

Country GDP project

May 7, 2025

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

```
[5]: print(pd.__version__)
```

2.2.2

```
[11]: store=pd.read_csv(r'/Users/shashi/Downloads/data.csv')
```

```
[29]: store
```

```
[29]:
```

	CountryName	CountryCode	BirthRate	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]

```
[33]: len(store)
```

```
[33]: 195
```

```
[35]: len(store.columns)
```

```
[35]: 5
```

```
[37]: type(store)
```

```
[37]: pandas.core.frame.DataFrame
```

```
[39]: store
```

```
[39]:
```

	CountryName	CountryCode	BirthRate	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]
```

```
[41]: store.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

```

```
[ ]: # Info shows the range between 0-194, if data set is large memory will increase
```

```
[43]: store.columns
```

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

```
[49]: store.head()      #top rows
```

```
[49]:
```

	CountryName	CountryCode	BirthRate	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	

	IncomeGroup
0	High income
1	Low income
2	Upper middle income
3	Upper middle income
4	High income

```
[51]: store.tail()      #bottom rows
```

```
[51]:
```

	CountryName	CountryCode	BirthRate	InternetUsers	\
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
190	Lower middle income
191	Upper middle income
192	Low income
193	Lower middle income
194	Low income

```
[53]: store.tail(4)    # bottom 4 rows
```

```
[53]:      CountryName CountryCode BirthRate  InternetUsers \
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
191  Upper middle income
192          Low income
193  Lower middle income
194          Low income
```

```
[55]: store.head(2)    #top 2 rows
```

```
[55]:      CountryName CountryCode BirthRate  InternetUsers  IncomeGroup
0      Aruba          ABW    10.244           78.9  High income
1  Afghanistan          AFG    35.253            5.9  Low income
```

```
[57]: store[::-1]      #we get reverse table
```

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

      IncomeGroup
194          Low income
193  Lower middle income
192          Low income
191  Upper middle income
190  Lower middle income
..      ...
4          High income
3  Upper middle income
2  Upper middle income
1          Low income
0          High income
```

[195 rows x 5 columns]

```
[59]: store[:5]
```

```
[59]:      CountryName CountryCode BirthRate  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

      IncomeGroup
0      High income
1      Low income
2  Upper middle income
3  Upper middle income
4      High income
```

```
[61]: store[5:]
```

```
[61]:      CountryName CountryCode BirthRate  InternetUsers \
5          Argentina          ARG    17.716          59.9000
6          Armenia          ARM    13.308          41.9000
7    Antigua and Barbuda          ATG    16.447          63.4000
8          Australia          AUS    13.200          83.0000
9          Austria          AUT     9.400          80.6188
..          ...          ...          ...
190        Yemen, Rep.          YEM    32.947          20.0000
191        South Africa          ZAF    20.850          46.5000
192    Congo, Dem. Rep.          COD    42.394           2.2000
193          Zambia          ZMB    40.471          15.4000
194          Zimbabwe          ZWE    35.715          18.5000

      IncomeGroup
5      High income
6  Lower middle income
7      High income
8      High income
9      High income
..          ...
190  Lower middle income
191  Upper middle income
192      Low income
193  Lower middle income
194      Low income
```

[190 rows x 5 columns]

```
[63]: store[0:200:10]
```

```
[63]:
```

	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

```
[67]: store.describe()      # descriptive stats - will give only numerical data of
↳ birth data & internet users such as
#mean, std deviation, 25 % percentil, 75% percentile, max value
```

```
[67]:
```

	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

```
[69]: store.describe().transpose()      #transpose converts rows into columns
```

```
[69]:
```

	count	mean	std	min	25%	50%	75%	\
BirthRate	195.0	21.469928	10.605467	7.9	12.1205	19.68	29.7595	
InternetUsers	195.0	42.076471	29.030788	0.9	14.5200	41.00	66.2250	
								max

```
BirthRate      49.6610
InternetUsers   96.5468
```

```
[77]: store.columns
```

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

```
[79]: store.columns=['a', 'b', 'c', 'd', 'e']
```

```
[81]: store.columns
```

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

```
[91]: store.columns=['CountryName', 'CountryCode', 'BirthRate', 'InternetUsers',
          'IncomeGroup']
```

```
[93]: store.columns
```

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

```
[89]: store.head()
```

```
[89]:
```

	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

```
[95]: store[:]
```

```
[95]:
```

	CountryName	CountryCode	BirthRate	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]

```
[99]: store.isnull()
```

```

[99]:      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 x 5 columns]

```
[101]: store.isnull().sum()    # same as store.isna()
```

```

[101]: CountryName      0
       CountryCode      0
       BirthRate        0
       InternetUsers    0
       IncomeGroup      0
       dtype: int64

```

```
[133]: store.isna()
```

```

[133]:      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 x 5 columns]

```
[103]: store.dtypes
```

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

```
[105]: store.columns
```

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

```
[107]: store.head(2)
```

```
[107]:   CountryName CountryCode BirthRate  InternetUsers  IncomeGroup
0      Aruba      ABW      10.244          78.9  High income
1  Afghanistan      AFG      35.253           5.9  Low income
```

```
[109]: store
```

```
[109]:   CountryName CountryCode BirthRate  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]

```
[ ]: #divide the data into two part - categorical data into one part & numerical
      ↪data into 2nd type.
```

```
[113]: store['CountryName']
```

```

[113]: 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

```

```
[117]: store[['CountryName', 'CountryCode']]
```

```

[117]:      CountryName CountryCode
0          Aruba          ABW
1    Afghanistan          AFG
2          Angola          AGO
3          Albania          ALB
4    United Arab Emirates      ARE
..          ...          ...
190    Yemen, Rep.          YEM
191    South Africa          ZAF
192    Congo, Dem. Rep.      COD
193          Zambia          ZMB
194          Zimbabwe      ZWE

```

[195 rows x 2 columns]

```
[131]: store_categorical = store[['CountryName', 'CountryCode', 'IncomeGroup']]
store_categorical.head()
```

```
[131]:
```

	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

```
[139]: store.describe()
```

```
[139]:
```

	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

```
[141]: store_categorical.describe()
```

```
[141]:
```

	CountryName	CountryCode	IncomeGroup
count	195	195	195
unique	195	195	4
top	Aruba	ABW	High income
freq	1	1	67

```
[147]: num = store[['BirthRate', 'InternetUsers']]
```

```
[149]: store.num.head()
```

```
[149]:
```

	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

```
[151]: store
```

```
[151]:
```

	CountryName	CountryCode	BirthRate	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]

[]: