In [1]:

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

In [2]:

```
dt = pd.read_excel('Covid 19 Death.xlsx')
```

Death Analysis

In [3]:

```
dt.head(5)
```

Out[3]:

	iso_code	continent	location	date	total_cases	new_cases	total_deaths	new_deaths	icu_patients	hosp_patients	total_tests	new_tests	population
0	AFG	Asia	Afghanistan	2020-02-24	5.0	5.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
1	AFG	Asia	Afghanistan	2020-02-25	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
2	AFG	Asia	Afghanistan	2020-02-26	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
3	AFG	Asia	Afghanistan	2020-02-27	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
4	AFG	Asia	Afghanistan	2020-02-28	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0

Finding null values

In [4]:

```
dt[dt['continent'].isnull()].index
```

Out[4]:

```
Int64Index([  7624,   7625,   7626,   7627,   7628,   7629,   7630,   7631,
              7632,   7633,
            ...
            238260, 238261, 238262, 238263, 238264, 238265, 238266, 238267,
            238268, 238269],
           dtype='int64', length=14376)
```

droping null values

In [5]:

```
dt = dt.drop(index=dt[dt['continent'].isnull()].index)
```

In [6]:

```
dt.head(5)
```

Out[6]:

	iso_code	continent	location	date	total_cases	new_cases	total_deaths	new_deaths	icu_patients	hosp_patients	total_tests	new_tests	population
0	AFG	Asia	Afghanistan	2020-02-24	5.0	5.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
1	AFG	Asia	Afghanistan	2020-02-25	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
2	AFG	Asia	Afghanistan	2020-02-26	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
3	AFG	Asia	Afghanistan	2020-02-27	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0
4	AFG	Asia	Afghanistan	2020-02-28	5.0	0.0	NaN	NaN	NaN	NaN	NaN	NaN	41128772.0

replace nan values

In [7]:

```
dt = dt.replace(np.nan, 0)
```

In [8]:

```
dt.head(5)
```

Out[8]:

	iso_code	continent	location	date	total_cases	new_cases	total_deaths	new_deaths	icu_patients	hosp_patients	total_tests	new_tests	population
0	AFG	Asia	Afghanistan	2020-02-24	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	41128772.0
1	AFG	Asia	Afghanistan	2020-02-25	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41128772.0
2	AFG	Asia	Afghanistan	2020-02-26	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41128772.0
3	AFG	Asia	Afghanistan	2020-02-27	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41128772.0
4	AFG	Asia	Afghanistan	2020-02-28	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41128772.0

change data type of columns

In [9]:

```
dt.dtypes
```

Out[9]:

```
iso_code                 object
continent                object
location                 object
date             datetime64[ns]
total_cases             float64
new_cases               float64
total_deaths            float64
new_deaths              float64
icu_patients            float64
hosp_patients           float64
total_tests             float64
new_tests               float64
population              float64
dtype: object
```

In [10]:

```
dt[["total_cases", "new_cases", "total_deaths", "new_deaths", "icu_patients", "hosp_patients", "total_tests",
    "new_tests", "population"]]=dt[['total_cases', 'new_cases', 'total_deaths', 'new_deaths', 'icu_patients',
                                'hosp_patients', 'total_tests', 'new_tests', 'population']].astype('int64')
```

In [11]:

```
dt.dtypes
```

Out[11]:

```
iso_code                  object
continent                 object
location                  object
date              datetime64[ns]
total_cases                int64
new_cases                  int64
total_deaths               int64
new_deaths                 int64
icu_patients               int64
hosp_patients              int64
total_tests                int64
new_tests                  int64
population                 int64
dtype: object
```

In [12]:

```
dt.head(5)
```

Out[12]:

	iso_code	continent	location	date	total_cases	new_cases	total_deaths	new_deaths	icu_patients	hosp_patients	total_tests	new_tests	population
0	AFG	Asia	Afghanistan	2020-02-24	5	5	0	0	0	0	0	0	41128772
1	AFG	Asia	Afghanistan	2020-02-25	5	0	0	0	0	0	0	0	41128772
2	AFG	Asia	Afghanistan	2020-02-26	5	0	0	0	0	0	0	0	41128772
3	AFG	Asia	Afghanistan	2020-02-27	5	0	0	0	0	0	0	0	41128772
4	AFG	Asia	Afghanistan	2020-02-28	5	0	0	0	0	0	0	0	41128772

covid infection rate

In [13]:

```
ifr = dt.groupby(['continent','location', 'population'], as_index=False)['total_cases'].max()
```

In [14]:

```
ifr.head(5)
```

Out[14]:

	continent	location	population	total_cases
0	Africa	Algeria	44903228	271403
1	Africa	Angola	35588996	105184
2	Africa	Benin	13352864	27990
3	Africa	Botswana	2630300	329494
4	Africa	Burkina Faso	22673764	22025

In [15]:

```
ifr['infection_rate'] = ifr['total_cases'] / ifr['population'] * 100
```

In [16]:

```
ifr.head(5)
```

Out[16]:

	continent	location	population	total_cases	infection_rate
0	Africa	Algeria	44903228	271403	0.604418
1	Africa	Angola	35588996	105184	0.295552
2	Africa	Benin	13352864	27990	0.209618
3	Africa	Botswana	2630300	329494	12.526860
4	Africa	Burkina Faso	22673764	22025	0.097139

round the infection rate with 2 decimal points

In [17]:

```
ifr = ifr.round({"infection_rate":2})
```

In [18]:

```
ifr.head(5)
```

Out[18]:

	continent	location	population	total_cases	infection_rate
0	Africa	Algeria	44903228	271403	0.60
1	Africa	Angola	35588996	105184	0.30
2	Africa	Benin	13352864	27990	0.21
3	Africa	Botswana	2630300	329494	12.53
4	Africa	Burkina Faso	22673764	22025	0.10

top 10 countries with highest infection rate

In [19]:

```
topifr = ifr.nlargest(n=10, columns=['infection_rate'])
```

In [20]:

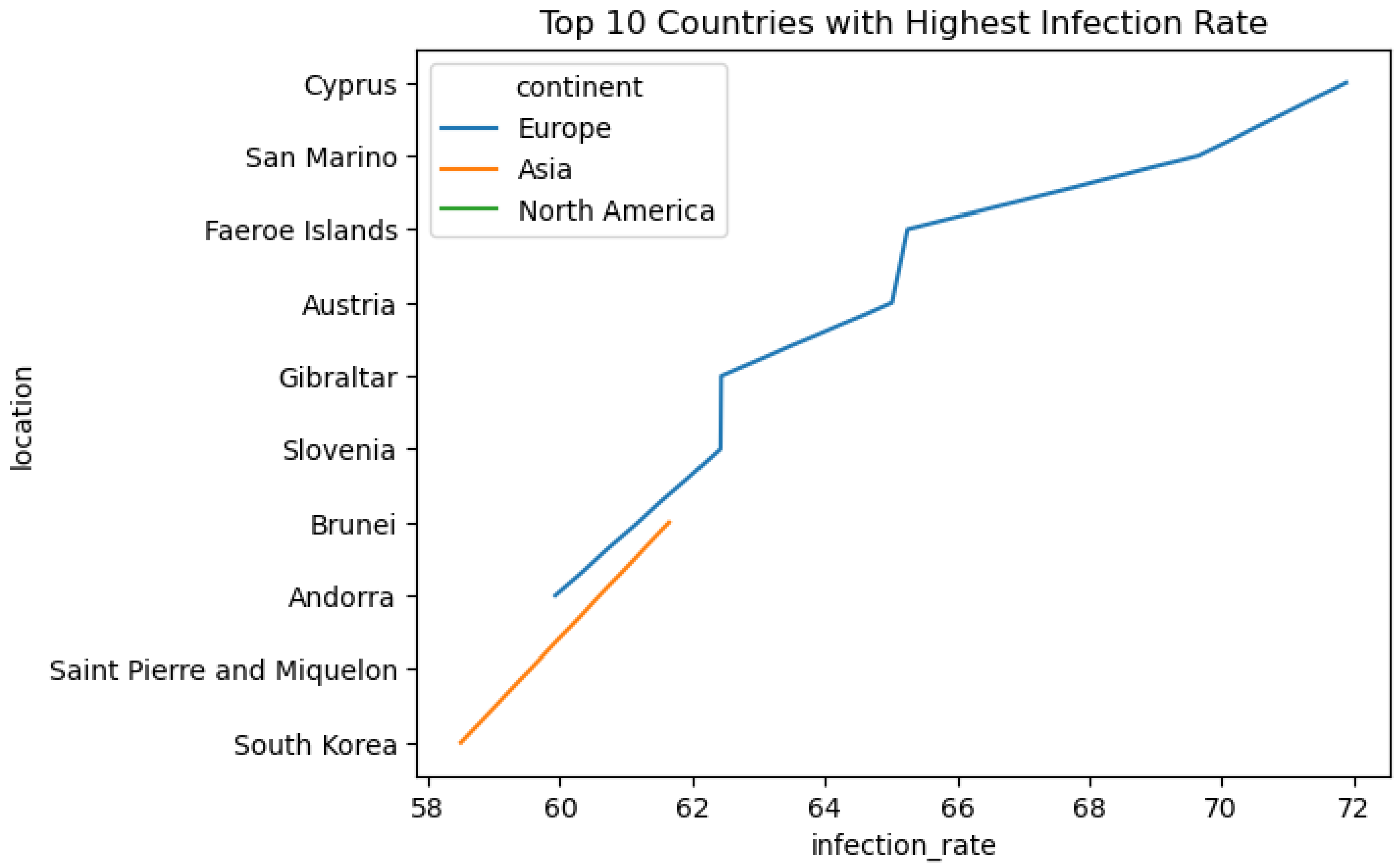
```
topifr
```

Out[20]:

	continent	location	population	total_cases	infection_rate
115	Europe	Cyprus	896007	644160	71.89
150	Europe	San Marino	33690	23468	69.66
120	Europe	Faeroe Islands	53117	34658	65.25
109	Europe	Austria	8939617	5812712	65.02
124	Europe	Gibraltar	32677	20399	62.43
154	Europe	Slovenia	2119843	1323146	62.42
62	Asia	Brunei	449002	276825	61.65
108	Europe	Andorra	79843	47850	59.93
192	North America	Saint Pierre and Miquelon	5885	3452	58.66
94	Asia	South Korea	51815808	30311979	58.50

In [21]:

```python
sns.lineplot(x='infection_rate', y='location', hue='continent', color='red', data=topifr)
plt.title('Top 10 Countries with Highest Infection Rate')
plt.show(1)
```



covid death rate

In [22]:

```python
dtr = dt.groupby(['continent','location', 'population'], as_index=False)[['total_cases','total_deaths']].max()
```

In [23]:

```python
dtr.head(5)
```

Out[23]:

	continent	location	population	total_cases	total_deaths
0	Africa	Algeria	44903228	271403	6881
1	Africa	Angola	35588996	105184	1931
2	Africa	Benin	13352864	27990	163
3	Africa	Botswana	2630300	329494	2876
4	Africa	Burkina Faso	22673764	22025	396

In [24]:

```python
dtr["death_rate"] = dtr['total_deaths'] / dtr['total_cases'] * 100
```

In [25]:

```
dtr.head(5)
```

Out[25]:

	continent	location	population	total_cases	total_deaths	death_rate
0	Africa	Algeria	44903228	271403	6881	2.535344
1	Africa	Angola	35588996	105184	1931	1.835831
2	Africa	Benin	13352864	27990	163	0.582351
3	Africa	Botswana	2630300	329494	2876	0.872854
4	Africa	Burkina Faso	22673764	22025	396	1.797957

round the death rate with 2 decimal points

In [26]:

```
dtr = dtr.round({"death_rate":2})
```

In [27]:

```
dtr.head(5)
```

Out[27]:

	continent	location	population	total_cases	total_deaths	death_rate
0	Africa	Algeria	44903228	271403	6881	2.54
1	Africa	Angola	35588996	105184	1931	1.84
2	Africa	Benin	13352864	27990	163	0.58
3	Africa	Botswana	2630300	329494	2876	0.87
4	Africa	Burkina Faso	22673764	22025	396	1.80

top 10 countries with highest death rate

In [28]:

```
topdtr = dtr.nlargest(n=10, columns=['death_rate'])
```

In [29]:

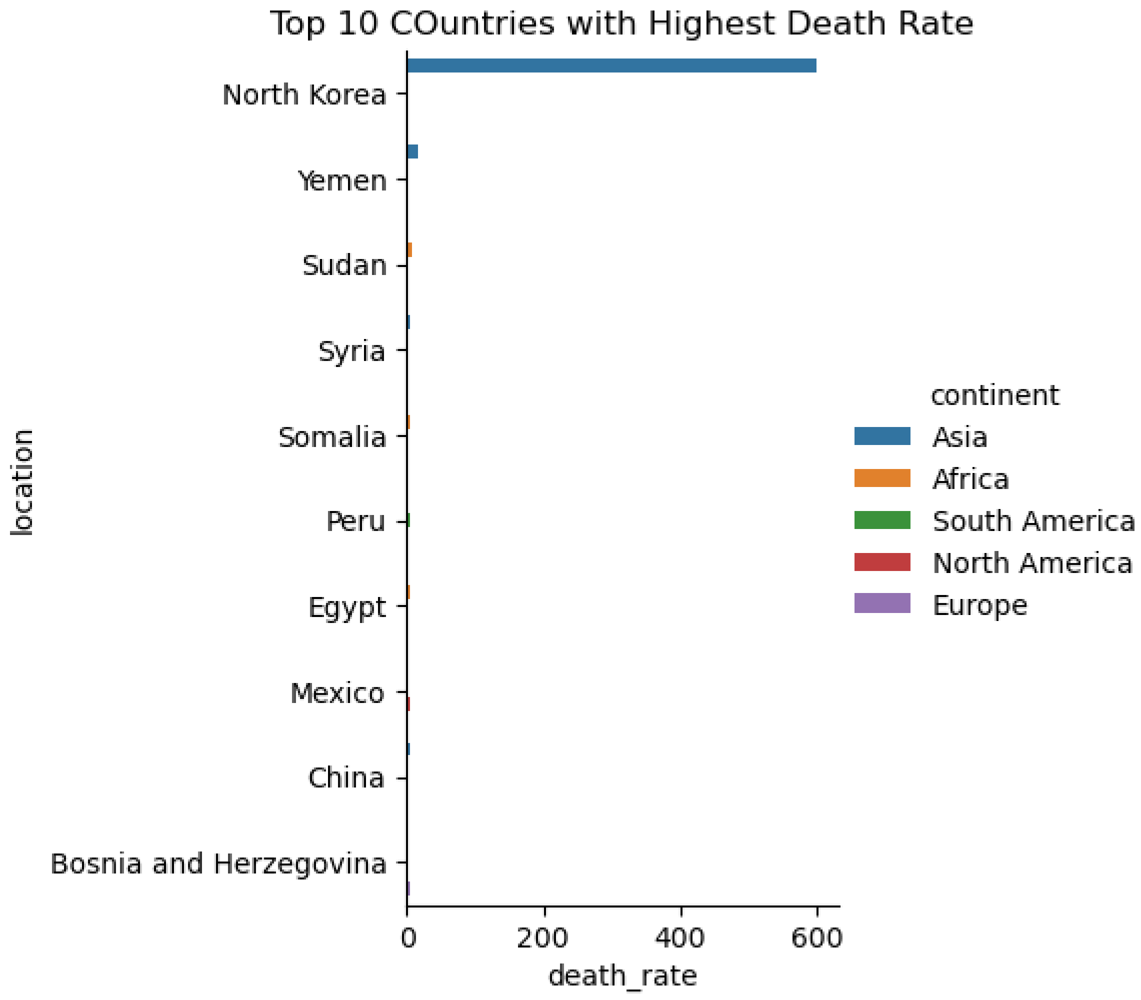
```
topdtr
```

Out[29]:

	continent	location	population	total_cases	total_deaths	death_rate
85	Asia	North Korea	26069416	1	6	600.00
106	Asia	Yemen	33696612	11945	2159	18.07
48	Africa	Sudan	46874200	63759	5008	7.85
96	Asia	Syria	22125242	57453	3164	5.51
45	Africa	Somalia	17597508	27322	1361	4.98
231	South America	Peru	34049588	4482852	219214	4.89
15	Africa	Egypt	110990096	515666	24807	4.81
185	North America	Mexico	127504120	7390902	332483	4.50
64	Asia	China	1425887360	2023904	87468	4.32
112	Europe	Bosnia and Herzegovina	3233530	401444	16260	4.05

In [30]:

```
sns.catplot(x='death_rate', y='location', kind='bar', hue='continent', data=topdtr)
plt.title('Top 10 COuntries with Highest Death Rate')
plt.show(1)
```



total tests done in ratio

In [31]:

```
tt = dt.groupby(['continent','location', 'population'], as_index = False)['total_tests'].max()
```

In [32]:

```
tt.head(5)
```

Out[32]:

	continent	location	population	total_tests
0	Africa	Algeria	44903228	230553
1	Africa	Angola	35588996	1618566
2	Africa	Benin	13352864	604310
3	Africa	Botswana	2630300	2285160
4	Africa	Burkina Faso	22673764	324773

In [33]:

```
tt["test_ratio"] = tt['total_tests'] / tt['population']
```

In [34]:

```
tt.head(5)
```

Out[34]:

	continent	location	population	total_tests	test_ratio
0	Africa	Algeria	44903228	230553	0.005134
1	Africa	Angola	35588996	1618566	0.045479
2	Africa	Benin	13352864	604310	0.045257
3	Africa	Botswana	2630300	2285160	0.868783
4	Africa	Burkina Faso	22673764	324773	0.014324

round the test ratio with 2 decimal point

In [35]:

```
tt = tt.round({"test_ratio":2})
```

In [36]:

```
tt.head(5)
```

Out[36]:

	continent	location	population	total_tests	test_ratio
0	Africa	Algeria	44903228	230553	0.01
1	Africa	Angola	35588996	1618566	0.05
2	Africa	Benin	13352864	604310	0.05
3	Africa	Botswana	2630300	2285160	0.87
4	Africa	Burkina Faso	22673764	324773	0.01

top 10 countries with highest test ratio

In [37]:

```
toptt = tt.nlargest(n=10, columns='test_ratio')
```

In [38]:

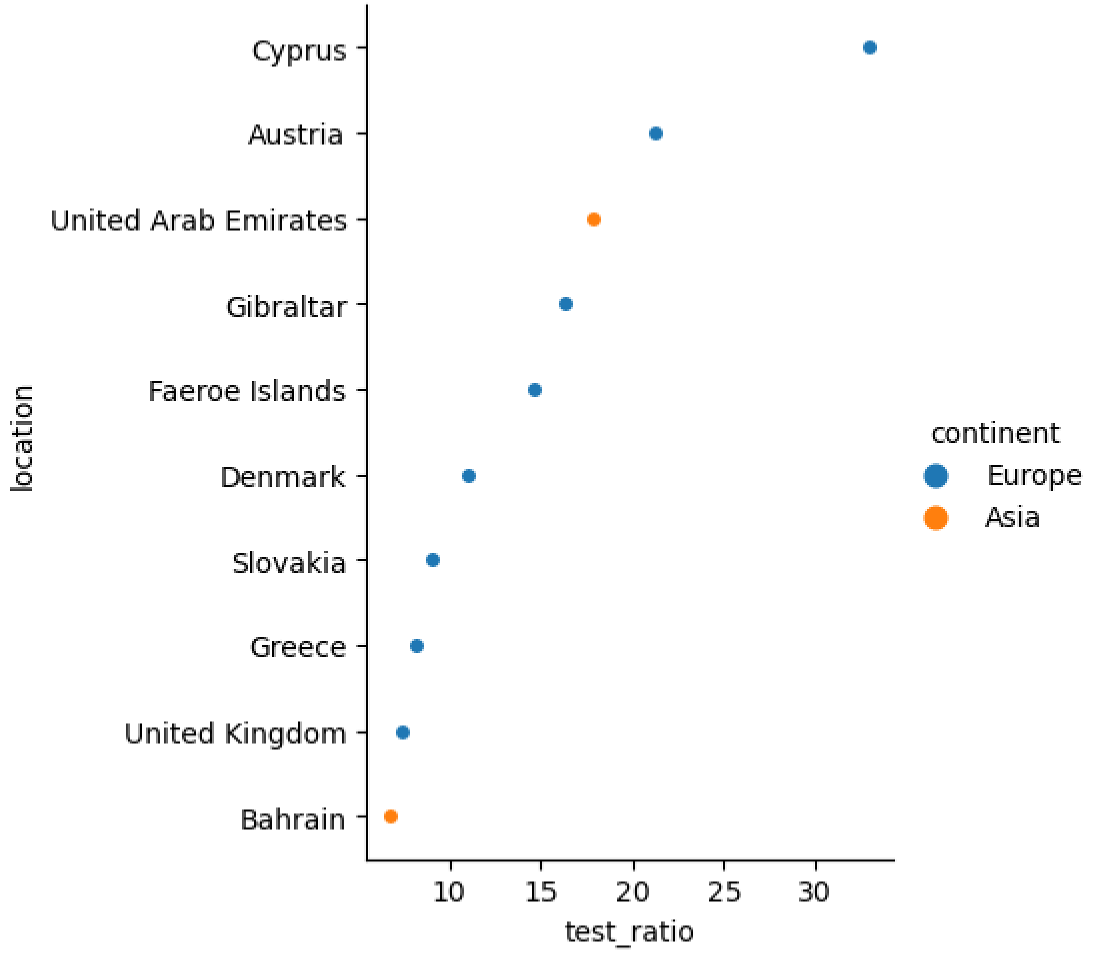
```
toptt
```

Out[38]:

	continent	location	population	total_tests	test_ratio
115	Europe	Cyprus	896007	29501771	32.93
109	Europe	Austria	8939617	189791719	21.23
103	Asia	United Arab Emirates	9441138	168522672	17.85
124	Europe	Gibraltar	32677	533268	16.32
120	Europe	Faeroe Islands	53117	777845	14.64
117	Europe	Denmark	5882259	64649913	10.99
153	Europe	Slovakia	5643455	51238482	9.08
125	Europe	Greece	10384972	84483362	8.14
159	Europe	United Kingdom	67508936	503270347	7.45
59	Asia	Bahrain	1472237	9969082	6.77

```
In [39]: sns.catplot(x='test_ratio', y='location', kind='swarm',hue='continent', data=toptt)
```

```
Out[39]: <seaborn.axisgrid.FacetGrid at 0x21c17db6760>
```



Vaccination Analysis

```
In [40]: vc = pd.read_excel('Covid 19 Vaccination.xlsx')
```

```
In [41]: vc.head(5)
```

```
Out[41]:
```

	iso_code	continent	location	date	total_vaccinations	people_vaccinated	people_fully_vaccinated	total_boosters	new_vaccinations	population
0	DEU	Europe	Germany	2022-06-29	182944891.0	64740268.0	63392660.0	57099562.0	54614.0	83369840.0
1	DEU	Europe	Germany	2022-06-30	183006335.0	64741874.0	63395542.0	57156451.0	61444.0	83369840.0
2	DEU	Europe	Germany	2022-07-01	183042150.0	64743203.0	63397481.0	57188928.0	35815.0	83369840.0
3	DEU	Europe	Germany	2022-07-02	183052643.0	64743718.0	63398377.0	57197976.0	10493.0	83369840.0
4	DEU	Europe	Germany	2022-07-03	183055354.0	64743822.0	63398582.0	57200374.0	2711.0	83369840.0

finding null values

In [42]:

```
vc[vc['continent'].isnull()].index
```

Out[42]:

```
Int64Index([  5688,   5689,   5690,   5691,   5692,   5693,   5694,   5695,
              5696,   5697,
            ...
            254712, 254713, 254714, 254715, 254716, 254717, 254718, 254719,
            254720, 254721],
           dtype='int64', length=14376)
```

drop null values

In [43]:

```
vc = vc.drop(index=vc[vc['continent'].isnull()].index)
```

In [44]:

```
vc.head(5)
```

Out[44]:

	iso_code	continent	location	date	total_vaccinations	people_vaccinated	people_fully_vaccinated	total_boosters	new_vaccinations	population
0	DEU	Europe	Germany	2022-06-29	182944891.0	64740268.0	63392660.0	57099562.0	54614.0	83369840.0
1	DEU	Europe	Germany	2022-06-30	183006335.0	64741874.0	63395542.0	57156451.0	61444.0	83369840.0
2	DEU	Europe	Germany	2022-07-01	183042150.0	64743203.0	63397481.0	57188928.0	35815.0	83369840.0
3	DEU	Europe	Germany	2022-07-02	183052643.0	64743718.0	63398377.0	57197976.0	10493.0	83369840.0
4	DEU	Europe	Germany	2022-07-03	183055354.0	64743822.0	63398582.0	57200374.0	2711.0	83369840.0

replace nan values

In [45]:

```
vc = vc.replace(np.nan, 0)
```

In [46]:

```
vc.head(5)
```

Out[46]:

	iso_code	continent	location	date	total_vaccinations	people_vaccinated	people_fully_vaccinated	total_boosters	new_vaccinations	population
0	DEU	Europe	Germany	2022-06-29	182944891.0	64740268.0	63392660.0	57099562.0	54614.0	83369840.0
1	DEU	Europe	Germany	2022-06-30	183006335.0	64741874.0	63395542.0	57156451.0	61444.0	83369840.0
2	DEU	Europe	Germany	2022-07-01	183042150.0	64743203.0	63397481.0	57188928.0	35815.0	83369840.0
3	DEU	Europe	Germany	2022-07-02	183052643.0	64743718.0	63398377.0	57197976.0	10493.0	83369840.0
4	DEU	Europe	Germany	2022-07-03	183055354.0	64743822.0	63398582.0	57200374.0	2711.0	83369840.0

change data of columns

In [47]:

```
vc.dtypes
```

Out[47]:

```
iso_code                             object
continent                            object
location                             object
date                         datetime64[ns]
total_vaccinations                  float64
people_vaccinated                   float64
people_fully_vaccinated             float64
total_boosters                      float64
new_vaccinations                    float64
population                          float64
dtype: object
```

In [48]:

```
vc[["total_vaccinations", "people_vaccinated", "people_fully_vaccinated",
    "total_boosters", "new_vaccinations", "population"]] = vc[['total_vaccinations', 'people_vaccinated',
                                                              'people_fully_vaccinated',
                                                              'total_boosters',
                                                              'new_vaccinations', 'population']].astype('int64')
```

In [49]:

```
vc.dtypes
```

Out[49]:

```
iso_code                             object
continent                            object
location                             object
date                         datetime64[ns]
total_vaccinations                    int64
people_vaccinated                     int64
people_fully_vaccinated               int64
total_boosters                        int64
new_vaccinations                      int64
population                            int64
dtype: object
```

In [50]:

```
vc.head(5)
```

Out[50]:

	iso_code	continent	location	date	total_vaccinations	people_vaccinated	people_fully_vaccinated	total_boosters	new_vaccinations	population
0	DEU	Europe	Germany	2022-06-29	182944891	64740268	63392660	57099562	54614	83369840
1	DEU	Europe	Germany	2022-06-30	183006335	64741874	63395542	57156451	61444	83369840
2	DEU	Europe	Germany	2022-07-01	183042150	64743203	63397481	57188928	35815	83369840
3	DEU	Europe	Germany	2022-07-02	183052643	64743718	63398377	57197976	10493	83369840
4	DEU	Europe	Germany	2022-07-03	183055354	64743822	63398582	57200374	2711	83369840

covid ratio of people vaccinated vs people fully vaccinated vs total booster

In [51]:

```
cvr = vc.groupby(['continent','location', 'population'], as_index=False)[['people_vaccinated', 'people_fully_vaccinated', 't
```

In [52]:
```
cvr.head(5)
```

Out[52]:

	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters
0	Africa	Algeria	44903228	7840131	6481186	575651
1	Africa	Angola	35588996	15079129	8306664	1526098
2	Africa	Benin	13352864	3697190	2742837	0
3	Africa	Botswana	2630300	1691984	1427883	502795
4	Africa	Burkina Faso	22673764	4366726	3335753	0

In [53]:
```
cvr['vaccination rate'] = cvr['people_vaccinated'] / cvr['population']*100
cvr['fully vaccinated'] = cvr['people_fully_vaccinated'] / cvr['population']*100
cvr['take booster'] = cvr['total_boosters'] / cvr['population']*100
```

In [54]:
```
cvr.head(5)
```

Out[54]:

	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters	vaccination rate	fully vaccinated	take booster
0	Africa	Algeria	44903228	7840131	6481186	575651	17.460061	14.433675	1.281981
1	Africa	Angola	35588996	15079129	8306664	1526098	42.370201	23.340540	4.288118
2	Africa	Benin	13352864	3697190	2742837	0	27.688367	20.541189	0.000000
3	Africa	Botswana	2630300	1691984	1427883	502795	64.326655	54.285937	19.115500
4	Africa	Burkina Faso	22673764	4366726	3335753	0	19.258937	14.711951	0.000000

round the vaccination rate with 2 decimal point

In [55]:
```
cvr = cvr.round({'vaccination rate':2,
                'fully vaccinated':2,
                 'take booster':2
                })
```

In [56]:
```
cvr.head(5)
```

Out[56]:

	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters	vaccination rate	fully vaccinated	take booster
0	Africa	Algeria	44903228	7840131	6481186	575651	17.46	14.43	1.28
1	Africa	Angola	35588996	15079129	8306664	1526098	42.37	23.34	4.29
2	Africa	Benin	13352864	3697190	2742837	0	27.69	20.54	0.00
3	Africa	Botswana	2630300	1691984	1427883	502795	64.33	54.29	19.12
4	Africa	Burkina Faso	22673764	4366726	3335753	0	19.26	14.71	0.00

top 10 countries with highest vaccination rate

In [57]:
```
topvr = cvr.nlargest(n=10, columns = 'vaccination rate')
```

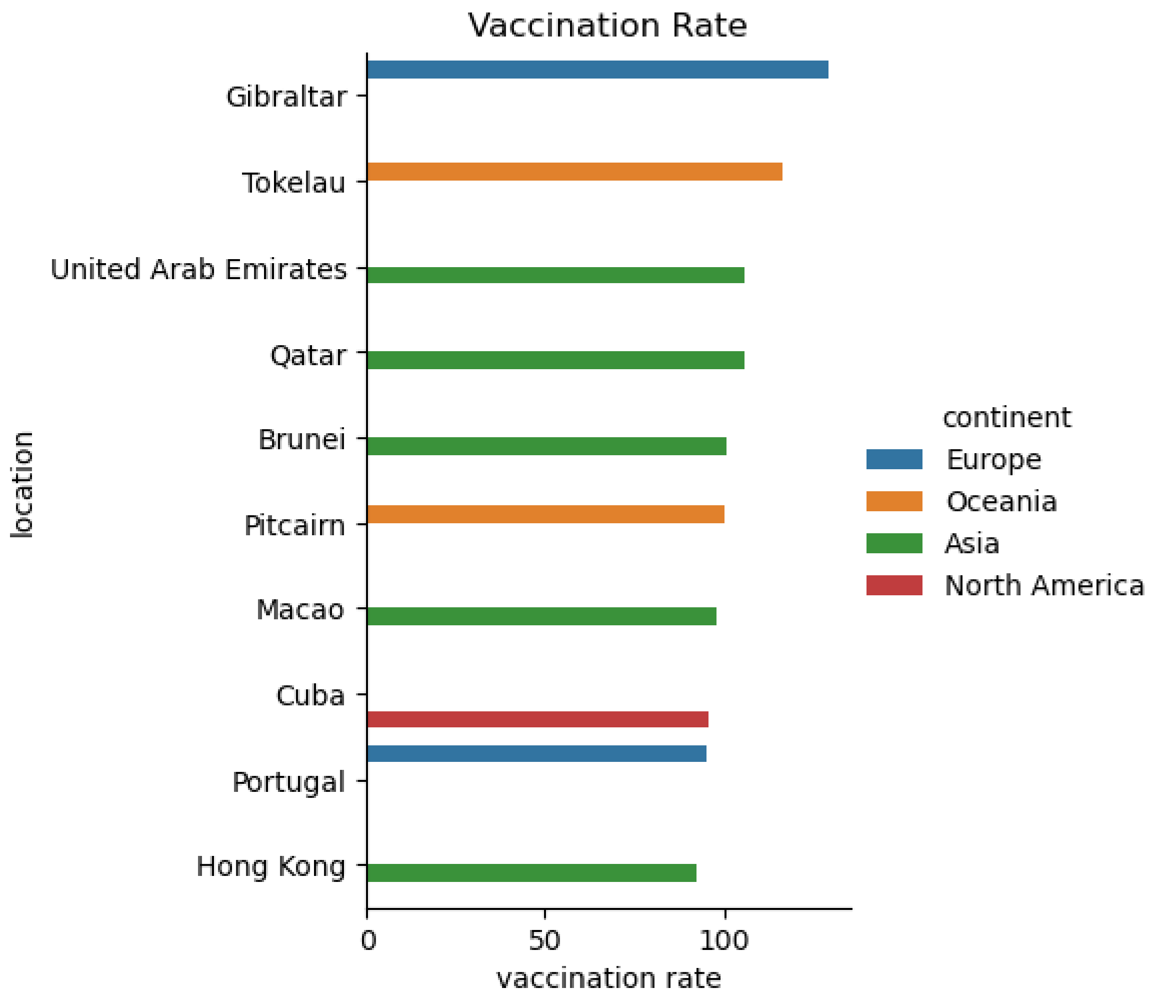
```
In [58]: topvr
```

Out[58]:

	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters	vaccination rate	fully vaccinated	take booster
124	Europe	Gibraltar	32677	42175	41465	49170	129.07	126.89	150.47
217	Oceania	Tokelau	1893	2203	2203	968	116.38	116.38	51.14
103	Asia	United Arab Emirates	9441138	9991089	9792266	5138699	105.83	103.72	54.43
91	Asia	Qatar	2695131	2851272	2851271	1902912	105.79	105.79	70.61
62	Asia	Brunei	449002	450788	446323	339711	100.40	99.40	75.66
214	Oceania	Pitcairn	47	47	47	23	100.00	100.00	48.94
79	Asia	Macao	695180	678421	640491	476363	97.59	92.13	68.52
174	North America	Cuba	11212198	10725298	10007149	8694346	95.66	89.25	77.54
147	Europe	Portugal	10270857	9777719	8891728	7040000	95.20	86.57	68.54
66	Asia	Hong Kong	7488863	6912485	6793089	6912067	92.30	90.71	92.30

```
In [59]: sns.catplot(x='vaccination rate', y='location',kind = 'bar',hue = 'continent', data=topvr)
         plt.title('Vaccination Rate')
```

```
Out[59]: Text(0.5, 1.0, 'Vaccination Rate')
```



top 10 countries with highest people fully vaccinated

In [60]:

```
toppfv = cvr.nlargest(n=10, columns = 'fully vaccinated')
```

In [61]:

```
toppfv
```

Out[61]:

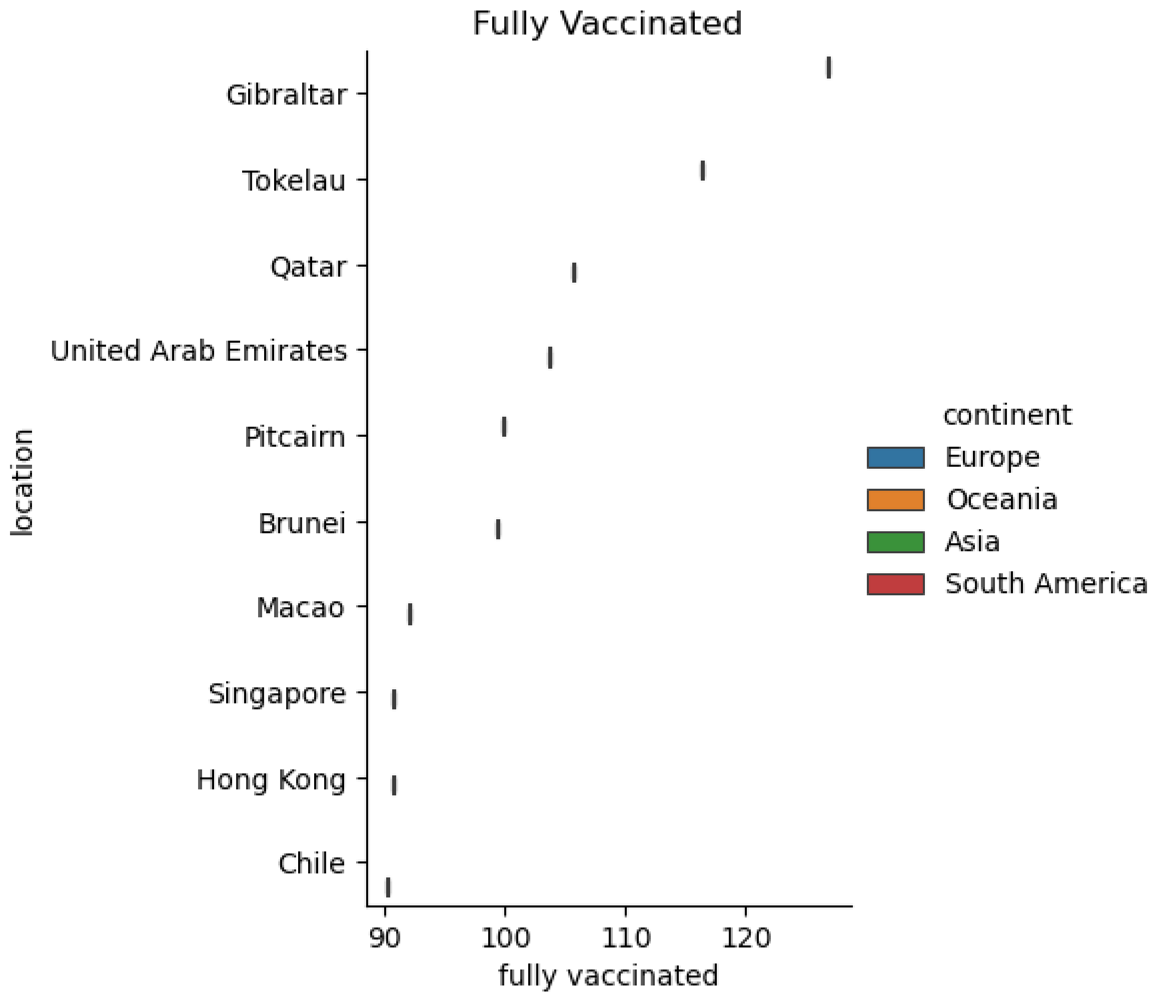
	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters	vaccination rate	fully vaccinated	take booster
124	Europe	Gibraltar	32677	42175	41465	49170	129.07	126.89	150.47
217	Oceania	Tokelau	1893	2203	2203	968	116.38	116.38	51.14
91	Asia	Qatar	2695131	2851272	2851271	1902912	105.79	105.79	70.61
103	Asia	United Arab Emirates	9441138	9991089	9792266	5138699	105.83	103.72	54.43
214	Oceania	Pitcairn	47	47	47	23	100.00	100.00	48.94
62	Asia	Brunei	449002	450788	446323	339711	100.40	99.40	75.66
79	Asia	Macao	695180	678421	640491	476363	97.59	92.13	68.52
93	Asia	Singapore	5637022	5160551	5120969	4440289	91.55	90.85	78.77
66	Asia	Hong Kong	7488863	6912485	6793089	6912067	92.30	90.71	92.30
225	South America	Chile	19603736	18088517	17700117	27474929	92.27	90.29	140.15

In [62]:

```
sns.catplot(x='fully vaccinated', y='location', hue='continent', kind='box', data=toppfv)
plt.title('Fully Vaccinated')
```

Out[62]:

```
Text(0.5, 1.0, 'Fully Vaccinated')
```



top 10 countries with highest total boosters

In [63]:

```
topb= cvr.nlargest(n=10, columns = 'take booster')
```

In [64]:

```
topb
```

Out[64]:

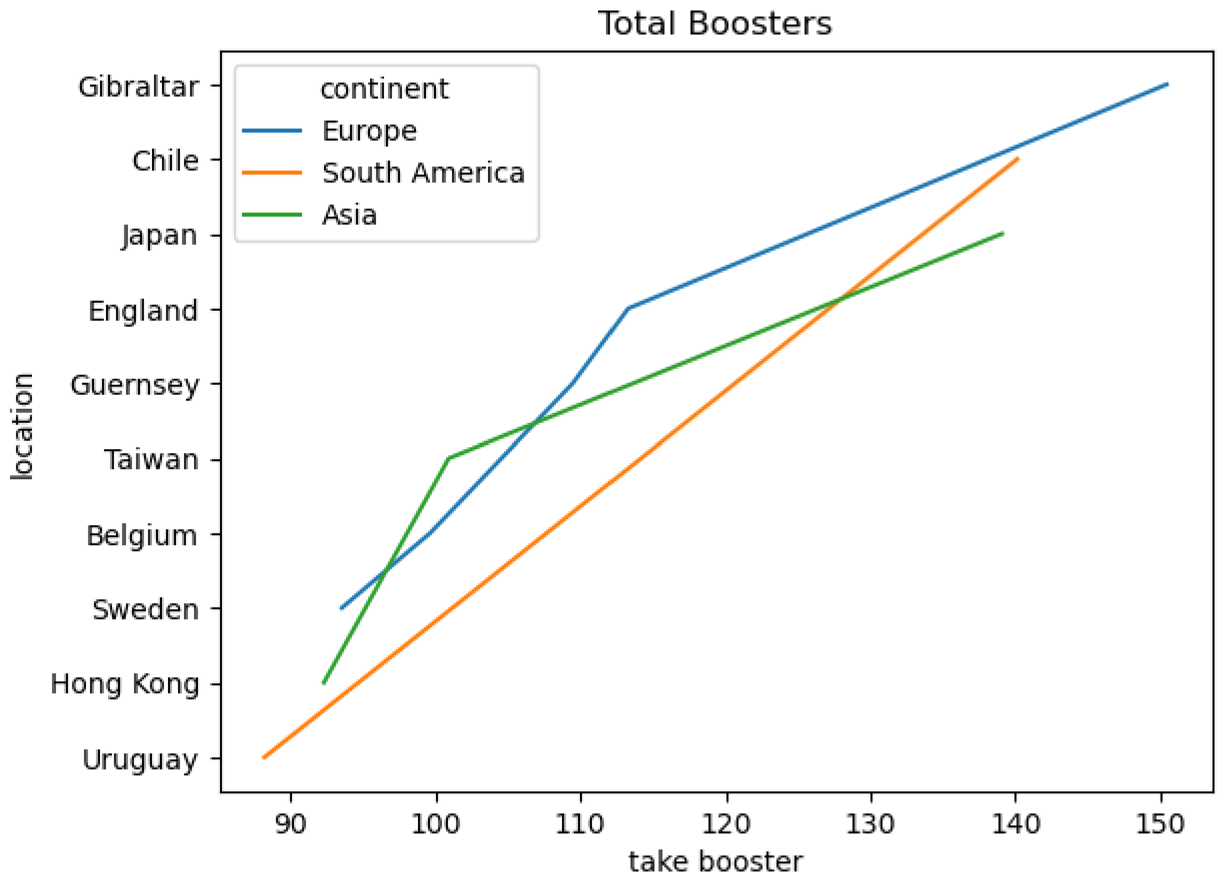
	continent	location	population	people_vaccinated	people_fully_vaccinated	total_boosters	vaccination rate	fully vaccinated	take booster
124	Europe	Gibraltar	32677	42175	41465	49170	129.07	126.89	150.47
225	South America	Chile	19603736	18088517	17700117	27474929	92.27	90.29	140.15
72	Asia	Japan	123951696	104640998	103273937	172408505	84.42	83.32	139.09
118	Europe	England	56550000	45398149	42916983	64062268	80.28	75.89	113.28
126	Europe	Guernsey	63329	54223	52710	69339	85.62	83.23	109.49
97	Asia	Taiwan	23893396	21859305	20705041	24112605	91.49	86.66	100.92
111	Europe	Belgium	11655923	9265134	9167544	11612338	79.49	78.65	99.63
156	Europe	Sweden	10549349	7817893	7635229	9867336	74.11	72.38	93.54
66	Asia	Hong Kong	7488863	6912485	6793089	6912067	92.30	90.71	92.30
233	South America	Uruguay	3422796	3005984	2898215	3018550	87.82	84.67	88.19

In [65]:

```
sns.lineplot(x='take booster',y='location', hue='continent', color='red', data=topb)
plt.title('Total Boosters')
```

Out[65]:

```
Text(0.5, 1.0, 'Total Boosters')
```


Total Boosters
continent
Europe
South America
Asia
location
Gibraltar
Chile
Japan
England
Guernsey
Taiwan
Belgium
Sweden
Hong Kong
Uruguay
take booster