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**REGISTRATION NO OF STUDENT: 21MAI1003**

**SLOT: L31 + L32**

**DATE: 20/09/2021**

**LAB EXPERIMENT 1**

**INTRODUCTION TO PROGRAMMING IN R**

**AIM:**

To perform basic operations in R and to work with Tables

**Question: DATA SET- POPULATION OF INDIA**

1. Consider the following dataset:

https://www.worldometers.info/world-population/india-population/

Population of India (2020 and historical)

| **Year** | **Population** | **Yearly % Change** | **Yearly Change** | **Migrants (net)** | **Median Age** | **Fertility Rate** | **Density (P/Km²)** | **Urban Pop %** | **Urban Population** | **Country's Share of World Pop** | **World Population** | **India Global Rank** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2020 | **1,380,004,385** | 0.99 % | 13,586,631 | -532,687 | 28.4 | 2.24 | 464 | 35.0 % | 483,098,640 | 17.70 % | 7,794,798,739 | 2 |
| 2019 | **1,366,417,754** | 1.02 % | 13,775,474 | -532,687 | 27.1 | 2.36 | 460 | 34.5 % | 471,828,295 | 17.71 % | 7,713,468,100 | 2 |
| 2018 | **1,352,642,280** | 1.04 % | 13,965,495 | -532,687 | 27.1 | 2.36 | 455 | 34.1 % | 460,779,764 | 17.73 % | 7,631,091,040 | 2 |
| 2017 | **1,338,676,785** | 1.07 % | 14,159,536 | -532,687 | 27.1 | 2.36 | 450 | 33.6 % | 449,963,381 | 17.74 % | 7,547,858,925 | 2 |
| 2016 | **1,324,517,249** | 1.10 % | 14,364,846 | -532,687 | 27.1 | 2.36 | 445 | 33.2 % | 439,391,699 | 17.75 % | 7,464,022,049 | 2 |
| 2015 | **1,310,152,403** | 1.20 % | 15,174,247 | -470,015 | 26.8 | 2.40 | 441 | 32.7 % | 429,069,459 | 17.75 % | 7,379,797,139 | 2 |
| 2010 | **1,234,281,170** | 1.47 % | 17,334,249 | -531,169 | 25.1 | 2.80 | 415 | 30.8 % | 380,744,554 | 17.74 % | 6,956,823,603 | 2 |
| 2005 | **1,147,609,927** | 1.67 % | 18,206,876 | -377,797 | 23.8 | 3.14 | 386 | 29.1 % | 334,479,406 | 17.54 % | 6,541,907,027 | 2 |
| 2000 | **1,056,575,549** | 1.85 % | 18,530,592 | -136,514 | 22.7 | 3.48 | 355 | 27.6 % | 291,350,282 | 17.20 % | 6,143,493,823 | 2 |
| 1995 | **963,922,588** | 1.99 % | 18,128,958 | -110,590 | 21.8 | 3.83 | 324 | 26.5 % | 255,558,824 | 16.78 % | 5,744,212,979 | 2 |
| 1990 | **873,277,798** | 2.17 % | 17,783,558 | 9,030 | 21.1 | 4.27 | 294 | 25.5 % | 222,296,728 | 16.39 % | 5,327,231,061 | 2 |
| 1985 | **784,360,008** | 2.33 % | 17,081,433 | 115,942 | 20.6 | 4.68 | 264 | 24.3 % | 190,321,782 | 16.10 % | 4,870,921,740 | 2 |
| 1980 | **698,952,844** | 2.32 % | 15,169,989 | 222,247 | 20.2 | 4.97 | 235 | 23.0 % | 160,941,941 | 15.68 % | 4,458,003,514 | 2 |
| 1975 | **623,102,897** | 2.33 % | 13,582,621 | 421,208 | 19.7 | 5.41 | 210 | 21.3 % | 132,533,810 | 15.27 % | 4,079,480,606 | 2 |
| 1970 | **555,189,792** | 2.15 % | 11,213,294 | -68,569 | 19.3 | 5.72 | 187 | 19.7 % | 109,388,950 | 15.00 % | 3,700,437,046 | 2 |
| 1965 | **499,123,324** | 2.07 % | 9,715,129 | -17,078 | 19.6 | 5.89 | 168 | 18.7 % | 93,493,844 | 14.95 % | 3,339,583,597 | 2 |
| 1960 | **450,547,679** | 1.91 % | 8,133,417 | -30,805 | 20.2 | 5.90 | 152 | 17.9 % | 80,565,723 | 14.85 % | 3,034,949,748 | 2 |
| 1955 | **409,880,595** | 1.72 % | 6,711,079 | -21,140 | 20.7 | 5.90 | 138 | 17.6 % | 71,958,495 | 14.78 % | 2,773,019,936 | 2 |

1. Create a data frame with the above data.

data = read.csv('C:/Users/shanm/OneDrive/Documents/lab1population.csv')

print(data)

1. Find the summary of the whole data set. (Use appropriate syntax)

A screenshot of a computer

Description automatically generated with low confidence

1. Find the mean, median for the population of India between 1955 and 2020 and justify your answer.

Mean: 964957502

Median: 1010249069

1. Find the variance, standard deviation of population of India and population of the world.

Standard Deviation of India: 357476221

Standard Deviation of World: 1786228737

Variance of India: 1.277892e+17

Variance of World: 3.190613e+18

Text

Description automatically generated

1. calculate the average density.

**324.6111**

Graphical user interface

Description automatically generated with medium confidence

1. Any other notable analysis from the above dataset.

* Indian population has been notably growing through all these years.
* On years when percentage is high, Migrants have an impact on this directly.
* All other fields show a slow but steady growth