```
In [1]:
          import pandas as pd # importing Pandas
 In [7]:
         stats = pd.read_csv(r'C:/Users/abhin/Desktop/Full Stack DS & AI/Works/CSV/DemographicData.csv')
          # Reading the csv file and impoting the dataframe for the excel sheet
 In [8]:
          stats
Out[8]:
                   CountryName CountryCode BirthRate InternetUsers
                                                                        IncomeGroup
           0
                                       ABW
                                               10.244
                                                             78.9
                         Aruba
                                                                         High income
                                       AFG
                                               35.253
                                                              5.9
                                                                         Low income
           1
                     Afghanistan
           2
                                                             19.1 Upper middle income
                         Angola
                                       AGO
                                               45.985
                                                             57.2 Upper middle income
           3
                        Albania
                                        ALB
                                               12.877
           4 United Arab Emirates
                                        ARE
                                               11.044
                                                             88.0
                                                                         High income
         190
                     Yemen, Rep.
                                               32.947
                                       YEM
                                                             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
                                               40.471
                                                             15.4 Lower middle income
                        Zambia
                                       ZMB
         194
                                       ZWE
                                                             18.5
                      Zimbabwe
                                               35.715
                                                                         Low income
         195 rows × 5 columns
In [9]:
          stats.shape # No of rows ans columns
         (195, 5)
Out[9]:
In [10]:
          len(stats) # No Of Rows
Out[10]:
In [11]:
          stats.columns # Column Names
         Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
Out[11]:
                 'IncomeGroup'],
               dtype='object')
In [12]:
          len(stats.columns) # No Of Columns
Out[12]:
In [13]:
          type(stats)
         pandas.core.frame.DataFrame
Out[13]:
In [14]:
          stats.info()
         <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
                                             float64
          3 InternetUsers 195 non-null
                             195 non-null
                                             object
          4 IncomeGroup
         dtypes: float64(2), object(3)
         memory usage: 7.7+ KB
In [15]:
         stats.head()
```

Out[15]:		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 l	Jnited Arab Emirates	ARE	11.044	88.0	High income			
In [20]:	sta	its.head(3)							
Out[20]:	(CountryName Coun	tryCode Birt	hRate Inter	netUsers	IncomeGroup			
	0	Aruba	ABW	0.244	78.9	High income			
	1	Afghanistan	AFG 3	35.253	5.9	Low income			
	2	Angola	AGO 4	15.985	19.1 Uppe	r middle income			
In [21]:	sta	nts.tail()							
Out[21]:		CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup			
	190	Yemen, Rep.	YEM	32.947		Lower middle income			
	191	South Africa	ZAF	20.850		Upper middle income			
	192		COD	42.394	2.2	Low income			
	193	Zambia	ZMB	40.471		Lower middle income			
	194	Zimbabwe	ZWE	35.715	18.5	Low income			
In [23]:	sta	nts.tail(4)							
	3 Ca C3 · Ca I I (4)								
Ou+[22].		CountryNome	CountryCode	RinthData	InternetHear	IncomoGroup			
Out[23]:	101	CountryName				IncomeGroup			
Out[23]:	191	South Africa	ZAF	20.850	46.5	Upper middle income			
Out[23]:	192	South Africa Congo, Dem. Rep.	ZAF	20.850 42.394	46.5 2.2	Upper middle income Low income			
Out[23]:	192 193	South Africa Congo, Dem. Rep. Zambia	ZAF COD ZMB	20.850 42.394 40.471	46.5 2.2 15.4	Upper middle income Low income Lower middle income			
Out[23]:	192	South Africa Congo, Dem. Rep.	ZAF	20.850 42.394	46.5 2.2	Upper middle income Low income			
Out[23]: In [25]:	192 193 194	South Africa Congo, Dem. Rep. Zambia Zimbabwe	ZAF COD ZMB	20.850 42.394 40.471	46.5 2.2 15.4	Upper middle income Low income Lower middle income			
In [25]:	192 193 194	South Africa Congo, Dem. Rep. Zambia Zimbabwe	ZAF COD ZMB ZWE	20.850 42.394 40.471 35.715	46.5 2.2 15.4 18.5	Upper middle income Low income Lower middle income Low income			
	192 193 194	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName	ZAF COD ZMB ZWE	20.850 42.394 40.471 35.715	46.5 2.2 15.4 18.5	Upper middle income Low income Lower middle income Low income			
In [25]:	192 193 194	South Africa Congo, Dem. Rep. Zambia Zimbabwe	ZAF COD ZMB ZWE	20.850 42.394 40.471 35.715	46.5 2.2 15.4 18.5	Upper middle income Low income Lower middle income Low income			
In [25]:	192 193 194 sta	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName	ZAF COD ZMB ZWE	20.850 42.394 40.471 35.715 BirthRate V 10.244	46.5 2.2 15.4 18.5 InternetUsers 78.9000	Upper middle income Low income Lower middle income Low income IncomeGroup High income			
In [25]:	192 193 194 sta	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName Aruba	ZAF COD ZMB ZWE CountryCod ABV	20.850 42.394 40.471 35.715 BirthRate V 10.244 G 35.253	46.5 2.2 15.4 18.5 InternetUsers 78.9000 5.9000	Upper middle income Low income Low income Low income IncomeGroup High income Low income			
In [25]:	192 193 194 sta	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName Aruba Afghanistan	ZAF COD ZMB ZWE CountryCod ABV AFG	20.850 42.394 40.471 35.715 BirthRate V 10.244 G 35.253 D 45.985	46.5 2.2 15.4 18.5 InternetUsers 78.9000 5.9000 19.1000	Upper middle income Low income Low income Low income IncomeGroup High income Low income			
In [25]:	192 193 194 sta 0 1 2 3	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName Aruba Afghanistan Angola	ZAF COD ZMB ZWE CountryCod ABV AFC AGC AL	20.850 42.394 40.471 35.715 BirthRate V 10.244 G 35.253 O 45.985 B 12.877	46.5 2.2 15.4 18.5 InternetUsers 78.9000 5.9000 19.1000 57.2000	Upper middle income Low income Low income Low income IncomeGroup High income Low income Upper middle income Upper middle income			
In [25]:	192 193 194 sta 0 1 2 3	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName Aruba Afghanistan Angola Albania	ZAF COD ZMB ZWE CountryCod ABV AFC AGC AL AR	20.850 42.394 40.471 35.715 BirthRate V 10.244 G 35.253 D 45.985 B 12.877 E 11.044	46.5 2.2 15.4 18.5 InternetUsers 78.9000 5.9000 19.1000 7.7,2000 88.0000	Upper middle income Low income Low income Low income IncomeGroup High income Low income Upper middle income Upper middle income High income High income			
In [25]:	192 193 194 sta 0 1 2 3 4	South Africa Congo, Dem. Rep. Zambia Zimbabwe ats.head(15) CountryName Aruba Afghanistan Angola Albania United Arab Emirates	ZAF COD ZMB ZWE CountryCod ABV AFC AGC AL AR	20.850 42.394 40.471 35.715 BirthRate V 10.244 G 35.253 A 5.985 B 12.877 E 11.044 G 17.716	46.5 2.2 15.4 18.5 InternetUsers 78.9000 5.9000 7.2000 88.0000 59.9000	Upper middle income Low income Low income Low income IncomeGroup High income Low income Upper middle income Upper middle income High income High income High income			

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
10	Azerbaijan	AZE	18.300	58.7000	Upper middle income
11	Burundi	BDI	44.151	1.3000	Low income
12	Belgium	BEL	11.200	82.1702	High income
13	Benin	BEN	36.440	4.9000	Low income
14	Burkina Faso	BFA	40.551	9.1000	Low income

In [26]: stats.tail(15)

```
St. Vincent and the Grenadines
                                                   VCT
                                                           16.306
                                                                          52.00 Upper middle income
          183
          184
                             Venezuela, RB
                                                   VEN
                                                           19.842
                                                                         54.90
                                                                                       High income
                         Virgin Islands (U.S.)
                                                   VIR
                                                           10.700
                                                                          45.30
                                                                                       High income
          185
                                                  VNM
                                                           15.537
                                                                                Lower middle income
          186
                                  Vietnam
                                                                         43.90
          187
                                  Vanuatu
                                                   VUT
                                                           26.739
                                                                          11.30
                                                                               Lower middle income
          188
                        West Bank and Gaza
                                                           30.394
                                                                          46.60 Lower middle income
                                                   PSE
                                                  WSM
          189
                                   Samoa
                                                           26.172
                                                                          15.30
                                                                                Lower middle income
                                                  YEM
                                                           32.947
                                                                         20.00
                                                                               Lower middle income
          190
                               Yemen, Rep.
          191
                                                           20.850
                               South Africa
                                                   ZAF
                                                                          46.50 Upper middle income
          192
                          Congo, Dem. Rep.
                                                  COD
                                                           42.394
                                                                          2.20
                                                                                        Low income
                                                  ZMB
          193
                                   Zambia
                                                           40.471
                                                                          15.40
                                                                                Lower middle income
          194
                                Zimbabwe
                                                  ZWE
                                                                          18.50
                                                           35.715
                                                                                        Low income
In [27]:
           stats.describe()
                  BirthRate InternetUsers
Out[27]:
                 195.000000
                               195.000000
           count
                                42.076471
                  21.469928
           mean
                  10.605467
                                29.030788
             std
                                 0.900000
            min
                   7.900000
                                14.520000
            25%
                  12.120500
                                41.000000
            50%
                  19.680000
                  29.759500
                                66.225000
            75%
                  49.661000
                                96.546800
            max
In [28]:
           stats.describe().transpose()
Out[28]:
                        count
                                               std min
                                                           25%
                                                                  50%
                                                                          75%
                                   mean
                                                                                   max
              BirthRate
                                                    7.9 12.1205 19.68 29.7595 49.6610
                         195.0 21.469928
                                         10.605467
                                                    0.9 14.5200 41.00 66.2250 96.5468
          InternetUsers
                        195.0 42.076471 29.030788
In [29]:
           stats.columns
          Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
Out[29]:
                  'IncomeGroup'],
                 dtype='object')
In [30]:
           stats.columns = ['a','b','c','d','e']
In [31]:
           stats.columns
          Index(['a', 'b', 'c', 'd', 'e'], dtype='object')
In [32]:
           stats.head()
Out[32]:
                                                                    е
          0
                          Aruba ABW 10.244 78.9
                                                          High income
                     Afghanistan
          1
                                 AFG 35.253
                                               5.9
                                                           Low income
          2
                                AGO 45.985 19.1 Upper middle income
                         Angola
          3
                         Albania
                                             57.2 Upper middle income
                                  ALB 12.877
          4 United Arab Emirates
                                 ARE 11.044 88.0
                                                          High income
In [33]:
           stats.columns = ['CountryName','CountryCode','BirthRate','InternetUsers','IncomeGroup']
In [34]:
```

CountryName CountryCode BirthRate InternetUsers

URY

USA

UZB

Uruguay

United States

Uzbekistan

14.374

12.500

22.500

57.69

84.20

IncomeGroup

High income

High income

38.20 Lower middle income

Out[26]:

180

181

182

```
stats.columns
           Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
Out[34]:
                   'IncomeGroup'],
                 dtype='object')
In [35]:
           stats.head()
Out[35]:
                   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
             United Arab Emirates
                                          ARE
                                                   11.044
                                                                   88.0
                                                                                High income
In [36]:
           stats[0:5]
Out[36]:
                   CountryName CountryCode BirthRate InternetUsers
                                                                              IncomeGroup
           0
                                                   10.244
                           Aruba
                                          ABW
                                                                   78.9
                                                                               High income
           1
                                          AFG
                                                                    5.9
                      Afghanistan
                                                   35.253
                                                                                Low income
                                                                   19.1 Upper middle income
           2
                          Angola
                                          AGO
                                                   45.985
           3
                                                   12.877
                                                                   57.2 Upper middle income
                         Albania
                                          ALB
           4 United Arab Emirates
                                          ARE
                                                   11.044
                                                                   88.0
                                                                                High income
In [37]:
           stats[:]
Out[37]:
                     CountryName CountryCode BirthRate InternetUsers
                                                                                IncomeGroup
             0
                                                                                  High income
                                            \mathsf{ABW}
                                                     10.244
                                                                     78.9
                             Aruba
             1
                        Afghanistan
                                            AFG
                                                     35.253
                                                                      5.9
                                                                                  Low income
             2
                                                     45.985
                                                                     19.1 Upper middle income
                            Angola
                                            AGO
             3
                                                                     57.2 Upper middle income
                            Albania
                                             ALB
                                                     12.877
             4 United Arab Emirates
                                             ARE
                                                     11.044
                                                                     88.0
                                                                                  High income
           190
                        Yemen, Rep.
                                            YEM
                                                     32.947
                                                                     20.0 Lower middle income
           191
                        South Africa
                                             ZAF
                                                     20.850
                                                                     46.5 Upper middle income
                   Congo, Dem. Rep.
                                                     42.394
           192
                                            COD
                                                                      2.2
                                                                                  Low income
           193
                            Zambia
                                            ZMB
                                                     40.471
                                                                     15.4
                                                                          Lower middle income
                                            ZWE
                                                                     18.5
           194
                         Zimbabwe
                                                     35.715
                                                                                  Low income
          195 rows × 5 columns
In [38]:
           stats[10:15]
               CountryName CountryCode BirthRate InternetUsers
Out[38]:
                                                                          IncomeGroup
                                                            58.7000 Upper middle income
           10
                   Azerbaijan
                                      AZE
                                              18.300
           11
                     Burundi
                                       BDI
                                              44.151
                                                             1.3000
                                                                            Low income
                     Belgium
           13
                       Benin
                                      BEN
                                              36.440
                                                             4.9000
                                                                            Low income
```

14

In [39]:

Burkina Faso

stats[:15]

BFA

40.551

9.1000

Low income

Out[39]:		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
	10	Azerbaijan	AZE	18.300	58.7000	Upper middle income
	11	Burundi	BDI	44.151	1.3000	Low income
	12	Belgium	BEL	11.200	82.1702	High income
	13	Benin	BEN	36.440	4.9000	Low income

40.551

9.1000

Low income

BFA

In [40]:

stats[::-1]

Burkina Faso

Out[40]:

	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	32.947	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 × 5 columns

In [41]: stats[::10]

```
0
                        Aruba
                                       ABW
                                                10.244
                                                          78.900000
                                                                            High income
            10
                                       AZE
                                                18.300
                                                          58.700000 Upper middle income
                    Azerbaijan
                                                          54.170000 Upper middle income
            20
                       Belarus
                                       BLR
                                                12.500
                                                          85.800000
            30
                                       CAN
                                                10.900
                                                                             High income
                       Canada
            40
                    Costa Rica
                                        CRI
                                                15.022
                                                          45.960000
                                                                    Upper middle income
                                                21.070
            50
                      Ecuador
                                       ECU
                                                          40.353684
                                                                     Upper middle income
            60
                       Gabon
                                       GAB
                                                30.555
                                                            9.200000 Upper middle income
                    Greenland
            70
                                       GRL
                                                14.500
                                                          65.800000
                                                                             High income
            80
                        India
                                       IND
                                                20.291
                                                          15.100000 Lower middle income
            90
                    Kazakhstan
                                       \mathsf{KAZ}
                                                22.730
                                                          54.000000
                                                                     Upper middle income
           100
                        Libya
                                       LBY
                                                21.425
                                                          16.500000
                                                                    Upper middle income
           110
                     Moldova
                                       \mathsf{MDA}
                                                12.141
                                                          45.000000
                                                                     Lower middle income
           120
                  Mozambique
                                      MOZ
                                                39.705
                                                            5.400000
                                                                             Low income
           130
                  Netherlands
                                       NLD
                                                10.200
                                                          93.956400
                                                                             High income
           140
                       Poland
                                       POL
                                                9.600
                                                          62.849200
                                                                             High income
           150
                                       SDN
                                                33.477
                                                          22.700000 Lower middle income
                       Sudan
           160
                     Suriname
                                       SUR
                                                18.455
                                                          37.400000
                                                                     Upper middle income
           170
                     Tajikistan
                                        TJK
                                                30.792
                                                           16.000000
                                                                     Lower middle income
           180
                     Uruguay
                                       URY
                                                14.374
                                                          57.690000
                                                                             High income
           190
                                       YEM
                                                32.947
                                                          20.000000 Lower middle income
                   Yemen, Rep.
In [42]:
           stats['CountryName'].head()
                                 Aruba
Out[42]:
                           Afghanistan
           2
                                Angola
                               Albania
                United Arab Emirates
           Name: CountryName, dtype: object
In [43]:
           stats[['CountryName','BirthRate']].head()
Out[43]:
                   CountryName BirthRate
           0
                                     10.244
                           Aruba
           1
                      Afghanistan
                                     35.253
           2
                                     45.985
                          Angola
           3
                         Albania
                                     12.877
           4 United Arab Emirates
                                     11.044
In [44]:
           stats['BirthRate']
                  10.244
Out[44]:
                  35.253
                  45.985
           3
                  12.877
                  11.044
           190
                  32.947
           191
                  20.850
           192
                  42.394
           193
                  40.471
           194
                  35.715
           Name: BirthRate, Length: 195, dtype: float64
```

IncomeGroup

Out[41]:

In [45]:

stats[5:10][['CountryName','BirthRate']]

CountryName CountryCode BirthRate InternetUsers

```
Out[45]:
                  CountryName BirthRate
          5
                                  17.716
                      Argentina
          6
                       Armenia
                                  13.308
          7 Antigua and Barbuda
                                  16.447
          8
                                   13.200
                       Australia
          9
                        Austria
                                   9.400
In [46]:
          df1 = stats[['CountryName','BirthRate']]
In [47]:
          df1
Out[47]:
                    CountryName BirthRate
            0
                           Aruba
                                    10.244
            1
                      Afghanistan
                                    35.253
            2
                          Angola
                                    45.985
            3
                                    12.877
                          Albania
                                    11.044
            4 United Arab Emirates
          190
                                    32.947
                      Yemen, Rep.
          191
                      South Africa
                                    20.850
          192
                  Congo, Dem. Rep.
                                    42.394
          193
                          Zambia
                                    40.471
          194
                       Zimbabwe
                                    35.715
         195 rows × 2 columns
In [48]:
          df2 = stats[5:10]
In [49]:
Out[49]:
                  CountryName CountryCode BirthRate InternetUsers
                                                                         IncomeGroup
          5
                                                           59.9000
                                       ARG
                                               17.716
                                                                          High income
                      Argentina
                       Armenia
                                       ARM
                                               13.308
                                                           41.9000 Lower middle income
          7 Antigua and Barbuda
                                       ATG
                                                           63.4000
                                                                          High income
                                               16.447
          8
                                                           83.0000
                                                                          High income
                       Australia
                                       AUS
                                               13.200
          9
                        Austria
                                       AUT
                                                9.400
                                                           80.6188
                                                                          High income
In [51]: stats.BirthRate * stats.InternetUsers
                 808.2516
Out[51]:
                 207.9927
          2
                 878.3135
                 736.5644
                 971.8720
          190
                 658.9400
          191
                 969.5250
          192
                93.2668
          193 623.2534
          194 660.7275
          Length: 195, dtype: float64
In [52]: stats['calc'] = stats.BirthRate * stats.InternetUsers
In [53]:
          stats.head()
```

t[53]:		CountryName (CountryCode I	BirthRate	InternetUsers	IncomeGroup	calc
-	0	Aruba	ABW	10.244	78.9	High income	
	1	Afghanistan	AFG	35.253	5.9	Low income	
	2	Angola	AGO	45.985		Upper middle income	
	3	Albania	ALB	12.877		Upper middle income	
		nited Arab Emirates	ARE	11.044	88.0	High income	
			, <u>-</u>		00.0	gcoc	37.1.07.20
.]:	stat	cs.drop('calc',	axis = 1)				
54]:		CountryName	CountryCode	BirthRate	e InternetUser	s IncomeGroup	_
	0	Aruba	ABW	10.24	4 78.9	9 High income	Э
	1	Afghanistan	AFG	35.25	3 5.9	9 Low income	е
	2	Angola	AGO	45.98	5 19.	1 Upper middle incom	е
	3	Albania	ALB	12.87	7 57.7	2 Upper middle income	е
	4	United Arab Emirates	ARE	11.04	4 88.0	0 High income	9
	•••						
	190	Yemen, Rep.	YEM				
	191	South Africa	ZAF			5 Upper middle incom	
	192	Congo, Dem. Rep.	COD				
	193	Zambia	ZMB			4 Lower middle income	
	194	Zimbabwe	ZWE	35.71	5 18.	5 Low income	е
	195 ro	ows × 5 columns					
.]:[stat	cs.head()					
.]:		CountryName C	CountryCode I	BirthRate	InternetUsers	IncomeGroup	calc
	0	Aruba	ABW	10.244	78.9	High income	808.2516
	1	Afghanistan	AFG	35.253	5.9	Low income	207.9927
	2	Angola	AGO	45.985	19.1	Upper middle income	878.3135
	3	Albania	ALB	12.877	57.2	Upper middle income	736.5644
	4 Ur	nited Arab Emirates	ARE	11.044	88.0	High income	971.8720
62]:	stat	cs = stats.drop	('calc',axi	s = 1)			
3]:	stat	cs.head()					
3]:		CountryName C	CountryCode I	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 Ur	nited Arab Emirates	ARE	11.044	88.0	High income	
:	stat	cs.columns[3]					
:	'Inte	ernetUsers'					
]:	stat	s.InternetUser	s > 10				
5]:	0	True					
	1 2	False True					
	3	True					
	4	True 					
	190	True					
	191 192	True False					
	193	True					
	194 Name:	True : InternetUsers,	Length: 195,	dtype: l	pool		
		•	- ,				

```
In [66]:
          Filter = stats.InternetUsers > 10
In [67]:
          Filter
                  True
Out[67]:
                 False
          2
                  True
                  True
                  True
          190
                  True
          191
                  True
          192
                 False
          193
                  True
          194
                  True
          Name: InternetUsers, Length: 195, dtype: bool
In [70]:
          stats[Filter]
                                                                            IncomeGroup
Out[70]:
                    CountryName CountryCode BirthRate InternetUsers
            0
                                                  10.244
                                                                 78.9
                           Aruba
                                         ABW
                                                                             High income
            2
                                                  45.985
                                                                 19.1 Upper middle income
                          Angola
                                         AGO
            3
                          Albania
                                          \mathsf{ALB}
                                                  12.877
                                                                 57.2 Upper middle income
            4 United Arab Emirates
                                          ARE
                                                  11.044
                                                                 0.88
                                                                             High income
            5
                                         ARG
                                                  17.716
                                                                 59.9
                        Argentina
                                                                             High income
          189
                                         WSM
                                                  26.172
                          Samoa
                                                                 15.3 Lower middle income
          190
                                                  32.947
                      Yemen, Rep.
                                         YEM
                                                                 20.0 Lower middle income
          191
                      South Africa
                                          ZAF
                                                  20.850
                                                                 46.5 Upper middle income
          193
                                                  40.471
                                                                 15.4 Lower middle income
                          Zambia
                                         ZMB
          194
                                         ZWE
                                                                 18.5
                        Zimbabwe
                                                  35.715
                                                                             Low income
         157 rows \times 5 columns
In [74]:
          stats.BirthRate > 30
                 False
Out[74]:
                  True
          2
                  True
                 False
                 False
          190
                  True
          191
                 False
          192
                  True
          193
                  True
          194
                  True
          Name: BirthRate, Length: 195, dtype: bool
In [75]:
          Filter2 = stats.BirthRate > 30
In [76]:
          Filter2
                 False
Out[76]:
                  True
                  True
          3
                 False
                 False
                  . . .
          190
                  True
          191
                 False
          192
                  True
          193
                  True
          194
                  True
          Name: BirthRate, Length: 195, dtype: bool
In [77]: stats[Filter2]
```

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
1	Afghanistan	AFG	35.253	5.90	Low income
2	Angola	AGO	45.985	19.10	Upper middle income
11	Burundi	BDI	44.151	1.30	Low income
13	Benin	BEN	36.440	4.90	Low income
14	Burkina Faso	BFA	40.551	9.10	Low income
29	Central African Republic	CAF	34.076	3.50	Low 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
38	Comoros	COM	34.326	6.50	Low income
52	Eritrea	ERI	34.800	0.90	Low income
55	Ethiopia	ETH	32.925	1.90	Low income
60	Gabon	GAB	30.555	9.20	Upper middle income
63	Ghana	GHA	33.131	12.30	Lower middle income
64	Guinea	GIN	37.337	1.60	Low income
65	Gambia, The	GMB	42.525	14.00	Low income
66	Guinea-Bissau	GNB	37.503	3.10	Low income
67	Equatorial Guinea	GNQ	35.362	16.40	High income
83	Iraq	IRQ	31.093	9.20	Upper middle income
91	Kenya	KEN	35.194	39.00	Lower middle income
99	Liberia	LBR	35.521	3.20	Low income
111	Madagascar	MDG	34.686	3.00	Low income
115	Mali	MLI	44.138	3.50	Low income
120	Mozambique	MOZ	39.705	5.40	Low income
121	Mauritania	MRT	33.801	6.20	Lower middle income
123	Malawi	MWI	39.459	5.05	Low income
127	Niger	NER	49.661	1.70	Low income
128	Nigeria	NGA	40.045	38.00	Lower middle income
148	Rwanda	RWA	32.689	9.00	Low income
150	Sudan	SDN	33.477	22.70	Lower middle income
151	Senegal	SEN	38.533	13.10	Lower middle income
153	Solomon Islands	SLB	30.578	8.00	Lower middle income
154	Sierra Leone	SLE	36.729	1.70	Low income
156	Somalia	SOM	43.891	1.50	Low income
158	South Sudan	SSD	37.126	14.10	Low income
159	Sao Tome and Principe	STP	34.537	23.00	Lower middle income
164	Swaziland	SWZ	30.093	24.70	Lower middle income
167	Chad	TCD	45.745	2.30	Low income
168	Togo	TGO	36.080	4.50	Low income
170	Tajikistan	TJK	30.792	16.00	Lower middle income
172	Timor-Leste	TLS	35.755	1.10	Lower middle income
177	Tanzania	TZA	39.518	4.40	Low income
178	Uganda	UGA	43.474	16.20	Low income
188	West Bank and Gaza	PSE	30.394	46.60	Lower middle income
190	Yemen, Rep.	YEM	32.947	20.00	Lower middle income
192	Congo, Dem. Rep.	COD	42.394	2.20	Low income
193	Zambia	ZMB	40.471	15.40	Lower middle income
194	Zimbabwe	ZWE	35.715	18.50	Low income

```
False
Out[78]:
         1
                False
         2
                 True
         3
                False
         4
                False
         190
                 True
         191
                False
         192
                False
         193
                 True
         194
                 True
         Length: 195, dtype: bool
```

In [80]: stats[Filter & Filter2]

Out[80]: CountryName CountryCode BirthRate InternetUsers IncomeGroup 2 Angola AGO 45.985 19.1 Upper middle income 63 Ghana GHA 33.131 12.3 Lower middle income 65 Gambia, The GMB 42.525 14.0 Low income **Equatorial Guinea** GNQ 35.362 16.4 High income 67 91 Kenya KEN 35.194 39.0 Lower middle income 128 NGA 40.045 Lower middle income Nigeria 38.0 150 Sudan SDN 33.477 22.7 Lower middle income Senegal SEN 38.533 Lower middle income 151 13.1 158 South Sudan SSD 37.126 14.1 Low income **159** Sao Tome and Principe STP 34.537 Lower middle income 23.0 164 Swaziland SWZ 30.093 Lower middle income 170 Tajikistan TJK 30.792 16.0 Lower middle income 178 Uganda UGA 43.474 16.2 Low income Lower middle income 188 West Bank and Gaza PSE 30.394 46.6 YEM 32.947 Lower middle income 190 Yemen, Rep. 20.0 ZMB Zambia 40.471 Lower middle income 193 15.4 194 Zimbabwe ZWE 35.715 18.5 Low income

In [82]: stats[(stats.BirthRate > 30) & (stats.InternetUsers > 10)]

Out[82]:		CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
	2	Angola	AGO	45.985	19.1	Upper middle income
	63	Ghana	GHA	33.131	12.3	Lower middle income
	65	Gambia, The	GMB	42.525	14.0	Low income
	67	Equatorial Guinea	GNQ	35.362	16.4	High income
	91	Kenya	KEN	35.194	39.0	Lower middle income
	128	Nigeria	NGA	40.045	38.0	Lower middle income
	150	Sudan	SDN	33.477	22.7	Lower middle income
	151	Senegal	SEN	38.533	13.1	Lower middle income
	158	South Sudan	SSD	37.126	14.1	Low income
	159	Sao Tome and Principe	STP	34.537	23.0	Lower middle income
	164	Swaziland	SWZ	30.093	24.7	Lower middle income
	170	Tajikistan	TJK	30.792	16.0	Lower middle income
	178	Uganda	UGA	43.474	16.2	Low income
	188	West Bank and Gaza	PSE	30.394	46.6	Lower middle income
	190	Yemen, Rep.	YEM	32.947	20.0	Lower middle income
	193	Zambia	ZMB	40.471	15.4	Lower middle income
	194	Zimbabwe	ZWE	35.715	18.5	Low income

In [85]: stats[stats.IncomeGroup == 'Low income']

Out[85]:	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
	1 Afghanistan	AFG	35.253	5.90	Low income
1	1 Burundi	BDI	44.151	1.30	Low income
1	B enin	BEN	36.440	4.90	Low income
1	4 Burkina Faso	BFA	40.551	9.10	Low income
2	9 Central African Republic	CAF	34.076	3.50	Low income
3	B Comoros	СОМ	34.326	6.50	Low income
5	2 Eritrea	ERI	34.800	0.90	Low income
5	5 Ethiopia	ETH	32.925	1.90	Low income
6	4 Guinea	GIN	37.337	1.60	Low income
6	G ambia, The	GMB	42.525	14.00	Low income
6	6 Guinea-Bissau	GNB	37.503	3.10	Low income
7	7 Haiti	HTI	25.345	10.60	Low income
9	3 Cambodia	КНМ	24.462	6.80	Low income
99	9 Liberia	LBR	35.521	3.20	Low income
11	1 Madagascar	MDG	34.686	3.00	Low income
11	5 Mali	MLI	44.138	3.50	Low income
12	0 Mozambique	MOZ	39.705	5.40	Low income
12	3 Malawi	MWI	39.459	5.05	Low income
12	7 Niger	NER	49.661	1.70	Low income
133	2 Nepal	NPL	20.923	13.30	Low income
14	8 Rwanda	RWA	32.689	9.00	Low income
15	4 Sierra Leone	SLE	36.729	1.70	Low income
15	S Somalia	SOM	43.891	1.50	Low income
15	South Sudan	SSD	37.126	14.10	Low income
16	7 Chad	TCD	45.745	2.30	Low income
16	3 Togo	TGO	36.080	4.50	Low income
17	7 Tanzania	TZA	39.518	4.40	Low income
178	3 Uganda	UGA	43.474	16.20	Low income

42.394

35.715

COD

ZWE

192

194

Congo, Dem. Rep.

Zimbabwe

```
In [86]:
         unique = stats.IncomeGroup.unique()
In [87]:
         unique
         array(['High income', 'Low income', 'Upper middle income',
Out[87]:
               'Lower middle income'], dtype=object)
In [88]:
         import matplotlib.pyplot as plt
In [89]:
         import seaborn as sns
In [90]: import warnings
In [91]:
         warnings.filterwarnings('ignore')
In [92]:
         %matplotlib inline
In [97]:
         plt.rcParams['figure.figsize'] = 10,5
In [98]:
         stats.head()
```

2.20

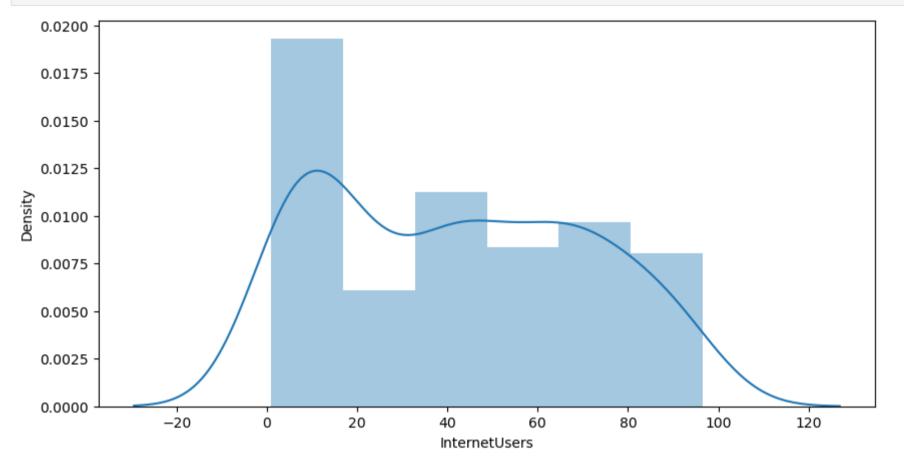
18.50

Low income

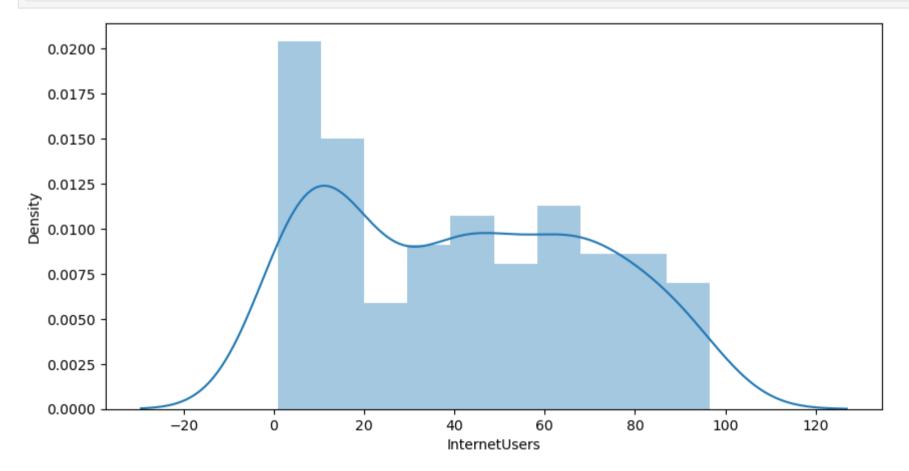
Low income

Out[98]: CountryName CountryCode BirthRate InternetUsers IncomeGroup 0 10.244 78.9 Aruba ABW High income 1 5.9 Afghanistan AFG 35.253 Low income 2 AGO 45.985 19.1 Upper middle income Angola 3 ALB 12.877 57.2 Upper middle income Albania ARE 11.044 4 United Arab Emirates 0.88 High income

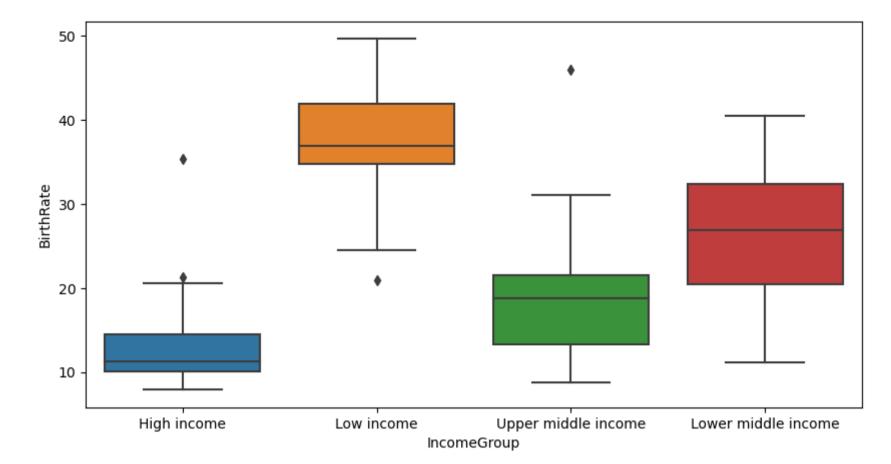
In [99]: visual = sns.distplot(stats["InternetUsers"])



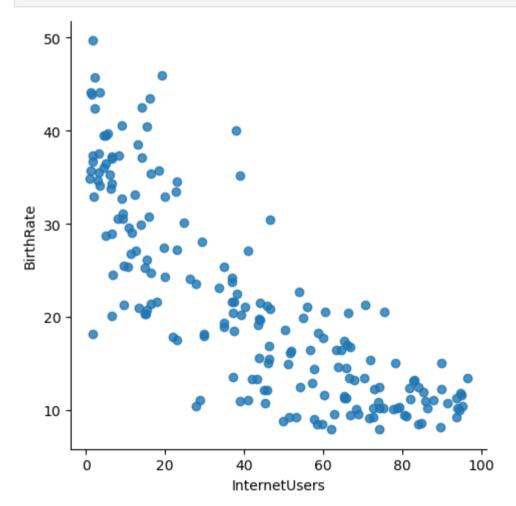
In [100... visual = sns.distplot(stats["InternetUsers"], bins = 10)



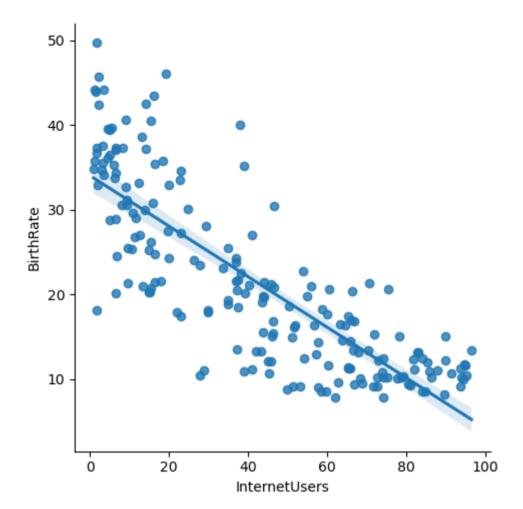
In [101... visual2 = sns.boxplot(data = stats, x="IncomeGroup",y="BirthRate")



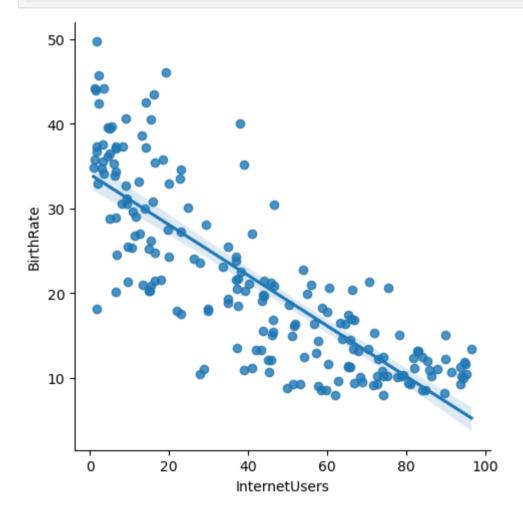
In [102... visual3 = sns.lmplot(data = stats, x = 'InternetUsers', y = 'BirthRate', fit_reg = False)



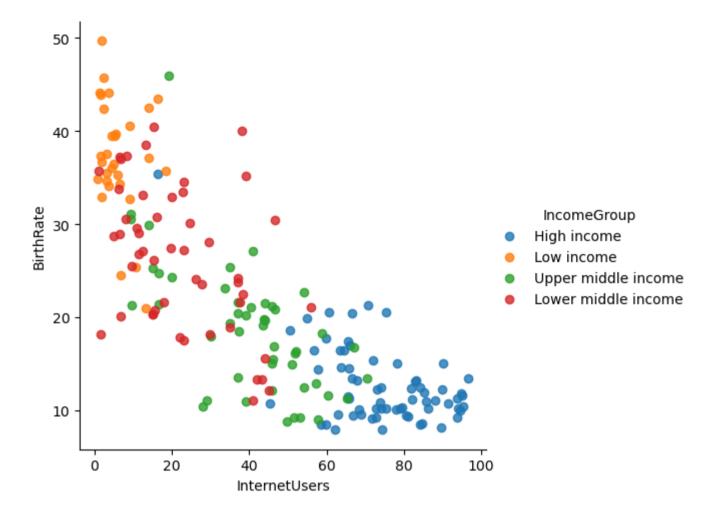
visual3 = sns.lmplot(data = stats, x = 'InternetUsers', y = 'BirthRate', fit_reg = True)



```
In [105... visual4 = sns.lmplot(data = stats, x = 'InternetUsers', y = 'BirthRate')
```



```
In [106... visual5 = sns.lmplot(data = stats, x = 'InternetUsers', y = 'BirthRate', fit_reg = False, hue = 'IncomeGroup')
```



visual5 = sns.lmplot(data = stats, x = 'InternetUsers', y = 'BirthRate', fit_reg = False, hue = 'IncomeGroup',
size = 10)

