INDIA'S POPULATION DATA ANALYSIS

A
PROJECT REPORT
Submitted in partial fulfillment of the Requirements
For the award of Master of Computer Application Degree.

LNCT UNIVERSITY BHOPAL (M.P)

MINOR PROJECT REPORT

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Project Code : - MAI-109
MCA (AI/ML)
SEC-A

Under the Guidance of
Prof. Ashish Jain

MASTER OF COMPUTER APPLICATION(AI/ML)

LNCT UNIVERSITY BHOPAL (M.P)
July-Dec, 2023

CERTIFICATE

This is to certify that the mini project report on data analysis using python **"INDIA'S POPULATION DATA ANALYSIS"** submitted by **Name of Student:-Aditya Raj Gupta(LNCCMCA11105), Name of Student:-Apurwa Khare(LNCCMCA11109), Name of Student:- Naveen Rai(LNCCMCA11180), Name of Student:-Manju Shah(LNCCMCA21102)** has been carried out under the guidance of **Prof. Ashish Jain, Master of computer application(AI/ML), LNCT UNIVERSITY, BHOPAL.** The project report is approved for submission requirement for Mini Project in **"Data Analytics Using Python"** 1st semester in **Master of Computer Application, LNCT UNIVERSITY, BHOPAL (M.P)** during the academic session **July-Dec, 2022.**

Guided By

Prof. Ashish Jain

Forwarded by

Director

LNCT UNIVERSITY MCA(AI/ML), Bhopal

LNCT UNIVERSITY, BHOPAL
MASTER OF COMPUTER APPLICATION (AI/ML)

DECLARATION

We name of students:-Aditya Raj Gupta, Apurwa Khare, Manju Shah, Naveen Rai hereby declare that the project entitled "INDIA'S POOPULATION DATA ANALYSIS", which is being submitted as Mini Project of 1st semester in **Master of Computer Application(AI/ML), LNCT UNIVERSITY, BHOPAL** is an authentic record of our genuine work done under the guidance of Prof. Ashish Jain **Master of Computer Application, LNCT UNIVERSITY, BHOPAL**.

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Date: 02-02-2023

LNCT UNIVERSITY, BHOPAL ,M.P

MASTER OF COMPUTER APPLICATION(AI/ML)

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We express our sincere indebtedness towards our guide Prof. Ashish Jain, **Master of Computer Application, LNCT UNIVERSITY, BHOPAL** for his/her invaluable guidance, suggestions and supervision throughout the work. Without his/her kind patronage and guidance the project would not have taken shape. We would also like to express our gratitude and sincere regards to Dr. Kavita kanathei for her kind suggestions, time to time counseling and advices. We would also like to thank to our Director Dr. Sanjay Bajpai, **LNCT UNIVERSITY, BHOPAL** for his expert advice and counseling from time to time. We owe sincere thanks to all the faculty members in the department of **SOCST**, **LNCT UNIVERSITY, BHOPAL** for their kind guidance and encouragement from time to time.

INDEX

S. No.	CONTENTS	Page No.	Remarks
1.	OBJECTIVES	6	
2.	Features	7	
3.	Hardware and Software Requirement	8	
4.	Implementation (coding)	8-17	
5.	Output Form (screen).	18-27	
6.	Future Enhancement	28	
7.	Bibliography	29	

➢ OBJECTIVES

Introduction of India's Population Data Analysis:-

- This is the mini–India's Popualtion Data Analysis project in python, that can help you to understand the basic concept of Function, loop, and special purpose libraries NumPy and pandas. This application based on a concept of getting insights from any entered data set.
- The user can manage the problems by entering simple choices based on their problem statements. Getting details, Graphical Visualization, and target-based analysis. This mini project contains limited features, but the essential one.
- Talking about the features of the mini project, the user can login with their user id and get analysis for their entered dataset. User can get the required information by entering mentioned choice. The user can get the distribution of data, statistical information from the dataset, useful insights of the target data with respect to independent variables.
- We are creating function for the special task in this project.
- There is login system for this project. All the main features for India's Population dataset.

➢ HARDWARE AND SOFTWARE REQUIREMENT:

➢ Software Requirement:

1) Operating system: Microsoft windows 10 based system

2) Language -- Python

3) Environment – Jupyter Notebook

➢ Hardware Requirement:

- Computer/processor: intel 5 personal computer
- minimum 90MHz or Higher processor.
- Memory : 256 MB RAM (128 recommended)
- Operating System : Windows Operating System.
- Peripheral / Miscellaneous: Keyboard, Mouse.

➢ IMPLEMENTATION OF COADING

```
from colorama import Fore
#for colour
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import os
import getpass
# for password
import mysql.connector
conn = mysql.connector.connect(host='localhost',
password='Aditya001#', user='root
cursor = conn.cursor()
 # database connectivity code
def fun(path):
    df=pd.read_csv(path)
    print("1. for getting the file")
    print("2. for seeing all the information of the file")
    print("3. for describing the file")
    print("4. for checking all the null values")
```

```
print ("5. for checking the sum of all the null values")
print ("6. for checking the sum of all the sum of all null values")
print ("7. for filling the value in place of all the null values")
print ("8. for show bar graph")
print ("9. for show lineplot")
print ("10 for show bar plot between Urban poplation and Country population")
print ("11 for show the matplotlib graph to find out the poplation of median age”)
choice = input("\nEnter your choice :- ")
 if choice == "1":
     print("This is Your Data")
     print(df)
elif choice == "2":
      print(df.info)
      print("All the information of the file ")
elif choice == "3":
      print(df.describe)
      print(" Describing the file")
elif choice == "4":
      print(df.isnull())
      print("Checking all the null values in given table of dataset")
```

```
 elif choice == "5":
        print(df.isnull().sum())
        print("the sum of all the null values")
    elif choice == "6":
        print(df.isnull().sum().sum())
        print("All the sum of all null values")
    elif choice == "7":
        print(df.fillna(method="pad",inplace=True))
    elif choice=="8":
        plt.figure(figsize=(20,10))
        plt.bar(df['Year'],df['Population'],color="teal",width=2)
        print(plt.show())
        print("Bar graph between Year and population")
    elif choice=="9":
       sns.lineplot(df["Year"],df["Population"])
       print(plt.show())
   elif choice=="10":
        df[['Urban Population','Population']]
        plot.bar(stacked=True, color = ['dark figsize = (12,8), grid =
True)
        plt.title('Urban population VS country population', fontsize = 15)
        plt.xlabel('Year', fontsize = 15)
```

```
                plt.ylabel('Population in BLRD', fontsize = 15)
                print(plt.show())
               print("Bar plot between Urban poplation and Country
        population")
          elif choice == "11":
               plt.figure(figsize= (10,4))
               plt.scatter(y = df.index, c = df.Population, x= df.Median_Age)
                print(plt.show())
               print("Matplotlib graph to find out the poplation of median age ")
          else:
                print("invalid choice")
          cho=input("Press 'c' for Continue and 'e'for exit :-")
          if cho=='c'or cho=='C':
          fun(path)
def pathfun():
    print("\n********************************** WELCOME TO EXPLOTARY
DATA ANALYSIS")
    p=input("Enter your csv path :- ")
    fun(p)
               # signin code
```

```
def signin():
    os.system('cls')
     print(Fore.MAGENTA+"\n\n***********SIGN IN**************\n\n")
     print(Fore.BLUE+" ")
     z = input("Enter name:- ")
     y = getpass.getpass("Enter password:- ")
     sql1 = "SELECT password FROM userinfo WHERE name=%s"
     sql2 = "SELECT name FROM userinfo WHERE password=%s"
     val1 = (z,)
     val2 = (y,)
     cursor.execute(sql1, val1)
     result1 = cursor.fetchall()
     cursor.execute(sql2, val2)
     result2 = cursor.fetchall()
    conn.commit()
    if (result1 and result2):
        pathfun()
```

```
    else:
        print(Fore.RED+"Incorrect Name or Password!")
        b = int(input( Fore.BLUE+"Press 1 for SignIn again and 2 for Forget Password ?:-"))
    if b == 1:
        signin()
    elif b == 2:
        forget_password()
    else:
        print(Fore.RED+"Invalid!")
            #forget password code
def forget_password():
    n=input("Enter your name :-")
    m=input("Enter your mobile number:-")
    sql1 = "SELECT password FROM userinfo WHERE name=%s And mobile=%s"
    val1 = (n,m) cursor.execute(sql1,val1)
    result1 = cursor.fetchall()
```

```
    res=result1[0]
if(result1):
    print("Your password is ",res[0])
    cho=int(input("press '1' to go back and '2'for exit "))
if cho==1:
    signin()
else:
    print("please enter correct info")
      #signup code
def signup():
    os.system('cls')
    print(Fore.MAGENTA+"\n\n**********SIGN UP**********\n\n")
    print(Fore.BLUE+" ")
    n = input("Enter Name: ")
    p = getpass.getpass("Enter Password: ")
    m = input("Enter Mobile Number :-")
    sql = "INSERT INTO userinfo (name,password,mobile) VALUES
(%s,%s,%s)"
```

```
        val = (n, p, m)
        cursor.execute(sql, val)
         conn.commit()
         signin()
                    # main function
def start():
         print(Fore.RED                                                    +
"\t\t\t\t**********************************************************************
***** )
         print("\t\t\t\t*
         print("\t\t\t\t*                              WELCOME TO EXPLOTARY
DATA ANALYSIS SYSTEM")
         print("\t\t\t\t*
          print("\t\t\t\t*                                1.PRESS 1 TO SIGNIN")
          print("\t\t\t\t*                                          2.PRESS 2 TO
SIGNUP")
          print("\t\t\t\t*                                            3.FORGET
PASSWORD ? PRESS 3")
```

```
        print("\t\t\t\t*                                                4.PRESS
4 TO EXIT")
        print("\t\t\t\t*
        print("\t\t\t\t*                              ENTER YOUR CHOICE BELOW :
        print("\t\t\t\t*
         print("\t\t\t\t****************************************
**********************
        x=int(input("Enter your choice :-"))
          if (x == 1):
              signin()
          elif (x == 2):
              signup()
          elif(x==3):
                forget_password()
            elif(x==4):
                  exit(1)
             else:
                  print("Please Enter valid choice")
```

```
            cho=input("press 'c' for continue and 'e'for exit")
               if cho=='c'or cho=='C':
                   start()
               else:
                    exit(1)
start()
```

#C:/Users/Aditya/Desktop/india_pop.cs

OUTPUT SCREEN

```
                    ********************************************************************************************
***
                    *
*
                    *                        WELCOME TO EXPLOTARY DATA ANALYSIS SYSTEM
*
                    *
*
                    *                             1.PRESS 1 TO SIGNIN
*
                    *                             2.PRESS 2 TO SIGNUP
*
                    *                             3.FORGET PASSWORD ? PRESS 3
*
                    *                             4.PRESS 4 TO EXIT
*
                    *
*
                    *                               ENTER YOUR CHOICE BELOW :
*
                    *
*
                    ********************************************************************************************
***
enter your choice
```

```
                    ********************************************************************************************
                    *                                                                                          *
                    *                        WELCOME TO EXPLOTARY DATA ANALYSIS SYSTEM                         *
                    *                                                                                          *
                    *                             1.PRESS 1 TO SIGNIN                                          *
                    *                             2.PRESS 2 TO SIGNUP                                          *
                    *                             3.FORGET PASSWORD ? PRESS 3                                  *
                    *                             4.PRESS 4 TO EXIT                                            *
                    *                                                                                          *
                    *                               ENTER YOUR CHOICE BELOW :                                  *
                    *                                                                                          *
                    ********************************************************************************************
Enter your choice :-2

***********SIGN UP************


Enter Name: aditya
Enter Password: ••••••••
Enter Mobile Number :-74747474444

***********SIGN IN*************


Enter name:- aditya
Enter password:- ••••••••
```

```
********** WELCOME TO EXPLOTARY DATA ANALYSIS SYSTEM **********

Enter your csv path :- C:/Users/Aditya/Desktop/india_pop.csv
1. for getting the file
2. for seeing all the information of the file
3. for describing the file
4. for checking all the null values
5. for checking the sum of all the null values
6. for checking the sum of all the sum of all null values
7. for filling the value in place of all the null  values
8. for show bar graph
9. for show lineplot
10 for show bar plot between Urban poplation and Country population
11 for show the matplotlib graph to find out the poplation of median age

   Enter your choice :- 1
   This is Your Data
      Year  Population  Yearly % Change  Yearly Change  Migrants (net)  \
   0  2020  1380004385             0.99       13586631         -532687
   1  2019  1366417754             1.02       13775474         -532687
   2  2018  1352642280             1.04       13965495         -532687
   3  2017  1338676785             1.07       14159536         -532687
   4  2016  1324517249             1.10       14364846         -532687
   5  2015  1310152403             1.20       15174247         -470015
   6  2010  1234281170             1.47       17334249         -531169
   7  2005  1147609927             1.67       18206876         -377797
   8  2000  1056575549             1.85       18530592         -136514
   9  1995   963922588             1.99       18128958         -110590
   10 1990   873277798             2.17       17783558            9030
   11 1985   784360008             2.33       17081433          115942
   12 1980   698952844             2.32       15169989          222247
   13 1975   623102897             2.33       13582621          421208
   14 1970   555189792             2.15       11213294          -68569
   15 1965   499123324             2.07        9715129          -17078
   16 1960   450547679             1.91        8133417          -30805
   17 1955   409880595             1.72        6711079          -21140

      Median_Age  Fertility Rate  Density (P/Km²)  Urban Pop %  \
   0        28.4            2.24              464         35.0
   1        27.1            2.36              460         34.5
   2        27.1            2.36              455         34.1
   3        27.1            2.36              450         33.6
   4        27.1            2.36              445         33.2
   5        26.8            2.40              441         32.7
   6        25.1            2.80              415         30.8
   7        23.8            3.14              386         29.1
   8        22.7            3.48              355         27.6
   9        21.8            3.83              324         26.5
   10       21.1            4.27              294         25.5
   11       20.6            4.68              264         24.3
   12       20.2            4.97              235         23.0
   13       19.7            5.41              210         21.3
   14       19.3            5.72              187         19.7
   15       19.6            5.89              168         18.7
   16       20.2            5.90              152         17.9
```

	Urban Population	Country's Share of World Pop	World Population	\
0	483098640	17.70	7794798739	
1	471828295	17.71	7713468100	
2	460779764	17.73	7631091040	
3	449963381	17.74	7547858925	
4	439391699	17.75	7464022049	
5	429069459	17.75	7379797139	
6	380744554	17.74	6956823603	
7	334479406	17.54	6541907027	
8	291350282	17.20	6143493823	
9	255558824	16.78	5744212979	
10	222296728	16.39	5327231061	
11	190321782	16.10	4870921740	
12	160941941	15.68	4458003514	
13	132533810	15.27	4079480606	
14	109388950	15.00	3700437046	
15	93493844	14.95	3339583597	
16	80565723	14.85	3034949748	
17	71958495	14.78	2773019936	

	India Global Rank
0	2
1	2
2	2
3	2
4	2
5	2
6	2
7	2
8	2
9	2
10	2
11	2
12	2
13	2
14	2
15	2
16	2
17	2

```
Press 'c' for Continue and 'e'for exit :-c
1. for getting the file
2. for seeing all the information of the file
3. for describing the file
4. for checking all the null values
5. for checking the sum of all the null values
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8. for show bar graph
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11 for show the matplotlib graph to find out the poplation of median age

Enter your choice :- 2
<bound method DataFrame.info of    Year  Population  Yearly % Change  Yearly Change  Migrants (net)  \
0   2020  1380004385            0.99       13586631        -532687
1   2019  1366417754            1.02       13775474        -532687
2   2018  1352642280            1.04       13965495        -532687
3   2017  1338676785            1.07       14159536        -532687
4   2016  1324517249            1.10       14364846        -532687
5   2015  1310152403            1.20       15174247        -470015
6   2010  1234281170            1.47       17334249        -531169
7   2005  1147609927            1.67       18206876        -377797
8   2000  1056575549            1.85       18530592        -136514
9   1995   963922588            1.99       18128958        -110590
10  1990   873277798            2.17       17783558           9030
11  1985   784360008            2.33       17081433         115942
12  1980   698952844            2.32       15169989         222247
13  1975   623102897            2.33       13582621         421208
14  1970   555189792            2.15       11213294         -68569
15  1965   499123324            2.07        9715129         -17078
16  1960   450547679            1.91        8133417         -30805
17  1955   409880595            1.72        6711079         -21140
```

	Median_Age	Fertility Rate	Density (P/Km²)	Urban Pop %
0	28.4	2.24	464	35.0
1	27.1	2.36	460	34.5
2	27.1	2.36	455	34.1
3	27.1	2.36	450	33.6
4	27.1	2.36	445	33.2
5	26.8	2.40	441	32.7
6	25.1	2.80	415	30.8
7	23.8	3.14	386	29.1
8	22.7	3.48	355	27.6
9	21.8	3.83	324	26.5
10	21.1	4.27	294	25.5
11	20.6	4.68	264	24.3
12	20.2	4.97	235	23.0
13	19.7	5.41	210	21.3
14	19.3	5.72	187	19.7
15	19.6	5.89	168	18.7
16	20.2	5.90	152	17.9
17	20.7	5.90	138	17.6

	Urban Population	Country's Share of World Pop	World Population
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3	449963381	17.74	7547858925
4	439391699	17.75	7464022049
5	429069459	17.75	7379797139
6	380744554	17.74	6956823603
7	334479406	17.54	6541907027
8	291350282	17.20	6143493823
9	255558824	16.78	5744212979
10	222296728	16.39	5327231061
11	190321782	16.10	4870921740
12	160941941	15.68	4458003514
13	132533810	15.27	4079480606
14	109388950	15.00	3700437046
15	93493844	14.95	3339583597
16	80565723	14.85	3034949748
17	71958495	14.78	2773019936

```
    India Global Rank
0                    2
1                    2
2                    2
3                    2
4                    2
5                    2
6                    2
7                    2
8                    2
9                    2
10                   2
11                   2
12                   2
13                   2
14                   2
15                   2
16                   2
17                   2  >
All the information of the file
Enter your choice :- 3
<bound method NDFrame.describe of     Year  Population  Yearly % Change  Yearly Change  Migrants (net)  \
0   2020  1380004385             0.99       13586631         -532687
1   2019  1366417754             1.02       13775474         -532687
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6         25.1            2.80              415         30.8
7         23.8            3.14              386         29.1
8         22.7            3.48              355         27.6
9         21.8            3.83              324         26.5
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11        20.6            4.68              264         24.3
12        20.2            4.97              235         23.0
13        19.7            5.41              210         21.3
14        19.3            5.72              187         19.7
15        19.6            5.89              168         18.7
16        20.2            5.90              152         17.9
17        20.7            5.90              138         17.6
```
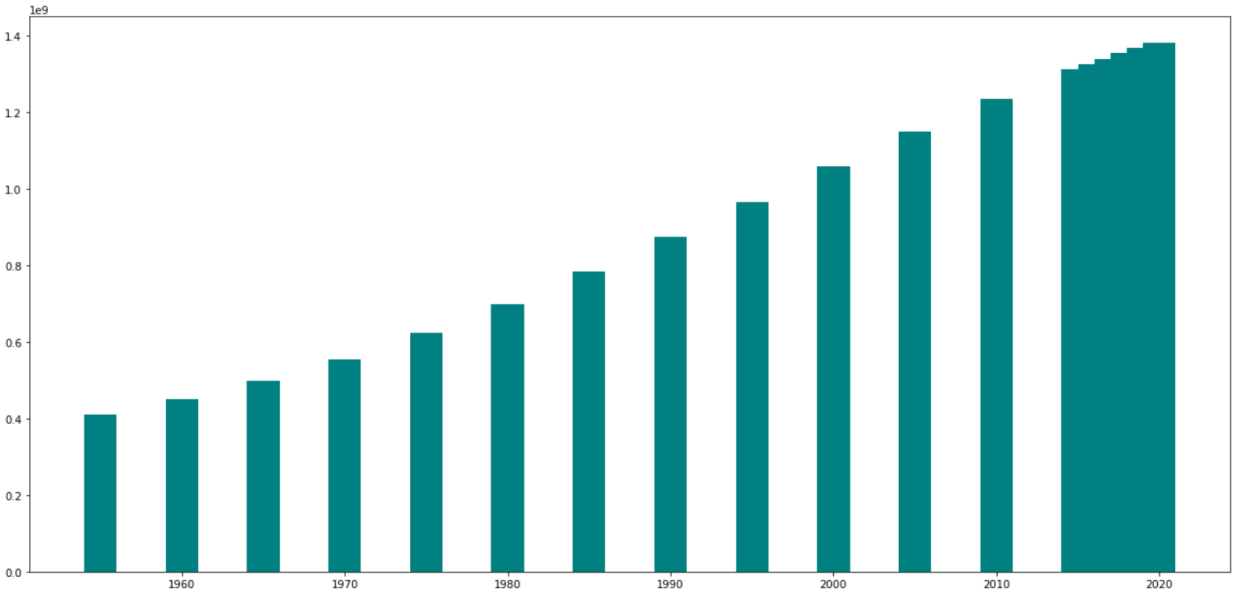

```
    Urban Population  Country's Share of World Pop  World Population  \
0          483098640                         17.70        7794798739
1          471828295                         17.71        7713468100
2          460779764                         17.73        7631091040
3          449963381                         17.74        7547858925
4          439391699                         17.75        7464022049
5          429069459                         17.75        7379797139
6          380744554                         17.74        6956823603
7          334479406                         17.54        6541907027
8          291350282                         17.20        6143493823
9          255558824                         16.78        5744212979
10         222296728                         16.39        5327231061
11         190321782                         16.10        4870921740
12         160941941                         15.68        4458003514
13         132533810                         15.27        4079480606
14         109388950                         15.00        3700437046
15          93493844                         14.95        3339583597
16          80565723                         14.85        3034949748
17          71958495                         14.78        2773019936

    India Global Rank
0                   2
1                   2
2                   2
3                   2
4                   2
5                   2
6                   2
7                   2
8                   2
9                   2
10                  2
11                  2
12                  2
13                  2
14                  2
15                  2
16                  2
17                  2  >
 Describing the file
  Enter your choice :- 4
      Year  Population  Yearly % Change  Yearly Change  Migrants (net)  \
  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
  5   False       False            False          False           False
  6   False       False            False          False           False
  7   False       False            False          False           False
  8   False       False            False          False           False
  9   False       False            False          False           False
  10  False       False            False          False           False
  11  False       False            False          False           False
  12  False       False            False          False           False
  13  False       False            False          False           False
  14  False       False            False          False           False
  15  False       False            False          False           False
  16  False       False            False          False           False
  17  False       False            False          False           False

      Median_Age  Fertility Rate  Density (P/Km²)  Urban Pop %  \
  0        False          False            False        False
  1        False          False            False        False
  2        False          False            False        False
  3        False          False            False        False
  4        False          False            False        False
  5        False          False            False        False
  6        False          False            False        False
  7        False          False            False        False
  8        False          False            False        False
  9        False          False            False        False
  10       False          False            False        False
  11       False          False            False        False
  12       False          False            False        False
  13       False          False            False        False
  14       False          False            False        False
  15       False          False            False        False
  16       False          False            False        False
  17       False          False            False        False
```

```
    Urban Population  Country's Share of World Pop  World Population  \
0              False                         False             False
1              False                         False             False
2              False                         False             False
3              False                         False             False
4              False                         False             False
5              False                         False             False
6              False                         False             False
7              False                         False             False
8              False                         False             False
9              False                         False             False
10             False                         False             False
11             False                         False             False
12             False                         False             False
13             False                         False             False
14             False                         False             False
15             False                         False             False
16             False                         False             False
17             False                         False             False

    India Global Rank
0               False
1               False
2               False
3               False
4               False
5               False
6               False
7               False
8               False
9               False
10              False
11              False
12              False
13              False
14              False
15              False
16              False
17              False
```

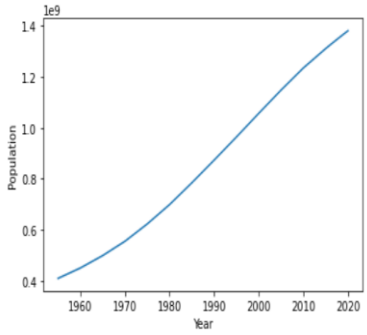
```
Enter your choice :- 5
Year                            0
Population                      0
Yearly % Change                 0
Yearly Change                   0
Migrants (net)                  0
Median_Age                      0
Fertility Rate                  0
Density (P/Km²)                 0
Urban Pop %                     0
Urban Population                0
Country's Share of World Pop    0
World Population                0
India Global Rank               0
dtype: int64
the sum of all the null values
```

```
Enter your choice :- 8
```

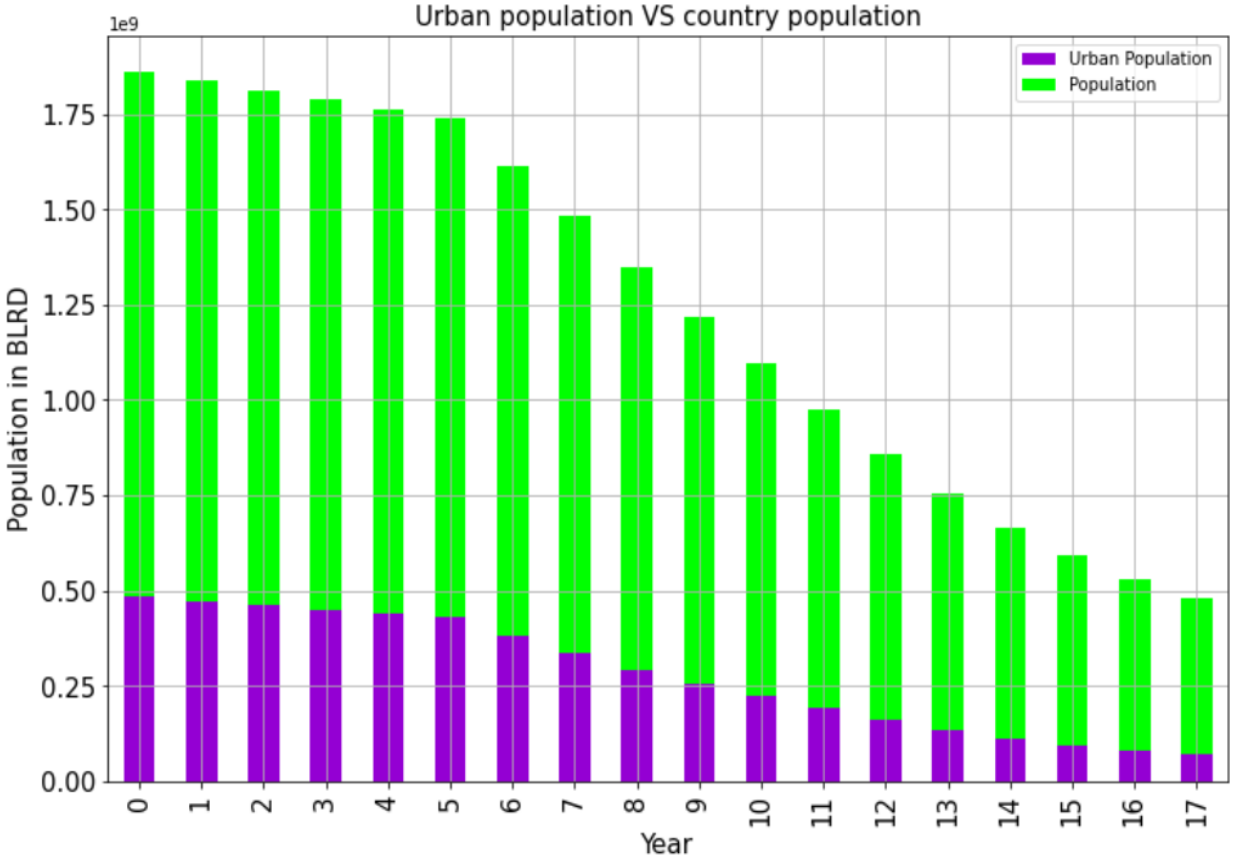



```
None
Bar graph between Year and population
```

```
Enter your choice :- 9
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\_decorators.py:36: FutureWarning: Pass the following variables as keyword args: x, y. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

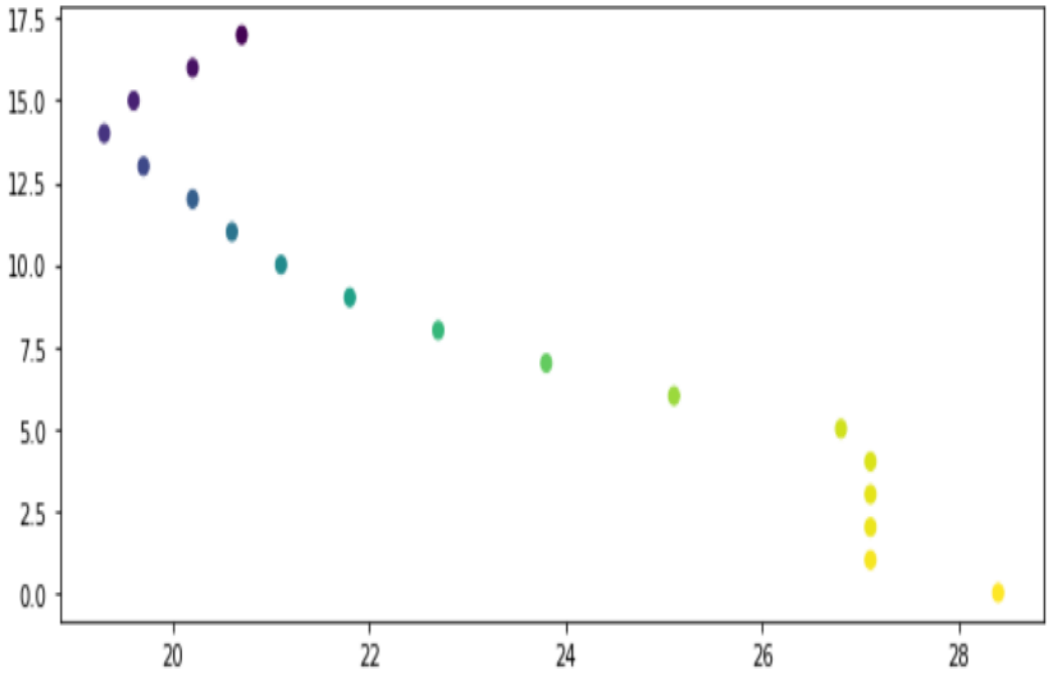



```
None
Press 'c' for Continue and 'e'for exit :-c
1. for getting the file
2. for seeing all the information of the file
3. for describing the file
4. for checking all the null values
5. for checking the sum of all the null values
6. for checking the sum of all the sum of all null values
7. for filling the value in place of all the null  values
8. for show bar graph
9. for show lineplot
10 for show bar plot between Urban poplation and Country population
11 for show the matplotlib graph to find out the poplation of median age
Enter your choice :- 10
```




```
None
Bar plot between Urban poplation and Country population
```

```
Enter your choice :- 11
```




```
None
Matplotlib graph to find out the poplation of median age
Press 'c' for Continue and 'e'for exit :-s
```

➢ Future Enhancement: -

- Add more Menu.
- Covert into GUI.
- Easily runs on any upcoming latest python-based environment.
- Flexible and more Compactable.
- As the technology emerges, it is possible to upgrade the system
- Because it is based on object-oriented design any further changes can be easily adaptable.

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