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COMPARISON THROUGH AGE-SEX COMPOSITION OF THE DISTRICTS OF WEST BENGAL BASED ON CENSUS 2011 DATA

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ABSTRACT

Age-sex composition of population speaks many unexplained features of a population. The districts of West Bengal are mostly non-homogeneous due to these age-sex composition of the population. The single age population of census 2011 data (Table-C13 of Census 2011 digital Library) has been considered. The different age groups combinations have been considered to bring the similarity of social structure. Population pyramids and specific dependency ratio have been calculated.

Keywords : Population Pyramid, Specific Dependency Ratio, Age Group, Social well-being

INTRODUCTION

India, with over 1.21 billion population (2011 census), contains more than one-sixth of the world's population is projected to be the world's most populous country by 2025. India's growth rate for 1990 - 2011 is 40.2% whereas for the world it is 30.0% and China numbers at a low 17.1%. West Bengal ranks fourth (7.55%) among the Indian states in terms of population. Age-sex structure is the diagrammatic representation of population of a region, systematically arranged in age groups/cohorts along the vertical axis and sex wise along the horizontal axis. The analysis is critical to any spatial unit because inherently it bears the signature of its history and is instrumental in defining and predicting the social-cultural-economic geography of the region. Age and Sex are two important demographic components. Births, deaths and movement of population are inherently inter-dependent and change in one may influence the other. Reproduction, physical ability, circumstances of employment, mental attitude is influenced by age. Birth rates are higher indicates higher proportion of individuals is higher in early ages as compared to the old and visa-versa. Factors like age of schooling, enrolment in voter list, age of marriage etc are determined by age. Age and sex are important to indicate individual's social status, working status, appearance, income, home ownership, occupation, etc. In 2020,

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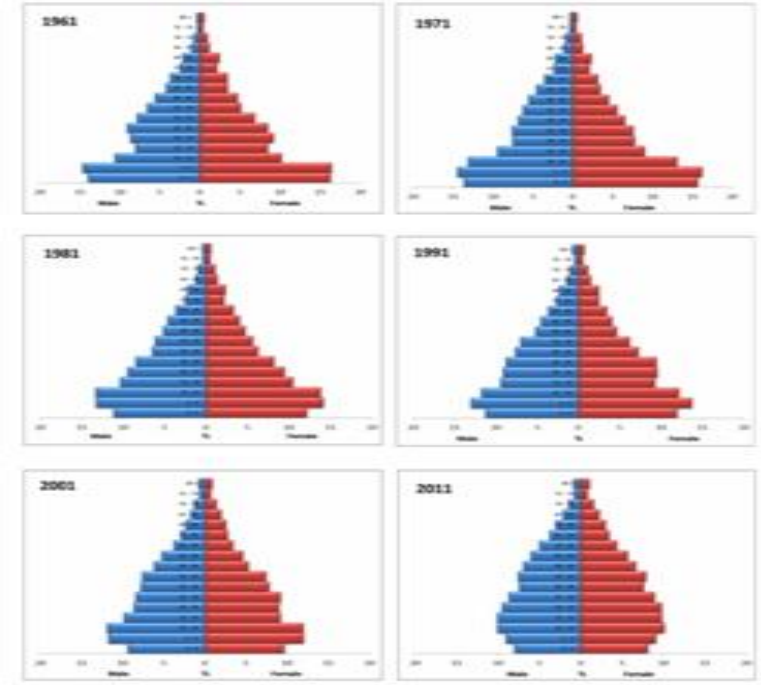
projections indicate more than one billion older persons (60+) in the world – 23.4% will be in China and 7.4% in the US. In 2020, projections indicate almost 149 million oldest-old people (80+) – 19.4% in China and 8.9% in the US. The study will include the differences in different factor over three census years (Mandal, 2020). There is a noticeable change in the shape of age sex pyramid of WB from 1961 - 2011 (Fig.1). The broad-based pyramid with very high proportion of child population and considerably small proportion of working population has eventually transformed into a balloon shaped pyramid with moderate child population and a huge proportion of working population. The notch noticed in 1961 pyramid is perhaps the result of partition in 1947. The shrinking of the base starts mainly from 1971 but the increase of percentage of the working population is noticeable from 1991. In 2001, the child population for both the sex came down to less than 10% of the total. The 2011 pyramid is an example of an almost developed nation that is approaching towards maturity that is a cylindrical shaped pyramid (Saha and Sarkar, 2015).

Figure-1 : Age-Sex Pyramid of West Bengal 1961 to 2011



Dependency ratio means the ratio of working age people face a burden in supporting the aging population on overall economy and healthcare. The inverse of the dependency ratio, the inverse dependency ratio can be interpreted as how many independent workers have to provide for one dependent person (pension & expenditure on children including health). The ultimate utility of dependency ratios as a measure of local well-being remains unclear. The ratio of dependent

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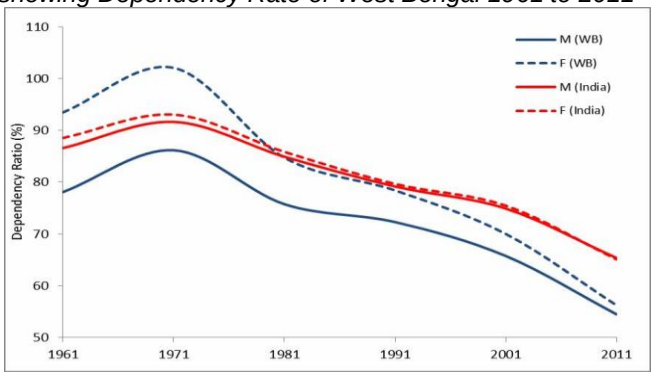
population (0 - 14 and > 59) and the working population (15 - 59). It is important for planning and formulating government policies. India had a death rate of around 90% in 1961 which increased slightly in 1971, decreased at a stable rate for the next three decades and then had a step fall to 65% in 2011 (Fig.2). Male and female showed similar pattern ad there were no disparity between male and female death rate. WB male started with a death rate less than 80% which swelled to over 85% in 1971, then decreased in 1991 drastically and since then it decreased at a stable rate to reach beyond 55%. WB females had a high DR around 95% that hiked to 105% and in 1971 and slipped at an increasing rate in 1981, after that there has been a rapid decline in WB female DR and in 2011 it is less than 60%.

Figure-2 showing Dependency Rate of West Bengal 1961 to 2011



Both the sexes have different biological, social and cultural functions and role (Pressat Roland, 1978). Both the sexes can migrate to any ages, though migration is particularly high among men of early working age (15- 29) and women around the age of marriage (Mukherjee, 1976). The working age group (15-59) is biologically the most reproductive, economically the most productive and demographically the most mobile (Trewartha, 1969). Factors like age of schooling, enrolment of name in voter‟s list, marriage etc. are generally determined by age. Sex and age are also very important because they are the "visible indisputable and convenient indicators of social status (Thomlinson, 1965). The young age group is economically unproductive and solely dependent upon the adult age group. The proportion of population in the young age group (below 15 years) is determined by the stage of demographic transition through which it is passing where larger proportion indicates first and second stage of transition (Chandna, 2005). An effort to create "adjusted" dependency measurements that better account for non-age related factors, age-disaggregation approach by accounting for social and economic community characteristics that may interact with age components. This adjustment process relies of a series of weights applied to the unadjusted measure of the dependency ratio, and allows us to reflect on whether the population of a given metro area has actual greater or lesser 'dependency', net of the social and economic characteristics that make communities what they are. These

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additional factors include measures of poverty, family structure, physical disability, and educational attainment. A series of social and economic indicators like the percentages of children with the following characteristics: Living in poverty Living with a physical disability Living in a household where a primary householder has less than a high-school degree living in a household without both parents present. After determining these percentages, we create z-score values by testing each estimate against the appropriate national average (child poverty in Billings, Montana vs. child poverty nationally, etc.). The multiplier adjustments based on the size and nature of the z-score values may reflect true dependency ratio. An alternative to the dependency ratio may be the LFPR (Labour Force Participation Ratio). The social factors are never being reflected by LFPR and Dependency Ratio. An approach is being tried to measure specific dependency ratio in this communication. This communication aims also to show disparities in the population structure age and sex-wise to look into the future of the characteristics of population. It aims to have ideas about the population in education, work sphere and old-age influences for the future. The population has been divided into 9 age groups like - 0-5(pre-school)(A), 6-9(primary school)(B), 10-15(high school)(C), 16-17(higher secondary)(D), 18-23(higher education)(E), 24-44(active young work force)(F), 45-59(older work force)(G), 60-80(pension/old-age)(H) and 81-w(pension/high risk/older age)(I).

DATA

The census population table C-13 has been considered here as basic data source. Only West Bengal population for all ages (0 to maximum age(w)) have been considered which has been divided into nine age-groups - 0-5(pre-school), 6-9(primary school), 10-15(high school), 16-17(higher secondary), 18-23(higher education), 24-44(active young work force), 45-59(older work force), 60-80(pension/old-age) and 81-w(pension/high risk/older age). The same division has been done for all the districts – Bankura(BAN), Birbhum(BIR), Burdwan(BRD), Dakshin Dinajpur(DD), Darjeeling(DAR), Howrah(HWH), Hooghly(HGH), Jalpaiguri(JAL), Coochbehar(CB), Kolkata(KOL), Malda(MAL), Murshidabad(MUR), Nadia(NAD), North 24 Parganas(N24), Midnapur West(MIDW), Midnapur East(MIDE), Purulia(PUR), South 24 Parganas(S24) and Uttar Dinajpur(UD). Further total population for each age group and district has been divided into Male and Female (Table-1).

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Table-1 showing Districtwise-Age Groupwise Male-Female Total Population of Census 2011

		District									
Gender	Age Gr	BAN	BRD	BIR	DD	DAR	HWH	HGH	JAL	CB	KOL
Female	0-5	12482	25373	7092	5112	5742	19998	25493	11129	9489	27060
Female	6-9	167006	293310	127015	61819	61380	191742	247958	118096	98315	226098
Female	10-15	246324	532753	229854	110601	121127	319337	410839	250818	182017	368825
Female	16-17	572857	1279938	544829	265610	317518	802713	943600	604965	431457	768201
Female	18-23	195153	459027	206190	97083	113463	291235	312493	251933	170106	232720
Female	24-44	56035	133108	57712	29671	35500	86716	92212	78946	52792	65585
Female	45-59	209236	426125	218293	109006	110776	261338	285742	240701	176304	194806
Female	60-80	124932	250262	131716	61269	63730	154255	161995	139501	102273	108650
Female	81-	173765	346276	187775	78169	79245	219047	222502	192710	143775	138203
Male	0-5	9703	21442	6007	4532	6147	17170	20238	11310	8979	26113
Male	6-9	144635	285566	116760	62518	68071	198225	248475	126207	99479	249883
Male	10-15	272767	616454	255623	126507	132364	380331	476174	288842	210317	437051
Male	16-17	594634	1337280	561336	266992	313610	852301	960643	621531	446586	828498
Male	18-23	210177	474064	213442	100900	112372	293532	309200	254565	182274	251441
Male	24-44	70745	151464	72108	35398	37753	92268	99779	83826	60202	72283
Male	45-59	222033	449749	231642	114041	115528	273836	296353	248012	183240	213528
Male	60-80	128935	261620	137262	63995	67152	162329	168055	146062	107493	116511
Male	81-	183514	364065	195521	81465	83010	227199	233765	201469	151629	148016

		District								
Gender	Age Gr	MAL	MUR	NAD	N24	MIDW	MIDE	PUR	S24	UD
Female	0-5	9507	20017	24605	55609	21722	20170	7323	32453	6564
Female	6-9	117809	239721	226193	432868	238713	197001	125518	288524	85042
Female	10-15	212113	391498	349570	727901	387900	317501	187283	480576	157065
Female	16-17	559188	1008608	840573	2E+06	963675	805530	437228	1E+06	409337
Female	18-23	237721	453459	308965	593084	351305	316163	154542	523444	162078
Female	24-44	71406	137560	88786	167292	100011	89653	46606	150327	55445
Female	45-59	292678	494897	289482	515582	345339	297136	184026	494673	229806
Female	60-80	185138	303477	164672	300512	205736	176934	118887	308955	151166
Female	81-	250595	425026	219980	398643	286289	244779	170256	430168	199064
Male	0-5	8848	15573	18765	50697	19981	20841	6894	28063	6449
Male	6-9	118450	224655	216399	454401	226904	204008	115207	292883	90836
Male	10-15	244486	444236	412769	839196	445917	365809	200300	548116	181088
Male	16-17	584045	1052688	879515	2E+06	968477	853108	452435	1E+06	422910
Male	18-23	246046	462071	319043	586432	349221	324597	165787	509019	177568
Male	24-44	85651	158922	102118	180902	116418	104775	58069	163833	63407
Male	45-59	306976	514276	304462	542811	359908	312163	193616	515524	239523
Male	60-80	193738	313221	170304	314179	213700	184289	124671	320624	159801
Male	81-	262014	439666	229030	417214	297184	258488	178351	446186	208898

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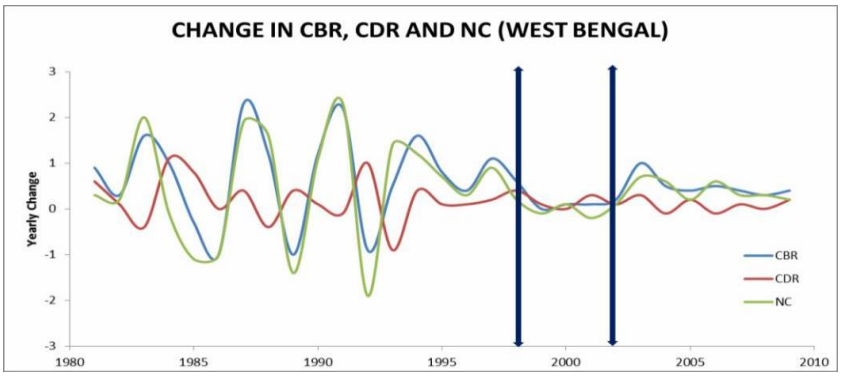
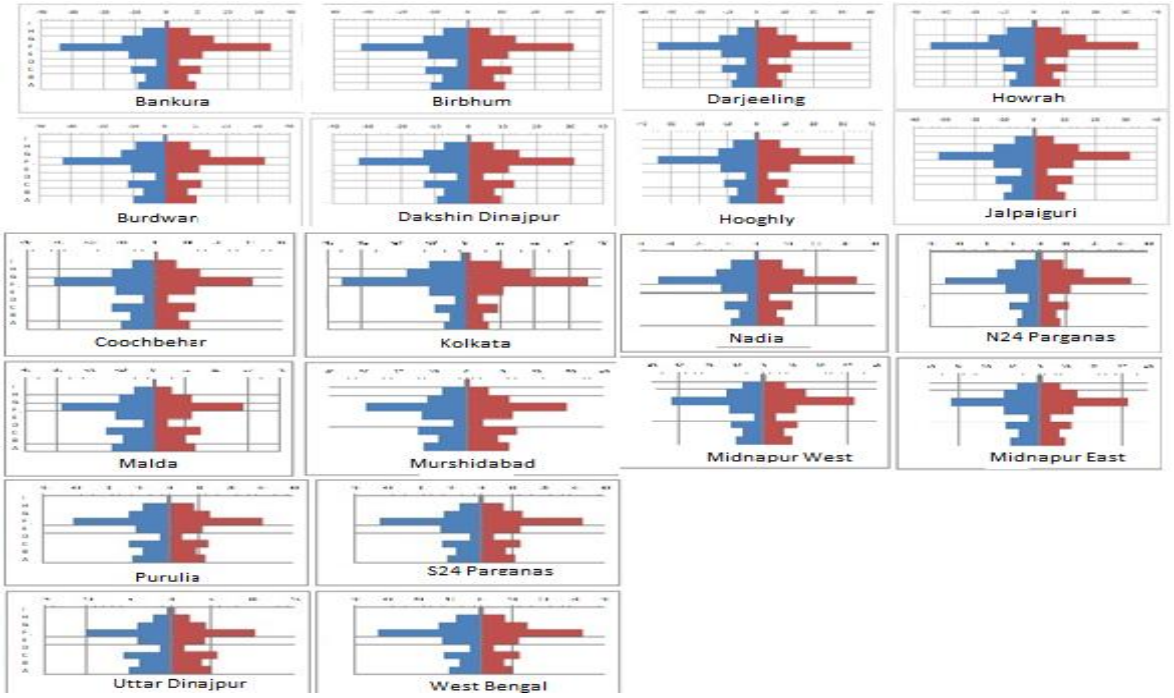


Figure-3 showing Population Pyramids for each districts of West Bengal



Each of the pyramids are in the shape of a '*kalshi*'. The '*Kalshi'-shaped pyramids have the modes* in the age group of 16-17 and next in the age group 45-59 and 18-23. The clubbing in the age group 24-44 are varying from districts to districts. These are due to in search of 'Jobs' and people are moving away from home and staying outside for long period. It is mostly in the districts like Dinajpur (Dakshin & Uttar), Midnapur (East & West), Malda, Bankura, Darjeeling, Howrah and Coochbehar. These people are at home after attending age 60 or even 50.

The age specific dependency ratio is the population in a specific age group to the all previous age group population or complementary to it. It will measure the proportion of population catered or

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supplemented by previous/all previous populations. It is in other sense the stochastic ratio. Larger the value better is the supplement.

Table – 2 showing specific dependency ratio for the districts of West Bengal on Total population

	District																		
Age Gr	BAN	BRD	BIR	DD	DAR	HWH	HGH	JAL	CB	KOL	MAL	MUR	NAD	N2	MIDW	MIDE	PUR	S24	UD
0-5																			
6-9	2.0	2.0	1.9	2.0	1.8	1.8	2.2	2.0	1.7	1.9	1.8	1.7	1.8	1.8	1.7	1.6	1.8	1.9	1.8
10-15	2.3	2.3	2.2	2.5	2.4	2.1	2.3	2.2	2.0	2.5	2.5	2.3	2.2	2.3	2.4	2.3	2.5	2.5	2.3
16-17	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4
18-23	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
24-44	3.1	3.5	3.4	3.1	3.0	3.0	3.0	3.2	3.0	3.8	3.4	3.1	3.0	3.3	3.1	3.6	3.2	3.9	3.2
45-59	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6
60-80	1.4	1.4	1.3	1.2	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.4
81-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

REMARKS

The usual way to compare age-sex comparision of a population are population pyramids and dependency ratio. Here districts of West Bengal have been compared by population pyramids and dependency ratio. It is interesting to note that usual age distribution of population has not been considered and that deviates the picture from pyramids to 'kalshi'. The dependency ratio has also been considered more specifically to bring the idea of social dependency not only economically and healthcare facilities but in other areas of social well-being and maintenance of the age-sex composition. The specific dependency ratio indicates the capacity of sustaining the structure of age-sex from lower or feeder age-group to the next age-group. The age and sex compositions for all the districts are more or less similar. The clubbing in the age group 24-44 are varying from districts to districts. It may be due to in search of 'Jobs' and people are moving away from home and staying outside for long period. It is mostly in the districts like Dinajpur (Dakshin & Uttar), Midnapur (East & West), Malda, Bankura, Darjeeling, Howrah and Coochbehar. These people are at home after attending age 60 or even 50. The same are also being explained by specific dependency ratios. The further derivations may be done on each age data analysis.

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