

Spatio-temporal Variation Of Female In Higher Education, West Bengal – Aishe Data Analysis

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Abstract - Women's education and empowerment are indicators of development. Women's education ensures holistic and long development. It includes equitable and increased access to technical and vocational education and training, higher education, and research with due attention to quality assurance. This communication has looked at women's participation through women's higher education institutes and women enrolment compared with the population. The participation in terms of the distribution of female enrolment for the categories total, SC & ST has been studied for the years 2012-13 to 2019-20. The measures considered are GER, GAP, and GPI.

Keywords: female population, female enrolment, gross enrolment ratio, gender parity index

I. INTRODUCTION

The under-representation of women in higher education in access, involvement, management is well documented. It serves to demonstrate that the pool of managerial talent within each country is not optimally utilized. Current recruitment and promotion practices require urgent investigation to understand the barriers to women's progress and to identify strategies to bring about a fairer gender balance based on professional equality. Women managers working in diverse socio-cultural and geographical contexts analyze the obstacles they have faced and overcome during their careers. Four principal themes emerge the widespread participation of women in education; the extent of their involvement in higher education and management, including impediments to their advancement; the development of strategies to surmount these career limitations (Ghara 2016).

As the 21st-century approaches, women strongly urged to assume their rightful place in the decision-making process - both in the systems and institutions of higher education and in the various professions they have studied. As this dual role is of the greatest importance for society, women merit strong encouragement in these endeavors. With hardly an exception, the global picture is one of the men outnumbering women at about five to one at the middle management level and about twenty or more to one at the senior management level. Women deans and professors are a minority group, and women vice-chancellors and presidents are still a rarity in

India. 'Access to education' is a telling indicator of women's status in a given society. Cultural perceptions of the roles women are expected to fill are reflected in how women participate in formal education and the type of education they have access to. In seeking to explain the under-representation of women in higher education, we turn first to consider the equity in girls or women's participation in education, reflect on the reasons for this phenomenon, and highlight its adverse consequences.

Primary level education is now widely available in all countries studied, and secondary and higher education opportunities are increasing. Increasing retention rates in India suggests that young people recognize that their job prospects will be bleak without some form of higher level education in the new technological era. The rising aspiration for further education is increasing pressure on governments to expand all forms of post-higher secondary education or higher education. Even where economic and technological development has progressed beyond the agrarian model, these attitudes persist, informing expectations and behaviors. This narrow definition of the female role limits girls' access to education, causes early attrition and restricts them to traditional female study areas. India's higher education system is massive and structurally diverse, with 4.3 million students in 1043 university-level institutions. Women's entry into higher education and employment came via the nurturing professions, nursing, and teaching, towards the end of the last century, largely due to social reformers' efforts to improve a lot of widows and other marginalized women. In more recent times, economic factors have broken down the access to higher education is often restricted for girls who live in rural areas or towns without colleges or universities. Women offer immense potential to contribute to their countries' skills base and represent a sadly under-utilized resource in many places.

Improving access to higher education requires legislative back-up to support changes in cultural attitude. Formal requirements for gender balance in the provision of financial assistance and scholarships have proved effective in increasing women's participation in higher education. Women education in India has been a major preoccupation of both the government and civil society as educated women can play a very important role in developing the country. One cannot neglect the importance of education about



women empowerment in India is poised to become a developed country by 2020. The growth of women's education in rural India is very slow. It is observed that women's education is increasing but not in a proper manner (Kumar). The comparative access of girls, especially in rural India, has not yet been studied for schedule caste and tribe people. This communication has studied girls' access to higher education for all categories in the population for all the districts of West Bengal. Based on the variations among the districts of West Bengal, the districts have been ranked.

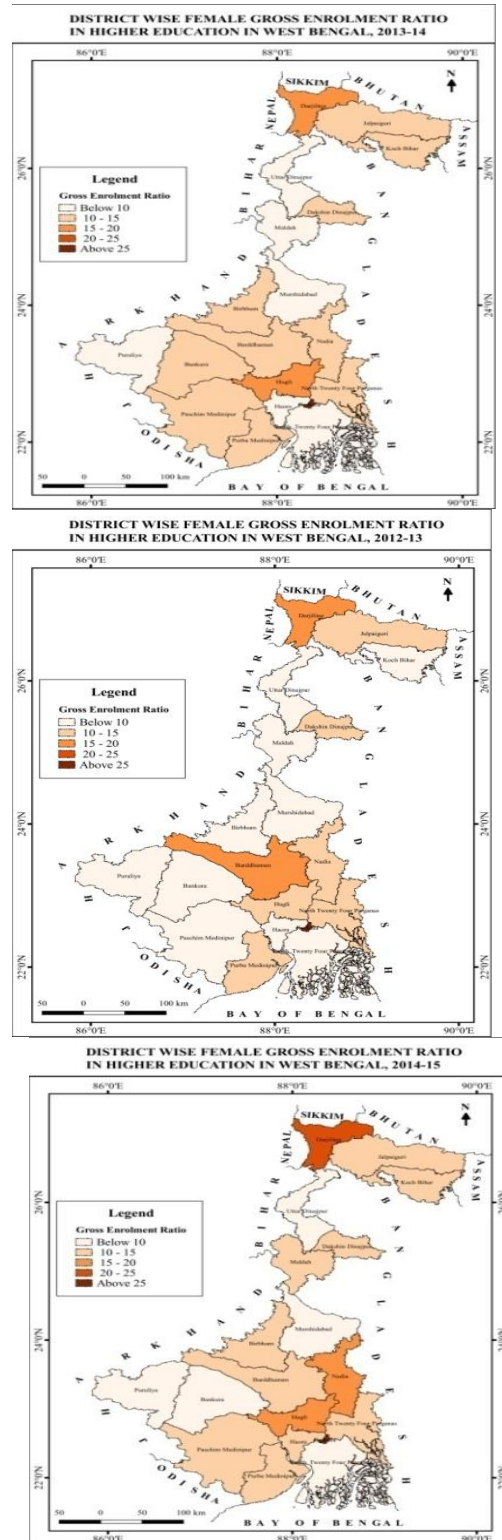
II. DATA

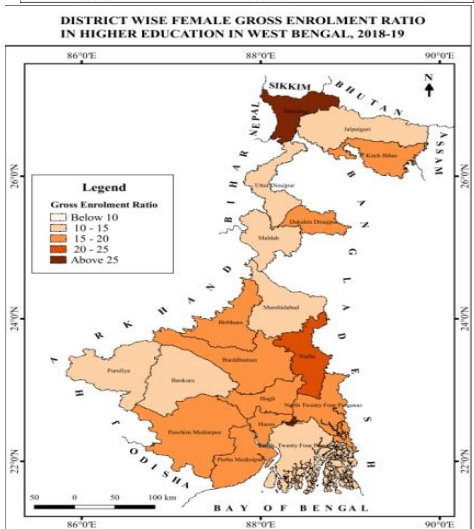
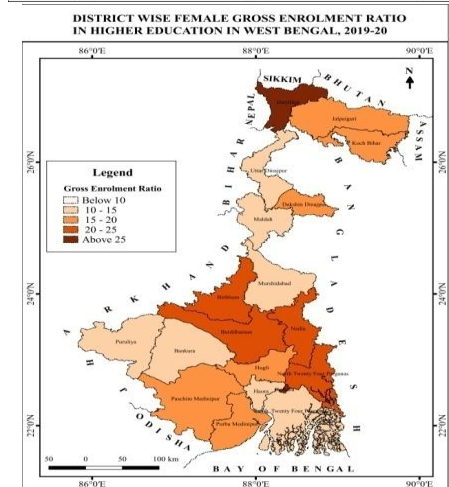
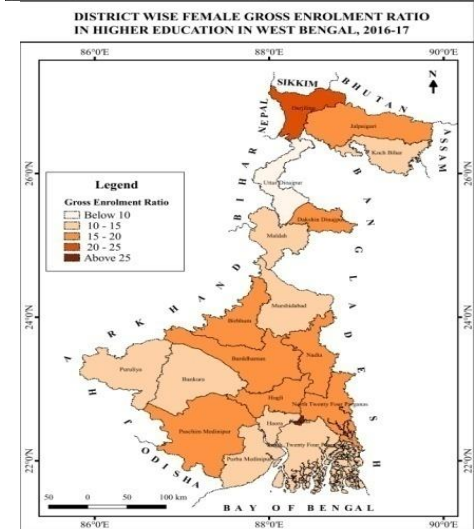
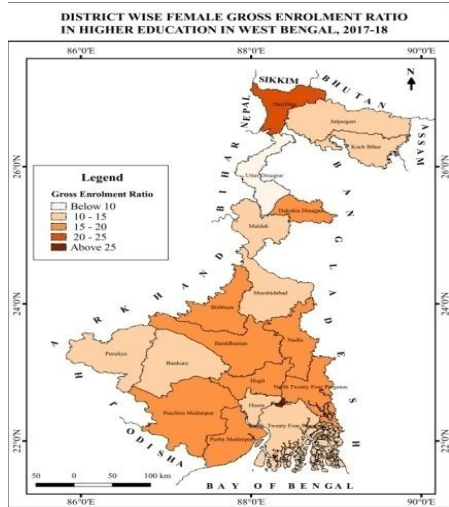
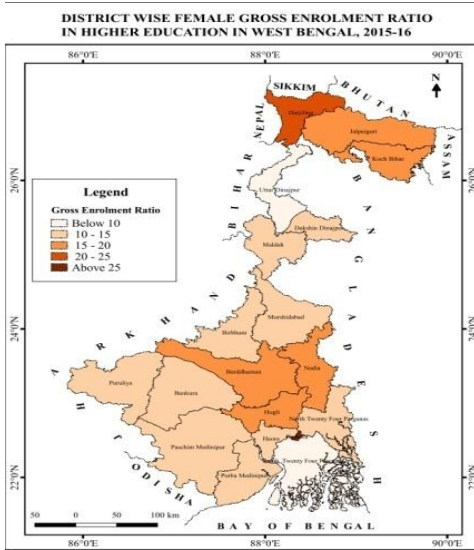
All India Survey on Higher Education (AISHE) has been taken as the main source of data. The population data have been shared from Census 2011 and reports of the Ministry of Human Resource Development (MHRD). The district-wise female enrollment – total, SC, and ST-is used to analyze the higher education growth for women considering AISHE survey data for the years 2012-2013, 2013-2014, 2014-2015, 2015-2016 2016-2017, 2017-2018, 2018-2019, and 2019-2020. The reports and raw data were used for analysis. The population in the age-group 18-23 has calculated using Census 2011 single-age data. The districts of West Bengal - Darjeeling(DAR), Jalpaiguri(JAL), Coochbehar(CB), Uttar Dinajpur(UD), Dakshin Dinajpur(DD), Malda(MAL), Murshidabad(MUR), Birbhum(BIR), Nadia(NAD), Barddaman(BAR), Purulia(PUR), Bankura(BAN), Hugli(HGH), Howrah(HWH), Paschim Midnapur(PASM), Purba Medinipur(PM), N24 Parganas(N24), South 24 Parganas(S24) and Kolkata(KOL) have been considered.

III. RESULTS and DISCUSSION

Gross Enrolment Ratio(GER) is the percentage of enrollment at the session t to the expected number of individuals in the age group 18-23 at the session t. The more the value of GER, the better is the status of education at the session t. It has been calculated for the sessions 2012-13, 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, and 2019-20 for each of the total SC and ST categories for females only. This GER will expectedly indicate higher education among females in society for the last 8 years under consideration.

Figure-1 showing the district-wise female GER(total) in higher education for the last 8 years in WB

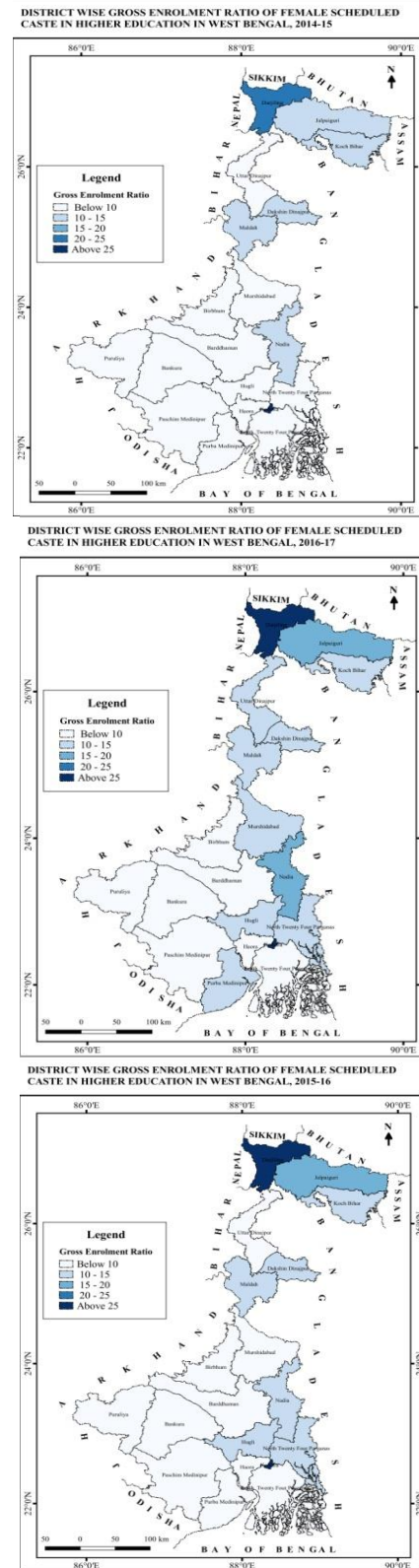
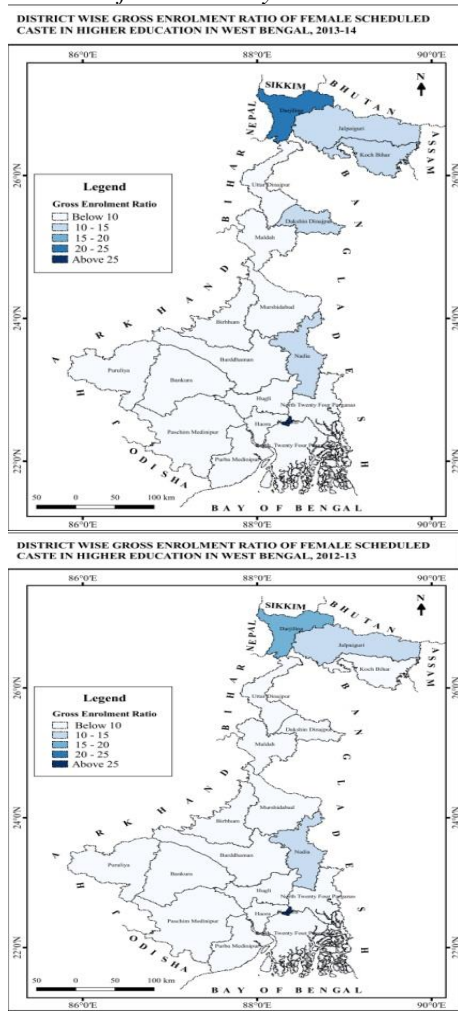


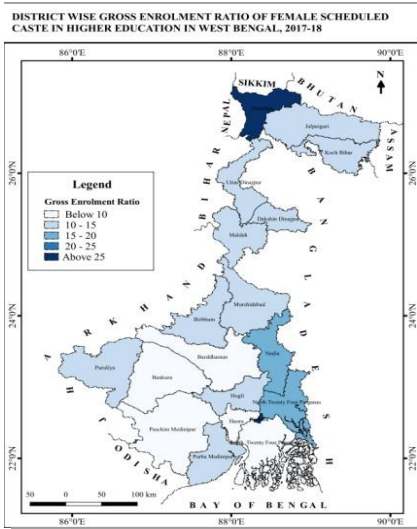


From figure-1, for the year 2012-13, the female GER(total) in the districts CB, UD, MAL, MUR, BIR, PUR, BAN, PASM, HWH, and S24 are below 10. It is between 10 and 15 in JAL, DD, NAD, HGH, PM & N24; between 15 and 20 in DAR & BAR and above 25 in KOL. For 2013-14, the female GER(total) in the districts – UD, MAL, MUR, PUR, HWH & S24 is below 10. It is between 10 and 15 in JAL, CB, DD, BIR, NAD, BAR, BAN, PASM, PM & S24; between 15 and 20 in the districts DAR & HGH; above 25 only in KOL. For the year 2014-15, the female GER(total) in UD, MUR, PUR, BAN & S24 is below 10. The same is between 10 and 15 in the districts JAL, CB, DD, MAL, BIR, BAR, HGH, PASM, PM & N24; between 15 and 20 in the districts HWH & NAD; between 20 and 25 in DAR and above 25 in KOL. For 2015-16, the female GER(total) in the districts UD & S24 is below 10. It is between 10 and 15 in the districts DD, MAL, MUR, BIR, PUR, BAN, HWH, PASM, PM & N24; between 15 and 20 in the districts JAL, CB, BAR, NAD & N24; between 20 and 25 in the district of DAR and above 25 in KOL. For the year 2016-17, the female GER(total) in the district UD is below 10. It is between 10 and 15 in the districts CB, MAL, MUR, PUR, BAN, HWH, PM & S24; between 15 and 20 in the districts JAL, DD, BIR, NAD,

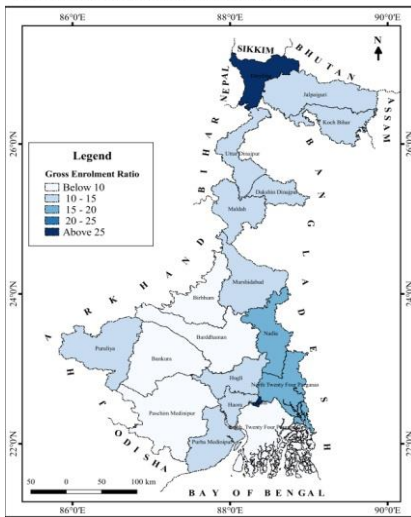
BAR, HGH, PASM & N24; between 20 and 25 in DAR and above 25 in KOL. For the year 2017-18, the female GER(total) in the district UD is below 10. It is between 10 and 15 in the districts JAL, CB, MAL, MUR, PUR, BAN, HWH & S24; between 15 and 20 in the districts DD, BIR, BAR, NAD, HGH, PM, PASM & N24; between 20 and 25 in DAR and above 25 in KOL. For the year 2018-19, the female GER(total) is between 10 and 15 in the districts JAL, UD, MAL, MUR, PUR, BAN & S24; between 15 and 20 in the districts CB, DD, BIR, BAR, HGH, HWH, PASM, PM & N24; between 20 and 25 in NAD and above 25 in DAR & KOL. For the year 2019-20, the female GER(total) is between 10 and 15 in the districts UD, MAL, MUR, PUR, BAN, HWH & S24; between 15 and 20 in the districts JAL, CB, DD, PM, HGH & PASM; between 20 and 25 in BIR, BAR, NAD & N24 and above 25 in DAR & KOL. For the entire 8 years, MUR is in legend-2 and KOL in legend-5.

Figure-2 showing the district-wise SC female GER in higher education for the last 8 years in WB

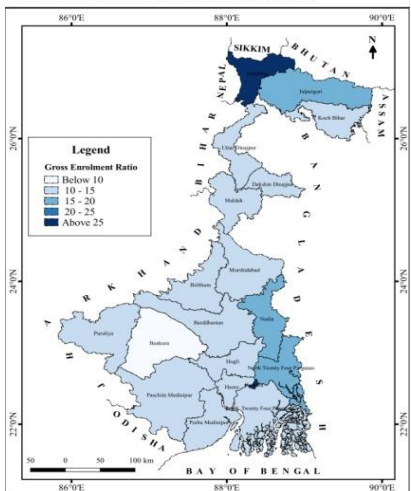




DISTRICT WISE GROSS ENROLMENT RATIO OF FEMALE SCHEDULED CASTE IN HIGHER EDUCATION IN WEST BENGAL, 2018-19



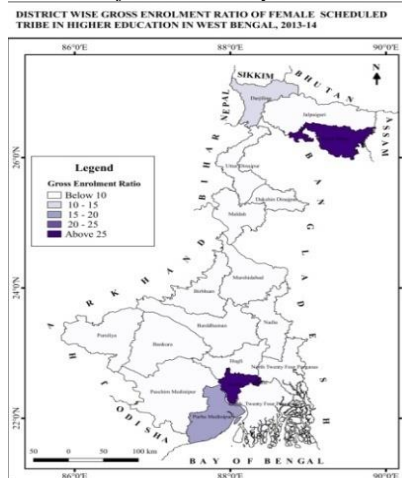
DISTRICT WISE GROSS ENROLMENT RATIO OF FEMALE SCHEDULED CASTE IN HIGHER EDUCATION IN WEST BENGAL, 2019-20

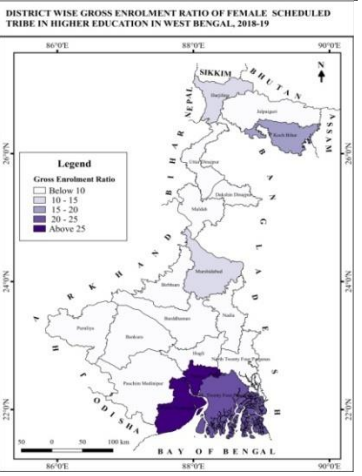
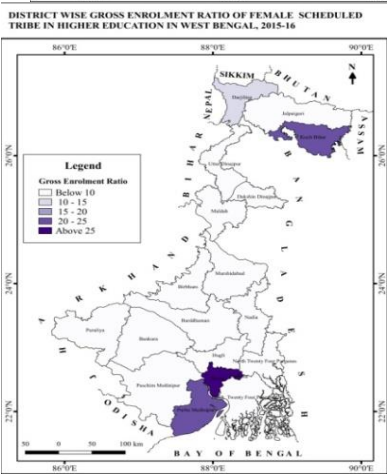
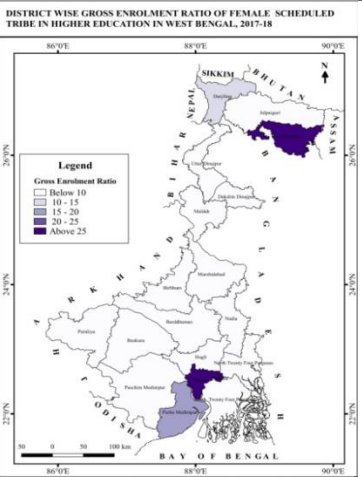
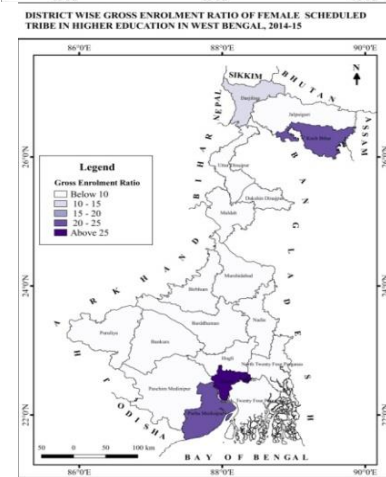
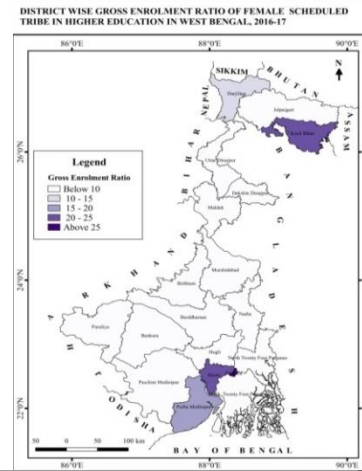
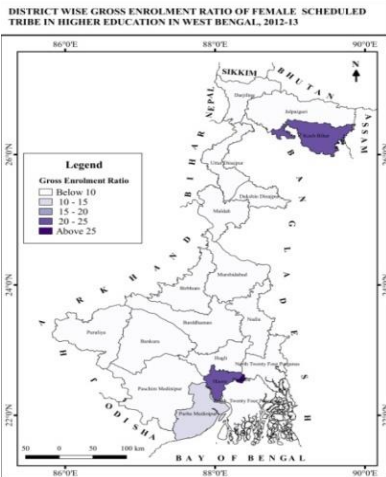


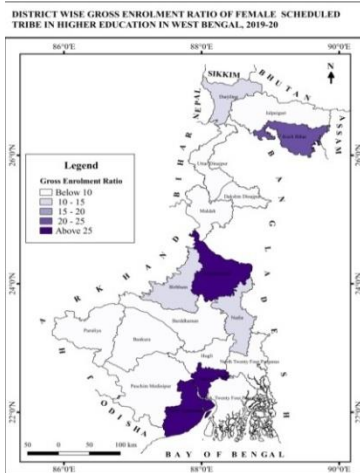
From figure-2, for the year 2012-13, the female GER(SC) in the districts CB, UD, DD, MAL, MUR, BIR, PUR, BAN,

PASM, PM, HGH, HWH, N24 & S24 are below 10. It is between 10 and 15 in the JAL & NAD; between 15 and 20 in DAR and above 25 in KOL. For the year 2013-14, the female GER(SC) in the districts – UD, MAL, MUR, BIR, PUR, BAR, HWH, HGH, BAN, PASM, PM, N24 & S24 are below 10. It is between 10 and 15 in JAL, CB, DD, NAD, and above 25 only in KOL. For the year 2014-15, the female GER(SC) in the districts UD, MUR, BIR, PUR, BAN, BAR, HGH, HWH, PASM, PM, N24 & S24 is below 10. The same is between 10 and 15 in JAL, CB, DD, MAL & NAD; between 20 and 25 in DAR and above 25 in KOL. For 2015-16, the female GER(SC) in the districts UD, MUR, BIR, BAR, PUR, BAN, HWH, PASM, PM & S24 is below 10. It is between 10 and 15 in the districts CB, DD, MAL, NAD, HGH & N24; between 15 and 20 in the district JAL; above 25 in DAR & KOL. For 2016-17, the female GER(SC) in the districts BAR, BIR, PUR, BAN, HWH, PASM & S24 is below 10. It is between 10 and 15 in the districts CB, UD, DD, MAL, MUR, HGH, PM & N24; between 15 and 20 in the districts JAL & NAD; above 25 in DAR & KOL. For the year 2017-18, the female GER(SC) in the district BAR, BAN, HWH, PASM & S24 is below 10. It is between 10 and 15 in the districts JAL, CB, UD, DD, MAL, MUR, BIR, PUR, HGH & PM; between 15 and 20 in the districts NAD & N24; above 25 in DAR & KOL. For the year 2018-19, the female GER(SC) is below 10 in the districts BIR, BAR, BAN, PASM & S24; between 10 and 15 in the districts JAL, CB, UD, DD, MAL, MUR, PUR, HGH, HWH & PM; between 15 and 20 in the districts NAD & N24 and above 25 in DAR & KOL. For the year 2019-20, the female GER(SC) is below 10 in the district BAN; between 10 and 15 in the districts CB, UD, DD, MAL, MUR, BIR, BAR, PUR, HGH, HWH, PASM, PM & S24; between 15 and 20 in the districts JAL, NAD & N24 and above 25 in DAR & KOL. For the entire 8 years, BAN is in the legend-1 and KOL in legend-5; DAR, CB, UD, DD, MAL, MUR, NAD, PUR, HGH, HWH, PASM, PM, N24 & S24 has improved.

Figure-3 showing the district-wise ST female GER in higher education for the last 8 years in WB







From figure-3, for the year 2012-13, the female GER(ST) in the districts DAR, JAL, UD, DD, MAL, MUR, BIR, PUR, BAN, NAD, BAR, PASM, HGH, N24 & S24 are below 10. It is between 10 and 15 in the district PM, between 20 and 25 in CB & HWH, and above 25 in KOL. For the year 2013-14, the female GER(ST) in the districts – JAL, UD, DD, MAL, MUR, BIR, PUR, NAD, BAR, BAN, HGH, PASM, N24 & S24 are below 10. It is between 15 and 20 in the districts DAR & PM and above 25 only in CB, HWH & KOL. For the year 2014-15, the female GER(ST) in the JAL, UD, DD, MAL, MUR, BIR, PUR, NAD, BAN, BAR, BAN, HGH, PASM, N24 & S24 is below 10. The same is between 15 and 20 in the district of DAR; between 20 and 25 in PM and above 25 in CB, HWH & KOL. For 2015-16, the female GER(ST) in the districts JAL, UD, DD, MAL, MUR, BIR, BAR, NAD, PUR, BAN, PASM, HGH, PASM, N24 & S24 is below 10. It is between 10 and 15 in the district DAR; between 20 and 25 in the district PM, and above 25 in CB, HWH & KOL. For 2016-17, the female GER(ST) in the districts JAL, UD, DD, MAL, MUR, BIR, BAR, NAD, PUR, BAN, PASM, HGH, PASM, N24 & S24 is below 10. It is between 10 and 15 in the district DAR; between 15 to 20 in PM; between 20 and 25 in HWH, and above 25 in CB & KOL. For the year 2017-18, the female GER(ST) in the district JAL, UD, DD, MAL, MUR, BIR, BAR, NAD, PUR, BAN, PASM, HGH, PASM, N24 & S24 is below 10. It is between 10 and 15 in the district DAR; between 15 to 20 in PM and above 25 in CB, HWH & KOL. For the year 2018-19, the female GER(ST) is below 10 in the districts JAL, UD, DD, MAL, BIR, BAR, NAD, PUR, BAN, PASM, HGH, PASM & N24 is below 10. It is between 10 and 15 in the district DAR & MUR; between 15 and 20 in the district CB & S24 and above 25 in PM, HWH & KOL. For the year 2019-20, the female GER(ST) is below 10 in the district JAL, UD, DD, MAL, BAR, PUR, BAN, PASM, HGH,

PASM, N24 & S24 is below 10. It is between 10 and 15 in the district DAR, NAD & BIR; between 20 and 25 in the district CB and above 25 in MUR, PM, HWH & KOL. For the entire 8 years, JAL, UD, DD, MAL, BAR, PUR, BAN, HGH, PASM & N24 are in the legend-1 and KOL in legend-5; DAR, MUR, NAD, BIR has improved.

It is expectedly ideal if the total female population is engaged in higher education in 18-23. It would not be as some left after graduation, some left during the study(drop out). It can be indicated by equating the percentage of female enrollment out of total and percentage of female populations for the age group 18-23(Table-1). GAP may be the difference between the female population's percentage for the age group 18-23 and female enrollment. GAP for the session 2019-20(GAP19), concerning 2012-13(GAP12) is the difference between GAP19 and GAP12. GAPS are near to zero are the best. Negative GAP for a district may indicate migration from some other district to the district (Table-2).

Table – 1 showing the district-wise percentage of enrolment and population for 2012-13 and 2019-20

DISTRICT	ET12	PT12	ET19	PT19	EC12	PC12
N24	10.4	10.84	10.28	9.59	7.35	10.11
S24	5.03	9.65	6.02	9.2	7.88	11.67
BAN	2.46	3.55	2.78	3.89	1.69	5.09
BIR	2.82	3.77	4.18	4.06	2.25	4.53
CB	2.44	3.16	2.72	3.28	5.86	6.54
DAR	2.76	2.09	3.54	2.06	2.92	1.58
DD	1.8	1.81	1.76	2.03	2.12	2.07
UD	1.65	3.05	2.31	4.27	3.28	3.37
HGH	6.53	5.73	4.72	5.32	5.41	6.46
HWH	3.49	5.38	3.65	4.86	2.3	3.63
JAL	4.77	4.67	3.87	4.48	10.84	7.3
KOL	20.73	4.25	17.93	3.62	15.66	1.09
MAL	3.13	4.43	3.67	5.44	3.57	3.64
PM	5.61	5.8	4.69	5.53	3.46	3.64
PASM	4.16	6.43	5.82	6.42	2.56	5.28
MUR	4.82	8.45	5.45	9.21	3.62	4.19
NAD	5.7	5.67	5.88	5.38	9.08	7.35
BAR	10.03	8.45	8.18	7.93	8.76	10.13
PUR	1.65	2.82	2.54	3.42	1.39	2.31

DISTRICT	EC19	PC19	ES12	PS12	ES19	PS19
	10.7					
N24	9	8.85	3.05	5.12	4.33	4.77
S24	7.52	10.67	1.79	1.81	1.52	1.86
BAN	2.38	5.77	5.31	6.28	6.08	6.4

BIR	3.94	4.91	2.81	4.43	5.82	4.73
CB	6.29	6.76	1.31	0.34	0.82	0.34
DAR	2.98	1.58	12.77	7.71	9.53	7.11
DD	2.47	2.47	5.23	4.71	4	5.58
UD	4.23	4.45	2.54	2.58	1.78	3.35
HGH	4.34	6.08	5.05	4.73	3.58	4.24
HWH	2.26	3.13	1.38	0.32	0.85	0.23
JAL	8.11	7.12	11.82	15.4	9.35	14.5
KOL	13.2	0.91	10.03	2	9.76	0.14
MAL	4.19	4.5	3.9	0.19	3.07	6.37
PM	2.91	3.61	1.58	5.48	1.66	0.49
PASM	3.7	5.41	9.65	16.8	11.2	15.8
MUR	3.87	4.41	2.23	9	7	7
NAD	7.95	6.75	2.11	1.78	3.37	2.66
BAR	6.69	9.71	10.77	9.91	8.99	9.3
PUR	2.15	2.91	6.69	8.94	9.37	10.1
						2

Table – 2 showing the district-wise GAP values for 2012-13 and 2019-20

District	Total		SC		ST	
	GAP12	GAP19	GAP12	GAP19	GAP12	GAP19
N24	0.44	-0.69	2.76	-1.95	2.07	0.45
S24	4.62	3.19	3.80	3.14	0.02	0.34
BAN	1.09	1.11	3.40	3.39	0.97	0.32
BIR	0.95	-0.12	2.28	0.97	1.61	-1.09
CB	0.72	0.56	0.67	0.46	-0.97	-0.48
DAR	-0.67	-1.48	-1.35	-1.40	-5.06	-2.41
DD	0.01	0.27	-0.05	0.00	-0.52	1.58
UD	1.39	1.96	0.09	0.23	0.04	1.57
HGH	-0.80	0.59	1.05	1.74	-0.32	0.66
HWH	1.88	1.21	1.33	0.87	-1.06	-0.62
JAL	-0.10	0.61	-3.53	-0.99	3.60	5.18
KOL	-16.49	-14.31	-14.57	-12.32	-9.83	-9.62
MAL	1.30	1.77	0.07	0.32	1.58	3.30
PM	0.19	0.83	0.19	0.70	-0.97	-1.18
PASM	2.27	0.61	2.72	1.71	7.24	4.59
MUR	3.64	3.75	0.56	0.55	-0.44	-2.95
NAD	-0.04	-0.49	-1.73	-1.19	0.66	-0.71
BAR	-1.57	-0.26	1.37	3.03	-0.86	0.30
PUR	1.17	0.89	0.93	0.75	2.24	0.75

From Table-2, it is to note that GAP for the total female is negative in the districts- DAR, HGH, KOL, NAD, BAR & JAL for the session 2012-13, and the session 2019-20 in N24, BIR, DAR, KOL, NAD & BAR. More female enrollment in higher education than the female district population in the age group 18-23 due to migration or displacement or better facility for higher education in the district. GAP for SC female is negative in the districts – DAR, DD, JAL, KOL & NAD for 2012-13 and in N24, DAR, JAL, KOL & NAD for 2019-20. GAP for ST female is negative in the districts – CB, DAR, DD, HGH, HWH, KOL, PM, MUR & BAR for 2012-13 and in BIR, CB, DAR, HWH, KOL, PM, MUR & NAD for 2019-20. It may be noted that KOL has maximum GAP for 2012-13 and 2019-20 for all categories due to the best quality and facilities in higher education.

Another way to look at female involvement in society is the gender parity index (GPI). It is the ratio of female enrolment to male enrolment. It is 1 means there is an equal proportion of females and males. It is more than 1 means there are more females as compared to males.

Table – 3 showing the district-wise GPI values for 2012-13 and 2019-20

District	Total		SC		ST	
	GPI12	GPI19	GPI12	GPI19	GPI12	GPI19
N24	0.76	0.95	0.75	1.12	0.70	0.98
S24	0.50	0.87	0.61	1.00	0.45	0.48
BAN	0.71	1.12	0.48	1.01	0.52	1.02
BIR	0.60	1.16	0.49	1.12	0.61	1.21
CB	0.84	1.22	0.84	1.29	0.64	1.02
DAR	0.97	1.49	0.89	1.25	1.33	1.38
DD	0.81	1.24	0.84	1.22	0.97	1.29
UD	0.77	1.15	0.87	1.18	0.63	0.87
HGH	0.86	1.15	0.70	1.27	0.62	1.11
HWH	0.80	1.23	0.66	1.15	0.91	0.49
JAL	0.96	1.33	1.06	1.48	0.94	1.38
KOL	1.09	1.13	1.03	0.93	0.94	0.98
MAL	0.78	1.04	0.78	0.96	0.51	0.92
PM	0.87	1.32	0.61	0.96	0.47	0.74
PASM	0.57	1.05	0.51	0.91	0.55	0.91
MUR	0.67	0.89	0.76	0.86	0.54	0.95
NAD	0.80	1.04	0.73	0.98	0.51	0.86
BAR	0.80	1.04	0.79	1.08	0.74	0.96
PUR	0.58	1.04	0.45	0.91	0.48	0.95

From Table-3, it is to note that for total females, there is an increase in all districts and more than 1 except in N24 & S24. For SC females, there is an increase in all the districts except

KOL and more than 1 except in KOL, MAL, PM, PASM, MUR, NAD & PUR. For ST females, there is an increase in all districts except HWH. It is more than 1 in BAN, BIR, CB, DAR, DD, HGH & JAL. But it is less than that for SC almost in all districts.

IV. CONCLUSIONS

The districts have been compared in the light of GER, GAP, and GPI. The distribution concerning the variables has been shown. GER is less than the national average of 26.3. Districts are not equally adaptive towards quality and facilities in higher education. GPI has been increased and still below Haryana. Female enrolment in total, SC & ST has been increased. More social encouragements may further increase GPI and GER for a better, balanced, and healthy society.

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