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Research Article

Analyze the Effects of Indian Population on Economy of India

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Abstract: This research is based on population of India and the Indian economy. The population of India is 1,366,417,754 in 2019. Like as the economy of India is 2.8 trillion dollars in 2019. In this research paper, we will compare the economy and population of India. When we divide the economy of India in Indian population, its 2.31 lakhs per capita with simple random sampling. But Indian economy is not dividing fairly. Using stratified random sampling [1,2] finding the strata of total population of India as compare to economy of India.

Keywords: Economy1, GDP2, least square method3 and Indian population4.

1. Introduction: India is an overpopulated country with second ranking. The population of India in 2019 is

1,366,417,754. Total economy of India in 2019 is 2.8 trillion US dollar. When comparing the population of India and the total economy of India, every Indian must have 0.231 million rupees in a year. But this is not true, there are much population below poverty line. So, divide Indian population in strata. When making a mathematical model of Indian economy and Indian population the simple random sampling not gives good results. relation between the population and economy of India is heterogenous not homogenous. That is why, using for this mathematical model stratified random sampling. There are also other reasons to use stratified sampling assuming strata are relatively homogeneous, can reduce the variance in the sample statistic. Get better information for same sample size. For using the stratified sampling, we used strata, strata must be non-overlapping categories into which each sampling unit must be classified, Sampling units can only be in one stratum, Strata based on information about whole population. Inter-related production and consumption activity's large set is economy. Economy is based on some different points; population is one of them that effects the economy.

2. Methodology: To achieve this research work, using mathematical modeling, stratified random sampling is

use here to define the relationship between the Indian population and Indian economy. When using stratified random sampling, in this sampling also use simple random sampling. For estimating the population and economy of India using here least square method. The graphical representation is developed by MATLAB software. To find out the effects of Indian population on economy of India, we will use comparison test.

3. Development of model: In this research work use different methods to achieve the result, these methods are:

(1) Least square method.

(2) Stratified random sampling.

For using these results, some notations are adopted for stratified random sample.

L is the number of strata. In stratum i sample number of units is N_i. n_i is sample size in stratum i

N is number of total sampling units in population: $N = N_1 + N_2 + N_3 + \ldots\ldots + N_L$

sample unit of probability is $\frac{n_i}{N_i}$, for strata i unbiased estimate of mean is

$$\frac{1}{N_i}\sum_{j=1}^{n_i}\frac{1}{\pi_i}Y_{ij} = \frac{1}{N_i}\sum_{j=1}^{n_i}\frac{1}{n_i/N_i}Y_{ij} = \frac{1}{N_i}\sum_{j=i}^{n_i}\frac{N_i}{n_i}Y_{ij} = \frac{1}{n_i}\sum_{j=1}^{n_i}Y_{ij} = \overline{Y}_i$$

Estimated total for strata i total estimate is $\hat{\tau}_i = N_i\overline{Y}_i$,

estimate of population mean is $\overline{Y_{st}} = \frac{\hat{\tau}}{N} = \frac{1}{N}\sum_{i=i}^{L}\hat{\tau}_i = \frac{1}{N}\sum_{i=i}^{L}N_i\overline{Y}_i$

Estimator for the mean $\overline{Y_{st}} = \frac{1}{N}\sum_{i=1}^{L}N_i\overline{Y}_i$

Estimator for the variance of Y_{st}

$$var(Y_{st}) = var(\frac{1}{N}\sum_{i=i}^{L}N_i\overline{Y}_i)$$

$$= \frac{1}{N^2}\sum_{i=i}^{L}N_i^2 var\,(\overline{Y_i})$$

$$= \frac{1}{N^2}\sum_{i=i}^{L}N_i^2\left(1-\frac{n_i}{N_i}\right)\left(\frac{s_i^2}{n_i}\right)$$

The method used in order to achieve this work is least square method. Here, use some notations given by

y: population of a country. x: year of population.

Let 'a' be the first parameter of the statement

$$a = \frac{\sum y}{N}\ where\ N = \sum X$$

And the second parameter in this statement is 'b'

$$b = \frac{\sum xy}{\sum x^2}$$

So, by the using of these parameters find out trend value that is

$$Y = a + bX$$

$Y = a + b\,X$ to find the trend value for different years in table. Just changing the value of X, the trend value of that year automatically comes from the table. Because of the heterogeneous relations between the population and economy of India, stratified random sampling is used. But when we divide the population and economy of India into strata, the population and economy become homogenous. So, in these strata we are used simple random sampling and then the results become good.

4. Conceptual Analysis of Results: The gross domestic product [6,7,8] (GDP) of India in 2019 is 2800 billion

US dollar and population of India is 1,378,252,645 approx. The data for economy and population of India is collected from world bank and Census department of India respectively. But the relational between population and economy is not homogenous. So, the problem of this heterogenous relation is solved by stratified sampling. The Indian economy in the year 2018 was 2718.73 US billion dollar and the population was 1,352,642,280. But the relation of the population and economy is heterogenous. In 2018, there are 119 billionaires and the total wealth of combined billionaires in more than 440 billion US dollar it is over the rupees 3 lakh crore. Some business men with billion dollar net worth: Mukesh Ambani, Reliance, oil and gas, Businessman, net worth 47.3 billion , Azim Premji, Cooking oil business and software, Businessmen, net worth 21 billion, Lakshmi Mittal, ArcelorMittal, Businessmen, net worth 18.3 billion, Hinduja, Family Hinduja group, Businessmen, net worth 18 billion, Pallonji Mistry, Shapoorji Pallonji group, Businessmen, net worth 15.7 billion, Shiv Nadar, HCL, Businessmen, 14.6 billion, Godrej Family Godrej, Businessmen, 14 billion. According to this list collected from Forbes, in 2018, there was total 119 billionaires in India and they had more than 440 billion US dollar. This is a combine wealth of Indian billionaires and this is our 1st stratum. In 2019, counting of billionaires increased and became 138.

Indian politician was also very rich person name of some politicians with net worth in dollar: Jayadev Galla, Indian Politician, 6628247078, D. K. Shivakumar, indian Politician, 6117464368, Konda Vishveshwar Reddy, Indian Politician, 5212119077, Balakirshna Nandamuri, Indian Politician, 3201680686, Gokaraju Ganga Raju, Indian Politician, 2715065836, Vashanthakumar H, Indian Politician, 2152782536 in which year? In India there are 542 total members of Parliaments (MP) and the total no. of Member of Legislative Assembly (MLA) are 3988. These all have great amount of salary and they are qualifying for pensions also. Out of these, approximate 56-60 percent MP and MLA are millionaires. These 4530 people are rich person, and these are part of Kingdom in India. This is our 2nd stratum.

Sportsmen of India are also millionaires. Some millionaire's sports men's data is collected from Forbes. Most of the richest sports men are from the sport of cricket. In India most earning sports is cricket the list from Forbs is listed richest sports man is from background of cricket. Only 6 sports persons is coming from non-cricket backgrounds. Forbes listed 400 sports person who are millionaire. These sports person in our 3rd stratum.

There are many Bollywood and Tollywood actors and actress who are millions and billions of US dollar. The listed star is the richest top 10 star in wealth which is listed by Forbes. These actors and actress have millions of

the money in US dollar. Forbes listed 100 richest actor and actress of Bollywood and Tollywood. The list of these star in this paper is 4th stratum. There are more than 2 million Hindu temples of India. The richest 10 temple's list is below in the table. In these temples [3,4] there are billions and millions dollar worth is available in every temple. There are more 2 million Hindu temples in India. The amount of these temples is more than the Indian total GDP. The data of these temples in this research is 5th stratum. In India, there are 7300 millionaires are from many business, sports, priest of temple, may be employees, politicians and they may be actors and actress. Now the one more stratum is that is Indian employees. In India there are 2,15,47,845 government employees available in different post. In these employees there are class-I officer, class-B officer, group-C and group-D employees are

available. The data of these employees are our 6th stratum. The woman and girls in India are contributed at least19 lakh crores INR in a year which is unpaid work. These woman and girls who is done unpaid work are in millions. The data of these woman and girls is in this research is 7th stratum. The population of other than all these that is (businessman, politician, priest in Hindu temple, priest in Gurudwara, church etc., actor and actress, sportsman and Indian employees) are the common person in India. The total number of these people other than all these are 953 million.

5. Conclusion: Total population of India is 1,366,417,754 in 2019 and the total Gross domestic Product (GDP)

of India in 2019 is 2800 billion US dollar. The relation between population and Gross Domestic Product (GDP) of India is heterogenous. So, for finding the partial results of this relationship must converted this heterogenous sampling in homogenous sampling. All the data collected above in list by combining make another list which gives the total combination of all the stratum which discussed above. The list of combining all list is given below:

Table 1: List of Indian Population and its net worth separately

Sr. No.	Field	Total Population	Net worth (In Billion US Dollar)	Net Worth (In %)
.1	Businessman	1,000	440	13
2.	Indian Politician	7,000	400	12
3.	Sports man	1,000	300	9
4.	Bollywood Actor and Actress	1,000	300	9
5.	Indian temples	2,000,000	1000	29
6.	Employees	22,347,862	100	3
7.	Population of India below poverty line	442,950,732	134.4	4
8.	Unpaid woman	376,899,919	10	<1
9.	Middle class family	23,000,000	780	23

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Now,

Total number of strata is defined by L

In stratum i sample number of units is N_i

n_i is sample size in stratum i

N is number of total sampling units in population:

$$N = N_1 + N_2 + N_3 + N_4 + N_5 + N_{6+} N_7 + N_8 + N_9$$

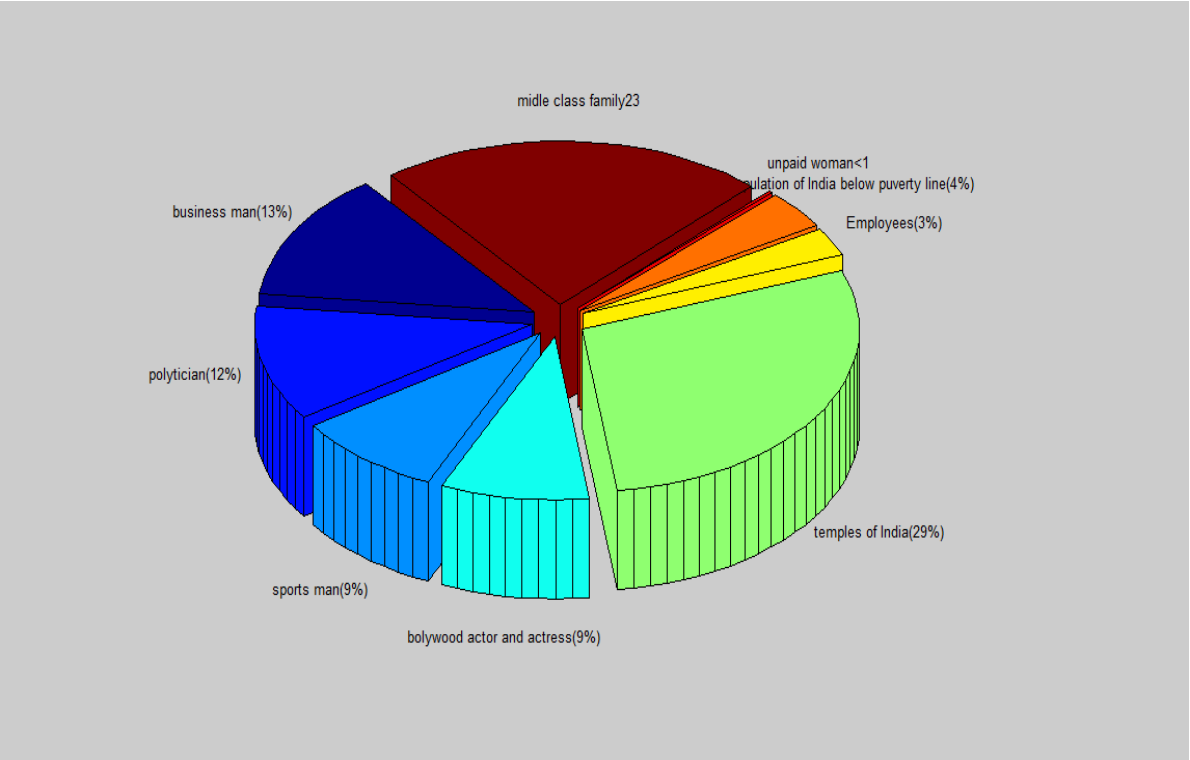
sample unit of probability is $\frac{n_i}{N_i}$, for strata i unbiased estimate of mean is

$$\frac{1}{N_i}\sum_{j=1}^{n_i}\frac{1}{\pi_i}Y_{ij} = \frac{1}{N_i}\sum_{j=1}^{n_i}\frac{1}{n_i/N_i}Y_{ij} = \frac{1}{N_i}\sum_{j=i}^{n_i}\frac{N_i}{n_i}Y_{ij} = \frac{1}{n_i}\sum_{j=1}^{n_i}Y_{ij} = \overline{Y_i}$$

Estimated total for strata i total estimate is $\hat{\tau}_i = N_i\overline{Y_i}$,

estimate of population mean is $\overline{Y_{st}} = \frac{\hat{\tau}}{N} = \frac{1}{N}\sum_{i=i}^{L}\hat{\tau}_i = \frac{1}{N}\sum_{i=i}^{L}N_i\overline{Y_i}$

Graph 1: 3-D pie chart of the Relation between Indian Population and Gross Domestic product (GDP) of India.



6. Result: Population of India in 2018 is approximate 1,352,642,280 and this population in 2019 becomes

1,366,417,754 and the gross domestic product (GDP) of India in 2018 is 2718.73 billion US dollar and it is becoming 2800 billion dollars in 2019. With all this in India increases number of counting of billionaires and millionaires. So, the Indian economy is cannot divide partially. The research is saying that, India's richest 1% hold more than 4-times wealth held by 953 million people who make up for the bottom 70% of the country's population. The hold on Indian economy of 1% richest person is 51.53% and the hold of top rich 10% person on economy is 77.40% and the hold of bottom 60% person on economy is only 4.8%.

7. Conflict of Interest: The authors do not have any conflict of interest

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