(http://www.pieriandata.com)

Matrix Plots

NOTE: Make sure to watch the video lecture, not all datasets are well suited for a heatmap or clustermap.

Imports

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

The Data

World Population Prospects publishes United Nations population estimates for all world countries and every year from 1950 to 2020, as well as projections for different scenarios (low, middle and high variants) from 2020 to 2100. The figures presented here correspond to middle variant projections for the given year.

https://www.ined.fr/en/everything_about_population/data/all-countries/?lst_continent=900&lst_pays=926 (https://www.ined.fr/en/everything_about_population/data/all-countries/?lst_continent=900&lst_pays=926)

Source : Estimates for the current year based on data from the World Population Prospects. United Nations.

In [2]:
```
# 2020 Projections
df = pd.read_csv('country_table.csv')
```

In [3]:
```
df
```

Out[3]:

	Countries	Birth rate	Mortality rate	Life expectancy	Infant mortality rate	Growth rate
0	AFRICA	32.577	7.837	63.472	44.215	24.40
1	ASIA	15.796	7.030	73.787	23.185	8.44
2	EUROPE	10.118	11.163	78.740	3.750	0.38
3	LATIN AMERICA AND THE CARIBBEAN	15.886	6.444	75.649	14.570	8.89
4	NORTHERN AMERICA	11.780	8.833	79.269	5.563	6.11
5	OCEANIA	16.235	6.788	78.880	16.939	12.79
6	WORLD	17.963	7.601	72.766	27.492	10.36

Heatmap

In [4]:
```
df = df.set_index('Countries')
```

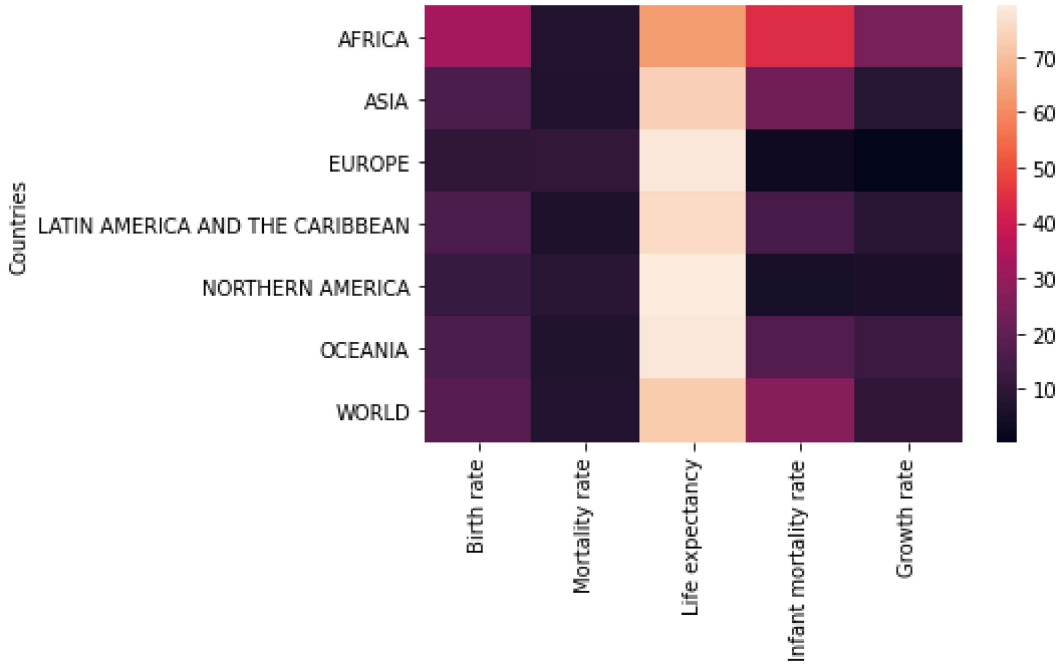
In [5]:
```
df
```

Out[5]:

Countries	Birth rate	Mortality rate	Life expectancy	Infant mortality rate	Growth rate
AFRICA	32.577	7.837	63.472	44.215	24.40
ASIA	15.796	7.030	73.787	23.185	8.44
EUROPE	10.118	11.163	78.740	3.750	0.38
LATIN AMERICA AND THE CARIBBEAN	15.886	6.444	75.649	14.570	8.89
NORTHERN AMERICA	11.780	8.833	79.269	5.563	6.11
OCEANIA	16.235	6.788	78.880	16.939	12.79
WORLD	17.963	7.601	72.766	27.492	10.36

In [6]:
```
# Clearly shows life expectancy in different units
sns.heatmap(df)
```

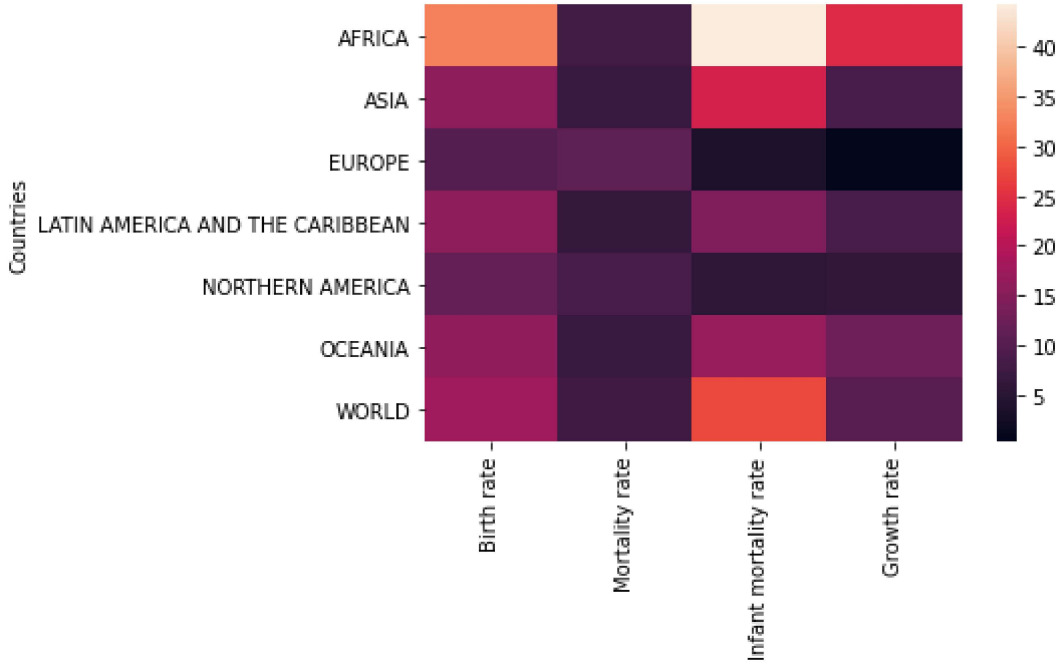
Out[6]: <AxesSubplot:ylabel='Countries'>



In [7]:
```
rates = df.drop('Life expectancy',axis=1)
```

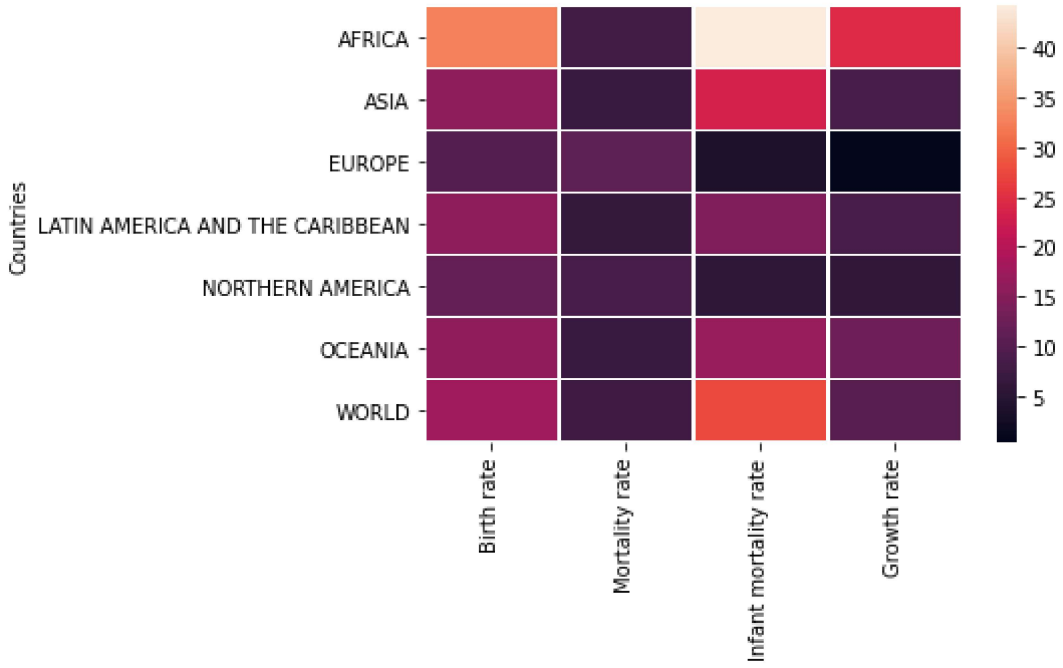
In [8]:
```
sns.heatmap(rates)
```

Out[8]: <AxesSubplot:ylabel='Countries'>



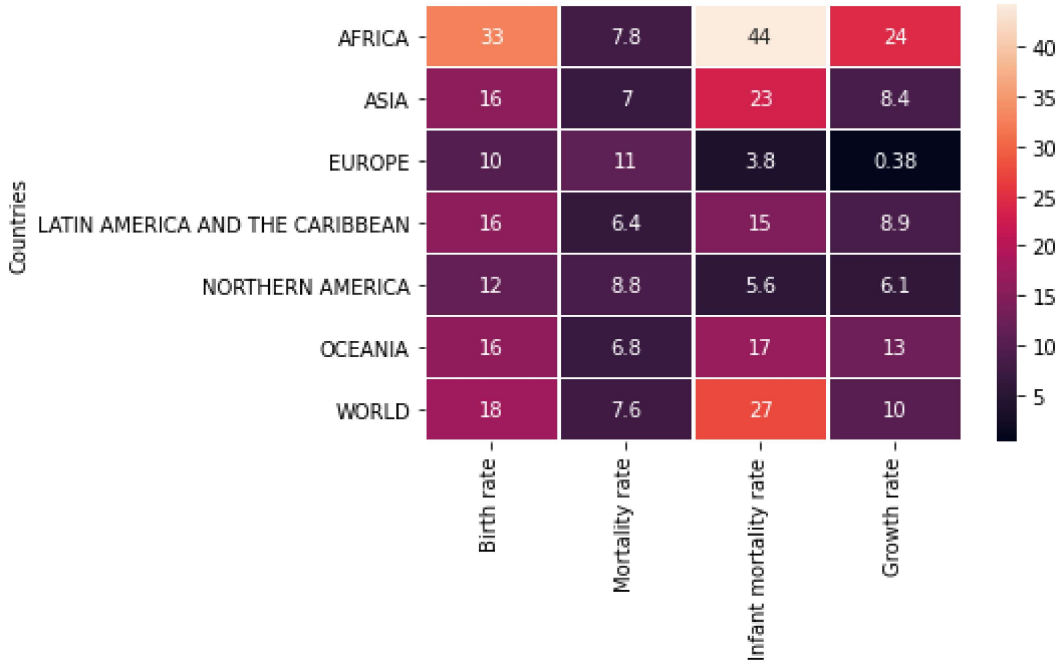
In [9]:
```
sns.heatmap(rates,linewidth=0.5)
```

Out[9]:
```
<AxesSubplot:ylabel='Countries'>
```



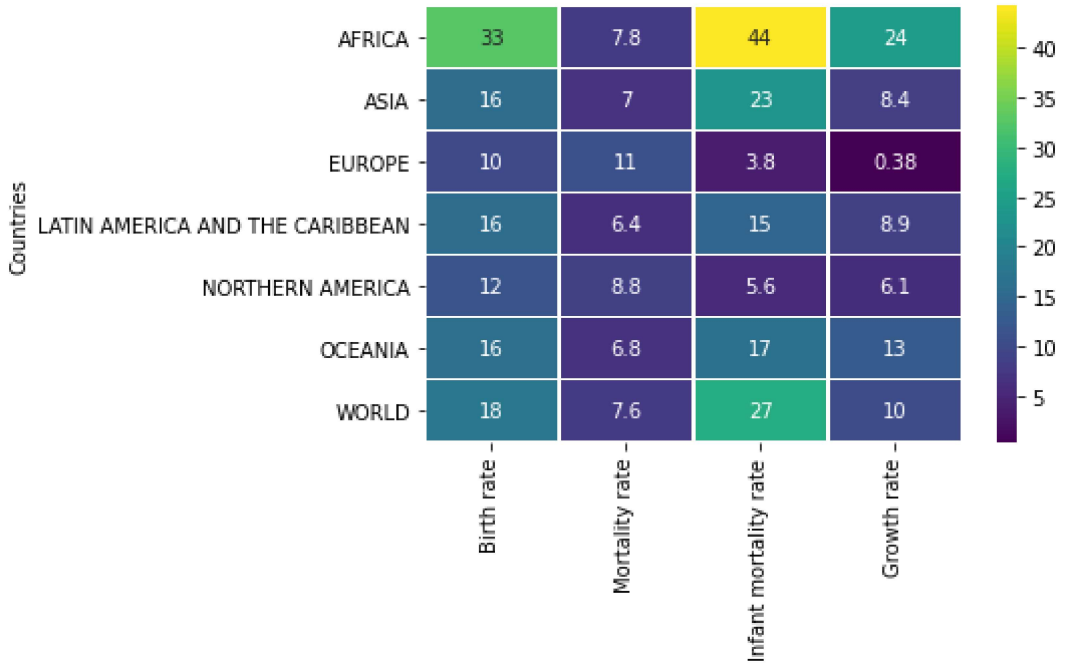
In [10]:
```
sns.heatmap(rates,linewidth=0.5,annot=True)
```

Out[10]:
```
<AxesSubplot:ylabel='Countries'>
```



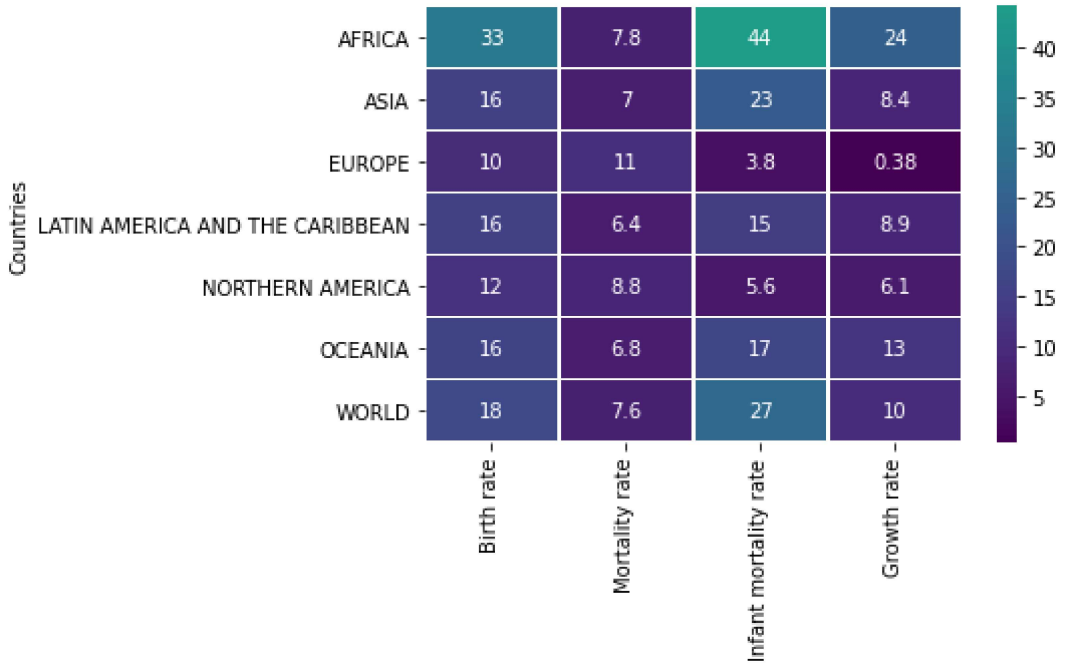
In [11]:
```
# Note how its not palette here
sns.heatmap(rates,linewidth=0.5,annot=True,cmap='viridis')
```

Out[11]: <AxesSubplot:ylabel='Countries'>



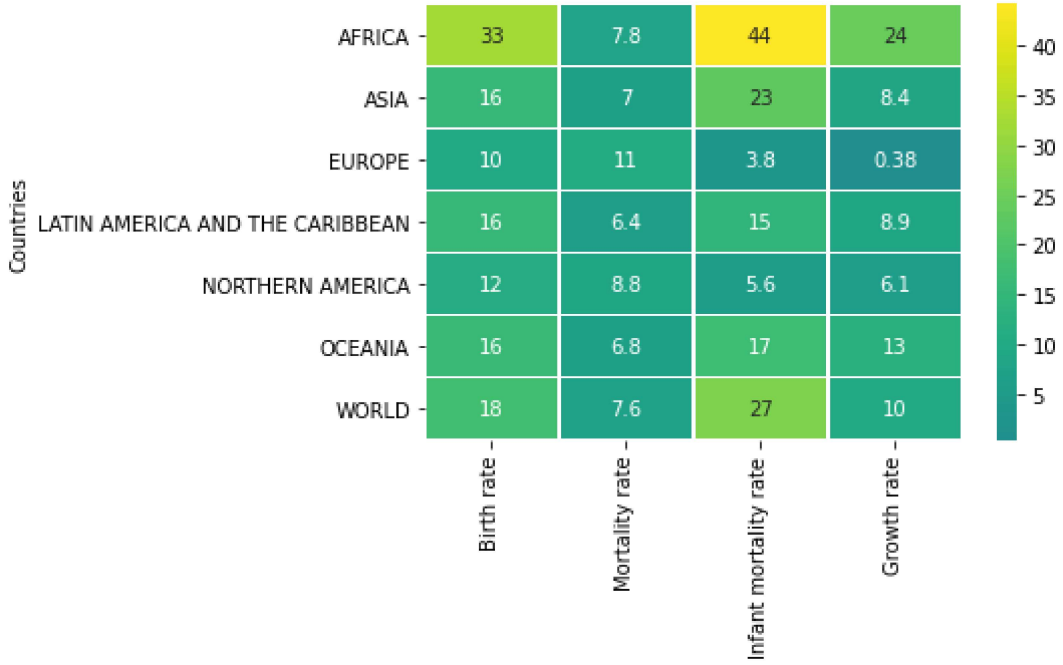
In [12]:
```
# Set colorbar based on value from dataset
sns.heatmap(rates,linewidth=0.5,annot=True,cmap='viridis',center=40)
```

Out[12]: <AxesSubplot:ylabel='Countries'>



In [13]:
```
# Set colorbar based on value from dataset
sns.heatmap(rates,linewidth=0.5,annot=True,cmap='viridis',center=1)
```

Out[13]: <AxesSubplot:ylabel='Countries'>

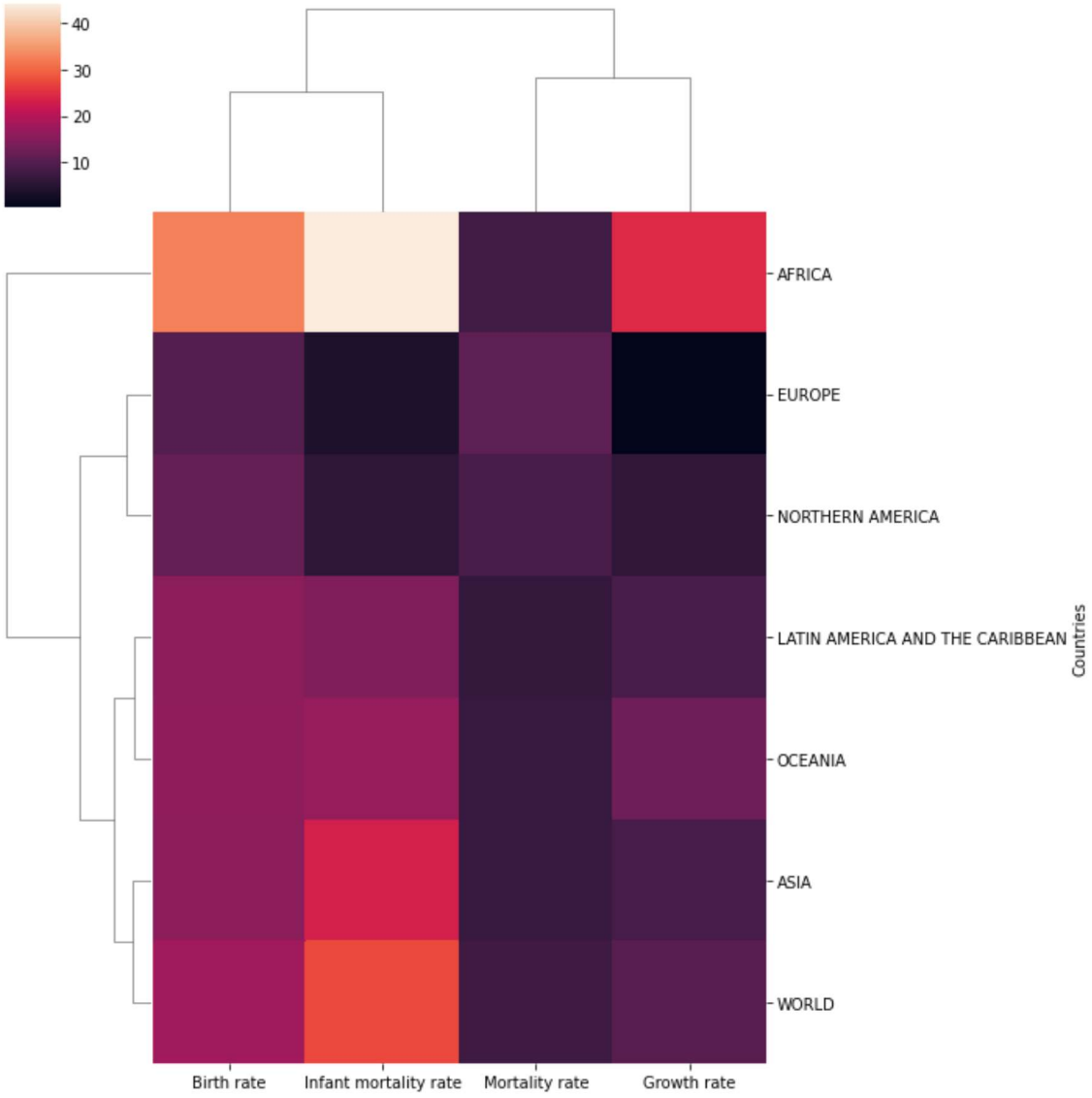


Clustermap

Plot a matrix dataset as a hierarchically-clustered heatmap.

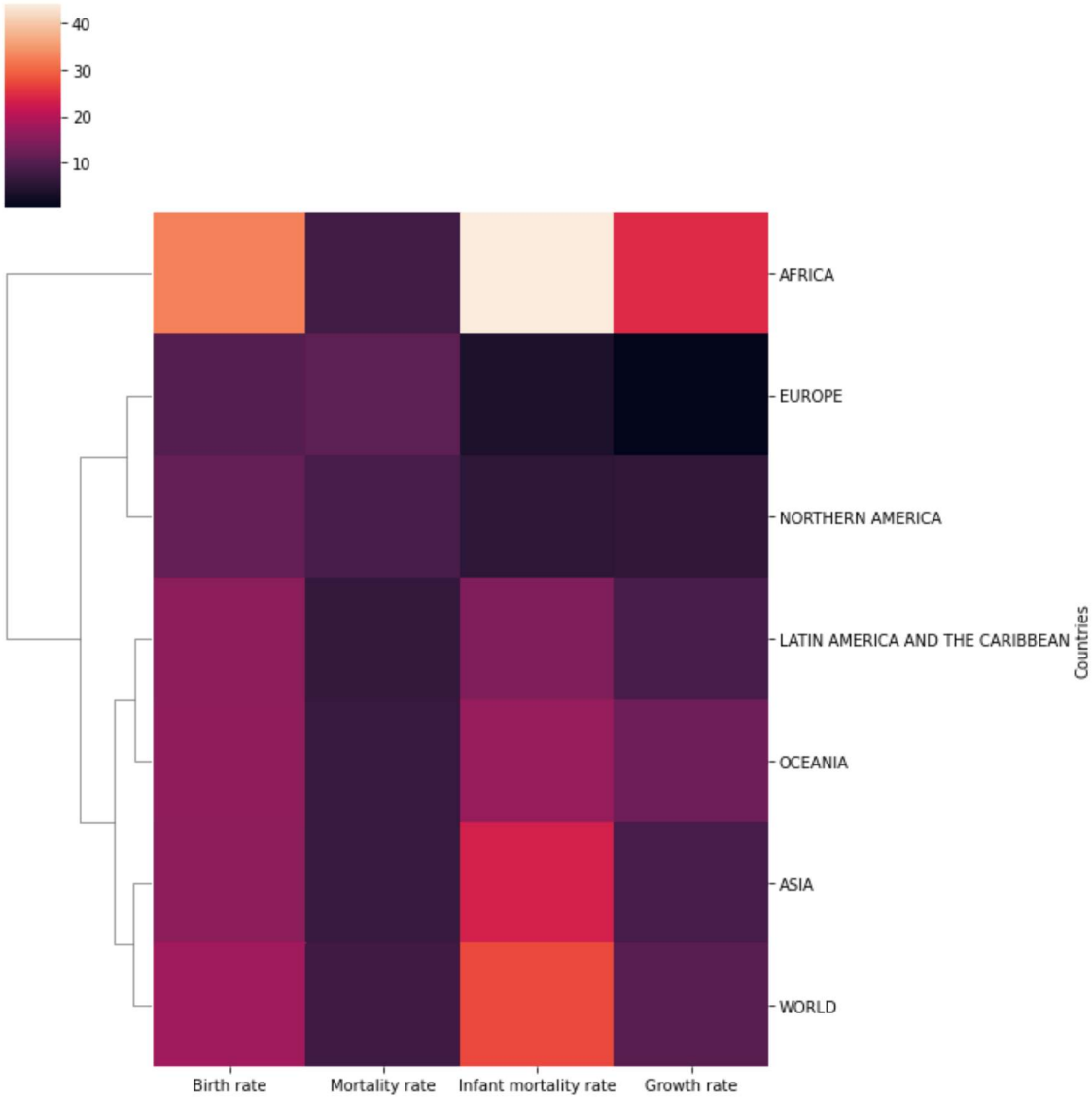
In [14]:
```
sns.clustermap(rates)
```

Out[14]:
```
<seaborn.matrix.ClusterGrid at 0x158e27976c8>
```



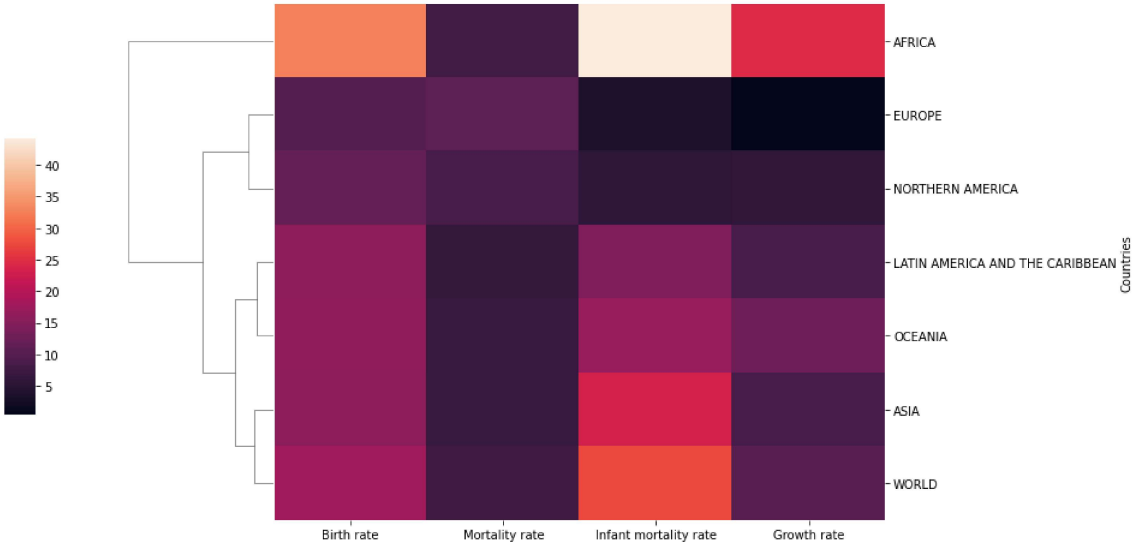
In [15]:
```
sns.clustermap(rates,col_cluster=False)
```

Out[15]:
```
<seaborn.matrix.ClusterGrid at 0x158e235c9c8>
```



In [16]:
```
sns.clustermap(rates,col_cluster=False,figsize=(12,8),cbar_pos=(-0.1, .2, .
```

Out[16]:
```
<seaborn.matrix.ClusterGrid at 0x158e2ffc848>
```



In [17]:
```
rates.index.set_names('',inplace=True)
```

In [18]:
```
rates
```

Out[18]:

	Birth rate	Mortality rate	Infant mortality rate	Growth rate
AFRICA	32.577	7.837	44.215	24.40
ASIA	15.796	7.030	23.185	8.44
EUROPE	10.118	11.163	3.750	0.38
LATIN AMERICA AND THE CARIBBEAN	15.886	6.444	14.570	8.89
NORTHERN AMERICA	11.780	8.833	5.563	6.11
OCEANIA	16.235	6.788	16.939	12.79
WORLD	17.963	7.601	27.492	10.36

In [19]:
```
# Recall you can always edit the DF before seaborn
sns.clustermap(rates,col_cluster=False,figsize=(12,8),cbar_pos=(-0.1, .2, .
```

Out[19]:
```
<seaborn.matrix.ClusterGrid at 0x158e354b508>
```