Micro Level Study On Future Population Of Mayurbhanj; The Most Tribal District Of Odisha

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Abstract: Population projections are estimates of the population for future period. They are typically based on an estimated population consistent with the most recent decennial census. Government policy makers and planners use population projections to access future demand for food, water, energy, and services, and to forecast future demographic characteristics. Population projections can alert policy makers to major trends that may affect economic development and help policy makers craft policies that can be adapted for various projection scenarios. Population change reflects the interplay of fertility, mortality, and migration, but in less developed regions, where fertility levels are high, fertility has the greatest effect on future population size. For the most backward and tribal district of Odisha future population estimation is badly needed for a proper policy planning. By the most reliable method i.e. Ratio method of projection with a minimum error a micro level projection is being done at block level of Mayurbhanj district and the expected steady growth rate leads to some recommendation like small family norm, late marriage, spread of literacy, exposure to modern technology and health care etc.

"We all worry about the population explosion, but we don't worry about it at the right time"

-Arthur Hoppe

Human resource is quite dynamic and grows at the rate of geometric progression for which future planning is essential for the overall development of the country. But difficult problems are being encountered in projecting population into the future and that too again is unsatisfactory because of the limitation of such data, with extremely fluctuating population growth, during intercensal periods due to migration, death by natural calamities, war and partition of the state and country etc. An analysis of the age pyramid, composition of productive age groups, fertility and gross production rates are of extreme importance as their bearings on population cannot be over emphasized. However, apart from all these, while forecasting the future population the existing population determinants are to be considered since these will also continue to operate in the future decades.

"Population when unchecked goes on doubling itself every 25 years or increases in a geometrical ratio"

-Thomas Malthus

So to check future population growth a proper planning and estimation about the future population of a region is very much essential. Government policy makers and planners use population projections to access future demand for food, water, energy, and services, and to forecast future demographic characteristics. Population projections can alert policy makers to major trends that may affect economic development and help policy makers craft policies that can be adapted for various projection scenarios.

Population change reflects the interplay of fertility, mortality, and migration, but in less developed regions, where fertility levels are high, fertility has the greatest effect on future population size. Mayurbhanj, the largest district of Odisha in terms of area and third largest in terms of population is among the three undivided district in Odisha.

The population growth rate of Mayurbhanj has not been affected as the number of district in Odisha has increased from 13 to 30 in 1991-2001.According to 2011 census the district has an area of 10,418 sq.km.and a population of around 2.5 million.

In the beginning of twentieth century the population density of the country was 77 as it was 66 in the state and 59 in the district. In the mid twentieth century i.e. just after independence the population density has increased to 117, 94 and 99 in the country, state & district respectively.

Another surprising aspect of demography of this socially backward district is its high sex-ratio. Mayurbhanj stands 12th from the top in the Sex-ratio list among all the districts of Odisha. According to 2011 census the Sex ratio of Mayurbhanj (1006) is much more higher than that of Odisha (978) and India (940).A higher sex-ratio may be an helping factor for a high population growth.

Mayurbhanj is one of the tribal districts of Odisha, which constitutes 58.58% of tribal population in the district as against 22.85% in the state during 2011. More than 75% of Santals, more than 60% Bhumij & more than 30% of the total Kolh population of Odisha are found in Mayurbhanj. Due to this large percentage of ST population development in different aspect is at the back seat.

The Literacy rate when compared between Mayurbhanj and the state it is found that after independence from 1951 to 2011 the district literacy rate was less than the state average. In the recent census the literacy rate in the state is 73.45 percent where as the district has the literacy rate of 63.20 percent. The low literacy rate plays a significant role in the demography of the district.

To compare the net growth or decline in birth rates in different time interval as well as to study the effects of different factors influencing the birth rate we calculate decennial birth rate. It is to note that the birth rates in India & Odisha were much higher than that of Mayurbhanj after independence but gradually they are at par which shows that literacy, urbanization etc. are not picking up in the district so rapidly as the state in particular and nation in general.

Similarly to compare the net growth or decline in death rates in different time interval as well as to study the effects of different factors influencing the death rate we calculate decennial death rate. In India the death rate has declined substantially from 22.8 per thousand to 7.48 per thousand in last 50 years .Similarly in Odisha, it has reduced by70% in the last five decades. In 1961 the death rate of Odisha stood at 22.9 per thousand where as in 2011 it has come down to a mere 8.5.But surprisingly the death rate in Mayurbhanj was very less at 9.67 in 1961& in 2011 still it is low at 8.7 per thousand.

It is impossible that with a low birth rate and high death rate the population of a region will grow. This may be due to poor birth and death registration which is a result of illiteracy.

But to increase the pace of growth of this district several measures are to be undertaken with proper planning and implementation. But without estimating the population of this district in future it is futile to plan some strategy. So a micro level projection of population at block level will help the estimation of population of the district more accurately.

Ratio method presents a more intensive process of projection of population even at block level by finding out the ratio of each block population to the district population (R) in different census years. This ratio is projected for future years by the formula

$$R_t = \frac{R_1^2}{R_0}$$, R_t: Estimated Ratio in the year t

R_1: Population in the previous census year

R_0: Ratio in the census before the recent census

Ratio R= $\frac{\text{Population of the block}}{\text{Population of the district}}$

From the projected ratio using the projected population of the district we project the population of the blocks in future time.

Blocks	Population		Ratio				
	2001	2011	2011	2021	2031	2041	2051
Tiring	48556	57076	0.02	0.023	0.0240	0.0248	0.0256
Bahalda	75842	86081	0.03	0.034	0.0337	0.0336	0.0335
Jamada	55801	59402	0.02	0.022	0.0205	0.0191	0.0179
Rairangpur	77952	95494	0.04	0.040	0.0436	0.0469	0.0505
Bijotola	58174	64193	0.03	0.024	0.0238	0.0230	0.0223
Kusumi	82188	93116	0.04	0.036	0.0363	0.0362	0.0360
Bisoi	66724	74572	0.03	0.029	0.0283	0.0278	0.0273
Jashipur	93361	106159	0.04	0.042	0.0417	0.0417	0.0417
Raruan	59041	66504	0.03	0.026	0.0256	0.0254	0.0251
Sukruli	52239	60577	0.02	0.024	0.0248	0.0252	0.0257
Karanjia	102831	114383	0.05	0.044	0.0430	0.0421	0.0411
Thakurmunda	90115	104694	0.04	0.042	0.0430	0.0439	0.0448
Kaptipada	126371	148717	0.06	0.061	0.0626	0.0648	0.0670
Udala	78569	89299	0.04	0.035	0.0351	0.0350	0.0350
Gopabandhunagar	66309	75345	0.03	0.030	0.0296	0.0295	0.0295
Khunta	68528	74155	0.03	0.028	0.0264	0.0251	0.0239
Samakhunta	70889	79883	0.03	0.031	0.0308	0.0305	0.0302
Bangiriposi	91603	103880	0.04	0.041	0.0406	0.0405	0.0403
Sarasakana	89374	100816	0.04	0.039	0.0390	0.0387	0.0383
Kuliana	88647	101151	0.04	0.040	0.0400	0.0401	0.0403
Suliapada	92108	102263	0.04	0.039	0.0383	0.0374	0.0365
Baripada	160992	186631	0.07	0.075	0.0762	0.0777	0.0791
Badasahi	130850	146232	0.06	0.057	0.0555	0.0545	0.0536
Betnoti	128908	150434	0.06	0.061	0.0623	0.0639	0.0655
Rashagovindpur	83632	96526	0.04	0.039	0.0391	0.0396	0.0402
Murada	94015	103775	0.04	0.040	0.0384	0.0373	0.0362

Table 1: Ratios of different blocks in Mayurbhanj for population estimation

Blocks	2021	2031	2041	2051
Tiring	65300	76906	89782	104815
Bahalda	96530	108140	121901	137412
Jamada	62461	65645	69404	73378
Rairangpur	113565	139752	170031	206871
Bijotola	68139	76224	83535	91548
Kusumi	102208	116558	131153	147576
Bisoi	82334	90834	100824	111912
Jashipur	119243	133852	151160	170706
Raruan	73817	82285	92053	102980
Sukruli	68139	79436	91486	105363
Karanjia	124921	138013	152468	168437
Thakurmunda	119243	137802	159002	183463
Kaptipada	173186	200850	234750	274373
Udala	99369	112492	126981	143336
Gopabandhunagar	85173	94864	107055	120812
Khunta	79495	84678	91005	97804
Samakhunta	88013	98921	110710	123904
Bangiriposi	116404	130275	146725	165253
Sarasakana	110726	125098	140149	157011
Kuliana	113565	128430	145544	164939
Suliapada	110726	122926	135546	149462
Baripada	212935	244583	281597	324212
Badasahi	161830	178100	197676	219404
Betnoti	173187	199785	231553	268373
Rashagovindpur	110726	125393	143736	164763
Murada	113565	123301	135172	148184
Mayurbhanj	2844800	3215142	3640997	4126289

Table 2: Projected population of different blocks through Ratio method

In the ratio method the percentage distribution of the parent population (district) among the blocks are observed for one or more past decades projected to future decades and applied to an independently derived projection. Ratio of block population to district population was calculated for all the decades 2021-2051.Projected figures for each of the blocks are

then examined taking into account the past trend and future prospects and in certain cases some modifications in the growth rate of ratios were made. While doing the projection of the district the error estimation is less than the geometric progression. So obviously this may be accepted for future forecasting of population.

Suggestive Measures To Check population Growth:

"A finite region can support only a finite population, therefore population growth must eventually equal zero."

- Garrett Hardin

The growth rate can be checked by undertaking the following measures:

✓ Birth rate should be controlled. Proper birth control measures including the practice of late marriage, compulsory acceptance of small family norm etc. to be implemented.

✓ Growth rate can't be checked without a wide spread literacy. Education on sex, family welfare, birth control and above all proper birth and death registration must be provided in a large scale.

✓ Woman empowerment is vital in checking population growth by improving health, education & financial condition of woman population growth can be brought down.

All these targets will be a dream without proper development of infrastructure including transport, basic amenities etc. in So special measures should be undertaken at micro level to improve the level of communication this backward and remote district which will definitely bring out the inhabitants from illiteracy and poverty.

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