```
In [2]:  import pandas as pd
```

```
In [4]:  pd.__version__
```

```
Out[4]:  '2.2.2'
```

```
In [6]:  pd.read_csv(r"C:\Users\91630\Downloads\data.csv")
```

Out[6]:

|     | 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 | 32.947 | 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 × 5 columns

```
In [8]:  df=pd.read_csv(r"C:\Users\91630\Downloads\data.csv")
```

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

| | 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 | 32.947 | 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 × 5 columns

In [12]:
```python
df.shape
```

Out[12]: (195, 5)

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

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

In [16]:
```python
type(df)
```

Out[16]: pandas.core.frame.DataFrame

In [18]:
```python
df
```

Out[18]:

| | 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 | 32.947 | 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 × 5 columns

In [23]:
```python
df.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
 3   InternetUsers  195 non-null    float64
 4   IncomeGroup    195 non-null    object
dtypes: float64(2), object(3)
memory usage: 7.7+ KB
```

In [25]:
```python
len(df)
```

Out[25]: 195

In [27]:
```python
len(df.columns)
```

Out[27]: 5

In [29]:
```python
df.head()
```

Out[29]:

| | 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 [31]: `df.tail()`

Out[31]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| **190** | Yemen, Rep. | YEM | 32.947 | 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 |

In [33]: `df.info`

Out[33]:
```
<bound method DataFrame.info of          CountryName CountryCode  BirthRat
e  InternetUsers  \
0                 Aruba         ABW     10.244           78.9
1           Afghanistan         AFG     35.253            5.9
2                Angola         AGO     45.985           19.1
3               Albania         ALB     12.877           57.2
4    United Arab Emirates         ARE     11.044           88.0
..                  ...         ...        ...            ...
190          Yemen, Rep.         YEM     32.947           20.0
191         South Africa         ZAF     20.850           46.5
192     Congo, Dem. Rep.         COD     42.394            2.2
193               Zambia         ZMB     40.471           15.4
194             Zimbabwe         ZWE     35.715           18.5

             IncomeGroup
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

[195 rows x 5 columns]>
```

In [35]: `df.head(2)`

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 |

In [37]: `df.tail(2)`

Out[37]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| **193** | Zambia | ZMB | 40.471 | 15.4 | Lower middle income |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5 | Low income |

In [39]: `df[::-1]`

Out[39]:

| | 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]: `df[:5]`

| | 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 |

```
df[6:]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 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 |
| ... | ... | ... | ... | ... | ... |
| 190 | Yemen, Rep. | YEM | 32.947 | 20.0000 | Lower middle income |
| 191 | South Africa | ZAF | 20.850 | 46.5000 | Upper middle income |
| 192 | Congo, Dem. Rep. | COD | 42.394 | 2.2000 | Low income |
| 193 | Zambia | ZMB | 40.471 | 15.4000 | Lower middle income |
| 194 | Zimbabwe | ZWE | 35.715 | 18.5000 | Low income |

189 rows × 5 columns

```
df[0:200:10]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.900000 | High income |
| 10 | Azerbaijan | AZE | 18.300 | 58.700000 | Upper middle income |
| 20 | Belarus | BLR | 12.500 | 54.170000 | Upper middle income |
| 30 | Canada | CAN | 10.900 | 85.800000 | High income |
| 40 | Costa Rica | CRI | 15.022 | 45.960000 | Upper middle income |
| 50 | Ecuador | ECU | 21.070 | 40.353684 | Upper middle income |
| 60 | Gabon | GAB | 30.555 | 9.200000 | Upper middle income |
| 70 | Greenland | GRL | 14.500 | 65.800000 | High income |
| 80 | India | IND | 20.291 | 15.100000 | Lower middle income |
| 90 | Kazakhstan | KAZ | 22.730 | 54.000000 | Upper middle income |
| 100 | Libya | LBY | 21.425 | 16.500000 | Upper middle income |
| 110 | Moldova | 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 | Sudan | SDN | 33.477 | 22.700000 | Lower middle income |
| 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 | Yemen, Rep. | YEM | 32.947 | 20.000000 | Lower middle income |

In [49]: df

Out[49]:

| | 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 | 32.947 | 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 × 5 columns

In [47]:
```python
df.describe()
```

Out[47]:

| | 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 [51]:
```python
df[0:200:50]
```

Out[51]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.900000 | High income |
| 50 | Ecuador | ECU | 21.070 | 40.353684 | Upper middle income |
| 100 | Libya | LBY | 21.425 | 16.500000 | Upper middle income |
| 150 | Sudan | SDN | 33.477 | 22.700000 | Lower middle income |

In [55]: `df.describe().transpose()`

Out[55]:

| | 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 [59]: `df.head(2)`

Out[59]:

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.9 | High income |
| 1 | Afghanistan | AFG | 35.253 | 5.9 | Low income |

In [61]: `df.describe().T`

Out[61]:

| | 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 [63]: `df.columns`

Out[63]: 
```
Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
       'IncomeGroup'],
      dtype='object')
```

In [65]: `df.columns=['a','b','c','d','e']`

In [67]: `df.head(1)`

Out[67]:

| | a | b | c | d | e |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.9 | High income |

In [69]: `df`

Out[69]:

| | a | b | c | d | e |
|---|---|---|---|---|---|
| **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 | 32.947 | 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 × 5 columns

In [71]: `df.columns`

Out[71]: `Index(['a', 'b', 'c', 'd', 'e'], dtype='object')`

In [73]:
```python
df.columns=['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
            'IncomeGroup']
```

In [75]: `df`

| | 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 | 32.947 | 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 × 5 columns

```
df[:]
```

| | 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 | 32.947 | 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 × 5 columns

```
df[::10]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.900000 | High income |
| 10 | Azerbaijan | AZE | 18.300 | 58.700000 | Upper middle income |
| 20 | Belarus | BLR | 12.500 | 54.170000 | Upper middle income |
| 30 | Canada | CAN | 10.900 | 85.800000 | High income |
| 40 | Costa Rica | CRI | 15.022 | 45.960000 | Upper middle income |
| 50 | Ecuador | ECU | 21.070 | 40.353684 | Upper middle income |
| 60 | Gabon | GAB | 30.555 | 9.200000 | Upper middle income |
| 70 | Greenland | GRL | 14.500 | 65.800000 | High income |
| 80 | India | IND | 20.291 | 15.100000 | Lower middle income |
| 90 | Kazakhstan | KAZ | 22.730 | 54.000000 | Upper middle income |
| 100 | Libya | LBY | 21.425 | 16.500000 | Upper middle income |
| 110 | Moldova | 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 | Sudan | SDN | 33.477 | 22.700000 | Lower middle income |
| 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 | Yemen, Rep. | YEM | 32.947 | 20.000000 | Lower middle income |

```
df[0:200:20]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.9000 | High income |
| 20 | Belarus | BLR | 12.500 | 54.1700 | Upper middle income |
| 40 | Costa Rica | CRI | 15.022 | 45.9600 | Upper middle income |
| 60 | Gabon | GAB | 30.555 | 9.2000 | Upper middle income |
| 80 | India | IND | 20.291 | 15.1000 | Lower middle income |
| 100 | Libya | LBY | 21.425 | 16.5000 | Upper middle income |
| 120 | Mozambique | MOZ | 39.705 | 5.4000 | Low income |
| 140 | Poland | POL | 9.600 | 62.8492 | High income |
| 160 | Suriname | SUR | 18.455 | 37.4000 | Upper middle income |
| 180 | Uruguay | URY | 14.374 | 57.6900 | High income |

```
df[0:100:50]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.900000 | High income |
| 50 | Ecuador | ECU | 21.070 | 40.353684 | Upper middle income |

```
df[0:200:40]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.90 | High income |
| 40 | Costa Rica | CRI | 15.022 | 45.96 | Upper middle income |
| 80 | India | IND | 20.291 | 15.10 | Lower middle income |
| 120 | Mozambique | MOZ | 39.705 | 5.40 | Low income |
| 160 | Suriname | SUR | 18.455 | 37.40 | Upper middle income |

```
df[0:20]
```

| | 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 | 58.70000 | 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 |

```
df[:9]
```

| | 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 |
| **5** | Argentina | ARG | 17.716 | 59.9 | High income |
| **6** | Armenia | ARM | 13.308 | 41.9 | Lower middle income |
| **7** | Antigua and Barbuda | ATG | 16.447 | 63.4 | High income |
| **8** | Australia | AUS | 13.200 | 83.0 | High income |

```
df[5:]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| **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 |
| **...** | ... | ... | ... | ... | ... |
| **190** | Yemen, Rep. | YEM | 32.947 | 20.0000 | Lower middle income |
| **191** | South Africa | ZAF | 20.850 | 46.5000 | Upper middle income |
| **192** | Congo, Dem. Rep. | COD | 42.394 | 2.2000 | Low income |
| **193** | Zambia | ZMB | 40.471 | 15.4000 | Lower middle income |
| **194** | Zimbabwe | ZWE | 35.715 | 18.5000 | Low income |

190 rows × 5 columns

```
df.dtypes
```

```
CountryName       object
CountryCode       object
BirthRate         float64
InternetUsers     float64
IncomeGroup       object
dtype: object
```

```
In [86]: df.columns
```

```
Out[86]: Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
                'IncomeGroup'],
               dtype='object')
```

```
In [88]: df_cat=df[['CountryName', 'CountryCode', 'IncomeGroup']]
```

```
In [90]: df_cat
```

Out[90]:

| | CountryName | CountryCode | IncomeGroup |
|---|---|---|---|
| 0 | Aruba | ABW | High income |
| 1 | Afghanistan | AFG | Low income |
| 2 | Angola | AGO | Upper middle income |
| 3 | Albania | ALB | Upper middle income |
| 4 | United Arab Emirates | ARE | High income |
| ... | ... | ... | ... |
| 190 | Yemen, Rep. | YEM | Lower middle income |
| 191 | South Africa | ZAF | Upper middle income |
| 192 | Congo, Dem. Rep. | COD | Low income |
| 193 | Zambia | ZMB | Lower middle income |
| 194 | Zimbabwe | ZWE | Low income |

195 rows × 3 columns

```
In [92]: df_num=df[['BirthRate', 'InternetUsers']]
```

```
In [94]: df_num
```

Out[94]:

| | BirthRate | InternetUsers |
|---|---|---|
| 0 | 10.244 | 78.9 |
| 1 | 35.253 | 5.9 |
| 2 | 45.985 | 19.1 |
| 3 | 12.877 | 57.2 |
| 4 | 11.044 | 88.0 |
| ... | ... | ... |
| 190 | 32.947 | 20.0 |
| 191 | 20.850 | 46.5 |
| 192 | 42.394 | 2.2 |
| 193 | 40.471 | 15.4 |
| 194 | 35.715 | 18.5 |

195 rows × 2 columns

In [98]:
```
df_cat.head()
```

Out[98]:

| | CountryName | CountryCode | IncomeGroup |
|---|---|---|---|
| 0 | Aruba | ABW | High income |
| 1 | Afghanistan | AFG | Low income |
| 2 | Angola | AGO | Upper middle income |
| 3 | Albania | ALB | Upper middle income |
| 4 | United Arab Emirates | ARE | High income |

In [100...
```
df.isnull()
```

|  | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | False | False | False | False | False |
| 1 | False | False | False | False | False |
| 2 | False | False | False | False | False |
| 3 | False | False | False | False | False |
| 4 | False | False | False | False | False |
| ... | ... | ... | ... | ... | ... |
| 190 | False | False | False | False | False |
| 191 | False | False | False | False | False |
| 192 | False | False | False | False | False |
| 193 | False | False | False | False | False |
| 194 | False | False | False | False | False |

195 rows × 5 columns

```python
df[21:26]
```

|  | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 21 | Belize | BLZ | 23.092 | 33.60 | Upper middle income |
| 22 | Bermuda | BMU | 10.400 | 95.30 | High income |
| 23 | Bolivia | BOL | 24.236 | 36.94 | Lower middle income |
| 24 | Brazil | BRA | 14.931 | 51.04 | Upper middle income |
| 25 | Barbados | BRB | 12.188 | 73.00 | High income |

```python
df[:10]
```

In [118...
```python
df.head(10)
```

Out[118...

| | 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 [120...
```python
df[::-1]
```

| | 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

```
df
```

| | 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 | 32.947 | 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 × 5 columns

```python
df[::20]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 0 | Aruba | ABW | 10.244 | 78.9000 | High income |
| 20 | Belarus | BLR | 12.500 | 54.1700 | Upper middle income |
| 40 | Costa Rica | CRI | 15.022 | 45.9600 | Upper middle income |
| 60 | Gabon | GAB | 30.555 | 9.2000 | Upper middle income |
| 80 | India | IND | 20.291 | 15.1000 | Lower middle income |
| 100 | Libya | LBY | 21.425 | 16.5000 | Upper middle income |
| 120 | Mozambique | MOZ | 39.705 | 5.4000 | Low income |
| 140 | Poland | POL | 9.600 | 62.8492 | High income |
| 160 | Suriname | SUR | 18.455 | 37.4000 | Upper middle income |
| 180 | Uruguay | URY | 14.374 | 57.6900 | High income |

```python
df.columns
```

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

```
In [128... df.head()
```

Out[128...

| | 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 [130... df['CountryName'].head()
```

Out[130...
```
0                  Aruba
1             Afghanistan
2                 Angola
3                 Albania
4       United Arab Emirates
Name: CountryName, dtype: object
```

```
In [132... df_num.head()
```

Out[132...

| | BirthRate | InternetUsers |
|---|---|---|
| **0** | 10.244 | 78.9 |
| **1** | 35.253 | 5.9 |
| **2** | 45.985 | 19.1 |
| **3** | 12.877 | 57.2 |
| **4** | 11.044 | 88.0 |

```
In [134... df[4:8][['CountryName','BirthRate']]
```

Out[134...

| | CountryName | BirthRate |
|---|---|---|
| **4** | United Arab Emirates | 11.044 |
| **5** | Argentina | 17.716 |
| **6** | Armenia | 13.308 |
| **7** | Antigua and Barbuda | 16.447 |

```
In [136... df['BirthRate']
```

```
Out[136...    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 [138...  `df[['CountryName','BirthRate']]`

Out[138...

|     | 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 [140...  `df[['CountryName','BirthRate']][4:8]`

Out[140...

|     | CountryName | BirthRate |
| --- | --- | --- |
| **4** | United Arab Emirates | 11.044 |
| **5** | Argentina | 17.716 |
| **6** | Armenia | 13.308 |
| **7** | Antigua and Barbuda | 16.447 |

In [142...  `df1=df[['CountryName','BirthRate']]`

In [144...  `df1`

| | 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 [146...
```python
df2=df[4:8]
```

In [148...
```python
df2
```

Out[148...

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 4 | United Arab Emirates | ARE | 11.044 | 88.0 | High income |
| 5 | Argentina | ARG | 17.716 | 59.9 | High income |
| 6 | Armenia | ARM | 13.308 | 41.9 | Lower middle income |
| 7 | Antigua and Barbuda | ATG | 16.447 | 63.4 | High income |

In [150...
```python
df.head()
```

Out[150...

| | 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 [152...
```python
df[['CountryCode','BirthRate','InternetUsers']][4:8]
```

| | CountryCode | BirthRate | InternetUsers |
|---|---|---|---|
| 4 | ARE | 11.044 | 88.0 |
| 5 | ARG | 17.716 | 59.9 |
| 6 | ARM | 13.308 | 41.9 |
| 7 | ATG | 16.447 | 63.4 |

```
df.head()
```

| | 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 |

```
df.BirthRate*df.InternetUsers
```

```
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
```

```
df['myCalc']=df.BirthRate*df.InternetUsers
```

```
df.head()
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup | myCalc |
|---|---|---|---|---|---|---|
| 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 |

```
df.drop('myCalc',axis=1)
```

Out[162...

| | 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 | 32.947 | 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 × 5 columns

In [164...
```python
df=df.drop('myCalc',axis=1)
```

In [166...
```python
df.head()
```

Out[166...

| | 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 [168...
```python
df.columns[2]
```

Out[168...
```
'BirthRate'
```

In [170...
```python
df.InternetUsers<2
```

```
Out[170...   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 [172...   Filter=df.InternetUsers<2
```

```
In [174...   Filter
```

```
Out[174...   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 [176...   df[3:7]
```

Out[176...

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

```
In [178...   df[30:40]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 30 | Canada | CAN | 10.900 | 85.80 | High income |
| 31 | Switzerland | CHE | 10.200 | 86.34 | 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 |

```
df[Filter]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 11 | Burundi | BDI | 44.151 | 1.3 | Low income |
| 52 | Eritrea | ERI | 34.800 | 0.9 | Low income |
| 55 | Ethiopia | ETH | 32.925 | 1.9 | Low income |
| 64 | Guinea | GIN | 37.337 | 1.6 | Low income |
| 117 | Myanmar | MMR | 18.119 | 1.6 | Lower middle income |
| 127 | Niger | NER | 49.661 | 1.7 | Low income |
| 154 | Sierra Leone | SLE | 36.729 | 1.7 | Low income |
| 156 | Somalia | SOM | 43.891 | 1.5 | Low income |
| 172 | Timor-Leste | TLS | 35.755 | 1.1 | Lower middle income |

```
df.BirthRate>40
```

```
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
```

```
Filter2=df.BirthRate>40
```

```
In [186…   Filter2
```

```
Out[186…   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 [188…   df[Filter2]
```

Out[188…

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

```
In [190…   Filter&Filter2
```

```
Out[190…   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 [192…   df[Filter&Filter2]
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income |
| **127** | Niger | NER | 49.661 | 1.7 | Low income |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income |

In [194...
```python
df[(df.BirthRate>40)&(df.InternetUsers<2)]
```

Out[194...

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| **11** | Burundi | BDI | 44.151 | 1.3 | Low income |
| **127** | Niger | NER | 49.661 | 1.7 | Low income |
| **156** | Somalia | SOM | 43.891 | 1.5 | Low income |

In [196...
```python
df.head()
```

Out[196...

| | 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 [198...
```python
df[df.IncomeGroup=='Low income']
```

| | CountryName | CountryCode | BirthRate | InternetUsers | IncomeGroup |
|---|---|---|---|---|---|
| 1 | Afghanistan | AFG | 35.253 | 5.90 | Low 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 |
| 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 |
| 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 |
| 77 | Haiti | HTI | 25.345 | 10.60 | Low income |
| 93 | Cambodia | KHM | 24.462 | 6.80 | Low 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 |
| 123 | Malawi | MWI | 39.459 | 5.05 | Low income |
| 127 | Niger | NER | 49.661 | 1.70 | Low income |
| 132 | Nepal | NPL | 20.923 | 13.30 | Low income |
| 148 | Rwanda | RWA | 32.689 | 9.00 | Low 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 |
| 167 | Chad | TCD | 45.745 | 2.30 | Low income |
| 168 | Togo | TGO | 36.080 | 4.50 | Low income |
| 177 | Tanzania | TZA | 39.518 | 4.40 | Low income |
| 178 | Uganda | UGA | 43.474 | 16.20 | Low income |
| 192 | Congo, Dem. Rep. | COD | 42.394 | 2.20 | Low income |
| 194 | Zimbabwe | ZWE | 35.715 | 18.50 | Low income |

```python
df.IncomeGroup.unique()
```

Out[200...  array(['High income', 'Low income', 'Upper middle income',
            'Lower middle income'], dtype=object)

In [203...
```python
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
plt.rcParams['figure.figsize']=8,4
```

In [205...
```python
import warnings
warnings.filterwarnings('ignore')
```
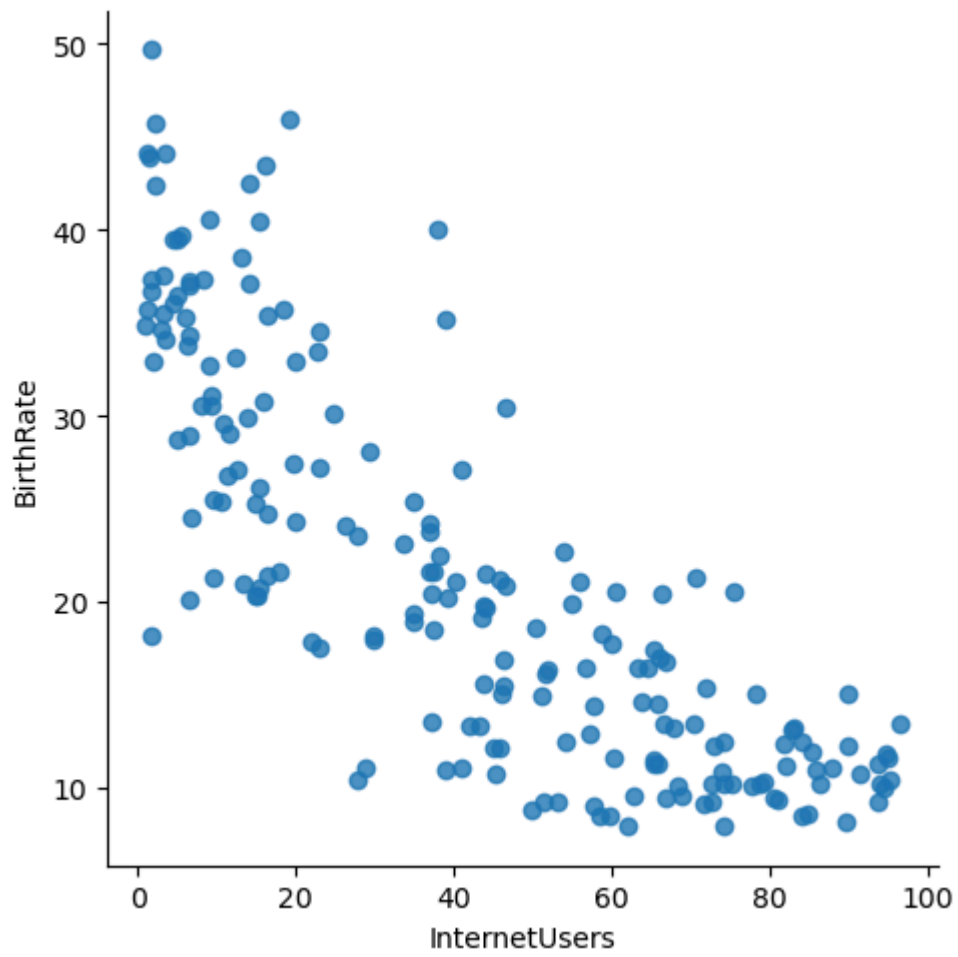
In [207...
```python
df.head()
```

Out[207...

|   | 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 [248...
```python
vis1=sns.distplot(df['InternetUsers'])
plt.show()
```
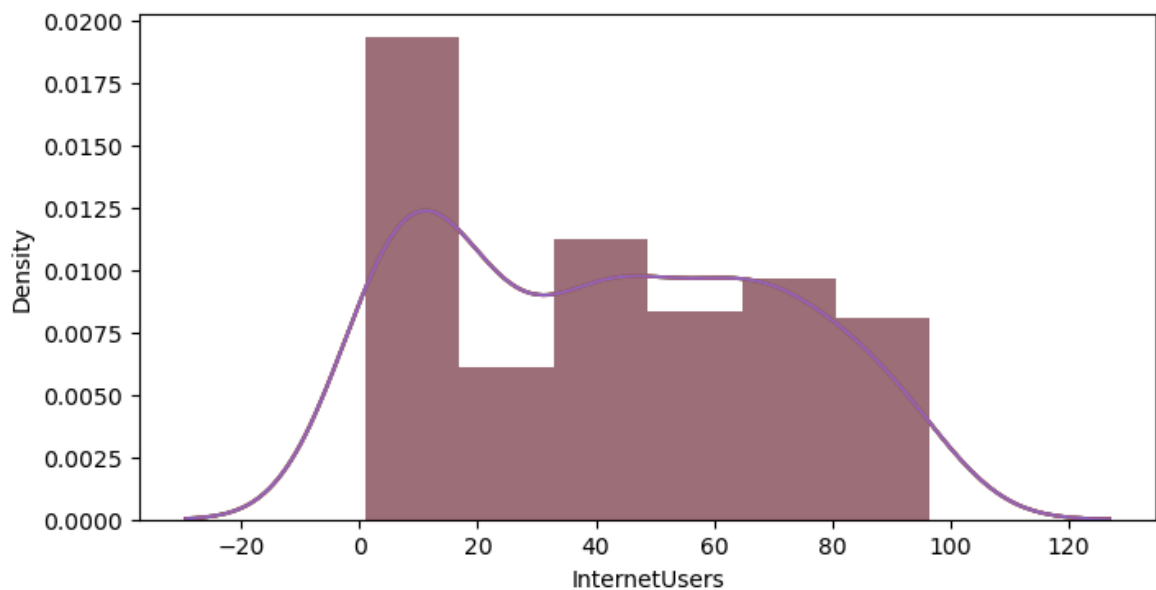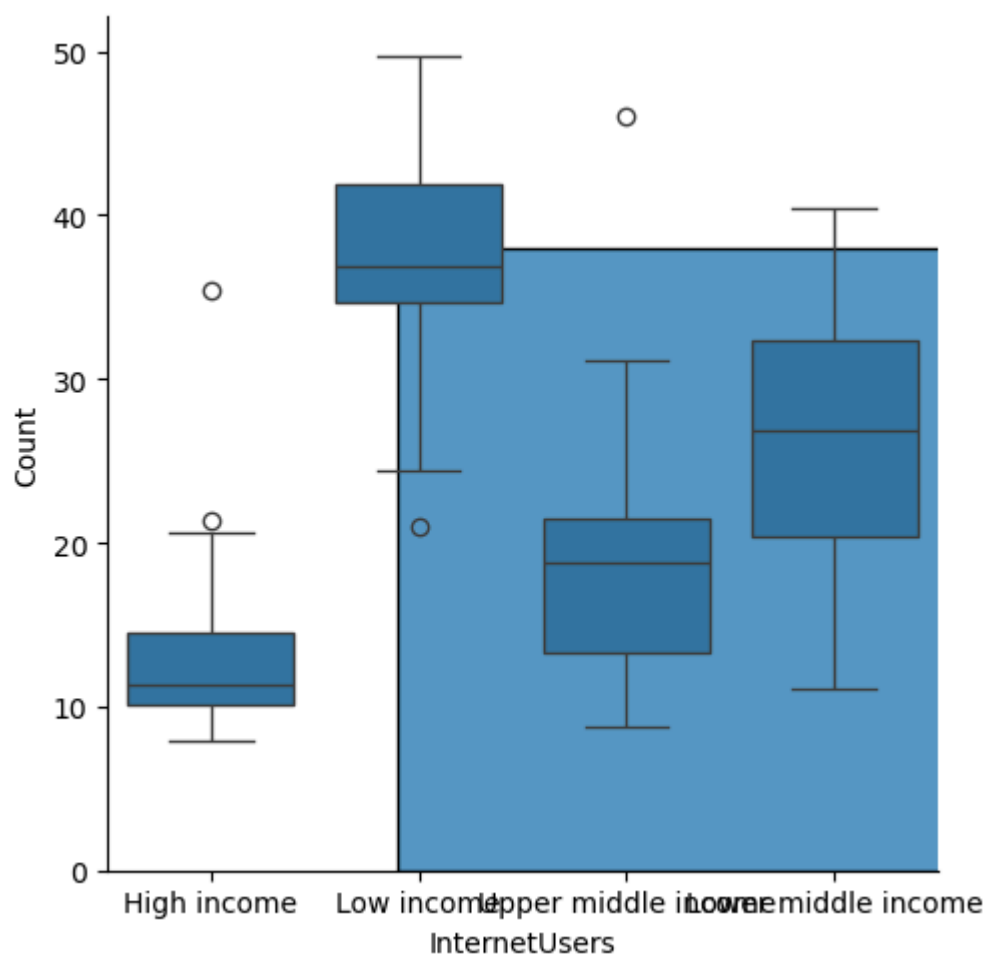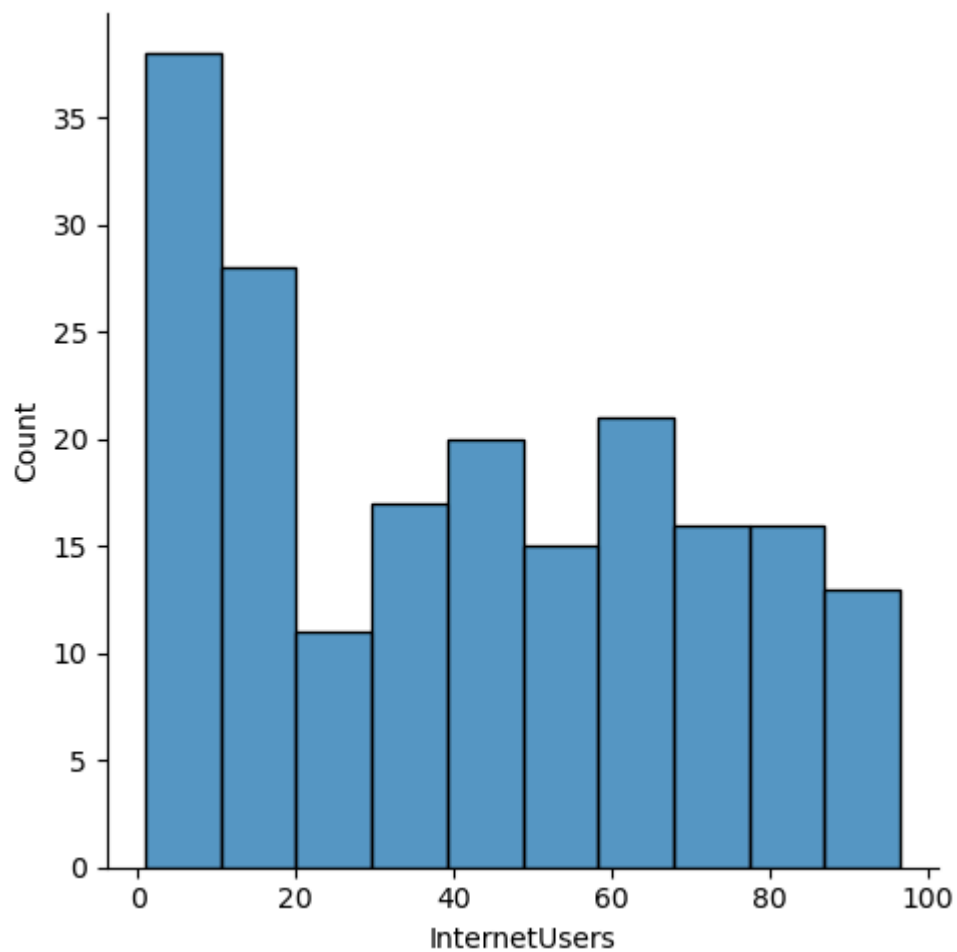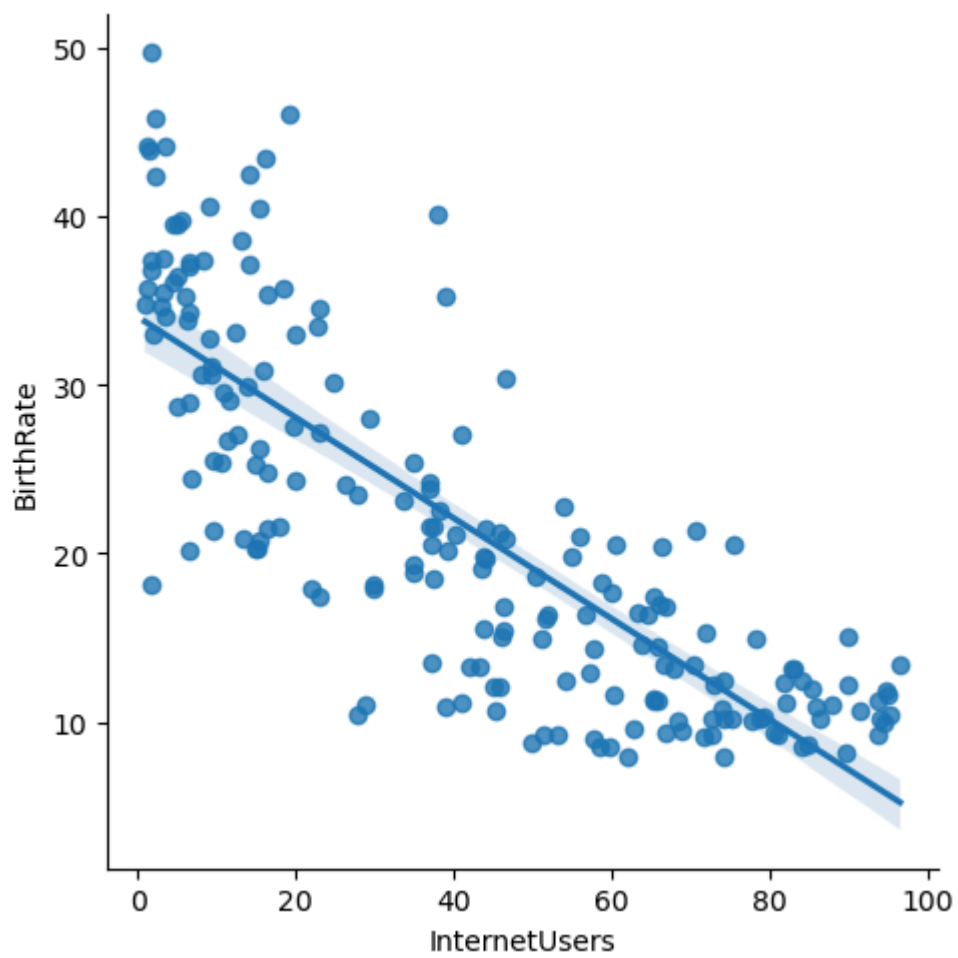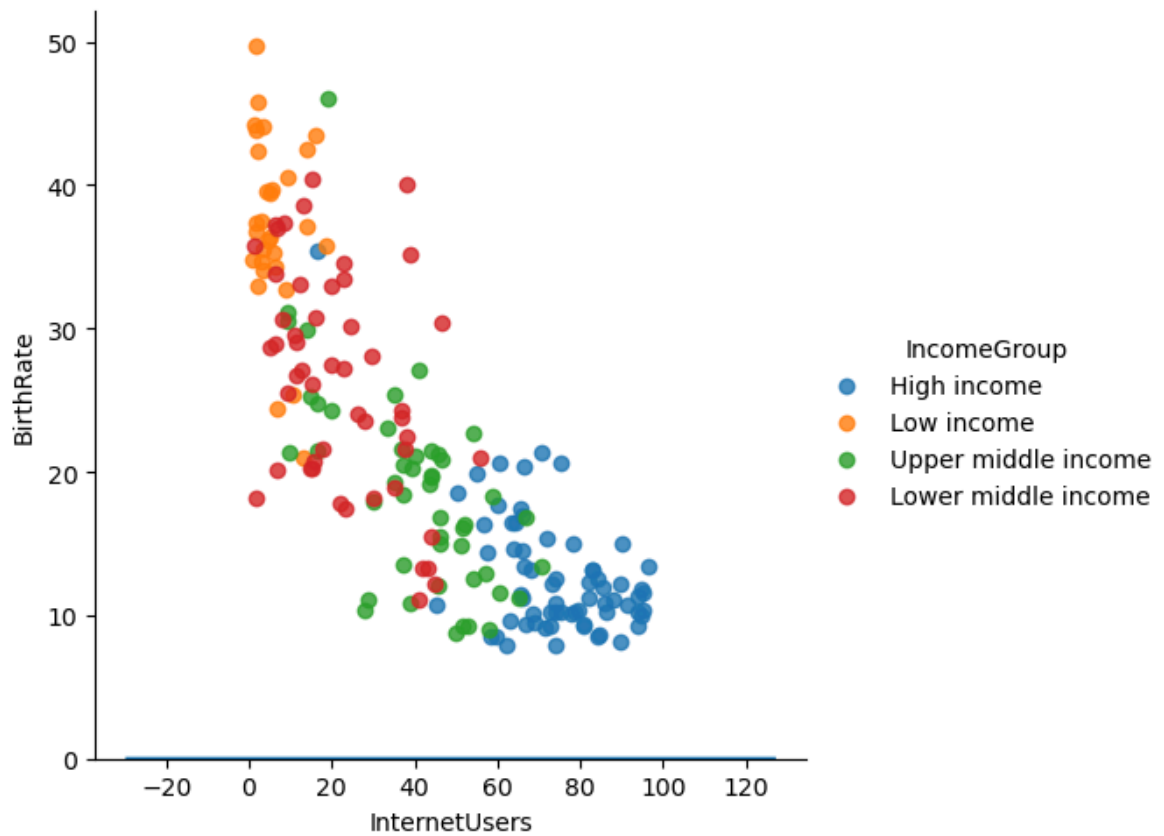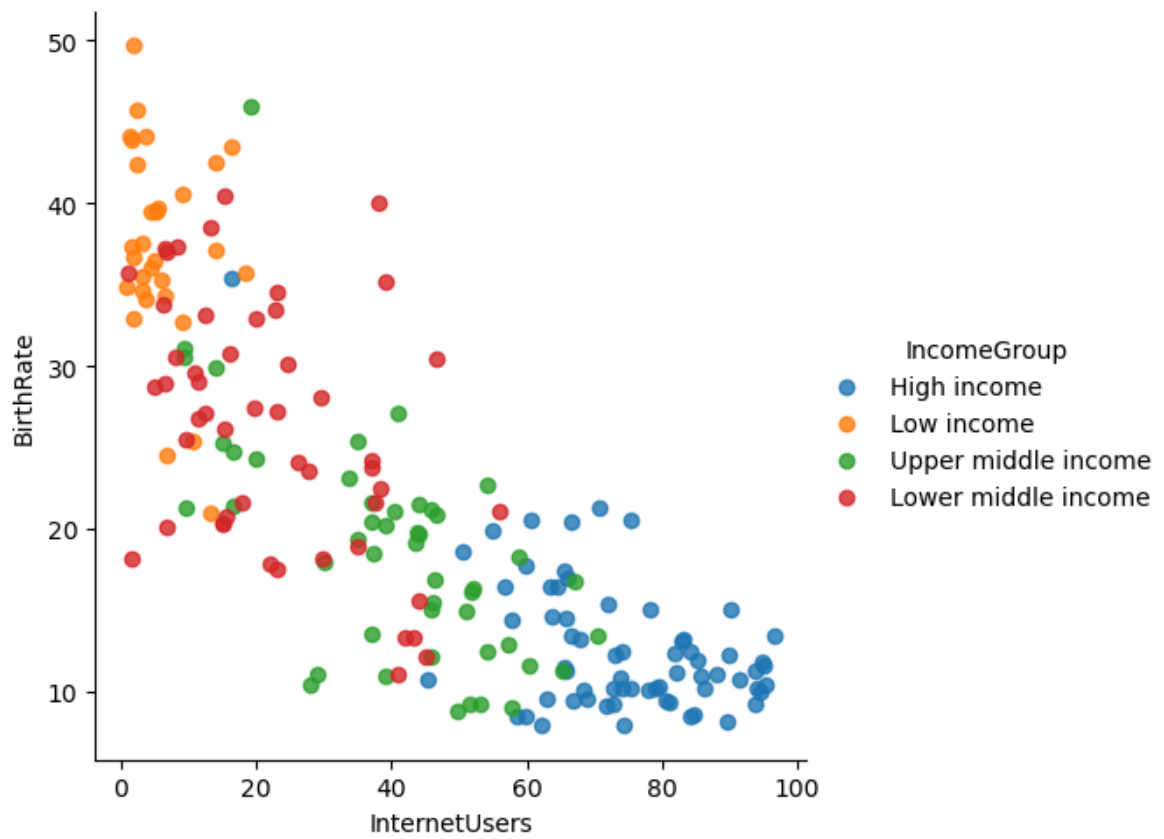
```
In [250...   vis1=sns.displot(df['InternetUsers'],bins=10)
             plt.show()
```
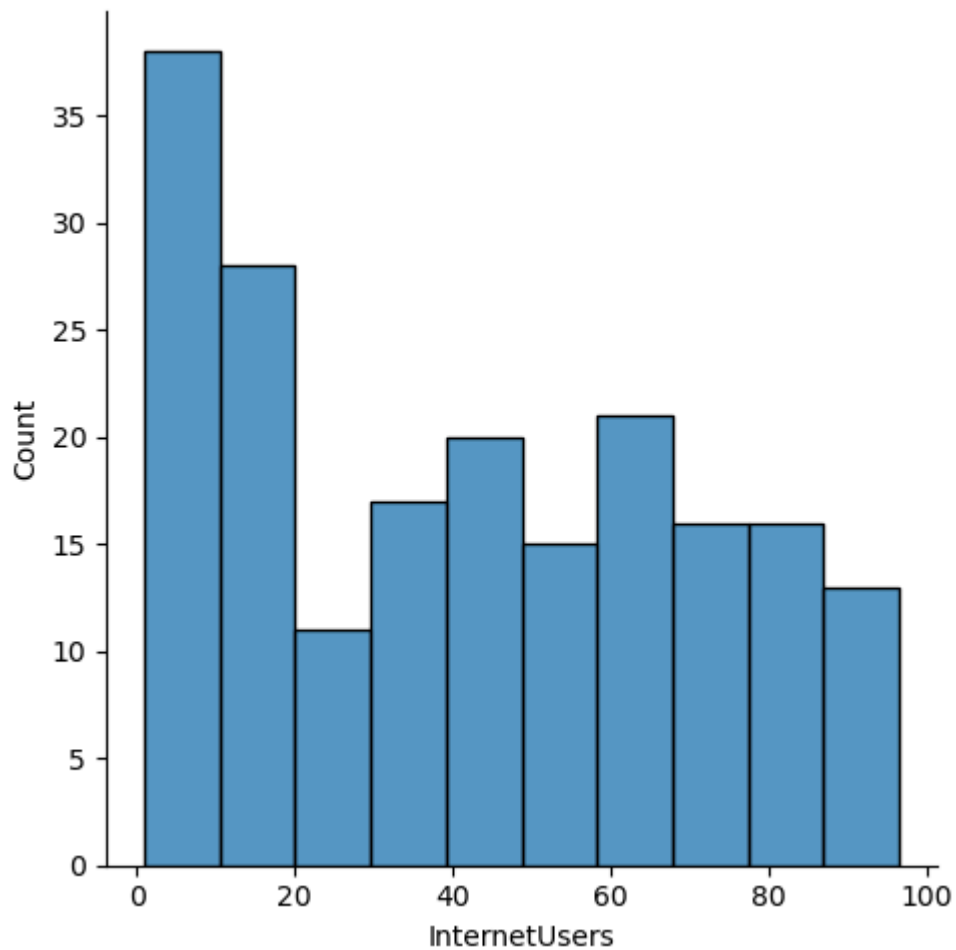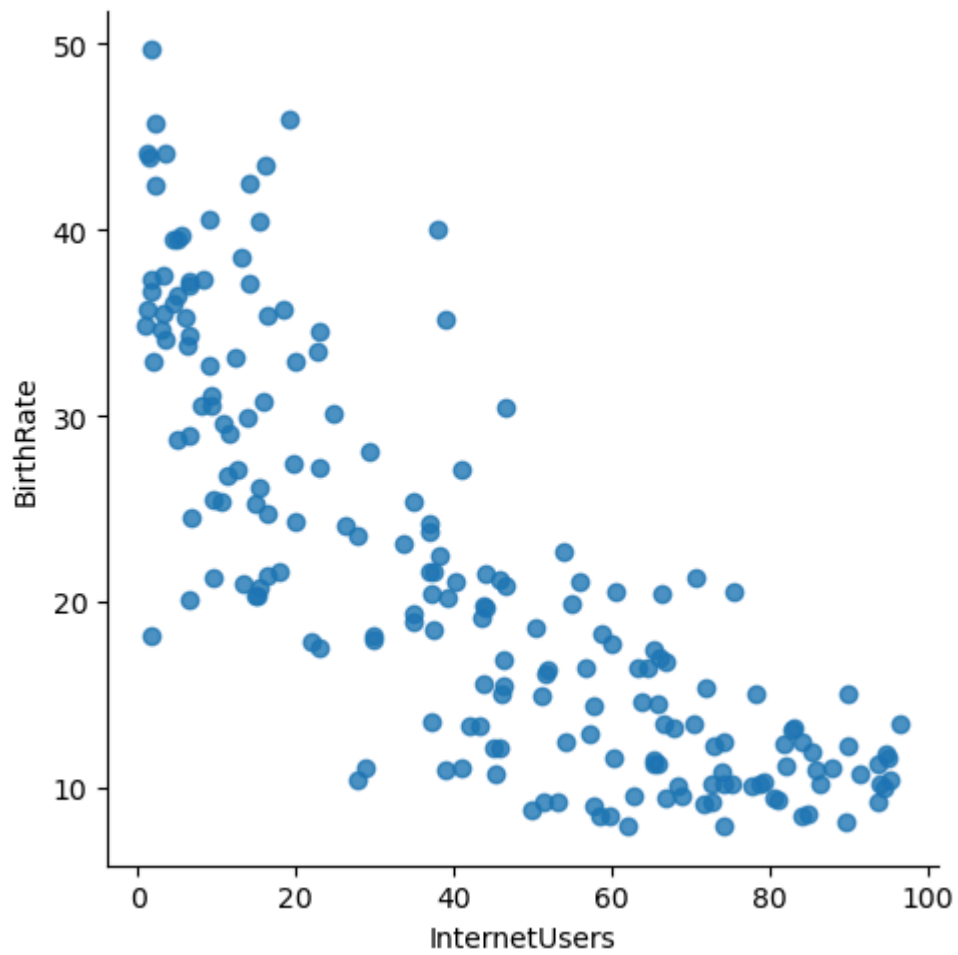
```python
vis2=sns.boxplot(data=df,x='IncomeGroup',y='BirthRate')
plt.show()
```
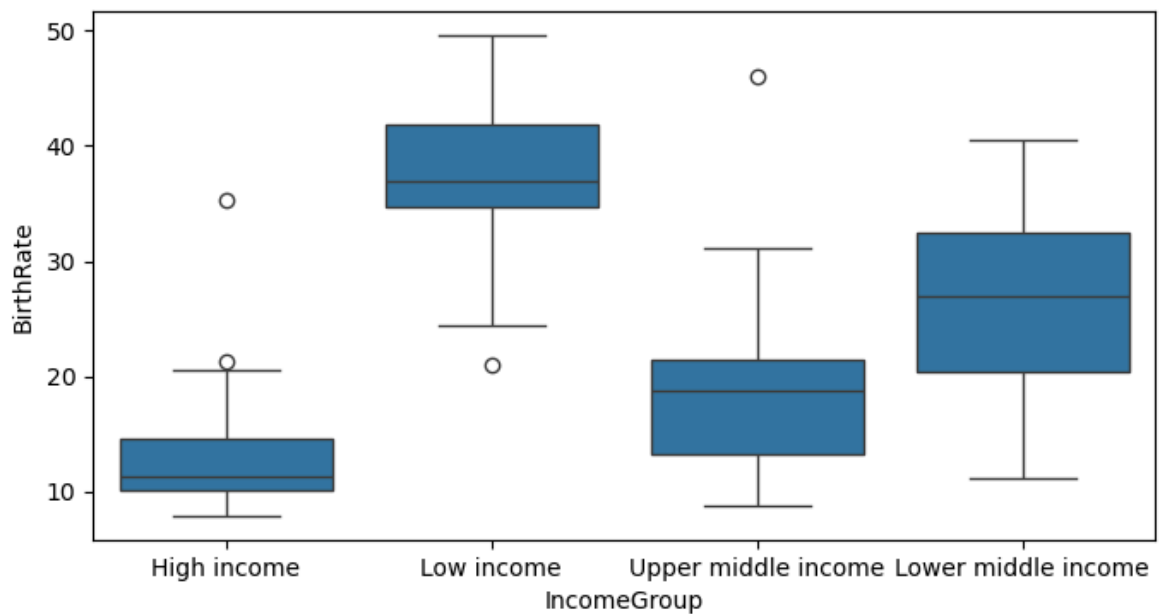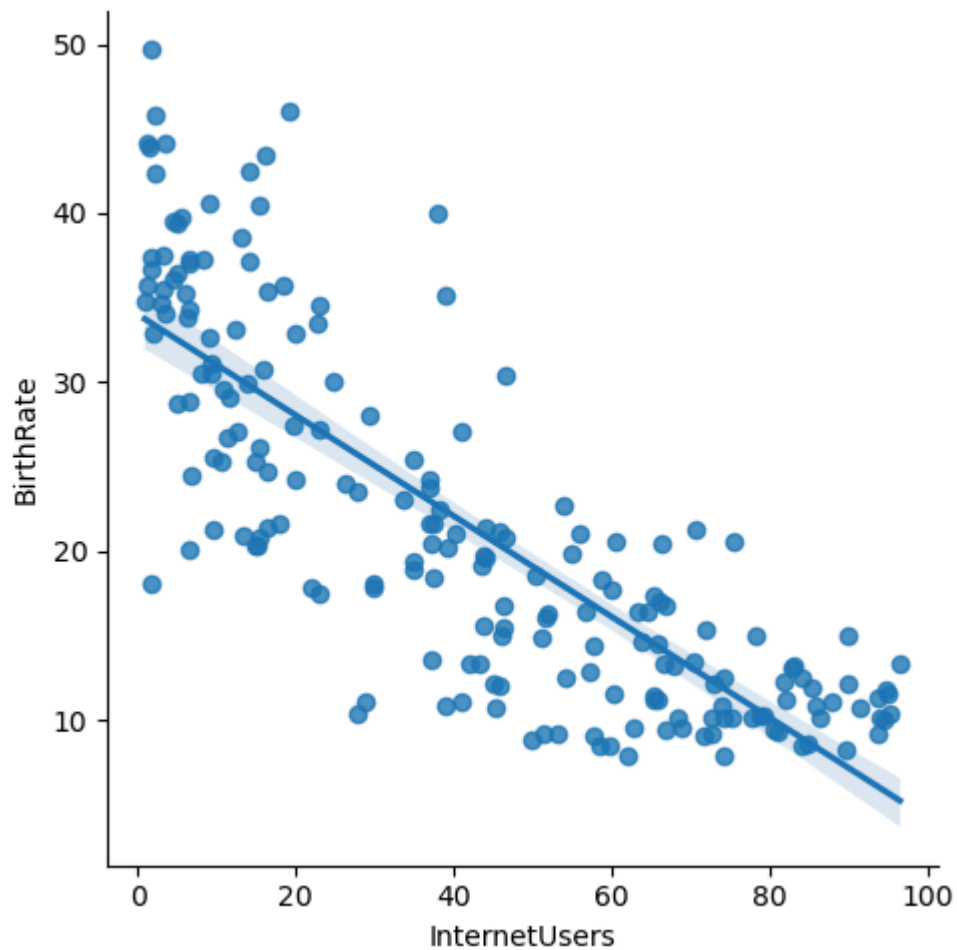
```python
vis3=sns.lmplot(data=df,x='InternetUsers',y='BirthRate',fit_reg=False)
plt.show()
```
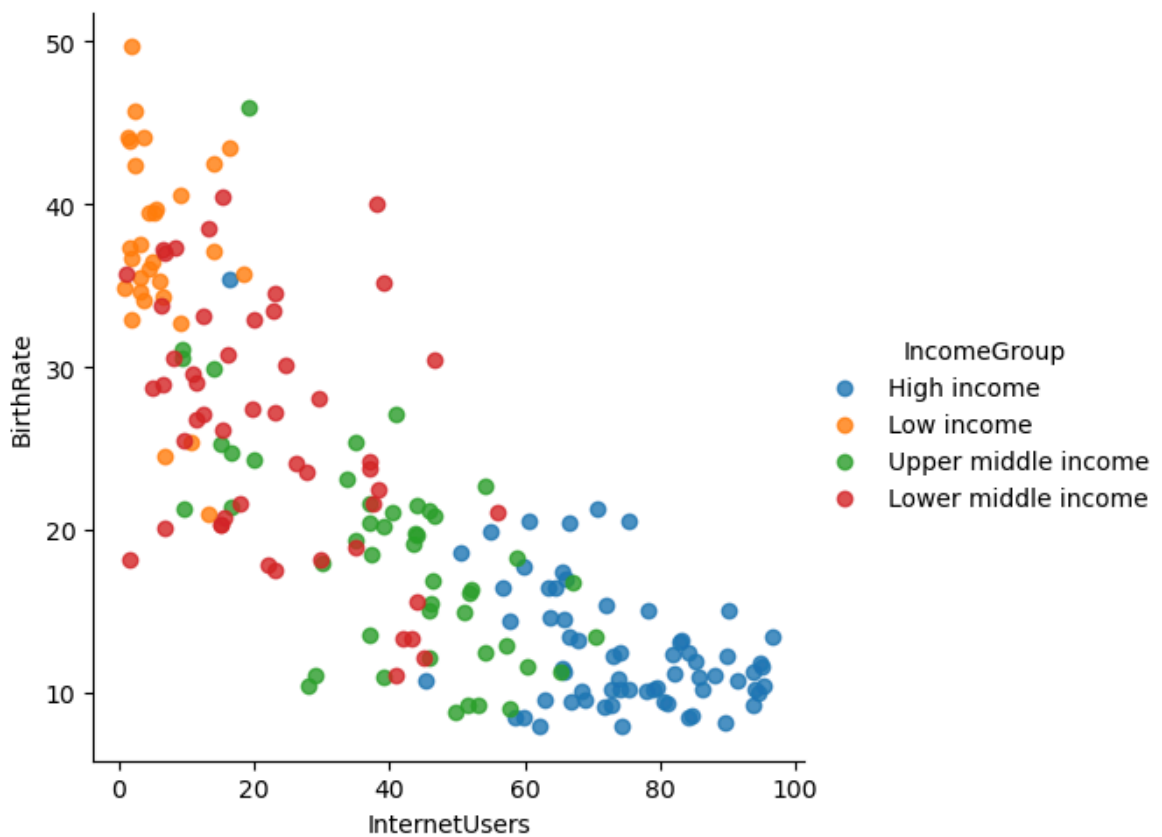
```
vis4 = sns.lmplot(data = df,x = 'InternetUsers', y = 'BirthRate')
plt.show()
```

```
In [258... vis5 = sns.lmplot(data = df,x = 'InternetUsers', y = 'BirthRate',
                          fit_reg = False,hue = 'IncomeGroup')
          plt.show()
```

```
In [ ]:
```

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In [ ]:
```

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In [ ]:
```