39.A COMPARATIVE ANALYSIS ON THE DISTRIBUTION OF POPULATION AMONG THE DISTRICTS OF TAMILNADU & THE CONCENTRATION OF INDUSTRIAL GROWTH

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ABSTRACT

In this paper, I have made an attempt to study the density of population in various districts of Tamil Nadu and the problem arises in highly dense areas. It also analyse the spread of Industrial expansion among the various districts with the migration of population from rural to urban areas. In this study, I try to examine the relationship between the industrial growth and the density of population in the state. Among the highly populated cities, Chennai is the topmost with the population of 26,000 persons per sq. km. compared with the second highest dense population which is accounted of 1,119 persons per sq.km in Kanyakumari District. With this information alone we can identify the uneven distribution of population in Tamil Nadu among the districts. Most of the problems faced by the society as well as government are caused due to the excess population growth rate which is beyond the capacity of the urban areas. Correlation analysis is used to study the relationship between the density of population and the industrial development. This paper also analyses the causes of migration of population from rural to urban areas and suggest some of the measures to resolve and overcome the problem of the high density of population.

KEYWORDS

Density of Population, Industrial Expansion, Migration

INTRODUCTION

Population density is the number of people living in the particular area and it is quoted for per square kilometre or square mile. This density of population can be calculated for the world as a whole, country, state level & district level etc. Population Density = Total number of People/Land Area. The unit of land area is usually taken in the form of square miles or square kilometres.

In India, Tamil Nadu economy is the second largest economy with the total population of 72.14 million according to 2011 census. Amongst them 34.95 million of total population are living in urban areas and 37.19 million population are in rural areas. This highest proportion of urban is mostly caused due to the migration of population from rural to urban areas in the past three decades for searching job & also for their livelihood. Comparatively, in the year 1991, 34.15% of total population of Tamil Nadu lives in Urban areas whereas in the year 2011, Tamil Nadu is accounted with 48.4% of population are living in urban areas comparatively 14% increase in the two decades, and it clearly shows that half of the Tamil Nadu population is living in the urban areas hence it is categorised as an urbanised state. The growth rate of population was increased at the rate of 6.49% in rural areas whereas 27.16% in urban areas between the year 2001

to 2011. Basically, the Tamil Nadu is an agrarian economy but in the past two decades with the heavy investment in Industrial sector & the advances in the service sector transforms the economy into service oriented economy. In the past two decades, South Chennai is growing fast with the increase of Information Technology sector and this engulfed several fishing and agricultural villages. This kind of sudden rise of urbanisation creates destruction on the ecological system which leads to severe environmental damage.

OBJECTIVES OF THE STUDY

To identify the highly dense districts in Tamil Nadu

To study the problems faced in the highly dense areas due to the overcrowded situation

Analyse the industrial expansion in the various districts of Tamil Nadu.

Correlation analyses between the density of population and the industrial investments or industrial development among the districts of Tamil Nadu.

To suggest the remedial measures to overcome the overpopulation problem especially in highly dense population districts.

METHODOLOGY OF THE STUDY

To support the objectives of the paper, quantitative techniques are employed. The study is basically descriptive in nature & the secondary data is used for the analytical purpose. The secondary data is collected from the website of Tamil Nadu Government (Statistics Handbook of 2018). Statistical tool: Correlation analysis is used to do the comparative data analysis for the density of population and the district wise assistance by Tamil Nadu Industrial Investment Corporation Ltd.

HYPOTHESIS

H_0 - There is no correlation between the density of population and the industrial development among the districts of Tamil Nadu.

H_1 – There is a correlation between the density of population and the industrial development among the districts of Tamil Nadu.

DISTRICT WISE POPULATION DISTRIBUTION IN TAMILNADU

According to the 2011 census, the above table shows a clear picture about the population in all the districts of Tamil Nadu with its density. It is the fourth populous metropolitan city in India. It gives a clear picture about the uneven spread of population in Tamil Nadu districts especially the difference between the first and second highest dense population itself shows the widening gap among the distribution, i.e., the Chennai city has the highest density of population with 26,076 per sq. km. whereas the second highest is the Kanyakumari district with 1,119 persons per sq. km. only. The Thiruvallur district holds the third place with 1089 persons per sq.km. The fourth and fifth place is hold by Chengelpet and Madurai with the population of 868 and 812 persons per sq. km. respectively. Vellore, Coimbatore, Cuddalore, Thanjavur, Kancheepuram, Theni accounted for 776, 732, 709, 708,704, 702 persons per sq. km. accordingly.

The rest of the districts are holding a meagre number of population density. The districts of Erode, Nilgiris, Ramanathapuram, Dharmapuri, Dindigul are with the population density of 276, 300, 333, 335, 345 respectively.

DISTRICT WISE POPULATION DISTRIBUTION IN TAMILNADU

S.No	District Name	Area (Sq.Km)	Population (as per Census 2011)	Density of Population
1	Ariyalur	1,940.00	7,54,894	389
2	Chengalpet	2944.96	25,56,244	868
3	Chennai	178.2	46,46,732	26076
4	Coimbatore	4,723	34,58,045	732
5	Cuddalore	3,678	26,05,914	709
6	Dharmapuri	4497.77	15,06,843	335
7	Dindigul	6266.64	21,59,775	345
8	Erode	8161.91	22,51,744	276
9	Kallakurichi	3520.37	13,70,281	389
10	Kancheepuram	1655.94	11,66,401	704
11	Karur	2,895.57	10,64,493	368
12	Krishnagiri	5143	18,83,731	366
13	Madurai	3741.73	30,38,252	812
14	Nagapattinam	2715.83	16,16,450	595
15	Kanyakumari	1672	18,70,374	1119
16	Namakkal	3368.21	17,26,601	513
17	Perambalur	1,757	5,65,223	322
18	Pudukkottai	4663	16,18,345	347
19	Ramanathapuram	4068.31	13,53,445	333
20	Ranipet	2234.32	12,10,277	542
21	Salem	5205	34,82,056	669
22	Sivagangai	4,086	13,39,101	328
23	Tenkasi	2916.13	14,07,627	483
24	Thanjavur	3396.57	24,05,890	708
25	Theni	3,066	12,45,899	406
26	Thiruvallur	3422.43	37,28,104	1089
27	Thiruvarur	2,161	12,64,277	585
28	Thoothukudi	4,621	17,50,176	379
29	Tiruchirappalli	4,407	27,22,290	618
30	Tirunelveli	3842.37	16,65,253	433
31	Tirupattur	1792.92	11,11,812	620
32	Tiruppur	5186.34	24,79,052	478
33	Tiruvannamalai	6,191	24,64,875	398
34	The Nilgiris	2452.5	7,35,394	300
35	Vellore	2080.11	16,14,242	776
36	Viluppuram	3725.54	20,93,003	562
37	Virudhunagar	4288	19,42,288	453

Source: https://www.tn.gov.in

Why the Urban Areas do are highly populated in Tamil Nadu?

With the second largest populated country like India, it is not a surprising one to see the high density of population but when we look into the real scenario, it is too obvious that the population is not distributed evenly among the different places. The disparities between the urban rural populations are mainly due to the increase of migrant workers from rural areas to urban. The migration of workers happens because of lack of job opportunities in rural areas hence they are migrating towards the urban areas. In the past decades, the population from rural Tamil Nadu has moved towards the urban areas but at the present situation not only the rural population of Tamil Nadu even the population from other states of India also migrating towards the urban areas like Chennai. In India, centralised administrative system is followed in the state level as well as fiscally centralised at the union level. The centralised planning system is not an effective system and it could not be addressed or efficiently identify the need of each and every district and act based on it. Even though, the revenue has been raised enormously, it is big question when it's come to the spending activities of the state and central governments. Most of the funds are irrelevantly spend for unproductive purposes such as for election campaigns and various purposes.

CHALLENGES FACED BY THE URBAN AREAS

Local governance becomes more complicated due to the heavy population in the urban areas. Providing basic amenities such as safe drinking water, proper drainage facility, infrastructure such as transportation, communication etc., to all is a complicated and a challenging one to the municipalities. Inappropriate planning will create hype in the asset prices and this will leads to increase the cost of living in the urban areas. Excessive population creates congestion in housing areas, heavy traffics in the road transportation, increase of prices of goods and services due to the high demand in these areas. The deteriorating environment creates problem on human health and their productive capacity of the workforce. The intense growth rate of population in urban areas also leads to increase the urban poverty rate. Pollution becomes a major problem in the highly dense areas due to the exhaustive usage of machineries in the industry, high usage of vehicles which emits carbon monoxide, depletion of land water due to its excessive usage, soil pollution due to the wastages thrown by the households and industrial wastes, noise pollution. Apart from this kind of pollution, electronic wastes also create a huge impact on the environment in the past few decades.

Poor maintenance of drainage & garbage disposal with the uncontrolled growth of population in urban areas most of our cities are in vulnerable situation of affecting by the natural disasters. The natural disasters hit are also becoming an unmanageable due to the excess of population living within the urban area and the one of the best example is 2015 flood in Chennai. The severity of flood is mainly happened due to the problems of overcrowding, encroachments of lakes and river beds, absence of proper drainage system & improper planning on city development, failure on enforcing environment laws etc. Even the present situation of Covid-19 spread and control over it also become a tedious issue in urban area like Chennai due to the high density of population. The lack of space is blamed for social distancing in Chennai is the main cause for the spread of the disease at a faster rate.

DISTRICT-WISE ASSISTANCE BY TAMILNADU INDUSTRIAL INVESTMENT CORPORATION LTD (GROSS)					
S.No.	Name of the District	2015-16		2016-17	
		No. of Proposals	Amount	No. of Proposals	Amount
1	Chennai	103	211.23	68	169.91
2	Kancheepuram	134	144.29	114	152.86
3	Thiruvallur	180	164.71	186	162.08
4	Cuddalore	121	21.38	70	18.57
5	Villupuram	61	24.32	47	21.26
6	Vellore	37	10.6	26	12.67
7	Tiruvannamalai	40	8.09	15	3.12
8	Salem	86	6.85	68	44.15
9	Namakkal	32	11.86	22	12.77
10	Dharmapuri	28	10.44	28	9.05
11	Krishnagiri	94	60.55	111	62.93
12	Erode	86	125.87	71	91.57
13	Coimbatore	173	14.82	135	96.36
14	Thiruppur	64	41.32	58	37.52
15	Nilgiris	1	0.08	0	0
16	Thiruchirappalli	44	89.04	35	39.46
17	Karur	15	4.74	20	13.85
18	Perambalur	4	1.59	6	1.82
19	Ariyalur	14	1.96	1	0.13
20	Pudukkottai	15	6.85	19	9.63
21	Thanjavur	42	18.83	26	11.15
22	Nagapattinam	8	1.54	4	2.42
23	Thiruvarur	13	3.34	7	2.97
24	Madurai	90	49.79	78	40.81
25	Theni	15	4.61	9	2.6
25	Dindigul	44	34.59	42	22.3
27	Ramanathapuram	18	7.29	16	4.11
28	Virudhunagar	91	39.49	69	31.68
29	Sivagangai	52	11.26	36	12.91
30	Tirunelveli	75	35.63	59	30.49
31	Thoothukkudi	91	65.17	62	66.02
32	Kanniyakumari	79	65.39	74	46.48
	Total	1950	1449.23	1582	1234.15
Source: https://www.tn.gov.in					

The above table shows the industrial investments during the year 2015 to 2016 and 2016 to 2017. It is visible from the data major industrial investments are done in few districts especially the highest industrial investment during the period of 2015 to 2016 is on Chennai, Kancheepuram, Tiruvallur, Erode & Coimbatore with the investment of Rs.211.23, 144.29 164.71, 125.87 & 104.82 Crores respectively. Comparatively Chennai attracted the major investments on industry and next two places are held by Kancheepuram

and Tiruvallur districts which are very closer to the Chennai district. The next level investments has done on Krishnagiri, Thiruchirappalli, Madurai, Thoothukkudi and Kanyakumari with Rs. 60.55, 89.04, 49.79, 65.17 & 65.39 Crores respectively. But rest of the districts attracted a very meagre amount of industrial investment. Some of the low invest districts are Nagapattinam, Theni, Tiruvarur, Ramanathapuram, Karur, Ariyalur, Thiruvannamalai, Pudukkottai, Perambalur with one crore to eight crores only and Nilgiris with 0.08 crores. Even during the year 2016-17 also the Chennai, Kancheepuram & Thiruvallur districts attracted the high industrial investments accounted as Rs. 169.91, 152.86 & 162.08 Crores respectively. The same districts are again fall under the least investment category for the 2016-17 also. Based on the overview of the investment distribution for industries, it can be identified that Chennai and its nearest districts like Kancheepuram & Thiruvallur are attracted more industrial investments with that the industrial development happened which attracts more migrants from rural areas to urban areas for finding the employment opportunities and this leads to the high density of population.

RESULT & ANALYSIS

Hypothesis Testing: Correlation is a statistical tool to use for analyse two or more variables. The value of the coefficient of correlation is lies between -1 to +1. The positive 1 implies that there is perfect correlation existence between the two variables whereas the -1 indicate that there is a perfect negative correlation between the variables and the value zero implies that there is no correlation between the variables. If the coefficient values lies between +0.5 to 0.9 indicates a high degree of correlation existent whereas if the values lies between 0.3 to 0.49 refers to medium correlation and the values

between +0.1 to +0.29 indicates low correlation. The negative value represents the negative correlation between the variables like high degree, medium degree and low degree of negative correlation.

In this study, the correlation analysis is used to analyse the compatibility between the Population density among the districts based on 2011 census and the Tamil Nadu Industrial Investment Assistance during the period 2015-16. Correlation between the two variables are r=0.6. It is a positive correlation with high degree of relationship. So, there is a high degree of correlation between the density of population and the Industrial investment or development. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted.

INDUSTRIAL COMPLEXES / INDUSTRIAL PARKS / GROWTH CENTRES DEVELOPED BY SIPCOT

State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT) is the Development of industrial complexes/parks/industrial estate centres with basic infrastructure facilities provided specifically for the industrial development. Special Economic Zones (SEZs) is an area specially designed for the industries where the business and trade laws are different and favourable for the industries to start up and expand its activities. SIPCOT and the SEZ are specially designed for promoting the industries and its development. In the above table, the SIPCOT & SEZ areas are listed with total capital commitment in units (Rs. Crores). It is clearly shown that SIPCOT & SEZ are highly located in Chennai and its surroundings (for ex: Oragadam, siruseri, mappedu, Gummidipoondi,) and its surrounded areas such as Kanchipuram & Tiruvallur districts (for ex: Irungattukottai, Sriperumbudur, Vallam Vadagal, Thevoykandigai, Pallipakkam etc.). Upto 2017, the total capital commitment in units in SIPCOT & SEZ is accounted as Rs.1,25,608.63 Crores. Out of that, Rs. 1,00,133 Crores is invested in the three districts namely Chennai, Kancheepuram and Thiruvallur (Siruseri IT park, Oragadam, Mappedu, Gummidipoondi,

Irungattukottai , Sri Perumbudur, Thervoykandigai, Pallipakkam & Vallam Vadagal). Out of 37 districts of Tamil Nadu, these three districts namely Chennai, Kancheepuram, Thiruvallur has been invested around 80% of the total investment in SIPCOT & SEZ. Apart from this, very few districts has SIPCOT such as hosur, Madurai, Cuddalore, Vellore, Pudukottai, thoothukudi, thirunelveli, erode, dindigul, thiruvannamalai, Krishnagiri shared the 20% of total investment done by Tamil Nadu which is a very meagre amount. Only 14 districts got SIPCOT out of the total of 37 districts in the state that too with the heavy fall of investment is only on three districts out of 14. This picture clear shows that there is a lack of investment and henceforth there is a lack of availability of job in other districts and this leads to the high density of population in urban areas like Chennai and its surroundings.

INDUSTRIAL COMPLEXES / INDUSTRIAL PARKS / GROWTH CENTRES DEVELOPED BY SIPCOT (AS ON 31.3.2017)

S.No.	Name of the Industrial Complexes / Parks / Growth Centres	Area Upto March 2016	During 2016-17	Allotted upto 31.03.17	Total Capital commitment by units (Rs. In Crores) both DTA & SEZ
1	Hosur	313	1	314	4578.43
2	Gummidipoondi	286		286	986.29
3	EPIP, Gummidipoondi I	32		32	
4	Ranipet	206		207	2467.32
5	Cuddalore	72		72	1284.86
6	Pudukkottai	94		94	61.82
7	Manamadurai	75		75	2407.57
8	Thoothukkudi	96		96	4797.57
9	Sriperumpudur	117	2	119	23053.5
10	Irungattukottai	235	2	237	9033.18
11	Pillaipakkam	87	3	90	5407.58
12	Siruseri IT Park	82	1	83	11829.93
13	Gangaikondan	47	10	57	1753.14
14	Nilakottai	54	2	56	1167
15	Perundurai	242	9	251	3998.91
16	Cheyyar	12		12	2211
17	Bargur	40		40	748
18	Oragadam & Oragadam Expansion	153		153	31323.14
19	Thervoykandigai	12	3	15	13639
20	Mappedu	1		1	260.5
21	Vallam - Vadagal	64	18	82	4064.76
22	Vallam - Vadagal (Aerospace park)	11	2	13	535.12
	Total	2331	55	2386	125608.62

*DTA & SEZ – Domestic Traffic Area, Special Economic Zone
Source: https://www.tn.gov.in

CHANGING BUSINESS SCENARIO

Nowadays, the trade activities are facing major changes in the country in the past decade with the introduction of online services provided by various websites such as Amazon, flipkart, Snapdeal, Big Basket etc. During this year, that too after the outbreak of covid-19, most of the people prefer online shopping instead of conventional shopping. Even the delivery partners are actively delivering the products to their customers in an efficient way. This kind of drastic change of consumption pattern and the delivery system will create a major impact in business & trade activities in the forthcoming years. Accordingly, the government also has to analyse the situation efficiently and taking necessary steps to create more industries in various parts of the state. Due to the availability of online services any one can access any type of goods from their own place hence it might not be a problem of availing facility in urban or rural areas. The only thing which we have to concentrate is to create more of job opportunities across the state which may brings down the migration of population from rural areas to urban areas. In this way, we can ensure the widespread of population all over the state instead of accumulation of the labour force to one or few specific areas or districts.

More of Special economic zone has to be created all over the state to encourage the entrepreneurs to start their business in all the districts. Provision of all amenities including water facility, proper sewage system, and the infrastructural facilities such as transportation, electricity, communication, and subsidies, tax concessions for the enterprise to start the industries in backward areas will motivate the entrepreneurs.

SUGGESTIONS

To encourage the skilled & unskilled labours through providing the employment opportunities in their own districts can bring down the gap between the distribution of population among the districts. Through proper education system the government can implement more skill related training from the school education. Even the school education system has to be modified through concentrating more on practical related works than the written examination. To promote the entrepreneurship quality, from school education level itself, give more practical & project works etc. to stimulating the entrepreneurship quality among the students at the very young age. There is a saying in Tamil "aindil valaiyadadhu aimbadil valaiyadhu" means the quality of the person cannot be changed at the age of 50, instead his qualities can be determined based on their young age learning & experiences. There is a prominent change is required in the education system to inculcate or impose the thought on the young minds to promote the entrepreneurship qualities through various activities from their primary education level, to motivate and create more entrepreneurs in this society. To encourage the budding entrepreneurs through providing the proper training & the necessary support by the government & this may helps the economy to become a self sustainable over a period of time.

Strengthening the transport system through introducing the modern transportation system in every district such as metro train & bullet trains etc with the cooperation of public private partnership will help us to avoid the restrictions of labour movement which in turn avoid overcrowded in few areas. Strengthen the service industry with the uninterrupted movement of goods & services between the rural to urban areas even the nook & corner of the state. It ensures that every person in the society can access any types of goods & services in their place itself and this make the better standard of

living possible even in rural areas.

Identifying the speciality of each and every districts and preparing a proper plan to utilise its advantages may help us to create more employment opportunities in all the districts. Instead of concentrating on few places to invest and build the industries, it's the time to concentrate and encourage the industries to have their start ups in various districts. All we need is a proper and a systematic planning with the efficient management to change the present situation and create a bright future for us and our future generations. With the above all, the industrial development has to be done without damaging the environment nor the eco system. This kind of sustainable development only helps us to create a bright future for our society.

The district which has the agricultural lands like Nilgiris, Ariyalur, Cuddalore, Perambalur, Thiruvarur, Karur, Nagapattinam, Kanyakumari, Dindigul, Coimbatore, Pudukottai and Salem should be treated as like reserved areas and strong environmental law should be enacted to safeguard the agricultural lands and also taken sufficient measures to promote agricultural sector. Aggressive promotion has to be done for the tourism sector to develop the tourism and its related business in the places like Madurai, Kanyakumari, Kancheepuram, Nilgiris, Mahabalipuram, Chidambaram, Ooty, Coimbatore, Yelagiri, Kodaikanal, Coonoor, Theni, Vedanthangal etc. Identifying the advantages of the districts and utilising its in a best way to promote agriculture, tourism, industrialisation and service sectors will manifest more job in each and every districts.

"Changing is the only thing which never changes in the World". Yes, this is the time to think and bring changes in all the aspects especially in planning. So far, the government has concentrated on a centralised planning but as of now,

due to the population explosion and the different needs of districts call us for going by a decentralised planning. As I have already stated that, Tamil Nadu has the total of 37 districts and in each and every district it has its own advantage and specialised in its own way. So every district has a different need to be taken care of. In such kind of situation it is unavoidable to think about decentralised planning for each and every district in the state.

CONCLUSION

Our cities with their high population density and poor civic standards are vulnerable to the domino effect that can be set off by freak weather. The latest disaster of floods in Chennai during December 2015 gives us numerous lessons especially it makes to understand about the necessity of proper town planning, requirement of proper drainage system, maintenance of forest areas, trees & the need of maintain mangroves which could absorbed the excess rain. At present, the covid-19 infection spread is vast in Chennai City compared with other areas which is mainly due to the high population. Even the social distancing is an impossible one in a city like Chennai where the density of population 26,000 persons approximately per sq.km. Public health experts are also voiced out their opinions regarding the population problem in the urban areas. Natural disasters are more in the past decade & one among the reason is population & the encroachments made by them. This is an awakening call given by the nature repetitively in the past 5 to 6 years through various disasters to make us to think and concentrate on the redistribution of population from highly dense areas to rural areas especially where the density is quite low. To avoid this high density of population, have to concentrate to create more employment opportunities through the widespread of industries

in all the districts of Tamil Nadu and this will definitely reduce the migration from rural to urban areas. Depending on the geographical difference, each district has its own advantage which we have to identify and utilise it properly to enlarge & widespread employment opportunities in all the districts to avoid migration and overcrowded in urban areas.

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