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In [3]: import pandas as pd
import numpy as np
GDP= pd.read_csv(r"C:\Users\vsirius\Desktop\DATA SCIENCE CLASS PRACTICE\country_gdp_data.csv")

In [4]: GDP

Out[4]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244         78.9      High income
1  Afghanistan          AFG    35.253         5.9      Low income
2           Angola          AGO    45.985        19.1  Upper middle income
3       Albania          ALB    12.877        57.2  Upper middle income
4  United Arab Emirates      ARE    11.044         88.0      High income
...         ...         ...         ...         ...         ...
190  Yemen, Rep.          YEM    32.847        20.0  Lower middle income
191  South Africa          ZAF    20.850        46.5  Upper middle income
192  Congo, Dem. Rep.      COD    42.394         2.2      Low income
193       Zambia          ZMB    40.471        15.4  Lower middle income
194    Zimbabwe          ZWE    35.715        18.5      Low income

195 rows x 5 columns

In [5]: len(GDP)
Out[5]: 195

In [6]: GDP.shape
Out[6]: (195, 5)

In [8]: GDP.columns
Out[8]: Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
              'IncomeGroup'],
              dtype='object')

In [10]: type(GDP)
Out[10]: pandas.core.frame.DataFrame

In [11]: GDP.info()
Out[11]:
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 195 entries, 0 to 194
Data columns (total 5 columns):
#   Column          Non-Null Count  Dtype
---  --
0   CountryName     195 non-null    object
1   CountryCode     195 non-null    object
2   BirthRate       195 non-null    float64
3   InternetUsers   195 non-null    float64
4   IncomeGroup     195 non-null    object
dtypes: float64(2), object(3)
memory usage: 7.7+ KB

In [12]: GDP.head(10)
Out[12]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244        78.9000    High income
1  Afghanistan          AFG    35.253         5.9000    Low income
2           Angola          AGO    45.985       19.1000  Upper middle income
3       Albania          ALB    12.877       57.2000  Upper middle income
4  United Arab Emirates      ARE    11.044        88.0000    High income
5       Argentina          ARG    17.716       59.9000    High income
6       Armenia          ARM    13.308       41.9000  Lower middle income
7  Antigua and Barbuda      ATG    16.447       63.4000    High income
8         Australia          AUS    13.200       83.0000    High income
9         Austria          AUT     9.400       80.6188    High income

In [13]: GDP.tail(4)
Out[13]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
191  South Africa          ZAF    20.850        46.5      Upper middle income
192  Congo, Dem. Rep.      COD    42.394         2.2      Low income
193       Zambia          ZMB    40.471        15.4      Lower middle income
194    Zimbabwe          ZWE    35.715        18.5      Low income

In [14]: GDP.describe()
Out[14]:
   BirthRate  InternetUsers
count  195.000000    195.000000
mean    21.469928    42.076471
std     10.605467     29.030788
min      7.900000     0.900000
25%     12.120500    14.520000
50%     19.680000    41.000000
75%     29.759500    66.225000
max     49.661000    96.546800

In [15]: GDP.describe().transpose()
Out[15]:
   count  mean  std  min  25%  50%  75%  max
BirthRate  195.0  21.469928  10.605467  7.9  12.1205  19.68  29.7595  49.6610
InternetUsers  195.0  42.076471  29.030788  0.9  14.5200  41.00  66.2250  96.5468

In [16]: GDP[:1]
Out[16]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244         78.9      High income
1  Afghanistan          AFG    35.253         5.9      Low income
2           Angola          AGO    45.985        19.1  Upper middle income
3       Albania          ALB    12.877        57.2  Upper middle income
4  United Arab Emirates      ARE    11.044         88.0      High income
...         ...         ...         ...         ...         ...
190  Yemen, Rep.          YEM    32.847        20.0  Lower middle income
191  South Africa          ZAF    20.850        46.5  Upper middle income
192  Congo, Dem. Rep.      COD    42.394         2.2      Low income
193       Zambia          ZMB    40.471        15.4  Lower middle income
194    Zimbabwe          ZWE    35.715        18.5      Low income

195 rows x 5 columns

In [17]: GDP[:20]
Out[17]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244        78.90000    High income
1  Afghanistan          AFG    35.253        5.90000    Low income
2           Angola          AGO    45.985       19.10000  Upper middle income
3       Albania          ALB    12.877       57.20000  Upper middle income
4  United Arab Emirates      ARE    11.044        88.00000    High income
5       Argentina          ARG    17.716       59.90000    High income
6       Armenia          ARM    13.308       41.90000  Lower middle income
7  Antigua and Barbuda      ATG    16.447       63.40000    High income
8         Australia          AUS    13.200       83.00000    High income
9         Austria          AUT     9.400       80.61880    High income
10  Azerbaijan          AZE    18.300       86.70000  Upper middle income
11         Burundi          BDI    44.151        1.30000    Low income
12         Belgium          BEL    11.200       82.17020    High income
13         Benin          BEN    36.440       4.90000    Low income
14  Burkina Faso          BFA    40.551        9.10000    Low income
15         Bangladesh      BGD    20.142        6.63000  Lower middle income
16         Bulgaria          BGR     9.200       53.06150  Upper middle income
17         Bahrain          BHR    15.040       90.00004    High income
18  Bahamas, The          BHS    15.339       72.00000    High income
19  Bosnia and Herzegovina  BIH     9.062       57.79000  Upper middle income

In [18]: GDP[20:40]
Out[18]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
20         Belarus          BLR    12.500        54.17  Upper middle income
21         Belize          BLZ    23.092        33.60  Upper middle income
22         Bermuda          BMU    10.400        95.30      High income
23         Bolivia          BOL    24.235       36.94  Lower middle income
24         Brazil          BRA    14.931       51.04  Upper middle income
25         Barbados          BRB    12.188        73.00      High income
26  Brunei Darussalam      BRN    16.405        64.50      High income
27         Bhutan          BTN    16.134        29.90  Lower middle income
28         Botswana          BWA    25.267        15.00  Upper middle income
29  Central African Republic  CAF    34.076         3.50      Low income
30         Canada          CAN    10.900        85.80      High income
31         Switzerland      CHE    10.200       80.34      High income
32         Chile          CHL    13.385       66.50      High income
33         China          CHN    12.100       45.80  Upper middle income
34         Cote d'Ivoire      CIV    37.320         8.40  Lower middle income
35         Cameroon          CMR    37.236         6.40  Lower middle income
36         Congo, Rep.        COG    37.011         6.60  Lower middle income
37         Colombia          COL    16.076       51.70  Upper middle income
38         Comoros          COM    34.326         6.50      Low income
39         Cabo Verde          CPV    21.625       37.50  Lower middle income

In [19]: GDP[:, :1]
Out[19]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
194    Zimbabwe          ZWE    35.715        18.5      Low income
193       Zambia          ZMB    40.471        15.4  Lower middle income
192  Congo, Dem. Rep.      COD    42.394         2.2      Low income
191  South Africa          ZAF    20.850        46.5  Upper middle income
190  Yemen, Rep.          YEM    32.847        20.0  Lower middle income
...         ...         ...         ...         ...         ...
4  United Arab Emirates      ARE    11.044         88.0      High income
3       Albania          ALB    12.877        57.2  Upper middle income
2           Angola          AGO    45.985        19.1  Upper middle income
1  Afghanistan          AFG    35.253         5.9      Low income
0           Aruba          ABW    10.244        78.9      High income

195 rows x 5 columns

In [20]: GDP[0:50:10]
Out[20]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244        78.90      High income
10  Azerbaijan          AZE    18.300       86.70  Upper middle income
20  Belarus          BLR    12.500        54.17  Upper middle income
30  Canada          CAN    10.900        85.80      High income
40  Costa Rica          CRI    15.022       45.96  Upper middle income

In [21]: GDP['IncomeGroup']
Out[21]: 0      High income
1      Low income
2  Upper middle income
3  Upper middle income
4      High income
...
190  Lower middle income
191  Upper middle income
192      Low income
193  Lower middle income
194      Low income
Name: IncomeGroup, Length: 195, dtype: object

In [22]: ['CountryName','BirthRate']
Out[22]: ['CountryName', 'BirthRate']

In [23]: GDP[['CountryName','BirthRate']]
Out[23]:
   CountryName  BirthRate
0           Aruba    10.244
1  Afghanistan    35.253
2           Angola    45.985
3       Albania    12.877
4  United Arab Emirates  11.044
...         ...         ...
190  Yemen, Rep.    32.947
191  South Africa    20.850
192  Congo, Dem. Rep.  42.394
193       Zambia    40.471
194    Zimbabwe    35.715

195 rows x 2 columns

In [24]: GDP[['CountryName','BirthRate']][4:8]
Out[24]:
   CountryName  BirthRate
4  United Arab Emirates    11.044
5       Argentina    17.716
6       Armenia    13.308
7  Antigua and Barbuda    16.447

In [25]: # MATHEMATICAL OPERATIONS
GDP.BirthRate>GDP.InternetUsers
Out[25]: 0      889.2516
1      287.9927
2      878.3135
3      736.5644
4      971.8720
...
190     658.9480
191     969.5250
192      93.2688
193     623.2534
194     668.7275
Length: 195, dtype: float64

In [30]: Filter=GDP.InternetUsers<5
In [31]: len(GDP[Filter])
Out[31]: 19

In [33]: GDP.BirthRate<40
Out[33]: 0      False
1      False
2       True
3      False
4      False
...
190      False
191      False
192       True
193       True
194      False
Name: BirthRate, Length: 195, dtype: bool

In [34]: GDP.IncomeGroup.unique()
Out[34]: array(['High income', 'Low income', 'Upper middle income',
              'Lower middle income'], dtype=object)

In [35]: import matplotlib.pyplot as plt
import seaborn as sns

In [37]: %matplotlib inline
plt.rcParams['figure.figsize']=10,5

In [39]: import warnings
warnings.filterwarnings('ignore')

In [41]: GDP.head(5)
Out[41]:
   CountryName  CountryCode  BirthRate  InternetUsers  IncomeGroup
0           Aruba          ABW    10.244         78.9      High income
1  Afghanistan          AFG    35.253         5.9      Low income
2           Angola          AGO    45.985        19.1  Upper middle income
3       Albania          ALB    12.877        57.2  Upper middle income
4  United Arab Emirates      ARE    11.044         88.0      High income

In [42]: GDP["InternetUsers"]
Out[42]: 0      78.9
1       5.9
2      19.1
3      57.2
4      88.0
...
190     26.0
191     46.5
192       2.2
193     15.4
194     18.5
Name: InternetUsers, Length: 195, dtype: float64

In [43]: vis=sns.displot(GDP["InternetUsers"])

Count
40
35
30
25
20
15
10
5
0
0 20 40 60 80 100
InternetUsers

In [45]: vis=sns.displot(GDP["InternetUsers"],bins=28)

Count
20
15
10
5
0
0 20 40 60 80 100
InternetUsers

In [46]: vis=sns.boxplot(data=GDP,x="IncomeGroup",y="BirthRate")

BirthRate
50
40
30
20
10
High income  Low income  Upper middle income  Lower middle income
IncomeGroup

In [49]: vis=sns.lmplot(data=GDP,x="InternetUsers",y="BirthRate",fit_reg=False)

BirthRate
50
40
30
20
10
0 20 40 60 80 100
InternetUsers

In [50]: vis=sns.lmplot(data=GDP,x="InternetUsers",y="BirthRate",fit_reg=False,hue="IncomeGroup")
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