

Decadal Growth (2001 -2011) and Spatial Variation of Population in Siliguri Municipal Corporation of Darjeeling District, West Bengal

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As mankind has changed drastically over the time of history so has their geographical extension. Today settlements can be observed from Oymyakon, Russia to Death Valley of California and from Alaska to Australia. Population has spread all over the world. But the proportion of concentration differs from one part of the world to another e.g., temperate regions are experiencing population boom while in equatorial and polar regions they are concentrated in dispersed scattered groups. on the basis of political boundary China, India, Bangladesh, Brazil, Nigeria, Indonesia, Pakistan, USA, Russia, Germany, Italy etc countries shows a huge number of population while some other countries like Greenland, Mongolia, Namibia, Australia shows less population in comparison.

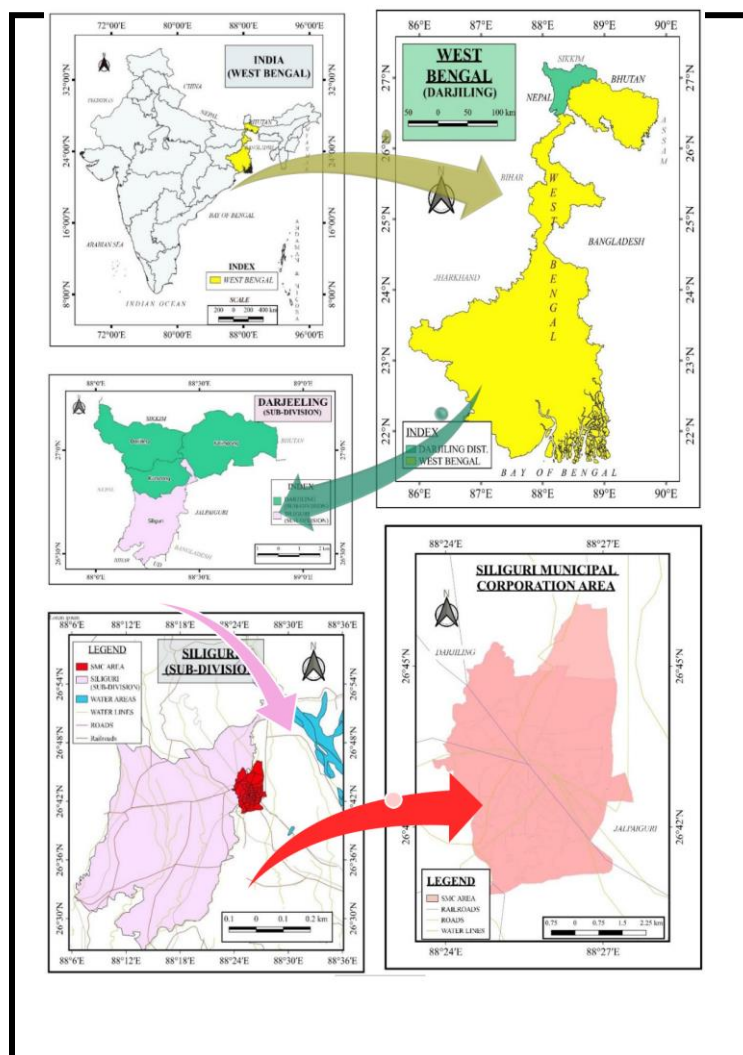
Objectives

The study of population is concerned not only with the population variables but also with the relationship between population variables such as social, economic, political, biological, genetic, geographical and the interrelationship between those variables. The main objective of this paper “Decadal Population Growth Rate of Siliguri municipal corporation (2001-2011)” is to develop a comparable study in the wards of Siliguri in terms of its population growth from 2001 to 2011 census year. To study the female growth rate structure.

Study Area

The entire study area is located in Siliguri corridor of Darjeeling and Jalpaiguri district of West Bengal, India between 26°40'41" N _26°47'32" n latitude and 88°23'48"E to 88°27'48"E longitude. It is surrounded by dense forests, tea gardens, wildlife sanctuaries and the flood plain of North Bengal. As there is no other transport medium other than by land to reach the north eastern states of India, Siliguri plays significant role in connecting these distant locations to the main land. To reach the hill stations such as Gangtok, Darjeeling, Kalimpong, Kurseong, and Mirik, Siliguri acts as a nodal point in terms of air, rail, road network. Hence this region is known as “Doors to North-eastern India” or “chickens Neck”.

LOCATION MAP OF STUDY AREA



Materials and Methods

The entire study has been done on secondary data collected from mainly Census of India, and also from Census Digital Library District Census Handbooks, various articles, Books and Journals. Maximum relevant data is taken from two consecutive census reports 2001, 2011 primary census abstracts. Statistical tables and choropleth mapping techniques is used for showing the spatio - temporal variation of total Population, Total Male and Female Population, Population Density of Siliguri Municipal Area.

Brief History of Siliguri

Siliguri municipal corporation. It is the third largest urban agglomeration in west Bengal after Kolkata and Asansol. Its strategic location has made it in a significant commercial trading centre. But just less than a century ago Siliguri was nothing but an ordinary village with unnoticeable number of population. It was in 1907 that Siliguri was declared a sub division or mahakuma by the British Administration. It has a total of 784 persons at that time. The original location of Siliguri was to the south of where Shaktigarh is located today. The region is now under Jalpaiguri district and Rajganj police Station. The government activities were mostly conducted from the area where Hashquoa

tea estate is located today. The Siliguri Municipality was established in 1949. In 1961 it was declared a class I town, the -first of its type in the entire region of North Bengal. In 1994 due to the unmeasured growth Siliguri was given the status of corporation. Until 1994 there was 33 wards in Siliguri after the declaration 14 wards were added in Siliguri corporation area these areas come under Jalpaiguri district.

Decadal Growth of Population

The growth rate of Siliguri since it became a town in 1931 was very rapid. In 1907 the population of Siliguri was 784. In 1931 it increased to 6,067 marks. Between 1931 and 1951 the growth rate was at its peak mainly because of the consequences of independence. In the following decades the rate declined nearly half. again 2001 the growth rate increased nearly two-fold. The main reason behind this sudden growth was the upgradation of Siliguri municipality into Siliguri municipal corporation.

Census Year	Population	Decadal variation (in Percentage)
1931	6,067	—
1941	10,487	72.9
1951	32,480	209.7
1961	65,471	101.6
1981	97,484	48.9
1991	1,54,378	58.4
2001	4,72,374	206.0
2011	5,13,264	8.7

Source: Census of India.

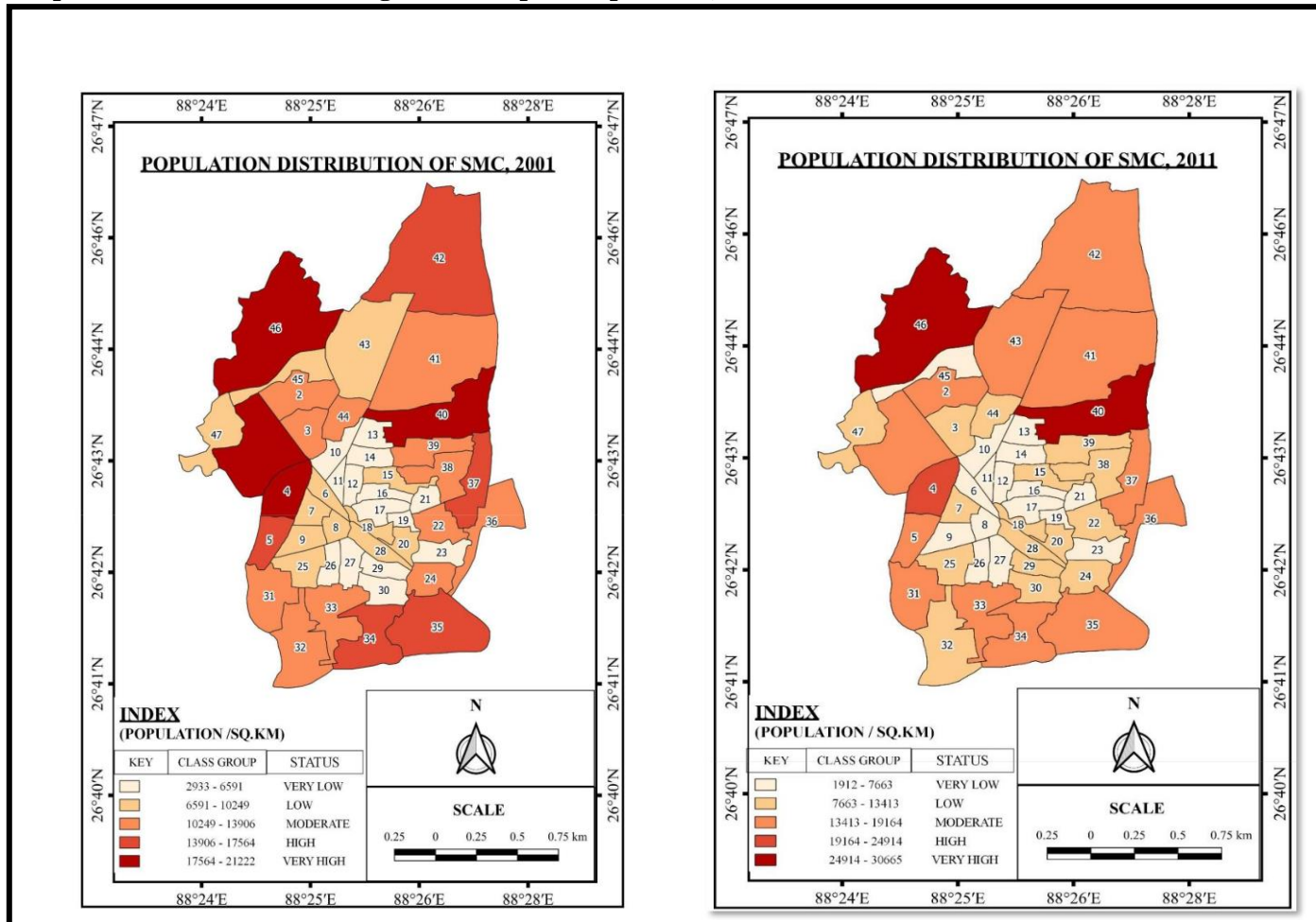
Demographic Character

The Spatio - temporal changes in population distribution shows change in the whole number of populations in a given time. There is a wide variety in terms of total population distribution in the wards of Siliguri municipal corporation as well as between the two census years. As of 2001 and 2011 data, lowest population is found in the ward no 11 and highest population in ward no 46. Interestingly in ward no-11, population decreased another 34.5% while ward no - 46 shows a growth of 44.5% in its total population. Here all the wards have been divided into five zones to get a clear picture of the spatial distribution of populations in various wards.

Total population of Siliguri Municipal Corporation is more than 5 lakhs. The distribution of population among the 47 wards are not equal. The lowest population is found in ward no 11 with 2933 total population in 2001 which further decreases into 1912 persons in census 2011. And it shows the second most negative growth rate after, ward no 8. However, the highest population is observed in ward no 46 with 21222 population in 2001. It holds its position to the top with 30665 people as inhabitants in 2011. This ward has seen the third highest growth rate in the municipality area after, ward 29 (highest growth rate), and 43(second highest growth rate). In below distribution of population of Siliguri Municipal Corporation Area has been divided into five zones of very low to very high category.

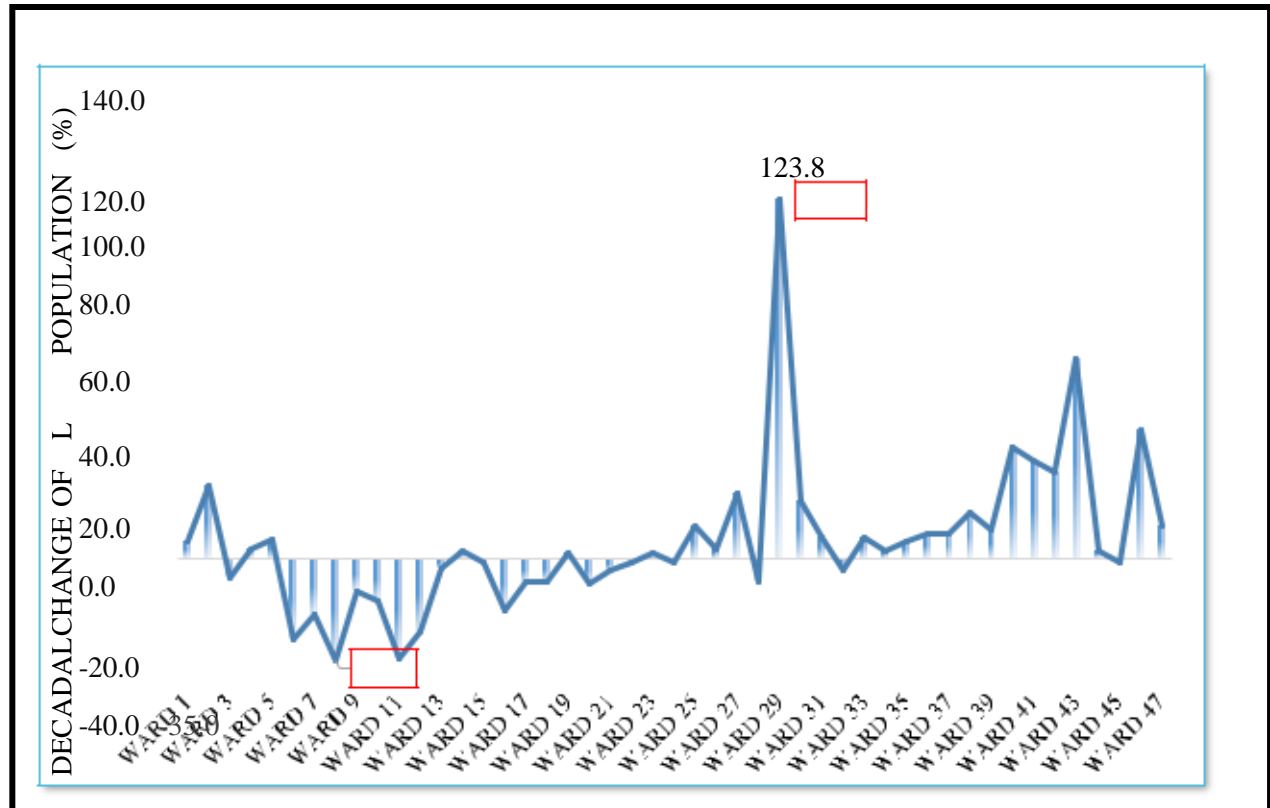
SL. NO.	WARDS	TOTAL POPULATION		GAP BETWEEN (2001- 2011)	
		2001	2011	WHOLE NUMBER	PERCENTAGE
1	WARD 1	17843	18928	1085	6.1
2	WARD 2	11436	14327	2891	25.3
3	WARD 3	11753	10993	-760	-6.5
4	WARD 4	20028	20745	717	3.6
5	WARD 5	15326	16369	1043	6.8
6	WARD 6	9023	6484	-2539	-28.1
7	WARD 7	9889	7954	-1935	-19.6
8	WARD 8	7843	5097	-2746	-35.0
9	WARD 9	7306	6481	-825	-11.3
10	WARD 10	4720	4019	-701	-14.9
11	WARD 11	2933	1912	-1021	-34.8
12	WARD 12	3772	2832	-940	-24.9
13	WARD 13	5070	4886	-184	-3.6
14	WARD 14	6407	6566	159	2.5

Population Distribution of Siliguri Municipal Corporation, Census – 2001 & 2011



Total population of Siliguri has increased but in some selected spaces. According to 2001 census, the wards with very low population proportion are ward no-10, 11, 12, 13, 14, 16, 17, 19, 21, 23, 29, 16, 17, 30. Wards with low population (6591-10249 persons) are 6, 7, 8, 9, 15, 18, 20, 25, 43, 45, 47. Wards with moderate population (10249-13906 persons) are 2, 3, 22, 24, 31, 32, 33, 36, 38, 39, 41, 44, wards with high population (13906-17564 persons) are 34, 35, 37, 42. Wards with very high populations (17564-21222) in the SMC area are Ward no- 1, 4, 46, 40. According to 2011 census 20 out of 47 wards have shown negative growth rate. Among these wards 29 has shown interestingly immense positive growth rate of 123.8% while on the other hand ward no 8 has lost 35% of its population from last census. It has been noticed that the wards under Jalpaiguri district have gone through positive growth in population while most of the ward under Darjeeling district has experienced negative growth. For 2021 populations have divided in the same manner but range of values have increased as the dispersion of negative and positive growth have also increased. Thus, total number of wards under very low category (1912-766 persons) has increased with the addition of ward no 45, 6, 9, 8. Wards under low category (7663-13413 persons) are ward no-37, 15, 18, 20, 22, 24, 25, 28, 29, 30, 32, 38, 39, 44, 47. In moderate category (13413-19164) there are ward no-1, 2, 5, 31, 33, 34, 35, 36, 37, 41, 42, 43. Ward no 4 fall under high category (19164-24914 persons) and 43, 46 ward comes under very high category (24914-30665 persons) that also means these wards holds highest number of population in their respective areas as well as in the whole study area.

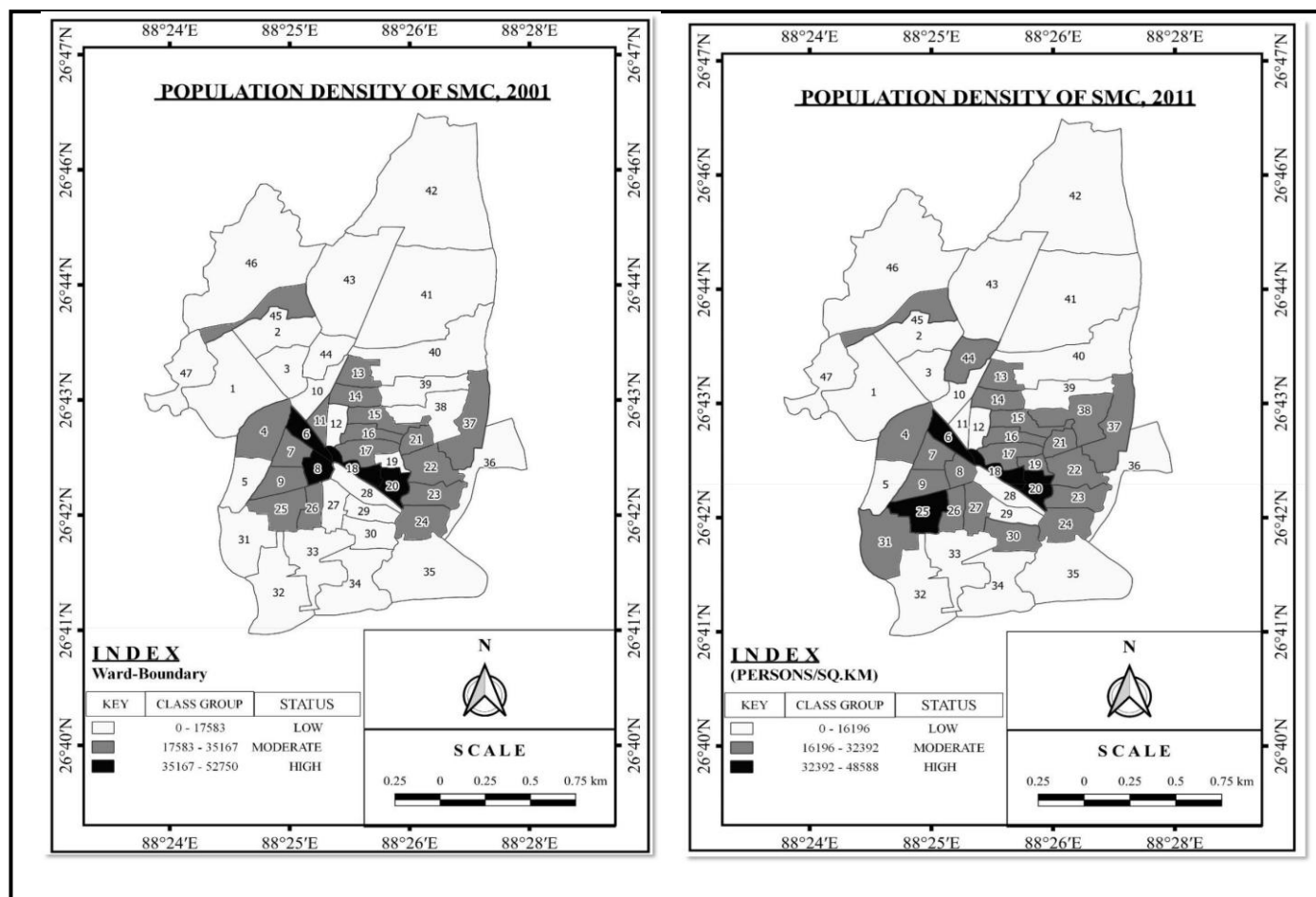
Ward – wise Decadal Population Growth of Siliguri Municipal Corporation (2001 – 2011)



SPATIO -TEMPORAL CHANGE IN DENSITY OF TOTAL POPULATION

Population density is the number of people per unit of geographic area. Here spatio temporal changes in population density of Siliguri Municipal Corporation has been calculated. It's an important tool to analyse the pressure of population upon its resources.

POPULATION DENSITY MAP OF SMC, 2001, 2011



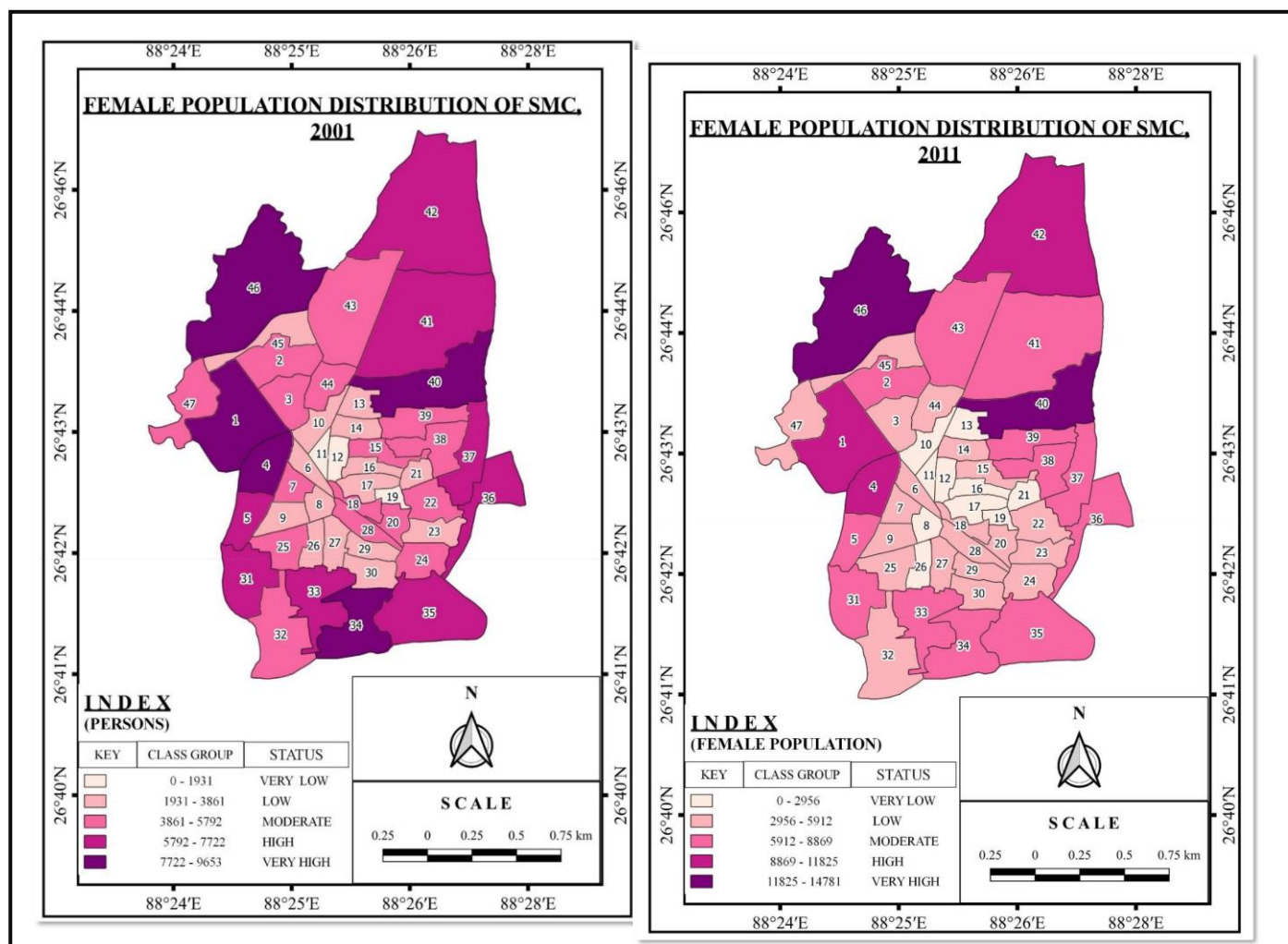
The decadal change of Population Density is divided into three categories of low moderate and high density. Highest population densities are found around the places of very low population distribution. these are also the places with less geographic areas. As of 2001 census data highest population density of 52570 person's/ sq. km is found in ward no 18 also known as Subhas Pally or town Station area and lowest density is found in ward no 42 (3544.8 persons/sq.km). and both holds their ranks in 2011 also. Obviously, ward 42 has the highest area, 4.15 sq.km, followed by ward no 46 (3.63 sq.km) among the wards and ward no18 possesses the lowest amount of land area (0.16 sq.km) in the study area. Ward no 25 with an area of 0.25 sq. km shows second highest growth. Ward number 25 or Milan pally shows an increase of extra 3736 persons per sq. km from last year.

Ward	Area (Sq. Km.)	Total Population (2001)	Density (Persons/ Sq. Km.)	Total Population (2011)	Density (Persons/ Sq. Km.)
1	2.3	17843	7757.8	18928	8229.6
2	1.5	11436	7624.0	14327	9551.3
3	1.02	11753	11522.5	10993	10777.5
4	1.13	20028	17723.9	20745	18358.4
5	1.22	15326	12562.3	16369	13417.2
6	0.2	9023	45115.0	6484	32420.0
7	0.32	9889	30903.1	7954	24856.3
8	0.2	7843	39215.0	5097	25485.0
9	0.28	7306	26092.9	6481	23146.4
10	0.77	4720	6129.9	4019	5219.5
11	0.16	2933	18331.3	1912	11950.0
12	0.24	3772	15716.7	2832	11800.0
13	0.28	5070	18107.1	4886	17450.0
14	0.32	6407	20021.9	6566	20518.8
15	0.34	8103	23832.4	8002	23535.3
16	0.24	5984	24933.3	4922	20508.3
17	0.2	5485	27425.0	5029	25145.0
18	0.16	8440	52750.0	7774	48587.5
19	0.2	3233	16165.0	3286	16430.0
20	0.24	9869	41120.8	9009	37537.5
21	0.32	5875	18359.4	5624	17575.0
22	0.48	10293	21443.8	10182	21212.5
23	0.28	6205	22160.7	6340	22642.9
24	0.48	11165	23260.4	11045	23010.4
25	0.25	8525	34100.0	9459	37836.0
26	0.24	4873	20304.2	5038	20991.7
27	0.36	5630	15638.9	6892	19144.4
28	0.69	9578	13881.2	8836	12805.8
29	0.69	4783	6931.9	10703	15511.6
30	0.43	6510	15139.5	7819	18183.7
31	0.8	13414	16767.5	14424	18030.0
32	1.29	11845	9182.2	11334	8786.0
33	1.13	13543	11985.0	14518	12847.8
34	1.28	16560	12937.5	16999	13280.5
35	1.94	14945	7703.6	15820	8154.6
36	0.96	13553	14117.7	14734	15347.9
37	0.64	14431	22548.4	15690	24515.6
38	0.65	11235	17284.6	13022	20033.8
39	0.78	11237	14406.4	12353	15837.2
40	2.43	18164	7474.9	25152	10350.6
41	3.24	12951	3997.2	17351	5355.2
42	4.15	14711	3544.8	19139	4611.8
43	1.77	9661	5458.2	16339	9231.1
44	0.73	11522	15783.6	11843	16223.3
45	0.26	7117	27373.1	7001	26926.9
46	3.63	21222	5846.3	30665	8447.7
47	0.68	8363	12298.5	9327	13716.2
Total	41.9	472374	18361.3	513264	17990.1

SPATIO-TEMPORAL CHANGES IN TOTAL MALE-FEMALE POPULATION

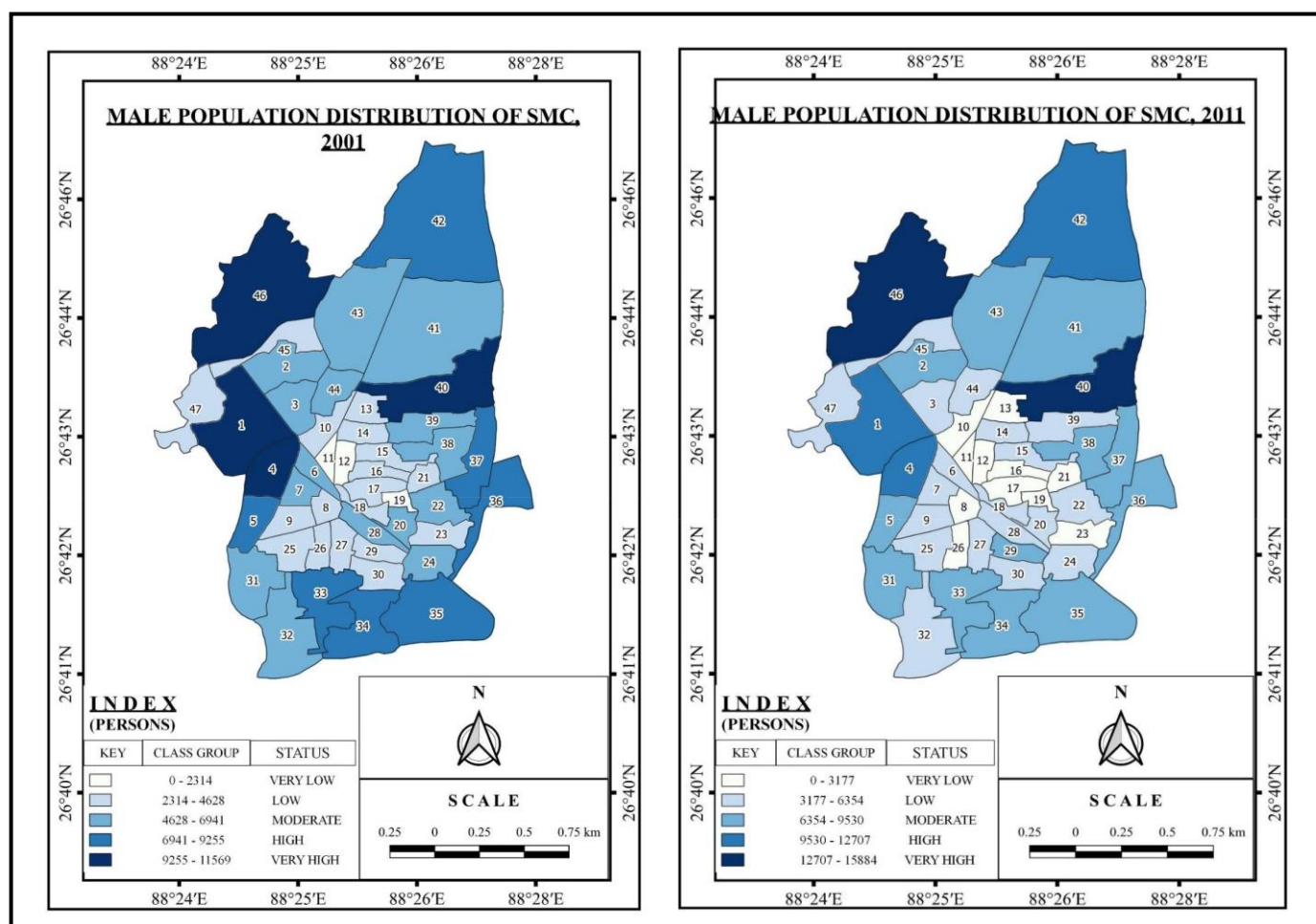
Spatio-temporal change in male female population means change in the total number of populations of a given area in a given time. Here, the change in proportion of male female population between 2001 and 2011 census has been calculated and divided into five classes of very low, low, moderate, high and very high category. For this male female populations for each census year have been displayed separately.

Ward – wise Distribution of Total Female Population (2001 and 2011)



As of 2011 Highest distribution of female population rate has seen in ward no 17 with 51% concentration. And highest distribution of male population is seen in ward 29 with 50 of its population as male. Interestingly lowest distribution of female population is observed in ward no 29 with 40% of the population as females. and lowest distribution of male population is seen in ward no 17 with 47% male population.

Ward – wise Distribution of Total Male Population (2001 and 2011)

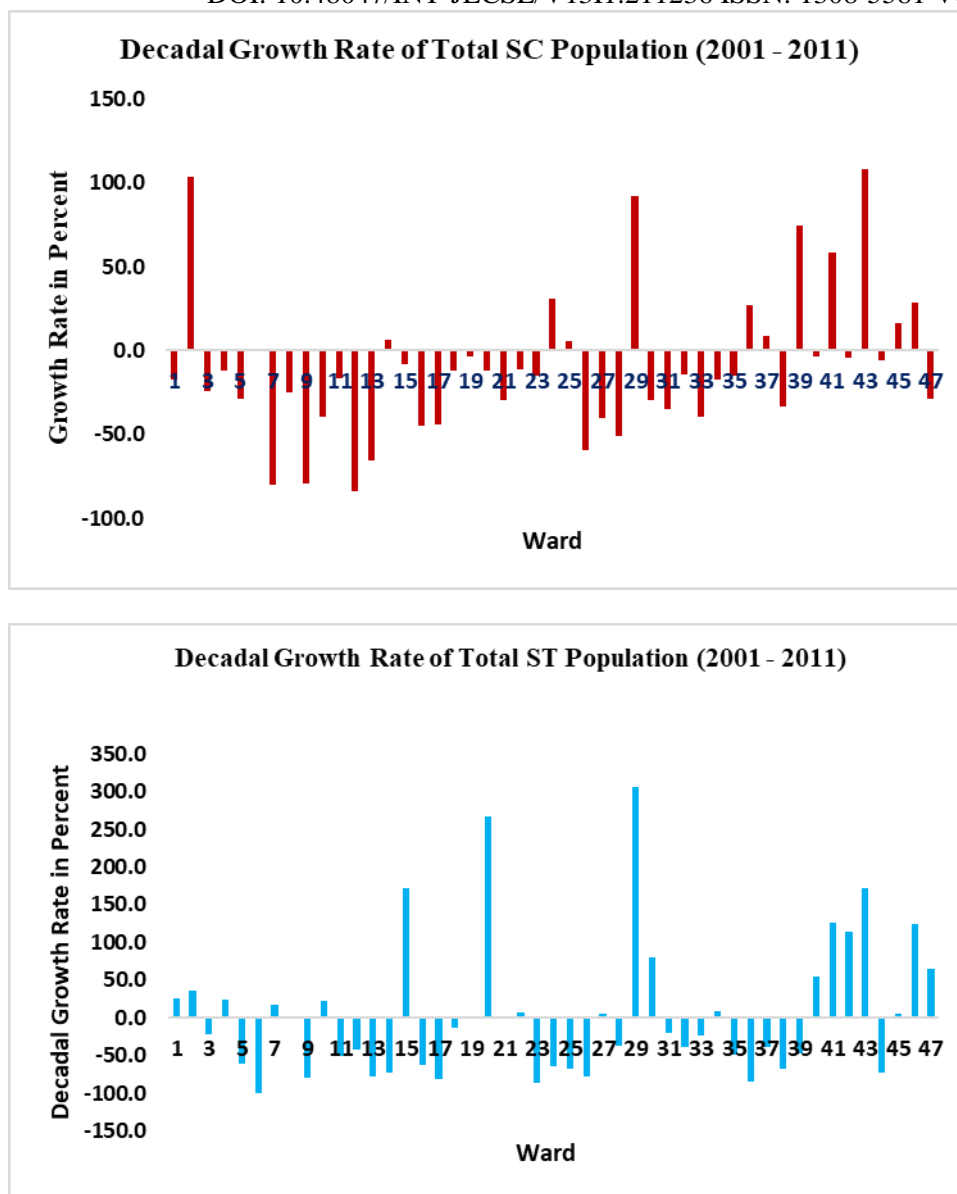


SPATIO TEMPORAL CHANGE IN SC AND ST POPULATION

Like other Indian cities population differentials among different castes is found in the study area. The picture of ST population is somewhat better than the SC population. The growth rate for total SC population is -4.9% but the growth rate of total population is 8.7%. The growth rate of SC population as a whole, -4.9% is much lower than that of Siliguri town. Highest population growth rate, 108.1, is found in ward no 43, and lowest population growth - 83.3 is found in ward no 12. Ward no 2, 24 29, 36 39, 41, 45, and 46 has shown better growth rate than the average growth rate of SMC area. Other areas like ward no 6, 14, 15, 25, 37 have also shown positive growth rate but less than the average of Siliguri town. Whereas ward no 1, 3 4, 5, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 30, 31, 32, 33, 34, 35, 38, 40, 42, 44, 47 has shown negative growth.

Ward	SC Population (2001)			SC Population (2011)			Growth Rate (2001 - 2011)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1	2796	1471	1325	2314	1167	1147	-17.2	-20.7	-13.4
2	677	353	324	1380	694	686	103.8	96.6	111.7
3	580	336	244	439	237	202	-24.3	-29.5	-17.2
4	1337	715	622	1180	598	582	-11.7	-16.4	-6.4
5	2468	1333	1135	1760	916	844	-28.7	-31.3	-25.6
6	181	95	86	183	82	101	1.1	-13.7	17.4
7	288	174	114	57	32	25	-80.2	-81.6	-78.1
8	172	96	76	129	67	62	-25.0	-30.2	-18.4
9	71	50	21	15	10	5	-78.9	-80.0	-76.2
10	211	91	120	128	65	63	-39.3	-28.6	-47.5
11	67	33	34	56	33	23	-16.4	0.0	-32.4
12	108	66	42	18	13	5	-83.3	-80.3	-88.1
13	252	129	123	87	40	47	-65.5	-69.0	-61.8
14	373	184	189	396	197	199	6.2	7.1	5.3
15	373	180	193	343	168	175	-8.0	-6.7	-9.3
16	232	106	126	129	67	62	-44.4	-36.8	-50.8
17	343	171	172	143	78	65	-44.3	-54.4	-62.2
18	2770	1491	1279	2432	1283	1149	-12.2	-14.0	-10.2
19	293	146	147	284	146	138	-3.1	0.0	-6.1
20	2508	1280	1228	2204	1156	1048	-12.1	-9.7	-14.7
21	1124	555	569	790	390	400	-29.7	-29.7	-29.7
22	1532	791	741	1365	688	677	-10.9	-13.0	-8.6
23	959	490	469	813	399	414	-15.2	-18.6	-11.7
24	1847	940	907	2416	1237	1179	30.8	31.6	30.0
25	310	174	136	328	166	162	5.8	-4.6	19.1
26	438	219	219	179	85	94	-59.1	-61.2	-57.1
27	291	139	152	174	88	86	-40.2	-36.7	-43.4
28	2042	1029	1013	1001	506	495	-51.0	-50.8	-51.1
29	144	82	62	276	148	128	91.7	80.5	106.5
30	853	419	434	604	308	296	-29.2	-26.5	-31.8
31	2853	1473	1380	1866	953	913	-34.6	-35.3	-33.8
32	1137	614	523	978	509	469	-14.0	-17.1	-10.3
33	1713	974	739	1044	517	527	-39.1	-46.9	-28.7
34	3779	1955	1824	3131	1598	1533	-17.1	-18.3	-16.0
35	3740	1929	1811	3191	1659	1532	-14.7	-14.0	-15.4
36	4636	2413	2223	5905	3073	2832	27.4	27.4	27.4
37	3531	1828	1703	3833	2028	1805	8.6	10.9	6.0
38	1243	634	609	832	427	405	-33.1	-32.6	-33.5
39	579	304	275	1009	509	500	74.3	67.4	81.8
40	2446	1255	1191	2369	1259	1110	-3.1	0.3	-6.8
41	1756	933	823	2779	1403	1376	58.3	50.4	67.2
42	6592	3426	3166	6300	3227	3073	-4.4	-5.8	-2.9
43	1208	653	555	2514	1313	1201	108.1	101.1	116.4
44	2092	1089	1003	1966	1003	963	-6.0	-7.9	-4.0
45	438	236	202	508	262	246	16.0	11.0	21.8
46	2316	1222	1094	2979	1541	1438	28.6	26.1	31.4
47	1313	690	623	932	468	464	-29.0	-32.2	-25.5
Total	67012	34966	32046	63759	32813	30946	-9.9	-11.6	-8.2

Ward	ST Population (2001)			ST Population (2011)			Growth Rate (2001 - 2011)		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1	191	100	91	239	128	111	25.1	28.0	22.0
2	299	136	163	407	183	224	36.1	34.6	37.4
3	176	90	86	138	63	75	-21.6	-30.0	-12.8
4	56	27	29	69	41	28	23.2	51.9	-3.4
5	54	28	26	21	11	10	-61.1	-60.7	-61.5
6	16	10	6	0	0	0	-100.0	-100.0	-100.0
7	6	4	2	7	5	2	16.7	25.0	0.0
8	0	0	0	1	0	1	0.0	0.0	0.0
9	29	22	7	6	3	3	-79.3	-86.4	-57.1
10	49	31	18	60	34	26	22.4	9.7	44.4
11	4	1	3	2	1	1	-50.0	0.0	-66.7
12	7	3	4	4	2	2	-42.9	-33.3	-50.0
13	79	39	40	17	8	9	-78.5	-79.5	-77.5
14	54	26	28	15	5	10	-72.2	-80.8	-64.3
15	7	3	4	19	11	8	171.4	266.7	100.0
16	8	7	1	3	0	3	-62.5	-100.0	200.0
17	39	22	17	7	2	5	-82.1	-90.9	-70.6
18	52	27	25	45	22	23	-13.5	-18.5	-8.0
19	0	0	0	6	4	2	0.0	0.0	0.0
20	9	5	4	33	23	10	266.7	360.0	150.0
21	21	13	8	21	6	15	0.0	-53.8	87.5
22	15	6	9	16	7	9	6.7	16.7	0.0
23	153	71	82	21	12	9	-86.3	-83.1	-89.0
24	48	26	22	17	9	8	-64.6	-65.4	-63.6
25	130	67	63	41	19	22	-68.5	-71.6	-65.1
26	14	10	4	3	1	2	-78.6	-90.0	-50.0
27	37	15	22	39	21	18	5.4	40.0	-18.2
28	27	12	15	17	10	7	-37.0	-16.7	-53.3
29	17	7	10	69	50	19	305.9	614.3	90.0
30	15	7	8	27	17	10	80.0	142.9	25.0
31	64	31	33	51	24	27	-20.3	-22.6	-18.2
32	311	164	147	190	92	98	-38.9	-43.9	-33.3
33	126	82	44	97	45	52	-23.0	-45.1	18.2
34	79	43	36	86	47	39	8.9	9.3	8.3
35	115	53	62	59	40	19	-48.7	-24.5	-69.4
36	273	136	137	44	22	22	-83.9	-83.8	-83.9
37	51	24	27	31	15	16	-39.2	-37.5	-40.7
38	40	19	21	13	5	8	-67.5	-73.7	-61.9
39	38	22	16	20	10	10	-47.4	-54.5	-37.5
40	163	87	76	251	136	115	54.0	56.3	51.3
41	229	118	111	519	259	260	126.6	119.5	134.2
42	435	215	220	931	443	488	114.0	106.0	121.8
43	46	25	21	125	62	63	171.7	148.0	200.0
44	74	32	42	20	10	10	-73.0	-68.8	-76.2
45	238	116	122	250	123	127	5.0	6.0	4.1
46	648	317	331	1455	711	744	124.5	124.3	124.8
47	382	196	186	628	331	297	64.4	68.9	59.7
Total	4924	2495	2429	6140	3073	3067	24.7	23.2	26.3



CONCLUSION

The overall growth pattern of Siliguri municipal corporation is very steady than the previous year. Growth has decreased from an excess of 206% to 8.7%. Female growth rate shows good results than the average male population growth. Growth rate of SC population is far less than the growth of ST population. The variation among the wards is very high. Growth rate is highest in ward 29 and lowest in ward 8. Each ward comes under Darjeeling district. ST growth rate.

Density has increased from an average of 11273.842persons/square kilometres to 12249.7 persons per square kilometre. The rate of urbanization is the main reason behind this growth. Siliguri is an important trading centre in entire west Bengal and as it is evolving each day its attracting huge number of labours from its peripheral areas. these people from outside areas comes as labours and make residence in around the commercial centres increasing the rate of totals.

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