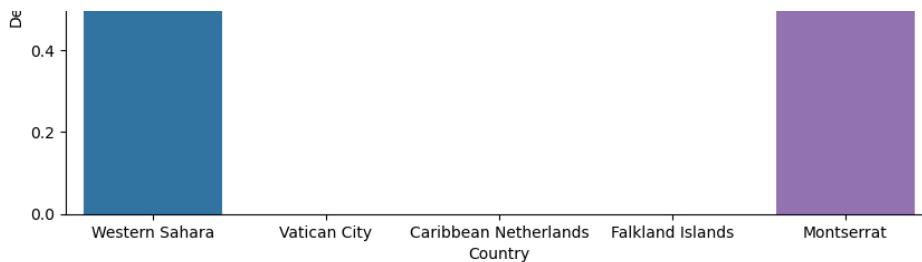


```
In [111]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Deaths", data = top5)
plt.show()
```

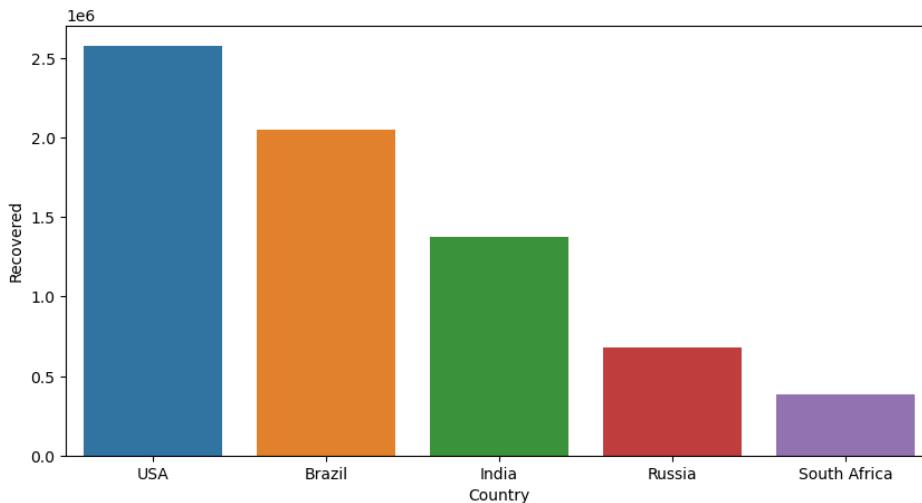


```
In [112]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Deaths", data = bot5)
plt.show()
```

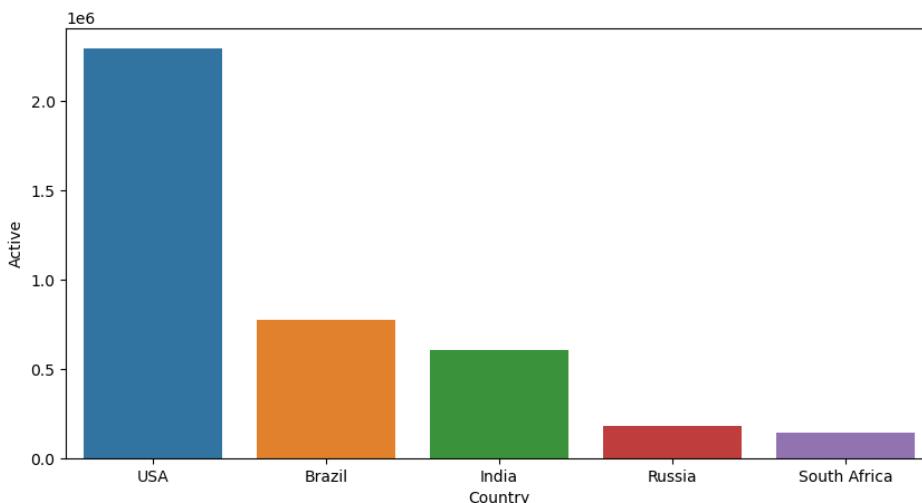




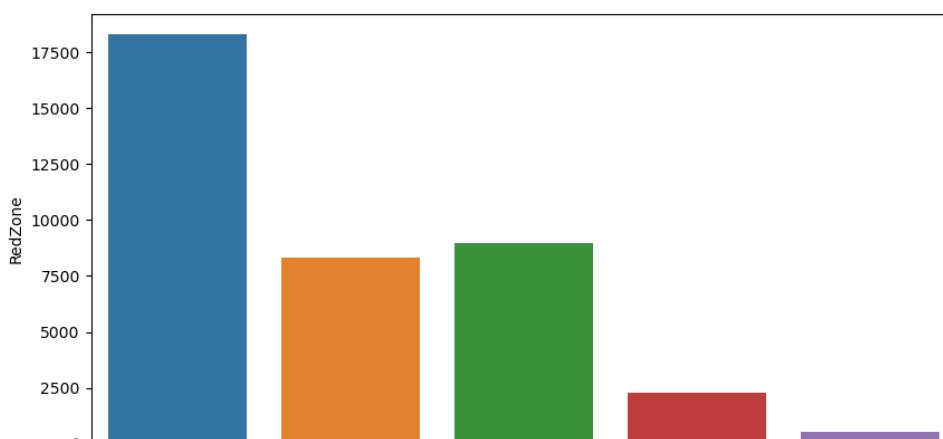
```
In [114]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Recovered", data = top5)
plt.show()
```



```
In [115]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Active", data = top5)
plt.show()
```

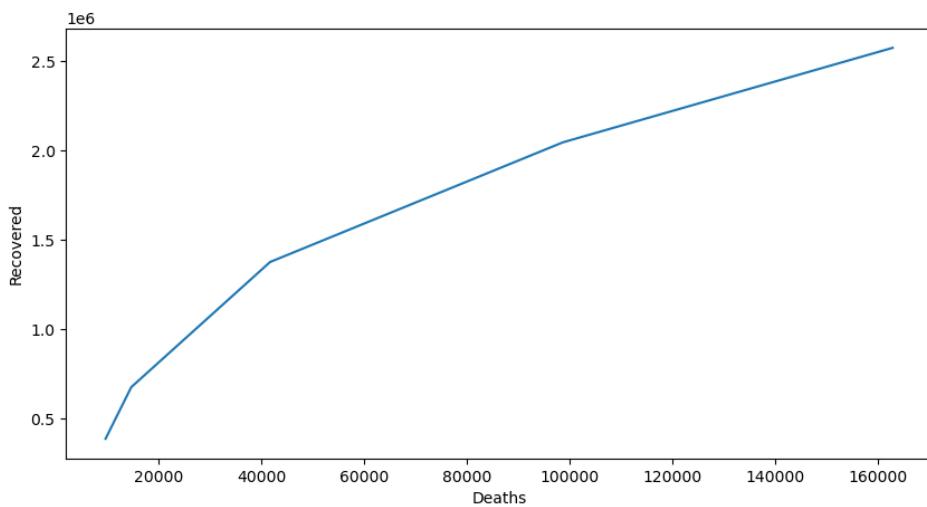


```
In [116]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "RedZone", data = top5)
plt.show()
```

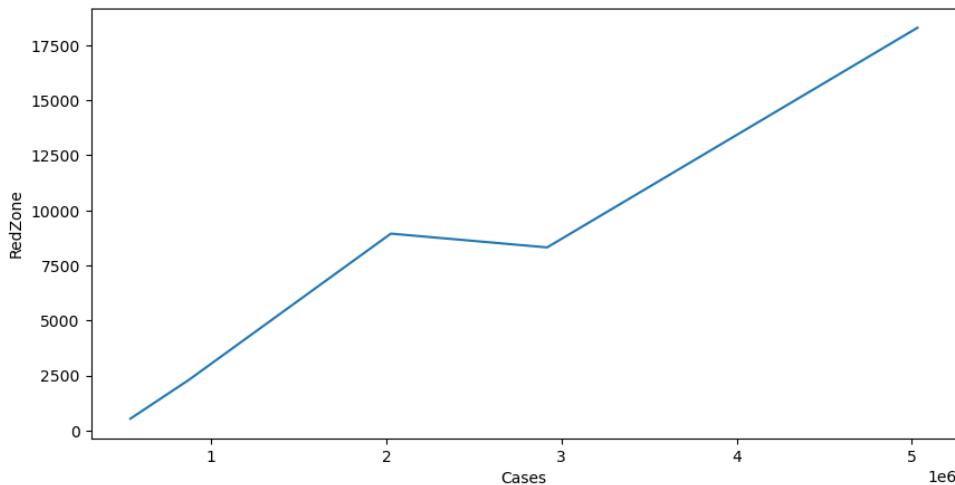


USA Brazil India Russia South Africa

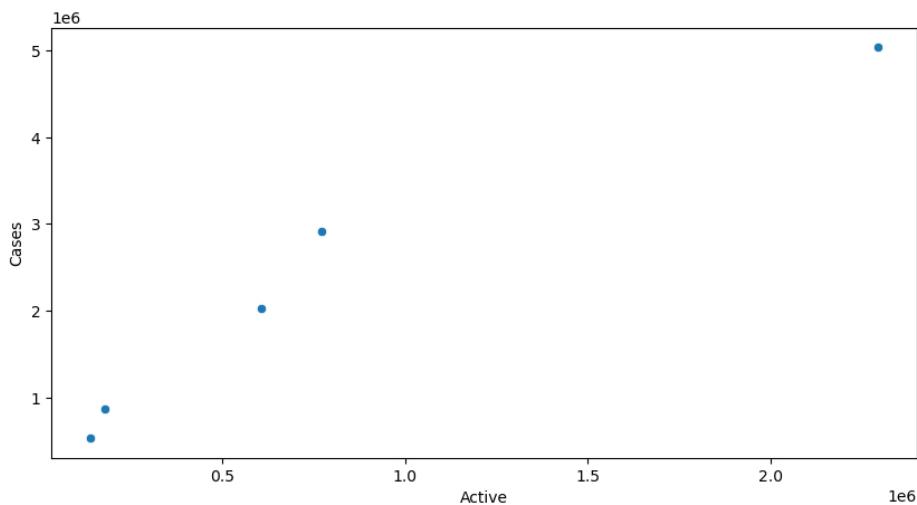
```
In [122]: plt.figure(figsize = (10, 5))
sns.lineplot(x = "Deaths", y = "Recovered", data = top5)
plt.show()
```



```
In [124]: plt.figure(figsize = (10, 5))
sns.lineplot(x = "Cases", y = "RedZone", data = top5)
plt.show()
```

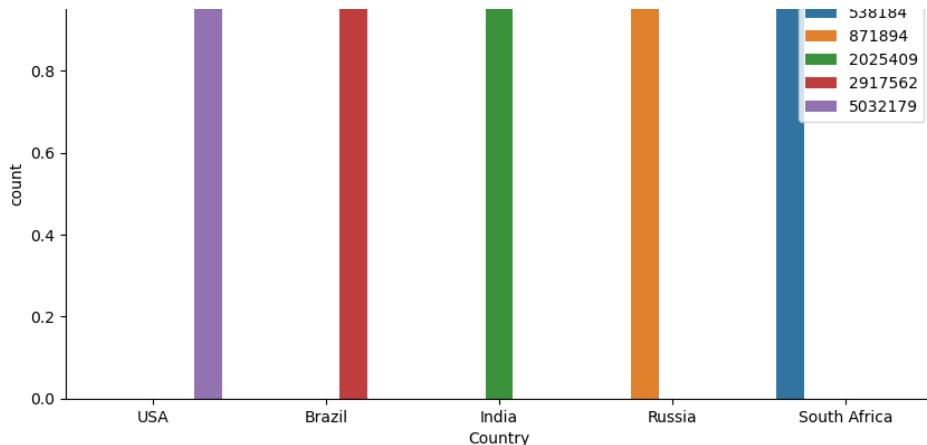


```
In [126]: plt.figure(figsize=(10, 5))
sns.scatterplot(x="Active", y="Cases", data=top5)
plt.show()
```

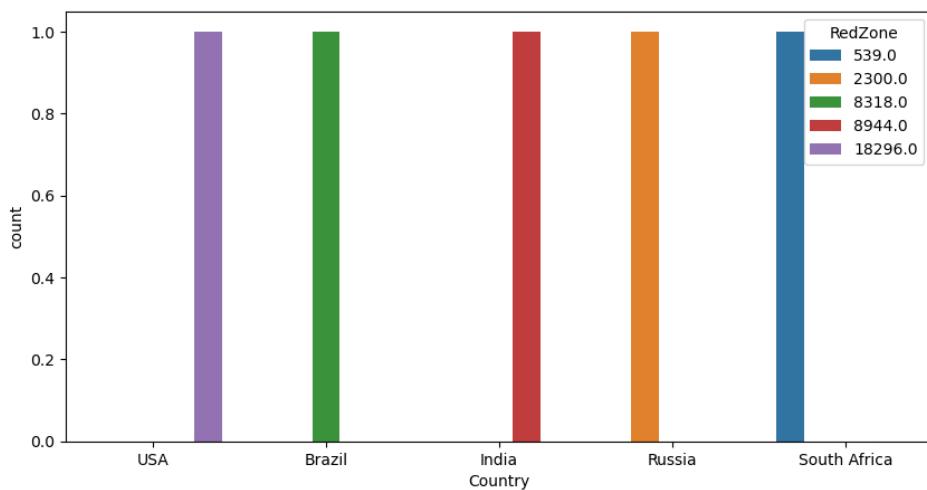


```
In [128]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5, hue="Cases")
plt.show()
```

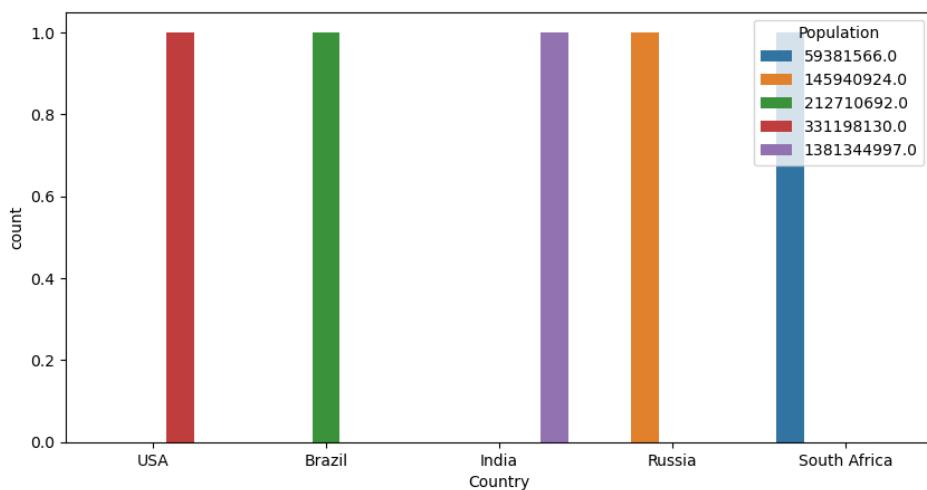




```
In [129]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5, hue="RedZone")
plt.show()
```

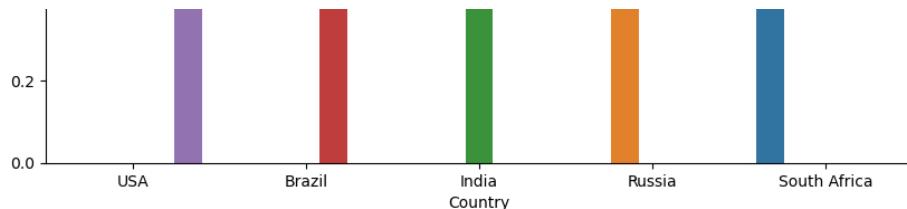


```
In [130]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5, hue="Population")
plt.show()
```



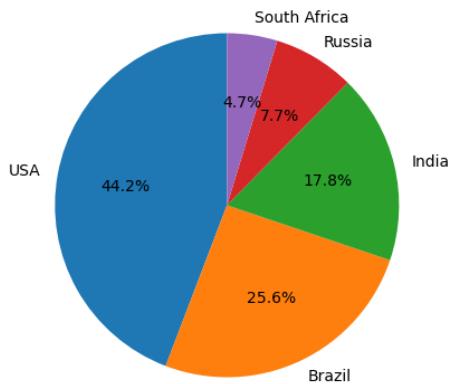
```
In [131]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5, hue="Recovered")
plt.show()
```





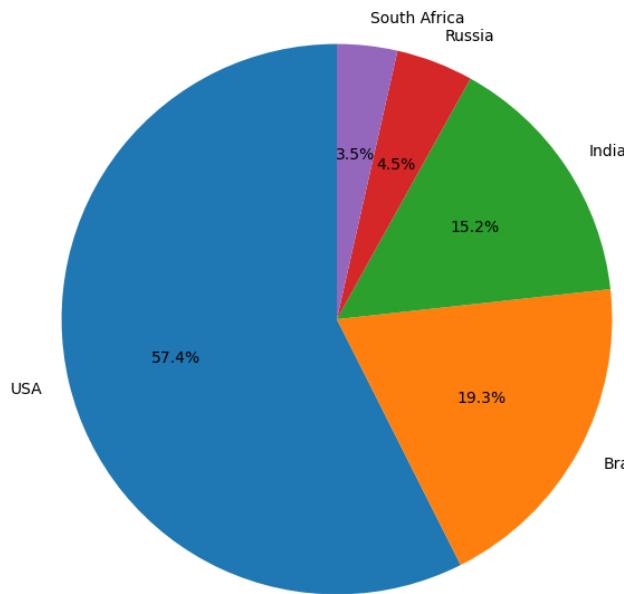
```
In [137]: plt.figure(figsize=(10, 5))
plt.pie(top5['Cases'], labels=top5['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Cases by Country')
plt.show()
```

Distribution of Cases by Country



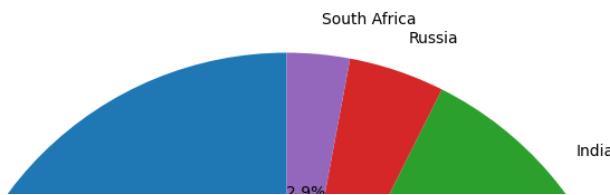
```
In [167]: plt.figure(figsize=(10, 8))
plt.pie(top5['Active'], labels=top5['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Active by Country')
plt.show()
```

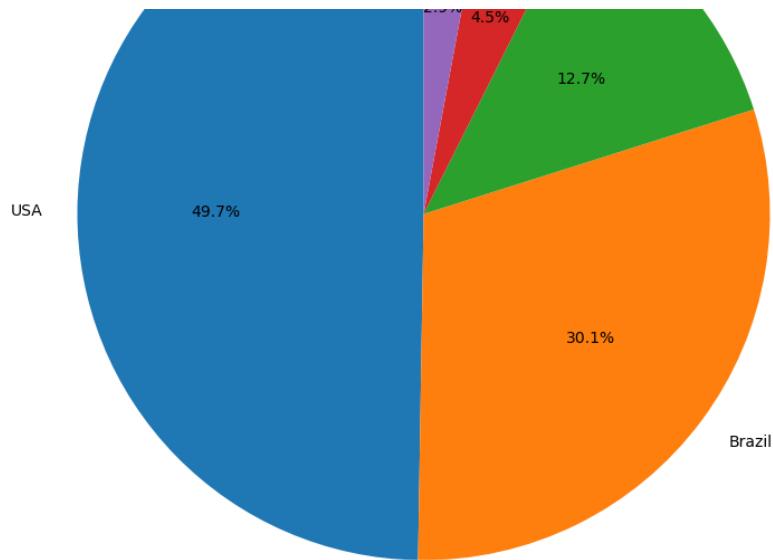
Distribution of Active by Country



```
In [141]: plt.figure(figsize=(10, 15))
plt.pie(top5['Deaths'], labels=top5['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Deaths by Country')
plt.show()
```

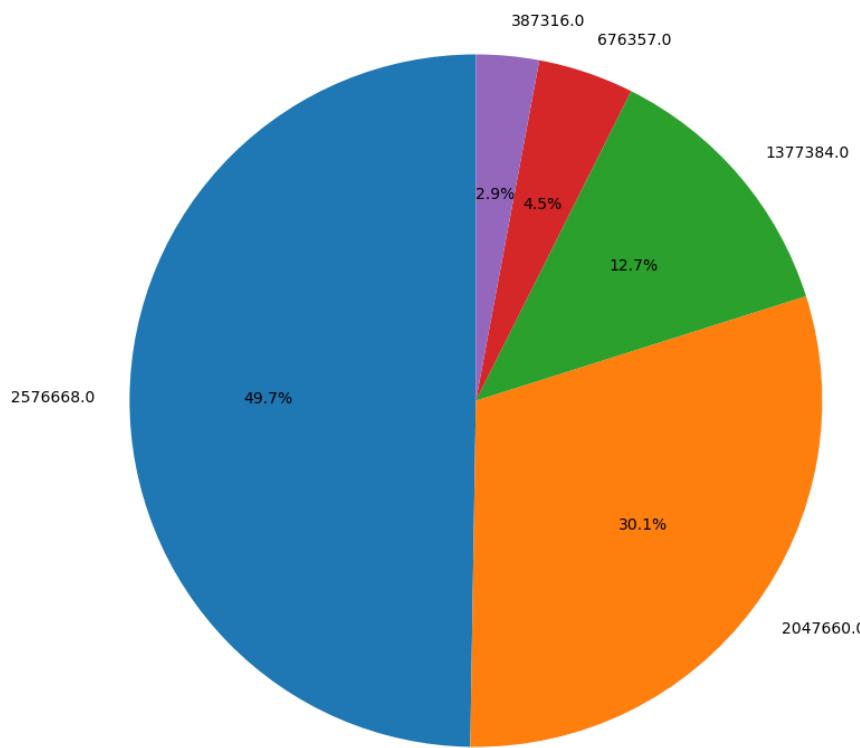
Distribution of Deaths by Country





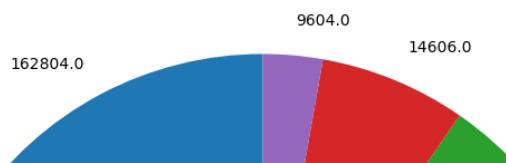
```
In [143]: plt.figure(figsize=(10, 15))
plt.pie(top5['Deaths'], labels=top5['Recovered'], autopct='%.1f%%', startangle=90)
plt.title('Distribution of Deaths & recovered')
plt.show()
```

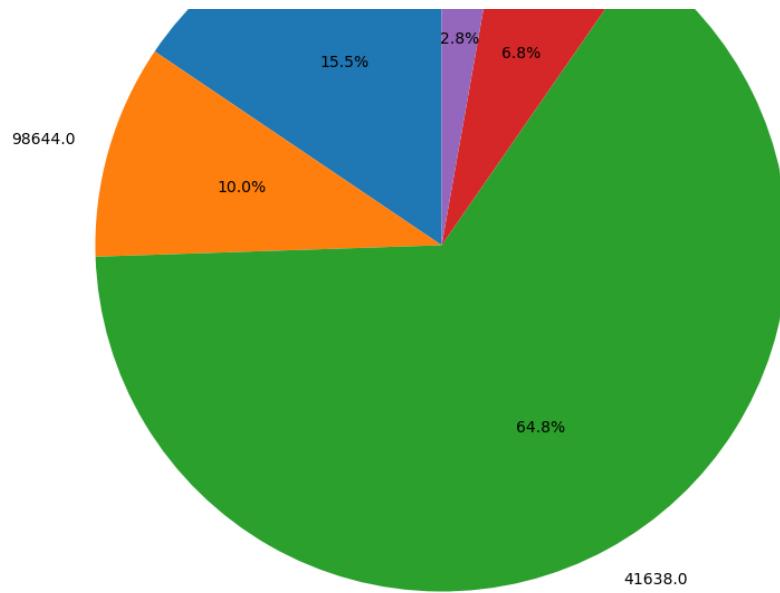
Distribution of Deaths & recovered



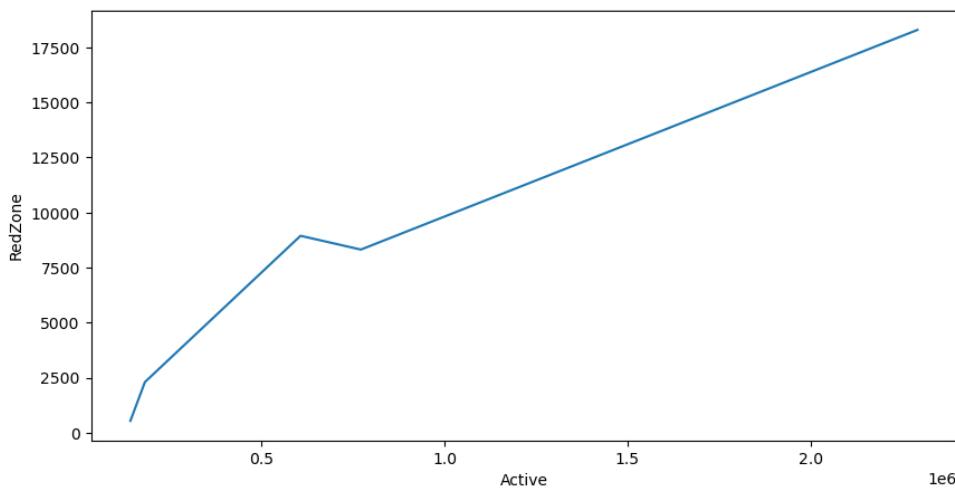
```
In [148]: plt.figure(figsize=(10, 15))
plt.pie(top5['Population'], labels=top5['Deaths'], autopct='%.1f%%', startangle=90)
plt.title('Distribution of Population by Deaths')
plt.show()
```

Distribution of Population by Deaths

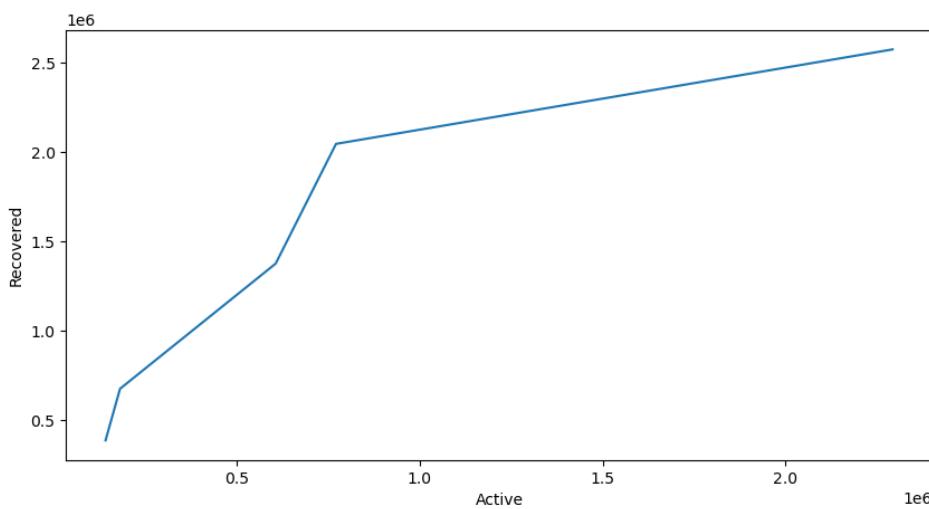




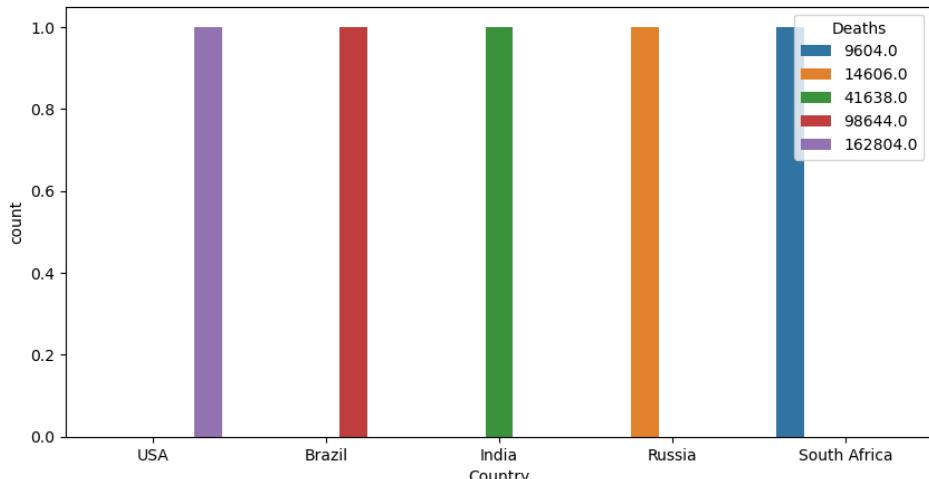
```
In [149]: covid.columns  
Out[149]: Index(['Country', 'Population', 'Cases', 'Deaths', 'Recovered', 'Active',  
       'RedZone'],  
       dtype='object')  
  
In [150]: plt.figure(figsize = (10, 5))  
sns.lineplot(x = "Active", y = "RedZone", data = top5)  
plt.show()
```



```
In [151]: plt.figure(figsize = (10, 5))  
sns.lineplot(x = "Active", y = "Recovered", data = top5)  
plt.show()
```



```
In [152]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5, hue="Deaths")
plt.show()
```



```
In [153]: covid1 = pd.read_csv("C:\\\\Users\\\\SUBHAJIT\\\\Desktop\\\\My Document\\\\Study Document\\\\Projects\\\\Covid Data Analysis\\\\country_wise_latest.csv")
```

```
In [154]: covid1
```

```
Out[154]:
```

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase	WHO Region
0	Afghanistan	36263	1269	25198	9796	106	10	18	3.50	69.49	5.04	35526	737	2.07	Eastern Mediterranean
1	Albania	4880	144	2745	1991	117	6	63	2.95	56.25	5.25	4171	709	17.00	Europe
2	Algeria	27973	1163	18837	7973	616	8	749	4.16	67.34	6.17	23691	4282	18.07	Africa
3	Andorra	907	52	803	52	10	0	0	5.73	88.53	6.48	884	23	2.60	Europe
4	Angola	950	41	242	667	18	1	0	4.32	25.47	16.94	749	201	26.84	Africa
...
182	West Bank and Gaza	10621	78	3752	6791	152	2	0	0.73	35.33	2.08	8916	1705	19.12	Eastern Mediterranean
183	Western Sahara	10	1	8	1	0	0	0	10.00	80.00	12.50	10	0	0.00	Africa
184	Yemen	1691	483	833	375	10	4	36	28.56	49.26	57.98	1619	72	4.45	Eastern Mediterranean
185	Zambia	4552	140	2815	1597	71	1	465	3.08	61.84	4.97	3326	1226	36.86	Africa
186	Zimbabwe	2704	36	542	2126	192	2	24	1.33	20.04	6.64	1713	991	57.85	Africa

187 rows × 15 columns

```
In [155]: covid1.head()
```

```
Out[155]:
```

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase	WHO Region
0	Afghanistan	36263	1269	25198	9796	106	10	18	3.50	69.49	5.04	35526	737	2.07	Eastern Mediterranean
1	Albania	4880	144	2745	1991	117	6	63	2.95	56.25	5.25	4171	709	17.00	Europe
2	Algeria	27973	1163	18837	7973	616	8	749	4.16	67.34	6.17	23691	4282	18.07	Africa
3	Andorra	907	52	803	52	10	0	0	5.73	88.53	6.48	884	23	2.60	Europe
4	Angola	950	41	242	667	18	1	0	4.32	25.47	16.94	749	201	26.84	Africa

```
In [156]: covid1.tail()
```

```
Out[156]:
```

	Country/Region	Confirmed	Deaths	Recovered	Active	New cases	New deaths	New recovered	Deaths / 100 Cases	Recovered / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase	WHO Region
182	West Bank and Gaza	10621	78	3752	6791	152	2	0	0.73	35.33	2.08	8916	1705	19.12	Eastern Mediterranean
183	Western Sahara	10	1	8	1	0	0	0	10.00	80.00	12.50	10	0	0.00	Africa
184	Yemen	1691	483	833	375	10	4	36	28.56	49.26	57.98	1619	72	4.45	Eastern Mediterranean
185	Zambia	4552	140	2815	1597	71	1	465	3.08	61.84	4.97	3326	1226	36.86	Africa
186	Zimbabwe	2704	36	542	2126	192	2	24	1.33	20.04	6.64	1713	991	57.85	Africa

```
In [157]: covid1.columns
```

```
Out[157]:
```

Index(['Country/Region', 'Confirmed', 'Deaths', 'Recovered', 'Active', 'New cases', 'New deaths', 'New recovered', 'Deaths / 100 Cases', 'Recovered / 100 Cases', 'Deaths / 100 Recovered', 'Confirmed last week', '1 week change', '1 week % increase', 'WHO Region'], dtype='object')

```
In [158]: covid1 = covid1[['Country/Region', 'Confirmed', 'New cases', 'Deaths', 'New recovered', 'Recovered', 'Active', 'Recovered / 100 Cases', 'Deaths / 100 Cases', 'Deaths / 100 R
```

```
In [159]: covid1 = covid1.rename(columns = {'Country/Region': 'Country', })
```

In [160]:	covid1.head()												
Out[160]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
0	Afghanistan	36263	106	1269	18	25198	9796	69.49	3.50	5.04	35526	737	2.07
1	Albania	4880	117	144	63	2745	1991	56.25	2.95	5.25	4171	709	17.00
2	Algeria	27973	616	1163	749	18837	7973	67.34	4.16	6.17	23691	4282	18.07
3	Andorra	907	10	52	0	803	52	88.53	5.73	6.48	884	23	2.60
4	Angola	950	18	41	0	242	667	25.47	4.32	16.94	749	201	26.84

In [161]:	covid1.tail()												
Out[161]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
182	West Bank and Gaza	10621	152	78	0	3752	6791	35.33	0.73	2.08	8916	1705	19.12
183	Western Sahara	10	0	1	0	8	1	80.00	10.00	12.50	10	0	0.00
184	Yemen	1691	10	483	36	833	375	49.26	28.56	57.98	1619	72	4.45
185	Zambia	4552	71	140	465	2815	1597	61.84	3.08	4.97	3326	1226	36.86
186	Zimbabwe	2704	192	36	24	542	2126	20.04	1.33	6.64	1713	991	57.85

In [162]:	covid1.shape												
Out[162]:	(187, 13)												

In [163]:	covid1.columns												
Out[163]:	Index(['Country', 'Confirmed', 'New cases', 'Deaths', 'New recovered', 'Recovered', 'Active', 'Recovered / 100 Cases', 'Deaths / 100 Cases', 'Deaths / 100 Recovered', 'Confirmed last week', '1 week change', '1 week % increase'], dtype='object')												

In [169]:	covid1.sort_values(by = 'New cases', ascending = False)												
Out[169]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
173	US	4290259	56336	148011	27941	1325804	2816444	30.90	3.45	11.16	3834677	455582	11.88
79	India	1480073	44457	33408	33598	951166	495499	64.26	2.26	3.51	1155338	324735	28.11
23	Brazil	2442375	23284	87618	33728	1846641	508116	75.61	3.59	4.74	2118646	323729	15.28
37	Colombia	257101	16306	8777	11494	131161	117163	51.02	3.41	6.69	204005	53096	26.03
132	Peru	389717	13756	18418	4697	272547	98752	69.93	4.73	6.76	357681	32036	8.96
...
157	Spain	272421	0	28432	0	150376	93613	55.20	10.44	18.91	264836	7585	2.86
54	Equatorial Guinea	3071	0	51	0	842	2178	27.42	1.66	6.06	3071	0	0.00
100	Liechtenstein	86	0	1	0	81	4	94.19	1.16	1.23	86	0	0.00
95	Latvia	1219	0	31	0	1045	143	85.73	2.54	2.97	1192	27	2.27
56	Estonia	2034	0	69	1	1923	42	94.54	3.39	3.59	2021	13	0.64

187 rows × 13 columns

In [170]:	covid1.sort_values(by = 'New cases', ascending = True)												
Out[170]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
59	Fiji	27	0	0	0	18	9	66.67	0.00	0.00	27	0	0.00
24	Brunei	141	0	3	0	138	0	97.87	2.13	2.17	141	0	0.00
142	Saint Vincent and the Grenadines	52	0	0	0	39	13	75.00	0.00	0.00	50	2	4.00
143	San Marino	699	0	42	0	657	0	93.99	6.01	6.39	699	0	0.00
166	Tanzania	509	0	21	0	183	305	35.95	4.13	11.48	509	0	0.00
...
132	Peru	389717	13756	18418	4697	272547	98752	69.93	4.73	6.76	357681	32036	8.96
37	Colombia	257101	16306	8777	11494	131161	117163	51.02	3.41	6.69	204005	53096	26.03
23	Brazil	2442375	23284	87618	33728	1846641	508116	75.61	3.59	4.74	2118646	323729	15.28
79	India	1480073	44457	33408	33598	951166	495499	64.26	2.26	3.51	1155338	324735	28.11
173	US	4290259	56336	148011	27941	1325804	2816444	30.90	3.45	11.16	3834677	455582	11.88

187 rows × 13 columns

In [205]:	top5_1 = covid1.sort_values(by = 'New cases', ascending = False).head()												
Out[205]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
173	US	4290259	56336	148011	27941	1325804	2816444	30.90	3.45	11.16	3834677	455582	11.88
79	India	1480073	44457	33408	33598	951166	495499	64.26	2.26	3.51	1155338	324735	28.11
23	Brazil	2442375	23284	87618	33728	1846641	508116	75.61	3.59	4.74	2118646	323729	15.28

37	Colombia	257101	16306	8777	11494	131161	117163	51.02	3.41	6.69	204005	53096	26.03
132	Peru	389717	13756	18418	4697	272547	98752	69.93	4.73	6.76	357681	32036	8.96

```
In [206]: bot5_1 = covid1.sort_values(by ='New cases', ascending = False).tail()
bot5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
157	Spain	272421	0	28432	0	150376	93613	55.20	10.44	18.91	264836	7585	2.86
54	Equatorial Guinea	3071	0	51	0	842	2178	27.42	1.66	6.06	3071	0	0.00
100	Liechtenstein	86	0	1	0	81	4	94.19	1.16	1.23	86	0	0.00
95	Latvia	1219	0	31	0	1045	143	85.73	2.54	2.97	1192	27	2.27
56	Estonia	2034	0	69	1	1923	42	94.54	3.39	3.59	2021	13	0.64

```
In [207]: top5_1 = covid1.sort_values(by ='New cases', ascending = True).head()
top5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
59	Fiji	27	0	0	0	18	9	66.67	0.00	0.00	27	0	0.00
24	Brunei	141	0	3	0	138	0	97.87	2.13	2.17	141	0	0.00
142	Saint Vincent and the Grenadines	52	0	0	0	39	13	75.00	0.00	0.00	50	2	4.00
143	San Marino	699	0	42	0	657	0	93.99	6.01	6.39	699	0	0.00
166	Tanzania	509	0	21	0	183	305	35.95	4.13	11.48	509	0	0.00

```
In [208]: bot5_1 = covid1.sort_values(by ='New cases', ascending = True).tail()
bot5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
132	Peru	389717	13756	18418	4697	272547	98752	69.93	4.73	6.76	357681	32036	8.96
37	Colombia	257101	16306	8777	11494	131161	117163	51.02	3.41	6.69	204005	53096	26.03
23	Brazil	2442375	23284	87618	33728	1846641	508116	75.61	3.59	4.74	2118646	323729	15.28
79	India	1480073	44457	33408	33598	951166	495499	64.26	2.26	3.51	1155338	324735	28.11
173	US	4290259	56336	148011	27941	1325804	2816444	30.90	3.45	11.16	3834677	455582	11.88

```
In [209]: top5_1 = covid1.sort_values(by ='Deaths', ascending = True).head()
top5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
59	Fiji	27	0	0	0	18	9	66.67	0.00	0.00	27	0	0.00
75	Holy See	12	0	0	0	12	0	100.00	0.0	0.0	12	0	0.00
69	Grenada	23	0	0	0	23	0	100.00	0.0	0.0	23	0	0.00
94	Laos	20	0	0	0	19	1	95.00	0.0	0.0	19	1	5.26
68	Greenland	14	1	0	0	13	1	92.86	0.0	0.0	13	1	7.69

```
In [210]: top5_1 = covid1.sort_values(by ='Recovered', ascending = True).head()
top5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
32	Canada	116458	682	8944	0	0	107514	0.0	7.68	inf	112925	3533	3.13
163	Syria	674	24	40	0	0	634	0.0	5.93	inf	522	152	29.12
147	Serbia	24141	411	543	0	0	23598	0.0	2.25	inf	21253	2888	13.59
161	Sweden	79395	398	5700	0	0	73695	0.0	7.18	inf	78048	1347	1.73
117	Mozambique	1701	32	11	0	0	1690	0.0	0.65	inf	1507	194	12.87

```
In [211]: top5_1 = covid1.sort_values(by ='Confirmed', ascending = True).head()
top5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
183	Western Sahara	10	0	1	0	8	1	80.00	10.0	12.5	10	0	0.00
75	Holy See	12	0	0	0	12	0	100.00	0.0	0.0	12	0	0.00
68	Greenland	14	1	0	0	13	1	92.86	0.0	0.0	13	1	7.69
140	Saint Kitts and Nevis	17	0	0	0	15	2	88.24	0.0	0.0	17	0	0.00
49	Dominica	18	0	0	0	18	0	100.00	0.0	0.0	18	0	0.00

```
In [212]: top5_1 = covid1.sort_values(by ='Active', ascending = True).head()
top5_1
```

	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
49	Dominica	18	0	0	0	18	0	100.00	0.0	0.00	18	0	0.00

143	San Marino	699	0	42	0	657	0	93.99	6.01	6.39	699	0	0.0
69	Grenada	23	0	0	0	23	0	100.00	0.00	0.00	23	0	0.0
75	Holy See	12	0	0	0	12	0	100.00	0.00	0.00	12	0	0.0
24	Brunei	141	0	3	0	138	0	97.87	2.13	2.17	141	0	0.0

```
In [213]: top5_1 = covid1.sort_values(by ='Recovered / 100 Cases', ascending = True).head()
top5_1
```

Out[213]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
	32	Canada	116458	682	8944	0	0	107514	0.0	7.68	inf	112925	3533
	147	Serbia	24141	411	543	0	0	23598	0.0	2.25	inf	21253	2888
	161	Sweden	79395	398	5700	0	0	73695	0.0	7.18	inf	78048	1347
	163	Syria	674	24	40	0	0	634	0.0	5.93	inf	522	152
	117	Mozambique	1701	32	11	0	0	1690	0.0	0.65	inf	1507	194

```
In [214]: top5_1 = covid1.sort_values(by ='Deaths / 100 Cases', ascending = True).head()
top5_1
```

Out[214]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
	55	Eritrea	265	2	0	2	191	74	72.08	0.0	0.0	251	14
	114	Mongolia	289	1	0	4	222	67	76.82	0.0	0.0	287	2
	30	Cambodia	226	1	0	4	147	79	65.04	0.0	0.0	171	55
	19	Bhutan	99	4	0	1	86	13	86.87	0.0	0.0	90	9
	141	Saint Lucia	24	0	0	0	22	2	91.67	0.0	0.0	23	1

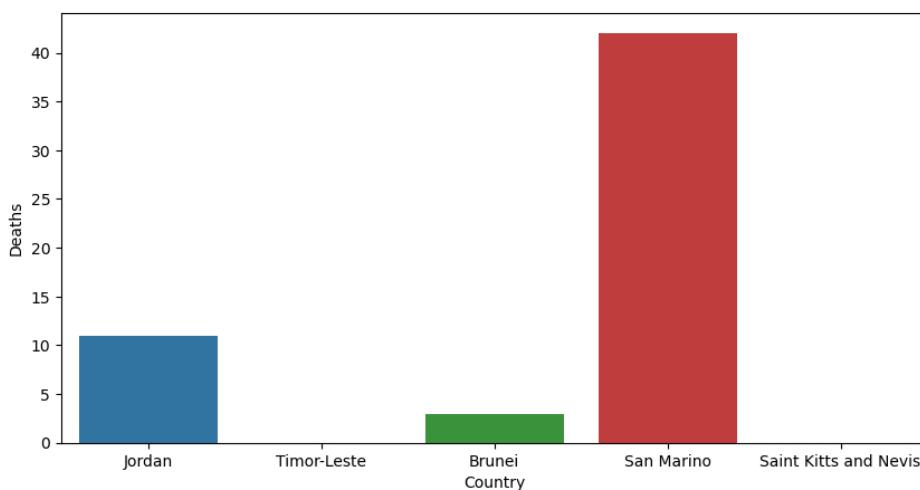
```
In [215]: top5_1 = covid1.sort_values(by ='Deaths / 100 Recovered', ascending = True).head()
top5_1
```

Out[215]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
	59	Fiji	27	0	0	0	18	9	66.67	0.0	0.0	27	0
	49	Dominica	18	0	0	0	18	0	100.00	0.0	0.0	18	0
	55	Eritrea	265	2	0	2	191	74	72.08	0.0	0.0	251	14
	68	Greenland	14	1	0	0	13	1	92.86	0.0	0.0	13	1
	69	Grenada	23	0	0	0	23	0	100.00	0.0	0.0	23	0

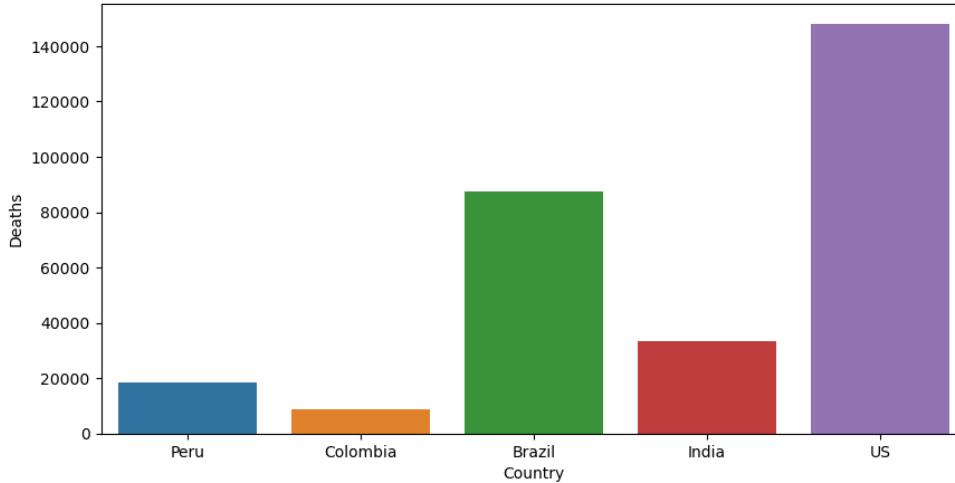
```
In [216]: top5_1 = covid1.sort_values(by ='1 week % increase', ascending = True).head()
top5_1
```

Out[216]:	Country	Confirmed	New cases	Deaths	New recovered	Recovered	Active	Recovered / 100 Cases	Deaths / 100 Cases	Deaths / 100 Recovered	Confirmed last week	1 week change	1 week % increase
	88	Jordan	1176	8	11	0	1041	124	88.52	0.94	1.06	1223	-47
	168	Timor-Leste	24	0	0	0	0	24	0.00	0.00	0.00	24	0
	24	Brunei	141	0	3	0	138	0	97.87	2.13	2.17	141	0
	143	San Marino	699	0	42	0	657	0	93.99	6.01	6.39	699	0
	140	Saint Kitts and Nevis	17	0	0	0	15	2	88.24	0.00	0.00	17	0

```
In [218]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Deaths", data = top5_1)
plt.show()
```



```
In [219]: plt.figure(figsize = (10, 5))
sns.barplot(x = "Country", y = "Deaths", data = bot5_1)
plt.show()
```



```
In [221]: covid1[['Country', 'New cases']].value_counts()
```

```
Out[221]: Country      New cases
Afghanistan   106          1
Pakistan      1176         1
Nepal          139          1
Netherlands   419          1
New Zealand    1           1
...
Georgia        6           1
Germany       445          1
Ghana          655          1
Greece         34          1
Zimbabwe      192          1
Name: count, Length: 187, dtype: int64
```

```
In [222]: covid1[['Country', 'New cases']].value_counts().head()
```

```
Out[222]: Country      New cases
Afghanistan   106          1
Pakistan      1176         1
Nepal          139          1
Netherlands   419          1
New Zealand    1           1
Name: count, dtype: int64
```

```
In [223]: covid1[['Country', 'Deaths']].value_counts()
```

```
Out[223]: Country      Deaths
Afghanistan   1269         1
Pakistan      5842         1
Nepal          48           1
Netherlands   6160         1
New Zealand    22           1
...
Georgia        16           1
Germany       9125         1
Ghana          168          1
Greece         202          1
Zimbabwe      36           1
Name: count, Length: 187, dtype: int64
```

```
In [224]: covid1[['Country', 'Deaths']].max()
```

```
Out[224]: Country      Zimbabwe
Deaths        148011
dtype: object
```

```
In [225]: covid1[['Country', 'Deaths']].min()
```

```
Out[225]: Country      Afghanistan
Deaths        0
dtype: object
```

```
In [226]: covid1[['Country', 'Deaths']].sum()
```

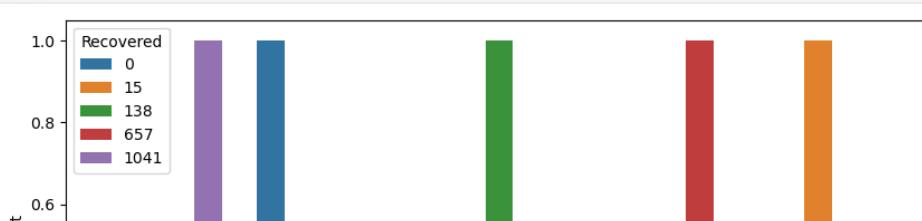
```
Out[226]: Country      Afghanistan Albania Algeria Andorra Angola Antigua ...
Deaths        654036
dtype: object
```

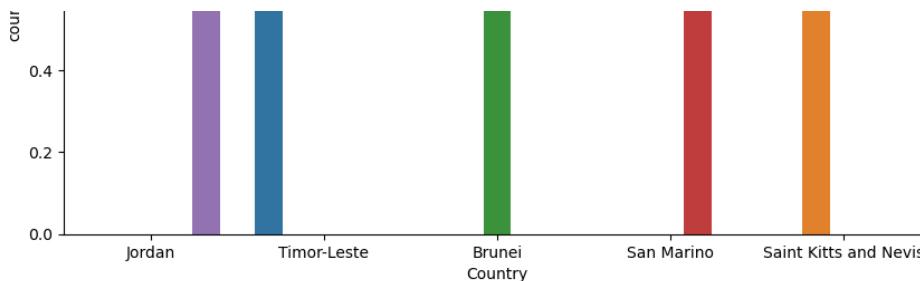
```
In [229]: overall_average_deaths = covid1['Deaths'].mean()
```

```
In [230]: overall_average_deaths
```

```
Out[230]: 3497.51871657754
```

```
In [235]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5_1, hue="Recovered")
plt.show()
```

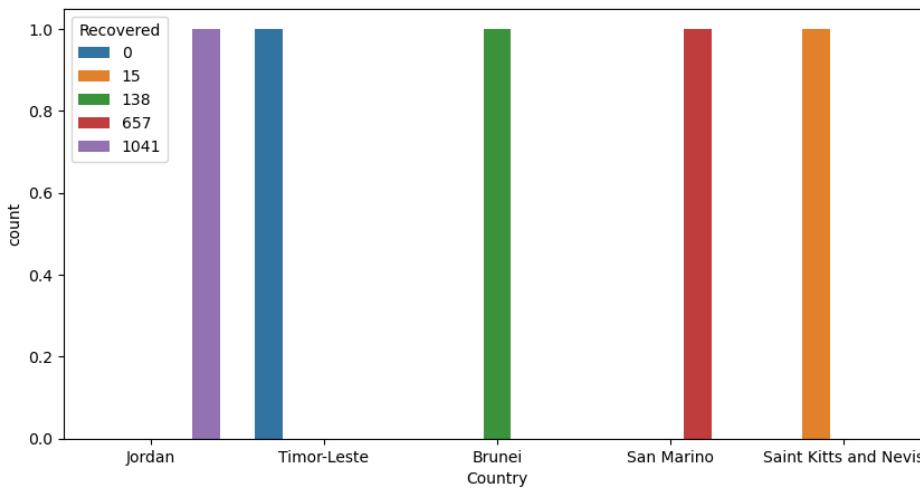




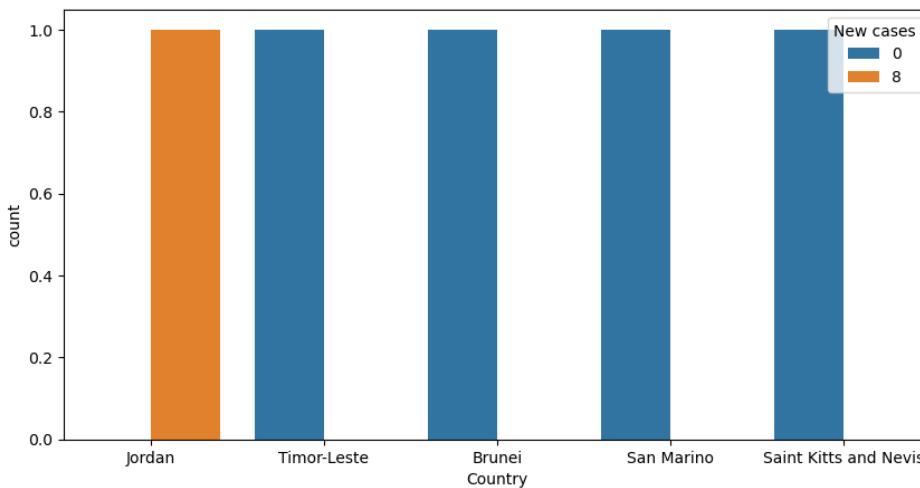
```
In [234]: covid1.columns
```

```
Out[234]: Index(['Country', 'Confirmed', 'New cases', 'Deaths', 'New recovered',
       'Recovered', 'Active', 'Recovered / 100 Cases', 'Deaths / 100 Cases',
       'Deaths / 100 Recovered', 'Confirmed last week', '1 week change',
       '1 week % increase'],
      dtype='object')
```

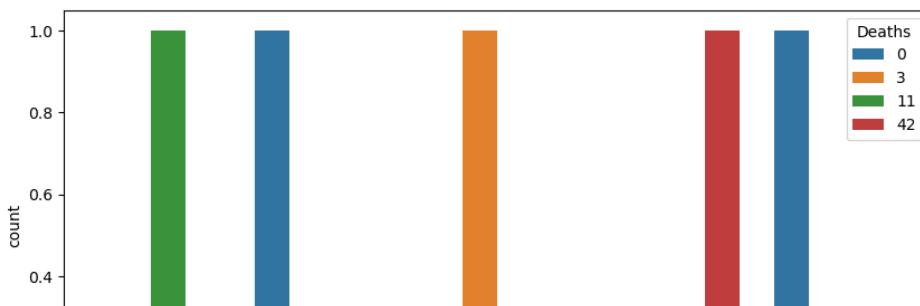
```
In [236]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5_1, hue="Recovered")
plt.show()
```

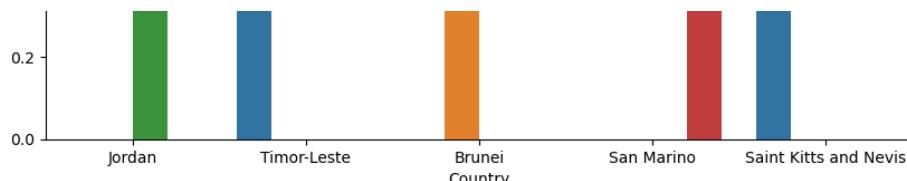


```
In [237]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5_1, hue="New cases")
plt.show()
```

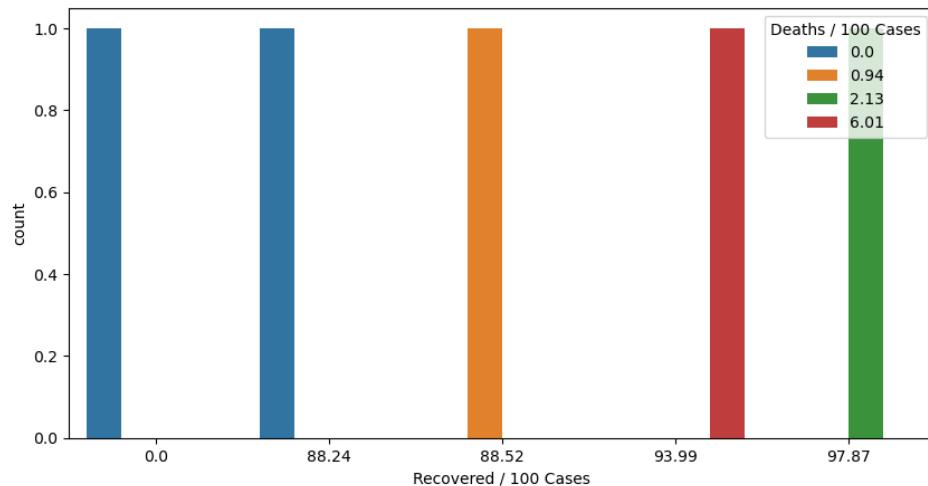


```
In [238]: plt.figure(figsize=(10, 5))
sns.countplot(x="Country", data=top5_1, hue="Deaths")
plt.show()
```

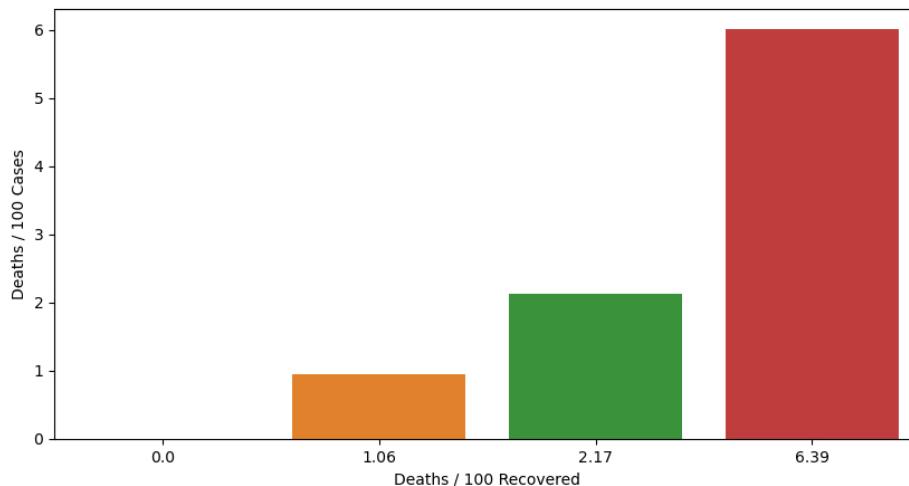




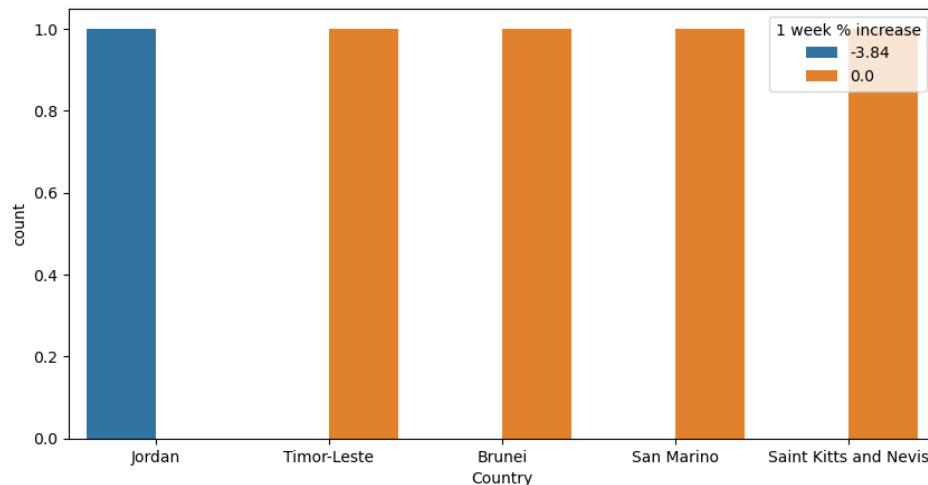
```
In [242]:  
plt.figure(figsize=(10, 5))  
sns.countplot(x="Recovered / 100 Cases", data=top5_1, hue="Deaths / 100 Cases")  
plt.show()
```



```
In [243]:  
plt.figure(figsize = (10, 5))  
sns.barplot(x = "Deaths / 100 Recovered", y = "Deaths / 100 Cases", data = top5_1)  
plt.show()
```



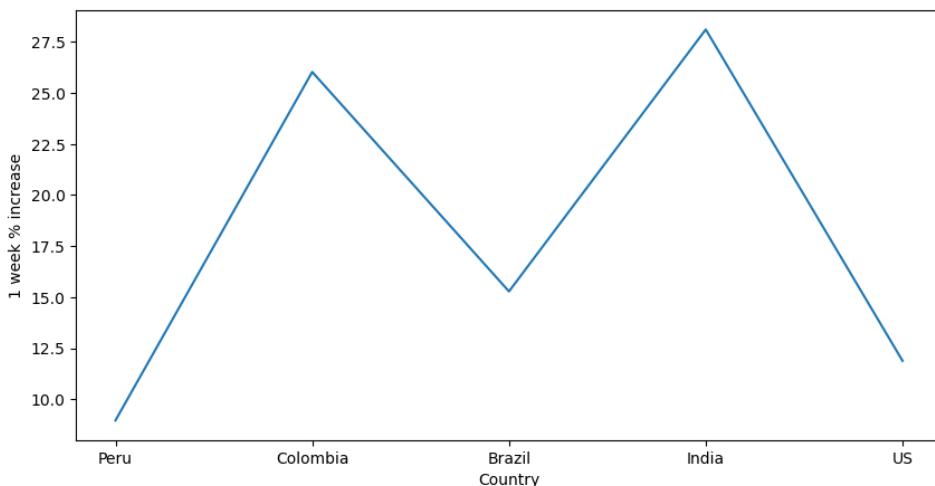
```
In [248]:  
plt.figure(figsize=(10, 5))  
sns.countplot(x="Country", data=top5_1, hue="1 week % increase")  
plt.show()
```



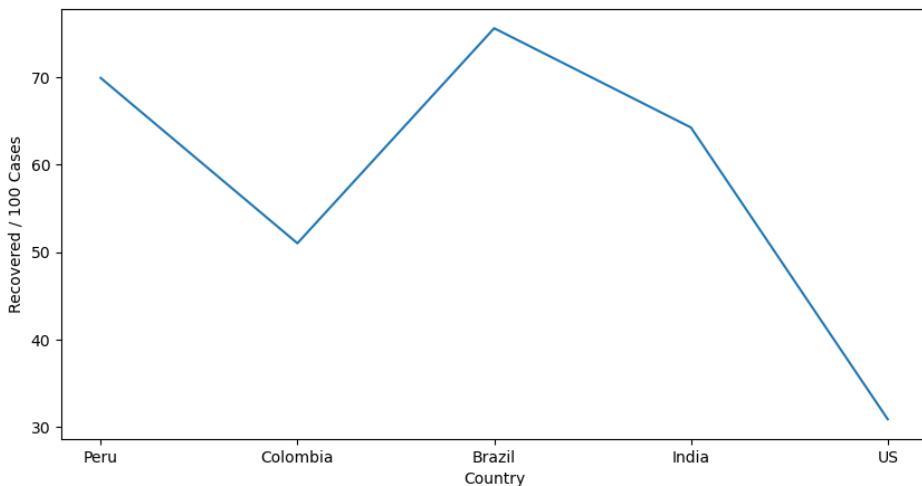
```
In [246]: covid1.columns
```

```
Out[246]: Index(['Country', 'Confirmed', 'New cases', 'Deaths', 'New recovered',
       'Recovered', 'Active', 'Recovered / 100 Cases', 'Deaths / 100 Cases',
       'Deaths / 100 Recovered', 'Confirmed last week', '1 week change',
       '1 week % increase'],
      dtype='object')
```

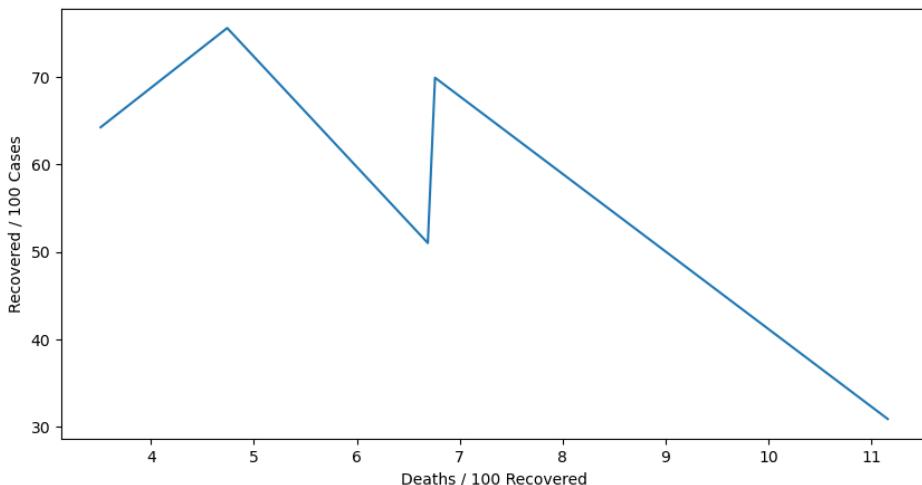
```
In [251]: plt.figure(figsize = (10, 5))
sns.lineplot(x = "Country", y = "1 week % increase", data = bot5_1)
plt.show()
```



```
In [252]: plt.figure(figsize = (10, 5))
sns.lineplot(x = "Country", y = "Recovered / 100 Cases", data = bot5_1)
plt.show()
```

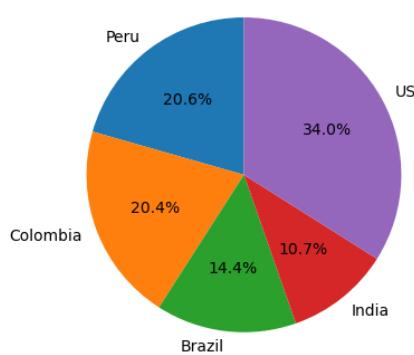


```
In [253]: plt.figure(figsize = (10, 5))
sns.lineplot(x = "Deaths / 100 Recovered", y = "Recovered / 100 Cases", data = bot5_1)
plt.show()
```

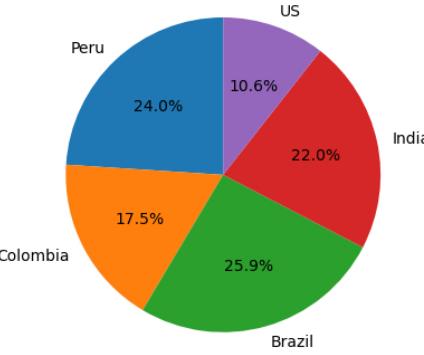


```
In [259]: plt.figure(figsize=(10, 5))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['Deaths / 100 Recovered'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Deaths / 100 Recovered')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['Recovered / 100 Cases'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Recovered / 100 Cases')
```

Deaths / 100 Recovered

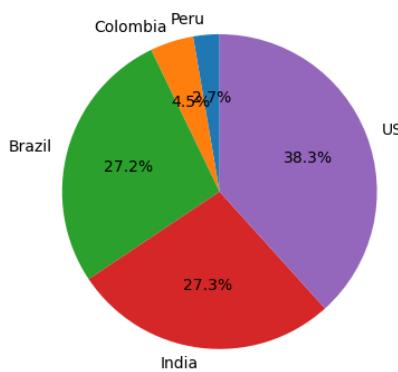


Recovered / 100 Cases

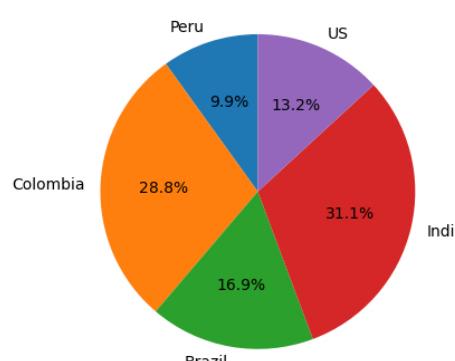


```
In [265]: plt.figure(figsize=(10, 15))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['1 week change'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('1 week change')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['1 week % increase'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('1 week % increase')
plt.show()
```

1 week change



1 week % increase

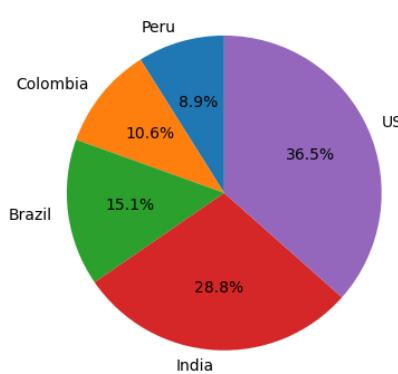


In [266]: covid1.columns

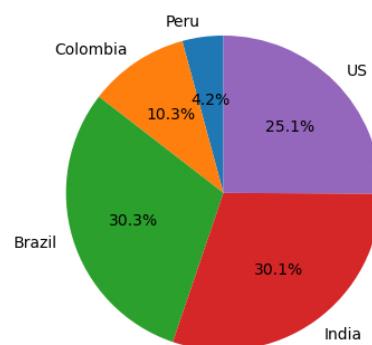
```
Out[266]: Index(['Country', 'Confirmed', 'New cases', 'Deaths', 'New recovered',
       'Recovered', 'Active', 'Recovered / 100 Cases', 'Deaths / 100 Cases',
       'Deaths / 100 Recovered', 'Confirmed last week', '1 week change',
       '1 week % increase'],
      dtype='object')
```

```
In [267]: plt.figure(figsize=(10, 15))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['New cases'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('New cases')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['New recovered'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('New recovered')
plt.show()
```

New cases



New recovered

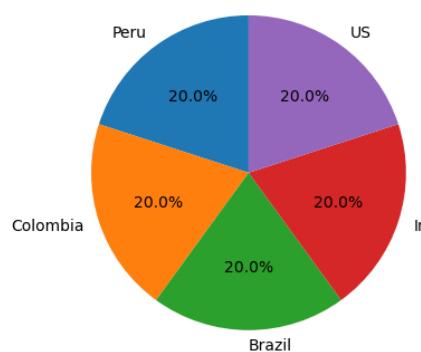


In [269]:

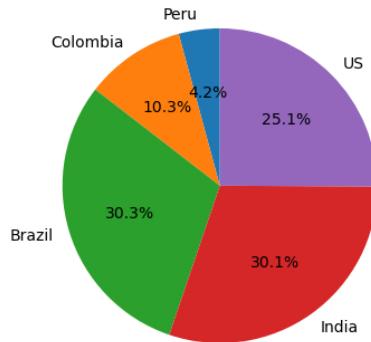
```
plt.figure(figsize=(10, 15))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Countries')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['New recovered'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('New Recovered Distribution')
```

```
plt.show()
```

Distribution of Countries

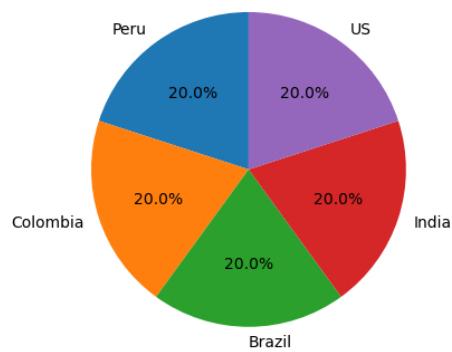


New Recovered Distribution

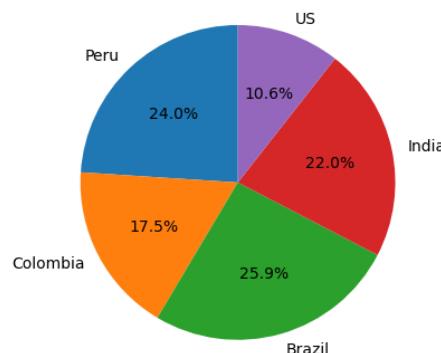


```
In [277]:  
plt.figure(figsize=(10, 15))  
plt.subplot(1, 2, 1)  
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)  
plt.title('Distribution of Countries')  
plt.subplot(1, 2, 2)  
plt.pie(bot5_1['Recovered / 100 Cases'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)  
plt.title('Recovered / 100 Cases')  
plt.show()
```

Distribution of Countries

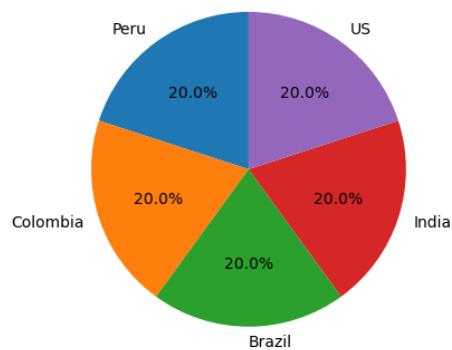


Recovered / 100 Cases

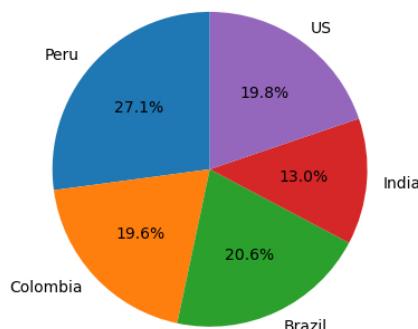


```
In [276]:  
plt.figure(figsize=(10, 15))  
plt.subplot(1, 2, 1)  
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)  
plt.title('Distribution of Countries')  
plt.subplot(1, 2, 2)  
plt.pie(bot5_1['Deaths / 100 Cases'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)  
plt.title('Deaths / 100 Cases')  
plt.show()
```

Distribution of Countries



Deaths / 100 Cases



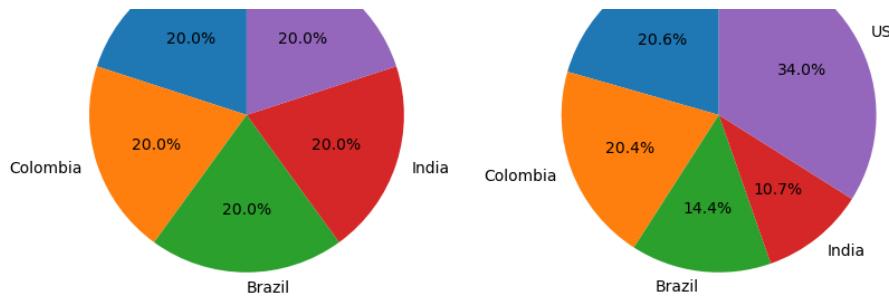
```
In [282]:  
plt.figure(figsize=(10, 15))  
plt.subplot(1, 2, 1)  
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)  
plt.title('Distribution of Countries')  
plt.subplot(1, 2, 2)  
plt.pie(bot5_1['Deaths / 100 Recovered'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)  
plt.title('Deaths / 100 Recovered')  
plt.show()
```

Distribution of Countries

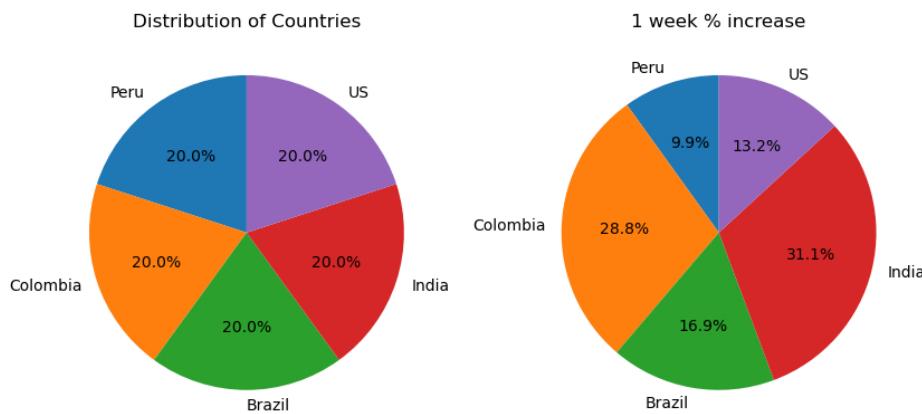


Deaths / 100 Recovered

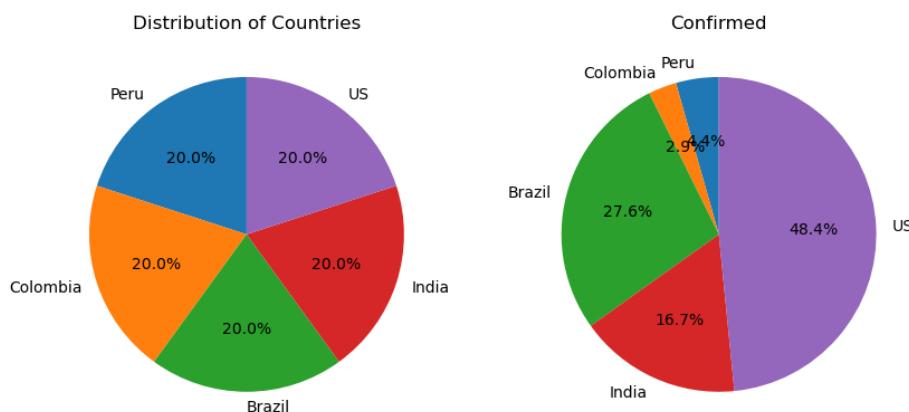




```
In [283]: plt.figure(figsize=(10, 15))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Countries')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['1 week % increase'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('1 week % increase')
plt.show()
```



```
In [284]: plt.figure(figsize=(10, 15))
plt.subplot(1, 2, 1)
plt.pie(bot5_1['Country'].value_counts(), labels=bot5_1['Country'].unique(), autopct='%1.1f%%', startangle=90)
plt.title('Distribution of Countries')
plt.subplot(1, 2, 2)
plt.pie(bot5_1['Confirmed'], labels=bot5_1['Country'], autopct='%1.1f%%', startangle=90)
plt.title('Confirmed')
plt.show()
```



In []: