PANDAS

Analysing GDP growth

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
stats = pd.read_excel(r'/Users/sasidharbhagavatula/Desktop/data.xlsx')
```

In [3]:
```
stats
```

Out[3]:

	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 [4]:
```
len(stats)
```

Out[4]: 195

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

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

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

Out[6]:
```
5
```

In [7]:
```
stats.shape
```

Out[7]:
```
(195, 5)
```

In [8]:
```
stats.isnull()
```

Out[8]:

	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

In [9]:
```
stats.isna()
```

Out[9]:

	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

In [10]:
```
stats.isnull().sum()
```

Out[10]:
```
CountryName      0
CountryCode      0
BirthRate        0
InternetUsers    0
IncomeGroup      0
dtype: int64
```

In [11]:
```
stats.dtypes
```

Out[11]:
```
CountryName       object
CountryCode       object
BirthRate        float64
InternetUsers    float64
IncomeGroup       object
dtype: object
```

In [12]:
```
stats.info()
```

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

In [13]:
```
type(stats)
```

Out[13]:
```
pandas.core.frame.DataFrame
```

In [14]:
```
# top 5 rows
stats.head()
```

Out[14]:

	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 [15]:
```
stats.tail()
```

Out[15]:

	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 [16]:
```
stats.tail(1)
```

Out[16]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
194	Zimbabwe	ZWE	35.715	18.5	Low income

In [17]:
```
stats.columns
```

Out[17]:
```
Index(['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
       'IncomeGroup'],
      dtype='object')
```

In [18]:
```
stats['CountryName']
```

Out[18]:
```
0                    Aruba
1              Afghanistan
2                   Angola
3                  Albania
4      United Arab Emirates
               ...
190             Yemen, Rep.
191            South Africa
192        Congo, Dem. Rep.
193                  Zambia
194                Zimbabwe
Name: CountryName, Length: 195, dtype: object
```

In [19]:
```
stats['BirthRate']
```

Out[19]:
```
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 [20]:
```
stats[['BirthRate','CountryName']]
```

Out[20]:

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

195 rows × 2 columns

In [21]:
```
stats_numeric_data= stats[['BirthRate','InternetUsers']]
```

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

Out[22]:

	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 [72]:
```
stats_categorical_data= stats[['CountryName','CountryCode','InternetUsers
```

In [73]:
```
stats_categorical_data.head()
```

Out[73]:

	CountryName	CountryCode	InternetUsers
0	Aruba	ABW	78.9
1	Afghanistan	AFG	5.9
2	Angola	AGO	19.1
3	Albania	ALB	57.2
4	United Arab Emirates	ARE	88.0

In [74]:
```
#total variables created
print(stats.shape)
print(stats_numeric_data.shape)
print(stats_categorical_data.shape)
```

```
(195, 5)
(195, 2)
(195, 3)
```

slicing in pandas

In [26]:
```
stats[:]
```

Out[26]:

	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 [27]:
```
#slicing
```

In [28]:
```
stats[:6]
```

Out[28]:

	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

In [29]:
```
stats[3:]
```

Out[29]:

	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
7	Antigua and Barbuda	ATG	16.447	63.4	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

192 rows × 5 columns

In [30]:
```
stats[3:10]
```

Out[30]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
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 [31]:
```
stats[3:55:5]
```

Out[31]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
3	Albania	ALB	12.877	57.2000	Upper middle income
8	Australia	AUS	13.200	83.0000	High income
13	Benin	BEN	36.440	4.9000	Low income
18	Bahamas, The	BHS	15.339	72.0000	High income
23	Bolivia	BOL	24.236	36.9400	Lower middle income
28	Botswana	BWA	25.267	15.0000	Upper middle income
33	China	CHN	12.100	45.8000	Upper middle income
38	Comoros	COM	34.326	6.5000	Low income
43	Cyprus	CYP	11.436	65.4548	High income
48	Dominican Republic	DOM	21.198	45.9000	Upper middle income
53	Spain	ESP	9.100	71.6350	High income

In [32]:
```
stats[::-1]
```

Out[32]:

	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 [33]:
```
stats[-1::]
```

Out[33]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
194	Zimbabwe	ZWE	35.715	18.5	Low income

In [34]:
```
stats[0:200]
```

Out[34]:

	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 [35]:
```
stats
```

Out[35]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.9	High income
1	Afghanistan	AFG	35.253	5.9	Low income
2	Angola	AGO	45.985	19.1	Upper middle income
3	Albania	ALB	12.877	57.2	Upper middle income
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 [36]:
```
stats[::-1]
```

Out[36]:

	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 [37]:
```
stats[:-1:2]
```

Out[37]:

	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
...	...	...	...	...	...
184	Venezuela, RB	VEN	19.842	54.9	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

97 rows × 5 columns

In [38]:
```
stats[0:300]
```

Out[38]:

	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 [39]:
```
pd.__version__
```

Out[39]:
```
'2.2.3'
```

In [ ]:
```

```

In [40]:
```
# 6th nov
```

In [41]:
```
stats.describe()  # only numeric attributes
```

Out[41]:

	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 [69]:
```
stats.describe().transpose()
```

Out[69]:

	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 [77]:
```
stats_categorical_data.describe()
```

Out[77]:

	InternetUsers
count	195.000000
mean	42.076471
std	29.030788
min	0.900000
25%	14.520000
50%	41.000000
75%	66.225000
max	96.546800

In [90]:
```
stats.head(2)
```

Out[90]:

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

In [91]:
```
stats['calc'] = stats['BirthRate'] * stats['InternetUsers']
```

In [92]:
```
stats['calc']
```

Out[92]:
```
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
Name: calc, Length: 195, dtype: float64
```

In [93]:
```
stats.head()
```

Out[93]:

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup	calc
0	Aruba	ABW	10.244	78.9	High income	808.2516
1	Afghanistan	AFG	35.253	5.9	Low income	207.9927
2	Angola	AGO	45.985	19.1	Upper middle income	878.3135
3	Albania	ALB	12.877	57.2	Upper middle income	736.5644
4	United Arab Emirates	ARE	11.044	88.0	High income	971.8720

In [94]:
```
stats=stats.drop('calc',axis=1) # drop the attribute from axis 1 column
```

In [95]:
```
stats
```

Out[95]:

	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 [96]:
```
stats['InternetUsers']<2 # without filters
```

Out[96]:
```
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 [98]:
```
stats[stats['InternetUsers']<2] # with filters
```

Out[98]:

	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

In [99]:
```
len(stats[stats['BirthRate']>40])   #no. of countries with bnirthrate > 4
```

Out[99]: 12

In [100…
```
stats[(stats.InternetUsers<2) & (stats.BirthRate>40)]   # and operation
```

Out[100…

	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 [101…
```
len(stats[(stats.InternetUsers<2) & (stats.BirthRate>40)])
```

Out[101… 3

In [102…
```
stats[stats.IncomeGroup == 'High income']
```

Out[102…

	CountryName	CountryCode	BirthRate	InternetUsers	IncomeGroup
0	Aruba	ABW	10.244	78.90	High income
4	United Arab Emirates	ARE	11.044	88.00	High income
5	Argentina	ARG	17.716	59.90	High income
7	Antigua and Barbuda	ATG	16.447	63.40	High income
8	Australia	AUS	13.200	83.00	High income
...	...	...	...	...	...
174	Trinidad and Tobago	TTO	14.590	63.80	High income
180	Uruguay	URY	14.374	57.69	High income
181	United States	USA	12.500	84.20	High income
184	Venezuela, RB	VEN	19.842	54.90	High income
185	Virgin Islands (U.S.)	VIR	10.700	45.30	High income

67 rows × 5 columns

In [103…

```
stats[stats.IncomeGroup == 'Low income'] #filtering
```

Out[103…

	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 [104…
```
stats.IncomeGroup.nunique() # no. of uninique entries in income group
```
Out[104… 4

In [ ]:

In [ ]:

In [68]:
```
stats.BirthRate.nunique() # no
```
Out[68]: 177

In [79]:
```
stats.BirthRate.nunique()
```
Out[79]: 177

In [106…
```
import pandas as pd
#import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib
plt.rcParams['figure.figsize']= 10,5
import warnings
warnings.filterwarnings('ignore')
```

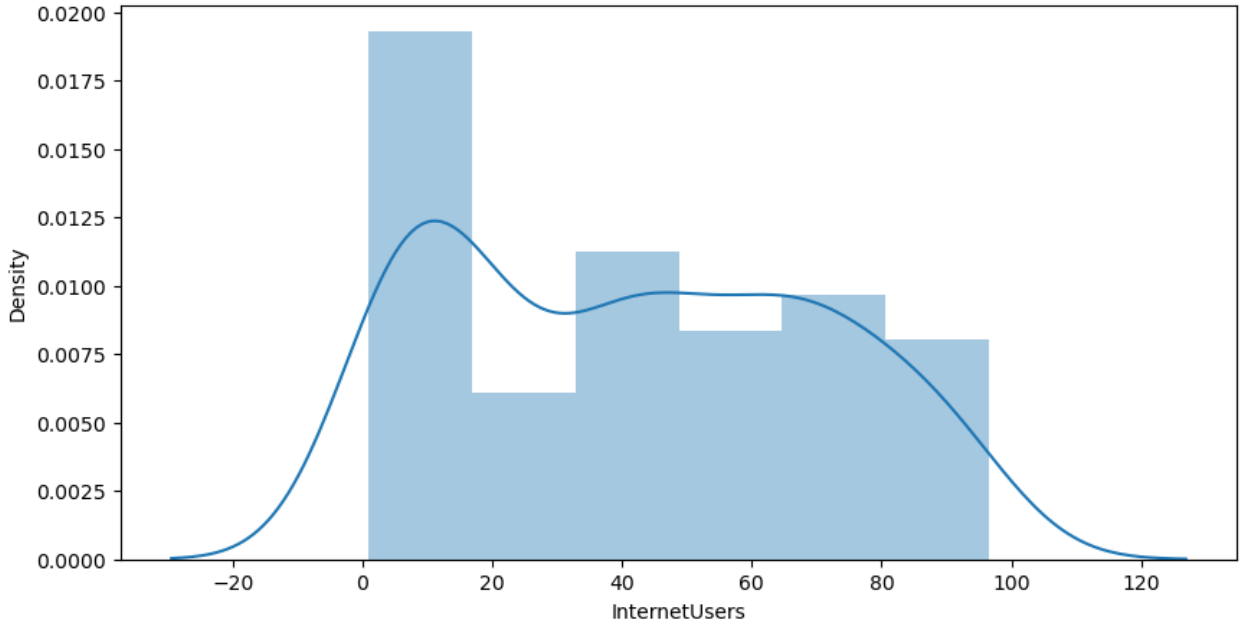
```
Using matplotlib backend: module://matplotlib_inline.backend_inline
```

In [107…
```
vis1=plt.distplot(stats['InternetUsers'])
```

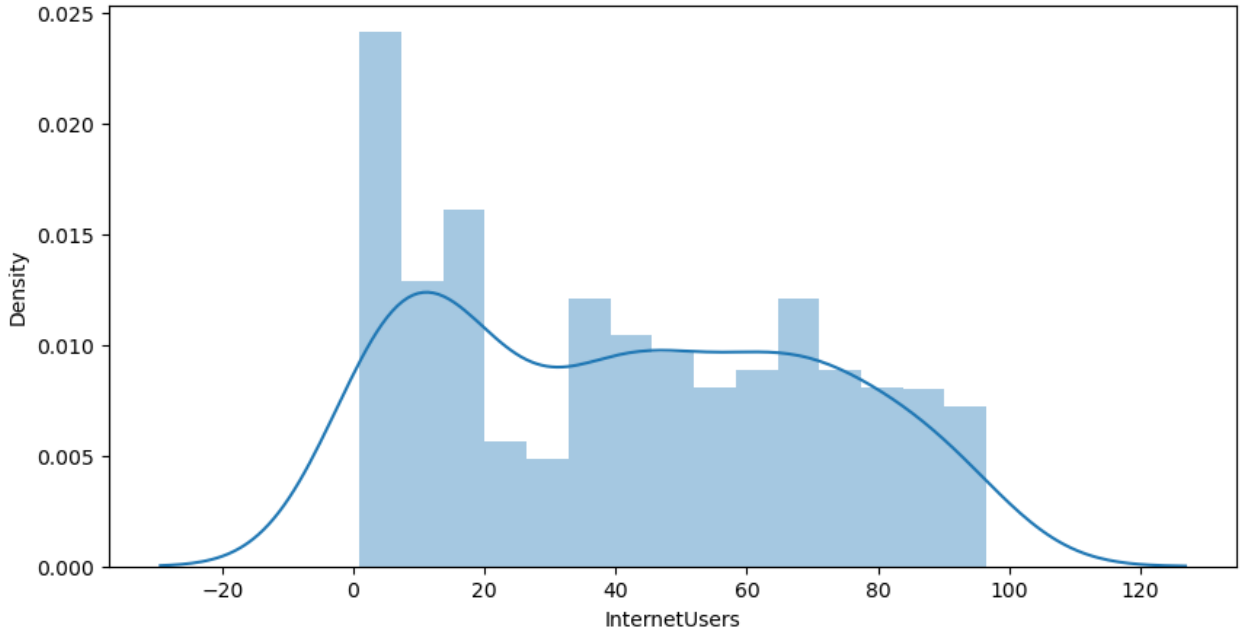
```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[107], line 1
----> 1 vis1=plt.distplot(stats['InternetUsers'])

AttributeError: module 'matplotlib.pyplot' has no attribute 'distplot'
```

In [108…
```
vis1=sns.distplot(stats['InternetUsers'])
#plt.show()
```

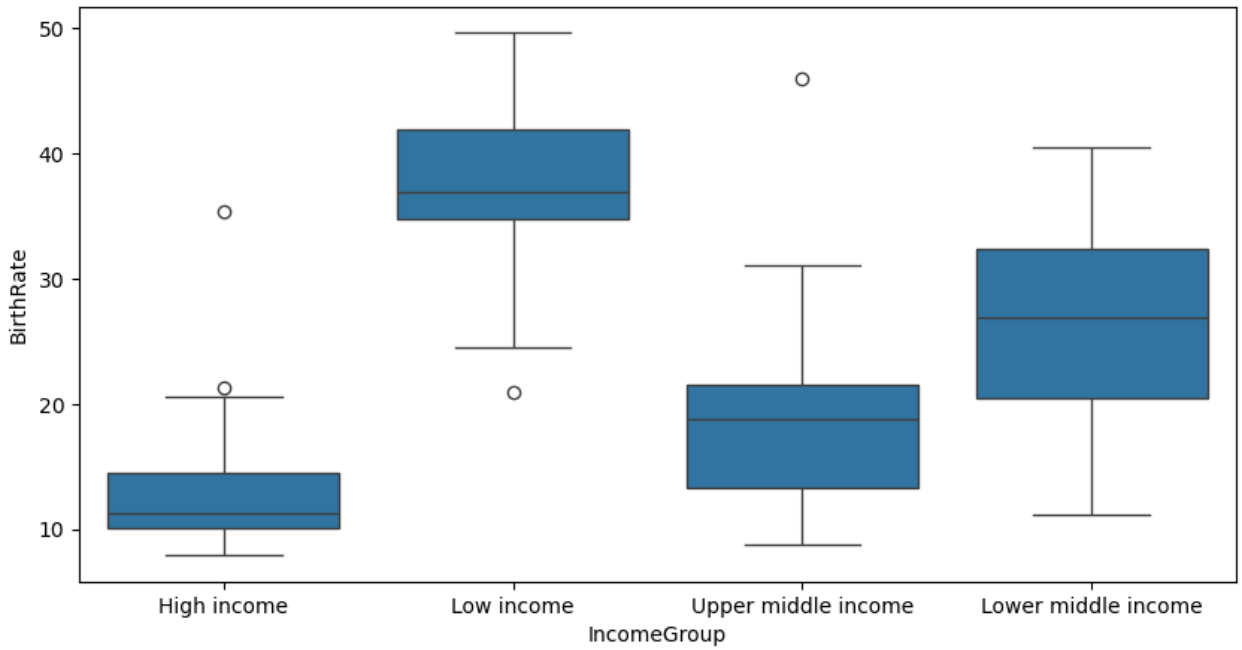


In [110…
```
vis3=sns.distplot(stats['InternetUsers'],bins=15) # bins=visualize in dif
plt.show()
```



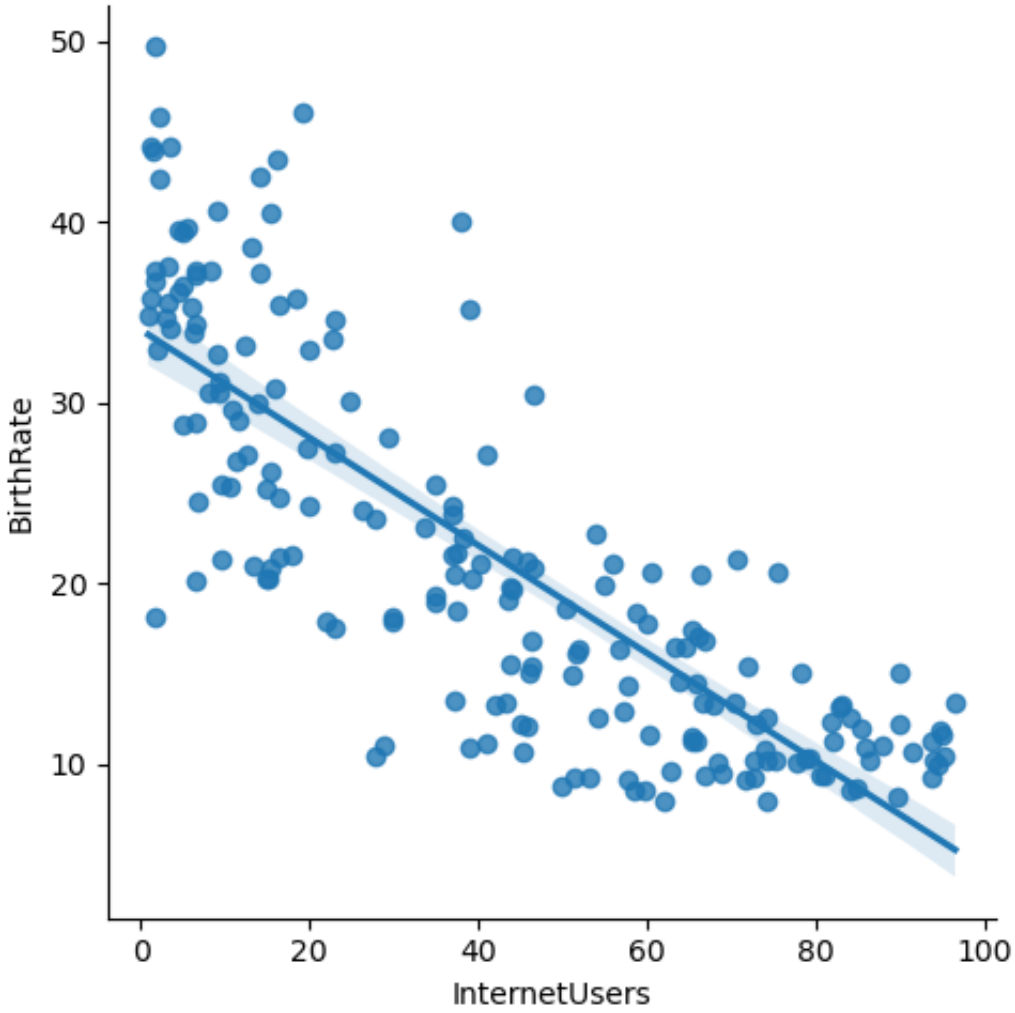
In [84]:
```
#box plot for bivariate
```

In [111…
```
vis4=sns.boxplot(data=stats, x="IncomeGroup",y='BirthRate')
plt.show()
```

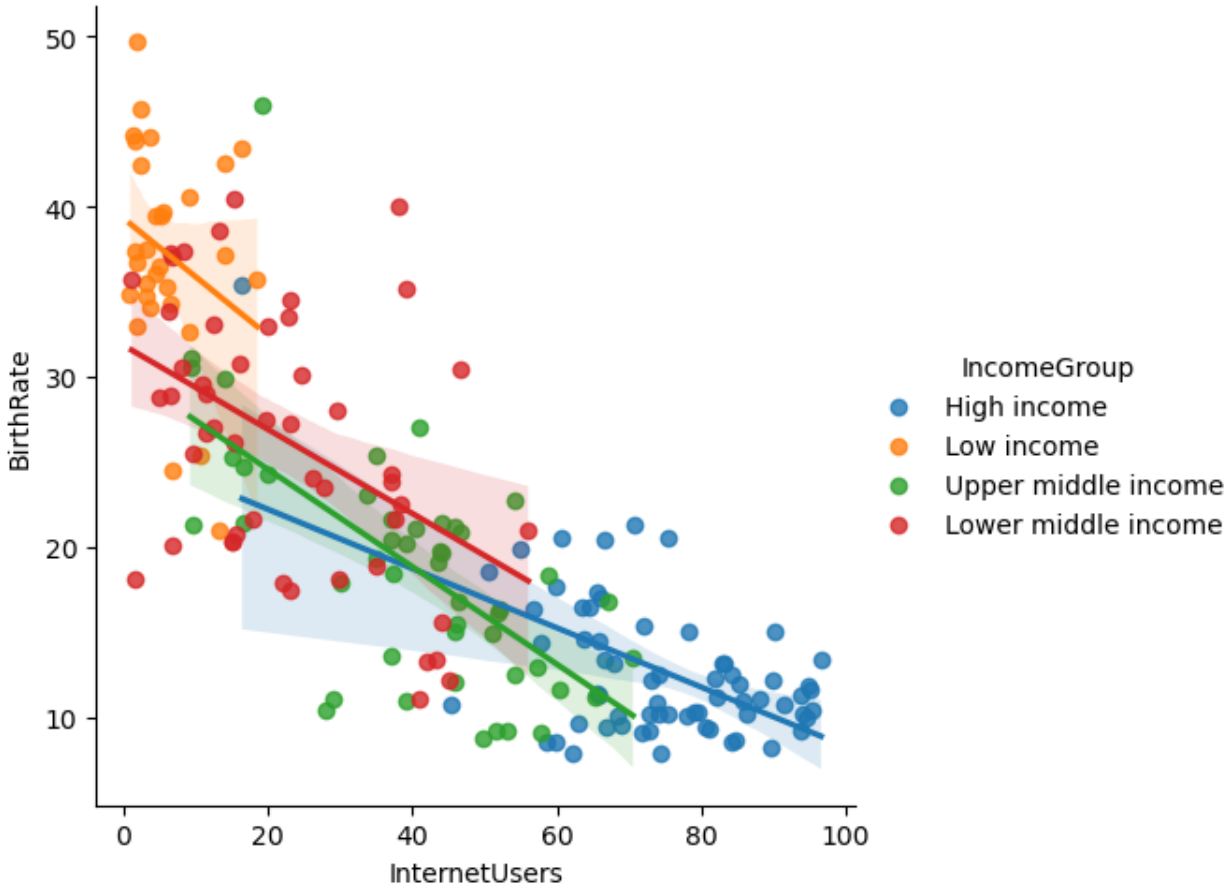


In [86]:
```
# 3 outliers
```

In [87]:
```
vis5=sns.lmplot(data=stats, x="InternetUsers",y='BirthRate')
plt.show()
```



In [118…
```
vis6=sns.lmplot(data=stats, x="InternetUsers",y='BirthRate',fit_reg=True,
plt.show()
```


50
40
30
20
10
BirthRate
0
20
40
60
80
100
InternetUsers
IncomeGroup
High income
Low income
Upper middle income
Lower middle income

In [ ]:

In [ ]: