In [1]:
```
import pandas as pd
```

In [2]:
```
df = pd.read_csv(r'C:\Users\galir\Downloads\DataFrame_ Pandas\DataFrame_ Pandas\
```

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

Out[3]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | Unnamed: 5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **...** | ... | ... | ... | ... | ... | ... |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

195 rows × 6 columns

In [4]:
```
len(df)
```

Out[4]:
```
195
```

In [5]:
```
df.columns
```

Out[5]:
```
Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
       'IncomeGroup', 'Unnamed: 5'],
      dtype='object')
```

In [6]:
```
len(df.columns)
```

Out[6]:
```
6
```

In [7]:
```
df.head()
```

Out[7]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | Unnamed: 5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [8]:
```
df.head(3)
```

Out[8]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | Unnamed: 5 |
|---|---|---|---|---|---|---|
| **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 |

In [9]:
```
df.tail()
```

Out[9]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | Unnamed: 5 |
|---|---|---|---|---|---|---|
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

In [10]:
```
df.tail(3)
```

Out[10]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | Unnamed: 5 |
|---|---|---|---|---|---|---|
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

In [11]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 195 entries, 0 to 194
Data columns (total 6 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 
 5   Unnamed: 5     195 non-null    float64
dtypes: float64(3), object(3)
memory usage: 9.3+ KB
```

In [12]:
```
df.describe()
```

Out[12]:

| | BirthRate | InternetUsers | Unnamed: 5 |
|---|---|---|---|
| **count** | 195.000000 | 195.000000 | 195.000000 |
| **mean** | 21.469928 | 42.076471 | 653.559009 |
| **std** | 10.605467 | 29.030788 | 351.553521 |
| **min** | 7.900000 | 0.900000 | 28.990400 |
| **25%** | 12.120500 | 14.520000 | 361.263300 |
| **50%** | 19.680000 | 41.000000 | 682.074300 |
| **75%** | 29.759500 | 66.225000 | 892.690170 |
| **max** | 49.661000 | 96.546800 | 1552.589500 |

In [13]:
```
df.describe().transpose()
```

Out[13]:

| | count | mean | std | min | 25% | 50% | 75% | |
|---|---|---|---|---|---|---|---|---|
| **BirthRate** | 195.0 | 21.469928 | 10.605467 | 7.9000 | 12.1205 | 19.6800 | 29.75950 | |
| **InternetUsers** | 195.0 | 42.076471 | 29.030788 | 0.9000 | 14.5200 | 41.0000 | 66.22500 | |
| **Unnamed: 5** | 195.0 | 653.559009 | 351.553521 | 28.9904 | 361.2633 | 682.0743 | 892.69017 | 1 |

In [14]:
```
df.columns
```

Out[14]:
```
Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
       'IncomeGroup', 'Unnamed: 5'],
      dtype='object')
```

In [15]:
```
df.columns = ['a','b','c','d','e','f']
```

In [16]:
```
df.head()
```

Out[16]:

| | a | b | c | d | e | f |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [17]:
```
df.columns = ['CountryName','countrycode','BirthRate','InternetUsers','IncomeGro
```

In [18]:
```
df.head()
```

Out[18]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [19]:
```
df[20:27]
```

Out[19]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **20** | Belarus | BLR | 12.500 | 54.17 | Upper middle income | 677.12500 |
| **21** | Belize | BLZ | 23.092 | 33.60 | Upper middle income | 775.89120 |
| **22** | Bermuda | BMU | 10.400 | 95.30 | High income | 991.12000 |
| **23** | Bolivia | BOL | 24.236 | 36.94 | Lower middle income | 895.27784 |
| **24** | Brazil | BRA | 14.931 | 51.04 | Upper middle income | 762.07824 |
| **25** | Barbados | BRB | 12.188 | 73.00 | High income | 889.72400 |
| **26** | Brunei Darussalam | BRN | 16.405 | 64.50 | High income | 1058.12250 |

In [20]:
```
df[:]
```

Out[20]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **...** | ... | ... | ... | ... | ... | ... |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

195 rows × 6 columns

In [21]:
```
df[:10]
```

Out[21]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **0** | Aruba | ABW | 10.244 | 78.9000 | High income | 808.25160 |
| **1** | Afghanistan | AFG | 35.253 | 5.9000 | Low income | 207.99270 |
| **2** | Angola | AGO | 45.985 | 19.1000 | Upper middle income | 878.31350 |
| **3** | Albania | ALB | 12.877 | 57.2000 | Upper middle income | 736.56440 |
| **4** | United Arab Emirates | ARE | 11.044 | 88.0000 | High income | 971.87200 |
| **5** | Argentina | ARG | 17.716 | 59.9000 | High income | 1061.18840 |
| **6** | Armenia | ARM | 13.308 | 41.9000 | Lower middle income | 557.60520 |
| **7** | Antigua and Barbuda | ATG | 16.447 | 63.4000 | High income | 1042.73980 |
| **8** | Australia | AUS | 13.200 | 83.0000 | High income | 1095.60000 |
| **9** | Austria | AUT | 9.400 | 80.6188 | High income | 757.81672 |

In [22]:
```
df.head(10)
```

Out[22]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **0** | Aruba | ABW | 10.244 | 78.9000 | High income | 808.25160 |
| **1** | Afghanistan | AFG | 35.253 | 5.9000 | Low income | 207.99270 |
| **2** | Angola | AGO | 45.985 | 19.1000 | Upper middle income | 878.31350 |
| **3** | Albania | ALB | 12.877 | 57.2000 | Upper middle income | 736.56440 |
| **4** | United Arab Emirates | ARE | 11.044 | 88.0000 | High income | 971.87200 |
| **5** | Argentina | ARG | 17.716 | 59.9000 | High income | 1061.18840 |
| **6** | Armenia | ARM | 13.308 | 41.9000 | Lower middle income | 557.60520 |
| **7** | Antigua and Barbuda | ATG | 16.447 | 63.4000 | High income | 1042.73980 |
| **8** | Australia | AUS | 13.200 | 83.0000 | High income | 1095.60000 |
| **9** | Austria | AUT | 9.400 | 80.6188 | High income | 757.81672 |

In [23]:
```
df[::-1]
```

Out[23]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **...** | ... | ... | ... | ... | ... | ... |
| **4** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **3** | Albania | ALB | 12.877 | 57.2 | Upper middle income | 736.5644 |
| **2** | Angola | AGO | 45.985 | 19.1 | Upper middle income | 878.3135 |
| **1** | Afghanistan | AFG | 35.253 | 5.9 | Low income | 207.9927 |
| **0** | Aruba | ABW | 10.244 | 78.9 | High income | 808.2516 |

195 rows × 6 columns

In [24]:
```
df
```

Out[24]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **...** | ... | ... | ... | ... | ... | ... |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

195 rows × 6 columns

In [25]:
```
df[::20]
```

Out[25]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **0** | Aruba | ABW | 10.244 | 78.9000 | High income | 808.25160 |
| **20** | Belarus | BLR | 12.500 | 54.1700 | Upper middle income | 677.12500 |
| **40** | Costa Rica | CRI | 15.022 | 45.9600 | Upper middle income | 690.41112 |
| **60** | Gabon | GAB | 30.555 | 9.2000 | Upper middle income | 281.10600 |
| **80** | India | IND | 20.291 | 15.1000 | Lower middle income | 306.39410 |
| **100** | Libya | LBY | 21.425 | 16.5000 | Upper middle income | 353.51250 |
| **120** | Mozambique | MOZ | 39.705 | 5.4000 | Low income | 214.40700 |
| **140** | Poland | POL | 9.600 | 62.8492 | High income | 603.35232 |
| **160** | Suriname | SUR | 18.455 | 37.4000 | Upper middle income | 690.21700 |
| **180** | Uruguay | URY | 14.374 | 57.6900 | High income | 829.23606 |

In [26]:
```
df.columns
```

Out[26]:
```
Index(['CountryName', 'countrycode', 'BirthRate', 'InternetUsers',
       'IncomeGroup', 'Unnamed:5'],
      dtype='object')
```

In [27]:
```
df.head()
```

Out[27]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [28]:
```
df['CountryName'].head()
```

Out[28]:
```
0                  Aruba
1            Afghanistan
2                 Angola
3                Albania
4    United Arab Emirates
Name: CountryName, dtype: object
```

In [29]:
```
['CountryName','BirthRate']
```

Out[29]:
```
['CountryName', 'BirthRate']
```

In [30]:
```
df[['CountryName','BirthRate']].head()
```

Out[30]:

| | CountryName | BirthRate |
|---|---|---|
| **0** | Aruba | 10.244 |
| **1** | Afghanistan | 35.253 |
| **2** | Angola | 45.985 |
| **3** | Albania | 12.877 |
| **4** | United Arab Emirates | 11.044 |

In [31]:
```
df.head()
```

Out[31]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [32]:
```
df['BirthRate']
```

Out[32]:
```
0      10.244
1      35.253
2      45.985
3      12.877
4      11.044
       ...
190    32.947
191    20.850
192    42.394
193    40.471
194    35.715
Name: BirthRate, Length: 195, dtype: float64
```

In [33]:
```
df[5:9][['CountryName','BirthRate']]
```

Out[33]:

| | CountryName | BirthRate |
|---|---|---|
| **5** | Argentina | 17.716 |
| **6** | Armenia | 13.308 |
| **7** | Antigua and Barbuda | 16.447 |
| **8** | Australia | 13.200 |

In [34]:
```
df[['CountryName','BirthRate']][5:9]
```

Out[34]:

| | CountryName | BirthRate |
|---|---|---|
| **5** | Argentina | 17.716 |
| **6** | Armenia | 13.308 |
| **7** | Antigua and Barbuda | 16.447 |
| **8** | Australia | 13.200 |

In [35]:
```
df1 = df[['CountryName','BirthRate']]
```

In [36]:
```
df1
```

Out[36]:

| | 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 × 2 columns

In [37]:
```
df2 = df[5:9]
```

In [38]:
```
df2
```

Out[38]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **5** | Argentina | ARG | 17.716 | 59.9 | High income | 1061.1884 |
| **6** | Armenia | ARM | 13.308 | 41.9 | Lower middle income | 557.6052 |
| **7** | Antigua and Barbuda | ATG | 16.447 | 63.4 | High income | 1042.7398 |
| **8** | Australia | AUS | 13.200 | 83.0 | High income | 1095.6000 |

In [39]:
```
df.head()
```

Out[39]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [40]:
```
df[['countrycode','BirthRate','InternetUsers']][5:9]
```

Out[40]:

| | countrycode | BirthRate | InternetUsers |
|---|---|---|---|
| **5** | ARG | 17.716 | 59.9 |
| **6** | ARM | 13.308 | 41.9 |
| **7** | ATG | 16.447 | 63.4 |
| **8** | AUS | 13.200 | 83.0 |

In [41]:
```
df.head()
```

Out[41]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [42]:
```
df.BirthRate*df.InternetUsers
```

Out[42]:
```
0      808.2516
1      207.9927
2      878.3135
3      736.5644
4      971.8720
         ...
190    658.9400
191    969.5250
192     93.2668
193    623.2534
194    660.7275
Length: 195, dtype: float64
```

In [43]:
```
df['mycalc'] = df.BirthRate*df.InternetUsers
```

In [44]:
```
df.head()
```

Out[44]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 | n |
|---|---|---|---|---|---|---|---|
| **0** | Aruba | ABW | 10.244 | 78.9 | High income | 808.2516 | 80 |
| **1** | Afghanistan | AFG | 35.253 | 5.9 | Low income | 207.9927 | 20 |
| **2** | Angola | AGO | 45.985 | 19.1 | Upper middle income | 878.3135 | 87 |
| **3** | Albania | ALB | 12.877 | 57.2 | Upper middle income | 736.5644 | 73 |
| **4** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 | 97 |

In [45]:
```
df.drop('mycalc',axis = 1)
```

Out[45]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **...** | ... | ... | ... | ... | ... | ... |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0 | Lower middle income | 658.9400 |
| **191** | South Africa | ZAF | 20.850 | 46.5 | Upper middle income | 969.5250 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income | 660.7275 |

195 rows × 6 columns

In [46]:
```
df = df.drop('mycalc',axis = 0)
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Cell In[46], line 1
----> 1 df = df.drop('mycalc',axis = 0)

File ~\anaconda3\Lib\site-packages\pandas\core\frame.py:5581, in DataFrame.drop(s
elf, labels, axis, index, columns, level, inplace, errors)
   5433 def drop(
   5434     self,
   5435     labels: IndexLabel | None = None,
   (...)
   5442     errors: IgnoreRaise = "raise",
   5443 ) -> DataFrame | None:
   5444     """
   5445     Drop specified labels from rows or columns.
   5446
   (...)
   5579             weight  1.0     0.8
   5580     """
-> 5581     return super().drop(
   5582         labels=labels,
   5583         axis=axis,
   5584         index=index,
   5585         columns=columns,
   5586         level=level,
   5587         inplace=inplace,
   5588         errors=errors,
   5589     )

File ~\anaconda3\Lib\site-packages\pandas\core\generic.py:4788, in NDFrame.drop(s
elf, labels, axis, index, columns, level, inplace, errors)
   4786 for axis, labels in axes.items():
   4787     if labels is not None:
-> 4788         obj = obj._drop_axis(labels, axis, level=level, errors=errors)
   4790 if inplace:
   4791     self._update_inplace(obj)

File ~\anaconda3\Lib\site-packages\pandas\core\generic.py:4830, in NDFrame._drop_
axis(self, labels, axis, level, errors, only_slice)
   4828         new_axis = axis.drop(labels, level=level, errors=errors)
   4829     else:
-> 4830         new_axis = axis.drop(labels, errors=errors)
   4831     indexer = axis.get_indexer(new_axis)
   4833 # Case for non-unique axis
   4834 else:

File ~\anaconda3\Lib\site-packages\pandas\core\indexes\base.py:7070, in Index.dro
p(self, labels, errors)
   7068 if mask.any():
   7069     if errors != "ignore":
-> 7070         raise KeyError(f"{labels[mask].tolist()} not found in axis")
   7071     indexer = indexer[~mask]
   7072 return self.delete(indexer)

KeyError: "['mycalc'] not found in axis"
```

In [47]:
```
df = df.drop('mycalc',axis = 1)
```

In [49]:
```
df.head()
```

Out[49]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [51]:
```
df.columns[2]
```

Out[51]:
```
'BirthRate'
```

In [53]:
```
df.InternetUsers<2
```

Out[53]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192    False
193    False
194    False
Name: InternetUsers, Length: 195, dtype: bool
```

In [55]:
```
Filter = df.InternetUsers < 2
```

In [57]:
```
Filter
```

Out[57]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192    False
193    False
194    False
Name: InternetUsers, Length: 195, dtype: bool
```

In [59]:
```
df[3:7]
```

Out[59]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **3** | Albania | ALB | 12.877 | 57.2 | Upper middle income | 736.5644 |
| **4** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |
| **5** | Argentina | ARG | 17.716 | 59.9 | High income | 1061.1884 |
| **6** | Armenia | ARM | 13.308 | 41.9 | Lower middle income | 557.6052 |

In [61]:
```
df[30:50]
```

Out[61]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **30** | Canada | CAN | 10.900 | 85.8000 | High income | 935.220000 |
| **31** | Switzerland | CHE | 10.200 | 86.3400 | High income | 880.668000 |
| **32** | Chile | CHL | 13.385 | 66.5000 | High income | 890.102500 |
| **33** | China | CHN | 12.100 | 45.8000 | Upper middle income | 554.180000 |
| **34** | Cote d'Ivoire | CIV | 37.320 | 8.4000 | Lower middle income | 313.488000 |
| **35** | Cameroon | CMR | 37.236 | 6.4000 | Lower middle income | 238.310400 |
| **36** | Congo, Rep. | COG | 37.011 | 6.6000 | Lower middle income | 244.272600 |
| **37** | Colombia | COL | 16.076 | 51.7000 | Upper middle income | 831.129200 |
| **38** | Comoros | COM | 34.326 | 6.5000 | Low income | 223.119000 |
| **39** | Cabo Verde | CPV | 21.625 | 37.5000 | Lower middle income | 810.937500 |
| **40** | Costa Rica | CRI | 15.022 | 45.9600 | Upper middle income | 690.411120 |
| **41** | Cuba | CUB | 10.400 | 27.9300 | Upper middle income | 290.472000 |
| **42** | Cayman Islands | CYM | 12.500 | 74.1000 | High income | 926.250000 |
| **43** | Cyprus | CYP | 11.436 | 65.4548 | High income | 748.541093 |
| **44** | Czech Republic | CZE | 10.200 | 74.1104 | High income | 755.926080 |
| **45** | Germany | DEU | 8.500 | 84.1700 | High income | 715.445000 |
| **46** | Djibouti | DJI | 25.486 | 9.5000 | Lower middle income | 242.117000 |
| **47** | Denmark | DNK | 10.000 | 94.6297 | High income | 946.297000 |
| **48** | Dominican Republic | DOM | 21.198 | 45.9000 | Upper middle income | 972.988200 |
| **49** | Algeria | DZA | 24.738 | 16.5000 | Upper middle income | 408.177000 |

In [63]:
```
df[Filter]
```

Out[63]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income | 57.3963 |
| **52** | Eritrea | ERI | 34.800 | 0.9 | Low income | 31.3200 |
| **55** | Ethiopia | ETH | 32.925 | 1.9 | Low income | 62.5575 |
| **64** | Guinea | GIN | 37.337 | 1.6 | Low income | 59.7392 |
| **117** | Myanmar | MMR | 18.119 | 1.6 | Lower middle income | 28.9904 |
| **127** | Niger | NER | 49.661 | 1.7 | Low income | 84.4237 |
| **154** | Sierra Leone | SLE | 36.729 | 1.7 | Low income | 62.4393 |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income | 65.8365 |
| **172** | Timor-Leste | TLS | 35.755 | 1.1 | Lower middle income | 39.3305 |

In [65]:
```
df.BirthRate>40
```

Out[65]:
```
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 [67]:
```
Filter2 = df.BirthRate>40
```

In [69]:
```
Filter2
```

Out[69]:
```
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 [71]:
```
df[Filter2]
```

Out[71]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **2** | Angola | AGO | 45.985 | 19.1 | Upper middle income | 878.3135 |
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income | 57.3963 |
| **14** | Burkina Faso | BFA | 40.551 | 9.1 | Low income | 369.0141 |
| **65** | Gambia, The | GMB | 42.525 | 14.0 | Low income | 595.3500 |
| **115** | Mali | MLI | 44.138 | 3.5 | Low income | 154.4830 |
| **127** | Niger | NER | 49.661 | 1.7 | Low income | 84.4237 |
| **128** | Nigeria | NGA | 40.045 | 38.0 | Lower middle income | 1521.7100 |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income | 65.8365 |
| **167** | Chad | TCD | 45.745 | 2.3 | Low income | 105.2135 |
| **178** | Uganda | UGA | 43.474 | 16.2 | Low income | 704.2788 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2 | Low income | 93.2668 |
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income | 623.2534 |

In [73]:
```
Filter & Filter2
```

Out[73]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192    False
193    False
194    False
Length: 195, dtype: bool
```

In [75]:
```
df[Filter & Filter2]
```

Out[75]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income | 57.3963 |
| **127** | Niger | NER | 49.661 | 1.7 | Low income | 84.4237 |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income | 65.8365 |

In [77]:
```
df[(df.BirthRate > 40) & (df.InternetUsers < 2)]
```

Out[77]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income | 57.3963 |
| **127** | Niger | NER | 49.661 | 1.7 | Low income | 84.4237 |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income | 65.8365 |

In [79]:
```
df.head()
```

Out[79]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

In [81]:
```
df[df.IncomeGroup =='Low income']
```

Out[81]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **1** | Afghanistan | AFG | 35.253 | 5.90 | Low income | 207.99270 |
| **11** | Burundi | BDI | 44.151 | 1.30 | Low income | 57.39630 |
| **13** | Benin | BEN | 36.440 | 4.90 | Low income | 178.55600 |
| **14** | Burkina Faso | BFA | 40.551 | 9.10 | Low income | 369.01410 |
| **29** | Central African Republic | CAF | 34.076 | 3.50 | Low income | 119.26600 |
| **38** | Comoros | COM | 34.326 | 6.50 | Low income | 223.11900 |
| **52** | Eritrea | ERI | 34.800 | 0.90 | Low income | 31.32000 |
| **55** | Ethiopia | ETH | 32.925 | 1.90 | Low income | 62.55750 |
| **64** | Guinea | GIN | 37.337 | 1.60 | Low income | 59.73920 |
| **65** | Gambia, The | GMB | 42.525 | 14.00 | Low income | 595.35000 |
| **66** | Guinea-Bissau | GNB | 37.503 | 3.10 | Low income | 116.25930 |
| **77** | Haiti | HTI | 25.345 | 10.60 | Low income | 268.65700 |
| **93** | Cambodia | KHM | 24.462 | 6.80 | Low income | 166.34160 |
| **99** | Liberia | LBR | 35.521 | 3.20 | Low income | 113.66720 |
| **111** | Madagascar | MDG | 34.686 | 3.00 | Low income | 104.05800 |
| **115** | Mali | MLI | 44.138 | 3.50 | Low income | 154.48300 |
| **120** | Mozambique | MOZ | 39.705 | 5.40 | Low income | 214.40700 |
| **123** | Malawi | MWI | 39.459 | 5.05 | Low income | 199.26795 |
| **127** | Niger | NER | 49.661 | 1.70 | Low income | 84.42370 |
| **132** | Nepal | NPL | 20.923 | 13.30 | Low income | 278.27590 |
| **148** | Rwanda | RWA | 32.689 | 9.00 | Low income | 294.20100 |
| **154** | Sierra Leone | SLE | 36.729 | 1.70 | Low income | 62.43930 |
| **156** | Somalia | SOM | 43.891 | 1.50 | Low income | 65.83650 |
| **158** | South Sudan | SSD | 37.126 | 14.10 | Low income | 523.47660 |
| **167** | Chad | TCD | 45.745 | 2.30 | Low income | 105.21350 |
| **168** | Togo | TGO | 36.080 | 4.50 | Low income | 162.36000 |
| **177** | Tanzania | TZA | 39.518 | 4.40 | Low income | 173.87920 |
| **178** | Uganda | UGA | 43.474 | 16.20 | Low income | 704.27880 |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.20 | Low income | 93.26680 |
| **194** | Zimbabwe | ZWE | 35.715 | 18.50 | Low income | 660.72750 |

In [83]:
```
df.IncomeGroup.unique()
```

Out[83]:
```
array(['High income', 'Low income', 'Upper middle income',
       'Lower middle income'], dtype=object)
```

In [85]:
```
df.IncomeGroup.nunique()
```

Out[85]:
```
4
```

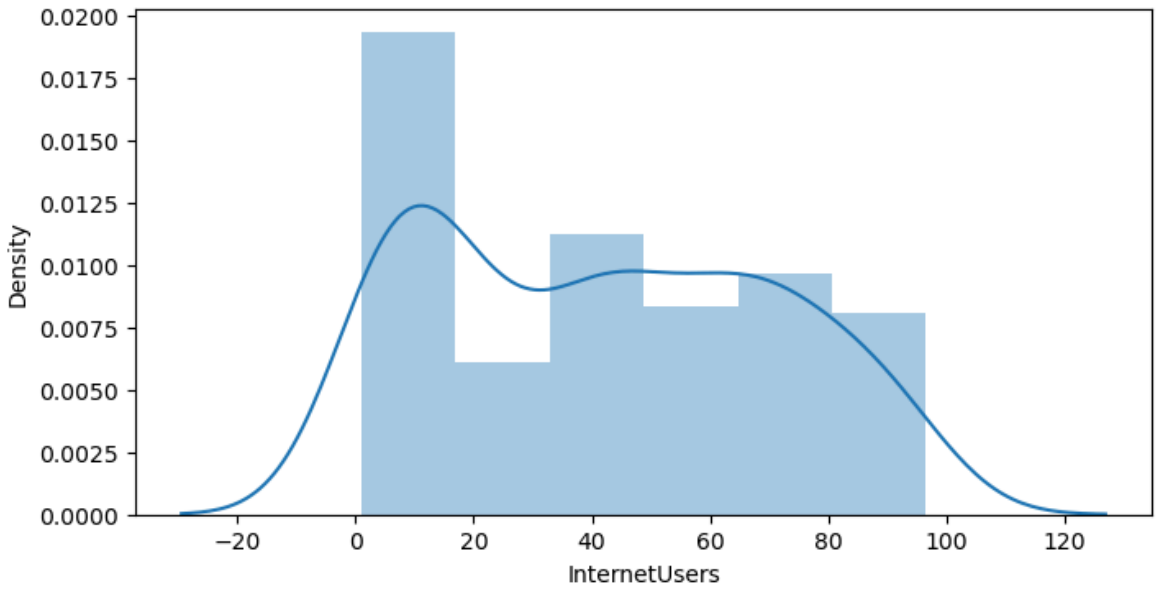
In [87]:
```
# Introdution to seaborn # seaborn is very powerful visualization (STATISTIC VIS

import matplotlib.pyplot as plt # visulaization
import seaborn as sns

%matplotlib inline
plt.rcParams['figure.figsize'] = 8,4

import warnings
warnings.filterwarnings('ignore')
```

In [88]:
```
df.head()
```

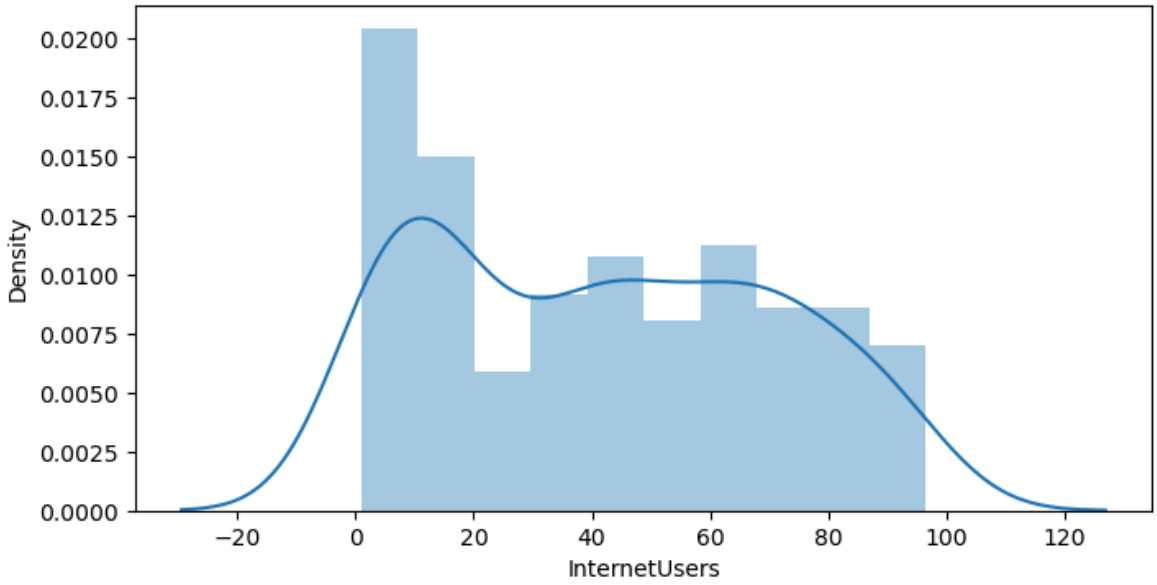
Out[88]:

| | CountryName | countrycode | BirthRate | InternetUsers | IncomeGroup | Unnamed:5 |
|---|---|---|---|---|---|---|
| **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** | United Arab Emirates | ARE | 11.044 | 88.0 | High income | 971.8720 |

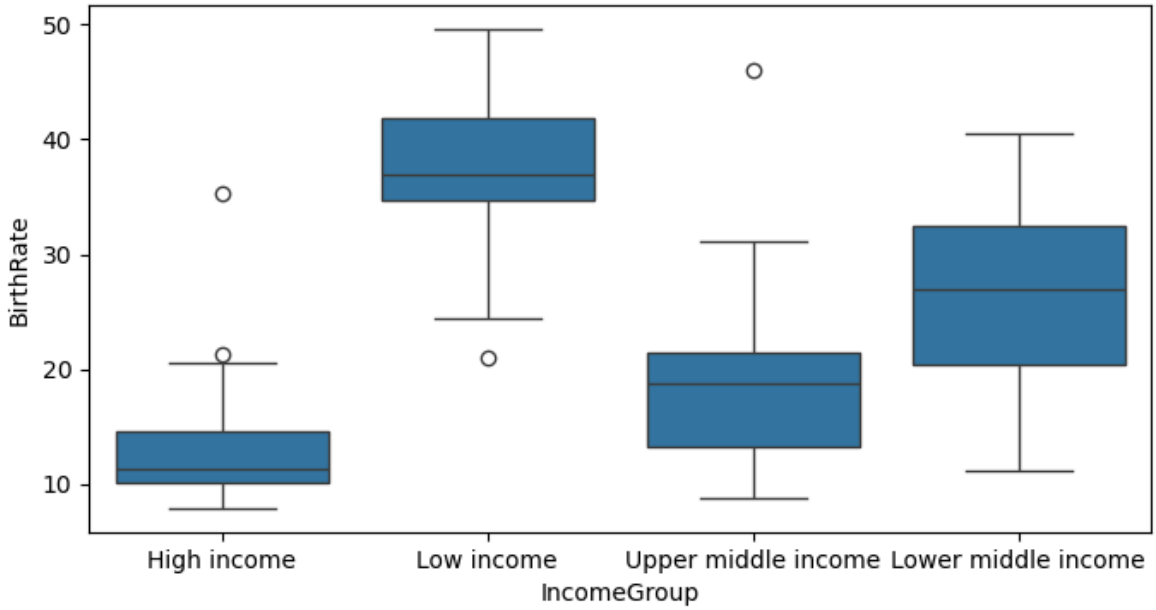
In [89]:
```
vis1 = sns.distplot(df["InternetUsers"])
```



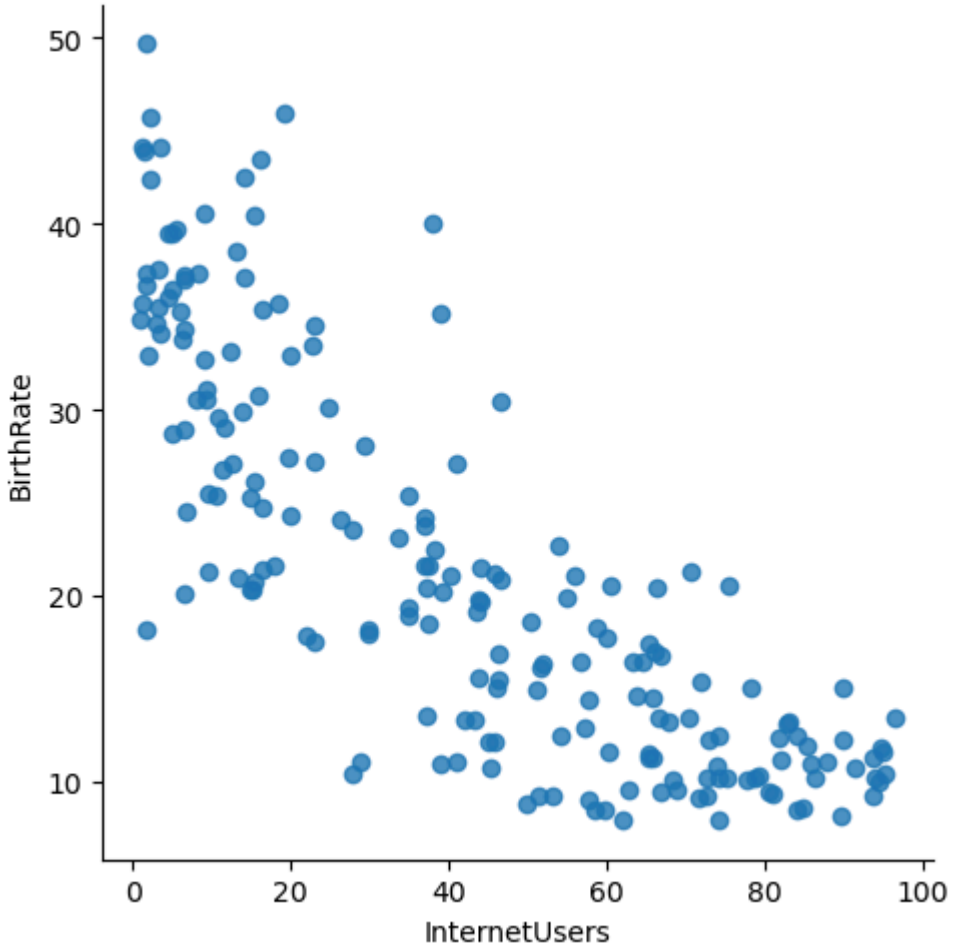

In [90]:
```
vis1 = sns.distplot(df["InternetUsers"],bins = 10)
```



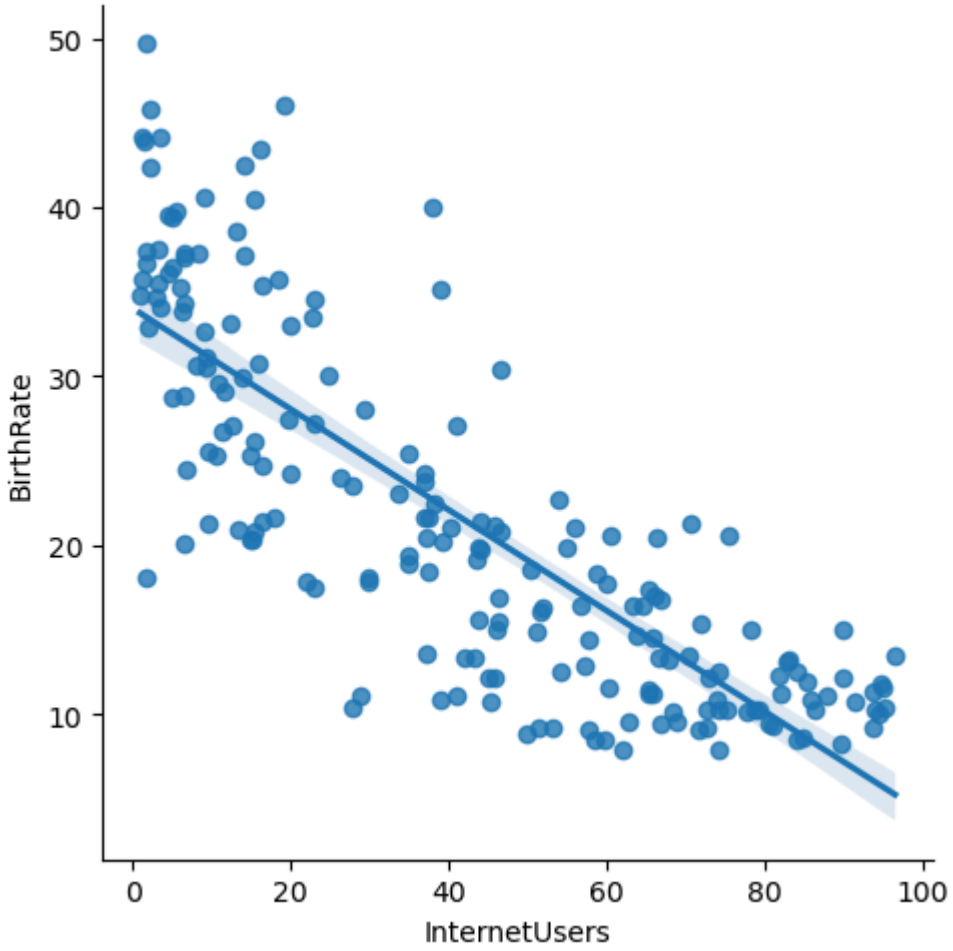

In [91]:
```
vis2 = sns.boxplot(data = df, x ="IncomeGroup",y = 'BirthRate')
```



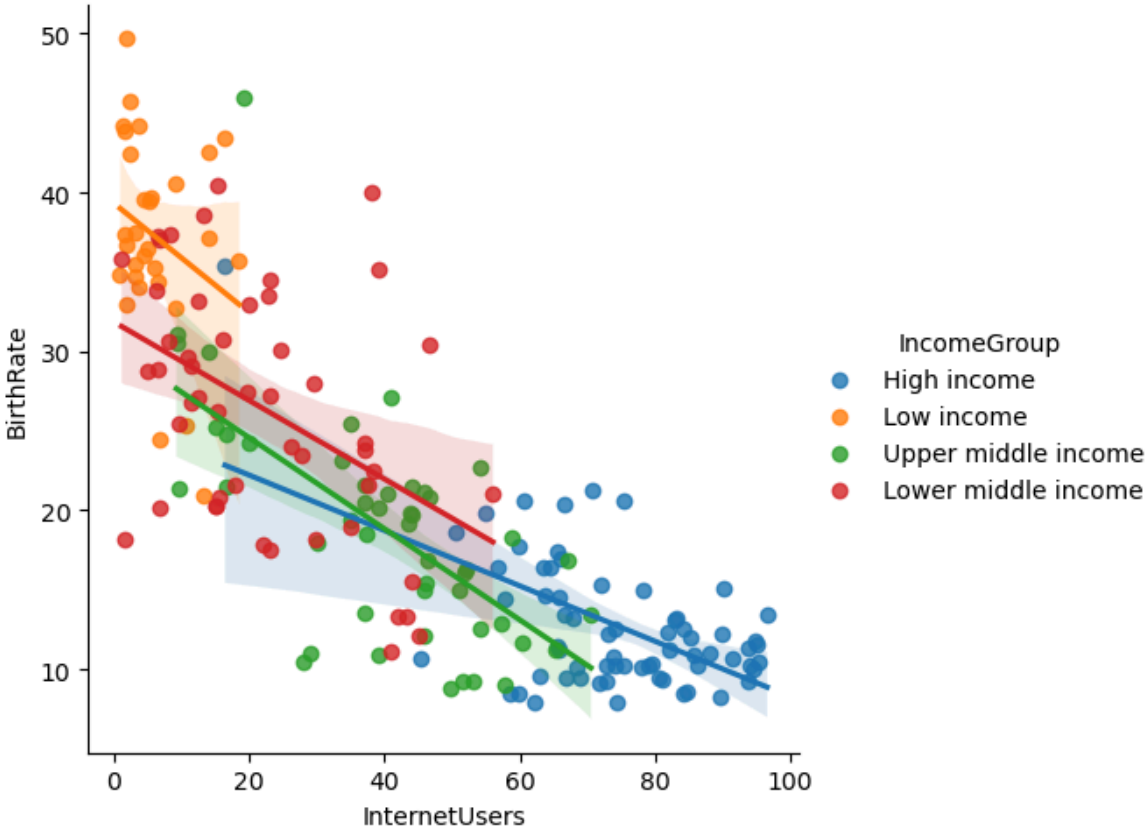

In [97]:
```
vis3 = sns.lmplot(data = df, x ="InternetUsers",y = 'BirthRate', fit_reg = False
```




In [99]:
```
vis4 = sns.lmplot(data = df, x ="InternetUsers",y = 'BirthRate')
```

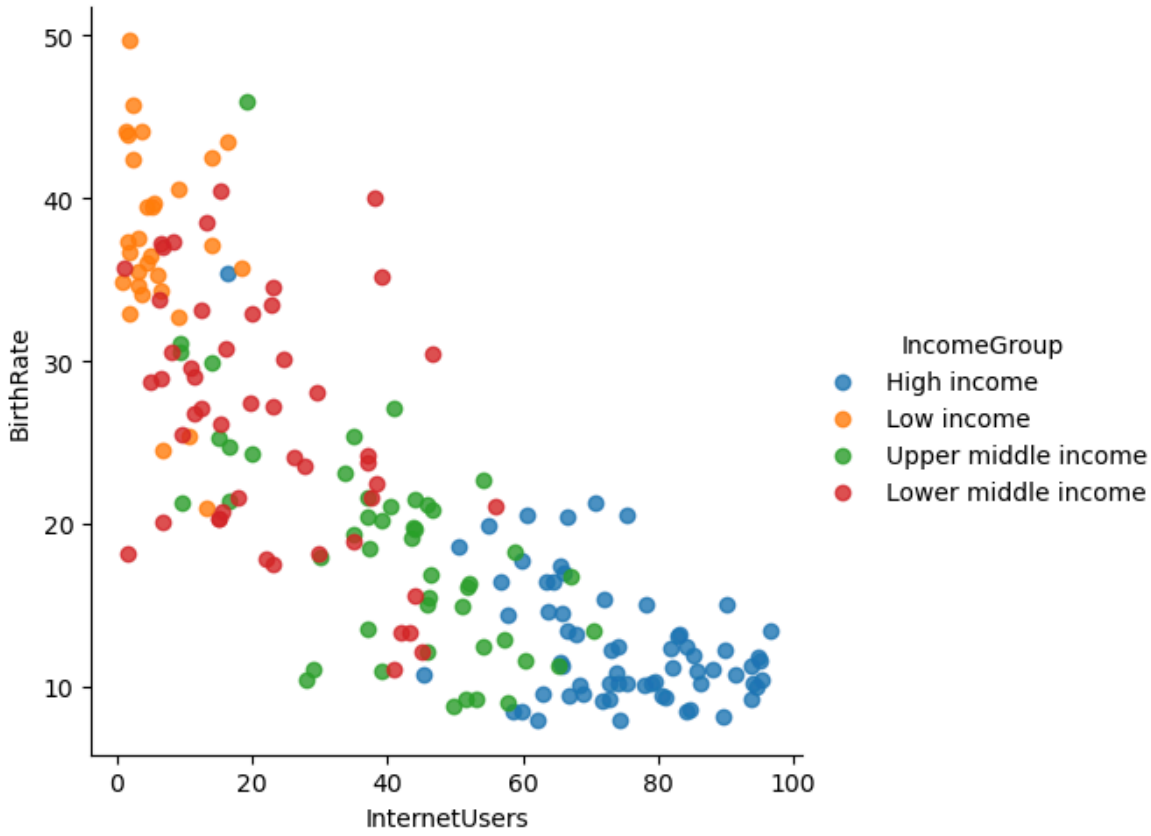



In [101…
```
vis3 = sns.lmplot(data = df, x ="InternetUsers",y = 'BirthRate',fit_reg = True,h
```




In [103…
```
sns.lmplot(data = df, x ="InternetUsers",y = 'BirthRate',fit_reg = False,hue = '
```

Out[103… <seaborn.axisgrid.FacetGrid at 0x1ec52c615b0>




In [ ]: