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A Regional Analysis

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A Regional Analysis[#]

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Abstract

Countries experience inequalities in the process of development. The inequalities can be economic, social or regional. Although the development planners always aimed at maximising the spread effects to promote a balanced regional development, regional inequalities continued to be a part of the process of development in all countries across the globe. The story is the same in the case of higher education development. The regional inequalities in higher education are not only large in India but also continue to increase over a period of time. This is primarily because of the urban-centric nature of the locations of new Higher Education Institutions (HEIs) in India. Students in the urban areas benefit from the urban bias in higher education development, while those in the rural areas are not beneficiaries of distance discount associated with location of HEIs. In this context, this study attempts to answer one question: how concentrated are the locations of higher education institutions in India? The study developed a measure of concentration, namely the concentration ratio, to analyse the regional distribution of higher education facilities in India. Based on the only source of district-wise data on the location of HEIs, Census data, a detailed analysis of spread of locations of higher education institutions (both technical and general) among States and districts is carried out in this study. The empirical analysis, relying on the measure of concentration ratio, helps in identifying districts which are enjoying high concentration of HEIs and those which are deprived of the same. The conclusions drawn from the empirical analysis will be helpful in identifying districts which need to be accorded priority for opening new higher education institutions in India.

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Introduction

Inequalities in development are a common theme in public discourses. The inequalities can be regional, economic or social in nature. An unequal sharing of benefits between regions results in the co-existence of prospering and wealthy regions along with weak and economically poor regions in the development process in most countries. These spatial disparities represent a breach of an equality norm and, at times, are implicit in a development strategy. An unequal distribution of resources among territorial units, no doubt, contributes to spatial inequalities in the development of a country.

Any growth process, in general, produces both concentration effects and diffusion effects - termed 'backwash effects' and 'spread effects' (Myrdal, 1957). The concentration effects, resulting from unequal distribution of resources, lead to better growth advantage for some regions than other regions, leading to increased regional polarisation. Development economists (for instance, Hirschman, 1958) recognised the importance of spread effects in development and emphasised the importance of forward and backward linkages in the process of economic development. The idea of growth poles (Perroux, 1970) implied development through grouping of industries around a central core which helps spatial development of nearby areas. The growth pole became a core regional planning doctrine in the 1960s and 1970s.

The emergence of knowledge economy in the subsequent decades shifted the orientation away from the growth pole doctrine to the idea of a knowledge-centred development which affirmed faith in knowledge as a key to economic growth and development. Under this frame of analysis, development depended on the capacity to use knowledge in production and adopt new technologies and innovations. It was expected that knowledge-based and technology-dependent development would help demise geographical distances in development and promote a dispersal of economic activity to achieve spatial equality in development (Arbo and Benneworth, 2007).

Many of the knowledge sectors and newly emerging growth centres, called technopoles or technopolis (Castells and Hall, 1994), developed outside the orbit of the traditional industrial centres. Unlike the industrial phase in development, the technopolis focused on knowledge intensive production and sought the help of research and development support for its growth and expansion. Knowledge formed the foundation to develop technopolis and they relied on universities which attracted talented people for new ideas and innovation. In many instances, one notices a university or a university-affiliated research institute closely aligned to the technopolis.

Higher education became dear to planners at this phase of development. The planners believed that although higher education may not guarantee rapid economic growth, sustained progress is impossible without it (Taskforce, 2000). It also reinforced a belief in the need for a dispersed growth of universities and research capacities to support fast and balanced regional economic development. The recognition of the role of universities in regional development encouraged efforts towards achieving parity in the provision of higher education facilities between regions.

There are, of course, other compelling reasons for arguing in favour of a dispersed distribution of higher education institutions. The most important reason was to improve access conditions to higher education facilities. The social demand for higher education, resulting from the expansion of secondary education, increased the pressure to open more higher education institutions in the suburbs and rural areas. The pressure to fulfil the aspirations of the growing number of students from non-traditional social groups, especially from the disadvantaged segments, to pursue higher education encouraged policy-makers to open a large number of higher education institutions in rural areas which were deprived of such facilities. In other words, the national objective of equalising opportunities to pursue higher education can be achieved only when there is adequate spatial dispersion in the distribution of higher education facilities.

This study focuses on the regional inequalities in development of higher education in India. The paper is planned as follows. Section two reiterates the linkages between higher eduation and regional development. Considering the role of higher education in regional development, the concentration in higher education institutions in the process of development is discussed in section three. Section four gives classification of the concentration of higher education institutions. Section five represents a comparative analysis of concentration of HEIs between different States and UTs of India. Similarly, section six shows inequalities in the distribution of higher education facilities across different districts of India. The final section provides a conclusion and policy recommendations.

Higher Education Development in India

Higher Education Expansion

The establishment of universities in India reflects an urban bias in the provision of higher education facilities. The first group of universities in India were established in 1857 in the urban locations of Calcutta, Bombay and Madras. Since the expansion of higher education facilities were limited and confined mostly to urban areas, the higher education sector in India remained an almost exclusive domain of the elites. Even after nearly a century of the establishment of the first group of universities, the total number of universities in India in 1951 was only 27.

The initial years of the post-independence period experienced a faster expansion of the higher education system. More and more higher education institutions were established by the public authorities in the 1950s and 1960s. This included the universities, colleges and specialised institutions such as Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), Regional Engineering Colleges (RECs) and research institutions. Most of them were established in urban or semi-urban areas. Many of the affiliated colleges were established in towns and semi-urban areas. In fact, the affiliation system promoted the establishment of government and aided colleges to achieve a more regional dispersed distribution of higher education facilities in India.

The public investment and, consequently, the number of new public institutions declined from the decade of 1980s onwards. In the absence of public investments, the private sector became active in establishing higher education institutions. The self- financing higher education institutions and capitation fee colleges in the professional and technical subject areas were established in many States. Many of the private institutions were established in the suburbs and semi-urban areas.

After decades of slowdown in growth and expansion, the turn of this century witnessed the fastest expansion of the sector (Varghese, 2015). This surge in the establishment of higher education institutions was mainly due to the expansion of private institutions. Many States in India permitted the opening and operation of private universities in the first decade of the present century. Consequently, private universities and colleges expanded in India. As shown in Table 1, with 859 universities, 40,026 colleges, 35.7 million enrolments and a GER of 25.2 percent in 2016-17, India is not only in a stage of massification of higher education but also has the second largest higher education system in the world.

Table 1: Higher Education Expansion: Institutions & Enrolments

Year	Central Universities	State Universities	Deemed to be Universities	Institutes of Nation Importance	Private Universities	Total	Colleges	Enrolments (in millions)	GER %
1950-51	3	24	-	-	-	27	578	0.2	
1960-61	4	41	2	2	-	49	1819	0.6	1.5
1970-71	5	79	9	9	-	102	3277	2	4.2
1980-81	7	105	11	9	-	132	4577	2.8	4.7
1990-91	10	137	29	9	-	185	6627	4.4	5.9
2001-02							11146	8.8	8.1
2005-06	18	205	95	18	7	343	17625	11.6	11.6
2011-12	43	299	128	59	105	634*	34852	29.2	20.8
2012-13	43	305	127	62	122	659*	35525	30.2	21.5
2013-14	43	322	127	68	154	714*	36634	32.3	23.0
2014-15	44	329	122	75	182	752	38498	34.2	24.3
2015-16	44	342	122	75	198	781	39071	34.6	24.5
2016-17	45	358	122	100	234	859	40026	35.7	25.2

**This figure includes others category*
Source: MHRD (2005, 2013, 2014, 2015, 2016 & 2017)

Private Higher Education Development

The initial enthusiasm to establish public higher education institutions waned in the 1970s onwards. Consequently, there was a decline in the growth of public institutions, student enrolment and in the share of resources allocated to higher education. The private aided colleges increased in numbers and share in enrolment in the 1970s. 'Private colleges that were legally private but publicly financed dominated the higher education landscape until 1980' (Agarwal, 2007, p. 72). This decade also witnessed the emergence of non-governmental private initiatives in higher education.

The private individuals and trusts established self-financing colleges in professional and technical subject areas. The self-financing colleges were concentrated in the states of Karnataka, Andhra Pradesh, Tamil Nadu and Maharashtra. Many of these self-financing institutions were not established in the capital cities but were more in the suburbs. Hence, they may not have added substantially to the urban concentration of higher education institutions.

This century experienced a revival of higher education globally as also in India (Varghese, 2015). The cost-recovery measures in the public institutions, introduction

of self-financing courses in the public institutions and fast growth of private higher education institutions helped this revival. The self-financing colleges and the 'capitation fee colleges' were established mostly in the subject areas of engineering, medicine, and management and they proliferated in the country (Agarwal, 2007). The Southern states of Andhra Pradesh, Karnataka, and Tamil Nadu and the Western state of Maharashtra led the private higher education (self-financing colleges) revolution in higher education in India (Varghese, 2013).

The establishment of private universities in the 2000s gave further boost to private sector in higher education in India. Between 2001 and 2016, around 198 private universities were established in India. The private institutions (universities and colleges) contributed considerably to the accelerated growth of higher education in the country, especially in this century. In fact, the recent developments underline the fact that India has moved from a public sector dominated to a private sector or market mediated higher education system. At present, more than 60 percent of the institutions and an equal share of enrolments are in private institutions.

As discussed earlier, the private institutions are established either in the cities or in the suburbs surrounding major cities. The urban areas may have larger number of households with paying capacity and opening of institutions in those areas will attract more students, levy higher fees and maximise revenue and profits. No doubt, such an approach to open higher education institutions also has contributed to increasing concentration of higher education institutions in the towns and locations closer to urban areas.

Distances and Inequalities in Higher Education Opportunities

Distances matter in providing access to facilities and ensuring equal opportunities to all in any development efforts. Commuting long distance is a social disincentive and economic burden for many, especially those belonging to disadvantaged groups. Distances act as a constraint for many seeking university admissions and opportunities for higher education. The experience of higher education development globally shows that travelling long distances away from home became a necessary condition for pursuing university education given the unequal spread of facilities across regions (Gibbons and Vignoles, 2009). The universities and higher education institutions were not only less in number but they were also located in selected areas, mostly urban locations. At this stage of development, access to higher education was very much limited and was almost an exclusive domain of high-income and high social status students who could financially afford to travel long distances and stay away from home.

This approach to provision of higher education opportunities changed when social demand for higher education increased, leading to massification of the sector. The transition from an elite stage to a stage of massification also implied an urge among the previously under -represented groups to pursue higher education. For the non-traditional groups and first generation learners, distances from home have been an important factor affecting the choice of an institution to pursue higher studies. They had economic and social compulsions to remain at home or in nearby areas and pursue studies. The options, in many instances, were to study in a nearby higher education institution or not to seek admission in any higher education institutions at all since geographical distances also implied high cost and economic distances for the less privileged. India needs to address the issues of regional disparities in the availability of higher education institutions at district level as well as access to higher education by deprived social groups (Sinha, 2018).

The public policy concern for equity in access demanded that higher education facilities are provided in large quantities and that they are spread across regions. The non-traditional and disadvantaged groups living further away from urban centres are less likely to choose to enrol in higher education institutions located far away from home and are more likely to attend local colleges. This 'distance discount' (Frenette, 2004, 2006; Spiess and Wrohlich, 2008) is a necessary condition for a system which is massifying and equalising higher education opportunities. In other words, the geographical distribution of higher education institutions has long-term implications for inter-generational inequalities because of the prevalence of earnings advantage associated with higher education graduates, in general, and graduates from elite universities, in particular (Hussain, McNally and Telhaj, 2009).

The 'distance discount' translates into reduced costs and improved affordability among prospective students, especially among low income groups. Therefore, equity concerns demand a policy intervention for promoting geographical dispersion of good quality higher education institutions. Massification of the system also necessitates levelling-off of the geographical inequalities in the distribution of higher education facilities. The locational planning or school mapping (Hallak, 1977; Varghese, 1997) is the most appropriate and widely used educational planning technique to level off existing inequalities, if any, in the distribution of school education facilities. Unfortunately, such methods are rarely applied in planning for higher education, resulting in geographical concentration of higher education institutions.

In the absence of effective public policy interventions, the locations of higher education institutions become urban-centric for several reasons. First, the pressure to expand higher education facilities will be more in the urban areas given the relatively larger pool of secondary education graduates. Second, the infrastructural and transportation facilities are better in urban areas for attracting a larger number of students to any institution. Third, children enter colleges when they become adults and commuting distances, if transportation facilities are available, is not a major problem among the youth and adults. Fourth, the grown-up children have the option to stay away from parents and they could stay in hostels to pursue their studies, if financial resources support such decisions.

Although there are several arguments in favour of an urban-centric approach to higher education development, such policies led to polarisation of access to higher education. The objective of equality of opportunities demanded a dispersed distribution of higher education institutions. Over a period of time, public higher education institutions were opened in non-urban areas, giving access to those living in the rural areas. In other words, a policy towards a dispersed distribution of higher education facilities helped reduce the adverse effects of opportunity deprivation.

The permeation of market principles in the operation of higher education does not seem to have supported the public policy of dispersed distribution of higher education institutions. In fact, one of the important factors to constrain equality in the geographical distribution of higher education institutions is the market influence in the provision of facilities. The private sector would try to establish institutions where the demand for higher education (supported by financial capacity) is high enough to sustain the operation of institutions. In other words, economic viability and profitability concerns in the market-based operations in higher education may favour location of higher education institutions in suburbs and urban areas. The potential to attract a large number of students is a necessary condition for higher revenue generation and maximising profits. These market-based concerns, very often, go against the equity concerns of public policy promoting geographical equality in the distribution of institutions of higher education.

Regional Inequalities in Higher Education Development in India

The expansion of higher education in India is accompanied by widening regional disparities. The disparities widened not because of absence of growth of higher education in any State but because of the variations in the rates of growth of higher education institutions among States. While all States improved their GERs in higher education, the GER increased by three times in States such as Andhra Pradesh and

Tamil Nadu and it doubled in many of the major States while the increase was relatively less in States such as West Bengal. This led to a widening of inter-State disparities in enrolment in higher education.

As shown in Table 2, in 2002-03, the GER varied between 4.33 percent in Nagaland and 28.7 percent in Chandigarh. The variation in GER in 2015-16 was between 5.7 percent in Daman and Diu and 57.6 percent in Chandigarh. This shows that the variations in GER between the highest and lowest States increased from 23.7 percentage points in 2002-03 to 52 percentage points in 2015-16. The GER of SC and ST population in 2015-16 also shows the deprived States such as Bihar, Jharkhand and West Bengal showing poor enrolment of SCs' and Madhya Pradesh, Chhattisgarh, Odisha and West Bengal showing poor enrolment of STs', with the exception of small States and Union Territories. A close examination of the State-level data will indicate that larger gains in GER took place mainly in those States where private institutions accounted for a good share of the total institutions and enrolments. The exceptions are smaller States and Union Territories such as Delhi and Chandigarh.

Table 2: Gross Enrolment Ratio at State Level

States/UTS	Total GER	Total GER	Total GER	SC		ST	
				Total GER		Total GER	
	2002-03(%)	2011-12 (%)	2015-16 (%)	2011-12(%)	2015-16 (%)	2011-12(%)	2015-16 (%)
A & N Islands	-	12.3	23.5	-	-	7.2	12.3
Andhra Pradesh	9.51	29.9	30.8	25.6	25.5	24.2	23.4
Arunachal Pradesh	6.37	21.3	28.7	-	-	24.8	33.8
Assam	8.67	14.7	15.4	12.5	16.8	15.9	19.3
Bihar	7.3	12.5	14.3	7.8	9.3	15.0	12.3
Chandigarh	28.68	42.2	57.6	18.5	32.7	-	-
Chhattisgarh	7.27	10.5	15.1	8.1	14.7	4.7	9.3
Dadra & Nagar Haveli	-	6.4	9.1	6.2	22.9	1.9	6.6
Daman & Diu	-	3.9	5.7	14.8	25.1	12.5	14.0
Delhi	19.4	38.9	45.4	18.5	29.5	-	-
Goa	13.47	23.5	27.6	22.7	27.2	12.7	20.6
Gujarat	9.65	16.5	20.7	16.8	25.5	9.1	13.2
Haryana	10.56	28.0	26.1	17.5	17.0	-	-
Himachal Pradesh	12.76	24.8	32.5	13.9	21.1	19.3	31.8
J & K	4.95	22.8	24.8	10.5	15.7	6.9	9.5
Jharkhand	8.12	9.9	15.5	5.8	11.9	5.6	10.5
Karnataka	9.92	23.8	26.1	15.8	18.7	14.3	16.1
Kerala	7.66	21.8	30.8	16.9	22.4	14.0	16.5
Lakshadweep	-	11.5	7.1	-	-	3.2	3.4
Madhya Pradesh	7.77	18.5	19.6	12.4	15.5	7.1	8.6
Maharashtra	12.3	26.3	29.9	23.9	29.6	11.4	14.7
Manipur	10.19	30.2	34.2	54.8	52.8	19.4	19.7
Meghalaya	10.94	17.4	20.8	33.0	50.1	14.9	17.1
Mizoram	9.51	19.0	24.1	90.8	158.0	19.2	24.5
Nagaland	4.33	15.8	14.9	-	-	12.3	14.1
Odisha	8.71	16.6	19.6	9.2	14.7	6.6	9.4
Puducherry	17.88	38.3	43.2	28.8	32.5	-	-
Punjab	8.53	23.0	27.0	8.4	18.0	-	-
Rajasthan	8.77	18.2	20.2	11.8	15.2	12.7	15.2
Sikkim	6.29	28.2	37.6	27.8	29.1	19.0	24.5
Tamil Nadu	10.91	40.0	44.3	28.5	34.4	32.5	31.8
Telangana	-	-	36.3	-	36.1	-	33.9
Tripura	5.84	12.4	16.9	10.6	14.6	6.4	10.9
Uttar Pradesh	7.03	17.4	24.5	12.9	20.5	20.5	30.6
Uttrakhand	12.25	31.11	33.3	17.2	23.5	40.2	38.6
West Bengal	8.21	13.6	17.7	9.0	12.8	6.4	9.5
All India	8.97	20.8	24.5	14.9	19.9	11.0	14.2
Total Enrolment in Millions	**9.95**	**29.1**	**34.6**	**3.6**	**4.8**	**1.3**	**1.7**

Sources: MHRD (2005, 2012a & 2017a)

Distribution of Higher Secondary Schools and Higher Education Institutions

Like the distribution of higher education institutions, the distribution of higher secondary schools is also uneven across the States. As shown in Table 3, India has approximately 40,000 higher education institutions and 1.12 lakh higher secondary schools in 2015-16. In terms of absolute numbers, it is clear that Uttar Pradesh, the most populous State of India, has the highest number of institutions and schools, closely followed by Maharashtra and Karnataka.

But, to understand the level of concentration of these institutions, the number of HEIs and schools per 100 thousand population is calculated. The wider variation between the States is evident from the analysis. In 2015-16, there are 28 institutions per 100 thousand population and 253 schools per 100 thousand population at the all-India level. The number of institutions per 100 thousand population varies from seven in Bihar, nine in Jharkhand, nine in Delhi, 10 in West Bengal to 565 in Telangana, 62 in Puducherry, 51 in Karnataka, 50 in Himachal Pradesh whereas number of schools per 100thousand population varies from 35 in Tripura, 93 in Odisha, 105 in Jharkhand, 113 in Bihar to 1634 in Telangana, 921 in Himachal Pradesh, 606 in Rajasthan, 537 in Uttarakhand (Table 3).

Table 3: Number of Higher Educational Institutions per 100,000 Population (18-23 age group) & Higher Secondary Schools per 100,000 Population (16-17 age group).

States	No. of Higher Secondary Schools	Higher Secondary Schools per 100 thousand population	No. of Higher Education Institutions	Higher Education Institution per 100 thousand population
Andaman & Nicobar Island	63	443.41	7	14.92
Andhra Pradesh	2589	162.23	2565	45.79
Arunachal Pradesh	155	269.14	37	22.83
Assam	2075	186.11	561	15.17
Bihar	3926	113.19	768	6.86
Chandigarh	90	194.37	28	16.13
Chhattisgarh	3818	374.86	728	23.60
Dadar & Nagar Haveli	21	158.22	8	13.37
Daman & Diu	24	243.43	8	14.70
Delhi	1684	255.98	218	9.74
Goa	110	236.37	57	33.32
Gujarat	6592	299.44	2181	30.35
Haryana	4300	426.89	1170	36.73
Himachal Pradesh	2212	921.93	376	50.49
Jammu & Kashmir	1061	245.08	340	25.36
Jharkhand	1229	105.66	343	9.14
Karnataka	4509	217.91	3656	51.33
Kerala	2949	284.37	1323	43.36
Lakshadweep	13	538.97	0	0.00
Madhya Pradesh	8100	285.49	2327	26.48
Maharashtra	8738	215.67	4709	35.30
Manipur	210	233.70	91	31.30
Meghalaya	300	239.69	73	21.20
Mizoram	138	330.14	32	24.51
Nagaland	175	201.75	69	27.87
Odisha	1291	93.39	1112	23.89
Puducherry	164	359.67	95	62.70
Punjab	4553	452.11	1085	33.41
Rajasthan	16958	606.95	3142	36.09
Sikkim	87	344.05	32	40.69
Tamil Nadu	6877	310.70	2466	33.78
Telangana	2162	1634.63	2478	565.06
Tripura	411	35.41	58	1.43
Uttar Pradesh	15937	186.13	6594	26.91
Uttarakhand	2218	537.04	471	38.64
West Bengal	6898	214.16	1118	10.25
All India	**112637**	**253.77**	**40326**	**28.54**

Source: DISE (2015-2016), MHRD (2017)

There is a high and positive correlation between the number of higher educational institutions and number of higher secondary schools (r = 0.84). It indicates that when there are more higher secondary schools then there is an increasing demand for establishment of more higher educational institutions. Similarly, there is a positive and higher degree of correlation between number of higher educational institutions per 100 thousand population and number of higher secondary schools per 100 thousand population (r = 0.83).

The States that have a higher share of private unaided colleges also have a larger number of colleges per 100 thousand population. For example, in 2015-16, the share of private unaided colleges is 80.4 percent in Andhra Pradesh, 76 percent in Tamil Nadu, 75.9 percent in Uttar Pradesh, 73.5 percent in Rajasthan, 67.7 percent in Haryana and 67.6 percent in Karnataka (Table 4). There is an increase in private un-aided institutions and, in some cases, this has increased substantially. A substantial increase in the share of private institutions has contributed to an increased density of HEIs in the States. These States also have a large number of colleges per 100 thousand population. Some of the States, which have predominantly public universities and colleges, have a lower density of institutions. The exceptions to this pattern are small States and Union Territories such as Himachal Pradesh, Goa, Jammu & Kashmir and Manipur.

Table 4: Share of Higher Education Institutions by Management

State	Total		Government (%)		Private Aided (%)		Private Unaided (%)	
	2011-12	2015-16	2011-12	2015-16	2011-12	2015-16	2011-12	2015-16
A & N Islands	5	7	100.0	100.0	0.0	0.0	0.0	0.0
Andhra Pradesh	3833	2424	10.7	12.2	7.3	7.5	82.1	80.4
Arunachal Pradesh	14	19	57.1	68.4	14.3	5.3	28.6	26.3
Assam	288	473	86.5	86.9	4.2	3.2	9.4	10.0
Bihar	548	652	87.0	75.0	6.9	12.3	6.0	12.7
Chandigarh	22	25	63.6	64.0	31.8	28.0	4.5	8.0
Chhattisgarh	574	699	45.1	47.1	12.5	9.3	42.3	43.6
Dadra & Nagar Haveli	4	7	25.0	42.9	0.0	0.0	75.0	57.1
Daman & Diu	5	8	20.0	50.0	60.0	12.5	20.0	37.5
Delhi	162	167	52.5	55.1	8.6	9.6	38.9	35.3
Goa	46	55	45.7	41.8	34.8	36.4	19.6	21.8
Gujarat	1664	2003	35.3	12.9	24.2	25.9	40.5	61.2
Haryana	499	870	23.8	19.4	16.8	12.9	59.3	67.7
Himachal Pradesh	257	300	47.1	49.0	5.8	6.3	47.1	44.7
J & K	193	304	50.3	46.7	3.1	5.6	46.6	47.7
Jharkhand	101	281	71.3	52.3	8.9	10.0	19.8	37.7
Karnataka	2940	3264	20.3	19.5	13.7	12.9	66.1	67.6
Kerala	793	1216	19.2	17.7	23.5	16.5	57.4	65.8
Madhya Pradesh	1249	2050	36.0	31.2	10.8	9.9	53.2	59.0
Maharashtra	2524	4429	25.5	18.7	26.5	21.5	48.0	59.8
Manipur	64	83	56.3	57.8	21.9	16.9	21.9	25.3
Meghalaya	35	48	37.1	41.7	37.1	33.3	25.7	25.0
Mizoram	29	29	93.1	96.6	3.4	3.5	3.4	3.5
Nagaland	57	65	35.1	32.3	49.1	47.7	15.8	20.0
Odisha	502	1066	34.3	33.1	38.0	38.5	27.7	28.4
Puducherry	74	77	32.4	35.1	2.7	2.6	64.9	62.3
Punjab	341	960	24.3	20.6	12.0	18.4	63.6	60.9
Rajasthan	1106	2392	23.6	20.2	5.2	6.3	71.2	73.5
Sikkim	10	14	50.0	64.3	0.0	7.1	50.0	28.6
Tamil Nadu	2264	2344	12.6	13.4	10.6	10.6	76.8	76.0
Telangana	-	2032	-	10.7	-	6.0	-	83.3
Tripura	38	50	86.8	84.0	2.6	4.0	10.5	12.0
Uttar Pradesh	1906	5842	21.1	13.6	18.2	10.5	60.7	75.9
Uttrakhand	207	333	43.0	35.7	8.2	18.3	48.8	46.0
West Bengal	849	1079	43.8	41.4	22.9	20.5	33.3	38.1
All India	23203	**35667**	26.7	**22.4**	15.1	**13.8**	58.2	**63.8**

Source: MHRD (2012a & 2017a)

The trends in enrolment also reflect a pattern similar to the distribution of unaided institutions. The enrolment is higher in those States that have a high concentration of unaided institutions. For example, in Table 5 in the year 2015-16, the GER is high and the share of students enrolled in private unaided institutions is high in States such as Andhra Pradesh (75.5 percent, Uttar Pradesh (69.1 percent), Tamil Nadu (63.0 percent), Puducherry (56.6 percent) and Rajasthan (50.7 percent). The share of enrolment in the private unaided sector is very low in States such as Jharkhand (7.4 percent), West Bengal (9.7 percent), and Bihar (3.2 percent) where GER is also low including few selected small States and Union Territories too. It seems the market operations in higher education is more associated with the income levels of the States or their capacity to attract students from other States as is the case in Andhra Pradesh, Tamil Nadu and Karnataka.

Table 5: Enrolment in Private and Government Colleges 2011-12 and 2015-16 (%)

State	Total (000s)		Government (%)		Private Aided (%)		Private Un-Aided(%)	
	2011-12	2015-16	2011-12	2015-16	2011-12	2015-16	2011-12	2015-16
A & N Islands	3.2	6.2	100.0	100.0	-	0.0	-	0.0
Andhra Pradesh	1877.7	1196.3	13.1	13.9	9.9	10.6	77.1	75.5
Arunachal Pradesh	17.2	25.8	89.9	90.3	0.9	3.1	9.2	6.5
Assam	273.6	445.7	95.9	96.6	2.0	0.7	2.1	2.8
Bihar	1057.3	1396.7	85.6	83.1	11.2	13.7	3.2	3.2
Chandigarh	30.3	46.8	43.3	39.2	56.7	60.2	0.0	0.6
Chhatisgarh	271.8	368.0	51.0	58.6	14.2	10.1	34.8	31.3
Dadra & Nagar Haveli	2.5	5.2	9.5	52.0	0.0	0.0	90.5	48.0
Daman & Diu	1.0	3.1	66.1	84.2	6.2	1.6	27.7	14.2
Delhi	209.3	255.0	67.3	68.4	13.2	12.1	19.5	19.5
Goa	26.4	30.8	41.5	41.4	50.7	48.7	7.8	9.9
Gujarat	996.4	1171.2	44.2	17.3	29.2	42.8	26.6	39.9
Haryana	391.6	562.1	37.4	37.2	32.5	30.8	30.1	32.0
Himachal Pradesh	131.9	156.0	75.2	76.2	6.5	6.2	18.3	17.7
J & K	196.8	195.8	83.1	83.0	0.7	1.5	16.2	15.5
Jharkhand	232.1	482.1	85.5	80.7	10.3	11.9	4.3	7.4
Karnataka	1179.8	1429.0	27.3	29.2	25.9	22.4	46.8	48.4
Kerala	426.7	634.0	18.3	15.8	42.9	36.4	38.8	47.9
Madhya Pradesh	687.8	1207.7	56.5	49.0	10.2	10.5	33.4	40.5
Maharashtra	1639.4	2782.4	26.2	20.8	42.9	39.9	30.9	39.3
Manipur	71.5	88.8	61.0	57.4	30.9	32.1	8.2	10.5
Meghalaya	32.4	52.2	29.0	46.3	56.0	39.5	15.0	14.1
Mizoram	17.0	18.9	98.0	98.6	1.3	0.0	0.6	1.4
Nagaland	27.7	27.0	39.1	32.9	46.0	53.0	14.9	14.1
Odisha	295.8	704.6	34.8	35.9	39.6	44.4	25.7	19.7
Puducherry	34.0	41.7	37.1	42.8	4.9	0.6	58.0	56.6
Punjab	248.8	607.6	37.1	29.2	19.4	32.4	43.5	38.4
Rajasthan	705.6	1316.9	57.1	44.5	5.6	4.8	37.2	50.7
Sikkim	9.9	8.1	88.5	92.6	0.0	0.2	11.5	7.3
Tamil Nadu	1747.7	2098.6	16.1	17.9	20.5	19.1	63.4	63.0
Telangana	-	1166.7	-	12.4	-	7.0	-	80.6
Tripura	39.4	54.9	95.9	94.2	1.0	2.2	3.1	3.6
Uttar Pradesh	1960.8	5377.5	16.8	12.9	34.0	18.0	49.2	69.1
Uttrakhand	219.6	227.7	52.8	51.5	27.8	21.9	19.4	26.5
West Bengal	1242.5	1540.1	57.8	63.5	32.4	26.8	9.7	9.7
All India	**16305.4**	**25731.2**	**37.9**	**33.0**	**23.7**	**21.4**	**38.3**	**45.6**

Source: MHRD (2012a & 2017a)

As discussed in the previous sections, the growth and expansion of higher education is not uniform across States. The establishment of institutions, perhaps, did not follow a well developed plan to ensure minimisation of inequalities in the geographical distribution of higher education facilities. The expansion is driven by the pressure of social demand supported by financial resources. Resultantly, institutions are, at times, opened in those very same areas that have been endowed with these facilities. This not only led to geographical inequalities in the distribution of higher education facilities but also some regions had oversupply of facilities while other regions were deprived of them. This study attempts to analyse the distribution of higher education facilities across States and districts to identify localities where institutions are in oversupply as also those experiencing undersupply of higher education facilities. Such mapping of the localities, requiring the need to open additional higher education institutions, would help in maintaining a regional balance in terms of availability of HEIs and, therefore, facilitate access to higher education by different sections of the population.

The objectives of the study are: (i) to analyse the geographical distribution of higher education institutions (HEIs) in order to identify the States where there is higher/lower concentration of HEIs , (ii) to examine the extent of concentration of HEIs among districts within a State , (iii) to identify localities for prioritisation in the establishment of new higher education institutions

The analysis has been carried out separately for technical and general higher education institutions.

The study attempted to develop a methodology and generate empirical evidence on the pattern of distribution of higher education facilities in India at the State and district levels. It identifies the districts with oversupply or undersupply of general and technical HEIs. The study is based on secondary sources of data. It has relied mainly on latest data from Census of India 2011. Other sources referred to are the All India Survey of Higher Education (AISHE) and DISE data published by NIEPA.

One of the major contributions of the study is its analysis of higher education facilities at the district level which is rarely carried out in India. The district-level data were derived from the census data through a process of aggregation of village and town- level data which, indeed, is a very tedious and time-consuming task. For drawing conclusions regarding concentration and undersupply of HEIs and identifying the districts to be given priority in opening of new general and technical HEIs,

three major variables were computed. These were Concentration Ratio (CR), average size of the institutions, and Gross Enrolment Ratio (GER).[1]

Before computing these principal variables, some basic variables were created for all the districts of India using Census 2011 data[2] such as: age group population (18-23) for higher education, total enrolments in higher education (both general and technical) and number of available HEIs of both types in each of the districts.

Concentration of Higher Education Institutions in India

Concentration Ratio (CR)

For this study, we have referred to the concentration ratio as a measure to determine the concentration of HEIs in different regions in comparison to the total age group (18-23) population. To measure geographical concentration, the concentration ratio is a widely used measure. The OECD study found the concentration ratio for the variables such as the level of unemployment in different regions and total area/size of the region (Spiezia, 2003). Spiezia (2003) also developed a new indicator named Adjusted Geographic Concentration Index (AGC) which took into consideration both within and between country differences in size of the regions as a controlled variable.

We have extensively reviewed the literature to develop a formula to identify a concentration ratio to measure the degree of concentration of HEIs in different States and in the districts within each State. The concentration ratios of 28 States (including undivided Andhra Pradesh) and seven Union Territories of India are calculated using data from the Census 2011.

Before calculating concentration ratio, we found out the percentage (share) of higher education institutions and the percentage (share) of total age group population. Thereafter, the concentration ratio was worked out by dividing the percentage of higher education institutions with the percentage of total age group population. This ratio helps us to know the States and districts where there is undersupply or oversupply of higher educational institutions.

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1 Though the All India Survey of Higher Education gives GER at the State level, the Census data does not give any such data. Therefore GER was computed for all 28 States and 7 Union territories and their respective 640 districts.

2 Such kind of calculations and development of some basic statistical indicators in higher education are done by authors using Census of India 2011 data. These indicators at the district level are not available in any other study in India.

Even though the institutions per lakh population gives a picture of the availability of HEIs in a district/State, the concentration ratio gives a better picture of the degree of concentration of HEIs as it considers the percentage share of population as well as institutions compared to the other districts of the State or of the States concerned compared to the country total.

The concentration ratio (CR) is computed as follows:

CR = *Share of HEIs in a locality/ Share of population in the age-group of 18.-23 years in that locality*[3]

Gross Enrollment Ratio (GER)

The GER is worked out for any locality by dividing total population attending higher education institutions irrespective of their age by total age group population (18-23) and multiplied by 100.

This sort of calculation generated a new set of data of GER in higher education at the district level computed from the Census 2011 data. The AISHE data gives GER at All India level only

Gross Enrolment Ratio is computed as:

GER = *Total population attending HEIs (Across All ages) / Total population (Total of 18-23 age group) * 100*

Average Size

Average size of an institution is worked out by dividing the total population attending higher education by total number of higher education institutions.

Prior to calculating the above three parameters, we calculated the ratio of age group population (18-23) to total number of higher education institutions. The age-group population was calculated based on the single age population figures from the census. It helped to know average number of the population within the age group of 18-23 per institution.

The Average Size (AS) of the institutions is derived as:

AS = Total population attending HEIs (Across all ages) in a locality / Total number of HEIs in that locality

[3] CR is authors estimate. Share of HEIs in a locality is derived as percentage of HEIs in a district/state upon total number of HEIs in the whole state/country*100; similarly share of age group of 18-23 years in a locality is derived as share of the number of age group population in a district/state upon the number of age group population in state/country *100

The study adopted a long process of data collection, collation and analysis of district-level data to derive the concentration of higher education institutions in India across States and district levels.

Classifications based on Concentration Ratio

The study carried out a correlation analysis taking into account some of the variables supposedly influencing the concentration of institutions. The concentration ratio (CR) was correlated with variables such as overall literacy rate, female literacy rate, GER and the share of urban population, and all these variables correlated with CR. Among the variables considered, we retained three variables for our further analysis and to also make suggestions regarding priority to be accorded in opening of new institutions. These three variables are: i) concentration ratio (CR); ii) the gross enrolment ratio (GER); and iii) average size of the institution. In general, the average size of an institution is negatively correlated with the CR and the GER is positively correlated with CR. The details of the analysis and results are given in the subsequent chapters.

Taking into account these three variables, the study classified the scenario into eight categories. The classification is given below. Our analysis and classification indicated that the value of concentration ratio can be considered as the determining variable to derive a better classification. Therefore, the study classified the value of concentration ration into five categories. It was found that when CR is very low at less than (<) 0.5, the GER may be low and the average size can be low or high depending upon the demand for higher education in that locality. Based on these empirical analyses, we moved to a classification of three categories.

In order to find out where there is more/less concentration of HEIs we classified eight categories in the beginning of analysis after going through above mentioned basic analysis. We gradually moved towards classifying the level of concentration into 5 categories and then finally ending up with 3 categories.

Table 6: Classifications based on Concentration Ratio, GER and Average Size of HEIs

Categories	
Eight Categories	1. High CR, High GER, High Size 2. High CR, Low GER, High Size 3. High CR, Low GER, Low Size 4. Low CR, High GER, High Size 5. Low CR, High GER, Low Size 6. Low CR, Low GER, Low Size 7. High CR, High GER, Low Size 8. Low CR, Low GER, High Size
Five Categories	**i. CR** a. Less than (<) 0.5 b. 0.5 - 1.0 c. 1.0 – 1.5 d. 1.5 – 2.0 e. Greater than equal to (≥) 2.0
	ii. Average Size and GER (varies from state to state) a. < (State average – Range / 5) b. (State average – Range / 5) to (State average) c. (State average) to (State average + Range / 5) d. (State average + Range / 5) to (State average + 2 * Range / 5) e. ≥ (State average + 2 * Range / 5)
Three Categories	**i. CR** (same for all the states) a. < 1.00 (Low CR) b. 1.00 - < 2.00 (Moderate CR) c. ≥ 2.0 (High CR)
	ii. Average Size and GER (varies from state to state) a. < State average b. (State average) to (State average + 2 * Range / 5 c. ≥ (State average + 2 * Range / 5

Source: Authors' Estimations

To identify the concentration of higher education institutions, initially eight categories were classified, based on the values of CR, GER, and Average Size taken together at the district level, as shown in Table 6. Then five categories were defined separately for CR and the classification remained the same for all the States. Similarly, the Average Size and GER were categorised separately into five classifications considering the State average value and range value (Max. Value – Min. value) that varies from State to State. Finally, for a meaningful comparison of the district-level concentration, we end up with three categories of CR which is defined as low CR, moderate CR and high CR taking into consideration the State average value of CR which is 1 throughout the States. And the average size of institutions and GER were also defined into three categories, each based on State average value that varies from State to State.

Based on the above defined categories of CR, Average size and GER, some suggestions are made regarding the requirement in establishing new institutions or expansion of the existing institutions in terms of enrolments at the district level.

Table 7: Classification based on Concentration Ratio and Indicators for Establishing New Institutions or Expanding Existing HEIs

Categories	Observations	Interpretations/Suggestions
Low CR	• Very few number of Institutions • Low GER • Average size of institutions > state average • Average size of institutions < state average	1. Average size of institutions > state average indicates overcrowding of existing institutions • Establish more institutions 2. Average size of institutions < state average indicates the need for expansion of existing institutions • Increase enrolments
Moderate CR	• Low number of Institutions • Moderate or high level of GER • Average size of institutions > state average • Average size of institutions < state average	1. Average size of institutions > state average indicates overcrowding of existing institutions • Establish more institutions 2. Average size of institutions < state indicates the need for expansion of existing institutions • Increase enrolments
High CR	Large number of Institutions High GER Average size of institutions > state average Average size of institutions < state average	1. Average size of institutions > state average indicates overcrowding of existing institutions • Establish more institutions 2. Average size of institutions < state average indicates the need for expansion of existing institutions • Increase enrolments

Source: Authors' Estimations

On the basis of the above three classifications based on CR, and the observations from the respective number of institutions, GER and average size of the institutions the data is interpreted and some policy suggestions are given.

The empirical analysis showed that some districts in every state have higher concentration of higher education institutions than others. The average size of the institutions indicated that in many instances the concentration ratio is high but the institutions are of small size. Therefore, we considered two situations; a) the need for

opening of more institutions in districts where the average size of institutions is large; and b) expanding facilities in the existing institutions where the average size of institutions is low. In other words, the policy options are two: i) open more institutions to achieve more equal geographical distribution of higher education institutions; ii) expand facilities for more enrolment in the existing institutions.

According to Table 7, when the CR is low, with very few numbers of HEIs and low GER, if the average size of the institutions is less than the State average, it may then be suggested that there is the need for expansion of enrolment rather than opening of new HEIs in the district. On the other hand, when CR is low with very few numbers of HEIs and low GER, if the average size of the institutions is more than the State average, then it is suggested that there is requirement of establishing new HEIs in the district to cater to the growing demand for higher education.

When the CR is moderate/high with a low number/large number of HEIs and moderate or high GER, if the average size of the institutions is less than the State average, it is then suggested that there is a need for expansion of enrolment rather than opening up of new HEIs in the district. And when CR is moderate/high, with a low number/large number of HEIs and moderate or high GER, if the average size of the institutions is more than the State average, it is then suggested that there is a need for establishing new HEIs in the respective district to meet the demand for higher education.

Concentration of HEIs: An Analysis at the State Level

Several education related variables, such as literacy rate, urbanisation, share of population (both total and age group of 18-23 years), HEIs including the share of public and private higher education institutions, the average size of the institutions and gross enrolment ratio (GER) between the States were considered. As an initial step, a correlation analysis was carried out between the selected variables. Subsequently, the concentration ratio was estimated on the basis of these initial statistical analyses and based on the methodology elaborated in the earlier section. The analysis found that there is Oversupply and concentration of HEIs in some States while there is undersupply of higher education institutions in other States.

The literacy rate varies among States. It varies from 61.7 percent literacy in Bihar and 94.0 percent in Kerala. The States with higher overall literacy rates also have higher female literacy rates. The examples are the States/UTs of Kerala, Lakshadweep and Goa. The overall literacy rate is also positively correlated with the Gross Enrolment Ratio (GER) in higher education, as shown in Table A.2 in annexure.

There is a higher level of significance between the overall literacy of a region and GER at district as well as at all- India levels (which indicates that higher literacy rate reflects higher enrolments in higher education.[4]) Further, similar to the overall literacy rate, the female literacy rate is also found to be significantly correlated with GER as given in Table A.3 in annexure. These results reinforce the argument that the educated parents are more likely to send their children to schools and higher education institutions than their illiterate counterparts.

Urbanisation is an important indicator of the growth and development of a region. As such, it is considered as one of the parameters that justifies the development of a region. Urbanisation encourages the establishment of educational institutions besides other amenities in the region concerned. The present study, looking into the concentration of HEIs in different regions of India, identifies share of urban population as an important variable resulting in higher GER. There is a high degree of correlation between percentage of urban population and GER in majority of the States, with few exceptions, as the correlation results have shown in Table A.1 in the annexure.[5] As discussed in the introduction, there seems to be an urban bias in establishment of public higher education institutions in India. The private sector too showed a similar trend. The urban areas are also the preferred locations for opening private higher education institutions. This association between private institutions and urban locations is clearer in those States where private sector is a dominant partner. The examples of this trend are the States of Maharashtra, Karnataka and Kerala, Gujarat and Andhra Pradesh. This trend very much substantiates the theoretical argument, as discussed in the first section, that in a knowledge economy, the growth pole doctrine has transformed into the development of knowledge centres (i.e. HEIs) in urban areas and suburbs to meet the growing demand (due to higher share of age group population) for higher education in these regions. As argued earlier, this results in better growth advantage for some regions as compared to others, leading to increased regional polarisation.

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[4] The correlation between overall literacy rate and GER could not be computed for some of the States and UTs, due to the unavailability of figure either of one or both the variables. Those States and UTs are as follows; Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Lakshadweep, and Sikkim. No significant correlation was found for few States and UTs such as Manipur, Puducherry and Tripura.

[5] The correlation between urban population and GER could not be computed for some of the States and UTs, due to the unavailability of figures, either of one or both the variables. Those States and UTs are Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Lakshadweep and Sikkim. No significant correlation was found for few States and UTs such as Himachal Pradesh, Kerala, Manipur, NCT of Delhi, Puducherry, Uttarakhand and Tripura.

At the all-India level, the share of population between 18-23 age groups in the total population varies between the States. Out of the total population, the share of Uttar Pradesh is the highest at 17 percent approximately, followed by Maharashtra and West Bengal, as shown in Table 8.

Table 8: State level Share in Total Population (18-23), Urban Population, Higher Educational Institutions (HEIs), Private Institutions, Enrollment, and GER

States	Share of Total Population (18-23)	Share of Urban Population	Share of HE Institutions	Share of Private Institutions	Share of Enrolment In HEIs	GER
Andaman & Nicobar Island	0.031	37.70	0.024	0.000	0.027	25.19
Andhra Pradesh	7.178	33.36	9.352	76.532	10.075	39.47
Arunachal Pradesh	0.119	22.94	0.182	40.580	0.130	30.68
Assam	2.598	14.10	3.468	28.256	1.899	20.56
Bihar	7.465	11.29	4.118	29.057	6.370	24.00
Chandigarh	0.104	97.25	0.111	4.762	0.177	48.01
Chhattisgarh	2.145	23.24	1.537	43.127	1.299	17.03
Dadra & Nagar Haveli	0.037	46.72	0.008	66.667	0.023	17.80
Daman & Diu	0.033	75.17	0.005	0.000	0.013	10.97
Goa	0.111	62.17	0.132	66.000	0.212	53.90
Gujarat	5.093	42.60	4.358	66.303	4.517	24.94
Haryana	2.279	34.88	1.648	56.891	2.822	34.82
Himachal Pradesh	0.559	10.03	0.647	50.612	0.690	34.70
Jammu & Kashmir	1.020	27.38	0.512	33.505	1.345	36.99
Jharkhand	2.560	24.05	0.758	40.418	2.430	26.55
Karnataka	5.298	38.67	9.181	64.125	6.393	33.93
Kerala	2.268	47.70	3.679	71.429	3.571	44.27
Lakshadweep	0.005	78.07	0.008	0.000	0.004	22.94
Madhya Pradesh	6.119	27.63	4.847	44.578	4.259	19.57
Maharashtra	9.643	45.22	9.321	72.145	11.580	33.77
Manipur	0.245	29.21	0.277	67.416	0.332	38.14
Meghalaya	0.253	20.07	0.288	73.394	0.194	21.55
Mizoram	0.096	52.11	0.182	13.043	0.090	26.42
Nagaland	0.182	28.86	0.291	52.727	0.166	25.65
NCT of Delhi	1.517	97.50	0.127	35.417	2.241	41.56
Odisha	3.375	16.69	5.850	43.567	1.963	16.35
Puducherry	0.093	68.33	0.240	68.132	0.148	44.79
Punjab	2.449	37.48	4.952	41.440	2.341	26.88
Rajasthan	5.918	24.87	6.344	83.597	4.696	22.32
Sikkim	0.058	25.15	0.061	52.174	0.045	21.92
Tamil Nadu	5.559	48.40	6.901	82.549	7.011	35.46
Tripura	0.322	26.17	0.328	1.613	0.198	17.30
Uttar Pradesh	16.977	22.27	15.073	59.699	16.893	27.98
Uttarakhand	0.893	30.23	1.437	39.706	1.134	35.72
West Bengal	7.854	31.87	3.753	44.546	4.708	16.86
All India	**100.000**		**100.000**		**100.000**	**27.99**

Source: Authors' Estimations from Census 2011

Out of total 37, 862 HEIs, the share of institutions in UP is the highest, followed by Andhra Pradesh and Maharashtra respectively. No doubt, the share of population of 18-23 age groups varies from State to State. The share of the number of HEIs across the States is an important concern at the policy level to improve access to HE. The objective of the establishment of public HEIs is to equally distribute the share of the higher education institutions according to the age group population, whether rural or urban. At the policy level, there is the need to look into the distribution of HEIs across the States and UTs and measuring the concentration of HEIs in select States.

It can be seen from the correlation matrix given in Table 9 that the share of institutions and that of enrolment are highly correlated. The number of institutions is correlated with the population size and also the share of private institutions. The urban bias in higher education development is evident from the fact that GER is correlated with the share of urban population.

Table 9: Correlation Matrix of the Share of Total Population, Share of Urban Population, Share of HEIs, Share of Enrolment, Share of Private Institutions and GER

Variables	Share of Total Population (18-23)	Share of Urban Population	Share of HE Institutions	Share of Enrollment	Share of Private Institutions	GER
Share of Total Population (18-23)	1					
Share of Urban Population	-0.267	1				
Share of HE Institutions	0.916**	-0.255	1			
Share of Enrollment	0.961**	-0.185	0.938**	1		
Share of Private Institutions	0.361*	-0.257	0.447**	0.422*	1	
GER	-0.088	0.409*	-0.009	0.070	0.304	1
(N=35) **Correlation is significant at the 0.01 level (2-tailed)						
*Correlation is significant at the 0.05 level (2-tailed)						

Source: Authors' Estimations from Census 2011

Concentration Ratio, Size of Institutions and GER: A Correlational Analysis

As per the methodology developed in determining the concentration ratio, as elaborated in section 2, the concentration of HEIs are determined at the district level. A total of 640 districts across India are considered for calculating the concentration ratio. Accordingly, the oversupply/undersupply of HEIs is identified and is explained in the following section highlighting the regional disparities at district level. But, in the current section focussing on all-India level disparities, the selective variables determining the concentration ratio are explained to identify the regional variations.

The variations in terms of variables, such as overall literacy, GER in higher education, availability of HEIs compared to the share of population and average size of the HEIs existing in different regions further aggravates inequality between the regions.

Table 10: State Level Comparisons of Average Size of Institutions, Concentration Ratio and Gross Enrolment Ratio (GER)

States	Total HE Institutions	Age Group Population (18-23)/ No. of Institutions	Average Size of Institutions	Concentration Ratio	GER
Andaman & Nicobar Island	9	4736.00	1193.00	0.78	25.19
Andhra Pradesh	3541	2831.98	1117.81	1.30	39.47
Arunachal Pradesh	69	2408.48	738.83	1.53	30.68
Assam	1313	2764.43	568.30	1.33	20.56
Bihar	1559	6689.13	1605.18	0.55	24.00
Chandigarh	42	3453.74	1658.29	1.07	48.01
Chhattisgarh	582	5149.58	876.82	0.72	17.03
Dadra & Nagar Haveli	3	17112.33	3045.33	0.22	17.80
Daman & Diu	2	22981.50	2520.50	0.16	10.97
Goa	50	3091.74	1666.42	1.19	53.90
Gujarat	1650	4312.15	1075.55	0.86	24.94
Haryana	624	5102.54	1776.92	0.72	34.82
Himachal Pradesh	245	3188.96	1106.71	1.16	34.70
Jammu & Kashmir	194	7366.10	2724.55	0.50	36.99
Jharkhand	287	12526.89	3326.50	0.30	26.55
Karnataka	3476	2129.37	722.58	1.73	33.93
Kerala	1393	2274.93	1007.16	1.62	44.27
Lakshadweep	3	2249.00	516.00	1.64	22.94
Madhya Pradesh	1835	4658.37	911.77	0.79	19.57
Maharashtra	3529	3817.34	1289.16	0.97	33.77
Manipur	105	3260.14	1243.40	1.13	38.14
Meghalaya	109	3239.77	698.28	1.14	21.55
Mizoram	69	1940.45	512.65	1.90	26.42
Nagaland	110	2308.21	591.97	1.60	25.65
NCT of Delhi	48	44145.19	18344.92	0.08	41.56
Odisha	2215	2128.47	348.09	1.73	16.35
Puducherry	91	1427.92	639.60	2.58	44.79
Punjab	1875	1825.08	490.56	2.02	26.88
Rajasthan	2402	3441.96	768.13	1.07	22.32
Sikkim	23	3507.22	768.83	1.05	21.92
Tamil Nadu	2613	2972.10	1054.04	1.24	35.46
Tripura	124	3627.02	627.36	1.02	17.30
Uttar Pradesh	5707	4156.01	1162.91	0.89	27.98
Uttarakhand	544	2293.67	819.28	1.61	35.72
West Bengal	1421	7721.26	1301.54	0.48	16.86
All India	**37862**	**3707.18**	**1037.61**	**1.00**	**27.99**

Source: Authors' Estimations from Census 2011

Looking at the average size of the institutions the NCT of Delhi has exceeded the capacity when compared to other states and UTs as shown in Table 10. The institutions are over crowded due to the larger share of population between 18-23 age groups upon the given number of HEIs. The impact of migration of students from different parts of India cannot be ruled out in such instance.[6]

The concentration ratio is found to be highly correlated with average size. As given in Table 11 the average size of the HEIs are inversely correlated with the concentration ratio in almost all the states except in case of states such as Arunachal Pradesh, Meghalaya, Puducherry and Tripura where no significant correlations found. Similarly, this inverse relationship is also reflected in terms of negative correlation between concentration ratio and the age group population upon the total number of higher education institutions in all the states except Arunachal Pradesh. The suggestions in terms of establishing more HEIs in the regions where the existing institutions are overcrowded is made district wise looking into the oversupply or undersupply of HEIs considering the size of the HEIs. The state level concentration ratio is only an indicator of concentration like average size as it takes the mean value of overall concentration or average size of the institutions aggregating all the districts together. This is explained in the next chapter.

[6] It is to be noted that the institutional data for Central Delhi and New Delhi are not given in the Census data. Hence, the available institutions are excluded from the list of institutions. Further, the town data for large area which includes DMC (Delhi Municipal Corporation) & NDMC (New Delhi Municipal Council) named as the town spread over more than one district (spread over all 9 districts having 71 general HEIs and 351 technical HEIs) is excluded from the total number of HEIs used for analysis for the study. This is because there is unavailability of data in Census 2011 regarding age group population and enrolment in all levels of education.

Table 11: Correlation of Concentration Ratio with Average Size, GER, Age Group Population/ Number of HEIs, Percentage of Urban Population, Overall Literacy

Variables	Average Size	GER	Age Group Population/ No. Of HE Institutions	Percentage of Urban Population	Overall Literacy
Andhra Pradesh	-.684**	.595**	-.935**	.619**	.743**
Arunachal Pradesh	-.563	.505	-.596	.521	.461
Assam	-.545**	.856**	-.815**	.808**	.645**
Bihar	-.636**	.329*	-.836**	.071	.241
Chhattisgarh	-.738**	.184	-.880**	.245	.121
Gujarat	-.716**	.310	-.874**	.237	.430*
Haryana	-.615**	.391	-.953**	.234	.468*
Himachal Pradesh	-.767**	.715**	-.855**	-.007	.608*
Jammu & Kashmir	-.545*	.462*	-.596**	.194	.160
Jharkhand	-.788**	.666**	-.886**	.618**	.640**
Karnataka	-.757**	.386*	-.948**	.313	.568**
Kerala	-.730**	.671**	-.940**	.353	.607*
Madhya Pradesh	-.553**	.650**	-.730**	.696**	.455**
Maharashtra	-.732**	.264	-.866**	-.010	.186
Manipur	-.676*	.354	-.723*	.787*	.560
Meghalaya	-.711	.960**	-.777*	.930**	.453
Mizoram	-.728*	.199	-.796*	.101	-.003
Nagaland	-.668*	.815**	-.678*	.746**	.445
NCT of Delhi	-.853*	-.087	-.843*	.256	-.040
Odisha	-.597**	-.023	-.890**	.066	-.093
Puducherry	-.840	.785	-.980*	.627	.861
Punjab	-.779**	.207	-.884**	.080	.396
Rajasthan	-.529**	.760**	-.780**	.434*	.649**
Tamil Nadu	-.783**	.665**	-.930**	.442*	.365*
Tripura	-.936	.704	-.981*	.667	.423
Uttar Pradesh	-.924**	.063	-.931**	.241	.508**
Uttarakhand	-.507**	.491**	-.500**	.422**	.026
West Bengal	-.662**	.123	-.704**	-.046	-.106

Source: Authors' Estimations

The concentration ratio is also positively correlated to the overall literacy, GER in higher education and percentage of urban population. The Table 11 shows that higher overall literacy rate encourages the establishment of HEIs which is reflected in terms of higher GER. In earlier sections, it has already been mentioned that overall literacy is also positively correlated with GER. The concentration ratio is also positively correlated with age group population (18-23) upon the number of HEIs. Likewise, higher percentage of urban population also encourages the establishment of more

institutions. This indicates creation of growth poles (of higher education institutions) near urban areas and suburbs which also enhances regional polarisation. With the expansion of higher education, the growth process of HEIs is driven by concentration effects, resulting in uneven establishment of HEIs.

Table 12: Partial Correlation of Concentration Ratio with Average Size, GER, Age Group Population/ Number of HEIs, Percentage of Urban Population, and Overall Literacy

(Taking into consideration one variable along with CR and controlling other variables)

Variables	Average Size	GER	Age Group Population/ No. of HE Institutions	Percentage of Urban Population	Overall Literacy
Andhra Pradesh	-.617**	.574**	-.001	.184	-.018
Arunachal Pradesh	-.928	.901	.838	-.863	.256
Assam	-.655**	.801**	.094	.153	.024
Bihar	-.365*	.367*	-.005	-.127	-.087
Chhattisgarh	-.217	-.290	-.691	.521	.049
Gujarat	-.201	.260	-.242	-.063	-.133
Haryana	-.550*	.478	-.077	-.246	.249
Himachal Pradesh	-.933**	.909*	.860*	-.206	.655
Jammu & Kashmir	-.240	.547*	.130	-.146	-.027
Jharkhand	-.590**	.533*	-.084	.045	-.190
Karnataka	-.664**	.640**	.261	-.261	.186
Kerala	-.873**	.851**	.597	.699*	-.545
Madhya Pradesh	-.531**	.509**	.225	.122	.052
Maharashtra	.051	.023	-.319	.237	.125
Manipur	-.646	.780	.420	.695	-.198
Meghalaya	-.894	.924	.867	-.498	.450
Mizoram	.809	-.829	-.679	.908	.839
Nagaland	-.910**	.930**	.660	-.510	-.041
Odisha	-.313	.240	-.690**	-.086	-.235
Puducherry	-	-	-	-	-
Punjab	.209	-.353	-.448	-.211	.547*
Rajasthan	-.939**	.921**	.541**	.049*	.176
Tamil Nadu	-.713**	.717**	.331	.186	.117
Uttar Pradesh	-.648**	.529	.581**	-.025	.283*
Uttarakhand	-.042	.041	-.274	-.046	-.255
West Bengal	.224	-.036	-.417	-.233	-.521*

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note: Correlation cannot be computed for Andaman & Nicobar Islands, Chandigarh, Dadar & Nagar Haveli, Daman & Diu, Goa, Lakshadweep, NCT OF DELHI, Sikkim, and Tripura.

Source: Authors' Estimations

The concentration ratio is found to be inversely correlated with average size in most States such as Andhra Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Nagaland, Rajasthan, Tamil Nadu, and Uttar Pradesh (by controlling other variables such as GER, age group population/number of higher educational institutions, percentage of urban population, and overall literacy). Further, CR is also found to be positively correlated with GER in most States including Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Nagaland, Rajasthan, and Tamil Nadu (by controlling other variables such as average size, age group population/number of higher educational institutions, percentage of urban population, and overall literacy).

The suggestions in terms of establishing more HEIs in the regions, where the existing institutions are overcrowded, is made district-wise looking into the oversupply or undersupply of HEIs, considering the size of the HEIs. The State-level concentration ratio is only an indicator of concentration, like average size, as it takes the mean value of overall concentration or average size of the institutions aggregating all the districts together. This is explained in the next section.

Concentration of HEIs: An Analysis at the District Level

As observed in the previous section, there is a positive correlation between concentration ratio and GER. But, the average size of the institutions matters in determining whether or not the district needs more higher education institutions. The present section deals with an analysis of concentration and oversupply of higher education institutions at the district level and identifies a district which needs the establishment of new institutions or expansion of the existing HEIs at the district level.

At the district level, there is a wide variation in the development indicators like literacy rate, urban population, GER, HEIs. As discussed in the previous section, Kerala has the highest literacy rate, followed by Lakshadweep and Goa. However, the variations in literacy rate among districts within a State are significant. In fact, the higher literacy rate of a few selected districts may influence the overall literacy rate of the State. The States with literacy rate of more than 80 percent are Kerala, Lakshadweep, Goa, Mizoram, NCT of Delhi, Tamil Nadu, Puducherry, Sikkim, Chandigarh, Himachal Pradesh, Maharashtra,Tripura, Daman & Diu and Andaman have selected districts with high literacy rate.

At the same time, there are districts with higher literacy rates even though the State average is comparatively lower than 80 percent. Such districts are Hyderabad (Andhra), Kamrup Metropolitan, Jorhat, Sivasagar (Assam), Surat, Ahmedabad, Anand (Gujarat), Gurugram (formerly Gurgaon), Panchkula, Ambala (Haryana), Jammu, Samba (J & K), Dakshina Kannada, Bengaluru (formerly Bangalore), Mandya, Udupi, Uttara Kannada, Kodagu, Shimoga Dharwad (Karnataka), Jabalpur, Indore, Bhopal (Madhya Pradesh), Imphal West, Churachandpur, Imphal East, Ukhrul (Manipur), East Khasi Hills (Meghalaya), Mokokchung, Wokha, Zunheboto, Kohima, Dimapur (Nagaland), Khordha, Jagatsinghapur, Cuttack, Kendrapara, Puri, Bhadrak, Nayagarh, Jajapur (Odisha), Hoshiarpur, Sahibzada Ajit Singh Nagar, Jalandhar, Ludhiana, Rupnagar (Punjab), Gautam Buddha Nagar (Uttar Pradesh), Dehradun, Nainital, Chamoli, Pithoragarh, Garhwal, Rudraprayag, Almora, Bageshwar (Uttarakhand), Purba Medinipur, Kolkata, North 24 Parganas, Haora, Hugli (West Bengal). Districts of Jharkhand and Rajasthan have literacy rates below 80 percent.[7] The overall literacy rate is found to be positively correlated with the female literacy rate. In majority of States and UTs, higher overall literacy rate is driven by higher female literacy rate. As mentioned above, the districts in the States with highest overall literacy are also districts with higher female literacy rate with few exceptions in States such as Andhra Pradesh, Bihar, and Gujarat.

At the district level, the overall literacy rate is positively correlated with the percentage of urban population as shown in the Table A.4 in the annexure. It also shows the positive correlation between the concentration ratio and GER, with percentage of urban population, and inverse relationship between concentration ratio and average size of the institutions.

Concentration and Undersupply of Institutions at the District Level

In terms of the availability of HEIs, there are intra-regional disparities apart from inter-regional disparities. Out of 640 districts, there are 17 such districts where there are not a single HEI.[8] They are Nicobars (Andaman & Nicobar Island), Anjaw, Dibang valley, East Kameng, Kurung Kumey, Lower Dibang Valley, Tawang, Upper Siang and Upper Sibansiri (ArunachalPradesh), Sheohar (Bihar), Diu (Daman & Diu), Srinagar (J & K), Central Delhi, New Delhi and North Delhi (NCT of Delhi), and North District and West District (Sikkim).

7 For further details please refer to the research report by Varghese et al. 2017

8 The data is not available in Census 2011. Due to non-availability of HEIs, the calculations for age group population upon the total number of institutions, average size of the institutions and concentration ratio were not calculated for such districts.

Though there are 23 districts falling under high concentration ratio but selected districts in certain states are having very high concentration of HEIs with a concentration ratio of more than 3.0, which is higher compared to the State average of 1.0. Such districts are East Siang in Arunachal Pradesh, Kamrup Metropolitan in Assam, Baramula in J & K, Bhopal in Madhya Pradesh, Saiha in Mizoram, and Purulia in West Bengal. Similarly, the average size of the institutions in certain districts is quite larger than the State average. The examples are Lower Subansiri in Arunachal Pradesh, Begusarai and Khaguria in Bihar, Tapi in Gujarat, Kuigam and Punch in J & K, Chatra, Khunti, Sahib Ganj and Sarai Kale Khan in Jharkhand, Anuppur in Madhya Pradesh, Mumbai Suburban in Maharashtra, Ukhrul in Manipur, West Khasi Hills in Meghalaya, West, South West and East Delhi in NCT of Delhi, Siddharth Nagar in Uttar Pradesh and Cooch Behar in West Bengal. It indicates the undersupply of HEIs in these districts as both average size and CR are inversely related to each other. (For further details, please refer to the research report by Varghese et al. 2017).

The suggestions for opening up of more HEIs and expansion of existing institutions are based on the three categories such as low, moderate and high degree of concentration of HEIs which is derived from each particular State average of concentration ratio. Based on the formula of deriving the concentration ratio, Table 13 indicates the levels of concentration of overall HEIs covering general and technical in differentdistricts. However, when the general and technical HEIs are considered separately, the level of concentration varies, depending on the number of HEI (General/Technical) compared to the age group population. The Table A.6 in the annexure shows the variation in concentration ratio between general and technical HEIs.

But, overall policy recommendations regarding the requirement of opening up of new HEIs or expansion of enrolments is based on the GER and average size of the institutions along with CR. Accordingly, when the CR is low, with very few HEIs and low GER, and if the average size of the institutions is less than the State average, it is suggested in that case that there is a need for expansion of enrolment rather than opening of new HEIs in the district. Such districts are as given in Table A.5 in the annexure. On the other hand, when CR is low with very few numbers of HEIs and low GER, and if the average size of the institutions is more than the State average, then it is suggested that there is a need for establishing new HEIs in the district to cater to the growing demand for higher education.

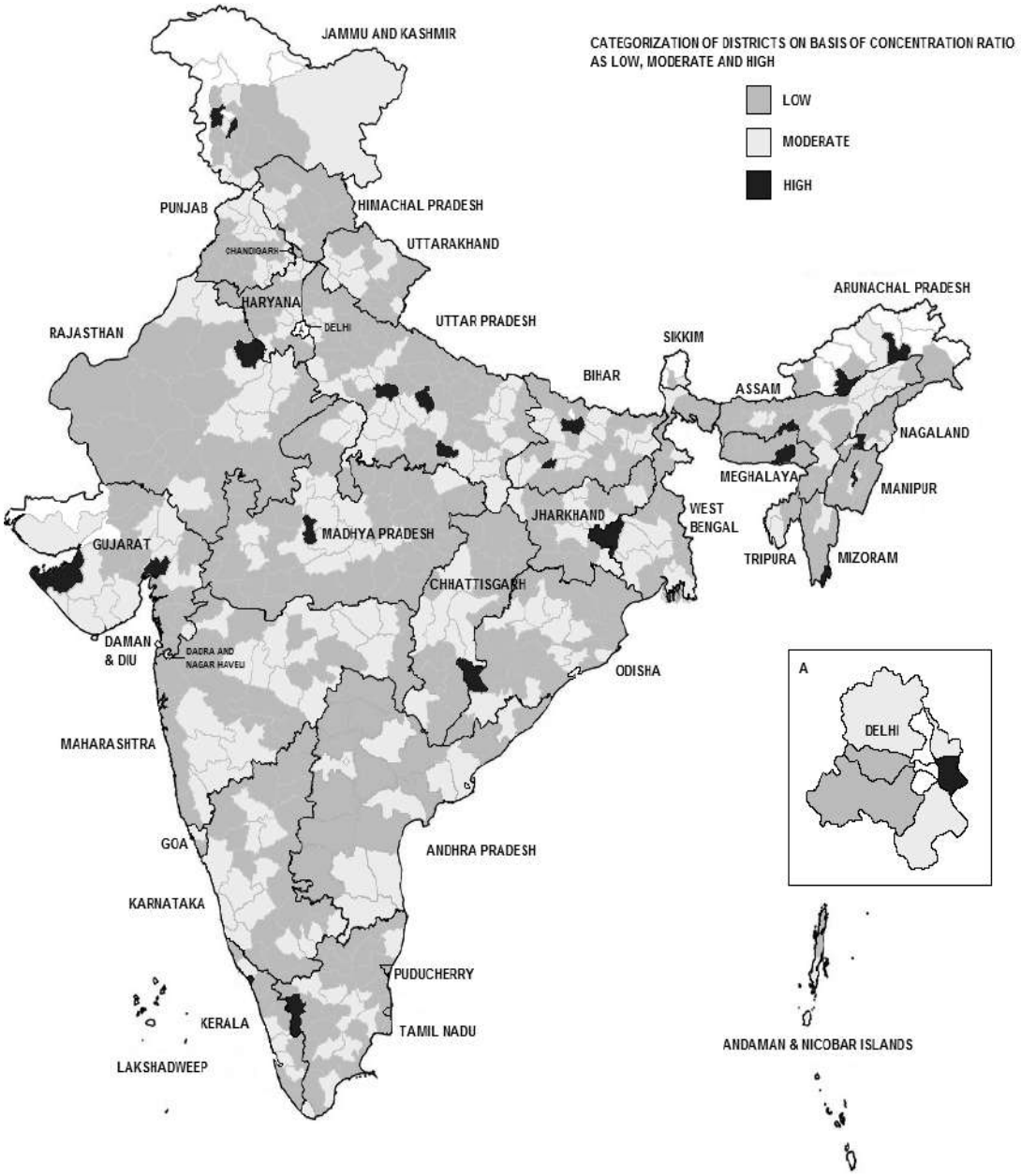
When the CR is moderate/high with low/large number of HEIs and high GER, if the average size of the institutions is less than the State average, then it is suggested that

there is a need for expansion of enrolment rather than opening of new HEIs in the district. When CR is moderate/high with low/large number of HEIs and high GER, if the average size of the institutions is more than the State average, then it is suggested that there is a need for establishing new HEIs to meet the higher demand for higher education. The districts are categorised accordingly as given in Table A.5 in annexure.

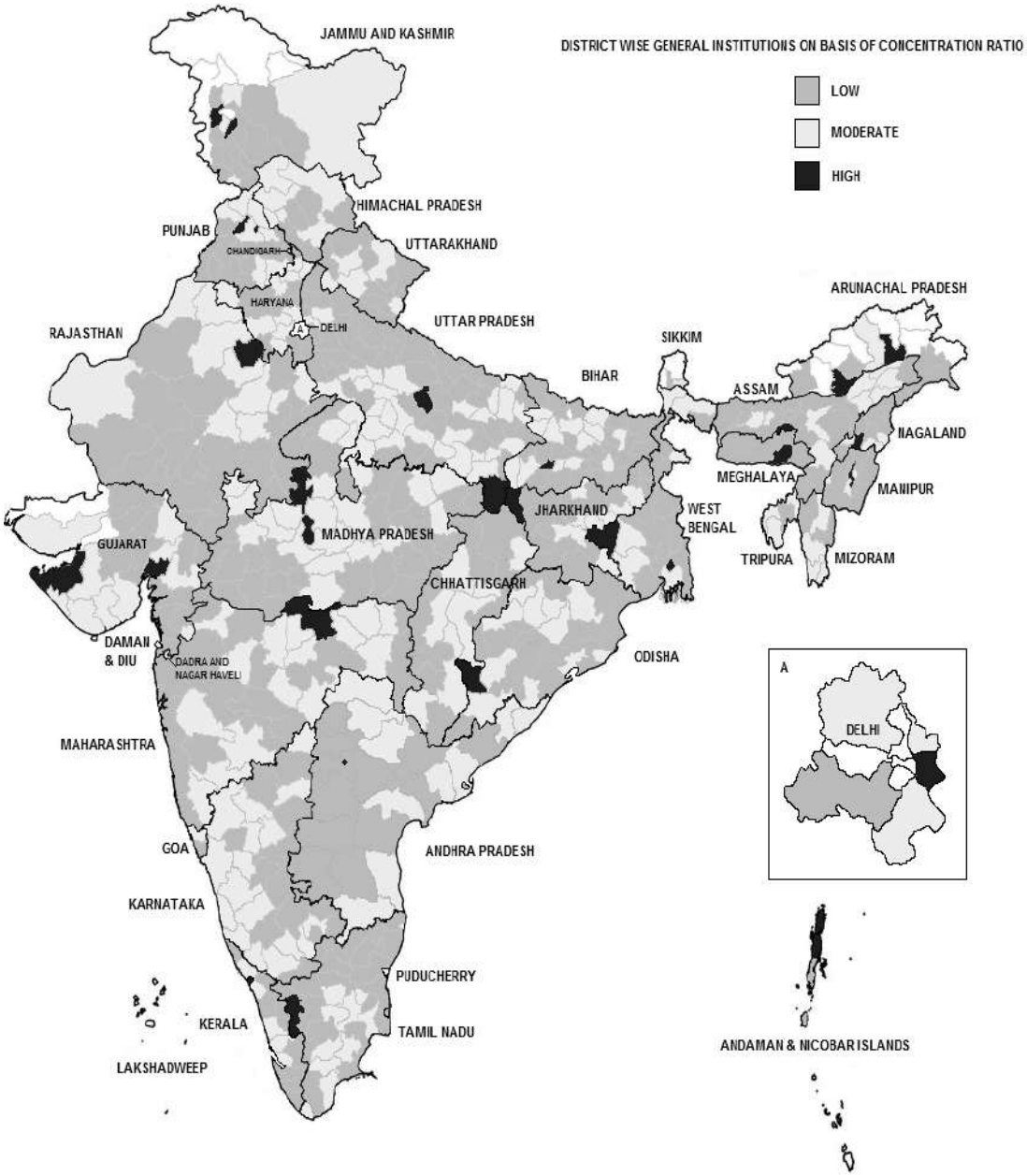
The dark shade in the Map 1 indicates the districts with low concentration ratio of HEIs, while light shade represents the districts with moderate concentration and darker shade represents districts with very high concentration of HEIs. The Table 13 indicates the name of the districts with low, moderate and high CR identified in different States.

Similarly, the Map 2 and 3 shows the low, moderate and high CR of general and technical HEIs respectively in different districts of India. The dark shade in the maps indicates the districts with low concentration ratio of HEIs, light shade represents the districts with moderate concentration and darker shade represents districts with very high concentration of HEIs. The Table A.6 in the annexure gives the name of the districts with low, moderate and high concentration of HEIs by types, such as general and technical.

Map 1: Categorization of Districts on the basis of Concentration Ratio as Low, Moderate and High



Map 2: District- wise General HEIs on the basis of Low, Moderate and High Concentration Ratio



Map 3: District-wise Technical HEIs on the basis of Low, Moderate and High Concentration Ratio

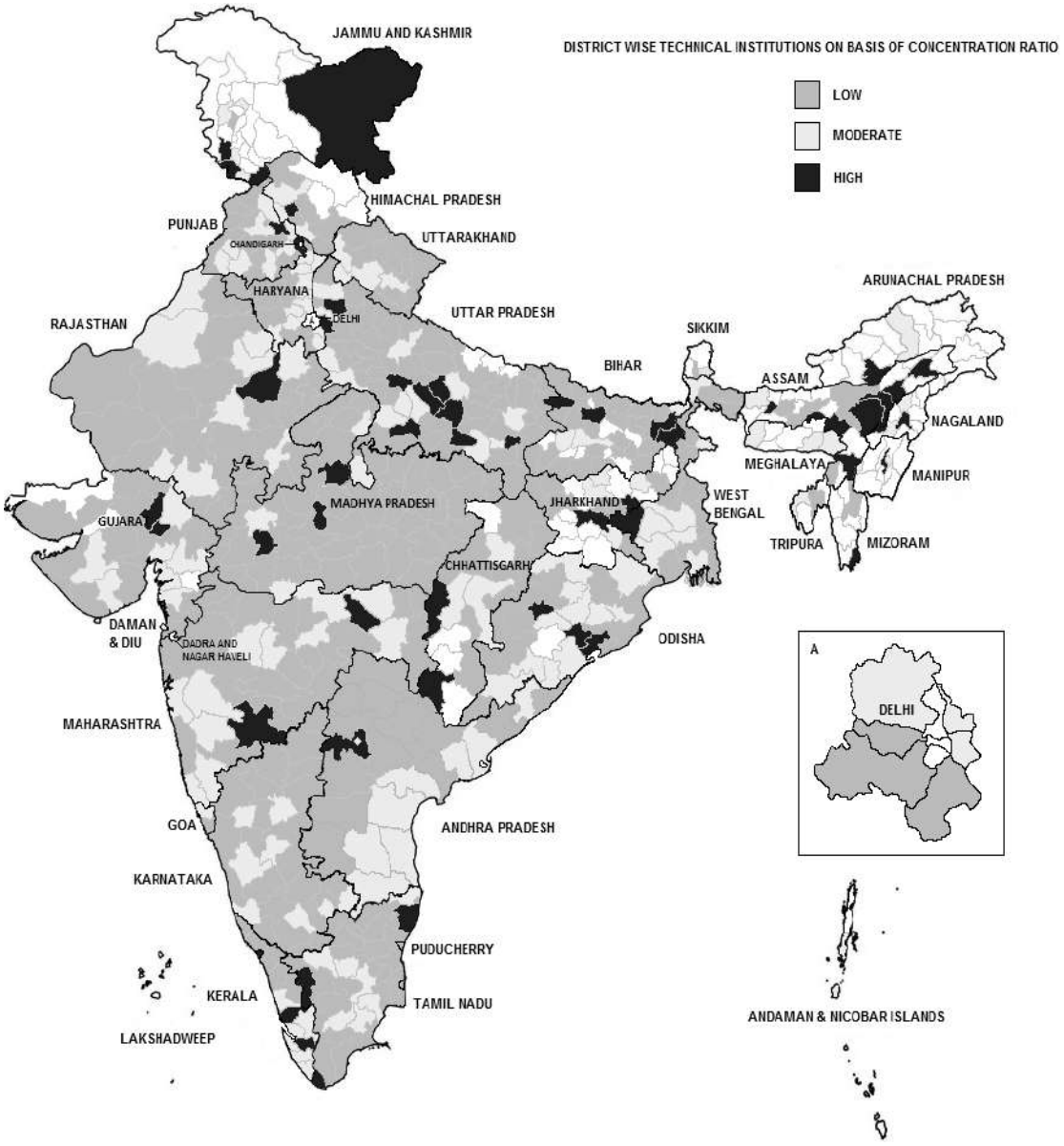


Table 13: Classification of Districts on the basis of Low, Moderate and High Concentration Ratio

State	Low	Moderate	High
Andaman & Nicobar Islands	North & Middle Andaman	South Andaman	
Andhra Pradesh	Adilabad, Anantapur, Karimnagar, Khammam, Krishna, Kurnool, Mahbubnagar, Medak, Nalgonda, Nizamabad, Prakasam, Srikakulam, Visakhapatnam	Chittoor, East Godavari, Guntur, Hyderabad, Rangareddy, Sri Potti Sriramulu Nellore, Vizianagaram, Warangal, West Godavari, Y.S.R	
Arunachal Pradesh	Changlang, Lohit, Lower Subansiri, Tirap, West Kameng	West Siang	East Siang, Papum Pare
Assam	Baksa, Bongaigaon, Cachar, Chirang, Darrang, Dhubri, Goalpara, Hailakandi, Kamrup, Karbi Anglong, Karimganj, Kokrajhar, Morigaon, Sonitpur, Tinsukia, Udalguri	Barpeta, Dhemaji, Dibrugarh, Dima Hasao, Golaghat, Jorhat, Lakhimpur, Nagaon, Nalbari, Sivasagar	Kamrup Metropolitan
Bihar	Araria, Aurangabad, Banka, Begusarai, Bhagalpur, Bhojpur, Buxar, Gaya, Jamui, Khagaria, Kishanganj, Lakhisarai, Nawada, Pashchim Champaran, Purba Champaran, Saharsa, Sheikhpura, Sitamarhi, Supaul, Vaishali	Arwal, Darbhanga, Gopalganj, Kaimur (Bhabua), Katihar, Madhepura, Madhubani, Munger, Patna, Purnia, Nalanda, Rohtas, Samastipur, Saran, Siwan	Jehanabad, Muzaffarpur
Chhattisgarh	Bastar, Dakshin Bastar Dantewada, Janjgir Champa, Jashpur, Kabeerdham, Korba, Koriya, Mahasamund, Narayanpur, Raigarh, Surguja, Uttar Bastar Kanker	Bijapur, Bilaspur, Dhamtari, Drug, Raipur, Rajnandgaon	
Daman & Diu		Daman	
Goa	South Goa	North Goa	
Gujarat	Ahmadabad, Banas Kantha, Bharuch, Dohad, Narmada, Navsari, Panch Mahals, Patan, Surat, Surendranagar, Tapi, Valsad	Amreli, Bhavnagae, Gandhinagar, Junagadh, Kachchh, Kheda, Mahesana, Porbandar, Rajkot, Sabar Kantha, The Dangs, Vadodara	Anand, Jamnagar
Haryana	Bhiwani, Fatehabad, Gurgaon, Hisar, Jind, Kaithal, Karnal, Mewat, Palwal, Panchkula, Rewari, Sirsa	Ambala, Faridabad, Jhajjar, Kurukshetra, Mahendragarh, Panipat, Rohtak, Sonipat, Yamunanagar	
Himachal Pradesh	Bilaspur, Chamba, Kinnaur, Kullu, Lahul & Spiti, Mandi, Shimla, Sirmaur	Hamirpur, Kangra, Solan, Una	
Jammu & Kashmir	Anantnag, Doda, Ganderbal, Kargil, Kishtwar, Kulgam, Kupwara, Punch, Rajouri, Ramban, Shupiyan, Udhampur	Badgam, Bandipore, Jammu, Kathua, Leh (Ladakh), Reasi, Samba	Baramula, Pulwama

Jharkhand	Chatra, Deoghar, Giridih, Godda, Gumla, Jamtara, Khunti, Latehar, Lohardaga, Pakur, Palamu, Pashchimi Singhbhum, Sahibganj, Saraikela-Kharswana, Simdega	Bokaro, Dhanbad, Dumka, Garhwa, Hazaribagh, Kodarma, Purbi Singhbhum, Ramgarh, Ranchi	
Karnataka	Bangalore Rural, Belgaum, Bellary, Bidar, Bijapur, Chamarajanagar, Chikkaballapura, Chitradurga, Dharwad, Gulbarga, Hassan, Haveri, Kodagu, Mysore, Raichur, Tumkur, Yadgir	Bangalore, Bagalkot, Chikmagalur, Dakshina Kannada, Davanagere, Gadag, Kolar, Koppal, Mandya, Ramanagara, Shimoga, Udupi, Uttara Kannada	
Kerala	Alappuzha, Idukki, Kasaragod, Kollam, Kozhikode, Malappuram, Palakkad, Thiruvananthapuram, Wayanad	Ernakulam, Kannur, Kottayam, Pathanamthitta, Thrissur	
Madhya Pradesh	Alirajpur, Anuppur, Balaghat, Barwani, Betul, Burhanpur, Chhatarpur, Chhindwara, Damoh, Dewas, Dhar, Dindori, Harda, Jhabua, Katni, Khandwa (East Nimar), Khargone (West Nimar), Mandla, Mandsaur, Morena, Neemuch, Panna, Rajgarh, Ratlam, Satna, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Singrauli, Tikamgarh Umaria	Ashoknagar, Bhind, Datia, Guna, Gwalior, Hoshangabad, Indore, Jabalpur, Narsimhapur, Raisen, Rewa, Sagar, Sehore, Ujjaim, Vidsha	Bhopal
Maharashtra	Ahmadnagar, Akola, Bid, Gadchiroli, Gondiya, Hingoli, Jalgaon, Latur, Mumbai, Mumbai Suburban, Nandurbar, Nashik, Osmanabad, Raigarh, Ratnagiri, Sindhudurg, Thane, Yavatmal	Amravati, Aurangabad, Bhandara, Buldana, Chandrapur, Dhule, Jalna, Kolhapur, Nagpur, Nanded, Parbhani, Pune, Sangli, Satara, Solapur, Wardha, Washim	
Manipur	Chandel, Churachandpur, Senapati, Tamenglong, Thoubal, Ukhrul	Bishnupur, Imphal East	Imphal West
Meghalaya	East Garo Hills, Jaintia Hills, Ribhoi, South Garo Hills, West Garo Hills, West Khasi Hills		East Khasi Hills
Mizoram	Champhai, Kolasib, Lawngtlai, Lunglei, Mamit, Serchhip	Aizawl	Saiha
Nagaland	Longleng, Mokokchung, Mon, Peren, Tuensang, Wokha, Zunheboto	Dimapur, Kiphire, Phek	Kohima
NCT of Delhi	South West, West	North East, North West, South	East
Odisha	Balangir, Baleshwar, Baudh, Bhadrak, Cuttack, Ganjam, Jajapur, Jharsuguda, Kalahandi, Kandhamal, Kendrapara, Kendujhar, Malkangiri, Mayurbhanj, Naupada, Puri, Rayagada, Sundargarh	Anugul, Bargarh, Debagarh, Dhenkanal, Gajapati, Jagatsinghapur, Khordha, Koraput, Nayagarh, Sambalpur, Subarnapur	Nabarangapur

Puducherry	Karaikal, Puducherry	Yanam	Mahe
Punjab	Barnala, Bathinda, Faridkot, Fatehgarh Sahib,Firozpur, Ludhiana, Mansa, Moga, Muktsar, Rupnagar, Tam Taran	Amritsar, Gurdaspur, Hoshiarpur, Jalandhar, Kapurthala, Patiala, Sahibzada Ajit Singh, Sangrur, Shahid Bhagat Singh Nagar	
Rajasthan	Banswara, Baran, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittaurgarh, Churu, Dhaulpur, Dungarpur, Jaisalmer, Jalor, Jhalawar, Jodhpur, Karauli, Kota, Nagaur, Pali, Pratapgarh, Rajsamand, Sawai Madhopur, Sirohi	Alwar, Ajmer, Dausa, Ganganagar, Hanumangarh, Jaipur, Sikar, Tonk, Udaipur	Jhunjhunun
Sikkim	South District	East District	
Tamil Nadu	Ariyalur, Chennai, Cuddalore, Dharmapuri, Dindigul, Karur, Krishnagiri, Nagapattinam, Pudukkottai, Ramanathapuram, Salem, The Nilgiris, Theni, Thiruvallur, Thiruvarur, Tirunelveli, Tiruppur, Tiruvannamalai, Vellore, Viluppuram, Virudhunagar	Erode, Kancheepuram, Kanniyakumari, Madhurai, Namakkal, Perambalur, Sivaganga, Thanjavur, Thoothukkudi, Tiruchiraopalli	Coimbatore
Tripura	Dhalai, North Tripura	South Tripura, West Tripura	
Uttar Pradesh	Aligarh, Baghpat, Bahraich, Ballia, Balrampur, Banda, Bara Banki, Bareilly, Basti, Bijnor,Budaun, Bulandshahr, Chandauli, Chitrakoot, Deoria, Etawah, Faizabad, Firozabad, Fatehpur,Gonda, Hardoi, Jaunpur, Jyotiba Phule Nagar, Kanshiram Nagar, Kheri, Kushinagar, Lalitpur, Mahamaya Nagar, Mahoba, Mau, Moradabad, Muzaffarnagar, Pilibhit, Pratapgarh, Rampur, Saharanpur, Shrawasti, Siddharthnagar,Sitapur, Sultanpur	Agra, Allahabad, Ambedkar Nagar, Auraiya, Azamgarh, Etah, Farrukhabad, Gautam Buddha Nagar, Ghaziabad, Ghazipur, Gorakhpur, Hamirpur, Jalaun, Jhansi, Kanpur Dehat, Kanpur Nagar, Mahrajganj, Mainpuri, Mathura, Meerut, Mirzapur, Rae Bareli, Sant Kabir Nagar, Sant Ravidas Nagar (Bhadohi), Shahjahanpur, Sonbhadra, Unnao, Varanasi	Kannauj, Kaushambi, Lucknow
Uttarakhand	Almora, Bageshwar, Nainital, Pithoragarh, Rudraprayag, Udham Singh Nagar, Uttarkashi	Chamoli, Champawat, Dehradun, Garhwal, Hardwar, Tehri Garhwal	
West Bengal	Birbhum, Haora, Jalpaiguri, Koch Bihar, Maldah, Murshidbad, Nadia, North Twenty Four Parganas, Purba Medinipur, Uttar Dinajpur	Bankura, Barddhaman, Dakshin Dinajpur, Darjiling, Hugli, Kolkata, Paschim Medinipur, South Twenty Four Parganas	Puruliya

Source: Authors' estimations

Conclusion

Most countries experienced regional inequalities in the development process. An unequal distribution of investments among territorial units leads to regional inequalities in development. The development economists argued for spread effects in development while emphasising on the importance of forward and backward linkages in the process of economic development. The idea of growth pole, which underlined the importance of more balanced spatial development, became a core regional planning framework in the 1960s and 1970s.

The emergence of knowledge economy showed that development depended on the capacity to use knowledge in production and adopt new technologies and innovations. It was expected that knowledge-based and technology-dependent development would promote dispersal of economic activity and reduce geographical distances in development. The knowledge sectors and technopolis were more dispersed and focused on knowledge-intensive production. They needed research and development activities for their growth and expansion. Many of the technopolis developed in localities close to universities or aligned to any university and their research. Thus, the higher education sector became dear to planners and in the expansion of knowledge sectors of the economy.

The need for a dispersed growth of universities and research capacities to support balanced regional economic development became important. However, the social demand for higher education resulting from the expansion of secondary education was more in the urban areas. Therefore, there has been an urban bias in higher education development. Distances acted as a constraint for many seeking university admissions and opportunities for higher education. In the absence of dispersal of locality, higher education remained an exclusive domain for the privileged.

In the absence of effective public policy interventions, the location of higher education institutions remained urban-centric for several reasons. An urban-centric approach to higher education development leads to polarisation of access to higher education and regional inequalities in the distribution of higher education opportunities. The increase in social demand and resulting massification of the sector implied the spread of higher education opportunities among the under-privileged. The massification of the system also necessitated levelling-off of the geographical inequalities in the distribution of higher education facilities.

The Indian experience shows that policy interventions, with the objective of equality of opportunity in terms of opening of public HEIs in non-urban areas, can improve access to higher education by the rural poor. But later, the influence of the market in the provision of educational facilities has escalated the establishment of HEIs in favourable geographical locations with a higher demand for higher education. As a result, the self-financing HEIs and capitation fee colleges in technical professional courses and private universities, in recent years, are established in suburbs and semi-urban areas.

India's massified higher education system driven by private HEIs necessitates policy intervention for the future establishment of higher education institutions. The most important factor would be to improve access to higher education by the deprived group of population who are otherwise discouraged to access higher education by several other socio-economic and psychological factors. Since majority of such groups reside in rural or interior parts of the country, it seems to be necessary to achieve equality of opportunities by opening new HEIs in the districts with low concentration of HEIs. There was, as such, the need for mapping of concentration of HEIs at the district level, like locational planning or school mapping, for effective policy intervention to even out the disparities in the provision of HEIs of different types.

The present study examines the geographical distribution of HEIs using Census 2011 data to identify regional disparities in terms of the number of HEIs of both general as well as technical in nature. The variations regarding overall literacy, GER in higher education, share of urban population, share of private HEIs, availability of HEIs, compared to the share of population and average size of the HEIs existing in different regions, tend to aggravate inequality between the regions in India. The extent of concentration of HEIs of both types are analysed district-wise using the measure of concentration ratio. The concentration ratio is defined as the share of HEIs in a locality upon the share of age-group population (between 18-23 age groups). Based on the concentration ratio, the study analysed the extent of inequalities in the provision of higher education facilities in the States and districts within the States. These analyses helped in identifying the districts deprived of higher education facilities and the locations for opening of higher education institutions in the future.

The study analysed the distribution of higher education institutions across States and districts in three categories, namely low concentration, moderate concentration and high concentration. It also considered the low concentration ratios along with average size of existing institutions and GER to open new institutions. Maps were also

prepared to highlight the districts (total 640 districts) with low, moderate and high concentration of general and technical HEIs. The three levels of concentration also signify the idea of growth pole, wherein the availability/establishment of HEIs is driven by the age-group population (18-23), GER of the region and share of urban population. Such concentration effect has resulted in uneven establishment of HEIs.

The State-level analysis in disparities, in terms of the number of HEIs, indicates that the States of Punjab and Puducherry have high concentration of HEIs. States such as Arunachal Pradesh, Assam, Chhattisgarh, Karnataka, Kerala, Madhya Pradesh, Odisha, Rajasthan and Uttarakhand have moderate concentration of higher education institutions. The institutions in NCT of Delhi compared to other States and UTs are highly overcrowded due to the larger share of population between 18-23 age groups compared to the given number of HEIs. The average size of the HEIs are negatively correlated with the concentration ratio in almost all the States except in case of States such as Arunachal Pradesh, Meghalaya, Puducherry and Tripura where no significant correlations are found. There is a negative correlation between concentration ratio and the age group population upon the total number of higher education institutions in all the States barring Arunachal Pradesh. However, the policy decision for concentration of HEIs and, therefore, opening of new institutions is suggested at the district level.

The study considered the low concentration ratio in two categories to prioritise locations for opening of new higher education institutions. The localities where the concentration ratio is < 0.5 were considered as the least developed and most needed localities to open higher education institutions and were categorised as priority 1 and those localities with concentration ratio between 0.5 and less than 1.0 were considered priority 2 districts to open new institutions.

A total of 191 districts are falling under priority 1 category of districts out of total 635 districts (classified based on CR). These districts are listed in Table 14. Madhya Pradesh, followed by Uttar Pradesh and Bihar, are found to have large number of such deprived districts falling under category 1, basically in terms of technical HEIs. Out of 191 districts, 54 districts need establishment of general HEIs and 121 need opening of technical HEIs while 16 districts require both types of HEIs.

Table 14: List of Districts Identified under Priority 1 for Opening New Institutions*

States	No. of Districts		
	General Only	**Technical Only**	**Both General & Technical**
Andhra Pradesh	Anantapur, Rangreddy	Adilabad, Mahbubnagar, Nizamabad	
Arunachal Pradesh	Changlang, Lohit, Lower Subansiri		
Assam	Baksa, Darrang, Hailakandi	Barpeta, Kamrup	
Bihar	Araria	Banka, Darbhanga, Gaya, Kaimur, Lakhisarai, Madhepura, Madhubani, Nalanda, Nawada, Pashchim Champaran, Purba Champaran, Rohtas, Saran, Siwan, Supual, Vaishali	Begusarai, Saharsa
Chhattisgarh	Narayanpur	Janjgir Champa, Kabeerdham, Mahasamund, Raigarh	
Gujarat	Panchmahals, Surat	Dohad, Patan	Banaskantha, Tapi
Haryana		Bhiwani, Fatehabad, Kaithal, Rewari	
Himachal Pradesh		Bilaspur, Chamba, Sirmaur	
Jammu & Kashmir	Ganderbal, Kargil, Kulgam, Punch, Shopian		
Jharkhand	Chatra, Latehar, Pakur, Sahibganj, Saraikela-Kharswana	Bokaro, Dumka, Ramgarh	
Karnataka		Bangalore Rural, Chamarajanagar, Chikkaballapura, Chitraduga, Haveri	
Kerala		Kozhikode, Malappuram, Wayanad	
Madhya Pradesh		Alirajpur, Balaghat, Betul, Bhind, Chhatarpur, Chhindwara, Damoh, Dewas, Dhar, Guna, Harda, Hoshangabad, Jhabua, Katni, Khargone (West Nimar), Narsimhapur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Seoni, Shahdol, Shajapur, Sidhi, Singrauli, Tikamgarh, Umaria, Vidisha	Anuppur, Barwani, Dindori, Mandla, Sheopur, Shivpuri
Maharashtra	Hingoli, Ratnagiri	Akola, Gadchiroli	Mumbai Suburban
Manipur	Chandel, Tamenglong, Thoubal, Ukhrul		
Meghalaya	East Garo Hills, Ribhoi, South Garo Hills, West Khasi Hills		
Mizoram	Kolasib		
Nagaland	Mon, Peren, Tuesang, Zunheboto		
NCT of Delhi	South West	West	

Odisha		Jagatsinghapur, Kalahandi, Kendrapara, Kendujhar, Malkangiri, Nabarangapur, Puri, Sambalpur	
Punjab	Fatehgarh Sahib		
Rajasthan		Banswara, Baran, Bundi, Dungarpur, Jaisalmer, Karauli, Nagaur, Sawai Madhopur	Barmer, Jalor
Sikkim	South District		
Tamil Nadu	Ariyalur	Chennai, Dindigul, Krishnagiri, Ramanathapuram	
Tripura	Dhalai		
Uttar Pradesh	Balrampur, Basti, Budaun, Bulandshahr, Chitrakoot, Mahoba, Muzzaffarnagar, Pilibhit, Rampur, Siddharthnagar	Auraiya, Ballia, Banda, Deoria, Faizabad, Firozabad, Gonda, Hardoi, Jaunpur, Jyotiba Phule Nagar, Mahamaya Nagar, Mau, Pratapgarh, Sant Kabir Nagar, Sultanpur	Bahraich, Kheri
Uttarakhand	Bageshwar, Rudraprayag	Chamoli, Champawat, Tehri Garhwal, Udham Singh Nagar	
West Bengal		Haora, Jalpaiguri, Cooch Behar, Kolkata, Uttar Dinajpur	Malda

***** The Priority 1 districts are those where the value of concentration ratio is less than 0.5 and therefore require immediate priority for opening new HEIs

Source: Authors' estimations

Districts categorised as priority 2 districts are those that have a concentration ratio between 0.5 and less than 1.0. These are low CR districts requiring opening of new institutions once the priority 1 category of districts are taken care of. There are 293 such districts out of total 635 districts falling under priority 2 category. Majority of districts of Uttar Pradesh, followed by Karnataka and Tamil Nadu, are falling under this category, as given in Table 15.

Table 15: List of Districts Identified under Priority 2 for Opening New Institutions*

States	No. of Districts		
	General Only	Technical Only	Both General & Technical
Andaman & Nicobar Islands	South Andaman		
Andhra Pradesh	Mahbubnagar, Nizamabad, Prakasam, Y.S.R	Anantapur, Karimnagar, Srikakulam, Warangal	Khammam, Krishna, Kurnool, Medak, Nalgonda, Visakhapatnam
Assam	Chirang, Dhubri, Goalpara, Karbi Anglong, Kokrajhar, Sonitpur, Udalguri	Darrang	Sonitpur
Bihar	Buxar, Gaya, Jamui, Khagaria, Nawada, Patna, Purba Champaran, Sheikhpura, Vaishali	Munger, Sitamarhi	Aurangabad, Bhagalpur, Bhojpur,
Chhattisgarh	Kabeerdham, Korba, Koriya, Raigarh, Uttar Bastar Kanker	Bilaspur, Dhamtari, Jashpur, Surguja	
Goa			South Goa
Gujarat	Bharuch, Dohad, Gandhinagar, Mahesana, Narmada, Patan	Jamnagar, Junagadh, Kachchh, Panch Mahals, Porbandar	Ahmadabad, Navsari, Valsad
Haryana	Faridabad, Karnal, Mahendragarh, Palwal	Sirsa	Gurgaon, Hisar, Jind, Panchkula
Himachal Pradesh	Bilaspur, Kinnaur, Kullu, Solan	Shimla	Mandi
Jammu & Kashmir	Anantnag, Jammu, Kathua, Kishtwar, Kupwara, Rajouri	Badgam	
Jharkhand	Deoghar, Godda, Gumla, Hazaribagh, Khunti, Simdega	Purbi Singhbhum	Palamu
Karnataka	Bangalore, Chamarajanagar, Chitradurga, Davanagere, Dharwad, Kolar	Bagalkot, Belgaum, Bidar, Chikmagalur, Gadag, Kodagu, Mysore, Udupi, Uttara Kannada	Bellary, Bijapur, Gulbarga, Hassan, Raichur, Tumkur
Kerala	Alappuzha, Idukki, Kollam, Pathanamthitta, Thriuvananthapuram, Wayanad	Kannur, Palakkad	
Madhya Pradesh	Balaghat, Chhatarpur, Chhindwara, Dhar, Indore, Katni, Khargone (West Nimar), Panna, Ratlam, Singrauli, Umaria	Gwalior, Jabalpur, Mandsaur, Rewa, Sagar, Satna	Khandwa (East Nimar), Morena
Maharashtra	Mumbai, Nandurbar, Raigarh, Satara	Bhandara, Hingoli, Parbhani, Sangli	Ahmadnagar, Bid, Gondiya, Jalgaon, Latur, Nashik, Osmanabad, Thane, Yavatmal

Manipur	Churachandpur, Senapati		
Meghalaya	Jaintia Hills, West Garo Hills		
Mizoram	Champhai, Serchhip	Aizawl	
Nagaland	Mokokchung, Wokha		
NCT of Delhi		South, South West	
Odisha	Ganjam, Jajapur, Kendrapara, Mayurbhanj, Nuapada, Rayagada, Sundargarh	Bargarh, Jharsuguda	Baleshwar, Bhadrak, Cuttack
Puducherry	Karaikal	Puducherry	
Punjab	Bathinda, Faridkot, Muktsar, Rupnagar, Sahibzada Ajit Singh Nagar, Tarn Taran	Amritsar, Firozpur, Gurdaspur, Kapurthala, Patiala	Ludhiana, Mansa, Moga
Rajasthan	Alwar, Banswara, Baran, Bikaner, Bundi, Dungarpur, Jhalawar, Karauli, Nagaur, Sawai Madhopur	Bharatpur, Bhilwara, Churu, Dausa, Hanumangarh, Pali, Tonk	Chittaurgarh, Dhaulpur, Jodhpur
Tamil Nadu	Erode, Kancheepuram, Pudukkottai, Vellore	Ariyalur, Karur, Perambular, Salem, Thanjavur, Theni, Thoothukuddi, Tiruppur, Virudhunagar	Cuddalore, Dharnapuri, Nagapattinam, The Nilgiris, Thiruvarur, Tirunelveli, Tiruvannamalai, Viluppuram
Uttar Pradesh	Azamgarh, Ballia, Banda, Bara Banki, Firozabad, Gautam Buddha Nagar, Gonda, Jaunpur, Jyotiba Phule Nagar, Mahamaya Nagar, Mathura, Mau, Sultanpur, Unnao	Ambedkar Nagar, Basti, Bulandshahr, Etah, Fatehpur, Ghazipur, Gorakhpur, Jhansi, Kushinagar, Mahrajganj, Mainpuri, Mirzapur, Moradabad, Pilibhit, Rampur, Saharanpur, Sonbhadra	Aligarh, Baghpat, Bijnor, Chandauli, Etawah
Uttarakhand	Almora, Dehradun, Udham Singh Nagar	Bageshwar, Rudraprayag	Nainital, Pithoragarh, Uttarkashi
West Bengal	Barddhaman, Haora, Hugli, Koch Bihar, Uttar Dinajpur	Murshidabad	Nadia, North 24 Parganas, Purba Medinipur

* The Priority 2 districts are those where the value of concentration ratio range from 0.5 to less than 1.0 and therefore require second priority for opening new HEIs after considering Priority 1 districts as given in table 4.2

Source: Authors' estimations

The study also identified districts with moderate concentration of HEIs (where concentration ratio is between 1.00 and 2.00) which need new higher education institutions. This is partly due to the overcrowding in the existing institutions. However, the priority for opening institutions may be given to districts with low concentration ratio, as indicated in priority 1 and priority 2 categories.

Overall, it can be stated that, concentration effects and development of growth poles are found to be more in case of technical or professional courses compared to general or non-technical courses in higher education.

It needs to be mentioned that these conclusions are based on the data from Census of India 2011, which is the only source for district-wise analysis, and hence could not take into account the distribution of higher education institutions after the census period.

Decisions regarding opening of higher education institutions are not based on technical exercises only. They need discussions and consultations at the State and district levels. This study helps in identifying the possible locations for opening of higher education institutions on priority basis. Needless to add, decisions on whether or not to open new higher education institutions in the identified locations are taken by the Central or State governments in consultation with the experts, public representatives and the local community.

References

Agarwal, P. (2007): *Private Higher Education in India: Status and Prospects*. London: Observatory of Borderless Higher Education (OBHE).

Arbo, P. and P. Benneworth (2007): *Understanding the Regional Contribution of Higher Education Institutions: A Literature Review*. Paris: OECD.

Castells, M. and P. Hall (1994): *Technopoles of the World: The Making of 21st Century Industrial Complexes.* New York: Routledge.

Census of India 2011 (2013a): *Population Enumeration, C-13 Tables Single Year Age Data-(India/States/UTs/ District) (Total, SC/ST)*. Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India.

Census of India 2011 (2013b): *Population Enumeration, C-10 Population Attending Educational Institutions (Total, SC/ST) (India & States/UTs- District Level).* Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India.

Census of India 2011 (2013c): *District Census Handbook- Town and Village Data*. Office of the Registrar General & Census Commissioner, Ministry of Home Affairs, Government of India.

District Information System for Education (DISE) (2015-2016): *Number of Higher Secondary Saachools*. New Delhi: National Institute of Educational Planning and Admnistration.

Frenette, M. (2004): "Access to College and University: Does Distance to School Matter?" *Canadian Public Policy*, 30(4), pp. 427-43.

Frenette, M. (2006): "Too Far To Go On? Distance to School and University Participation", *Education Economics*, 14 (1), pp. 31-58.

Gibbons, S. and Anna Vignole (2009): "*Access, Choice and Participation in Higher Education*", CEEDP101. Centre for the Economics of Education, London School of Economics. Houghton Street, London WC2A 2AE. Retrieved from https://files.eric.ed.gov/fulltext/ED530038.pdf

Hallak, Jacques (1977): *Planning the Location of Schools: An instrument of Policy*. Paris: IIEP.

Hirschman, A. O. (1958): *The Strategy of Economic Development*. New Haven: Yale University Press.

Hussain, I., S. McNally and S. Telhaj (2009): "*University Quality and Graduate Wages in the UK*". Centre for the Economics of Education, London School of Economics. Houghton Street, London WC2A 2AE. Retrieved from http://cee.lse.ac.uk/ceedps/ceedp99.pdf

Ministry of Human Resource Development (MHRD) (2005): *Report of the Central Advisory Board of Education (CABE) Committee on Autonomy of Higher Education Institutions*, Department of Secondary and Higher Education. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2012a): *All India Survey of Higher Education 2010-11*, Department of Higher Education. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2013): *All India Survey of Higher Education 2011-12, Department of Higher Education*. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2014): *Educational Statistics at a Glance*. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2015): *Educational Statistics at a Glance*. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2016): *Educational Statistics at a Glance*. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2017): *Educational Statistics at a Glance*. New Delhi: Government of India.

Ministry of Human Resource Development (MHRD) (2017a): *All India Survey of Higher Education 2015-16*, Department of Higher Education. New Delhi: Government of India.

Myrdal, G. (1957): *Economic Theory and Under-developed Regions*. London: Gerald Duckworth.

Perroux, F. (1970): "Note on the Concept of Growth Poles", in D.L.McKee, R.D. Dean and W.H. Leahy (eds.), *Regional Economics: Theory and Practice*. New York: The Free Press, pp. 93-104.

Sinha, S. (2018): "Regional Disparities in Availability, Access and Equity in Higher Education in India", in N.V. Varghese, Nidhi S. Sabharwal and C.M. Malish (eds.), *India Higher Education Report 2016: Equity*. New Delhi: Sage Publications India Pvt. Ltd., pp. 131-168.

Spiess, C.K. and K. Wrohlich (2008): "Does Distance Determine Who Attends a University in Germany?" IZA Discussion Paper No. 3615.

Spiezia, V. (2003): "Measuring Regional Economies", Statistics Brief-6, Organisation for Economic Co-operation and Development (OECD).

The Task Force on Higher Education and Society (2000): *Higher Education in Developing Countries: Peril and Promise*. Washington: The World Bank.

Varghese, N.V. (1997): "School Mapping- Module 8", in N.V.Varghese (ed.), *Modules on District Planning in Education*. New Delhi: National Institute of Educational Planning and Administration.

Varghese, N.V. (2013): "Private Higher Education: The Global Surge and Indian Concerns", in *India Infrastructure Report 2012: Private Sector in Education*. London and New Delhi: Routledge Taylor and Francis Group (IDFC), pp. 145-156.

Varghese, N.V. (2015): "Challenges of Massification of Higher Education in India", *CPRHE Research Paper 1*, Centre for Policy Research in Higher Education. New Delhi: National University of Educational Planning and Administration.

Varghese, N.V., J. Panigrahi and A. Rohatgi (2017): *Concentration and Undersupply of Higher and Technical Institutions in India*. CPRHE/NUEPA Research Report submitted to Ministry of Human Resource Development, Government of India, New Delhi.

Appendix

Table A.1: Correlation of Percentage of Urban Population and GER

States	Percentage of Urban Population and GER
Andhra Pradesh	0.863**
Arunachal Pradesh	0.636**
Assam	0.765**
Bihar	0.670**
Chhattisgarh	0.741**
Gujarat	0.464*
Haryana	0.526*
Himachal Pradesh	0.163
Jammu & Kashmir	0.802**
Jharkhand	0.845**
Karnataka	0.550**
Kerala	0.124
Madhya Pradesh	0.859**
Maharashtra	0.576**
Manipur	0.096
Meghalaya	0.862*
Mizoram	0.907**
Nagaland	0.869**
NCT of Delhi	0.114
Odisha	0.722**
Puducherry	0.112
Punjab	0.628**
Rajasthan	0.566**
Tamil Nadu	0.540**
Tripura	0.986*
Uttar Pradesh	0.410**
Uttarakhand	0.327
West Bengal	0.861**

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.05 level (2-tailed)

Source: Authors' estimations

Table A.2: Correlation of Overall Literacy with CR, GER, and Percentage of Urban Population

Overall Literacy is Positively Correlated with			
States	**Concentration Ratio**	**GER**	**Percentage of Urban Population**
Andhra Pradesh	0.743**	0.601**	0.758**
Arunachal Pradesh	0.461	.728**	0.708**
Assam	0.645**	0.616**	0.575**
Bihar	0.241	.849**	0.431**
Chhattisgarh	0.121	0.874**	0.431
Gujarat	0.430*	0.669**	0.620**
Haryana	0.468*	0.915**	0.649**
Himachal Pradesh	0.608*	0.770**	0.062
Jammu & Kashmir	0.16	0.311	0.404
Jharkhand	0.640**	0.844**	0.749**
Karnataka	0.568**	0.662**	0.534**
Kerala	0.607*	0.795**	0.459
Madhya Pradesh	0.455**	0.670**	0.569**
Maharashtra	0.186	0.707**	0.531**
Manipur	0.56	0.494	0.596
Meghalaya	0.453	0.434	0.722
Mizoram	-0.003	0.711*	0.740*
Nagaland	0.445	0.731*	0.505
NCT of Delhi	-0.04	0.822**	0.088
Odisha	-0.093	0.712**	0.315
Puducherry	0.861	0.937	0.144
Punjab	0.396	0.793**	0.421
Rajasthan	0.649**	0.882**	0.701**
Tamil Nadu	0.365*	0.444*	0.696**
Tripura	0.423	0.72	0.826
Uttar Pradesh	0.508**	0.804**	0.453**
Uttarakhand	0.026	0.713**	0.05
West Bengal	-0.106	0.563*	0.622**

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at 0.05 level (2-tailed)

Source: Authors' estimations

Note: However for some of the States or UTs, the correlation was not calculated because of non-availability of data on all variables. These States or UTs are Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Goa, Lakshadweep, and Sikkim and for few of the States no significant correlation was found at 0.01 and 0.05 level. These States are Jammu & Kashmir, Manipur, Meghalaya, Puducherry, and Tripura.

Table A.3: Correlation of Female Literacy with CR, GER, and Percentage of Urban Population

Female Literacy is Positively Correlated with			
States	**Concentration Ratio**	**GER**	**Percentage of Urban Population**
Andhra Pradesh	0.711**	0.523*	0.711**
Arunachal Pradesh	0.491	0.798**	0.693**
Assam	0.675**	0.620**	0.623**
Bihar	0.201	0.745**	0.491**
Chhattisgarh	0.136	0.870**	0.445
Gujarat	0.403*	0.683**	0.656**
Haryana	0.475*	0.856**	0.698**
Himachal Pradesh	0.618*	0.756**	0.077
Jammu & Kashmir	0.164	0.381	0.492*
Jharkhand	0.569**	0.868**	0.769**
Karnataka	0.550**	0.671**	0.546**
Kerala	0.596*	0.814**	0.421
Madhya Pradesh	0.479**	0.733**	0.633**
Maharashtra	0.189	0.754**	0.597**
Manipur	0.514	0.631	0.441
Meghalaya	0.465	0.479	0.714
Mizoram	-0.004	0.718*	0.755*
Nagaland	0.404	0.719*	0.506
NCT of Delhi	-0.018	0.712*	0.289
Odisha	-0.078	0.740**	0.343
Puducherry	0.936	0.889	0.315
Punjab	0.319	.777**	0.36
Rajasthan	0.689**	0.849**	0.746**
Tamil Nadu	0.390*	0.469**	0.723**
Tripura	0.53	0.684	0.791
Uttar Pradesh	0.511**	0.807**	0.534**
Uttarakhand	0.074	0.714**	0.421
West Bengal	-0.296	0.580**	0.681**

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at 0.05 level (2-tailed)

Source: Authors' estimations

Table A.4: Correlation between Concentration Ratio, Age group population/ number of HEI, Average Size, GER, and Percentage of Urban Population

Andhra Pradesh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.684**	1			
GER	.595**	.147	1		
Age Group Population/ No. of HE Institutions	-.935**	.815**	-.417**	1	
Percentage of Urban Population	.619**	.024	.863**	-.404	1

Arunachal Pradesh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.563	1			
GER	.505	.125	1		
Age Group Population/ No. of HE Institutions	-.596	.618	-.512	1	
Percentage of Urban Population	.521	-.453	.636**	-.536	1

Assam					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.545**	1			
GER	.856**	-.077	1		
Age Group Population/ No. of HE Institutions	-.815**	.792**	-.549**	1	
Percentage of Urban Population	.808**	-.314	.765**	-.475*	1

Bihar					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.636**	1			
GER	.329*	.340*	1		
Age Group Population/ No. of HE Institutions	-.836**	.729**	-.260	1	
Percentage of Urban Population	0.71	.353*	.670**	-.034	1

Chhattisgarh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.738**	1			
GER	.184	.394	1		
Age Group Population/ No. of HE Institutions	-.880**	.575*	-.444	1	
Percentage of Urban Population	.245	.264	.741**	-.252	1

Gujarat					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.716**	1			
GER	.310	.254	1		
Age Group Population/ No. of HE Institutions	-.874**	.798**	-.331	1	
Percentage of Urban Population	.237	-.020	.464*	-.348	1

Haryana					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.615**	1			
GER	.391	.446*	1		
Age Group Population/ No. of HE Institutions	-.953**	.565**	-.461*	1	
Percentage of Urban Population	.234	.183	.526*	-.312	1

Himachal Pradesh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.767**	1			
GER	.715**	-.239	1		
Age Group Population/ No. of HE Institutions	-.855**	.894**	-.603*	1	
Percentage of Urban Population	-.007	.000	.163	-.108	1

Jammu & Kashmir					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.545*	1			
GER	.462*	.061	1		
Age Group Population/ No. of HE Institutions	-.596**	.979**	-.215	1	
Percentage of Urban Population	.194	-.045	.802**	-.262	1

Jharkhand					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.788**	1			
GER	.666**	-.188	1		
Age Group Population/ No. of HE Institutions	-.886**	.792**	-.643**	1	
Percentage of Urban Population	.618**	-.242	.845**	-.530**	1

Karnataka					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.757**	1			
GER	.386*	.260	1		
Age Group Population/ No. of HE Institutions	-.948**	.775**	-.390*	1	
Percentage of Urban Population	.313	-.006	.550**	-.331	1

Kerala					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.730**	1			
GER	.671**	-.041	1		
Age Group Population/ No. of HE Institutions	-.940**	.707**	-.705**	1	
Percentage of Urban Population	.353	-.258	.124	-.326	1

Madhya Pradesh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.553**	1			
GER	.650**	.061	1		
Age Group Population/ No. of HE Institutions	-.730**	.816**	-.416**	1	
Percentage of Urban Population	.696**	-.115	.859**	-.468**	1

Maharashtra					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.732**	1			
GER	.264	.277	1		
Age Group Population/ No. of HE Institutions	-.866**	.938**	-.045	1	
Percentage of Urban Population	-.010	.485**	.576**	.279	1

Manipur					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.676*	1			
GER	.354	.241	1		
Age Group Population/ No. of HE Institutions	-.723*	.906**	-.115	1	
Percentage of Urban Population	.787*	-.516	.096	-.470	1

Meghalaya					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.711	1			
GER	.960**	-.608	1		
Age Group Population/ No. of HE Institutions	-.777*	.940**	-.766*	1	
Percentage of Urban Population	.930**	-.480	.862*	-.510	1

Mizoram					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.728*	1			
GER	.199	.229	1		
Age Group Population/ No. of HE Institutions	-.796*	.814*	-.364	1	
Percentage of Urban Population	.101	.466	.907**	-.066	1

Nagaland					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.668*	1			
GER	.815**	-.210	1		
Age Group Population/ No. of HE Institutions	-.678*	.677*	-.625*	1	
Percentage of Urban Population	.746**	-.243	.869**	-.456	1

NCT of Delhi					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.853*	1			
GER	-.087	.246	1		
Age Group Population/ No. of HE Institutions	-.843*	.993**	.144	1	
Percentage of Urban Population	.256	.062	.114	.107	1

Odisha					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.597**	1			
GER	-.023	.721**	1		
Age Group Population/ No. of HE Institutions	-.890**	.482**	-.127	1	
Percentage of Urban Population	.066	.429*	.722**	-.157	1

Puducherry					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.840	1			
GER	.785	-.337	1		
Age Group Population/ No. of HE Institutions	-.980*	.894	-.719	1	
Percentage of Urban Population	.627	-.920	.112	-.751	1

Punjab					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.779**	1			
GER	.207	.223	1		
Age Group Population/ No. of HE Institutions	-.884**	.868**	-.274	1	
Percentage of Urban Population	.080	.123	.628**	-.211	1

Rajasthan					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.529**	1			
GER	.760**	.105	1		
Age Group Population/ No. of HE Institutions	-.780**	.484**	-.661**	1	
Percentage of Urban Population	.434*	.012	.566**	-.474**	1

Tamil Nadu					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.783**	1			
GER	.665**	-.141	1		
Age Group Population/ No. of HE Institutions	-.930**	.829**	-.637**	1	
Percentage of Urban Population	.442*	-.117	.540**	-.405*	1

Tripura					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.936	1			
GER	.704	-.414	1		
Age Group Population/ No. of HE Institutions	-.981*	.985*	-.564	1	
Percentage of Urban Population	.667	-.387	.986*	-.537	1

Uttar Pradesh					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.924**	1			
GER	.063	.071	1		
Age Group Population/ No. of HE Institutions	-.931**	.959**	-.189	1	
Percentage of Urban Population	.241	-.231	.327	-.278	1

Uttarakhand					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.507**	1			
GER	.491**	-.093	1		
Age Group Population/ No. of HE Institutions	-.500**	.941**	-.344**	1	
Percentage of Urban Population	.422**	-.194	.410**	-.221	1

West Bengal					
Variables	**Concentration Ratio**	**Average Size**	**GER**	**Age Group Population/ No. of HE Institutions**	**Percentage of Urban Population**
Concentration Ratio	1				
Average Size	-.662**	1			
GER	.123	.248	1		
Age Group Population/ No. of HE Institutions	-.704**	.810**	-.335	1	
Percentage of Urban Population	-.046	.289	.861**	-.249	1

Source: Authors' estimations

Table A.5: More Enrolment and Open Institutions based on Concentration Ratio

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
Andaman & Nicobar Islands		North & Middle Andaman	South Andaman			
Andhra Pradesh	Adilabad, Anantpur, Karimnagar, Khammam, Krishna, Kurnool, Mahbubnagar, Medak, Nalgonda, Nizamabad, Visakhapatnam	Prakasam, Srikakulam	Hyderabad, Warangal	Chittoor, East Godavari, Guntur, Rangareddy, Sri Potti Sriramulu Nellore, Vizianagaram, West Godavari, Y.S.R		
Arunachal Pradesh	Changlang, Lohit	Lower, Subansiri, Tirap, West Kameng		West Siang		East Siang, Papum Pare
Assam	Baksa, Chirang, Darrang, Dhubri, Goalpara, Hailakandi, Kamrup, Karbi Anglong, Kokrajhar, Sonitpur, Udalguri	Bongaigaon, Cachar, Karimganj, Morigaon, Tinsukia	Nalbari	Barpeta, Dhemaji, Dibrugarh, Dima Hasao, Golaghat, Jorhat, Lakhimpur, Nagaon, Sivasagar		Kamrup Metropolitan
Bihar	Araria, Aurangabad, Banka, Begusarai, Bhagalpur, Bhojpur, Buxar, Gaya, Jamui, Khagaria, Lakhisarai, Nawada, Purba Champaran, Saharsa, Sheikhpura, Vaishali	Kishanganj, Pashchim Champaran, Sitamarhi, Supaul	Arwal, Kaimur (Bhabua), Munger, Patna, Rohtas	Darbhanga, Gopalganj, Katihar, Madhepura, Madhubani, Nalanda, Purnia, Samastipur, Saran, Siwan		Jehanabad, Muzaffarpur
Chhattisgarh	Janjgir Champa, Kabeerdham, Korba, Koriya, Mahasamund, Narayanpur, Raigarh, Uttar	Bastar, Dakshin Bastar Dantewada, Jashpur, Surguja	Bilaspur, Dhamtari, Drug	Bijapur, Raipur, Rajnandgaon		

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
	Bastar Kanker					
Daman & Diu				Daman		
Goa	South Goa			North Goa		
Gujarat	Ahmadabad, Banas Kantha, Bharuch, Dohad, Narmada, Navsari, Panch Mahals, Patan, Surat, Tapi, Valsad	Surendranagar	Gandhinagar, Mahesana,	Amreli, Bhavnagar, Junagadh, Kachchh, Kheda, Porbandar, Rajkot, Sabar Kantha, The Dangs, Vadodara		Anand, Jamnagar
Haryana	Bhiwani, Fatehabad, Gurgaon, Hisar, Jind, Kaithal, Karnal, Panchkula, Rewari	Mewat, Palwal, Sirsa	Faridabad, Sonipat	Ambala, Jhajjar, Kurukshetra, Mahendragarh, Panipat, Rohtak, Yamunanagar		
Himachal Pradesh	Bilaspur, Kinnaur, Kullu, Lahul & Spiti, Mandi, Shimla, Sirmaur	Chamba		Hamirpur, Kangra, Solan, Una		
Jammu & Kashmir	Anantnag, Ganderbal, Kargil, Kishtwar, Kulgam, Kupwara, Punch, Shupiyan	Doda, Rajouri, Ramban, Udhampur	Jammu	Badgam, Bandipore, Kathua, Leh (Ladakh), Reasi, Samba		Baramula, Pulwama
Jharkhand	Chatra, Giridih, Godda, Gumla, Khunti, Latehar, Lohardaga, Pakur, Palamu, Pashchimi Singhbhum, Sahibganj, Saraikela-Kharswana, Simdega	Deoghar, Jamtara	Purbi Singhbhum, Ranchi	Bokaro, Dhanbad, Dumka, Garhwa, Hazaribagh, Kodarma, Ramgarh		

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
Karnataka	Bangalore Rural, Bellary, Bijapur, Chamarajanagar, Chikkaballapura, Chitradurga, Dharwad, Gulbarga, Hassan, Kodagu, Raichur, Tumkur	Belgaum, Bidar, Haveri, Yadgir	Bangalore, Mysore	Bagalkot, Chikmagalur, Dakshina Kannada, Davanagere, Gadag, Kolar, Koppal, Mandya, Ramanagara, Shimoga, Udupi, Uttara Kannada		
Kerala	Alappuzha, Idukki, Kollam, Kozhikode, Malappuram, Thiruvananthapuram, Wayanad	Kasaragod, Palakkad	Kottayam, Pathanamthitta	Ernakulam, Kannur, Thrissur		
Madhya Pradesh	Anuppur, Balaghat, Barwani, Betul, Chhatarpur, Chhindwara, Dewas, Dhar, Dindori, Harda, Jhabua, Katni, Khandwa (East Nimar), Khargone (West Nimar), Mandla, Morena, Panna, Ratlam, Satna, Seoni, Shahdol, Sheopur, Shivpuri, Sidhi, Singrauli, Umaria	Alirajpur, Burhanpur, Damoh, Mandsaur, Neemuch, Rajgarh, Shajapur, Tikamgarh	Bhind, Gwalior, Hoshangabad Jabalpur, Rewa	Ashoknagar, Datia, Guna, Indore, Narsimhapur, Raisen, Sagar, Sehore, Ujjaim, Vidisha		Bhopal
Maharashtra	Ahmadnagar, Akola, Bid, Gadchiroli, Gondiya, Hingoli, Jalgaon, Latur, Mumbai, Mumbai Suburban, Nandurbar, Nashik, Osmanabad, Raigarh, Ratnagiri, Thane, Yavatmal	Sindhudurg	Satara	Amravati, Aurangabad, Bhandara, Buldana, Chandrapur, Dhule, Jalna, Kolhapur, Nagpur, Nanded, Parbhani, Pune, Sangli, Solapur, Wardha, Washim		

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
Manipur	Chandel, Churachandpur, Senapati, Tamenglong, Thoubal, Ukhrul			Bishnupur, Imphal East		Imphal West
Meghalaya	East Garo Hills, Jaintia Hills, Ribhoi, South Garo Hills, West Garo Hills, West Khasi Hills					East Khasi Hills
Mizoram	Champhai, Kolasib, Lunglei, Serchhip	Lawngtlai, Mamit	Aizawl			Saiha
Nagaland	Mokokchung, Mon, Peren, Tuensang, Wokha, Zunheboto	Longleng	Dimapur	Kiphire, Phek		Kohima
NCT of Delhi	South West, West			North East, North West, South		East
Odisha	Baleshwar, Bhadrak, Cuttack, Ganjam, Jajapur, Kendrapara, Mayurbhanj, Puri, Sundargarh	Balangir, Baudh, Jharsuguda, Kalahandi, Kandhamal, Kendujhar, Malkangiri, Naupada, Rayagada	Khordha	Anugul, Bargarh, Debagarh, Dhenkanal, Gajapati, Jagatsingha-pur, Koraput, Nayagarh, Sambalpur, Subarnapur		Nabarangapur
Puducherry	Karaikal, Puducherry			Yanam		Mahe
Punjab	Faridkot, Fatehgarh Sahib, Ludhiana, Mansa, Moga, Muktsar, Rupnagar, Tam Taran	Barnala, Bathinda, Firozpur	Gurdaspur, Sahibzada Ajit Singh	Amritsar, Hoshiarpur, Jalandhar, Kapurthala, Patiala, Sangrur, Shahid Bhagat Singh Nagar		

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
Rajasthan	Banswara, Baran, Barmer, Bharatpur, Bhilwara, Bundi, Chittaurgarh, Dhaulpur, Dungarpur, Jalor, Jhalawar, Jodhpur, Karauli, Kota, Nagaur, Sawai Madhopur	Bikaner, Churu, Jaisalmer, Pali, Pratapgarh, Rajsamand, Sirohi	Alwar, Dausa	Ajmer, Ganganagar, Hanumangarh, Jaipur, Sikar, Tonk, Udaipur		Jhunjhunun
Sikkim	South District			East District		
Tamil Nadu	Ariyalur, Chennai, Cuddalore, Dindigul, Karur, Krishnagiri, Nagapattinam, Ramanatha-puram, Salem, The Nilgiris, Theni, Thiruvallur, Thiruvarur, Tirunelveli, Tiruppur, Tiruvannamalai, Vellore, Viluppuram, Virudhunagar	Dharmapuri, Pudukkottai	Perambalur	Erode, Kancheepuram, Kanniyakumari, Madhurai, Namakkal, Sivaganga, Thanjavur, Thoothukkudi, Tiruchiraopalli		Coimbatore
Tripura	Dhalai	North Tripura	West Tripura	South Tripura		
Uttar Pradesh	Aligarh, Baghpat, Bahraich, Ballia, Balrampur, Banda, Basti, Bijnor, Bulandshahr, Chandauli, Chitrakoot, Deoria, Etawah, Faizabad, Firozabad, Gonda, Jaunpur, Jyotiba Phule Nagar, Kheri, Kushinagar, Mahamaya Nagar, Mahoba, Mau, Muzaffarnagar, Pilibhit, Pratapgarh, Rampur, Saharanpur,	Bara Banki, Bareilly, Budaun, Fatehpur, Hardoi, Kanshiram Nagar, Lalitpur, Moradabad, Sitapur	Allahabad, Ambedkar Nagar, Auraiya, Azamgarh, Farrukhabad, Ghazipur, Gorakhpur, Kanpur Nagar	Agra, Etah, Gautam Buddha Nagar, Ghaziabad, Hamirpur, Jalaun, Jhansi, Kanpur Dehat, Mahrajganj, Mainpuri, Mathura, Meerut, Mirzapur, Rae Bareli, Sant Kabir Nagar, Sant Ravidas Nagar (Bhadohi), Shahjahanpu, Sonbhadra, Unnao, Varanasi		Kannauj, Kaushambi, Lucknow

States	Low		Moderate		High	
	Open Institutions	More Enrollment	Open Institutions	More Enrollment	Open Institutions	More Enrollment
	Shrawasti, Siddharthnagar, Sultanpur					
Uttarakhand	Almora, Bageshwar, Nainital, Pithoragarh, Rudraprayag, Udham Singh Nagar, Uttarkashi		Dehradun	Chamoli, Champawat, Garhwal, Hardwar, Tehri Garhwal		
West Bengal	Haora, Jalpaiguri, Koch Bihar, Maldah, Murshidbad, Nadia, North Twenty Four Parganas, Purba Medinipur, Uttar Dinajpur	Birbhum	Darjiling, Hugli, Kolkata	Bankura, Barddhaman, Dakshin Dinajpur, Paschim Medinipur, South 24 Parganas		Puruliya

Table A.6: Concentration Ratio based on the Type of HEIs (General and Technical Institutions)

States	Low		Moderate		High	
	General Institutions	Technical Institutions	General Institutions	Technical Institutions	General Institutions	Technical Institutions
Andaman & Nicobar Island	South Andaman			South Andaman	North & Middle Andaman	
Andhra Pradesh	Anantapur, Khammam, Krishna, Kurnool, Mahbubnagar, Medak, Nalgonda, Nizamabad, Prakasam, Rangareddy, Visakhapatnam, Y.S.R	Adilabad, Anantapur, Karimnagar, Khammam, Krishna, Kurnool, Mahbubnagar, Medak, Nalgonda, Nizamabad, Srikakulam, Visakhapatnam, Warangal	Adilabad, Chittoor, East Godavari, Guntur, Karimnagar, Sri Potti Sriramulu Nellore, Srikakulam, Vizianagaram, Warangal, West Godavari	Chittoor, East Godavari, Guntur, Hyderabad, Prakasam, Sri Potti Sriramulu Nellore, Vizianagaram, West Godavari, Y.S.R	Hyderabad	Rangareddy
Arunachal Pradesh	Changlang, Lohit, Lower Subansiri, Tirap, West Kameng		West Siang	West Siang	East Siang, Papum Pare	Papum pare
Assam	Baska, Bongaigaon, Cachar, Chirang, Darrang, Dhubri, Goalpara, Golaghat, Hailakandi, Kamrup, Karbi Anglong, Karimganj, Kokrajhar, Morigaon, Sonitpur, Tinsukia, Udalguri	Barpeta, Darrang, Kamrup, Karimganj, Nagaon, Sonitpur	Barpeta, Dhemaji, Dibrugarh, Dima Hasao, Jorhat, Lakhimpur, Nagaon, Nalbari, Sivasagar	Kokrajhar	Kamrup Metro-politan	Bongaigaon, Cachar, Dibrugarh, Golaghat, Jorhat, Kamrup Metro-politan, Karbi Anglong
Bihar	Araria, Aurangabad, Banka, Begusarai, Bhagalpur, Bhojpur, Buxar, Gaya, Jamui, Katihar, Khagaria, Kishanganj, Lakhisarai,	Araria, Aurangabad, Banka, Begusarai, Bhagalpur, Darbhanga, Gaya, Jehanabad, Lakhisarai, Madhepura, Madhubani,	Arwal, Darbhanga, Gopalganj, Kaimur (Bhabua), Madhepura, Madhubani, Munger, Muzaffarpur, Nalanda, Rohtas,	Bhojpur, Kishanganj, Patna	Jehanabad	Gopalganj, Kaimur (Bhabua), Muzaffarpur, Purnia

	Nawada, Pashchim Champaran, Patna, Purba Champaran, Purnia, Saharsa, Sheikhpura, Sitamarhi, Supaul, Vaishali	Munger, Nalanda, Nawada, Pashchim Champaran, Purba Champaran, Rohtas, Saharsa, Saran, Sitamarhi, Siwan, Supaul, Vaishali	Samastipur, Saran, Siwan			
Chhattisgarh	Dakshin Bastar Dantewada, Kabeerdham, Korba, Koriya, Mahasamund, Narayanpur, Raigarh, Rajnandgaon, Surguja, Uttar Bastar Kanker	Bastar, Bilaspur, Dhamtari, Janjgir Champa, Jashpur, Kabeerdham, Mahasamund, Raigarh, Surguja	Bastar, Bijapur, Bilaspur, Dhamtari, Durg, Janjgir Champa, Jashpur, Raipur	Durg, Korba, Raipur		Bijapur, Rajnandgaon
Daman & Diu			Daman	Daman		
Goa	South Goa	South Goa	North Goa	North Goa		
Gujarat	Ahmedabad, Banaskantha, Bharuch, Dohad, Gandhinagar, Mehsana, Narmada, Navsari, Panchmahals, Patan, Surat, Surendranagar, Tapi, Valsad	Ahmedabad, Banaskantha, Bhavnagar, Dohad, Jamnagar, Junagadh, Kachchh, Kheda, Navsari, Panchmahals, Patan, Porbandar, Surendranagar, Tapi, The Dangs, Valsad	Amreli, Bhavnagar, Junagadh, Kachchh, Kheda, Porbandar, Rajkot, Sabarkantha, The Dangs, Vadodara	Amreli, Anand, Bharuch, Rajkot, Sabarkantha, Surat, Vadodara	Anand, Jamnagar	Gandhinagar Mehsana
Haryana	Faridabad, Fatehabad, Gurgaon, Hisar, Jind, Karnal, Mahendragarh, Mewat, Palwal, Panchkula, Panipat	Bhiwani, Fatehabad, Gurgaon, Hisar, Jind, Kaithal, Mewat, Panchkula, Rewari, Sirsa	Ambala, Bhiwani, Jhajjar, Kaithal, Kurukshetra, Rewari, Rohtak, Sirsa, Sonipat, Yamuna-nagar	Ambala, Faridabad, Jhajjar, Karnal, Kurukshetra, Mahendra-garh, Palwal, Panipat, Rohtak, Sonipat, Yamunanagar		

Himachal Pradesh	Bilaspur, Kinnaur, Kullu, Mandi, Sirmaur, Solan	Bilaspur, Chamba, Mandi, Shimla, Sirmaur	Chamba, Hamirpur, Kangra, Lahaul & Spiti, Shimla, Una	Kangra, Solan, Una		Hamirpur
Jammu & Kashmir	Anantnag, Doda, Ganderbal, Jammu, Kargil, Kathua, Kishtwar, Kulgam, Kupwara, Punch, Rajouri, Ramban, Reasi, Shupiyan, Udhampur	Badgam	Badgam, Bandipore, Leh (Ladakh), Samba	Baramula, Ganderbal, Reasi, Samba	Baramula, Pulwama,	Jammu, Kathua, Leh (Ladakh), Rajouri
Jharkhand	Chatra, Deoghar, Giridih, Godda, Gumla, Hazaribagh, Khunti, Latehar, Lohardaga, Pakur, Palamau, Paschimi Singhbhum, Sahibganj, Saraikela Kharswana, Simdega	Bokaro, Dumka, Garhwa, Latehar, Palamu, Purbi Singhbhum, Ramgarh	Bokaro, Dhanbad, Dumka, Jamtara, Kodarma, Purbi Singhbhum, Ramgarh, Ranchi	Deoghar, Hazaribagh, Kodarma, Saraikela-Kharswana	Garhwa	Dhanbad, Ranchi
Karnataka	Bangalore, Bellary, Bijapur, Chamaraja-nagar Chikkaballapura Chitradurga, Davanagere, Dharwad, Gulbarga, Hassan, Kolar, Raichur, Tumkur	Bagalkot, Bangalore Rural, Belgaum, Bellary, Bidar, Bijapur, Chamarajanagar, Chikkaballapur, Chikmagalur, Chitradurg, Gadag, Gulbarga, Hassan, Haveri, Kodagu, Mysore, Raichur, Ramanagara, Tumkur, Udupi, Uttara Kannada, Yadgir	Bagalkot, Bangalore Rural, Belgaum, Bidar, Chikmagalur, Dakshina Kannada, Gadag, Haveri, Kodagu, Koppal, Mandya, Mysore, Ramanagara, Shimoga, Udupi, Uttara Kannada, Yadgir	Bangalore, Dakshina Kannada, Davanagere, Dharwad, Kolar, Koppal, Mandya, Shimoga		

Kerala	Alappuzha, Idukki, Kasaragod, Kollam, Malappuram, Palakkad, Pathanamthitta Thiruvananthapuram, Wayanad	Kannur, Kasaragod, Kozhikode, Malappuram, Palakkad, Wayanad	Ernakulam, Kannur, Kottayam, Kozhikode, Thrissur	Alappuzha, Idukki, Kollam, Kottayam, Thiruvananthapuram, Thrissur		Ernakulam, Pathanamthit-ta
Madhya Pradesh	Alirajpur, Anuppur, Balaghat, Barwani, Burhanpur, Chhatarpura, Chhindwara, Damoh, Dewas, Dhar, Dindori, Harda, Indore, Jhabua, Katni, Khandwa (East Nimar), Khargone (West Nimar), Mandla, Morena, Panna, Ratlam, Seoni, Sheopur, Shivpuri, Sidhi, Singrauli, Umaria	Alirajpur, Anuppur, Balaghat, Barwani, Betul, Bhind, Chhatarpur, Chhindwara, Damoh, Dewas, Dhar, Dindori, Guna, Gwalior, Harda, Hoshangabad, Jabalpur, Jhabua, Katni, Khandwa (East Nimar), Khargone (West Nimar), Mandla, Mandsaur, Morena, Narsimhapur, Neemuch, Panna, Raisen, Rajgarh, Ratlam, Rewa, Sagar, Satna, Sehore, Seoni, Shahdol, Shajapur, Sheopur, Shivpuri, Sidhi, Singrauli, Tikamgarh, Umaria, Vidisha	Ashoknagar, Betul, Bhind, Datia, Gwalior, Hoshang-abad, Jabalpur, Mandsaur, Narsimhapur, Neemuch, Raisen, Rajgarh, Rewa, Sagar, Satna, Sehore, Shahdol, Shajapur, Tikamgarh, Ujjain, Vidisha	Burhanpur, Datia, Ujjain	Bhopal, Guna	Ashoknagar, Bhopal, Indore
Maharashtra	Ahmadnagar, Bid, Gadchiroli, Gondiya, Hingoli, Jalgaon, Jalna, Latur, Mumbai, Mumbai Suburban, Nandurbar, Nashik,	Ahmadnagar, Akola, Bhandara, Bid, Buldana, Dhule, Gadchiroli, Gondiya, Hingoli, Jalgaon, Latur, Mumbai, Mumbai Suburban,	Akola, Aurangabad, Bhandara, Buldana, Chandrapur, Dhule, Kolhapur, Nagpur, Nanded, Parbhani,	Amravati, Aurangabad, Chandrapur, Jalna, Kolhapur, Nagpur, Pune, Raigarh, Satara, Sindhudurg, Washim	Amravati	Solapur, Wardha

	Osmanabad, Raigarh, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal	Nanded, Nandurbar, Nashik, Osmanabad, Parbhani, Ratnagiri, Sangli, Thane, Yavatmal	Pune, Sangli, Solapur, Wardha, Washim			
Manipur	Chandel, Churachandpur, Senapati, Tamenglong, Thoubal, Ukhrul		Bishnupur, Imphal East	Imphal East	Imphal West	Imphal West
Meghalaya	East Garo Hills, Jaintia Hills, Ribhoi, South Garo Hills, West Garo Hills, West Khasi Hills			East Khasi Hills, Jaintia Hills, West Garo Hills	East Khasi Hills	
Mizoram	Champhai, Kolasib, Mamit, Serchhip	Aizawl	Aizawl, Lawngtlai, Lunglei, Saiha			Saiha
Nagaland	Longleng, Mokokchung, Mon, Peren, Tuensang, Wokha, Zunheboto		Dimapur, Kiphire, Phek	Kohima, Mokokchung	Kohima	Dimapur, Zunheboto
NCT of Delhi	South West	South, South West, West	North East, North West, South	East, North East, North West	East	
Odisha	Balangir, Baleshwar, Baudh, Bhadrak, Cuttack, Dhenkanal, Ganjam, Jajapur, Kandhamal, Kendrapara, Malkangiri, Mayurbhanj, Nayagarh, Nuapada, Puri, Rayagada, Subarnapur, Sundargarh	Balangir, Baleshwar, Bargarh, Bhadrak, Cuttack, Jagatsinghapur, Jharsuguda, Kalahandi, Kendrapara, Kendujhar, Malkangiri, Nabarangapur, Nuapada, Puri, Sambalpur	Anugul, Bargarh, Debagarh, Gajapati, Jagatsingh-apur, Jharsuguda, Kalahandi, Kendujhar, Khordha, Koraput, Sambalpur	Anugul, Baudh, Debagarh, Dhenkanal, Gajapati, Ganjam, Jajapur, Koraput, Mayurbhanj, Rayagada, Sundargarh	Nabaran-gapur	Khordha, Nayagarh, Subarnapur
Puducherry	Karaikal, Yanam	Karaikal, Puducherry	Puducherry	Yanam	Mahe	Mahe

Punjab	Barnala, Bathinda, Faridkot, Fatehgarh Sahib, Firozpur, Ludhiana, Mansa, Moga, Muktsar, Rupnagar, Sahibzada Ajit Singh Nagar, Tarn Taran	Amritsar, Barnala, Firozpur, Gurdaspur, Kapurthala, Ludhiana, Mansa, Moga, Patiala, Tarn Taran	Amritsar, Gurdaspur, Hoshiarpur, Jalandhar, Patiala, Sangrur, Shahid Bhagat Singh Nagar	Bathinda, Faridkot, Fatehgarh Sahib, Hoshiarpur, Jalandhar, Muktsar, Rupnagar, Sangrur	Kapurthala	Sahibzada Ajit Singh Nagar, Shahid Bhagat Singh Nagar
Rajasthan	Alwar, Banswara, Baran, Barmer, Bhilwara, Bikaner, Bundi, Chittaurgarh, Dhaulpur, Dungarpur, Jaisalmer, Jalor, Jhalawar, Jodhpur, Karauli, Kota, Nagaur, Pali, Pratapgarh, Rajsamand, Sawai Madhopur, Sirohi, Udaipur	Banswara, Baran, Barmer, Bharatpur, Bhilwara, Bundi, Chittaurgarh, Churu, Dausa, Dhaulpur, Dungarpur, Hanumangarh, Jaisalmer, Jalor, Jhalawar, Jodhpur, Karauli, Nagaur, Pali, Pratapgarh, Rajsamand, Sawai Madhopur, Tonk	Ajmer, Bharatpur, Churu, Dausa, Ganganagar, Hanuma-ngarh, Jaipur, Sikar, Tonk	Ajmer, Alwar, Bikaner, Ganganagar, Jhunjhunu, Kota, Sikar, Sirohi, Udaipur	Jhunjhunu	Jaipur
Sikkim	South District	South District	East District	East District		
Tamil Nadu	Ariyalur, Cuddalore, Dharmapuri, Dindigul, Erode, Kancheepuram, Krishnagiri, Nagapattinam, Pudukkottai, Ramanatha-puram, Salem, The Nilgiris, Theni, Thiruvallur, Thiruvarur, Tirunelveli, Tiruppur, Tiruvannamalai, Vellore, Viluppuram	Ariyalur, Chennai, Cuddalore, Dharmapuri, Dindigul, Karur, Krishnagiri, Nagapattinam, Perambular, Ramanatha-puram, Salem, Thanjavur, The Nilgiris, Theni, Thiruvarur, Thoothukkudi, Tirunelveli, Tiruppur, Tiruvannamalai, Vellore, Viluppuram, Virudhunagar	Chennai, Kanniya-kumari, Karur, Madurai, Namakkal, Perambalur, Sivaganga, Thanjavur, Thoothukkudi, Tiruchirappalli Virudhunagar	Erode, Madurai, Namakkal, Pudukkottai, Sivaganga, Thiruvallur, Tiruchirappalli	Coimbatore	Coimbatore, Kanchee-puram, Kanniya-kumari

Tripura	Dhalai	Dhalai	North Tripura, South Tripura, West Tripura	West Tripura		
Uttar Pradesh	Aligarh, Azamgarh, Baghpat, Bahraich, Ballia, Balrampur, Banda, Bara Banki, Bareilly, Basti, Bijnor, Budaun, Bulandshahr, Chandauli, Chitrakoot, Etawah, Fatehpur, Firozabad, Gautam Buddha Nagar, Gonda, Jaunpur, Jyotiba Phule Nagar, Kanshiram Nagar, Kheri, Kushinagar, Lalitpur, Mahamaya Nagar, Mahoba, Mathura, Mau, Moradabad, Muzaffarnagar, Pilibhit, Rae Bareli, Rampur, Saharanpur, Shahjahanpur, Shrawasti, Siddharthnagar, Sitapur, Sultanpur, Unnao	Aligarh, Ambedkar Nagar, Auraiya, Baghpat, Bahraich, Ballia, Banda, Bareilly, Basti, Bijnor, Budaun, Bulandshahr, Chandauli, Chitrakoot, Deoria, Etah, Etawah, Faizabad, Farrukhabad, Fatehpur, Firozabad, Ghazipur, Gonda, Gorakhpur, Hardoi, Jaunpur, Jhansi, Jyotiba Phule Nagar, Kanshiram Nagar, Kheri, Kushinagar, Mahamaya Nagar, Mahoba, Mahrajganj, Mainpuri, Mau, Mirzapur, Moradabad, Pilibhit, Pratapgarh, Rampur, Saharanpur, Sant Kabir Nagar, Sitapur, Sonbhadra, Sultanpur	Agra, Allahabad, Ambedkar Nagar, Auraiya, Deoria, Etah, Faizabad, Farrukhabad, Ghaziabad, Ghazipur, Gorakhpur, Hamirpur, Hardoi, Jalaun, Jhansi, Kannauj, Kanpur Dehat, Kanpur Nagar, Kaushambi, Mahrajganj, Mainpuri, Meerut, Mirzapur, Pratapgarh, Sant Kabir Nagar, Sant Ravidas Nagar Varanasi	Agra, Allahabad, Azamgarh, Bara Banki, Ghaziabad, Jalaun, Kanpur Dehat, Kanpur Nagar, Lalitpur, Mathura, Muzaffarna-gar, Sant Ravidas Nagar, Shahjahanpur	Lucknow, Sonbhadra	Gautam Buddha Nagar, Hamirpur, Kannuaj, Kaushambi, Lucknow, Meerut, Rae Bareli, Unnao, Varanasi

Uttarakhand	Almora, Bageshwar, Dehradun, Nainital, Pithoragarh, Rudraprayag, Udham Singh Nagar, Uttarkashi	Bageshwar, Chamoli, Champawat, Nainital, Pithoragarh, Rudraprayag, Tehri Garhwal, Udham Singh Nagar, Uttarkashi	Chamoli, Champawat, Garhwal, Hardwar, Tehri Garhwal	Almora, Dehradun, Garhwal, Hardwar		
West Bengal	Barddhaman, Birbhum, Haora, Hugli, Cooch Behar, Malda, Murshidabad, Nadia, North 24 Parganas, Purba Medinipur, Uttar Dinajpur	Birbhum, Haora, Jalpaiguri, Koch Bihar, Kolkata, Malda, Murshidabad, Nadia, North 24 Parganas, Purba Medinipur, Uttar Dinajpur	Bankura, Dakshin Dinajpur, Darjiling, Jalpaiguri, Paschim Medinipur, South 24 Parganas	Bankura, Barddhaman, Dakshin Dinajpur, Darjiling, Hugli, Paschim Medinipur, South 24 Parganas	Purulia, Kolkata	Purulia

Source: Authors' estimations

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About the paper

The expansion of higher education in India is accompanied by widening regional inequalities in its provision. Most of the higher education institutions in India used to be opened in the urban and semi-urban locations, leading to an urban-centric pattern of higher education development in the country. This paper analyses the empirical evidence on the location of technical and general higher education institutions in India and examines the extent of urban bias in higher education development. Based on the Census data and relying on a measure of concentration ratio, this paper identifies the districts with high and low concentration of higher education institutions. The analysis and the empirical evidence generated in the paper have implications for policy-makers while prioritising locations for opening of new institutions of higher education in India.

About the authors

N.V. Varghese is currently the Vice-Chancellor of NIEPA and Director of the Centre for Policy Research in Higher Education (CPRHE/NIEPA), New Delhi. Prior to joining the Centre, he was Head of Governance and Management in Education at the International Institute for Educational Planning (IIEP/UNESCO), Paris. He has published many books and several articles on issues relating to educational planning, governance, management and financing of higher education.

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