



Demographic Change: A case of Lucknow City

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Abstract : This paper, explore the composition and characteristic of the population of Lucknow city. Examine some basic concepts and important parameters like population size, density, sex ratio, literacy rate and people participation in working sector within the city limits. Demographics can include any statistical factors that influence population growth or decline, but the parameters above are particularly important.

IndexTerms - Population size, Density, Literacy rate, Migration pattern, Sex ratio, population distribution, Lucknow Municipal Corporation (LMC).

I. INTRODUCTION

Literally translated from Greek, 'Demography' means 'description of the people'. It is the study of the size, area distribution, composition of population, and changes therein. Population analysis is the basic to city planning because design standards are usually expressed in terms of population. As a tool for objectively studying populations, ecologists rely on a series of statistical measures, known as demographic parameters, to describe that population. It provides a mathematical description of how those characteristics change over time and comprise the components of demographical changes. The aim of formal demographic analysis is to isolate the components of demographic patterns by dividing a population into relatively homogeneous subgroups. Analysis of data on actual populations is paralleled by mathematical models of the interrelationship between population size and structure and the components of demographic change. Different type of population analysis is needed for planning purpose than just sticking to the traditionally offered practices.

1.1.1 Population Size

The most elementary demographic parameter is the number of individuals within a population. The population size is defined as the number of individuals present in a subjectively designated geographical range. Despite the simplicity in its concept, locating all individuals during a census (a full count of every individual) is nearly impossible, so ecologists usually estimate population size by counting individuals within a small sample area and extrapolating that sample to the larger population. Regardless of the challenges in measuring population size, it is an important characteristic of a population with significant implications for the dynamics of the population as a whole.

Populations display distinctive behaviors' based on their size. Small populations face a greater risk of extinction. Large populations experience their own problems. As they approach the maximum sustainable population size, known as carrying capacity, large populations show characteristic behavior. Populations nearing their carrying capacity experience greater competition for resources.

1.1.2 Population Density

It is a complete description of population's size includes the population density - the size of a population in relation to the amount of space that it occupies. Density is usually expressed as the number of individuals per unit area. Birth and immigration — the influx of new individuals from other areas — can increase a population's density, while death and emigration — the movement of individuals out of a population to other areas — can decrease its density.

1.1.3 Age Structure

Not all individuals contribute equally to a population. Occasionally, researchers find it useful to characterize the different contributions made by different individuals. This data can provide information preferences and trends among age groups and help policymakers to orient social programs, like healthcare or child support.

1.1.4 Sex Ratio

The measure of number of males and females within a population construct a sex ratio, which helps to predict population growth or decline. Much like population size, sex ratio is a simple concept with major implications for population dynamics.

1.1.5 Literacy Rate

Education is the core sector to achieve the objective of employment, human resource development and bringing about much needed change in social environment, leading to overall progress through efficient use of resources.

A person who is able to read and write with understanding in any language is recorded as literate. Literacy is the best possible barometer to judge the level of educational awakening in an area, leading to a minimum capacity for self-learning.

1.2 Population growth rate spatial distribution

1.2.1 Population distribution of the city - As per the provisional census data for the year 2011, Lucknow City's total population is 28.17 lakh. There is a growth of almost six times in the city population in the last six decades, from 5 lakh in the year 1951 to 28 lakh in the year 2011. Lucknow city's decadal population growth rate of 28.87% for the last decade is less than the country urban population growth rate (31.80%) and is at a little higher side from state urban population growth rate i.e. 28.75%. Population details of Lucknow since 1951 and decadal growth in the population is shown in Table and Figure.

AREA, POPLATION AND POPULATIN DENSITY CHART OF LUCKNOW MUNICIPAL CORPORATION (LMC)				
DESCRIPTION	AREA (SQ. KM)	POPULATION (IN LAKHS) 2001	POPULATION (IN LAKHS) 2011	DENSITY (PER./SQ. KM)
LUCKNOW DISTRICT	2528	36.47	45.89	1816
PLANNING AREA	1050	22.45	35.48	3379
URBAN AGGLOMERATION	377.5	23.20	30.38	7629
LMC AREA	348.80	21.54	28.17	8049

Figure 1: Area, Population and Population Density chart of LMC

Table 1: Population Distribution of LMC

POPULATION DISTRIBUTION OF LUCKNOW MUNICIPAL CORPORATION (LMC)			
YEAR	LUCKNOW MUNICIPAL CORPORATION (URBAN)		
	TOTAL POPULATION (IN LAKHS)	ABSOLUTE GROWTH (IN LAKHS)	GROWTH RATE (%)
1951	4,59,484	-	-
1961	6,15,523	1,56,039	33.96%
1971	7,74,644	1,59,121	25.85%
1981	9,47,990	1,73,346	22.38%
1991	16,19,116	6,71,126	70.79%
2001	21,85,927	5,66,811	35.01%
2011	28,17,105	6,31,178	28.87%
2021*	34,50,145	11,33,040	36.14%
2027*	39,01,528	4,51,383	36.51%
2031*	42,37,538	3,36,010	38.28%
2041*	52,23,622	9,86,084	40.94%

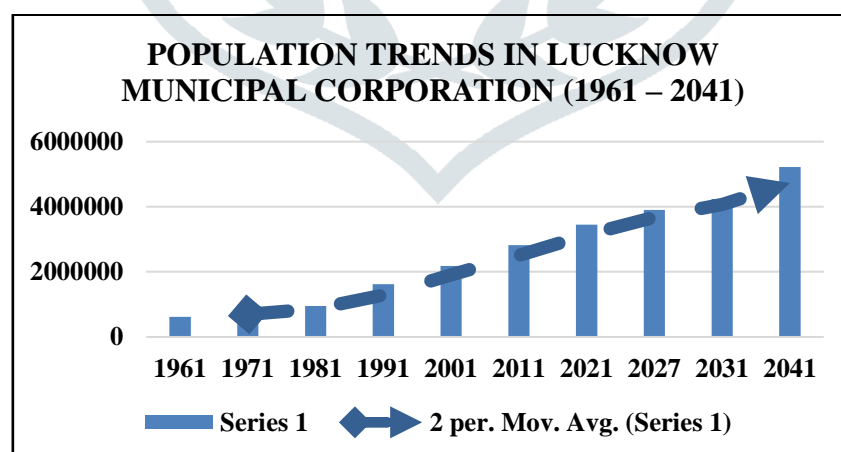


Figure 2: Population Trends in Lucknow Municipal Corporation.

Inferences:

There can be seen a growth of almost six times in the city's decadal population if focus on the population trend since 1961 to 2011.

The chart above illustrates the trend in projected population from 2021 to 2041, i.e., the city will undergo a gradual increase in growth rate from 36.14% to 40.94% from 2021 to 2041.

The last decade's growth rate is less than that of country's rate i.e., 31.80% and is slightly higher than state's urban population rate of 28.75%.

The city has faced a rapid growth between the decades of 1981-91 due to the change in municipal boundary area.

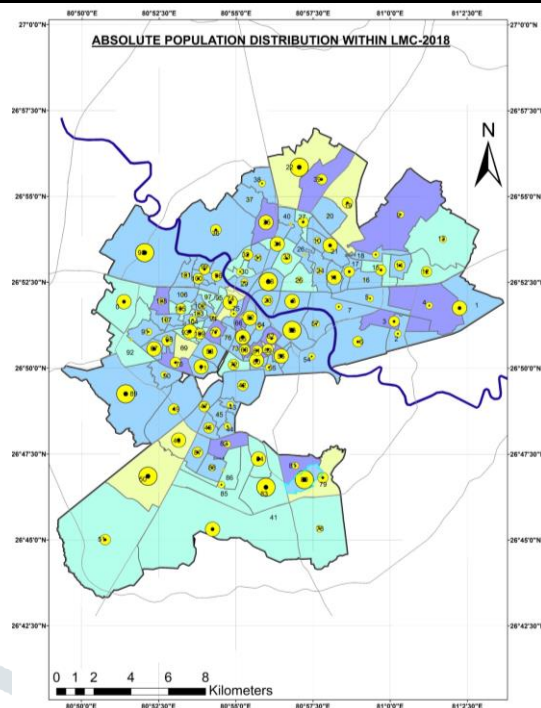


Figure 3: Absolute Population Distribution Within LMC - 2018

1.2.2 Population density distribution of Lucknow Municipal Corporation(LMC)

The overall liveability of a place is dependent on the population density of that place, In case of Lucknow as per the provisional figures of Census 2011; the population density is 8049 persons/ Sq.km (approx. 80 pph). The average population density of Lucknow city is on the lower side of the permissible limits of the UDPFI guidelines for metropolitan cities. The spatial distribution of population has been examined based on the ward population. LMC has 110 wards with ward population ranging from 69,000 in ward number 21 to 11,000 in ward number 31 and an average ward population of 25,000. Size of the wards varies a lot in the city, the ward areas towards the inner city side are small, however, as one moves towards the periphery the ward area increases. The ward-wise population distribution of LMC.

POPULATION DENSITY DISTRIBUTION OF LUCKNOW MUNICIPAL CORPORATION (LMC)								
YEAR	TOTAL POPULATION (IN LAKHS)	TOTAL AREA (HECTARES)	ABSOLUTE AREA VARIATIONS	GROWTH RATE OF AREA (%)	POPULATION DENSITY (PPH)	POPULATION DENSITY GAP ANALYSIS WITH STANDARDS (MIN. 125 PPH- MAX. 175 PPH)	STANDARD POPULATION DENSITY URDPFI (125-175 PPH)	U.P. STANDARD POPULATION DENSITY (828 PPH)
1951	4,59,484	4,800	-		95.7	29.3 – 79.3	Below standard	Below standard
1961	6,15,523	10,700	5,900	55.1	57.5	67.5 – 117.5	Below standard	Below standard
1971	7,74,644	10,100	-600	-5.9	76.6	48.4 – 98.4	Below standard	Below standard
1981	9,47,990	11,800	1,700	14.4	80.3	44.7 – 94.7	Below standard	Below standard
1991	16,19,116	34,880	23,080	66.1	46.4	78.6 – 128.6	Below standard	Below standard
2001	21,85,927				62.7	62.3 – 112.3	Below standard	Below standard
2011	28,17,105				80.8	44.2 – 94.2	Below standard	Below standard
2021*	34,50,145	Same as above	Same as above	Same as above	98.9	26.1 – 76.1	Below standard	Below standard
2027*	39,01,528				111.8	13.2 – 63.8	Below standard	Below standard
2031*	42,37,538				121.5	3.5 – 53.5	Below standard	Below standard

Figure 4: Population Density Distribution Of LMC.

Inferences:

The average population density of the city on lower sides of the permissible limits of both the URDPFI guidelines as well as the standard density of the state, i.e., 828 pph.

It has remained almost same due to the continuous increase in M.Corp boundary till 1991 but can be seen with a manifold increase till 2011 and the projected to have a gradual increase from 2021 till 2041.

As we can see in the chart, more population density can be seen in the core part with population sprawl more in north-east of the city and south-west left with less amount of densities.

Wards along the Gomti River have high density and the ones in core area have higher density than the ones in the periphery areas.

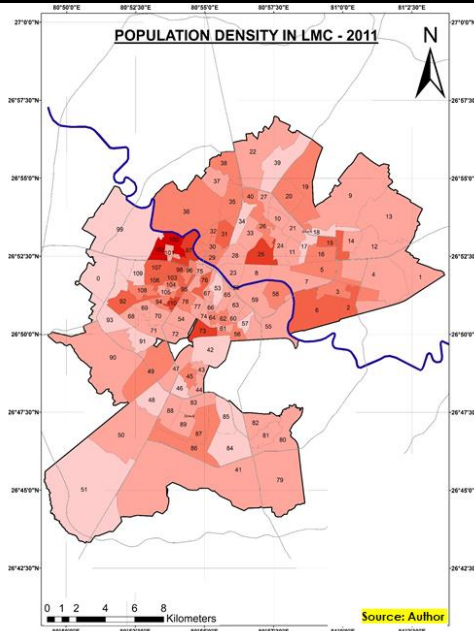


Figure 5: Population Density In LMC - 2011.

Population density of Lucknow city has remained almost same between the years 1951 and 1991 due to continuous increase in the municipal corporation boundary. After the last expansion of city areas which took place in the year 1987, the population density has increased manifold from 4262 persons per sq. km (46 pph) in 1991 to 8049 persons per sq. km (approx. 80 pph) in 2011 due to continuous growth in the population. From 1951 to 2011 changes in population density figures and area in Lucknow city.

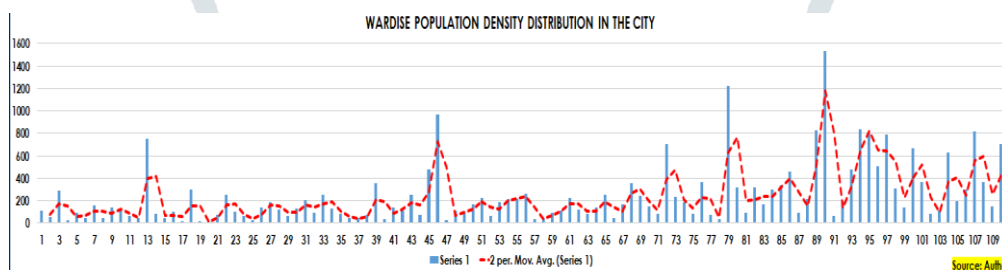


Figure 6: Ward-wise Population Density Distribution in the City.

Inferences:

Wards along the river has high density. The overcrowding in these wards is the consequence of being the old historic city with specialised and intense trade and commerce activities being taken up. If compare the data in decade 2011-2021 having the same area of 34,880 we have an enough holding capacity of population, though it can be seen increasing yet the area is good enough to hold the amount of population proposed till 2031.

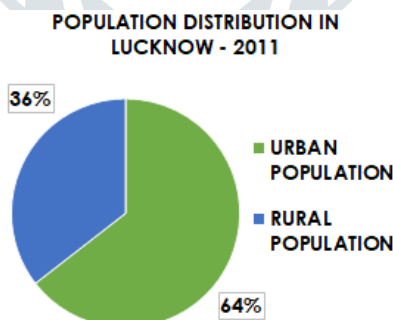


Figure 7: Population Distribution in Lucknow - 2011.

The existing scenario states that though more than half the population is living in urban areas, yet one-fourth the population is still living in rural areas. The area under municipal limits was in a continuous expansion since 1987 and the nearby settlements and nearby villages also became a part of the municipal limits resulting into high population growth for the previous decades due to both the reasons of increased municipal limits and other factors such as migration, birth rates, etc.

Observations:

As per the Lucknow City Development Plan prepared in 2006, migration into Lucknow accounted for 36 percent increase in population from 1991 to 2001. Census 20011 estimates that in the last decade, Lucknow received 2,07,307 migrants, 56.6 percent of which were from rural areas. According to the census, 22 percent of the migrants from rural areas and 27 percent from urban areas cited ‘employment’ as the reason for migration. The other reasons for migration include business reasons, education opportunities, marriage etc.

Migration Pattern of the City:

As per the Economic Survey 2019, the size of working-age population would increase during the period of 2031-41 and the state could meet a labour deficit of other states where the working population is on decline and would increase the migration form the states like U.P. As the result of no employment generation in U.P. the migration trend will rise in U.P. and will have a direct effect on the city being the state’s capital. The focus should be on improving the productivity to increase their income.

Reverse Migration in U.P.-2020:

Massive influx of migrants into Uttar Pradesh following the lockdown has brought the spotlight on a paradigm shift from 2011 census figures, which suggest India's most populous state was one of the biggest contributors to migration. A decade later, reverse migration is dramatically changing the state's demographic profile even as a fresh census operation is likely to be rolled out in UP next year. U.P. where always remained the source of out-migration, during Pandemic time it saw a reverse migration which dramatically changed the demographic profile of the state as well as the city too. Approximately, 20-25 lakh people returned home during COVID time in 2020.

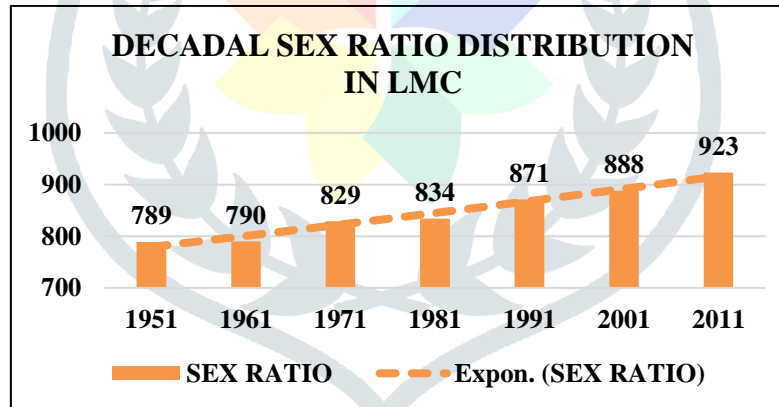
1.3 Sex Ratio

The measure of number of males and females within a population construct a sex ratio, which helps to predict population growth or decline. Much like population size, sex ratio is a simple concept with major implications for population dynamics.

Table 2: Sex Ratio of LMC.

SEX RATIO OF LUCKNOW MUNICIPAL CORPORATION			
YEAR	LMC	UTTAR PRADESH	NATIONAL AVERAGE = 940 (CENSUS-2011)
1951	789	908	BELOW THE STANDARD
1961	790	907	BELOW THE STANDARD
1971	829	876	BELOW THE STANDARD
1981	834	882	BELOW THE STANDARD
1991	871	876	BELOW THE STANDARD
2001	888	898	BELOW THE STANDARD
2011	923	912	BELOW THE STANDARD

Source: Lucknow Master Plan 2031, Census of India 1991, 2001 & 2011

**Figure 8: Decadal Sex Ratio Distribution In LMC.****Inferences:**

The Sex ratio in the city has shown some improvements till 2011 but still has remained below the National average standard of 940. The ratio is affected by differentials in mortality conditions of males and females and migration.

1.3.1 Sex Ratio in Uttar Pradesh

UP stands at the fifth to last position, and with a 96.2% literacy rate. Uttar Pradesh's literacy rate is 73%—less than the national average of 77.7%—reveals a report based on a National Statistical Office (NSO) survey.

UP's poor ranking could be attributed to the fact that there is no proper continuous Educational and Management Training programme. The data revealed by a report based on a National Statistical Office (NSO) survey.

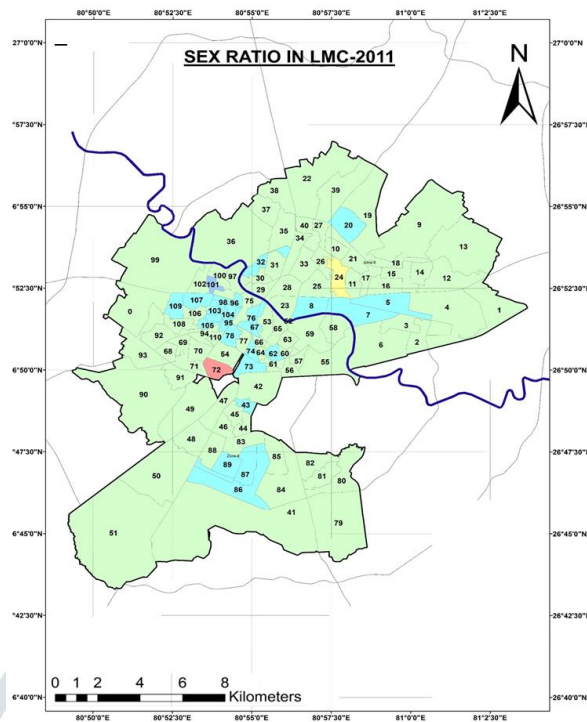


Figure 9: Sex Ratio In LMC- 2011.

1.4 Literacy Rate

Education is the core sector to achieve the objective of employment, human resource development and bringing about much needed change in social environment, leading to overall progress through efficient use of resources.

A person who is able to read and write with understanding in any language is recorded as literate. Literacy is the best possible barometer to judge the level of educational awakening in an area, leading to a minimum capacity for self-learning.

Table 3: Literacy Rate of LMC.

TOTAL LITERACY	2001	2011	%
TOTAL LITERATES	14,74,733	20,81,727	82.50
MALES	8,27,793	11,24,261	86.04
FEMALES	6,46,940	9,57,466	78.70

Source: Census of India 2011

Inferences -

Literacy rate reflects the socio-economic development of any region. The city has the highest literacy rate as compared to that of district, state and urban India. The high literacy rate can be attributed in the city being one of the leading centres of higher education in the state. Literacy rate reflects the socio-economic development of any region. The city has the highest literacy rate as compared to that of district, state and urban India. The high literacy rate can be attributed in the city being one of the leading centres of higher education in the state.

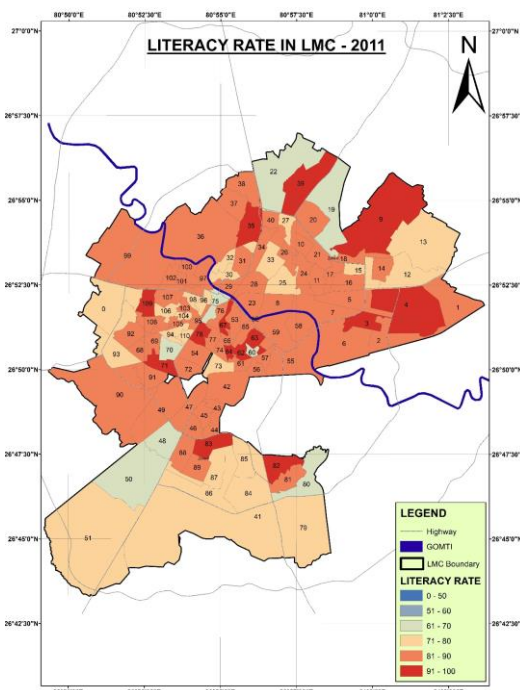


Figure 10: Literacy Rate in LMC- 2011

1.5 Economic Profile of the city

The curve of workforce participation rate always lowers down when it comes in the table of women participation, whether of main workers or marginal ones. On the other hand, about 60 % of female population is having the status of non-working class in female category. A comparative increase in the section of total cultivators could be seen to that of male workers. India being a highly developing country, giving the notion of “**BETI BACHAO, BETI PADHAO**”, “**SAB EK SAMAN**”, and Lucknow being the state’s capital and a hub of economy generation for the adjacent regions, also having a good share of floating population, still resides in such poor condition in terms of sex ratio and working participatory rate of women, is a notable thing to be taken care of. In Lucknow city majority of workers are in the others category which has more of the tertiary sector workers.

WORKFORCE PARTICIPATION RATE OF THE CITY - 2011			
NAME	ABSOLUTE		WFPR W.R.T. MALES
	MALES	FEMALES	
MAIN WORKERS	6,35,852	1,20,631	-81.0
MARGINAL WORKERS	1,19,233	68,579	-42.4
NON-WORKERS	7,05,885	11,66,925	-65.3
DISTRIBUTION OF MAIN + MARGINAL WORKERS			
TOTAL CULTIVATORS	14,857	29,410	+97.9
TOTAL AGRICULTURAL LABOURERS	25,166	6,030	-76.0
TOTAL HH INDUSTRY WORKERS	51,932	15,285	-70.5
TOTAL OTHER WORKERS	7,28,283	32,000	-95.6

Figure 11: Workforce Participation Rate of the city.

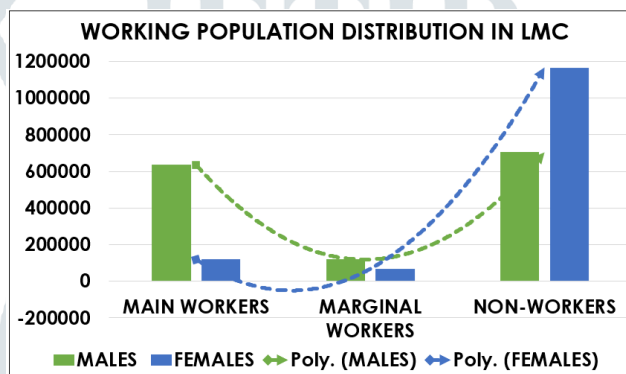


Figure 12: Working Population Distribution in LMC

Observations - 2020

The female labour force participation in India has fallen to 26 per cent in 2018 from 36.7 per cent in 2005, amid lack of access to quality education and underlying social, economic barriers limiting the opportunities for women. U.P. marks a rank amongst the states with lowest rates of female employment as 9.4%, as per Labour Force Survey Report (2017-18). During the pandemic time female workforce shrank in an economic shock of only 9% of all women of working age employed as 67% men are. The education ecosystem needs to go through a set of system strengthening initiatives.

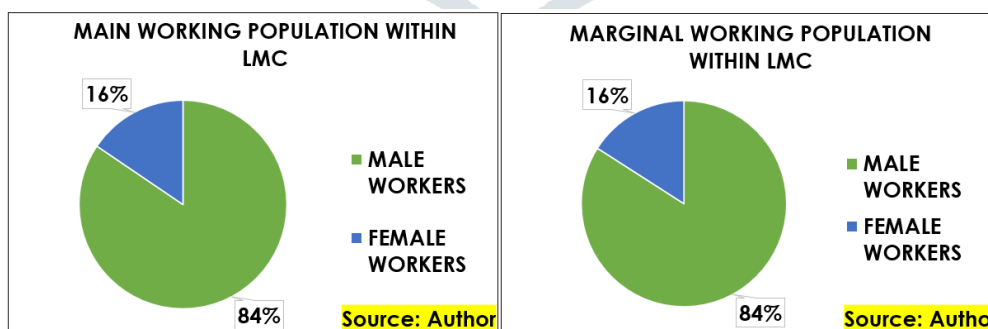


Figure 13: Main And Marginal Population Distribution in LMC

The data above shows the participation of women in counter to that of men in different sectors of employment as being the main or marginal workers, which is around less than a quarter of the total share of working population. On the other hand, the non-working population, females are most involved of compared to their percentage share in working one.

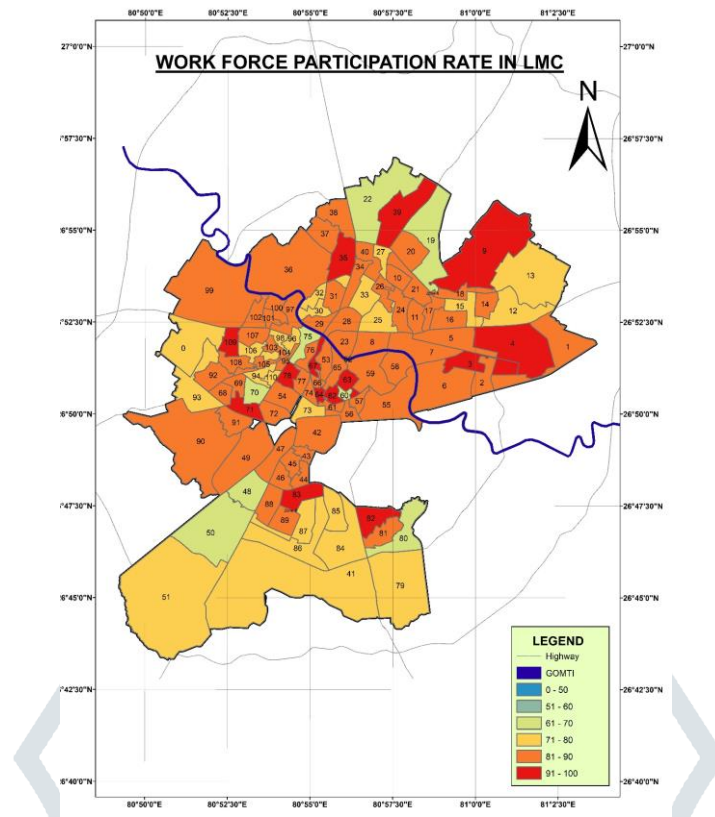


Figure 14: Workforce Participation Rate in LMC.

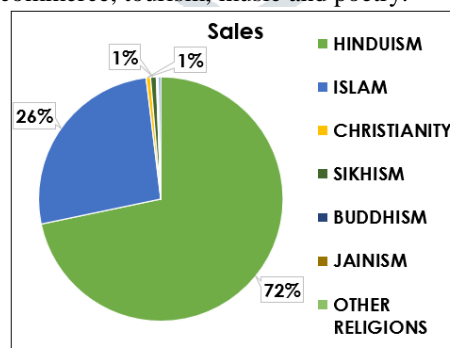
1.6 Floating Population Within the City

The population is estimated to be around 10% to 12% in the year 2015 of the total population, the rate of which has been decreased drastically during the pandemic time to 1% even. But additionally, the city undergone through stringent migrations within due to the return back of labourers due to the lockdown and serious situation of Pandemic during the decade of 2019-20.

As online mode of working being the new normal to every region it is tough to estimate and compare the present situations with the previous trends of population influx and migration used to happen within the city. According to the 2011 Census, 20.9 million people migrated outside the state from the two states. This is 37% of the total number of people who were inter-state migrants according to that enumeration.

1.7 Religion Population Distribution within the Lucknow city

At present, the population share is more inclined towards Hindu religion, i.e., more than half of the population residing in the city is from Hindu religion, preceded by Islamic population which it a triple fold of. We can see that being the city of nawabs in 18th and 19th century, it still continues to represent its multi-cultural aspect of living. It is an important centre of governance administration, education, commerce, tourism, music and poetry.



Source: Author

Figure 15: Religious Population Percentage in LMC

II. CONCLUSION

There can be seen a growth of almost six times in the city’s decadal population if focus on the population trend since 1961 to 2011. The last decade’s growth rate is less than that of country’s rate i.e., 31.80% and is slightly higher than state’s urban population rate of 28.75%. The city has faced a rapid growth between the decades of 1981-91 due to the change in municipal boundary area. The average population density of the city on lower sides of the permissible limits of both the URDPFI guidelines as well as the standard density of the state, i.e., 828 pph.

It has remained almost same due to the continuous increase in M.Corp boundary till 1991 but can be seen with a manifold increase till 2011. More population density can be seen in the core part with population sprawl more in north-east of the city

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III. REFERENCES

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