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Change In Population Growth and Its Characteristics: A Case Study of Haora Municipal Corporation, West Bengal, India (2001—2011)

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Abstract: *The rate of population growth, particularly in developing countries, is rapidly increasing due to an increase in fertility rates and a decrease in mortality rates. If a province or region experiences a large influx of migrants, it can lead to a potentially explosive situation. This is a common occurrence in countries such as India, where migration from rural to urban areas leads to a proliferation in urban pocket population growth. This study evaluates the changes in population growth as well as population characteristics of different wards in Haora Municipal Corporation between 2001 and 2011. Secondary data is analyzed using quantitative methods. The decadal change of spatial population composition has been discussed thoroughly.*

Key Words: *Developing countries, Population Growth, Migration.*

1. INTRODUCTION:

The UN (2011) identified October 31, 2011, as the day that the Earth's population topped seven billion (Barcus & Halfacree 2018). Additionally, there is the widely reported United Nations 2050 forecast of 10.1 billion (Dorling 2013). Over half of all people on Earth currently reside in cities, according to the best estimates of the United Nations (UN). Seven out of ten people will probably reside in cities by the year 2050. There are lots of young people in certain places and retirement communities in others; there are poor cities and rich ones. Age, sex, marital status, family size, economic activity, language, and religion are examples of quantitative demographic characteristics (Clarke 1972). Census data is often used to determine these elements, which can be classified as innate (sex, age, race), acquired (marriage, family, career), or individual and communal (Chandna 2019). Demographic composition refers to the number of people living in a certain population and provides a numerical description of the population characteristics (Barcus & Halfacree 2018). The age and gender composition of the population has an impact on many forms of planning, particularly institutional and community-based planning. In regional analysis, population composition research is important (Chandna 2019).
The "Analysis of Age-Sex Composition of Population of West Bengal, 1961 – 2011" article by Ashis Sarkar and Indrita Saha examines gender disparities, socioeconomic and demographic traits, and how population pyramids change over the course of census years. Qizhi, Long, and Kang's study examines data from national censuses to investigate China's urbanization trends and population density between 2000 and 2010. Furthermore, Tushar Kanti Ghara's research examines the dependency ratio and age-sex pyramid across the districts of West Bengal. The findings indicate a variation in the dependency ratio due to different age groups and population returns, as well as a 'Kolshi' form. The research conducted by Arvind Kumar titled "An Analysis of Occupational Trends in India" India's primary sector is heavily dependent on both rural and urban areas, according to NSSO data. Initiatives resulted in an increase in female labor participation from 2001 to 2011, despite a decline in women's labour participation. The life path is "a way of envisaging the passage of a lifetime less as a mechanical turning of a wheel and more as the unpredictable flow of a river," as Hockey and James (2003: 5) phrased it. Every river flows downward, from source to sea, and from birth to death, but the paths they follow are incredibly varied (Barcus & Halfacree 2018). A region's social and economic structure is impacted by gender balance.

2. LOCATION OF THE STUDY AREA

The Haora Municipal Corporation is located between 22°37'28"North and 22°33'5"North Latitudes and 88°14'38"East and 88°21'30"East Longitudes. The region is surrounded on the south and west by the Hooghly River and the Kolkata district, on the north by the Bally Municipality, and on the east by Domjur C. D. Block and Sankrail C. D. Block. The eastern and southern boundaries of the Municipal Corporation are naturally defined by the Hooghly River. The oldest municipality in Haora district is Haora Municipality, which was formed in 1862 and was upgraded to Haora Municipal Corporation in 1965 as per West Bengal Act XVII and is in Haora Sadar Sub-division. HMC has a total size of 51.74 square kilometers, accounting for just 3.53 percent and 0.06 percent of the entire geographical area of Haora District and West Bengal, respectively. Regarding the rail transportation network, the Howrah Municipal Corporation (HMC) is the focal point of the East and Southeast rail network. G.T road, the main artery for the road transportation system extends from the main city to the western part of the district. The Haora Municipal Corporation has 50 wards, according to the 2011 census.

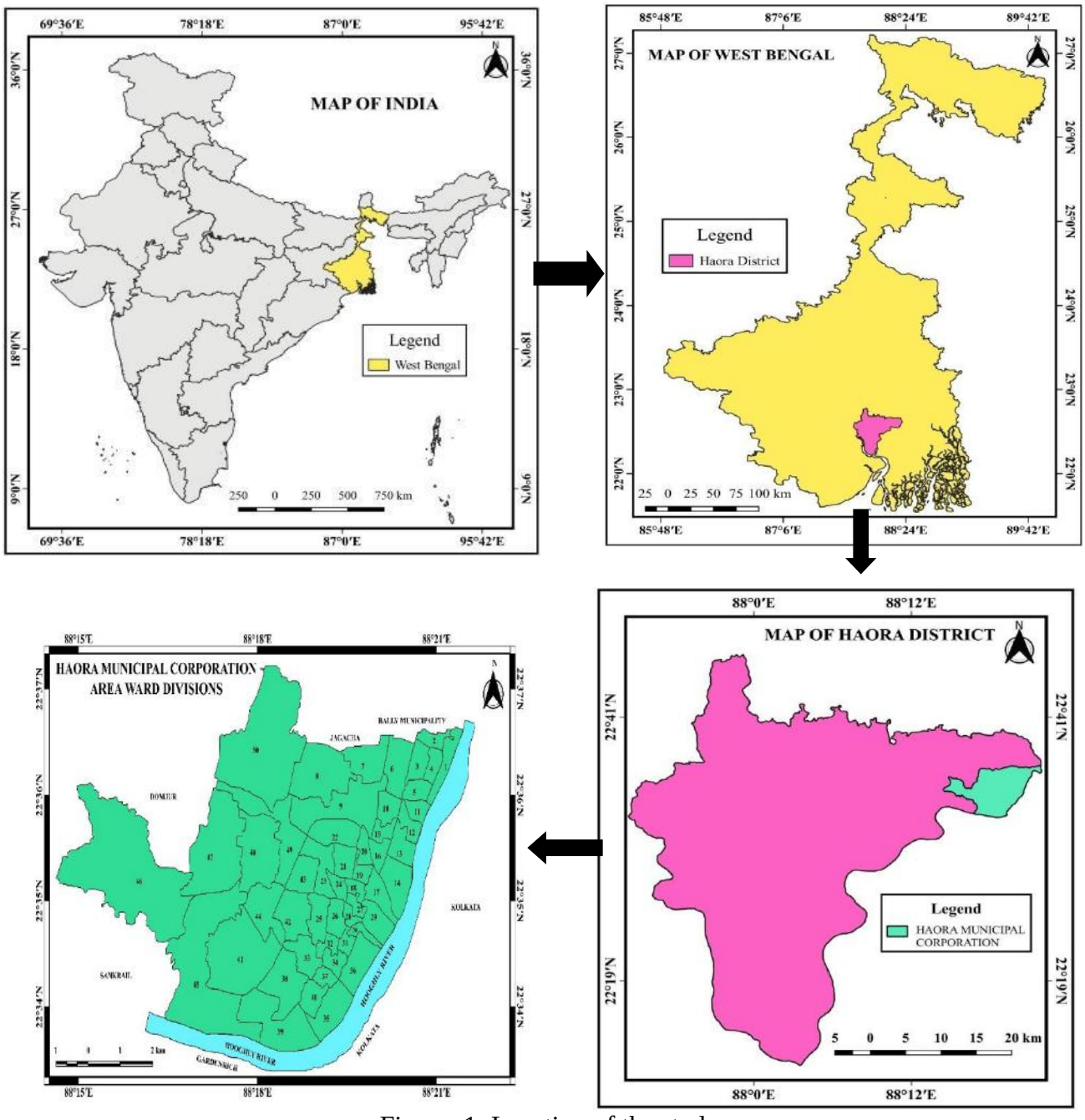

Figure: 1: Location of the study area

3. OBJECTIVES:

- To determine the change in population density in the study region over adecade.
- To depict the change in age composition in the study area.
- To ascertain the change in the sex composition of the study area.
- To ascertain the change in caste composition in the study area.
- To determine the change in the literacy rate in the study area.
- To depict the change in economic structure of the study area.
- To ascertain the change in dependency ratio in the research area.
- To find out the change in slum population in the study area.

4. METHODOLOGY :

The District Census Handbook provided the secondary data that were extracted and calculated for this study. Data categorized by ward have been gathered from 2001 to 2011 to give an overview the population growth and its characteristics of the Haora Municipal Corporation.

Following measures have been used to compare the collected data of the Haora Municipal Corporation.

1. Population Density:
   Population density which is a popular indicator of population distribution and expresses how tightly a population is concentrated in each area j (Newbold 2010). It is expressed as:
   $$D_j = P_j / A_j$$
   where P_j is the population (count) in area j and A_j is the geographic area of interest, usually defined as miles or kilometers squared.
2. Absolute Growth Rate:
   Population growth is the increase in the number of people in a population. An Absolute percentage growth refers to the rate of increase in the value of population. Absolute growth rate of population can be calculated using the following formula:
   $$\text{Absolute Growth Rate} = \frac{P_2 - P_1}{P_1} \times 100$$
   Where P_2 represents the current year and P_1 represents the previous year.
3. Population Projection (Arithmetical Increase Method):
   A population projection is a calculation of a population's size for specific census periods or the present year (Newbold 2009). Since the arithmetical increase method uses past census data to determine the average population increase per decade and assumes steady population growth, it is appropriate for major cities with significant expansion.
   Therefore, the rate of change of the population with respect to time is constant, or dP/dt = C.
   Population after the nth decade will therefore be Pn= P + n.C.
   where P is the current population and Pn is the population after n years.
4. Sex Ratio:
   A common numerical indicator of the sex composition of a population is the sex ratio. This ratio is calculated in a unique way for each nation. The sex ratio in India is estimated as the number of females per thousand males (Chandna 2019). It is expressed as under:
   $$(P_f / P_m) \times 1000$$
   Where P_f and P_m represent the number of females and the number of males respectively.
5. Literacy rate:
   According to the United Nations Population Commission, knowing and being able to read and write a basic message in any language is a prerequisite for being considered literate. The Indian Census has embraced this definition (Chandna, 2019, p. 432). There are two ways that literacy rates are typically calculated. Although the crude literacy rate is based on the total population, the effective literacy rate did not include the 0–7 age group since it was believed that a kid could only be deemed literate after two or three years of schooling (Chandna, 2019, p. 481).

$$\text{Crude Literacy rate} = \frac{\text{Number of literate persons}}{\text{Total population}} \times 100$$

$$\text{Effective literacy rate} = \frac{\text{Number of literate persons aged 7 or above}}{\text{Population aged 7 or above}} \times 100$$

6. Dependency Ratio:
   The dependency ratio is calculated by dividing the number of unemployed people, those under the age of 14, and those beyond the age of 60 by the total number of working people in the 15-59 age range (G. Surabi, 2021).
   $$\text{Dependency Ratio} = \frac{\text{Population under 14 + Population above 60}}{\text{Population aged 15 – 59}}$$

5. RESULT & DISCUSSION:

Population Distribution:

The population distribution is more locational, while the density is more proportionate. In 2001, India had a population of 1028 million people. In a decade, this has grown by 181.5 million to 1210 million in 2011. West Bengal had a population of 801,76,197 people in 2001. When compared to West Bengal, the population of Haora district and Haora Municipal Corporation in 2001 was 42,73,099 and 10,07,532, respectively (Figure 2).

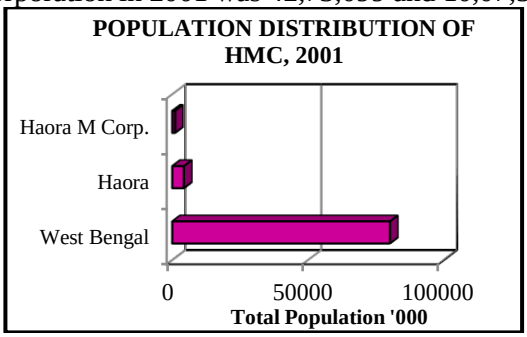

Figure: 2

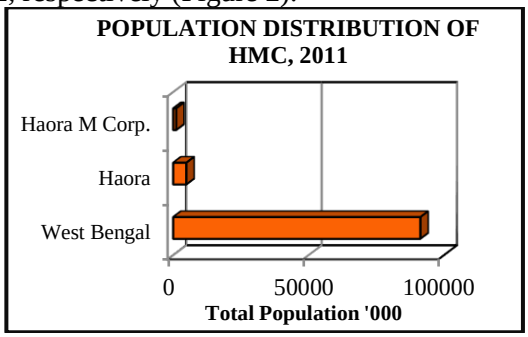

Figure: 3

In 2011, the population of West Bengal was 912,76,115. In 2011, the population of Haora district and Haora Municipal Corporation became 48,50,029 and 10,77,075 respectively, as compared to West Bengal (Figure 3). In a decade, the population of HMC has risen by 69343.

Density Of Population:

The average number of people living per kilometre is referred to as population density. It is calculated by dividing the total population by the whole geographic area. Based on the data from the census of India, the population densities of HMC at the ward level in 2000 and 2010 have been calculated and showcased through classification (see Figures 4 and 5). The Population density of HMC in 2001 was 19473, and it has increased to 20817 in 2011. In a decade, population density has risen by 1344.

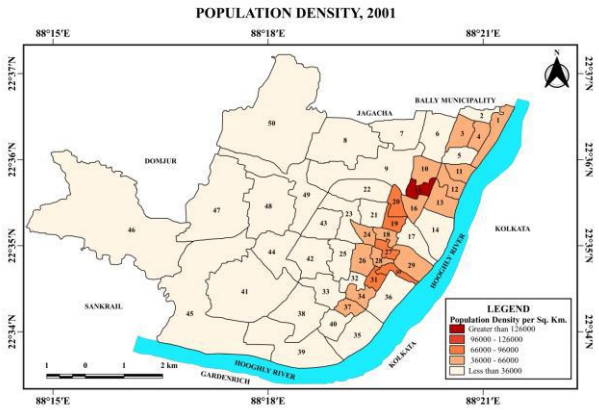

Figure:4

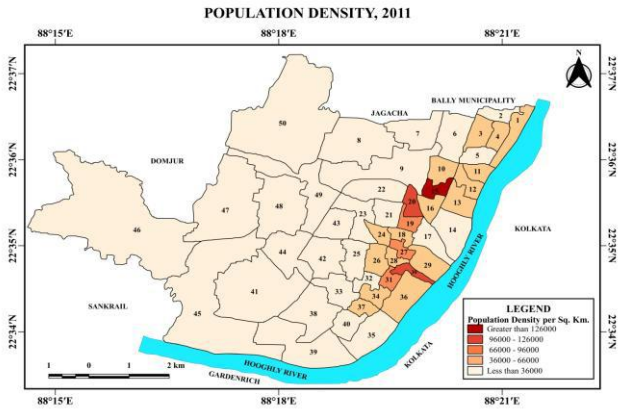

Figure:5

Considering population density, HMC has been divided into three types of areas.

1. *Areas of High Density:* Between 2001 and 2011, HMC had a population density of more than 96,000 people per square kilometre. In 2001 and 2011, this zone covered Wards 20 and 30, respectively, although in 2001 it only covered Ward 15.
2. *Areas of Moderate Density:* The population density of HMC ranged between 36,000 to 96,000 people per square kilometre between 2001 and 2011. As of 2011, this zone accounted for 38percent of all wards, compared to 40percent in 2001.
3. *Areas of Low Density:* Between 2001 and 2011, HMC had a population density of fewer than 36000 people per square kilometre. In both 2001 and 2011, this zone contained 58 percent of total wards.

Change in Density of Population: In this study, the population density in HMC is considered, and the fluctuation in population density has been divided during the 10 years from 2001 to 2011 into five groups: Significantly decreased (V<0.89), Slightly decreased (0.89≤V≤0.99), Basically unchanged (V=1.00), Slightly increased (1.01≤V≤1.11) and Significantly increased (V>1.11). V is the population density ratio between 2001 and 2011. Figure 6 depicts that there are significant changes in the wards of HMC. Ward 15 had a population density of 137,740 persons per square kilometre in 2001, which in 2011 increased to 187,951 persons per square kilometre. On the other side, the population density of Ward 37 declined by 10182 persons. Table 1 shows that since 2001, the variation of population density of HMC has been very conspicuous.

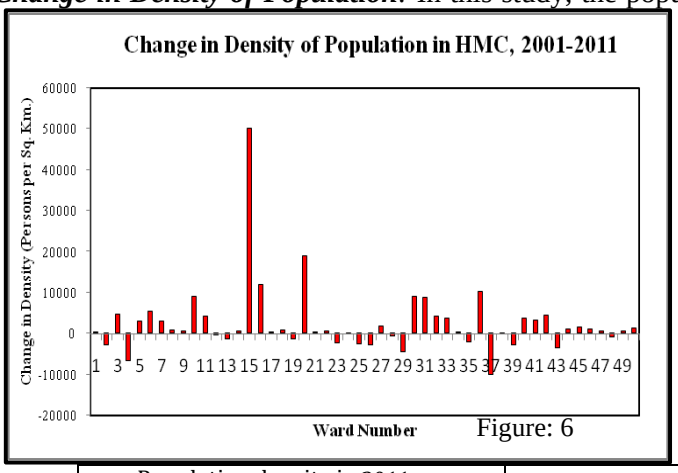

Figure: 6

$V=\frac{\text{Population density in 2011}}{\text{Population density in 2001}}$	Ward numbers
Significantly decreased V<0.89	4, 35, 37, 39
Slightly decreased (0.89≤V≤0.99)	2,12,13,19,23, 25, 26, 28, 29, 43, 48
Unchanged (V=1.00)	24, 34
Slightly increased (1.01≤V≤1.11)	1, 3, 5, 7, 8, 9, 11, 14, 17, 18, 21, 22, 27, 30, 31, 38, 40, 44, 47,49
Significantly increased (V>1.11)	6, 10, 15, 16, 20, 32, 33, 36, 41, 42, 45, 46, 50

Source: Calculated from Census 2001 and 2011

Table 1: Overview of population density variation in HMC from 2001 to 2011

Among the 50 wards of HMC, 2 remained unchanged in terms of population density, accounting for 8percent of the total, while the others witnessed remarkable changes, either increase or decrease. 11 wards saw a minor reduction in population density, occupying a total area of about 6.062 km^2, whereas 20 wards experienced a slight rise in population density, occupying a total area of approximately 16.5 km^2.

Total 30 wards out of 50 have increased population density. Transport and Communication system, low crime rate, effective public services like education and health care facilities are attracted people to settle these wards which leads to an increased population density. There is significantly decreased in population density in 4wards. Many industries like Engineering, shipbuilding and jute mills were in these wards. These industries had coolie-lines. Due to the closure of the industries the coolie-lines disappeared, and other residential places of labours also dislocated. Workers and labourers with their families migrated to other places. For these reasons the population density of these wards has declined.

Decadal Growth of Population:

Figure 7 illustrates Haora Municipal Corporation's decadal population growth patterns from 1901 to 2011. However, the rates of increase have fluctuated significantly over time. For the entire Municipal Corporation, population growth rate was the highest during 1931-41 and the lowest during 1971-81. The biggest absolute population growth rates in HMC occurred between 1931 and 1941, owing to increased urbanisation, industrialization, and rural-to-urban migration, which resulted in a mushrooming of pocket-based population expansion. This nucleated impact of population increases, which is eventually linked to a spillover effect, aims to extend suburbs throughout Kolkata. Higher fertility in rural areas, on the other hand, puts strain on the land and pushes the population towards the city.

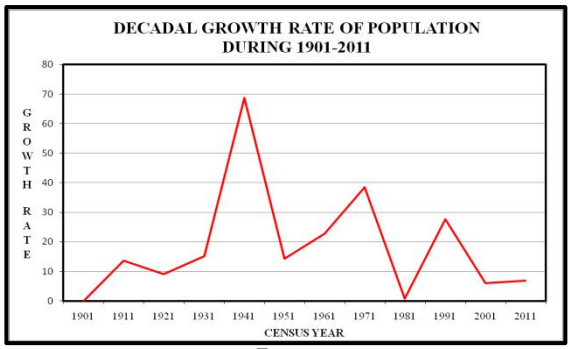

Figure: 7

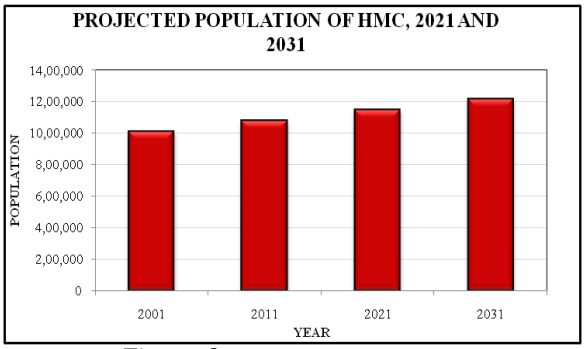

Figure: 8

Population Projection:

High-quality demographic statistics and estimates are increasingly crucial to the development, planning and delivery of public services in various geographic locations. HMC had a total population of 10,07,532 in 2001, which went up to 10,77,075 in 2011. Figure 8 shows an estimated population of HMC in 2021 and 2031 of 1146618 and 1216161, respectively. However, population predictions are not without drawbacks. The population forecasts are based on historical trends. The effect of assumptions about future migration, fertility, and death is frequently constrained by population change inertia; the future population of an area is substantially influenced by the initial base population. As a result, estimates for places with small populations are less reliable than those in areas with big populations, because migration affects them more.

Age Composition:

The age pyramid, often known as age and sex pyramids, is one of the most commonly used methodologies for assessing the age composition of a geographical area. The age pyramids are built to illustrate the age structure of the Haora Municipal Corporation for the years 2001 and 2011. The age and sex pyramids are structured methodically by age groups at 5 year intervals along the vertical axis and sex wise along the horizontal axis. The horizontal axis depicts the male and female population, with the right side reflecting the percentage of females and the left side showing the percentage of males.

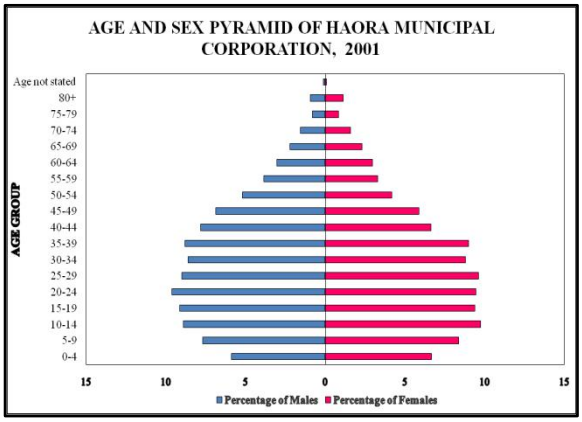

Figure: 9

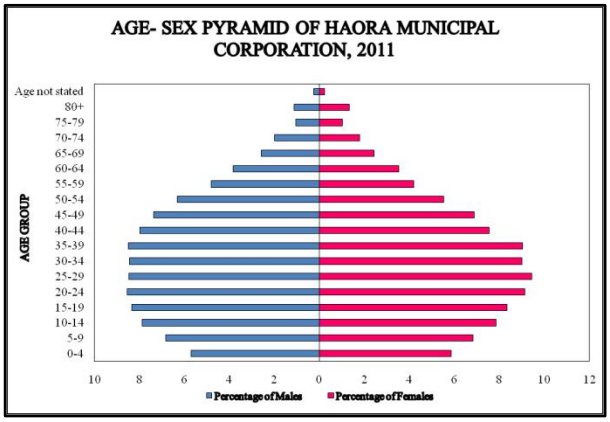

Figure: 10

There was a notable change in the shape of age and sex pyramids of HMC from 2001 to 2011. The pear shaped pyramid has turned into a balloon shaped pyramid over a decade. The juvenile population (0-14 age group) of HMC has decreased by 3.08percent, in which male and female population have decreased by 2.08percent and 4.28percent respectively.The youth population (15-29 age group) of HMC has decreased by 2percent, in which male and female population have decreased by 2.41percent and 1.57percent respectively.The matured population (30-44 age group) of HMC has increased by 0.39percent, in which male population has decreased by 0.28percent and female population has been increased by 1.16percent respectively. The experienced population (45-59 age group) of HMC has increased by 2.83percent, in which male and female population have been increased by 2.55 percent and 3.26 percent respectively.The retired population (60-74 age group) of HMC has increased by 1.28 percent, in which male and female population have increased by 1.61percent and 0.91percent respectively. The old population (Above 74 age) of HMC has increased by 0.56 percent, in which male and female population have increased by 0.6 percent and 0.52 percent respectively. The decrease in the juvenile population demonstrates the effectiveness of family planning measures. The centre of the pyramids, which represents the working population, has grown over the last decade. It refers to the expansion of educational facilities

and job possibilities. The improvement of health-care services has resulted in an increase in the elderly population. These factors cause the shape of the population pyramid to alter over time.

Gender Composition:

The sex ratio is a standard numerical measurement of a population's sex composition. In each country, this ratio is determined differently. The sex ratio in India is calculated in terms of the number of females per thousand males.

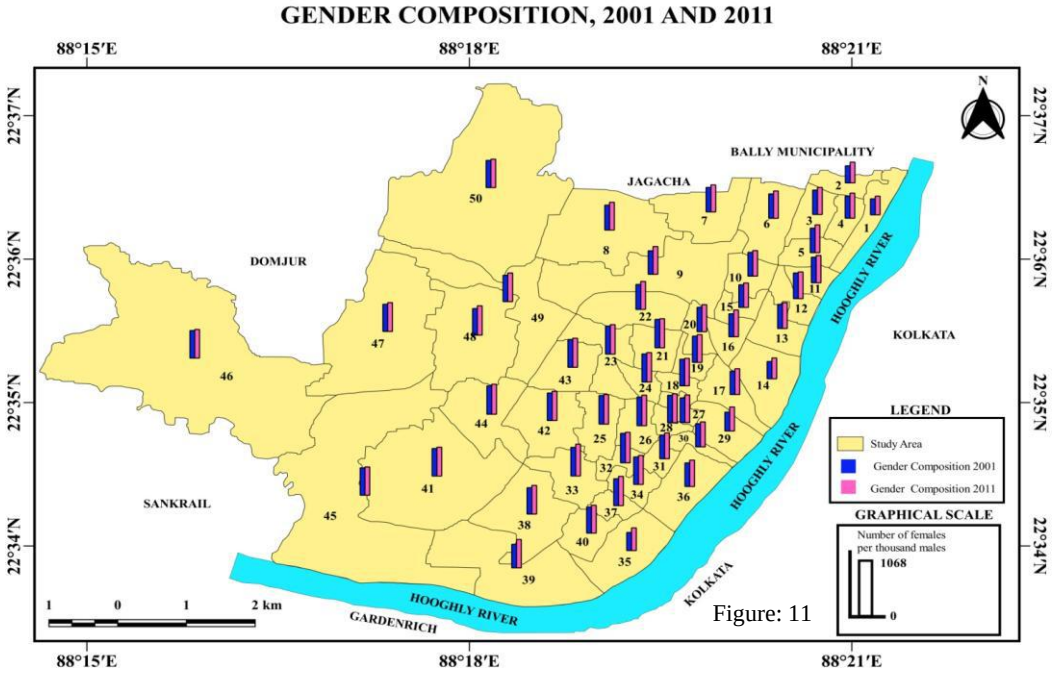

Figure: 11

Figure 11 depicts the Haora Municipal Corporation's sex ratio between 2001 and 2011. From this diagram, it can be seen that the sex ratio in all HMC wards has risen from 2001 to 2011 due to improvements in education, public awareness, improved health facilities, and so on. The highest and lowest positive change in sex ratio between 2001 and 2011 has been noticed in ward number 29 (176) and ward number 21 (22) due to women literacy rate. The change in sex ratio over time is categorized in 3 classes – high change, moderate change and low change. Change in sex ratio is high in ward numbers 2, 9, 16, 29, 35 and 39. The sex ratio is moderately changed in ward numbers 1,3,4,5,6,7,8,14,17,20,22,27,31,33,36,37,38,48 and 49. The change in sex ratio is low in the following wards- 10, 11, 12, 13, 15, 18, 19, 21, 23, 24, 25, 26, 28, 30, 32, 34, 40, 41, 42, 43, 44, 45, 46, 47 and 50.

Caste Composition:

India's caste system is possibly the world's oldest existing social structure. Caste, a distinguishing characteristic of Hinduism, is a complicated ordering of social groupings based on ceremonial purity. A person is regarded a member of the caste into which he or she is born and stays a member of that caste until death, but the specific ranking of that caste may vary across areas and over time. Differences in rank are historically rationalized by the religious theory of karma, which holds that one's station in life is determined by one's actions.

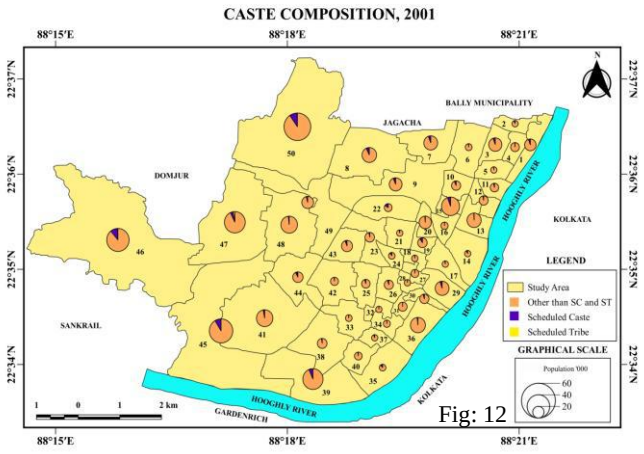

Fig: 12

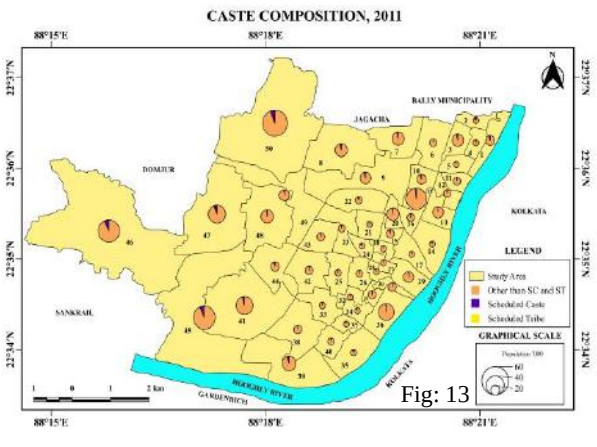

Fig: 13

Figures 12 and 13 show the caste composition of the HMC in 2001 and 2011, respectively. In these two illustrations, scheduled caste, scheduled tribe, and two castes that encompass general caste and other backward classes are depicted. In 2001, the SC population was highest in Ward 22 (15.52 percent of total population), but it has declined by 11.09 percent since then. SC population is declined due to migration. They migrate to other states and countries in search of employment and higher studies. In 2011, the SC population was highest in Ward 24 (11.58 percent of total population). In 2001, the SC population was lowest in Ward 31 (0.03 percent of total population), but it has increased by 0.36 percent since then. In 2011, Ward 16 had the lowest SC population. The ST population was highest in 2001 and 2011 in Ward 47 (2.51 percent and 1.72 percent of total population, respectively), but it has fallen by 0.79 percent in 2011. In both 2001 and 2011, there is no ST population in Wards 5, 16, 21, 27, 31, and 37. Other than SC and ST, the population is concentrated in Wards 31 and 16, respectively, in 2001 and 2011. SC population increased in wards 2, 20, 24, 27, 28, 31, 37, 40, 42, 44, 47, and 48, while ST population decreased in wards 3, 6, 9, 11, 12, 13, 15, 19, 22, 23, 25, 26, 29, 30, 33, 35, 38, 43, 44, 46, 47, 48, and 49.

Literacy:

Reducing poverty and mental isolation, fostering amicable and peaceful international relations, and letting demographic processes play out naturally all depend on literacy (Chandna, 1980, p. 98). On the assumption that a child could only be considered literate after attending school for two to three years, the age range zero to seven was left out of the literacy calculation for the 1981 Census. Consequently, a novel concept of effective literacy emerged. Effective literacy excludes children between the ages of 0 and 7, whereas crude (total) literacy is based on the entire population.

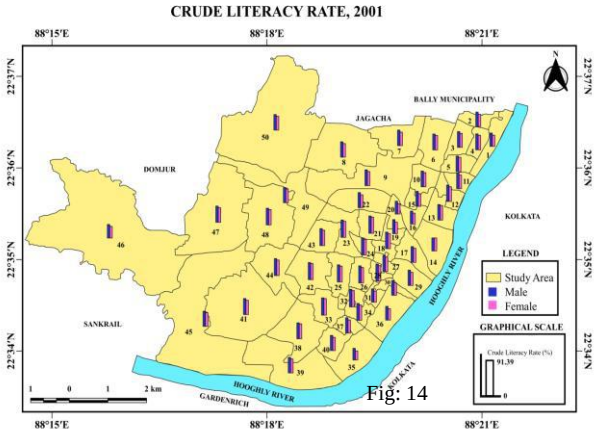

Fig: 14

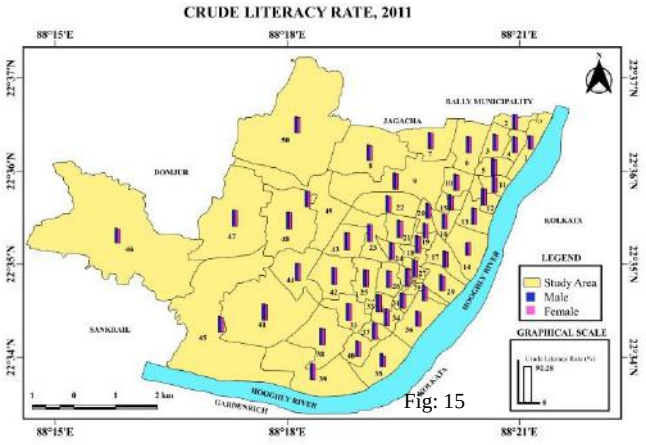

Fig: 15

Figures 14 and 15 depict the gender wise Crude Literacy Rate in 2001 and 2011 respectively. The progress of literacy between 2001 and 2011 is slow. But the improvement in crude literacy, especially in case of female literacy is noticeable. While the male crude literacy rate in the HMC has improved from 80.1percent to 81.2percent during 2001-11, that of female crude literacy rate has improved from 71.7 percent to 78.8 percent. The improvement in crude literacy rate during 2001-2011 is high in ward number 20 (12.3 percent, 9.7 percent and 15.8 percent in total, male and female literacy rates, respectively).

Effective literacy has, nevertheless, significantly improved, especially for women. The male effective literacy rate in the HMC rose from 88 percent to 91.1 percent between 2001 and 2011, while the female effective literacy rate went from 79.6 percent to 86.15 percent in the same period.

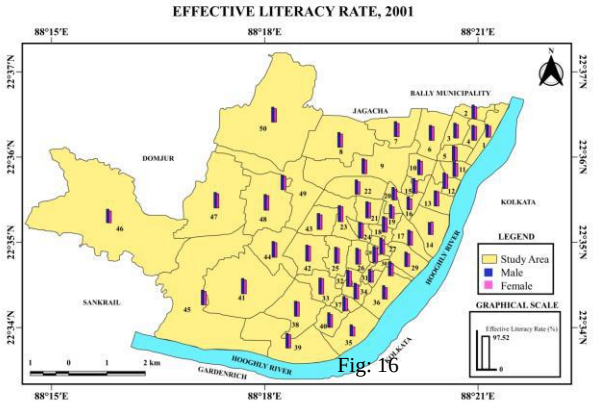

Fig: 16

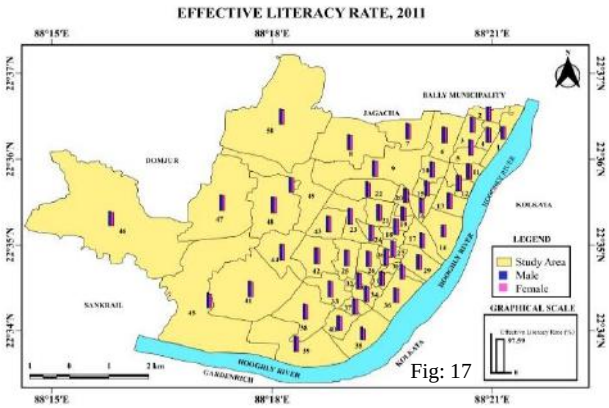

Fig: 17

Effective literacy rates in Ward 20 increased significantly between 2001 and 2011. The overall male and female literacy rates are 12.8 percent, 10.3 percent, and 16.5 percent, respectively. An increase in literacy rates is a result of both the quantitative expansion of educational facilities and the qualitative enhancement of the educational system. The government's policies of free and compulsory education, financial aid for the underprivileged, midday meal programs for school-age children, emphasis on female education, provision of high-quality educational institutions, and growth of technical education have all contributed to HMC's attainment of the necessary qualifications in the field of education.

Occupational Structure:

A "main worker" is defined by the Census of India as an individual who engaged in economically productive activity for six months or more before the enumeration date, and a "marginal worker" as an individual who engaged in economic activity for three months or less. By grouping its labor force into just four main categories, the Indian Census provides information about the country's occupational structure. Among them are laborers in household industries, agriculture, cultivation, and other (miscellaneous) labour.

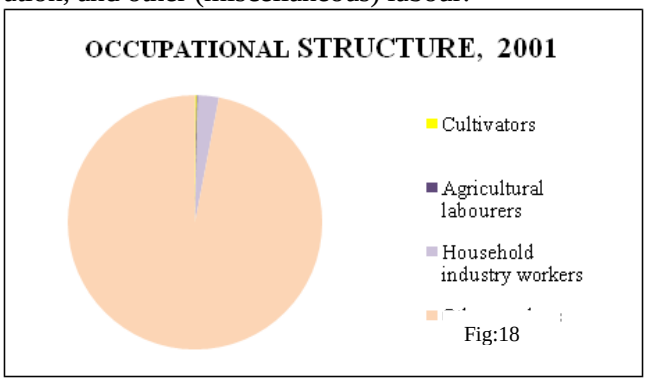

Fig:18

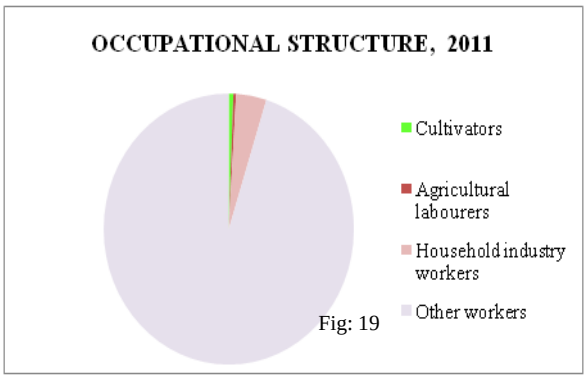

Fig: 19

Figures 18 and 19 represent the occupational structure of total HMC workers in 2001 and 2011. In 2001, 0.22 percent, 0.15 percent, 2.68 percent, and 96.98 percent of total workers in HMC were cultivators, agricultural workers, household-industry workers, and other workers, respectively. In 2011, however, 0.6 percent, 0.4 percent, 3.9 percent, and 95 percent of all workers were employed as cultivators, agricultural workers, household-industry workers, and other workers, respectively. Because HMC is a city, there are more other workers than the other three groups of workers. The number of main workers in this area has increased by 28274.

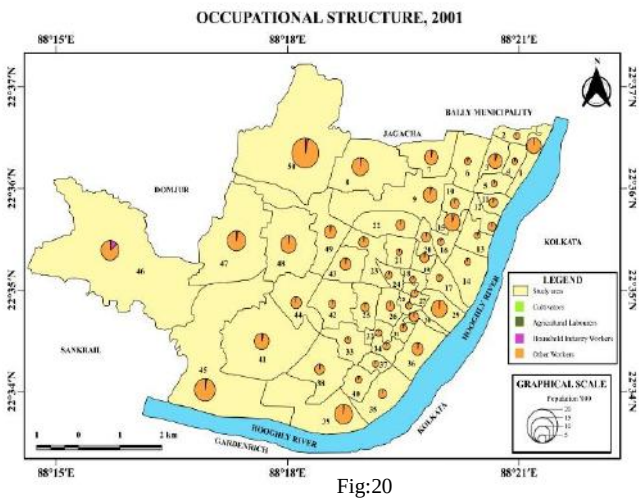

Fig:20

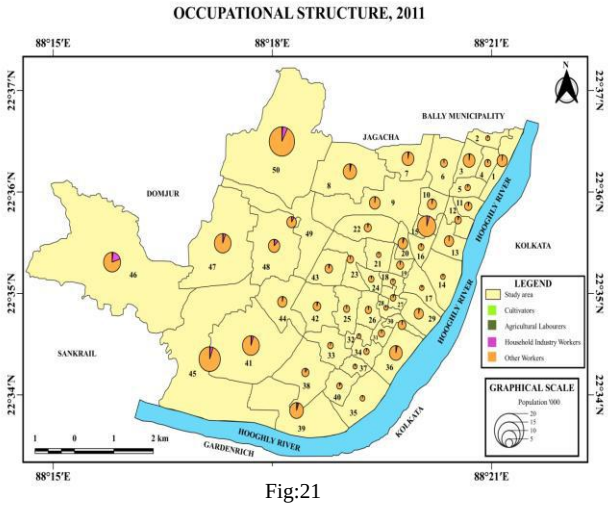

Fig:21

The occupational structure of HMC in 2001 and 2011 is depicted in figures 20 and 21. The highest total number of workers, which has increased by 5029, is found in Ward 50 (18283 in 2001 and 23312 in 2011). Ward 32 has the lowest total number of workers (2157 in 2001 and 2645 in 2011), despite a 488 rise in population. Ward 45 has had the most noticeable positive change in total workers, while Ward 29 has seen the most noticeable negative change in total workers.

Figures 20 and 21 also depict the industrial composition of HMC for the years 2001 and 2011 at ward level. Other workers, which include workers in manufacturing, administration, health, education, transportation, trade, commerce, public utility services, and so on, accounted for 96.98 percent and 95.15 percent of total workers in HMC in 2001 and 2011, respectively, which was the highest among the four major categories. Agricultural laborers came in fourth, household industry workers in second place, cultivators in third place, and other services in first place when it came to the overall number of workers.

In 2001, the wards had a higher proportion of other workers, ranging from a low of 85.97 percent in ward number 46 to a high of 99.58 percent in ward number 17, whereas in 2011, the proportion of other workers varies from a low of 80.21 percent in ward number 46 to a high of 99.41 percent in ward number 28.

In 2001, the wards had a proportion of household industry workers, ranging from a low of 0.2 percent in ward number 35 to a high of 13.14 percent in ward number 46, whereas in 2011, the proportion of household industry workers varies from a low of 0.27 percent in ward number 13 to a high of 17.94 percent in ward number 46.

In 2001, the wards had a proportion of cultivators, ranging from a low of 0 percent in ward number 5 to a high of 0.67 percent in ward number 30, whereas in 2011, the proportion of cultivators varies from a low of 0.14 percent in ward number 23 to a high of 1.34 percent in ward number 39.

Dependency Ratio:

By comparing the number of employed and dependent individuals by age, or 0–14 for those aged 15–64, the dependency ratio illustrates the negative economic effects of high rates of unemployment among working-age adults. While non-working populations are less stressed, the working group bears the responsibility of providing for the dependent population. The working population is subject to a greater tax burden as the population of non-workers increases. To reflect the aging population more accurately, adjustments are made for seniors who are getting close to 65.

Figure 22 shows that the dependency ratio has increased in Wards 1, 2, 3, 4, 5, 6, 9, 22, 29, and 35, while it has reduced in the remaining 40 wards. This ratio has increased due to lack of qualified jobs, out migration of independent population to the other cities for availability of better employment opportunities. The dependency ratio has dropped by 60 percent in Wards 39 and 45.

The dependency ratio has increased by 34 percent in ward number 29. In those wards where the dependency ratio of 2011 has decreased compared to the dependency ratio of 2001 the tax burden over the dependent population has also decreased and vice-versa.

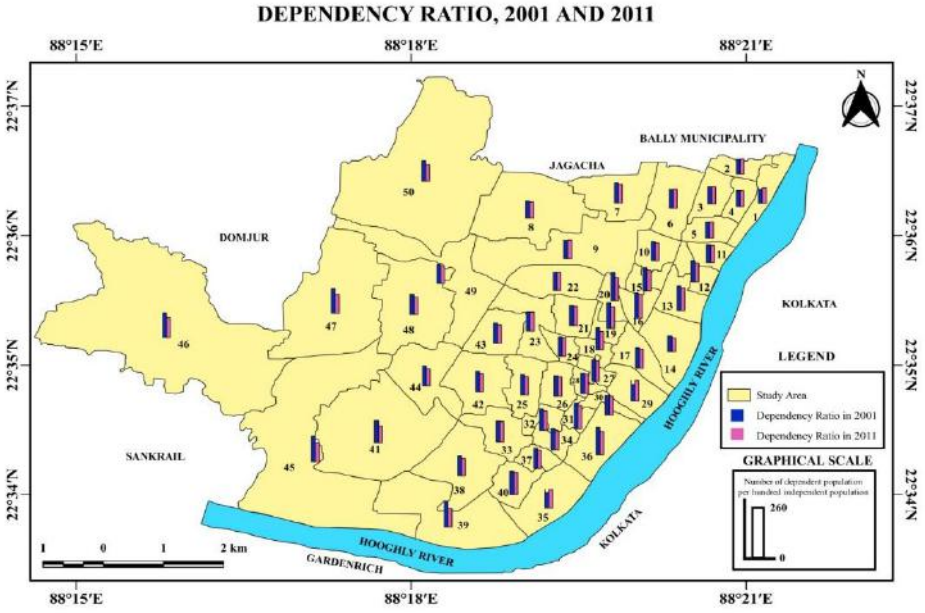

Fig:22

Slum Population:

India, home to one-sixth of the global population, has a 19.4-million-person housing shortage. Ninety percent of the shortages impact the LIG and impoverished, who reside in cramped dwellings made of cardboard, tin, straw, and mud. Since these men work in factories as unskilled laborers, slum neighborhoods are created by the high rate of migration from rural to urban areas. Melatala-Dasnagar and Tikiapara are two of the major slum areas in Haora Municipal

Corporation. The Indian census indicates that the slum population is in wards 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, 11, 15, 18, 19, 20, 22, 25, 26, 29, 39, 41, 44, 45, 47, 48, 49, and 50.

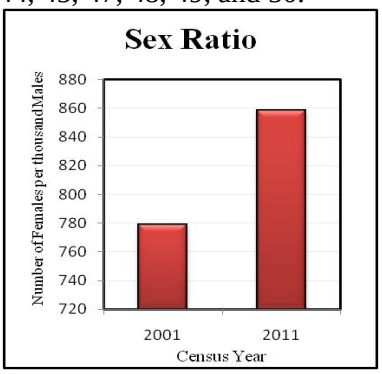

Figure: 23

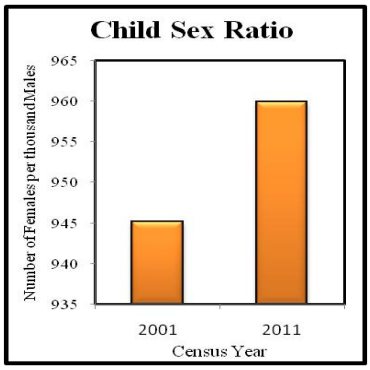

Figure: 24

Haora Municipal Corporation has some significant slum areas such as Melatala - Dasnagar and Tikiapara slum area. The ward numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, 11, 15, 18, 19, 20, 22, 25, 26, 29, 39, 41, 44, 45, 47, 48, 49 and 50 has slum population as per Indian census. Total slum population of HMC was 118286 (2001) which has decreased to 83509 (2011). Figures 23 and 24 show that HMC had a sex ratio of 778 in 2001, which improved to 858 in 2011, and that the child sex ratio increased by 14 between 2001 and 2011.

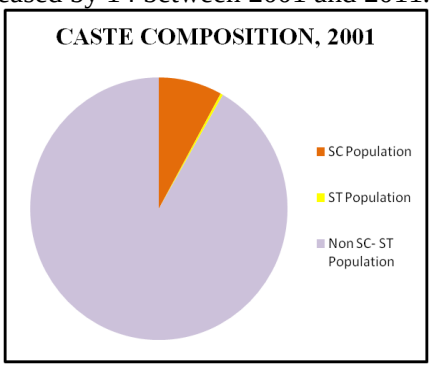

Figure: 25

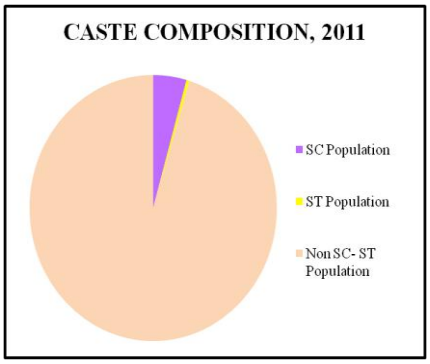

Figure: 26

Figures 25 and 26 show the caste composition of HMC's slum population in 2001 and 2011. Between 2001 and 2011, the SC population has dropped by 4 percent, while the ST population and other castes have risen by 1 percent and 3 percent, respectively.

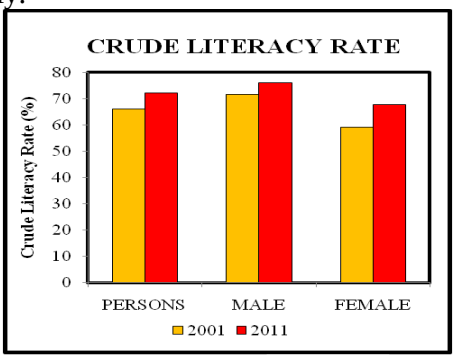

Fig:27

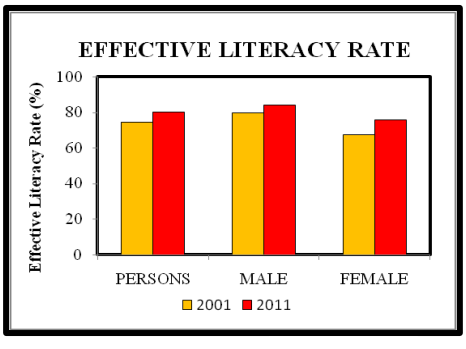

Fig:28

Figures 27 and 28 show crude literacy rate and effective literacy rate respectively. There is improvement can be seen in these two types of literacy rates during 2001-2011. Total crude literacy rate has improved by 5 percent and total effective literacy rate has increased by 6 percent between 2001 and 2011. The notable improvement in both literacy rates especially in case of females can be seen in these diagrams. Both female crude literacy rate and effective literacy rate have increased by 9% from 2001 to 2011 due to Government's policy of free and compulsory education, scholarships for poor, mid-day meal schemes for school going children, special focus on female child education and so on.

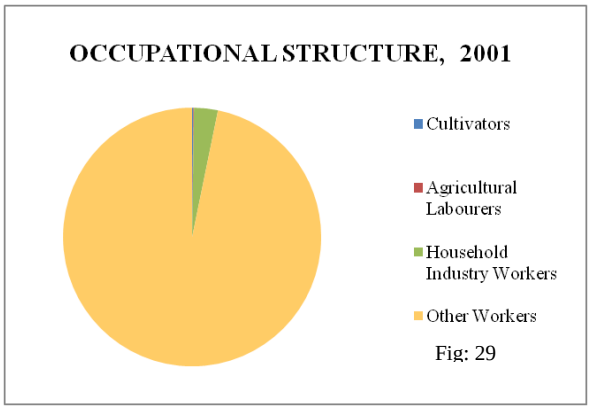

Fig: 29

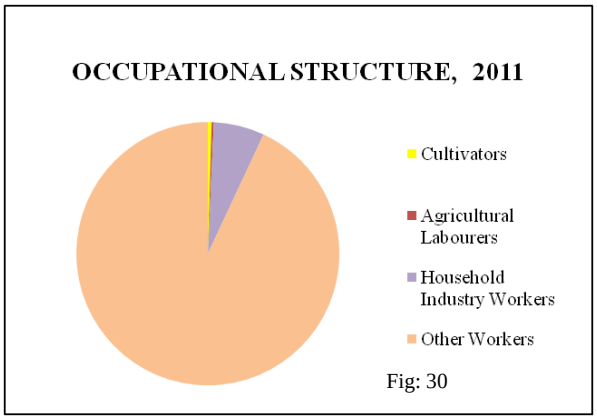

Fig: 30

Occupational structure of workers has shown in the figures 29 and 30 of Slum areas of HMC. Between 2001 and 2011 other workers has increased by 4 percent, household industry workers have increased by 3 percent and cultivators has increased by 1 percent. There is no notable change in agricultural labourers during 2001-2011.

6. MAIN FINDINGS

In a decade, the population of HMC has risen by 69343 people. In a decade, the population density of Haora Municipal Corporation has risen by 1344 people per square kilometer. The highest absolute population growth rates in HMC occurred between 1931 and 1941. The juvenile population and youth population of HMC have decreased by 3.08 percent and 2 percent respectively. The mature, experienced, retired, and old population of HMC has increased by 0.39 percent, 2.83 percent, 1.28 percent and 0.56 percent respectively. The Sex Ratio of HMC has increased by 77 females per 1000 males over a decade. SC and ST population has decreased by 1.59 percent and 0.06 percent of total population, respectively, while other than SC and ST population has increased by 1.64 percent of total population. The cultivators, agricultural laborers and household industry workers have increased by 0.36 percent, 0.21 percent, and 1.28 percent of total workers while people engaged in other workers has decreased by 1.83 percent. The dependency ratio of HMC has decreased by 33 percent. The crude literacy rate has increased by 4.9 percent, 3.35 percent, and 7.08 percent in terms of total, male and female respectively and the effective literacy rate has increased by 4.54 percent, 3.09 percent and 6.55 percent in terms of total, male and female respectively. The total slum population of Haora Municipal Corporation has dropped by 34777 people. The sex ratio and child sex ratio of slums have increased by 80 and 14 females per 1000 males, respectively between 2001 and 2011. Between 2001 and 2011, the SC population has dropped by 4 percent, while the ST population and other castes have risen by 1 percent and 3 percent, respectively. The crude and effective literacy rates have improved by 5 percent and 6 percent between 2001 and 2011. Other workers have increased by 4 percent, household industry workers have increased by 3 percent and cultivators have increased by 1 percent.

7. CONCLUSION

Census records show that since Independence, the total population of the Haora Municipal Corporation has been steadily increasing. This is due, in part, to the metropolitan area's increasing population pressure and the development of the Kolkata metropolitan area across the Hooghly River. The steady increase in population and the improvement of various daily living amenities are driving up the market value of land in HMC. Howrah Railway Station was established in 1854, and since then, its population has increased. It is currently connected by train to major Indian towns, serving as both a transportation hub for West Bengal and a crucial gateway for Kolkata, its twin city. The proportion of tertiary employees has increased, while the number of cultivators and agricultural labourers has decreased, indicating the rise of HMC. Haora is the second-biggest city in the state, but during the previous century, it has made insufficient investments in the development of its infrastructure. Haora thus continues to struggle with enduring problems like pollution, population growth, and transportation congestion. The state's already overburdened infrastructure is further taxed as the newly arrived immigrant labour force from neighbouring states and the remaining rural portions of the state look for cheaper housing. Such migrations frequently turn a neighbourhood into a slum with inadequate infrastructure. Based on one of these slums in the Haora Municipal Corporation, Kolkata's metropolitan area is frequently referred to as the "City of Joy." However, a few new industrial initiatives, such as Kona Truck Terminus, introduction of new metro service of Howrah-Kolkata which will enhance population growth and its characteristics, are improving the situation.

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