25-07-2023

In [1]:
```python
import numpy as np
import pandas as pd
```

In [79]:
```python
a=pd.read_csv(r"C:\Users\user\Downloads\2015 - 2015.csv")
a
```

4	Canada	North America	5	7.427	0.03553	1.32629	1.32261	0.90563
...	...	...	...	...	...	...	...	...
153	Rwanda	Sub-Saharan Africa	154	3.465	0.03464	0.22208	0.77370	0.42864
154	Benin	Sub-Saharan Africa	155	3.340	0.03656	0.28665	0.35386	0.31910
155	Syria	Middle East and Northern Africa	156	3.006	0.05015	0.66320	0.47489	0.72193
156	Burundi	Sub-Saharan Africa	157	2.905	0.08658	0.01530	0.41587	0.22396

In [80]:
```python
a=a.head(30)
a
```

11	Costa Rica	Latin America and Caribbean	12	7.226	0.04454	0.95578	1.23788	0.8602
12	Austria	Western Europe	13	7.200	0.03751	1.33723	1.29704	0.8904
13	Mexico	Latin America and Caribbean	14	7.187	0.04176	1.02054	0.91451	0.8144
14	United States	North America	15	7.119	0.03839	1.39451	1.24711	0.8617
15	Brazil	Latin America and Caribbean	16	6.983	0.04076	0.98124	1.23287	0.6970
16	Luxembourg	Western Europe	17	6.946	0.03499	1.56391	1.21963	0.9189
17	Ireland	Western Europe	18	6.940	0.03676	1.33596	1.36948	0.8953

In [81]: `a.sum()`

Out[81]:
```
Country                         SwitzerlandIcelandDenmarkNorwayCanadaFinland
Ne...
Region                          Western EuropeWestern EuropeWestern EuropeWe
st...
Happiness Rank                                                           465
Happiness Score                                                           21
2.353
Standard Error                                                            1.
18267
Economy (GDP per Capita)                                                 38.
61048
Family                                                                   37.
28895
Health (Life Expectancy)                                                 26.
14085
Freedom                                                                  17.
54261
Trust (Government Corruption)
8.3911
Generosity                                                                9.
22133
Dystopia Residual                                                        75.
15968
dtype: object
```

In [82]: `a.mean()`

Out[82]:
```
Happiness Rank                  15.500000
Happiness Score                  7.078433
Standard Error                   0.039422
Economy (GDP per Capita)         1.287016
Family                           1.242965
Health (Life Expectancy)         0.871362
Freedom                          0.584754
Trust (Government Corruption)    0.279703
Generosity                       0.307378
Dystopia Residual                2.505323
dtype: float64
```

In [83]: `a.median()`

Out[83]:
```
Happiness Rank                  15.500000
Happiness Score                  7.051000
Standard Error                   0.037400
Economy (GDP per Capita)         1.325885
Family                           1.270275
Health (Life Expectancy)         0.891140
Freedom                          0.616800
Trust (Government Corruption)    0.302585
Generosity                       0.318390
Dystopia Residual                2.470295
dtype: float64
```

In [84]: a.mode()

Out[84]:

	Country	Region	Happiness Rank	Happiness Score	Standard Error	Economy (GDP per Capita)	Family	Health (Life Expectancy)	Free
0	Argentina	Western Europe	1	6.574	0.01848	0.95578	0.91451	0.69702	0.4
1	Australia	NaN	2	6.575	0.01866	0.98124	1.02000	0.72052	0.4
2	Austria	NaN	3	6.611	0.02799	1.02054	1.07860	0.76276	0.4
3	Belgium	NaN	4	6.670	0.03140	1.04424	1.08182	0.78723	0.4
4	Brazil	NaN	5	6.750	0.03157	1.05351	1.12447	0.79661	0.4
5	Canada	NaN	6	6.786	0.03328	1.06353	1.12575	0.79733	0.4
6	Chile	NaN	7	6.798	0.03371	1.10715	1.19850	0.80925	0.5
7	Costa Rica	NaN	8	6.810	0.03411	1.22857	1.21963	0.81444	0.5
8	Denmark	NaN	9	6.853	0.03470	1.25018	1.22393	0.85857	0.5
9	Finland	NaN	10	6.867	0.03499	1.26637	1.23287	0.86027	0.5
10	France	NaN	11	6.901	0.03512	1.27778	1.23788	0.86179	0.5
11	Germany	NaN	12	6.937	0.03553	1.29025	1.24711	0.87464	0.5
12	Iceland	NaN	13	6.940	0.03595	1.30232	1.24823	0.88521	0.6
13	Ireland	NaN	14	6.946	0.03676	1.30782	1.25596	0.88911	0.6
14	Israel	NaN	15	6.983	0.03729	1.32548	1.26038	0.89042	0.6
15	Luxembourg	NaN	16	7.119	0.03751	1.32629	1.28017	0.89186	0.6
16	Mexico	NaN	17	7.187	0.03780	1.32792	1.28548	0.89284	0.6
17	Netherlands	NaN	18	7.200	0.03839	1.32944	1.28566	0.89533	0.6
18	New Zealand	NaN	19	7.226	0.03880	1.33171	1.28907	0.89667	0.6
19	Norway	NaN	20	7.278	0.04076	1.33358	1.29704	0.90563	0.6
20	Oman	NaN	21	7.284	0.04083	1.33596	1.29937	0.90837	0.6
21	Panama	NaN	22	7.286	0.04176	1.33723	1.30923	0.90943	0.6
22	Qatar	NaN	23	7.364	0.04454	1.36011	1.31826	0.91087	0.6
23	Singapore	NaN	24	7.378	0.04612	1.39451	1.31967	0.91387	0.6
24	Sweden	NaN	25	7.406	0.04884	1.39651	1.32261	0.91894	0.6
25	Switzerland	NaN	26	7.427	0.04910	1.42727	1.33095	0.93156	0.6
26	United Arab Emirates	NaN	27	7.522	0.05335	1.45900	1.34951	0.94143	0.6
27	United Kingdom	NaN	28	7.527	0.05800	1.52186	1.36058	0.94579	0.6
28	United States	NaN	29	7.561	0.06257	1.56391	1.36948	0.94784	0.6
29	Venezuela	NaN	30	7.587	0.06476	1.69042	1.40223	1.02525	0.6

In [85]: `a.describe()`

Out[85]:

	Happiness Rank	Happiness Score	Standard Error	Economy (GDP per Capita)	Family	Health (Life Expectancy)	Freedom	T (Governn Corrup
count	30.000000	30.000000	30.000000	30.000000	30.000000	30.000000	30.000000	30.00(
mean	15.500000	7.078433	0.039422	1.287016	1.242965	0.871362	0.584754	0.27
std	8.803408	0.315946	0.010686	0.172629	0.110128	0.071141	0.077319	0.13(
min	1.000000	6.574000	0.018480	0.955780	0.914510	0.697020	0.413190	0.07
25%	8.250000	6.820750	0.034258	1.233972	1.220705	0.825473	0.543400	0.16:
50%	15.500000	7.051000	0.037400	1.325885	1.270275	0.891140	0.616800	0.30:
75%	22.750000	7.344500	0.043845	1.354390	1.316002	0.910510	0.640145	0.38:
max	30.000000	7.587000	0.064760	1.690420	1.402230	1.025250	0.669730	0.52:

In [86]: `a.cumsum()`

2	SwitzerlandIcelandDenmark	EuropeWestern EuropeWestern Europe	6	22.675
3	SwitzerlandIcelandDenmarkNorway	Western EuropeWestern EuropeWestern EuropeWest...	10	30.197
4	SwitzerlandIcelandDenmarkNorwayCanada	Western EuropeWestern EuropeWestern EuropeWest...	15	37.624
5	SwitzerlandIcelandDenmarkNorwayCanadaFinland	Western EuropeWestern EuropeWestern EuropeWest...	21	45.030
6	SwitzerlandIcelandDenmarkNorwayCanadaFinlandNe...	Western EuropeWestern EuropeWestern EuropeWest...	28	52.408

In [87]: `a.count()`

Out[87]:
```
Country                          30
Region                           30
Happiness Rank                   30
Happiness Score                  30
Standard Error                   30
Economy (GDP per Capita)         30
Family                           30
Health (Life Expectancy)         30
Freedom                          30
Trust (Government Corruption)    30
Generosity                       30
Dystopia Residual                30
dtype: int64
```

In [88]: `a.min()`

Out[88]:
```
Country                                       Argentina
Region                        Australia and New Zealand
Happiness Rank                                        1
Happiness Score                                   6.574
Standard Error                                  0.01848
Economy (GDP per Capita)                        0.95578
Family                                          0.91451
Health (Life Expectancy)                        0.69702
Freedom                                         0.41319
Trust (Government Corruption)                   0.07785
Generosity                                      0.05841
Dystopia Residual                               1.55674
dtype: object
```

In [89]: `a.max()`

Out[89]:
```
Country                                Venezuela
Region                            Western Europe
Happiness Rank                                30
Happiness Score                            7.587
Standard Error                           0.06476
Economy (GDP per Capita)                 1.69042
Family                                   1.40223
Health (Life Expectancy)                 1.02525
Freedom                                  0.66973
Trust (Government Corruption)            0.52208
Generosity                               0.51912
Dystopia Residual                        3.60214
dtype: object
```

In [90]:
```python
from numpy import cov
```

In [91]:
```python
cov(a['Happiness Rank'])
```

Out[91]: `array(77.5)`

In [92]:
```python
from scipy.stats import pearsonr
pearsonr(a['Generosity'],a['Freedom'])
```

Out[92]: (0.49738105821051676, 0.005166269918442683)

In [93]:
```python
from scipy.stats import spearmanr
spearmanr(a['Freedom'],a['Family'])
```

Out[93]: SpearmanrResult(correlation=0.5283648498331479, pvalue=0.002687859078039424)