

Emerging Socio- Economic and Demographic Patterns of Mysore City

Gopiprasad. S¹, Prathap. M²

¹Director, Ides Consulting Pvt Ltd, Bengaluru, Karnataka, India

²GIS Engineer, Ides Consulting Pvt Ltd, Bengaluru, Karnataka, India

ABSTRACT

The paper presents the changing socio-economic and demographic pattern of Mysore city by carrying out analysis using the census data available for the period 2001 and 2011. The available variables (Population, Density, Workers Population, Literacy and Sex ratio) are utilized. The variables for both the census years are mapped on a geo- referenced city map comprising of Municipal ward boundaries for producing Choropleth maps. The broad patterns observed along with the land use patterns are described. The likely impact of the distribution of the variables on the land use and future design of infrastructure is of importance.

Key words: Urban Planning, Population, Land use, City Corporation, GIS, Choropleth, Infrastructure, Ward Mapping.

Background:

Population studies and demographic analysis of the city help in devising strategies for urban planning and infrastructure provision. The Census of India has recently provided data at the Mysore city level. This data is on the decadal basis. Visualization of data is of immense use as they lend information and allow for study of the changing patterns/trends. In this paper, the Choropleth maps that represent the data in single shaded color with the ranges of value from minimum value to maximum range are used. The values are mapped with reference to the geographical unit of the ward and ward boundary. Choropleth's are utilized for the understanding the socio-economic situation of urban areas.

Definitions:

Census: Population census is the total process of collecting, compiling, analyzing or otherwise disseminating demographic, economic and social data pertaining, at a specific time, to all persons in a country or a well defined part of a country. As such, the census provides a snapshot of the country's population and housing at a given point off time.

Statutory Town (ST): All places with a municipality, corporation, cantonment board or notified town area committee etc.

Census Town: Places that satisfy the following criteria are termed as Census Town (CTs). (a) A minimum population of 5000 (b) At least 75% of the male main working population engaged in non-agricultural pursuits (c) A density of population of at least 400 per sq.km.

Out Growth (OG):

Out Growth should be a viable unit such as a village or a part of a village contiguous to a statutory town and possess the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system, education institution, post offices, medical facilities, banks, etc. Examples of OGs are Railways colonies, University campuses, Port area, that may come up near a city or statutory towns outside its statutory limits but within the revenue limit of a village or villages contiguous to the town or city.

Urban Agglomeration (UA):

It is a continuous urban spread constituting a town and its adjoining urban out-growth (OGs) or two or more physically contiguous towns together and any adjoining urban out-growths of such towns.

Urban: Constituents of urban area are Statutory Towns, Census Towns and Outgrowths.

Karnataka:

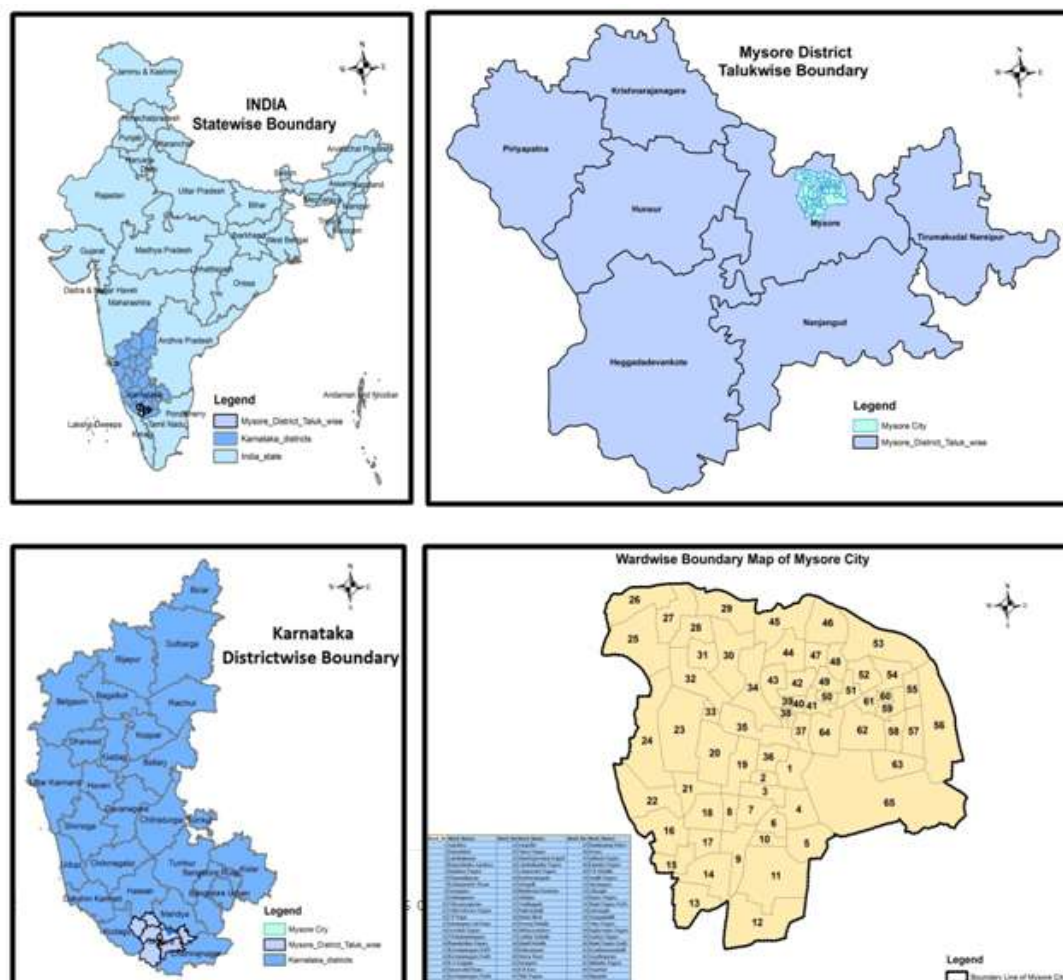
Formerly known as the State of Mysore, the state of Karnataka is located in the southern part of India. The capital of the state is the city of Bangalore which has most populous city in the city and fifth largest in the country.

Karnataka's population as per census 2011 stands at about 61 million, making it the 9th most populated state in India and 8th largest state with respect to geographical area (190000 sq. km. making it the 8th largest state in the country in terms of area and developing at a rapid rate.

1. INTRODUCTION

Mysore city is located at 12° 18' 19" N, 76° 39' 17.77" E. It is the second largest City in the State of Karnataka and also the District headquarters. The City is known for its Heritage and Palaces, famous of the Dasara festival which is celebrated with pomp and gaiety annually during the Navaratri (September-October). The festival attracts tourists from all over the country and abroad in large numbers. The city is also famous for its Brindavan Gar-dens that are laid out at Krishnarajasagar Reservoir.

The Mysore urban agglomeration is among the fastest growing Indian cities, with a decadal population growth rate of 25.19%, with a population of 0.984 million (Census 2011). The city has several facets working in its fa-vour including that of economic, institutional and cultural significance. Although the city is renowned for its tourist attractions, the growth of the IT/ITeS industry in recent years has positioned Mysore as the second-largest soft-ware exporter in the state, next to Bangalore. Mysore is emerging as the next IT hub of India with the presence of companies like Infosys, Wipro. The Ministry of Urban Development, Government of India, had Nationwide National City Rating has rated Mysore in Number two after Chandigarh in the country.



Map 1- Location Map of Study area – Mysore City

GROWTH OF MYSORE POPULATION

Over the decades, Mysore city has witnessed growth in population. The decadal growth in population is shown in the Chart 1 and Table 1, currently, the growth rate is at 25% (between 2001-2011).

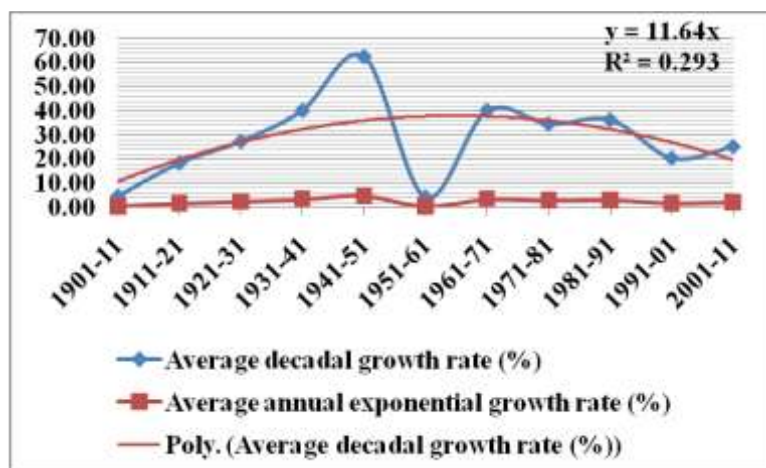


Chart 1: Decadal and average annual exponential growth rate of Mysore from 1901-2011 Population

Table 1: Mysore Urban Agglomeration population growth rate since 1901-2011

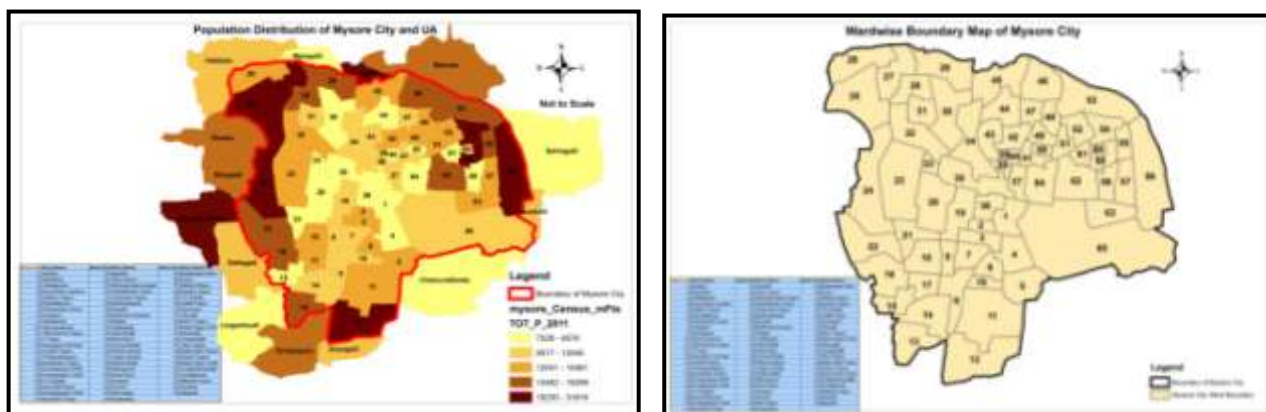
Year	Poulation (in Lakhs)	Population variations (in Lakhs)	Average decadal growth rate (%)	Average annual exponential growth rate (%)
1901	0.68	-	-	-
1911	0.71	0.03	4.41	0.43
1921	0.84	0.13	18.3	1.68
1931	1.07	0.23	27.38	2.42
1941	1.5	0.43	40.19	3.38
1951	2.44	0.94	62.67	4.86
1961	2.54	0.1	4.1	0.4
1971	3.56	1.02	40.16	3.38
1981	4.79	1.23	34.55	2.97
1991	6.53	1.74	36.33	3.1
2001	7.86	1.33	20.37	1.85
2011	9.84	1.98	25.19	2.25
Source: Town Director, Census of Indian, Provisional Census of India, 2011				

The main City Corporation comprises of the 65 wards with an area of over 128.4 sq.km with a population of 893,062, while the Out Growth (OG) along with CT areas (census 2011) account for a population of 110701 persons. Thus the total population of Mysore Urban Agglomeration /Metropolitan region is 990,900 with male population is 497,138 and the female population is 493,762.

Table 2: Mysore Outgrowth population -2011

Ward Names	Population as per census 2011
Metagalli (OG)	1798
Sathagalli(OG)	819
Alanahalli(OG)	6779
Chamundibetta(OG)	2878
Hebbalu(OG)	7169
Lingabudi(OG)	277
Dattagalli(OG)	7768
Elwala(CT)	9826
Koorgalli(CT)	7065
Hutagalli(CT)	18308
Belavata(CT)	8605
Hinkal(CT)	23162
Bhogadi(CT)	9041
Srirampura(CT)	11234
Kadakola(CT)	6436

Ward wise boundary Population Distribution of Mysore City Corporation and OGs



Ward wise boundary Map of Mysore City Corporation

A. Mysore Literacy Rate 2011:

The literacy rate of Mysore Agglomeration is 87.55% which is higher than National Urban average of 85 %. Literacy rate for male and female for Mysore stood at 90.56 % and 84.53 % respectively. Total literates in Mysore UA were 784,796 of which males were 406,450 and remaining 378,346 were females.

B. Mysore Child Population 2011

The children (0-6 age) population of Mysore UA is around 9.54 % of total Mysore UA population which is lower than National Urban average of 10.93 %. Total children in Mysore Urban were 94,497 of which male were 48,329 while remaining 46,168 Child were female.

C. Mysore Sex Ratio 2011

The sex ratio of female to male in Mysore UA was found higher with figure of 993 females against national urban average of 926 females per 1000 males. For children (0-6 age), girls were 955 per 1000 boys in Mysore Urban region against national average of 902 girls per 1000 boys.

Existing Land use and Structure:

Mysore city structure is a radial one with the main Highways as the arteries leading in to the city. For purposes of Urban planning, the Nanjangud City Municipal Corporation (CMC), which is on the southern side of Mysore city, is also included within the Local Planning area (LPA) of Mysore, with Mysore Urban Development Authority as the Authority. The existing land use map is produced by MUDA as on year 2009 is utilized for our study.

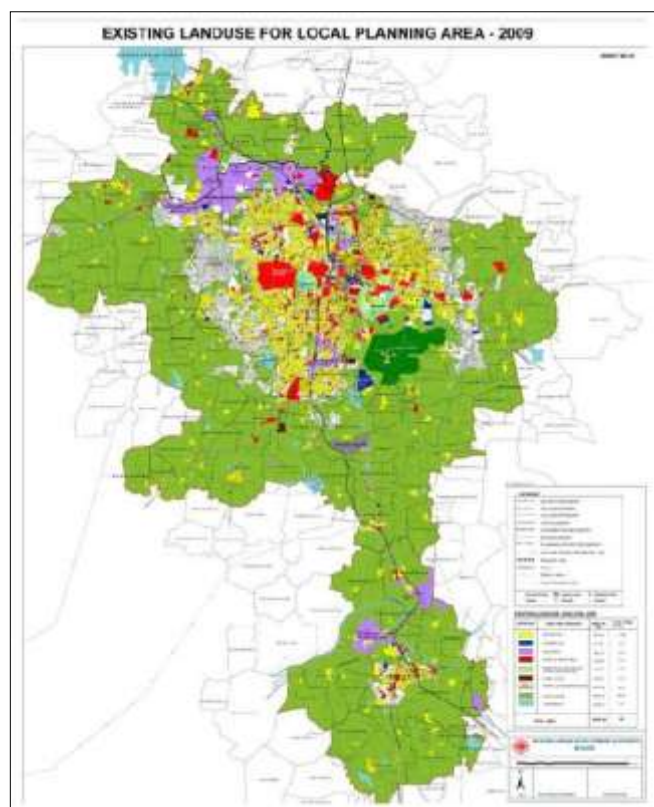
The Central core of the city comprises of the Palace and other historical structures. The University is close to the Hunsur Road. The new industrial areas are emerging in the North western side and Southern side of Mysore. Rapid transformation of the central land areas from residential to commercial uses is witnessed.

Table 3: Population Existing Land Use 2009 Mysore City Conurbation

Existing land use - 2009 - Mysore city conurbation		
Land use category	Area in ha	Percentage to total area
Residential	7032.89	25.24
Commercial	473.76	1.70
Industrial	1309.09	4.70
Public/semi-public	1545.99	5.55
Public utility	107.19	0.38
Open spaces	766.31	2.75
Traffic & transportation	3384.60	12.15
Agriculture	12168.34	43.67
Water body	326.84	1.17
Forest	749.31	2.69
Total	27864.32	100.00

Source: MUDA Revised Master Plan – Vol-I

Ward no 34, 35 and 36, 1, 2, 3, 4 and 38 and 39, 37 and 43, 42, 49, 40, 41 form the core part of the city. The broad boundaries are Meena bazaar, Medar block, DevarajMohalla, LashkarMohalla, Kailashpuram, Subbarayankere, Agarahara, Lakshmipuram, Sunnadekeri. A large percentage of the residential area has been vacant.



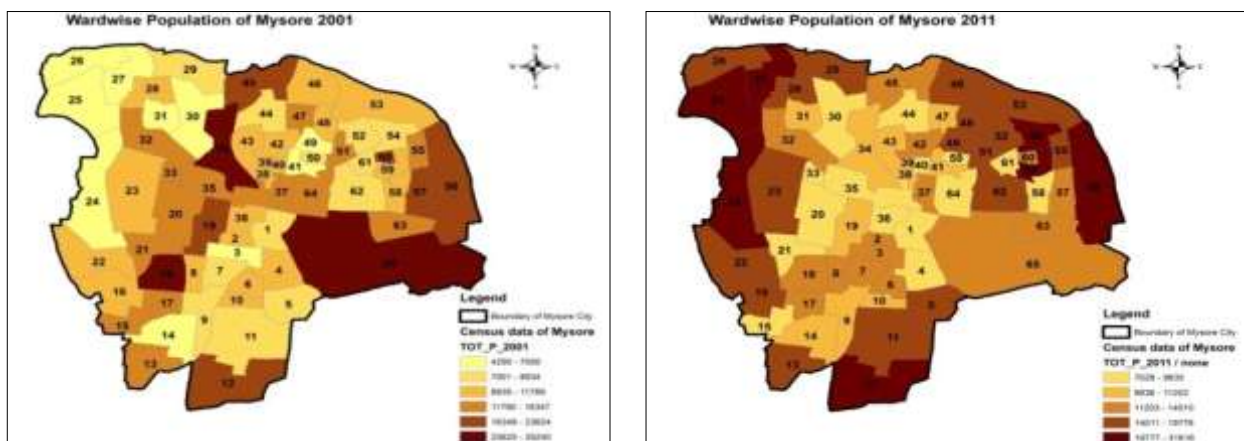
Source: MUDA Revised Master Plan – Vol-I

Method for thematic Map preparation:

- The first task for the mapping involves the Digitisation of the ward boundary and this has been derived from the Mysore City Corporation Map. The digitised boundary is registered with the Survey of India toposheet. The same is also converted into both .Shp files with WGS 84 projection. The same is also converted into .KML file and imported into Google earth for reference and study.
- The Census data for the two census years 2001 and 2011 has been collected and added to the database. The class intervals for representation purposes are also worked out.
- Choropleth maps are prepared for analysis:**
The maps are utilized for representation of the demographic changes in the wards with respect to the land use.

2. MAPPING OF EACH CENSUS VARIABLE

3.1 Population Map of Mysore City (2001 – 2011):



The above census maps represent the total population of Mysore city in the year of 2001 and 2011. In the representation, while the population of overall city has increased, the ward wise population growth shows differences from the overall distribution. In 2001 populations were concentrated in the central, South and South - East wards of the City and in 2011 in addition to the central areas, there is growth recorded in the North, West and North - Western part of the city. Maximum and minimum populated population wards in 2001 are Medar Block (35,240) and Lokanayaka Nagar (4290). Around 20 wards have experienced negative growth in 2011 census.

Table 4: List of wards showing Negative growth of Population:

Ward_No	Ward Names	TOT_P_2001	TOT_P_2011	Differences
15	Vivekanandanagara	12337	9576	-2761
17	Kuvempunagara KHB	15030	12607	-2423
18	Kuvempunagara South	27076	13526	-13550
19	K G Koppalu	23161	10610	-12551
20	SaraswathiPuram	14968	9139	-5829
21	Kuvempunagara North	13432	8198	-5234
33	Paduvarahalli	14010	9284	-4726
34	Medar Block	35240	10116	-25124
35	Devaraj Mohalla	13746	7917	-5829
36	Subbarayanakere	11028	9574	-1454
37	Lashkar Mohalla	12402	11647	-755
39	Kailasapuram	11274	9977	-1297
40	Meena Bazar	10917	8242	-2675
45	Bannimantap Hudco	17459	13497	-3962
47	Subhash Nagara	15791	10586	-5205
57	Vidya Nagara	20915	13007	-7908
58	Raghavendra Nagara	9769	7028	-2741
60	Shanti Nagara South	16379	11886	-4493
63	SiddharthaNagara	13526	12501	-1025
64	Nazarbad	14425	8744	-5681
65	Ittigegudu	24156	12040	-12116

Some of the reasons attributed to the population growth in the peripheral area:

- Proximity to the Industrial Estates/area, located at the North-Western and Southern parts of the city.
- Development of new layouts and creation of housing in the periphery. Some movement of population to these areas for better neighbourhood amenities. The idea of independent house on a given site remains attractive.

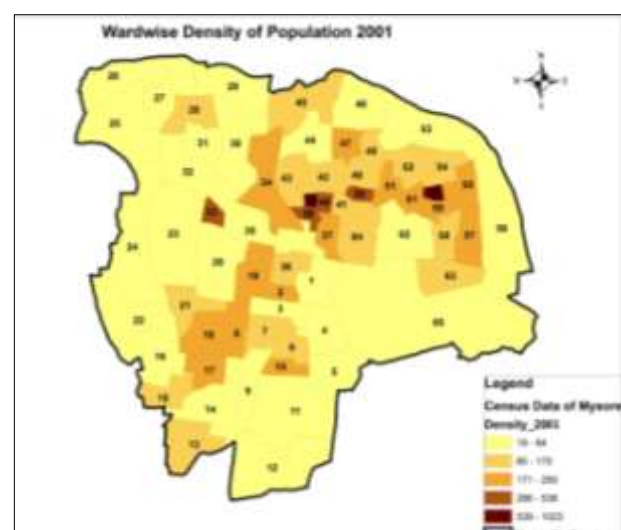
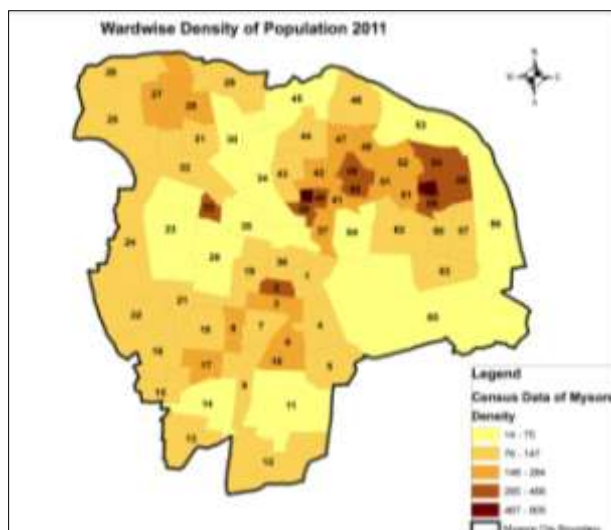
Table 5: Key Data of Mysore City on Census Population comparison of 2001 and 2011

Statistics Key words	2001	2011
Number of wards	65	65
Total Population (MCC)	755379	893062
Population in ward (Minimum)	4290	7028
Population in ward (Maximum)	35240	31616
Mean	11621	13739
Median	9769	12607

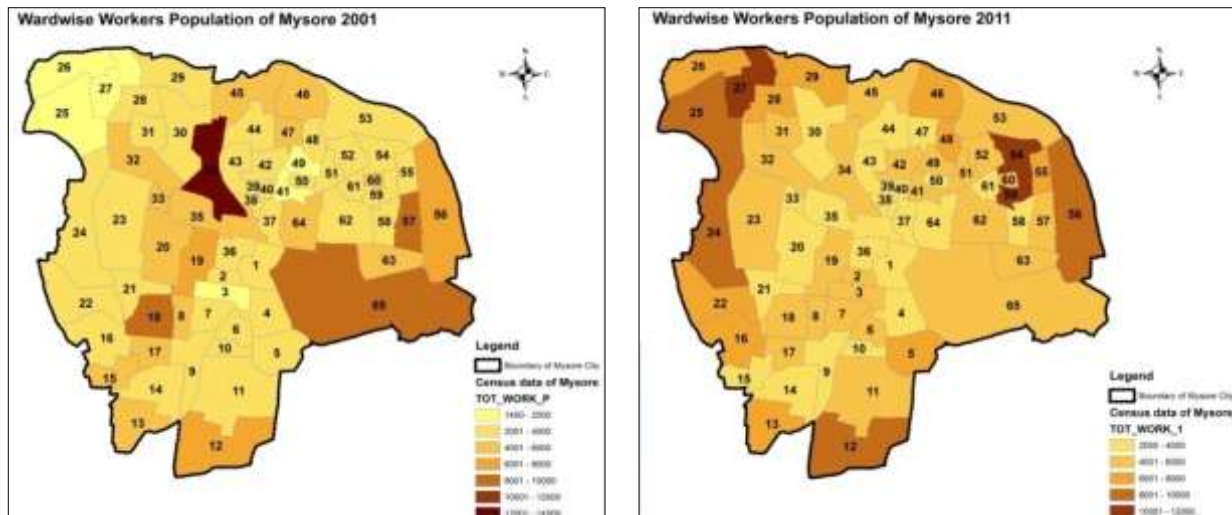
The Mean size of the wards is 1.29 km² remain the same between 2001 & 2011.

2.2 Population Density Map (2001 – 2011)

The density of population is calculated by the Persons per hectare. While High density of population was observed in the central part/core area of the city as per the census 2001 in addition to the existing dense areas a few wards in the North east and North West have high density. The highest density found in Kailasapuram (Ward- 39) 1023 P/ha and lowest density is in Vijaya Nagar (Ward -24) 19/ha in the year of 2001 and High density Kailasapuram (Ward- 39) with 905 Persons/ha and lowest density in Ittigegudu (ward 65) 14 P/ha in 2011. Ward number 13, 15, 16 to18, 24 to 29 shows medium density and 33, 2, 39, 60, 59, 54 and 55 shows high density and rest of the wards shows moderated and low density of the population.

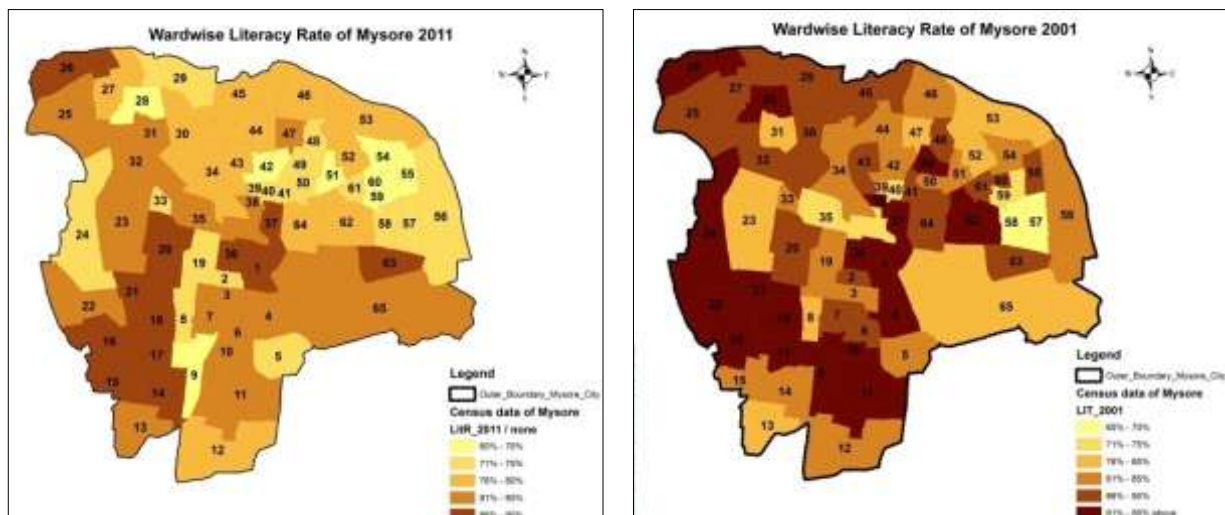


2.3 Ward wise workers population of Mysore 2001– 2011



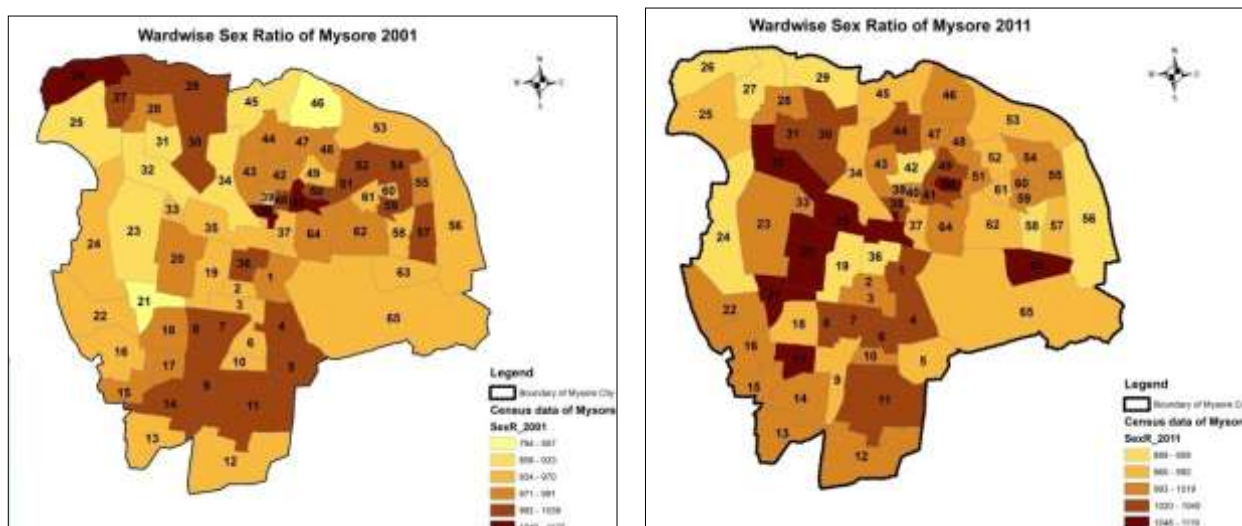
In the year 2001 the worker population is observed to be distributed high in Medar Block (Ward – 34) and ward number 65, 57, and 56, 18, 12, 32 had medium range of worker population. The remaining wards had lower working population; Lokanayaka Nagar ward had the least working population. In 2011 the situation of ward wise worker population has changed, more numbers of workers are located in the periphery of the city. Ward number 27, 54, 59 have larger numbers of worker and 12, 56, 55, 24, 25, 48, 46, 48, 5, 16, 32, 34 and 31 wards have medium range of workers population.

2.4 Ward wise Literacy Rate of Mysore 2001 – 2011



The above maps represent the literacy rate ward wise for the city of Mysore. In 2001, the map show high literacy rate in the south western part of the city, while the ward with numbers 40, 57, 58 and 35 represent lower literacy rate. Wards 9, 16, 17, 18, 10, 11, 4, 1, 36, 37, 38, 62, 49, 28, 26, 24, 22, 21, 16, 17 represent 91% to 95% of literacy rate. In the North – western part of the city shows 80% to 90% of literacy rate, due to the surrounded educational institute and influence of University of Mysore in ward number 23. The Peripheral wards close to the ring road has also witnessed the increase in the literacy rate.

2.5 Ward wise Sex Ratio of Mysore 2001 – 2011



The above maps represent the Sex Ratio and its comparison of 2001 and 2011 Census Data. Sex Ratio represents the number of Female per 1000 males in a particular area/region. As in this case the sex ratio shows increased rate some of the wards in Mysore City, in 2001 North, South and Central wards show more number of Female, they are 26, 38, 41, 29, 27, 11, 15, 57, 54, 51 and 50. And in 2011 the more number of female population found in the Central and Western part/wards of the city, 33, 35, 20, 21, 17 50, 63, 11, 8, 7, 6, 4 1,30, 31, and 44.

Sex ratio analysis can also be studied with relation to the literacy rate of the wards.

3. Observations and Analysis

The observations on the five data sets and mapping include the Population, Density, Workers Population, Literacy Rate and Sex Ratio. Due to the industrial Development in form of IT and ITES services, development of infrastructural facilities in the city has allowed the growth of the city and all the 5 variables studied have witnessed change. The wards which are in proximity to the Industrial areas/estate are having higher population, increased density and increase in worker population. Compared to the census 2001 with that of census 2011, the population concentration, and density and worker population is higher in the central wards/parts of the city. This is likely due to the fact that the commercial activities as work centres are located in the central part.

By 2011 there has been increase of commercial and industrial activities and this has spread all over the city, mainly in the South and North-western parts of the city. This has influenced the settling of population in the periphery and in OG's. The study maps of the Literacy and Sex Ratio, shows that the literacy rate is also high where there has been an increase in the sex ratio/ number (No. of females have increased). The influencing factors on population are educational institutions, industrial and commercial activities, amenities and housing. The changes are visible in the South North - Western and South Eastern Wards of the City.

The pattern of the city is interesting as the old areas and well serviced areas are witnessing slow addition of population and slow densification. The changing land use from Residential to commercial has also influenced the changes in population. The programmes such as the housing programme under Basic Services for Urban Poor (BSUP), Jawaharlal Nehru National Urban Renewal Mission (JnNURM), in Medar block have also allowed for the changes of population. The population addition in the periphery wards mainly connected by the radial corridors and proximity to the work centres is highlighted in the pattern. The areas which are of average to medium density with well-developed infrastructure seem to support the higher literacy and good balance between the Male-Female ratios. The Institutional areas coming under the wards 23 and 24 have the Prestigious Mysore University. Clearly the worker populations are seemingly concentrated at the periphery of the wards.

Going forward this pattern is likely to get accentuated due to the work centres being located at the edge of the ULB. The commercialization in form of retail and offices is already taking up space along well-developed roads. The central Commercial areas dealing with wholesale activity and commercial retail will witness changes in the future. The North Eastern Side of the city with the larger population will require attention as the population size has increased, corresponding variables such as sex ratio and literacy is slowing down. These dense areas will also need good public transport services for mobility.

4. Conclusions:

The findings are significant for the design of various infrastructures such as the water, sanitation, Power Solid waste management and public Transport systems. It will be useful to develop certain centralities at the North, South and West for efficiency and balanced development of the city. For future research, the additional variables on housing and infrastructure can be added to the study as and when the census data is made available. A co-relation study of the various variables can be carried out to establish the city structure and growth patterns.

5. Acknowledgement:

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Authors Biography:

S. GOPIPRASAD, received B.Arch degree in 1995 from MNIT, Jaipur and Master of Urban Design in 1999 from school of Architecture and planning, New Delhi. He is currently heading the urban practice in ides consulting private limited. His research interests include decision support, infrastructure development, spatial/land use planning and legislation. May be reached at gopiprasad@ides.in, urbgops@gmail.com

PRATHAP. M., received BA Geography in Maharaja's College, from University of Mysore, Mysore, Karnataka, in 2010 and completed Masters in Geo-informatics (GIS) in 2013 from University of Mysore, Mysore, Karnataka. Currently, He is working as “GIS Engineer” in ides consulting private limited, Bangalore. His area of interest includes Cartography, GIS & Remote Sensing, and GPS Survey. May be reached at prathap@ides.in, prathap0005@gmail.com