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District-Wise Analysis of Higher Education – A Study For Jharkhand, Madhya Pradesh, Orissa And West Bengal Based on AISHE 2017-18

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Abstract : The Higher Education status is still derived by the value of GER (Gross Enrollment Ratio). The districts of 4 states – Jharkhand, Madhya Pradesh, Orissa and West Bengal, India have been compared taking data from National Survey (AISHE) for the year 2017-18. The districts are also compared with College Population Index and Institutional Density.

Keywords: All India Survey on Higher Education, GER, CDI, Institutional Density, Ranking

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I. INTRODUCTION

Gross Enrolment Ratio (GER) is the total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in an year. The purpose is to show 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. It indicates the extent of over-aged and under-aged enrolment. It is the number of pupils (or students) enrolled in a given level of education regardless of age by the population of the age group which officially corresponds to the given level of education, and multiply the result by 100.

GER = E *100/P where GER is Gross Enrolment Ratio at level of education in the year, E is the Enrolment at the level of education in the year and P is the Population in age group (18-23 lbd)(last birth day) which officially corresponds to the level of education in the year in respect to Higher Education. We are to know the total enrolment for a given level of education, population of the age group (18-23 years) corresponding to the specified level (higher education). All India Survey on Higher Education (AISHE) gives the enrolment data in higher education. Population censuses or estimates for higher education population obtained from the reports of Census Bureau for all the years based on last census data. A high GER generally indicates a high degree of participation, whether the pupils belong to the official age group or not. A GER value approaching or exceeding 100% indicates that a country is, in principle, able to accommodate all of its susceptible population, but it does not indicate the proportion already enrolled. The achievement of a GER of 100% is therefore a necessary but not sufficient condition for enrolling all eligible population in higher education institutes. The GER exceeds 90% for a particular level of education, the aggregate number of places for pupils is approaching the number required for universal access of the official age group. However, this is a meaningful interpretation only if one can expect the under-aged and over-aged enrolments to decline in the future to free places for pupils from the expected age group. GER at each level of education should be based on total enrolment in all types of educational institutions, including public, private and all other institutions that provide organized educational programmes. GER can exceed 100% due to the inclusion of over-aged and under-aged pupils/students because of early or late entrants, and grade repetition. In this case, a rigorous interpretation of GER needs additional information to assess the extent of repetition, late entrants, lateral entrants, etc.

The International Standard Classification of Education(ISCED) is designed to serve as a statistical framework for assembling, compiling and presenting comparable indicators and statistics of education both within individual countries and internationally. It presents standard concepts, definitions and classifications. ISCED covers all organized and sustained learning opportunities for children, youth and adults including those with special needs education, irrespective of the institution or entity providing them or the form in which they are delivered. Gross Enrolment Ratio (GER) in Higher education in India is calculated for 18-23 years of age

group. Total enrolment in higher education, regardless of age, expressed as a percentage to the eligible official population (18-23 years) in the given period. Data includes details on gender wise gross enrolment ratio in higher education for all categories including OBC, SC and ST for the states Jharkhand, Madhya Pradesh, Orissa and West Bengal. The same have also been calculated for the district of the states.

II. DATA

Ministry of Human Resource Development has endeavoured to conduct an annual web-based effort called All India Survey on Higher Education (AISHE) since 2011-12. The survey covers all the institutions in the country engaged in imparting of higher education. Data is being collected on several parameters such as teachers, student enrolment, programmes, examination results, finance, scholarship & stipend, infrastructure, etc.. The data are self-declared data. Indicators of educational development such as Institution Density, Gross Enrolment Ratio, Pupil-teacher ratio, Gender Parity Index, Per Student Expenditure may also be calculated from the data collected through AISHE. These are useful in making informed policy decisions and research for development of education sector. The AISHE is now an annual event. Based on AISHE database, in this paper, attempt has been made to quantify the development in higher education by framing GER for the districts of 4 states. The ranking based on GER has been made. It is further attempted to rank the districts with respect to college population index and institutional density. We have considered 24 districts in Jharkhand, 51 districts in Madhya Pradesh, 30 districts in Orissa and 22 districts (18 districts due to merging of the districts like South & North 24 Parganas, Midnapore East & West, Uttar & Dakhin Dinajpur and Purba & Paschim Burdwan) of West Bengal as per AISHE 2017-2018. The population data has been calculated based on census 2011.

III. ANALYSIS

MHRD published in its report, the estimates of population for the years 2011, 2012, 2013, 2014, 2015 & 2016 in the age group 18-23 years. Based on the estimated total population in the age group 18-23 years, the population of the districts are estimated as described in Ghara(2016). The districts of West Bengal and Orissa were compared based on GER upto 2015 Ghara(2017). GER's have been calculated separately for total, female and male for the states along with the districts. The ranks of the districts have been obtained based on their GER values.

The population for the states and for the districts of the states are not available for 2017-18. The mapping from age-wise population based on the census 2011 may not be acceptable and the gap is more than 5 years where the patterns of mortality may vary. Without considering mortality and its multiplier into the calculation of population in the age group 18-23 years, the trends in the estimates have been considered here. Let p_{ij} is the proportion of increase/decrease of estimated population in the year jth from ith year; i,j = 2011-12(1), 2012-13(2), 2013-14(3), 2014-15(4), 2015-16(5), 2016-17(6) and 2017-18(7). Also p is the proportion/multiplier of population belongs to the age group 18-23 years of the total population. Thus, the estimated population for the 7^{th} year (i.e. for 2017-18) is

$P_7 = P_1*p*p_{12}*p_{23}*p_{34}*p_{45}*p_{56}*p_{67}$

Hence $P_7^m = SR*P_7$; SR is the proportion of male in the total population

and $P_7^f = P_7 - P_7^m$

The values of P_7, P_7^m and P_7^f have been calculated for the states and its districts. The data for enrolment have been taken from AISHE portal as on 15^{th} May 2018 for the states and its districts.

The estimated total GER for the states as of 2017-2018 are 16.58, 26.83, 20.18 and 18.59 respectively for Jharkhand, Madhya Pradesh, Orissa and West Bengal. The same for male are 15.97, 28.13, 21.91 and 18.73 respectively and those for female are 17.22, 25.44, 18.41 and 18.44 respectively. Thus, female GER is more only for Jharkhand as compared to male. But for all other 3 states, male GERs are more as compared to female.

Table 1.1 showing ranks of GER values for the districts of Jharkhand

No	**District**	Rank for GER – Total	Male	Female	CPI	ID
1	Bokaro	8	9	7	12	4
2	Chatra	15	14	16	16	18
3	Deoghar	10	11	11	7	7
4	Dhanbad	5	6	5	9	1
5	Dumka	12	12	13	14	14
6	East Singhbhum	3	3	3	3	3
7	Garhwa	17	17	14	15	11
8	Giridih	6	7	6	10	8
9	Godda	18	15	17	17	15

10	Gumla	21	21	21	22	19
11	Hazaribagh	2	2	2	2	6
12	Jamtara	20	20	20	13	17
13	Khunti	16	16	15	20	24
14	Koderma	7	5	9	8	5
15	Latehar	11	10	12	18	21
16	Lohardaga	19	18	19	21	12
17	Pakur	23	23	24	6	20
18	Palamu	9	8	8	5	9
19	Ramgarh	14	19	10	11	23
20	Ranchi	1	1	1	1	2
21	Sahebganj	22	22	22	24	10
22	Saraikela	13	13	18	19	16
23	Simdega	24	24	23	23	22
24	West Singhbhum	4	4	4	4	13

CPI = College population index (number of institutions per 1 lak population between 18-23 years of age)
ID = Institutional Density (number of institutions in 1000 sq. km area)
It is observed that Ranchi and Hazaribagh districts has GER more than 50. Male enrolment has greater influence on GER as compared to Female enrolment (correlation for Male is 0.98). Considering CDI & ID, districts are ranked. The raking by GER and CDI or ID are similar (correlation(GER-Total, CDI)=0.76, correlation(GER-Total, ID)=0.71 and correlation(CDI, ID)=0.58)

Table 1.2 showing ranks of GER values for the districts of Madhya Pradesh

No	**District**	Rank for GER – Total	Male	Female	CPI	ID
1	Agar Malwa	50	50	50	49	50
2	Alirajpur	46	44	47	50	49
3	Anuppur	45	43	45	24	22
4	Ashoknagar	39	36	40	36	37
5	Balaghat	37	46	29	27	25
6	Barwani	34	34	34	47	41
7	Betul	16	23	10	21	28
8	Bhind	8	9	7	5	5
9	Bhopal	1	1	1	1	1
10	Burhanpur	30	31	33	22	17
11	Chhatarpur	6	5	6	10	14
12	Chhindwara	19	32	14	23	27
13	Damoh	23	26	22	33	35
14	Datia	26	25	25	6	8
15	Dewas	33	35	30	31	26
16	Dhar	40	42	36	44	34
17	Dindori	28	21	32	42	48
18	East Nimar	38	40	38	41	44
19	Guna	35	29	39	20	23
20	Gwalior	4	4	3	2	3
21	Harda	18	15	17	35	38
22	Hoshangabad	13	16	8	16	19
23	Indore	3	3	4	3	2
24	Jabalpur	5	6	5	4	4
25	Jhabua	36	27	41	48	47
26	Katni	11	11	12	32	21
27	Khargone	51	51	51	51	39
28	Mandla	41	39	42	40	43
29	Mandsaur	14	13	13	14	12
30	Morena	21	17	27	8	6

31	Narsinghpur	20	19	21	25	20
32	Neemuch	17	18	15	7	11
33	Panna	43	45	37	17	29
34	Raisen	22	20	23	26	31
35	Rajgarh	31	30	35	45	36
36	Ratlam	25	22	28	30	15
37	Rewa	10	10	11	11	7
38	Sagar	9	8	19	12	13
39	Satna	2	2	2	15	10
40	Sehore	7	7	9	13	16
41	Seoni	27	28	24	37	42
42	Shahdol	29	37	20	19	24
43	Shajapur	32	33	31	38	32
44	Sheopur	42	38	44	34	46
45	Shivpuri	44	41	43	28	30
46	Sidhi	24	24	26	29	51
47	Singrauli	48	49	46	39	40
48	Tikamgarh	49	48	49	46	33
49	Ujjain	12	12	16	9	9
50	Umaria	47	47	48	43	45
51	Vidisha	15	14	18	18	18

Districts like Satna, Indore, Gwalior and Bhopal has GER more than 50. Male and Female enrolment has almost equal impact on GER (Correlation for Male is 0.97). The raking by GER and CDI or ID are similar (correlation(GER-Total, CDI)=0.78, correlation(GER-Total, ID)=0.75 and correlation(CDI, ID)=0.90)
Table 1.3 showing ranks of GER values for the districts of Orissa

No	**District**	Rank for GER – Total	Male	Female	CPI	ID
1	Anugul	8	6	11	15	18
2	Balangir	24	18	23	22	17
3	Baleshwar	5	4	6	5	3
4	Bargarh	19	22	19	16	14
5	Bhadrak	2	2	2	2	7
6	Boudh	30	30	30	30	28
7	Cuttack	3	3	3	4	2
8	Deogarh	21	21	21	3	21
9	Dhenkanal	6	5	8	11	10
10	Gajapati	15	10	22	19	24
11	Ganjam	12	12	15	20	9
12	Jagatsinghapu	22	27	14	21	6
13	Jajapur	10	13	10	17	5
14	Jharsuguda	17	17	16	14	12
15	Kalahandi	26	25	26	26	23
16	Kandhamal	18	20	17	18	27
17	Kendrapara	11	16	9	12	8
18	Kendujhar	23	24	20	24	20
19	Khordha	1	1	1	1	1
20	Koraput	25	19	25	27	26
21	Malkangiri	28	28	28	28	30
22	Mayurbhanj	9	9	7	13	13
23	Nabarangpur	29	29	29	29	29
24	Nayagarh	13	14	13	8	11
25	Nuapada	27	26	27	25	25
26	Puri	7	11	5	6	4
27	Rayagada	16	8	24	10	22
28	Sambalpur	4	7	4	7	19

29	Sonepur	20	23	18	23	16
30	Sundargarh	14	15	12	9	15

Khorda and Bhadrak districts has GER more than 50. Female enrolment has more impact on GER (Correlation for Female is 0.948). The raking by GER and CDI or ID are similar (correlation(GER-Total, CDI)=0.85, correlation(GER-Total, ID)=0.77 and correlation(CDI, ID)=0.68)

Table 1.4 showing ranks of GER values for the districts of West Bengal

No	**District**	Rank for GER – Total	Male	Female	CPI	ID
1	24 Paraganas	8	6	11	9	7
2	Alipurduar	17	17	17	17	17
3	Bankura	15	13	15	7	14
4	Birbhum	5	4	6	3	8
5	Coochbehar	11	12	8	16	15
6	Darjeeling	2	5	2	2	9
7	Dinajpur	13	15	13	13	13
8	Hooghly	6	8	7	11	5
9	Howrah	16	16	12	14	2
10	Jalpaiguri	7	10	5	15	10
11	Jhargram	18	18	18	18	18
12	Kolkata	1	1	1	1	1
13	Maldah	14	14	14	12	11
14	Medinipur	10	11	9	8	12
15	Murshidabad	12	9	16	4	3
16	Nadia	3	2	3	6	4
17	Burdwan	4	3	4	5	6
18	Purulia	9	7	10	10	16

Only district – Kolkata has GER more than 50. Male and Female enrolment almost has equal impact on GER with correlation is 0.94. The raking by GER and CDI or ID are similar (correlation(GER-Total, CDI)=0.72, correlation(GER-Total, ID)=0.56 and correlation(CDI, ID)=0.60)

IV. CONCLUSION

AISHE database has been used to calculate GER, CDI & ID for the districts of Jharkhand, Madhya Pradesh, Orissa and West Bengal using population estimating method similar to MHRD. The another method may be pulling age group population as available from census 2011 data. But question of natural mortality is not available and cannot be placed into the estimating methodology. It has also been observed for the all 4 states considered here that ranking the districts by GER or CDI or ID resulted the same at least statistically. Ranking of the districts has also been made by all three indicators.

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