Estimation Of Gross Enrolment Ratio(GER) After Smoothing Age-wise Population

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ABSTRACT : *One of the education development indicator is Gross Enrolment Ratio (GER). The estimation of GER for the years other than census year is crude and it is based on age-wise population figures. The mortality data for each age are not available. Age-wise population has been smoothed objectively and GER has been estimated. The estimated GER is higher than the usual GER calculated.*

KEYWORDS : *Gross Enrolment Ratio (GER), smoothing, death rate, age-wise population, estimation*

I.   INTRODUCTION

The National Youth Policy (NYP-2014) launched in February 2014 proposes a holistic 'vision' for the youth of India, which is "to empower youth of the country to achieve their full potential, and through them enable India to find its rightful place in the community of nations". The NYP-2014 has defined 'youth' as persons in the age-group of 15-29 years. Government of India has formulated the National Policy for Skill Development and Entrepreneurship in 2015 to provide an umbrella framework to all skilling activities being carried out within the country, and to align these to common standards and link skilling with demand centres.

India has the relative advantage at present over other countries in terms of distribution of youth population. As per India's Census, the total youth population increased from 168 million in 1971 to 422 million in 2011. India is seen to remain younger longer than China and Indonesia, the two major countries other than India which determine the demographic features of Asia.

A negative aspect of Youth in India is that the sex ratio in youth population is consistently decreasing from 1991 onwards. The reduction in sex ratio of youth is found to be much more than that of the overall population. It has come down to 939 in 2011 as compared to 961 in 1971 and is projected to decline further to 904 in 2021. The percentage share of currently married female in the age group 15-19 has come down drastically from 69.57 in 1961 to 19.47 in 2011 showing a welcome shift in the level of married women in younger age groups. Mean age at effective marriage for females in India has come up to 22.3 in 2014 as compared to 19.4 in 1995. Crude Death Rate (CDR) has come down from 14.9 in 1971 to 6.7 in 2014 at the National level. Literacy rate in India reached 73% as per 2011 census. Female literacy rate (64.6%) is still much lower than the male literacy rate (80.9%).

The student enrollment in higher education is highest (i.e. 77.93% of total) at Under Graduate level during 2017-18.Youth being enthusiastic, vibrant, innovative and dynamic in nature is the most important section of the population. Youth shows strong passion, motivation and will power which also make them the most valuable human resource for fostering economic, cultural and political development of a nation. A country's ability and potential for growth is highlighted by the size of its youth population. Youth are the creative digital innovators in their communities and participate as active citizens, eager to positively contribute to sustainable development. This section of the population need to be harnessed, motivated, skilled and streamlined properly to bring rapid progress for a country.Youth are often excluded from decision-making processes and generally looks at untraditional avenues for civic engagement. The diversity of situations explains why youth are considered both a source of concern and a beacon of hope and positive thinking. The complexity of today's social, economic, political and environmental issues constitutes a significant challenge, it also offers tremendous opportunities for youth to show their strengths as a strong self-organizing force with the potential for innovation and for embracing change.

Education is central to development and to the improvement of the lives of young people globally, and as such has been identified as a priority area in internationally agreed development goals and the World Programme of Action for Youth. Education is important in eradicating poverty and hunger and in promoting sustained, inclusive and equitable economic growth and sustainable development. Increased efforts towards education accessibility, quality and affordability are central to global development efforts.Worldwide, 10.6% of young people are illiterate, lacking basic numerical and reading skills, and as such lack the means to be able to

sustain a living through full and decent employment. With youth unemployment and underemployment at persistently high levels worldwide, and with many young working poor lacking even primary-level education, such youth unemployment and underemployment rates act to jeopardize social inclusion, cohesion and stability. In 2013, about 225 million youth, or 20% of all youth in the developing world, are "idle" – not in education, employment or training.

Knowledge and education are key factors to the full and effective participation of youth in the processes of social, economic and political development. Increased attention to improving participation rates of young people, particularly marginalized youth, is needed to ensure that they acquire the knowledge, capacities, skills and ethical values needed to fulfill their role as agents of development, good governance, social inclusion, tolerance and peace.

The persistent gender gap in education hinders youth development. Gender inequity in education is characterized by, among other things, lack of access to and availability of gender sensitive educational infrastructure, materials and training programmes.

Equally important, poor quality education and training deny young people employment opportunities as well as the resultant earnings and improved quality of life. Ultimately, poor quality education risks reinforcing inequalities and sustaining inter-generational poverty and marginalization. Many education and training systems do not provide young people with the basic skills needed to escape poverty and unemployment, even when they continue to receive formal education. Non-formal education programmes seek to fill this gap by providing learning and skills development opportunities that are relevant to the context in which young people live and seek their livelihoods. Often provided through youth and community based organizations, non-formal education facilitates the learning of life-relevant knowledge and skills, especially for disadvantaged and marginalized groups.

Commitments made at the international level, including the World Programme of Action for Youth, the Millennium Development Goals and the Education for All goals as well as the Global Education First Initiative, identify education as a key priority area for action.Overall, two in five (42.6 per cent) economically active youth are still either unemployed or working yet living in poverty. As of 2014, 73.3 million youth were unemployed which accounted for 36.7 per cent of the global unemployed. Youth employment is now a top policy priority in most countries across all regions. At the international level, it is being translated into the development of a global strategy for youth employment and embedded into the 2030 development agenda under Sustainable Development Goals.

Thus, education and quality education for youth is most important aspect of a country. The quality and timely education is measured by a number of goals under UN Sustainable Development Goals. In this communication, Gross Enrolment Ratio (GER) is being considered. The GER estimation is being proposed after considering the smoothing of age-wise population for the state of West Bengal.

II. DATA

Mortality is one of the basic components of population change and related datais essential for demographic studies and public health administration. It is the principal ingredient for population projections and life tables. There is no comprehensive estimate of adult mortality and its determinants in India and statesof India. Data limitation has also been the cause of slow pace methodological innovation to estimate adult mortality across the groups. In India, number of deaths in adult ages had increased from 2.2 million in 1991 to 2.6 million in 2011 and remained similar by 2030 under varying mortality scenario.

All India Survey on Higher Education (AISHE) report has been published for the year 2017-2018. Data on enrolment of the States in India for the years 2011-2012 to 2017-2018 are available. Age-wise Population data has been taken from Census 2011.

III. METHOD& RESULT

GER is the total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official age population (18 to 23 years for Higher Education) corresponding to the same level of education in a given year.

GER shows the general level of participation in a given level of education. It indicates the capacity of the education system to enroll students of a particular age group.

$GER_h^t = E_h^t *100/P_h^{x,t}$

GER_h^t is Gross Enrolment Ratio at level of education h in the year t

E_h^t is Enrolment at the level of education h in the year t and

$P_h^{x,t}$is Population at age x(in lbd) which officially corresponds to the level of education h in the year t.

Therefore, the total enrolment for a given level of education and Population of the age group (18 to 23 years) corresponding to thespecified level in the year t are the data requirements. Populationcensuses or

estimates for age specific population normally obtained from the Central Statistical Office. Enrolment is being taken from AISHE final report published by MHRD.

A high GER generally indicates a high degree of participation, whether the pupils belong to theofficial age group or not. The GER exceeds 90% for a particular level of education, the aggregate number of places for pupilsis approaching the number required for universal access of the official age group.GER at each level of education should be based on total enrolment in all types ofeducation institutions, including public,private and all other institutions those provide organized educationalprogrammes.

The question of having population figures for the years 2011-2012 to 2017-2018 is the main source of doubts. From age-wise population data, one can get the population figure for the age-group 18 to 23 years by summing and step backing starting from 2011-2012. For 2011-2012 year, it is the sum of population figures as per census 2011 for the ages 18 to 23.For 2012-2013 year, it is the sum of population figures as per census 2011 for the ages 17 to 22 and so on. It is the method adopted by MHRD and has been published in theportal. Apparently, it is true that the estimated population can be taken as population figures. But it is also true that during this estimation process, the mortality has taken as nil. Thus, the calculated GER obtained are not the reflection of the desired enrolment status.

Now, mortality was taken into consideration Ghara & Pahare(2018), the data gap is obvious due to non-publication of age specific death rate for each age (in lbd) of the states in India. The estimates of death rate for age-groups are also not available for the age-group 18-23 years. Here, the age-wise population as published in Census 2011 is being considered at the first time. It is interesting to note that population figures are heaped in odd-ages almost in all cases. Therefore, the total population figure for the age-group 18-23 years is expected to be more than the actual. It has been smoothened objectively. The best fitting curve is been considered among available with respect to highest R-square. The process of smoothing may vary depending on the truncation points and types of truncation. I have considered no truncation and the stepping backward has been adopted for projected population/s of West Bengal for the years 2011-12 to 2017-18. The proposed model for estimating population of West Bengal is

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$$P^x_h = 1000000 + 39444x - 1414x^2 + 8.85x^3; R^2 = 0.857 \text{---------- -----------------} (1)$$

where P^x_h = population for the age x lbd for the education level h

Thus, population figure for 2012-2013 and so on are calculated based on the age-wise estimated population as in (1) and summing over 17 to 22 and so non backwardly.

Table – showing for West Bengal- estimated population, GER, Estimated
GER and Enrolment for the years 2011-2012 to 2017-2018

Year	Estimated Population	Enrolment	Estimated GER	GER (as per MHRD)
2011-2012	7728454	1497019	19.37	13.64
2012-2013	7766952	1658987	21.36	15.14
2013-2014	7794695	1785382	22.91	16.32
2014-2015	7811364	1818156	23.28	16.64
2015-2016	7816640	1926500	24.65	17.66
2016-2017	7810205	2015996	25.81	18.51
2017-2018	7791741	2035981	26.13	19.92

It is observed that estimated GER thus obtained is more. It is about 1.39 times for West Bengal. GER increased from 13.64 in 2011-2012 to 19.92 in 2017-2018 for West Bengal as per MHRD and by this smooting estimated GER increased from 19.37 in 2011-2012 to 26.13 in 2017-2018. For low death rates,population between 18-23 years of age and higher number of enrolments, GER is expected to be higher in West Bengal.
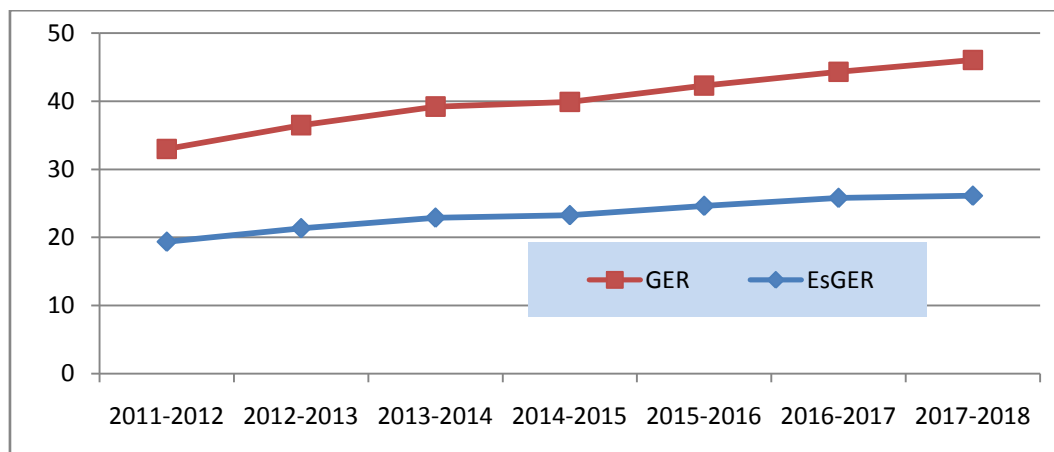
EsGER – estimated GER for West Bengal   **GER** – GER for West Bengal as per MHRD

IV. CONCLUSION

It is observed that the estimated GER is more compared to the GER as before if smoothing for age-wise population figures are considered into the estimation of population in the age-group 18 to 23 years. The backward pooling of data is again a crude way to guard the limitation of data. If the mortality data for the age group 18-23 years are available, exact estimation can be done. It is sure, the estimation of GER will further increase. This attempt has been done for West Bengal only. The increase may not be always for all the states. It may depend on the distribution of population over ages. It will be exactly same as of MHRD values if the estimation or smoothing follows a perfect pattern. It can be extended for all the states of India.

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