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

In [12]:
```
snt_df01=pd.read_csv(r'C:\Users\santa\Downloads\Work Set 01.csv')
```

In [13]:
```
snt_df01
```

Out[13]:

	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 [14]:
```
len(snt_df01)
```

Out[14]:
```
195
```

In [15]:
```
snt_df01.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 [16]:
```
type(snt_df01)
```

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

In [19]:
```
snt_df01.columns
```

Out[19]:
```
Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
       'IncomeGroup'],
      dtype='object')
```

In [21]:
```
snt_df01.shape
```

Out[21]:
```
(195, 5)
```

In [22]:
```
snt_df01.head()
```

Out[22]:

	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 [23]:
```
snt_df01.head(7)
```

Out[23]:

	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

In [24]:
```
snt_df01.tail()
```

Out[24]:

	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 [25]:
```
snt_df01.tail(7)
```

Out[25]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
188	West Bank and Gaza	PSE	30.394	46.6	Lower middle income
189	Samoa	WSM	26.172	15.3	Lower middle 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

In [27]:
```
snt_df01.describe()
```

Out[27]:

	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 [28]:
```
snt_df01.describe().transpose()
```

Out[28]:

	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 [29]:
```
snt_df01[:]
```

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
...	...	...	...	...	...
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 [30]:
```
snt_df01[:4]
```

Out[30]:

	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

In [31]:
```
snt_df01[3:5]
```

Out[31]:

	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

In [32]:
```
snt_df01[3:25:4]
```

Out[32]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
3	Albania	ALB	12.877	57.20	Upper middle income
7	Antigua and Barbuda	ATG	16.447	63.40	High income
11	Burundi	BDI	44.151	1.30	Low income
15	Bangladesh	BGD	20.142	6.63	Lower middle income
19	Bosnia and Herzegovina	BIH	9.062	57.79	Upper middle income
23	Bolivia	BOL	24.236	36.94	Lower middle income

In [33]:
```
snt_df01[::-1]
```

Out[33]:

	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 [36]:
```
snt_df01[::2]
```

Out[36]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
2	Angola	AGO	45.985	19.1	Upper middle income
4	United Arab Emirates	ARE	11.044	88.0	High income
6	Armenia	ARM	13.308	41.9	Lower middle income
8	Australia	AUS	13.200	83.0	High income
...	...	...	...	...	...
186	Vietnam	VNM	15.537	43.9	Lower middle 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
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income
194	Zimbabwe	ZWE	35.715	18.5	Low income

98 rows × 5 columns

In [35]:
```
snt_df01['IncomeGroup']
```

Out[35]:
```
0              High income
1               Low income
2      Upper middle income
3      Upper middle income
4              High income
              ...
190    Lower middle income
191    Upper middle income
192             Low income
193    Lower middle income
194             Low income
Name: IncomeGroup, Length: 195, dtype: object
```

In [37]:
```
snt_df01['BirthRate']
```

Out[37]:
```
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 [40]:
```
snt_df01[['CountryName', 'BirthRate']]
```

Out[40]:

	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 [42]:
```
snt_df01['BirthRate'].head()
```

Out[42]:
```
0    10.244
1    35.253
2    45.985
3    12.877
4    11.044
Name: BirthRate, dtype: float64
```

In [43]:
```
snt_df01[5:7]['BirthRate']
```

Out[43]:
```
5    17.716
6    13.308
Name: BirthRate, dtype: float64
```

In [44]:
```
snt_df01[5:7][['BirthRate', 'IncomeGroup']]
```

Out[44]:

	BirthRate	IncomeGroup
5	17.716	High income
6	13.308	Lower middle income

In [45]:
```
snt_df01[['BirthRate', 'IncomeGroup']][5:7]
```

Out[45]:

	BirthRate	IncomeGroup
5	17.716	High income
6	13.308	Lower middle income

In [46]:
```
snt_df01.BirthRate*snt_df01.InternetUsers
```

Out[46]:
```
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 [47]:
```
snt_df01['My Calc']=snt_df01.BirthRate*snt_df01.InternetUsers
```

In [57]:
```
snt_df01
```

Out[57]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup	My 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	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 [59]:
```
snt_df01 = snt_df01.drop('My Calc', axis=1)
```

In [60]:
```
snt_df01
```

Out[60]:

	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 [61]:
```
snt_df01.InternetUsers<4
```

Out[61]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192     True
193    False
194    False
Name: InternetUsers, Length: 195, dtype: bool
```

In [68]:
```
Filter00=snt_df01.InternetUsers<4
```

In [69]:
```
Filter00
```

Out[69]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192     True
193    False
194    False
Name: InternetUsers, Length: 195, dtype: bool
```

In [70]:
```
snt_df01[Filter00]
```

Out[70]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
11	Burundi	BDI	44.151	1.3	Low income
29	Central African Republic	CAF	34.076	3.5	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
66	Guinea-Bissau	GNB	37.503	3.1	Low income
99	Liberia	LBR	35.521	3.2	Low income
111	Madagascar	MDG	34.686	3.0	Low income
115	Mali	MLI	44.138	3.5	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
167	Chad	TCD	45.745	2.3	Low income
172	Timor-Leste	TLS	35.755	1.1	Lower middle income
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income

In [67]:
```
snt_df01.BirthRate>40
```

Out[67]:
```
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]:
```
Filter01=snt_df01.BirthRate>40
```

In [72]:
```
Filter01
```

Out[72]:
```
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 [73]:
```
snt_df01[Filter01]
```

Out[73]:

	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 [74]:
```
Filter00&Filter01
```

Out[74]:
```
0      False
1      False
2      False
3      False
4      False
       ...
190    False
191    False
192     True
193    False
194    False
Length: 195, dtype: bool
```

In [75]:
```
snt_df01[Filter00&Filter01]
```

Out[75]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
11	Burundi	BDI	44.151	1.3	Low income
115	Mali	MLI	44.138	3.5	Low income
127	Niger	NER	49.661	1.7	Low income
156	Somalia	SOM	43.891	1.5	Low income
167	Chad	TCD	45.745	2.3	Low income
192	Congo, Dem. Rep.	COD	42.394	2.2	Low income

In [78]:
```
snt_df01[snt_df01.IncomeGroup=='Low income']
```

Out[78]:

	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

In [79]:
```
snt_df01.IncomeGroup.unique()
```

Out[79]:
```
array(['High income', 'Low income', 'Upper middle income',
       'Lower middle income'], dtype=object)
```

In [80]:
```
import matplotlib.pyplot as plt
```

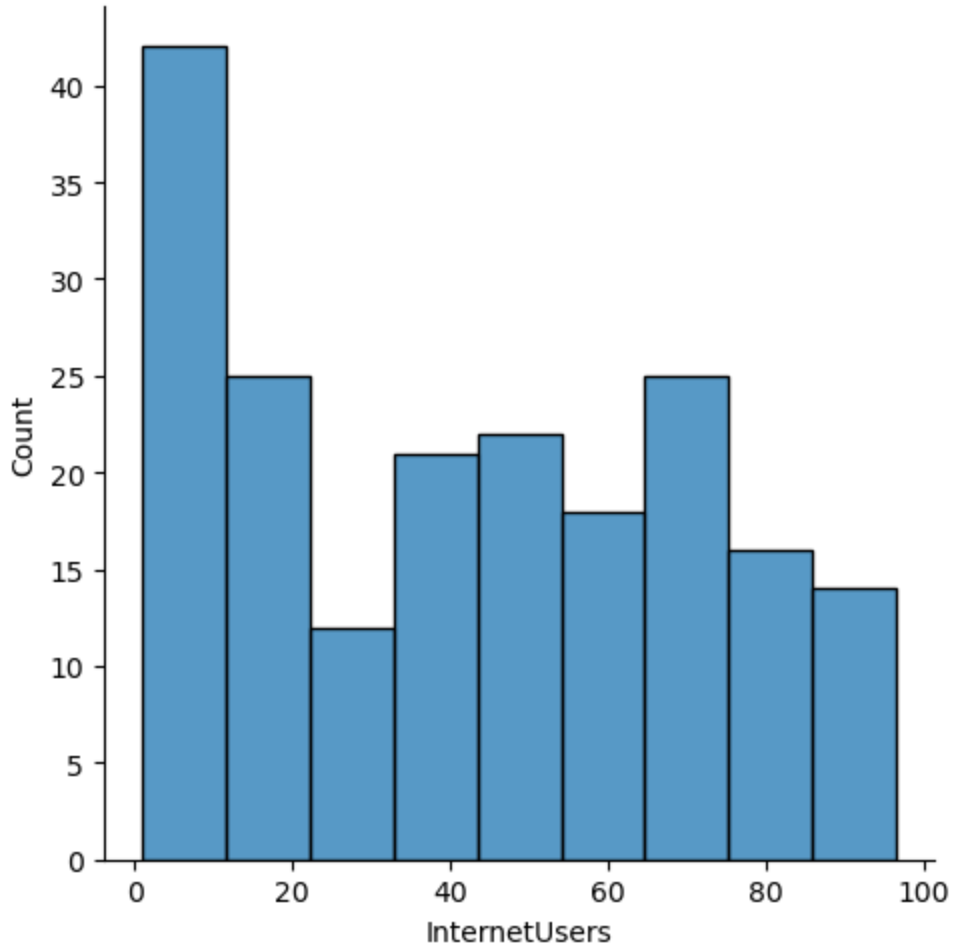
In [81]:
```
import seaborn as sns
```

In [82]:
```
%matplotlib inline
```

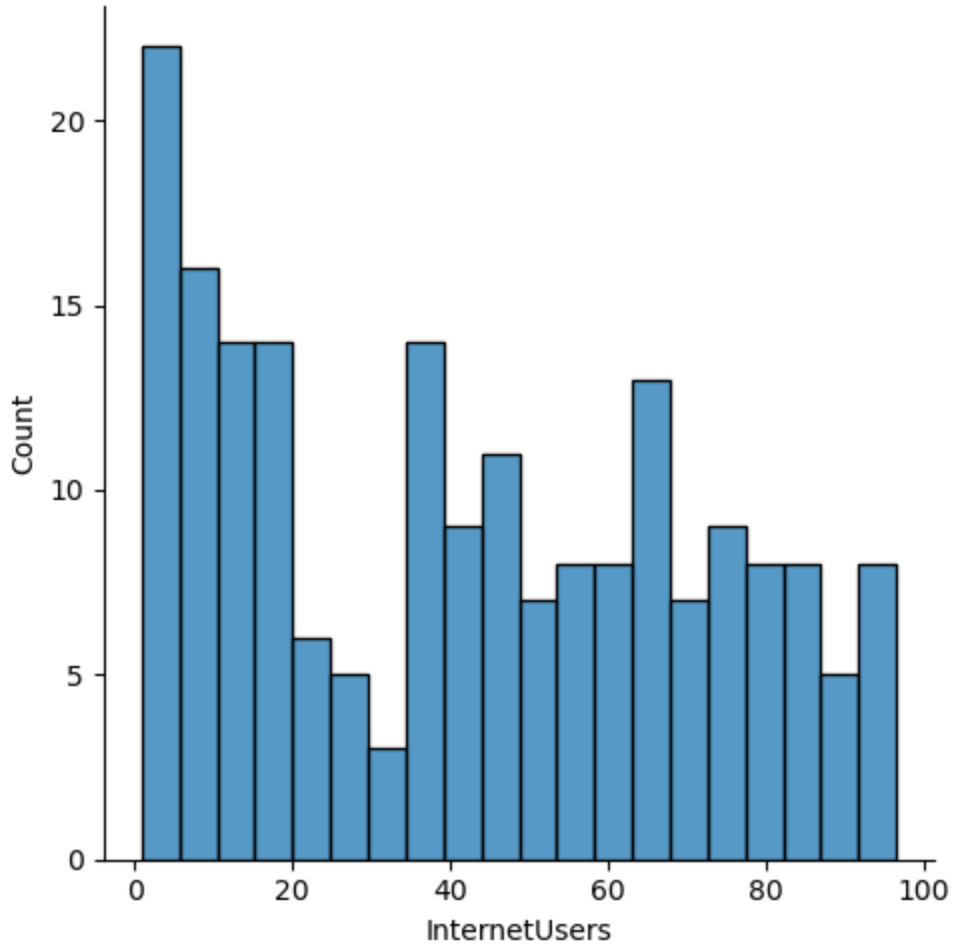
In [107…
```
plt.rcParams['figure.figsize']= 10,5
```

In [108…
```
import warnings
warnings.filterwarnings('ignore')
```

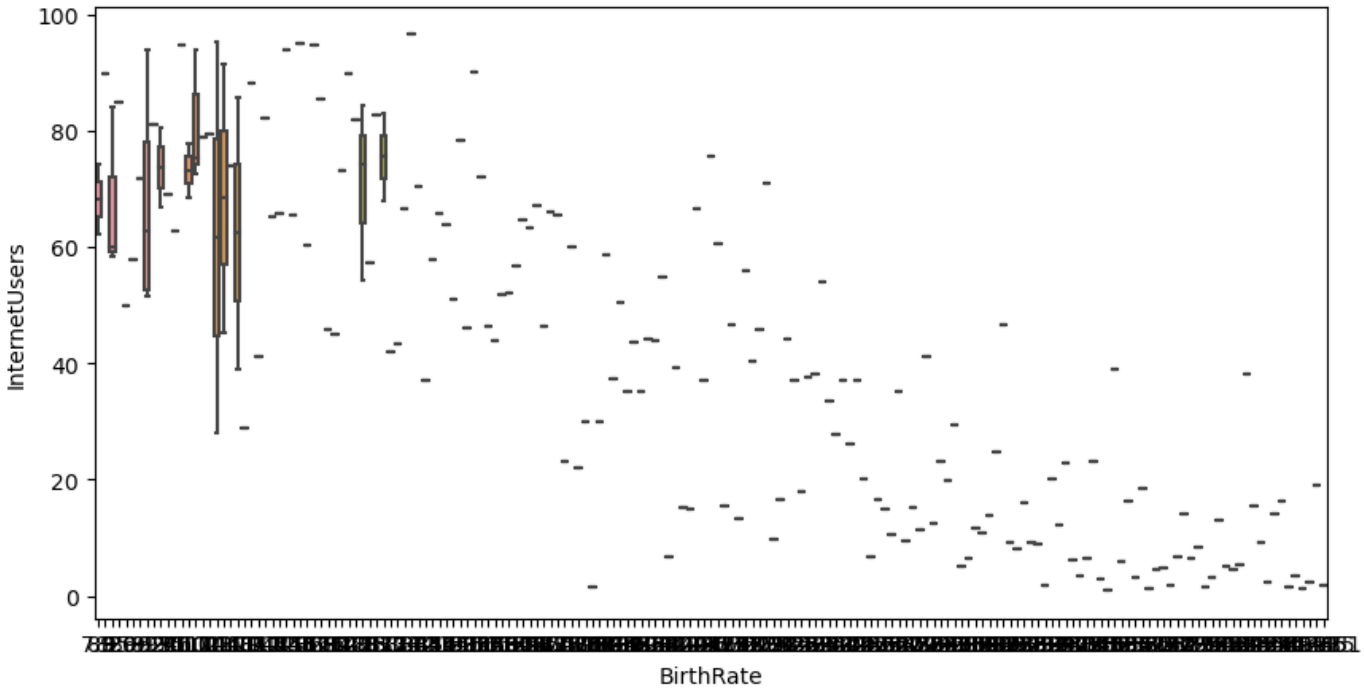
In [109…
```
Vis00=sns.displot(snt_df01['InternetUsers'])
```



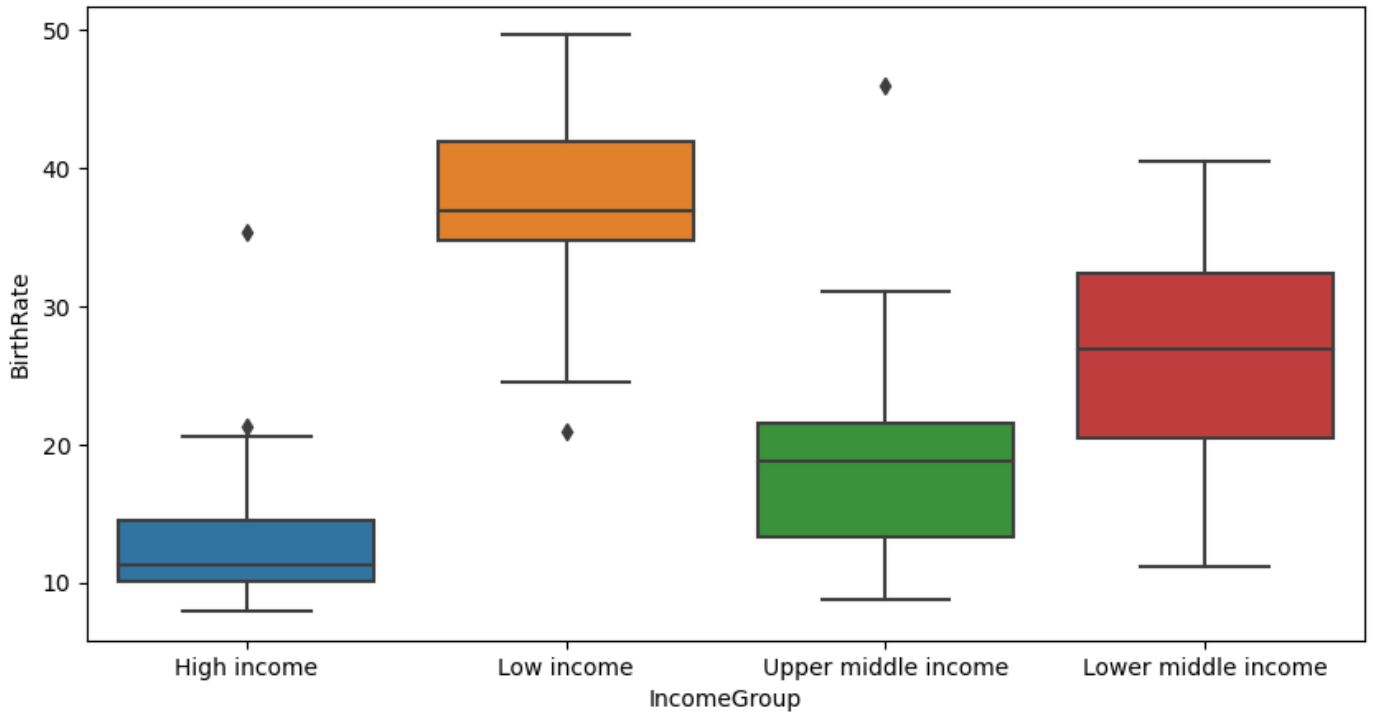
In [110…
```
Vis00=sns.displot(snt_df01['InternetUsers'], bins=20)
```



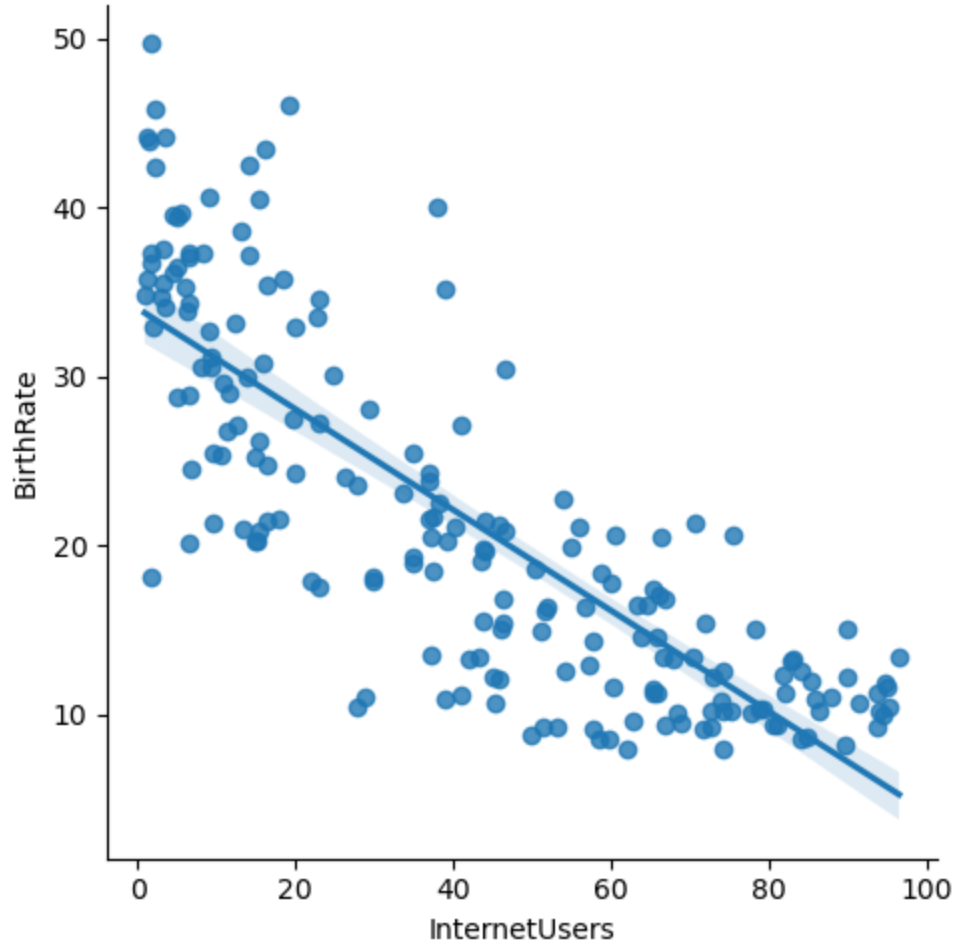
In [116…
```
Vis01=sns.boxplot(data=snt_df01, x='BirthRate', y='InternetUsers')
```



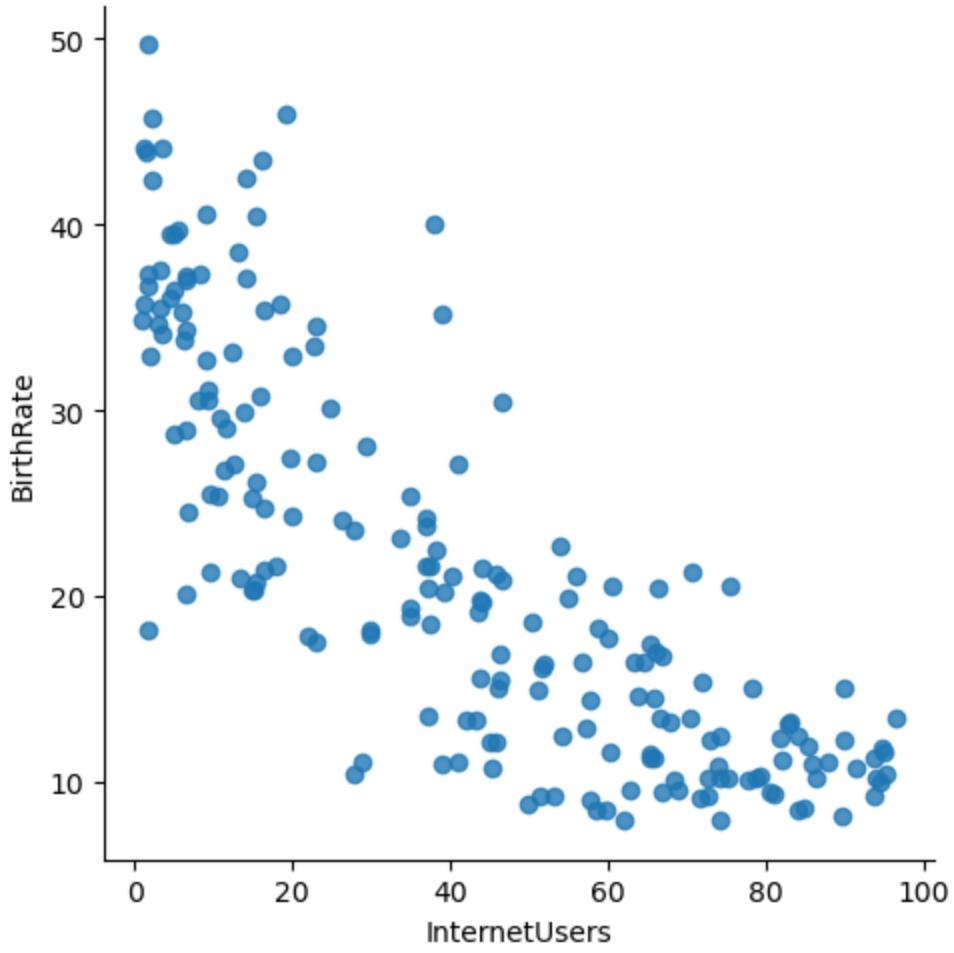
In [115…
```
Vis02=sns.boxplot(data=snt_df01, x='IncomeGroup', y='BirthRate')
```



In [118…
```
Vis03 = sns.lmplot(data = snt_df01 ,x = 'InternetUsers', y = 'BirthRate')
```

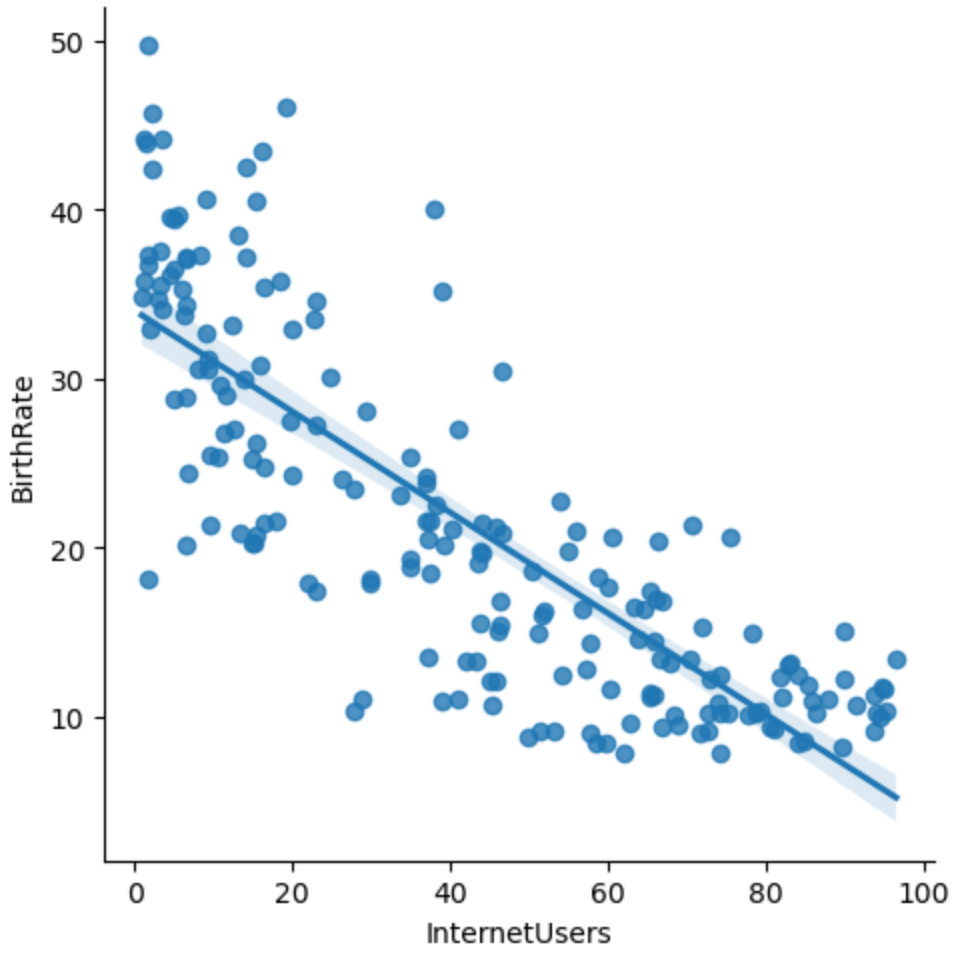


In [119…
```
Vis03 = sns.lmplot(data = snt_df01 ,x = 'InternetUsers', y = 'BirthRate', fit_reg = Fals
```

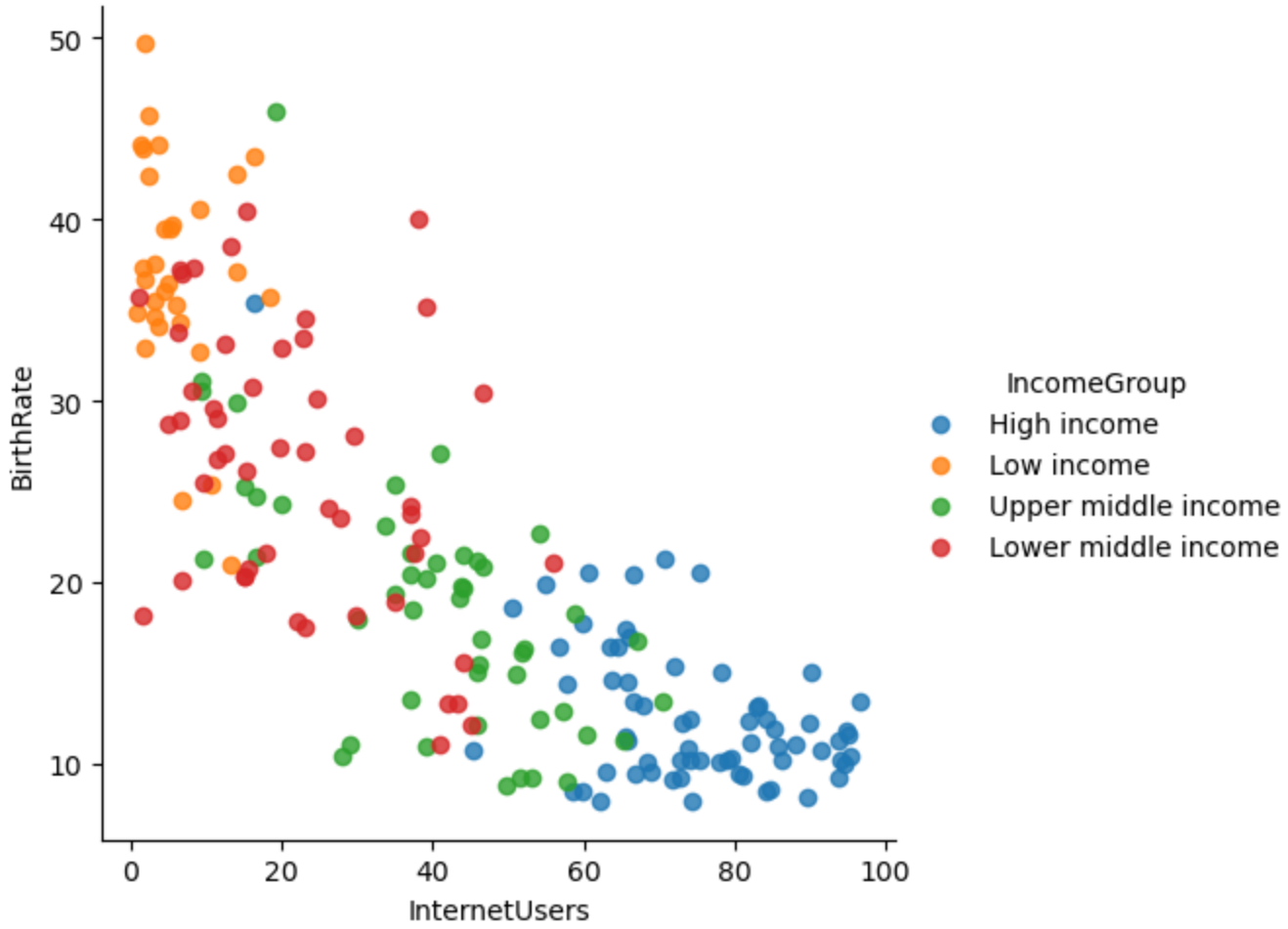


In [120…

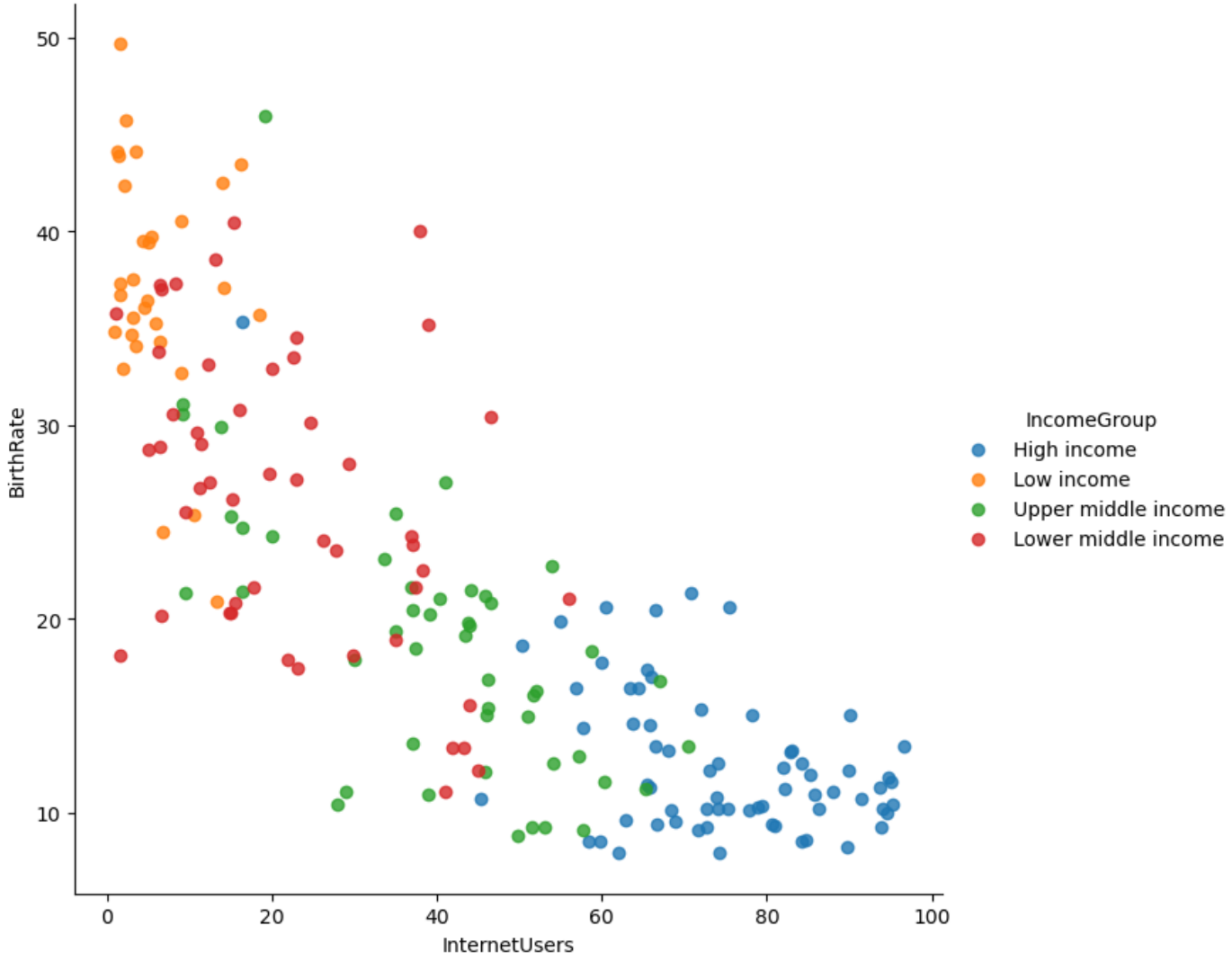
```
Vis03 = sns.lmplot(data = snt_df01 ,x = 'InternetUsers', y = 'BirthRate', fit_reg = True
```



In [125…
```
Vis04 = sns.lmplot(data = snt_df01 ,x = 'InternetUsers', y = 'BirthRate', fit_reg = Fals
```



In [127…
```
Vis04 = sns.lmplot(data = snt_df01 ,x = 'InternetUsers', y = 'BirthRate', fit_reg = Fals
```



In [ ]: