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A STUDY ON INTERSTATE DISPARITY IN STUDENTS ENROLMENT IN RESEARCH PROGRAMME IN INDIA

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ABSTRACT

The balanced educational development is very essential to achieve the distribute justice and inclusive educational development in different parts of the country. In reality one may notice a interstate disparity in access to higher educational institutions and opportunities of acquiring higher education in the country. This paper deals with interstate disparity in students' enrolment in research programme in India. It outlines the indicators of students' enrolment in various states and union territories in India. This paper conclude with some interesting findings.

KEYWORDS:

higher education, disparity, enrolment, inclusive growth, educational planning

INTRODUCTION

The educational planning done at the national level does not applicable to at the state and regional level. Some stated may be well developed in higher education and some states and UTs may be backward and most backward in higher education development. This situation leads to Inter State disparity in higher education development in India. In order to remove the regional disparity or interstate disparity in higher education development, the inclusive growth in higher education is need of the hour.

Higher education has expanded very rapidly in India in the last 25 years. This is a concern that whether the expansion of higher education is uniform throughout the country. Deshpande (2006)[1] argued that benefits of higher education researched all the regions and states in India. In general, in earlier period the higher education was mainly elite oriented. The real benefit of higher education should reach the marginalized sections of the society and remote and isolated regions.

Raftery and Hout (1993)[2] argued that inequality in availing the benefits of higher education is a inherent phenomenon in India. The primarily centralized system of higher educational planning does not allow the equal distribution of benefits of higher education. As per the national sample survey reports, the inequality in the distribution of benefits of higher education is well documented.

The inequality in the higher education development has been observed with respect to enrolment of students of different categories. In general, urban students might have benefitted much in availing the benefits of higher education in contrast to the rural students. One can find disparity in students' enrolment among the students of different socio-economic groups. It could be noted that enrolment of scheduled caste and scheduled tribe students may be quite low compared to the students of other backward caste and forward caste groups. The interstate disparity may be observed with respect of enrolment of minority students in higher education particularly Muslim students. The state wise and region wise disparity may be observed with respect to gender wise students' enrolment in higher education.

The balanced developments of higher education depend on removal of interstate disparity and inter regional disparity through the devices of identification of indicators of higher educational development. Even in the higher education sector, disparity has been observed course wise students' enrolment. It could be noted that in engineering and technical course students' enrolment may be higher in some states and it may be lower in some states and UTs. In some states one may notice an enrolment of large number of students in general arts and science courses and it is not the case for some other states. Some states and UTs might have enrolment a more number of students in medical course than the other states. Thus in general interstate disparity is inherent in the level of higher education development in India.

It is interesting to note that some states may have more concentration of universities and other educational institutions and the number may be low in some other states. This situation is inequality in the concentration of higher educational institutions. The presence of the inequality in concentration of number of higher educational institutions results in inequality in students' enrolment. The interstate disparity in higher educational institutions manifests in various angles and dimensions. It could be observed that inequality in under graduate level students enrolment, post graduate level,

students enrolment, gender wise students' enrolment, socio-economic group wise students, enrolment, professional course wise students' enrolment, diploma course wise students, enrolment, medical course wise students, enrolment and so on. Thus the studying of interstate disparity in higher education development is a multidimensional process.

METHODS AND MATERIALS

This study aims at analyzing the interstate disparity in higher education in India. This study examines the higher education development from the point of view of students' enrolment in Ph.D research programmes during the period 2010-2011 to 2015-2016. The students' enrolment indicators relating to male students' enrolment in Ph.d program, female students' Ph.d program enrolment, total Ph.d students enrolment has been analyzed. The relevant secondary data are collected from the All India Survey on Higher Education (2015-2016), Ministry Of Human Resource Development, Department Of Higher Education, and Government of India. To study the interstate disparity in the growth of higher education, the ANOVA two way model is applied. The general data interpretation is done with the help of percentage analysis.

RESULT AND DISCUSSION

Data presented table 1 indicate the growth of male students enrolment in Ph.D degree course. At the national level 48007 male students enrolled in Ph.D degree course in 2010-2011 and the number rose to 74547 in 2015-2016, showing a growth of 35.60 per cent in the period of analysis. It could be noted that the male students Ph.D enrolment is not uniform throughout the country and it shows interstate disparity. It is explained here in details.

Table 1 Male Students' Enrolment in Ph.D Program in India

State	Male (Ph.D.)						Growth Rate	CV
	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016		
A & N Islands UT	15	15	38	75	70	69	78.26	59.62
Andhra Pradesh	5435	4494	1664	1535	2010	2089	-160.17	57.87
Arunachal Pradesh	773	167	160	257	246	285	-171.23	73.12
Assam	1092	1350	1614	2097	2154	2318	52.89	27.84
Bihar	1218	1970	1706	1471	1334	1567	22.27	17.47
Chandigarh	274	111	564	468	383	448	38.84	42.98
Chhatisgarh	234	325	471	459	504	406	42.36	25.64
Delhi	3929	4246	7278	6633	6534	4861	19.17	25.25
Goa	8	49	20	78	41	44	81.82	60.89
Gujarat	1798	1485	1614	2105	2353	3286	45.28	31.31
Haryana	1132	1199	1025	1570	1338	1643	31.10	18.71
Himachal Pradesh	445	423	504	593	558	590	24.58	14.15
Jammu and Kashmir	311	400	452	500	781	985	68.43	45.06
Jharkhand	89	393	292	1129	1456	1726	94.84	80.23
Karnataka	5317	5382	4760	6245	7247	7424	28.38	18.08
Kerala	1418	1673	1661	1583	1663	1956	27.51	10.52
Madhya Pradesh	1183	1861	1814	2011	2168	2243	47.26	20.22
Maharashtra	3790	4077	3716	4783	5273	5757	34.17	18.40
Manipur	445	429	465	500	437	315	-41.27	14.50
Meghalaya	354	171	145	257	425	382	7.33	40.70
Mizoram	34	57	61	188	38	287	88.15	93.40
Nagaland	76	49	67	53	97	87	12.64	26.39
Odisha	367	784	772	676	953	1348	72.77	39.71
Puducherry	2147	257	300	360	302	617	-247.97	111.17
Punjab	892	961	1046	1124	1884	2048	56.45	38.06
Rajasthan	2193	1861	2293	2144	2314	1789	-22.58	10.60
Sikkim	0	0	10	9	42	27	62.96	113.41
Tamil Nadu	4925	7092	8555	10536	11253	13059	62.29	32.12
Telangana	0	0	3092	2808	2972	2710	-14.10	77.76
Tripura	81	128	88	222	196	289	71.97	49.21
Uttar Pradesh	4207	5127	5563	7216	7142	7815	46.17	22.95
Uttrakhand	1821	792	1493	2245	2159	2104	13.45	31.21
West Bengal	2004	1968	2351	2842	3257	3973	49.56	28.75
India	48007	49296	55654	64772	69584	74547	35.60	18.21

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Variation due to states and UTs	9.11E+08	32	28473724	46.514	1.516086
Variation due to years	18271486	5	3654297	5.969574	2.270667
Error	97944609	160	612153.8		
Total	1.03E+09	197			

In A & N Islands UT 15 male students joined the Ph.D course in 2010-2011 and the number moved up to 69 male students in 2015-2016, showing a growth of 78.26 per cent in the period of analysis. The number of male students joined the Ph.D course in Andhra Pradesh state was 5435 in 2010-2011 and it slowed down to 20.89 in 2015-2016, indicating a shrinkage of 160.17 per cent in the reference period. The male students enrolment at the Ph.D degree level education was

773 in 2010-2011 in Arunachal Pradesh State and the number turned down to 285 in 2015-2016, revealing a shortfall of 171.23 per cent in the period of analysis. Assam state had Ph.D male students' enrolment of 1092 in 2010-2011 and it rose to 2318 in 2015-2016, pointing out a growth of 52.89 per cent in the period investigation. The number of male Ph.D students' enrolment was 1218 in 2010-2011 in Bihar and the number increased to 1567 in 2015-2016, revealing a growth of 22.27 per cent during the reference period. In Chandigarh state 274 male students enrolled in the Ph.D course in 2010-2011 and the number moved ahead to 448 in 2015-2016, indicating an enhancement of 38.84 per cent in the period of analysis. The total male students' enrolment in Ph.D programme was 234 in Chhatisgarh state in 2010-2011 and the number rose to 406 in 2015-2016, showing a growth of 42.36 per cent.

In Delhi 3929 male students joined the Ph.D course in 2010-2011 and the number moved up to 4861 male students in 2015-2016, showing a growth of 19.17 per cent in the period of analysis. The number of male students joined the Ph.D course in Goa state was 8 in 2010-2011 and it moved to 44 in 2015-2016, indicating a growth of 81.82 per cent in the reference period. The male students' enrolment at the Ph.D degree level education was 1798 in 2010-2011 in Gujarat State and the number turned down to 3286 in 2015-2016, indicating a growth of 45.28 per cent in the period of analysis. Haryana state had Ph.D male students' enrolment of 1132 in 2010-2011 and it rose to 1643 in 2015-2016, pointing out a growth of 31.10 per cent in the period investigation. The number of male Ph.D students' enrolment was 445 in 2010-2011 in Himachal Pradesh State and the number increased to 590 in 2015-2016, revealing a growth of 24.58 per cent during reference period. In Jammu and Kashmir State 311 male students enrolled in the Ph.D course in 2010-2011 and the number moved to a head 985 in 2015-2016, indicating an enhancement of 68.43 per cent in the period of analysis. The total male students' enrolment in Ph.D programme was 89 in Jharkhand State in 2010-2011 and the number rose to 1726 in 2015-2016, showing a growth of 94.84 per cent.

In Karnataka 5317 male students joined the Ph.D course in 2010-2011 and the number moved up to 7424 male students in 2015-2016, showing a growth of 28.38 per cent in the period of analysis. The number of male students joined the Ph.D course in Kerala state was 1418 in 2010-2011 and it moved to 1956 in 2015-2016, indicating a growth of 27.51 per cent in the reference period. The male students enrolment at the Ph.D degree education level was 1183 in 2010-2011 in Madhya Pradesh State and the number turned down to 2243 in 2015-2016, indicating a growth of 47.26 per cent in the period of analysis. Maharashtra state had Ph.D male students' enrolment of 3790 in 2010-2011 and it rose to 5757 in 2015-2016, pointing out a growth of 34.17 per cent in the period investigation. The number of male Ph.D students' enrolment was 445 in 2010-2011 in Manipur State and the number increased to 315 in 2015-2016, revealing a shortfall of 41.27 per cent during reference period. In Meghalaya state 354 male students enrolled in the Ph.D course in 2010-2011 and the number moved ahead to 382 in 2015-2016, indicating an enhancement of 7.33 per cent in the period of analysis. The total male students' enrolment in Ph.D programme was 34 in Mizoram state in 2010-2011 and the number rose to 287 in 2015-2016, showing a growth of 88.15 per cent.

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In Nagaland State 76 male students joined the Ph.D course in 2010-2011 and the number moved up to 87 male students in 2015-2016, showing a growth of 12.64 per cent in the period of analysis. The number of male students joined the Ph.D course in Odisha state was 367 in 2010-2011 and it moved to 1348 in 2015-2016, indicating a growth of 72.77 per cent in the reference period. The male students' enrolment at the Ph.D degree education level was 2147 in 2010-2011 in Puducherry UT and the number turned down to 617 in 2015-2016, indicating a shrinkage of 274.97 per cent in the period of analysis. Punjab state had Ph.D male students enrolment of 892 in 2010-2011 and it rose to 2048 in 2015-2016, pointing out a growth of 56.45 per cent in the period investigation. The number of male Ph.D students' enrolment was 2193 in 2010-2011 in Rajasthan State and the number increased to 1789 in 2015-2016, revealing a shortfall of 22.58 per cent during reference period. In Sikkim state 10 male students enrolled in the Ph.D course in 2012-2013 and the number moved ahead 27 in 2015-2016, indicating an enhancement of 62.96 per cent in the period of analysis. The total male students' enrolment in Ph.D programme was 4925 in Tamil Nadu state in 2010-2011 and the number rose to 13059 in 2015-2016, showing a growth of 62.29 per cent.

In Telangana State 3092 male students joined the Ph.D course in 2012-2013 and the number moved up to 2710 male students in 2015-2016, showing a shortfall of 14.10 per cent in the period of analysis. The number of male students joined Ph.D course in Tripura state was 81 in 2010-2011 and it moved to 289 in 2015-2016, indicating a growth of 71.97 per cent in the reference period. The male students' enrolment at the Ph.D degree level education was 4207 in 2010-2011 in Uttar Pradesh State and the number turned up to 7815 in 2015-2016, indicating a growth of 46.17 per cent in the period of analysis. Uttrakhand state had Ph.D male students' enrolment of 1821 in 2010-2011 and it rose to 2104 in 2015-2016, pointing out a growth of 13.45 per cent in the period investigation. The number of male Ph.D students' enrolment was 2004 in 2010-2011 in West Bengal State and the number increased to 3973 in 2015-2016, revealing a growth of 49.56 per cent during reference period.

The ANOVA two way model is applied for further discussion. At one point the computed ANOVA value 46.51 is greater than its tabulated value at 5 per cent level significance. Hence there is a significant variation among the states and Union territories with respect to growth of enrollment of male Ph.D students in India. In another point the computed ANOVA value 5.86 is greater than its tabulated value. Hence there is a significant variation over the years in the growth of enrollment of male Ph.D students in India.

Table 2 presents data on the female students enrolment at the Ph.D degree level education. At the national level 29837 female students enrolled in the Ph.D programme in 2010-2011 and the number upturned to 51904 in 2015-2016, showing a growth of 42.52 per cent in the period of analysis. However one can notice a significant interstate disparity in female students' enrolment at the Ph.D degree level education. In A & N Islands UT only one female student joined the Ph.D programme in 2010-2011and the number multiplied to 17 in 2015-2016, showing a growth of 94.12 per cent in the period of analysis. In Andhra Pradesh State 2777 female students enrolled in the Ph.D programmes in 2010-2011 and the number shrinked to 1017 in 2015-2016, reflecting a shortfall of 173.06 per cent in the reference period. This is due to bifurcation of Telangana District.

Table 2 Female Students' Ph.D Program Enrolment in India

State	Female (Ph.D.)						Growth Rate	CV
	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016		
A & N Islands UT	1	1	8	20	16	17	94.12	79.62
Andhra Pradesh	2777	2479	1120	1267	1320	1017	-173.06	45.73
Arunachal Pradesh	278	73	94	150	179	213	-30.52	46.29
Assam	715	846	933	1356	1350	1556	54.05	30.05
Bihar	411	606	850	692	704	975	57.85	27.62
Chandigarh	298	196	689	494	390	567	47.44	41.16
Chhatisgarh	270	358	427	484	488	284	4.93	24.99
Delhi	3195	3434	6132	5943	5457	4018	20.48	27.76
Goa	7	61	29	71	66	26	73.08	60.33
Gujarat	914	785	821	1076	1340	1883	51.46	36.81
Haryana	1106	1169	1136	1473	1366	1755	36.98	18.84
Himachal Pradesh	231	290	460	301	582	588	60.71	38.24
Jammu and Kashmir	262	297	327	400	501	854	69.32	49.94
Jharkhand	24	328	172	476	515	688	96.51	66.05
Karnataka	2621	2778	2628	3379	4281	4353	39.79	24.15
Kerala	1451	2081	2141	2202	2298	2675	45.76	18.60
Madhya Pradesh	1956	1313	1115	1404	1522	1585	-23.41	19.23
Maharashtra	1595	2007	1967	2271	3351	3472	54.06	31.95
Manipur	417	375	450	488	421	303	-37.62	15.66
Meghalaya	421	131	147	288	398	428	1.64	45.07
Mizoram	29	71	87	223	35	268	89.18	85.41
Nagaland	81	58	60	57	100	74	-9.46	23.62
Odisha	162	333	767	210	651	1277	87.31	74.76
Puducherry	1287	124	169	192	214	315	-308.57	116.60
Punjab	1020	993	1072	1115	2116	2632	61.25	47.22
Rajasthan	1433	1419	3008	2317	2380	2345	38.89	28.69
Sikkim	0	0	7	10	21	31	77.42	107.03
Tamil Nadu	3070	5486	6502	7052	7753	9162	66.49	32.07
Telangana	0	0	1651	1477	1624	1423	-16.02	77.91
Tripura	30	104	60	145	110	183	83.61	52.62
Uttar Pradesh	2105	2500	3025	3607	3746	3737	43.67	22.36
Uttrakhand	832	533	769	810	832	1255	33.71	27.84
West Bengal	847	905	948	1368	1590	1945	56.45	35.00
India	29837	32134	39771	43118	47717	51904	42.52	21.19

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Variation due to states and UTs	4.04E+08	32	12610912	44.23108	1.516086
Variation due to years	11251592	5	2250318	7.89269	2.270667
Error	45618280	160	285114.2		
Total	4.6E+08	197			

In Assam state the number of female students joined the Ph.D programme was 278 in 2010-2012 and it went down to 213 in 2015-2016, showing a decline of 30.52 per cent in the period of analysis. The total 411 female students joined the Ph.D programme in 2010-2011 in Bihar State and the number enhanced to 975 in 2015-2016, indicating a growth of 54.05 per cent in the period of analysis. Chandigarh state had female students' enrolment of 298 at the Ph.D degree level education in 2010-2011 and the number increased to 567 in 2015-2016, indicating a growth of 47.44 per cent in the reference period. In Chhattisgarh state the total 270 female students joined the Ph.D programme in 2010-2011 and it rose to 284 in 2015-

2016, pointing out a growth of 4.93 per cent in the period of analysis.

In Delhi 3195 female students joined the Ph.D course in 2010-2011 and the number moved up to 4018 female students in 2015-2016, showing a growth of 20.48 per cent in the period of analysis. The number of female students joined the Ph.D course in Goa state was 7 in 2010-2011 and it moved to 26 in 2015-2016, indicating a growth of 73.08 per cent in the reference period. The female students' enrolment at the Ph.D degree level education was 914 in 2010-2011 in Gujarat State and the number turned up to 1883 in 2015-2016, indicating a growth of 51.46 per cent in the period of analysis. Haryana state had Ph.D female students' enrolment of 1106 in 2010-2011 and it rose to 1755 in 2015-2016, pointing out a growth of 36.98 per cent in the period investigation. The number of female Ph.D students' enrolment was 231 in 2010-2011 in Himachal Pradesh State and the number increased to 588 in 2015-2016, revealing a growth of 60.71 per cent during the reference period. In Jammu and Kashmir State 262 female students enrolled in the Ph.D course in 2010-2011 and the number moved ahead to 854 in 2015-2016, indicating an enhancement of 69.32 per cent in the period of analysis. The total female students' enrolment in Ph.D programme was 24 in Jharkhand State in 2010-2011 and the number rose to 688 in 2015-2016, showing a growth of 96.51 per cent.

In Karnataka State 2621 female students joined the Ph.D course in 2010-2011 and the number moved up to 4353 female students in 2015-2016, showing a growth of 39.79 per cent in the period of analysis. The number of female students joined the Ph.D course in Kerala state was 1451 in 2010-2011 and it moved to 2675 in 2015-2016, indicating a growth of 45.76 per cent in the reference period. The female students enrolment at the Ph.D degree level education was 1956 in 2010-2011 in Madhya Pradesh State and the number turned down to 1585 in 2015-2016, indicating a shortfall of 23.41 per cent in the period of analysis. Maharashtra state had Ph.D female students' enrolment of 1595 in 2010-2011 and it rose to 3472 in 2015-2016, pointing out a growth of 54.06 per cent in the period investigation. The number of female Ph.D students' enrolment was 417 in 2010-2011 in Manipur State and the number increased to 303 in 2015-2016, revealing a shortfall of 37.62 per cent during the reference period. In Meghalaya state 421 female students enrolled in the Ph.D course in 2010-2011 and the number moved ahead 428 in 2015-2016, indicating an enhancement of 1.64 per cent in the period of analysis. The total female students' enrolment in Ph.D programme was 29 in Mizoram state in 2010-2011 and the number rose to 268 in 2015-2016, showing a growth of 89.18 per cent.

In Nagaland State 81 female students joined the Ph.D course in 2010-2011 and the number moved down to 74 female students in 2015-2016, showing a growth of 9.46 per cent in the period of analysis. The number of female students joined the Ph.D course in Odisha state was 162 in 2010-2011 and it moved to 1277 in 2015-2016, indicating a growth of 87.31 per cent in the reference period. The female students' enrolment at the Ph.D degree level education was 1287 in 2010-2011 in Puducherry UT and the number turned down to 315 in 2015-2016, indicating a shrinkage of 308.57 per cent in the period of analysis. Punjab state had Ph.D female students' enrolment of 1020 in 2010-2011 and it rose to 2632 in 2015-2016, pointing out a growth of 61.25 per cent in the period investigation. The number of female Ph.D students' enrolment was 1433 in 2010-2011 in Rajasthan State and the number increased to 2345 in 2015-2016, revealing a growth of 38.89 per cent during reference period. In Sikkim state 7 female students enrolled in the Ph.D course in 2012-2013 and the number moved ahead to 31 in 2015-2016, indicating an enhancement of 77.42 per cent in the period of analysis. The total female students' enrolment in the Ph.D programme was 3070 in Tamil Nadu state in 2010-2011 and the number rose to 9162 in 2015-2016, showing a growth of 66.49 per cent.

In Telangana State 1651 female students joined the Ph.D course in 2012-2013 and the number moved down to 1423 female students in 2015-2016, showing a shortfall of 16.02 per cent in the period of analysis. The number of female students joined the Ph.D course in Tripura state was 30 in 2010-2011 and it moved to 183 in 2015-2016, indicating a growth of 83.63 per cent in the reference period. The female students' enrolment at the Ph.D degree level education was 2105 in 2010-2011 in Uttar Pradesh State and the number turned up to 3737 in 2015-2016, indicating a growth of 43.67 per cent in the period of analysis. Uttrakhand state had Ph.D female students enrolment of 832 in 2010-2011 and it rose to 1255 in 2015-2016, pointing out a growth of 33.71 per cent in the period investigation. The number of female Ph.D students' enrolment was 847 in 2010-2011 in West Bengal State and the number increased to 1945 in 2015-2016, revealing a growth of 56.45 per cent during reference period.

The ANOVA two way model is applied for further discussion. At one point the computed ANOVA value 44.23 is greater than its tabulated value at 5 per cent level significance. Hence there is a significant variation among the states and Union territories with respect to growth of enrollment of female Ph.D students in India. In another point the computed ANOVA value 7.89 is greater than its tabulated value. Hence there is a significant variation over the years in the growth of enrollment of female Ph.D students in India.

Table 3 presents data on the total number of students enrolled in Ph.D programme. At the national level 77844 students was joined the Ph.D programme in 2010-2011 and the number rose to 126451 in 2015-2016, showing a growth of 38.44 per cent in the period of analysis. However the total growth of students' enrolment at the Ph.D degree level education is not uniform and it shows interstate disparity. It is explained here in detail. In A & N Islands UT 16 total students joined the Ph.D programme in 2010-2011 and the number upturned 86 in 2015-2016, showing a growth of 81.40 per cent in the period of analysis.

Table 3 Total Ph.D Students Enrolment in India

State	Both (Ph.D)						Growth Rate	CV
	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016		
A & N Islands UT	16	16	46	95	86	86	81.40	63.22
Andhra Pradesh	8212	6973	2784	2802	3330	3106	-164.39	53.14
Arunachal Pradesh	1051	240	254	407	425	498	-111.04	62.15
Assam	1807	2196	2547	3453	3504	3874	53.36	28.61
Bihar	1629	2576	2556	2163	2038	2542	35.92	16.90
Chandigarh	572	307	1253	962	773	1015	43.65	41.58
Chhatisgarh	504	683	898	943	992	690	26.96	24.10
Delhi	7124	7680	13410	12576	11991	8879	19.77	26.36
Goa	15	110	49	149	107	70	78.57	57.82
Gujarat	2712	2270	2435	3181	3693	5169	47.53	33.20
Haryana	2238	2368	2161	3043	2704	3398	34.14	18.51
Himachal Pradesh	676	713	964	1194	1140	1178	42.61	23.97
Jammu and Kashmir	573	697	779	900	1282	1839	68.84	46.69
Jharkhand	113	721	464	1605	1971	2414	95.32	75.31
Karnataka	7938	8160	7388	9624	11528	11777	32.60	20.15
Kerala	2869	3754	3802	3785	3961	4631	38.05	14.82
Madhya Pradesh	3139	3174	2929	3415	3690	3828	18.00	10.30
Maharashtra	5385	6084	5683	7054	8624	9229	41.65	22.82
Manipur	862	804	915	988	858	618	-39.48	14.94
Meghalaya	766	302	292	545	823	810	5.43	42.05
Mizoram	63	128	148	411	73	555	88.65	88.82
Nagaland	157	107	127	110	197	161	2.48	24.35
Odisha	529	1117	1539	886	1604	2625	79.85	52.75
Puducherry	3434	381	469	552	516	932	-268.45	113.10
Punjab	1912	1954	2118	2239	4000	4680	59.15	42.76
Rajasthan	3626	3280	5301	4461	4694	4134	12.29	17.26
Sikkim	0	0	17	19	63	58	70.69	106.39
Tamil Nadu	7995	12578	15057	17588	19006	22221	64.02	31.96
Telangana	0	0	4743	4285	4596	4133	-14.76	77.80
Tripura	111	232	148	367	306	472	76.48	50.04
Uttar Pradesh	6312	7627	8588	10823	10888	11552	45.36	22.63
Uttrakhand	2653	1325	2262	3055	2991	3359	21.02	28.07
West Bengal	2851	2873	3299	4210	4847	5918	51.82	30.67
India	77844	81430	95425	107890	117301	126451	38.44	19.35

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*F crit*
Variation due to states and UTs	2.47E+09	32	77244879	46.74764	1.516086
Variation due to years	57914987	5	11582997	7.009886	2.270667
Error	2.64E+08	160	1652380		
Total	2.79E+09	197			

Andhra Pradesh State 8212 total students enrolled in the Ph.D programmes in 2010-2011 and the number shrinked to 3106 in 2015-2016, reflecting a shortfall of 164.39 per cent in the reference period. In Arunachal Pradesh State 1051 total students joined the Ph.D course in 2010-2011 and the number moved down to 498 total students in 2015-2016, showing a shortfall 111.04 per cent in the period of analysis. In Assam state the number of total students joined the Ph.D programme was 1807 in 2010-2012 and it went up to 3874 in 2015-2016, showing a growth of 53.36 per cent in the period of analysis. The total 1629 students joined the Ph.D programme in 2010-2011 in Bihar State and the number enhanced to 2542 in 2015-2016, indicating a growth of 35.92 per cent in the period of analysis. Chandigarh state had total Ph.D students' enrolment of 572 in 2010-2011 and the number increased to 1015 in 2015-2016, indicating a growth of 43.65 per cent in the reference period. In Chhattisgarh state 504 total students joined the Ph.D programme in 2010-2011 and it rose to 690 in 2015-2016, pointing out a growth of 41.58 per cent in the period of analysis.

In Delhi 7124 total students joined the Ph.D course in 2010-2011 and the number moved up to 8879 total students in 2015-2016, showing a growth of 19.77 per cent in the period of analysis. The number of total students joined the Ph.D course in Goa state was 15 in 2010-2011 and it moved to 70 in 2015-2016, indicating a growth of 78.57 per cent in the reference period. The total students' enrolment at the Ph.D degree level education was 2712 in 2010-2011 in Gujarat State and the number turned up to 5169 in 2015-2016, indicating a growth of 47.53 per cent in the period of analysis. Haryana state had Ph.D total students' enrolment of 2238 in 2010-2011 and it rose to 3398 in 2015-2016, pointing out a growth of 34.14 per cent in the period investigation. The number of total Ph.D students' enrolment was 676 in 2010-2011 in Himachal Pradesh State and the number increased to 1178 in 2015-2016, revealing a growth of 42.61 per cent during the reference period. In Jammu and Kashmir State 573 total students enrolled in the Ph.D course in 2010-2011 and the number moved ahead to 1839 in 2015-2016, indicating an enhancement of 68.84 per cent in the period of analysis. The

total students' enrolment in Ph.D programme was 113 in Jharkhand State in 2010-2011 and the number rose to 2414 in 2015-2016, showing a growth of 95.32 per cent.

In Karnataka State 7938 total students joined the Ph.D course in 2010-2011 and the number moved up to 11777 students in 2015-2016, showing a growth of 32.60 per cent in the period of analysis. The number of total students joined the Ph.D course in Kerala state was 2869 in 2010-2011 and it moved to 4631 in 2015-2016, indicating a growth of 38.05 per cent in the reference period. The total students' enrolment at the Ph.D degree level education was 3139 in 2010-2011 in Madhya Pradesh State and the number turned to 3828 in 2015-2016, indicating a growth of 10.30 per cent in the period of analysis. Maharashtra state had Ph.D total students' enrolment of 5385 in 2010-2011 and it rose to 9229 in 2015-2016, pointing out a growth of 41.65 per cent in the period investigation. The number of total Ph.D students' enrolment was 862 in 2010-2011 in Manipur State and the number decreased to 618 in 2015-2016, revealing a shortfall of 39.48 per cent during reference period. In Meghalaya state 766 total students enrolled in the Ph.D course in 2010-2011 and the number moved ahead to 810 in 2015-2016, indicating an enhancement of 5.43 per cent in the period of analysis. The total total students' enrolment in Ph.D programme was 63 in Mizoram state in 2010-2011 and the number increased to 555 in 2015-2016, showing a growth of 88.65 per cent.

In Nagaland State 157 total students joined the Ph.D course in 2010-2011 and the number moved up to 161 total students in 2015-2016, showing a growth of 2.48 per cent in the period of analysis. The number of total students joined the Ph.D course in Odisha state was 529 in 2010-2011 and it moved to 2625 in 2015-2016, indicating a growth of 79.85 per cent in the reference period. The total students' enrolment at the Ph.D degree level education was 3434 in 2010-2011 in Puducherry and the number turned down to 932 in 2015-2016, indicating a shrinkage of 268.45 per cent in the period of analysis. Punjab state had Ph.D total students' enrolment of 1912 in 2010-2011 and it increased to 4680 in 2015-2016, pointing out a growth of 59.15 per cent in the period investigation. The number of total Ph.D students' enrolment was 3626 in 2010-2011 in Rajasthan State and the number increased to 4134 in 2015-2016, revealing a shortfall of 12.29 per cent during reference period. In Sikkim state 17 total students enrolled in the Ph.D course in 2012-2013 and the number moved ahead 58 in 2015-2016, indicating an enhancement of 70.69 per cent in the period of analysis. The total students' enrolment in Ph.D programme was 7995 in Tamil Nadu state in 2010-2011 and the number rose to 22221 in 2015-2016, showing a growth of 64.02 per cent.

In Telangana State 4743 total students joined the Ph.D course in 2012-2013 and the number moved up to 4133 total students in 2015-2016, showing a slowdown of 14.76 per cent in the period of analysis. The number of total students joined the Ph.D course in Tripura state was 111 in 2010-2011 and it moved to 472 in 2015-2016, indicating a growth of 76.48 per cent in the reference period. The total students' enrolment at the Ph.D degree level education was 6312 in 2010-2011 in Uttar Pradesh State and the number turned up to 11552 in 2015-2016, indicating a growth of 45.36 per cent in the period of analysis. Uttrakhand state had Ph.D total students' enrolment of 2653 in 2010-2011 and it increased to 3359 in 2015-2016, pointing out a growth of 21.02 per cent in the period investigation. The number of total Ph.D students' enrolment was 2851 in 2010-2011 in West Bengal State and the number increased to 5918 in 2015-2016, revealing a growth of 51.82 per cent during reference period.

The ANOVA two way model is applied for further discussion. At one point the computed ANOVA value 46.74 is greater than its tabulated value at 5 per cent level significance. Hence there is a significant variation among the states and Union territories with respect to growth of enrollment of total Ph.D students in India. In another point the computed ANOVA value 7 is greater than its tabulated value. Hence there is a significant variation over the years in the growth of enrollment of total Ph.D students in India.

CONCLUSION

It could be seen clearly from the above discussion that India admitted 74547 male Ph.D students in 2015-2016. The male students' Ph.D admission shows 35.60 per cent growth during the period 2010-2011 to 2015-2016. A more than 50 per cent growth is male Ph.D students. admission has been observed in Andaman and Nicobar Islands UT, Assam, Goa, Jammu and Kshmir, Jharkhand, Mizoram, Odisha, Punjab, Sikkim and Tamil Nadu during the period 2010-2011 to 2015-2016. The male Ph.D students' enrolment is highest in Tamil Nadu and lowest in Sikkim. A more than 50 per cent co efficient of variation has been observed in male students' Ph.D program enrolment in Andaman and Nicobar Islands UT, Andhra Pradesh, Arunachal Pradesh, Goa, Jharkhand, Mizoram, Puducherry, Sikkim and Telengana during the period 2010-2011 to 2015-2016. This shows inconsistency in male Ph.D students' enrolment in such states in the period of analysis.

In this study that 51904 female students' have got Ph.D program admission in 2015-2016. The female students' Ph.D program enrolment shows 42.52 per cent in the period of analysis 2010-2011 to 2015-2016. The female students' enrolment in Ph.D program has become negative in Arunachal Pradesh, Andhra Pradesh, Madhya Pradesh, Manipur, Puducherry and Telangana during the period of analysis. A more than 60 per cent of growth in female students' enrolment in Ph.D program has been observed in Goa, Himachal Pradesh, Jammu and Kashmir, Kharkhand, Punjab, Tamil Nadu, Sikkim and Tripura during the period 2010-2011 to 2015-2016. A more than 4000 Ph.D female students' enrolment is highest in Tamil Nadu and lowest in Goa. The co efficient of variation in the growth of female Ph.D students is highest in Puducherry and lowest in Manipur during the period 2010-2011 to 20915-2016. It could be noted that through literacy rate is highest in Kerala the Ph.D female students enrolment is highest in Tamil Nadu, indicating growing importance of higher education in Tamil Nadu.

The total students enrolled in the Ph.D programme in India reveal the following facts. In average of a more than 1 lakh total Ph.D enrolment in India has been observed during the period 2010-2011 to 2015-2016 with the growth rate of 38.44 per cent during the period of analysis. The total Ph.D students' enrolment has become negative in Andhra Pradesh, Arunachal Pradesh, Manipur, Puducherry and Telanagana during the period 2010-2011 to 2015-2016. An average of a more than 1 lakh Ph.D students' enrolment has been observed in Tamil Nadu and Uttar Pradesh during the period of analysis. A more than 50 per cent growth in Ph.D total students enrolment has been observed in Andaman and Nicobar Islands UT, Assam, Goa, Jammu and Kashmir, Jharkhand, Mizoram, Odisha, Punjab, Sikkim, Tamil Nadu, Tripura and West Bengal. A less than 20 per cent growth of total Ph.D students'

enrolment has been observed in Rajasthan, Nagaland, Meghalaya and Delhi during the period 2010-2011 to 2015-2016. A more than 70 per cent co efficient of variation in the growth of total Ph.D students enrolment has been observed in Jharkhand State Mizoram, Puducherry, and Sikkim during the period 2010-2011 to 2015 20126. A less than 20 per cent co efficient of variation in the growth of total Ph.D students' enrolment has been observed in Manipur, Rajasthan, Kerala and Bihar during the period 2010-2011 to 20915-2016.

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ENDNOTES

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