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Assessing the Association of the Urban Share with Spatial Distribution of Educational Infrastructure and Behavioral Dimensions of People to Move for Higher Education in Assam, India

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Abstract

Urbanization has always been a major driving force in human and economic development throughout history. Urbanization is also linked to human capital formation and economic growth because most of the educational infrastructure is situated and built in urban areas which act as a driving force for people to migrate from lesser developed regions to more developed regions. Educational infrastructure index has been calculated taking 18 variables into consideration for 27 districts. It is skewed in nature. As in many other states of India, Assam also has more institutions imparting general education. The districts of Kamrup Metropolitan, Dibrugarh, Nagaon and Sonitpur have better infrastructure. The highest education infrastructure index value is recorded by Kamrup Metropolitan district. One of the reasons for the disparity in infrastructure can be attributed to the disparity in the level of urbanisation, although the state itself is at the lower end of urbanisation scale. Thus, districts which are more urbanised have better educational infrastructure compared to districts which record less urban share like Baksa, Chirrang, and Udalgiri. The size of town also influences people's behavioral dimensions of decision making to move to bigger cities for their higher education.

Keywords: Urbanization, Educational infrastructure, Skill development, Behavioral Dimension.

Introduction

A city's prosperity and its economic growth depend upon the productivity of its labour force, requisite skill they possess and ability to further develop their skill. Urbanisation attracts migration of talented and skilled workers from the hinterland. Educated workers are more prone to live in larger cities and towns since returns to education are much more in urban than in rural areas (Saiz, 2004). There are positive externalities with spillover effect from urban to rural areas. The emerging perspective on urban centres is that they would be a strong knowledge economy

integrated with physical infrastructure that connects people, resources/goods, and ideas/knowledge, and skill. Because of economies of agglomeration, they attract among other things institutions and, educated and skilled labour (Yang, 2004).

Assam is one of the eight north eastern states of India. It comprises five regional divisions, with each division consisting of a number of districts. Assam is situated south of eastern Himalayas along the Barak and Brahmaputra valleys. It covers an area of 78,438 km.² The state accounts for about 2.4 per cent of the total geographical area and 2.6 per cent of the total population of the country (Census, 2011). It is bounded by Arunachal Pradesh in the east, West Bengal, Meghalaya, and Bangladesh in the west, Arunachal Pradesh and Bhutan in the north, and Nagaland, Manipur, Mizoram, and Tripura in the south. According to the 2001 census, Assam had 23 districts. Baksa, Chirang, Udalguri and Kamrup Metropolitan were created between 2001 and 2011. Thus, 2011 census reported 27 districts in Assam.

There are about 2,261 institutions, including 20 universities in Assam which offer facilities in the general educational stream essentially to the population in the age group of 16 to 29. The educational levels included in this are higher secondary, undergraduate, postgraduate, and research degrees in Arts, Science, and Commerce. Besides these, there are 63 institutions imparting higher level skills that offer professional degrees which include medical and engineering colleges.

According to (Henderson, 2003), the human capital formation indicates, “the process of acquiring and increasing the number of persons who have the skills, education and experience which are critical for the economic and the political development of the country. Human capital formation is thus associated with investment in man and his development as a creative and productive resource” (Berry, 2005). Economists, like Yang and (Schultz, 1961), among others observed that one of the important factors responsible for the rapid growth of the American economy is their increasing allocation of outlays on education resulting significant improvement in the level of human capital formation. Galbraith observed, “We now get the larger part of our industrial growth not from more capital investment but from investment in men and improvements brought about by improved men.” Unless these developed economies spread education, knowledge, know-how and raise the level of skills and physical efficiency of their people, the productivity of physical capital would have been reduced at this moment (Elgin, 2013). Education capital determines the ability of a nation to develop new technologies and adopt existing technologies, (Aghion, 2009). It improves with growing age and experience, (Jones, 2004). Therefore, it is regarded as the most crucial and significant determinant of economic growth, development, and prosperity of any nation. Since educational achievement is a function of the age distribution of the population,

often computation is done by age-specific educational level. However, some scholars have simply used the average years of schooling as an indicator of human capital (Bertinelli, 2003).

Education and human capital are important drivers of economic growth and development. Gross inequalities in distribution of human capital may be primarily attributed to underlying differences in educational attainment (Glaeser, 2005). It is assumed that urban areas foster interaction among educated people and manifest in higher returns to the investment made in education. Educated workers are presumed to reside in urban areas and in bigger cities which tend to attract people from rural reservoir of population (Lucas, 1988).

(Elgin, 2013) found that during the urbanisation process, in the early the informal sectors expand in the early stage which gradually paves the way for expansion of the formal sector, leading to urban expansion and economic growth of the region. (Yang, 2002) in rural China and (Jonasson, 2007) in rural Peru found that educational output leads to increased productivity in the non-agricultural sectors and the movement of labour from agricultural to non-agricultural activities which leads to augmentation of human capital.

The probability of rural to urban migration of less skilled labour is significant enough to bring down the urban wage rate, (Storper, 2009). But there is a probability of spillover effect and positive externalities of development of urban centres on rural hinterland (remittances, for example) and positive impacts on human capital and economic growth (Arouri, 2014). It can

be said that while unskilled labour migration from rural to urban may harm or recede the growth of urban economy, skilled labour migration (rural to urban) will have a positive effect on the urban economy (McCormick and Wahba, 2005). The objectives of this paper is to (a) assess the spatial distribution of educational and skill imparting technical and professional institutions in Assam (b) identify the districts wise spatial variations based on the computed educational infrastructure index, and (d) analyze the relationship between educational infrastructure and level of urbanization

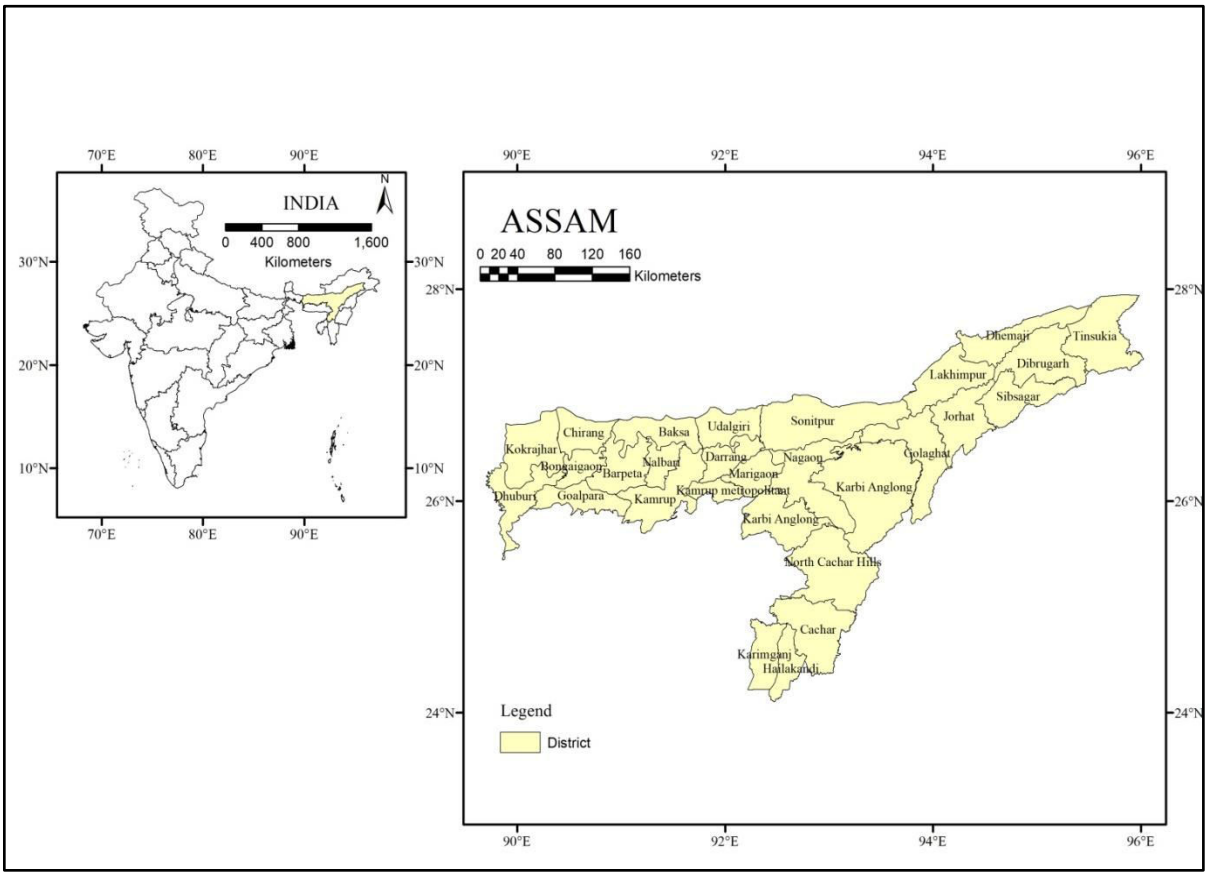
Study area

Assam is the biggest state in north east India. Its location is defined to the south of the eastern Himalayas alongside Brahmaputra and Barak valleys which are fertile river valley. The latitudinal and longitudinal extent of Assam comprises between the 24° and 28° North latitudes and between 89° and 97° East longitude. The area covered by Assam is 78,438 km², the state encompass 2.4 per cent and 2.6 per cent of total geographical area and population respectively. Assam is surrounded by many administrative units like Nagaland, Arunachal Pradesh, Manipur, Meghalaya and Tripura. (Figure 1)

Database and Methodologies

The source of data for the present paper has been Census of India and Census of Assam data 1991 to 2011. Town directory, 1991 and 2011, Primary Census Abstract, 2011 has also been used. Qgis software has been used to prepare all kind of map for the present paper. Steps involved in constructing the educational infrastructure are discussed in following paragraphs. Types of institutions taken into consideration for constructing educational institutional index include Non-technical education institutions such as Arts, Commerce, and Science colleges. Technical institutions include medical, engineering, and management. Polytechnics, short-term and long-term vocational institutions include ITI's. The number of institution as per list following list are used in constructing an educational infrastructure index for districts of Assam (Table 1). For assessing the behavioral dimension 300 respondents' from educational institutes of nine districts out of twenty seven were surveyed.

Figure 1: Study Area



Source: Prepared by authors based on Census District Handbook Assam, 2011

Table 1: Educational Infrastructure Data		
Sn	**Number of Institutions**	**Educational Infrastructure Index Procedure**
1.	Degree College - Arts Only	1. To begin with a matrix of 27 (districts) by 18 (variables listed above) is constructed. Each cell of the matrix records the number of entities. 2. Column means are computed, leading to 18 values 3. Each column in which all values (from the matrix defined in step1) are divided by the column means - is treated as an indicator. Variables with larger mean values would have proportionally lesser weights than variables with lower mean values. 4. Row totals are the composite educational infrastructure scores of districts. 5. Composite index of educational infrastructure is classified into few classes for mapping
2.	Degree College - Science Only	
3.	Degree College - Commerce Only	
4.	Degree College - Arts and Science Only	
5.	Degree College - Arts & Commerce only	
6.	Degree College- Art, Science & Commerce	
7.	Degree College - Law	
8.	Medical College	
9.	Engineering College	
10.	Management Institute	
11.	Polytechnic	
12.	Shorthand Training	
13.	Typewriting	
14.	Shorthand and Typewriting	
15.	MS Office	
16.	Desktop Publishing	
17.	Vocational	
18.	Non-formal Education	

Distribution of Institutions Imparting General Higher Education

Since schools are more ubiquitously distributed across all districts and a larger segment of the population in the school going age group is not expected to be in the labour force, only higher secondary and higher level educational institutions are included in this analysis. A distinction is

also made between Science, Commerce, and Arts colleges (usually one would find fewer science colleges than Arts or Commerce colleges as the latter is more in demand because it requires less capital expenditure).

Similarly, a distinction is also made between privately managed colleges and government colleges (the locations of which are usually norm based in the case of government managed colleges and demand based in the case of privately managed colleges). Thus, there are 16 different categories of such degree level colleges. Similarly, eight different categories are listed under professional courses which also include Law and Management.

The state also has 186 institutions that offer professional technical programmes that include: B. Ed. and M.Ed. (Government and Private), LLB/LLM, MBA/MCA and Management (including Hotel Management), Medical (Degree and Postgraduate degree – about 28 specializations in Allopathic and other medicinal systems (six streams), BDS/BHMA/BAMS,BSC Nursing, other Medical and Pharmacy/Paramedical courses. Besides these, there are Engineering colleges, 46 Polytechnics and Industrial Training Institutes (ITIs) that offer diploma and certificate level programmes. The courses in engineering degree consist of about 30 streams; the polytechnics offer thirty different courses wherein about 10 per cent of the seats remained vacant in 2017–18 and ITIs offer certificate courses in 39 different trades wherein about 37 per cent seats were vacant in 2017–18.

About 8.1 million persons were in the age group of 16–29 in Assam as per the 2011 Census (Table 2). It is useful to compare this figure with the intake capacity/enrolment in educational and skill building institutions in Assam. These figures are available for the year 2015–16 in various educational and skill building programmes in Assam (Table 3). Assuming 6 per cent growth (between 2011 and 2015, based on 2001–11 growth rate of population of Assam), the population in the age group of 16–29 would be about 8.6 million in 2015. Against this, the total intake capacity of these institutions is about 0.853 million. Thus, the intake capacity in Assam with reference to education above secondary level could cater to only about 10 per cent of the population in the age group of 16–29. It must also be noted that the capacity at the under graduate level general education is far higher than the capacity at the higher secondary level, presumably because students from neighboring states in the north eastern region also seek admission to colleges in Assam (Table 2).

The intake capacity reduces drastically when one moves from undergraduate to post graduate level. Only about 4 per cent of the students enrolled in undergraduate level courses can be accommodated at the post graduate level in Assam.

Table 2: Distribution of Youth Population in Assam, 2011

Age	*Persons*	*Males*	*Females*	*Percentage of Males to Total*
16	627495	333980	293515	53.22
17	527775	283757	244018	53.76
18	690902	358886	332016	51.94
19	548857	266400	282457	48.54
20-24	2909405	1415580	1493825	48.66
25-29	2815147	1393042	1422105	49.48
16-29	8119581	4051645	4067936	49.63

Source: Census of India, 2011, (C-08 Series)

Table 3: Intake Capacity/ Enrolment by General Educational Programme in Assam, 2015–16

General Education	*Number of Institutions*	*Intake Capacity/Enrolment*
Higher Secondary and Junior Colleges	1911	3,57,168
Degree (B.A., B.A. (Major) B.Sc., BSc. (Major), B.Com, B.Com (Major)	152	4,31,278
M.A, M.Sc. and M.com	61	16,287
Ph.d., D.Sc. M.Phil	20 (universities)	1,358
Others	97	14,118
Total	2,261	8,20,209

Source. Assam, Statistical Abstract 2018

Only about 8 per cent of the students enrolled in post graduate courses take admission in M.Phil., Ph.D, and D.Phil programmes in the state. While there is gender parity in enrolment up to higher secondary level, the proportion of female enrolment reduces noticeably at the degree and post graduate level education (Table 4). A sharp decline in female enrolment can be seen in all professional courses except nursing.

Table 4: Assam – Enrolment by Educational Level and Gender, 2015–16

Educational Level	*Enrolment (Women)*	*Enrolment (Total)*	*Female Enrolment as Percentage of Total Enrolment*
High School	500098	965640	51.79
Higher Secondary	170410	357168	47.71
Graduate Degree	162143	431278	37.60
Post Graduate and Research	7532	17649	42.68
LLB+ LLM	1961	78745	2.49
Medical	291	766	37.99
Engineering (Government Colleges)	179	960	18.65
Diploma	250	1461	17.11
Nursing	180	180	100.00
Pharmacy/Paramedical	132	532	24.81

Source: Same as Table 3

Distribution and Intake Capacity/Enrolment by Professional and Technical Education Programmes

There were about 186 institutions in Assam with an intake capacity over 22,000 students in Professional and Technical education programmes (Table 5). The professional courses include training for preparing school teachers (B.Ed. and M.Ed. courses), lawyers and management (including hotel management), and computer professionals. A large number of branches of engineering education are also available in the state with about 20 institutions and an intake capacity of over 5000 students. Health and medical related courses include training of medical practitioners at graduate and post graduate levels nursing and paramedical personnel and preparation of pharmacists. Thus, less than 4 per cent of the intake capacity in the higher general education has been created in the technical and professional scheme.

Table 5: Intake Capacity/ Enrolment by Professional Education and Technical Programmes in Assam, 2015–16

Professional and Technical Degree and Above	*Number of Institutions*	*Intake Capacity*

B. Ed. And M.Ed. (Government and Private)	71	5,950
LLB/LLM	28	7,845
MBA/MCA	23	1,140
Management including Hotel Management	23	NA
Medical (PG, Degree& Diploma) Including All India Quota	6	1,253
BDS/BHMA/BAMS	4	240
BSC Nursing	3	180
Other Medical	-	281
Pharmacy / Paramedical	8	532
Engineering	20	5,158
Sub-Total	186	22,579
Source: Same as Table 3		

Intake Capacity in Diploma and Long-term Certificate Education Programmes

One stream of opportunity available for students to continue skilling themselves is diploma and certificate courses in a variety of trades being offered by Polytechnics and Industrial Training Institutes. These two types of institutions have an intake capacity of about 10,000 trainees annually (Table 6). This is about four times the state's intake capacity for engineering degree level, which is a healthy ratio. However, while almost all seats available at professional degree level and to a large extent diploma level are full, many remain vacant in certificate level course offered by ITIs.

Table 6: Intake Capacity (Annual) at Diploma and Certificate Levels – Assam, 2015–16

Skill Building Institutions	*Number*	*Intake Capacity*
Polytechnics (Diploma)	21	3,568
ITI (Certificate)	28	6,641
Sub total	49	10,209
Source: Same as Table 3		

Of the 28 ITIs, five admit only women candidates. Sixteen of the institutions are located in rural areas and 12 in urban centres. While they have intake capacity of over 6,000 trainees annually, about 25 per cent of the capacity is unutilized in the government managed institution in urban areas as per 2015-16 data. The ITI in Dhubri, appears to be non-functional, and the one in Goalpara has very low level of capacity utilization (Table 7).

When all ITIs in the state were considered, the capacity utilization is only 37 per cent. In terms of trades, courses on stenography and secretarial training, sewing technology, machinist, tractor mechanic, surface ornamentation, mason, basic cosmetology, and refrigeration mechanics are not preferred and there is excess capacity. On the other side, there is a large unmet demand for courses that train information technologist, diesel mechanics, motor vehicle mechanics, and pump operators (Appendix 1).

Although there may be year to year differences in capacity utilization, courses offered in the Polytechnics appear popular as evidenced by the fact that the over 90 per cent of the intake capacity is utilized. A few courses have zero to low levels of enrolment (Appendix 2). Diploma course in Computer Applications has no takers because the institutions also offer Computer Engineering with a large intake capacity, of which about 97 per cent is utilized. Other courses which have low demand are Garment Technology and courses relating to Plastic and Textiles.

Table 7: Intake Capacity and Enrolment in Government Managed Urban ITIs

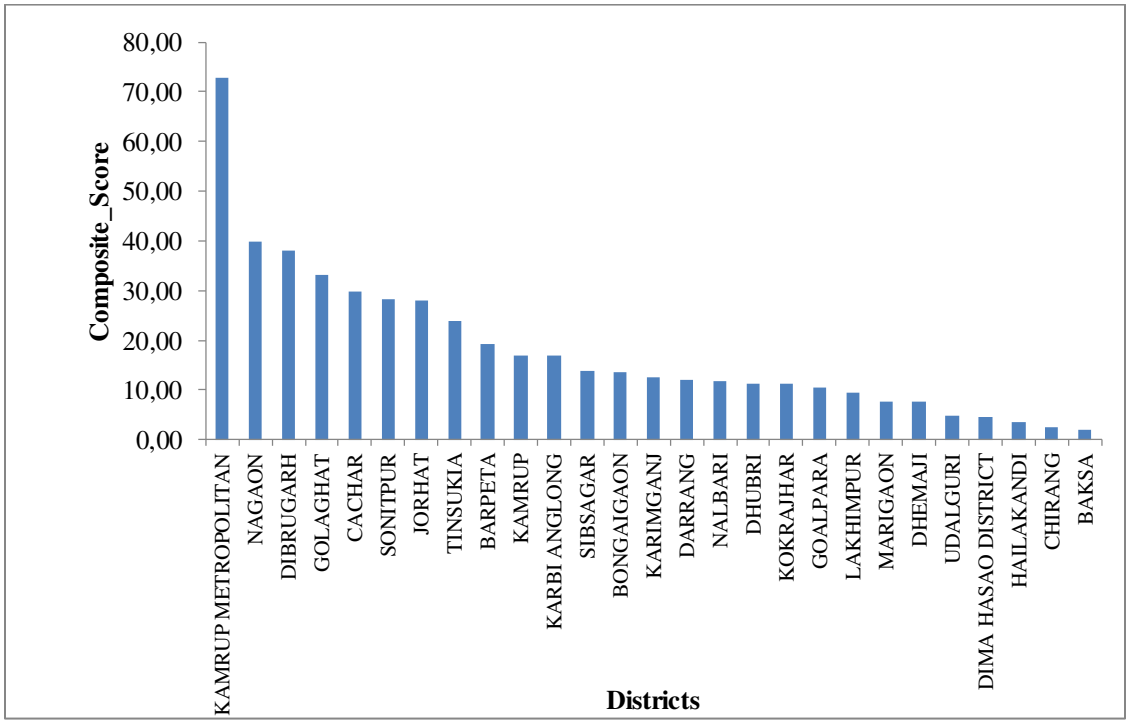
Government Managed ITI	*Annual intake Capacity*	*Enrolment*	*Enrolment as Per cent of Intake Capacity*
ITI Nagaon	305	253	82.95
Barpeta	126	53	42.06
Bongaigaon	231	165	71.43
Silchar	314	233	74.20
Dhemaji	68	49	72.06
Dhubri	21	1	4.76
Haflong	63	49	77.78
Goalpara	73	36	49.32
Jorhat	472	384	81.36
Guwahati	415	350	84.34
Total	2088	1573	75.34

Source: Directorate of Employment and Labour, Government of Assam

Spatial Distribution of Educational infrastructure Index and : A District Level Analysis

Educational infrastructure promotes adoption of new and existing technologies in an economy. Expansion of educational infrastructure and systems in urban areas is relatively easier and cost-effective than expansion in rural areas (Jaffe, 2009). The returns on education are also much higher in urban areas. Educational infrastructure is an important pillar for development of human resources. India has experienced massive expansion of its educational infrastructures, witnessing largest educational networks and having third largest pool of science and technology manpower in the world (Clark, 2002). The data descriptive explains that though there is difference in the means of urban share and educational infrastructure index but not much difference has been seen in the standard deviation values. There is positive value of correlation with about 76 per cent. The regression model explains that urban share has significant impact on explaining the educational infrastructure index among the districts. The standardized beta with 76 per cent and unstandardized beta values of 78 indicates towards a very well explained impact of urban share on educational infrastructure index (Table 8).

Figure 3: District wise Educational Infrastructure Index in Assam, 2011



(World Bank, 2019 and Economic Forum, 2015 and 2016) highlighted the educational system

and its characteristics. The availability of educational and skill building infrastructure-General, Professional and Technical (other than school education) - are included in computing an educational infrastructure value for each district in the state. The choice is guided by availability of comparable data for district in the state. The parameters taken into consideration for the present study are education infrastructure after 10+2 level because this level of educational infrastructure determines the quality and quantity of human capital and their nature of participation in labour market. Educational infrastructure from primary level to higher education level is similar to age-sex pyramid with broad base and tapering top.

Table 8: Statistical Analysis

Descriptive Statistics

Attributes	Mean	Std. Deviation
Educational Infrastructure Index	18.00	15.35
Urban Share	13.85	14.95

Correlation

	Educational Infrastructure Index	Urban Share
Educational Infrastructure Index	1.000	.762
Urban Share	.762	1.000

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.762[a]	.581	.564	10.14082	.581	34.609	.000

a. Predictors: (Constant), Urban share , b. Dependent Variable: educational infrastructure index

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	7.163	2.684		2.669	.013	1.636	12.690
	Urban Share	.782	.133	.762	5.883	.000	.508	1.056

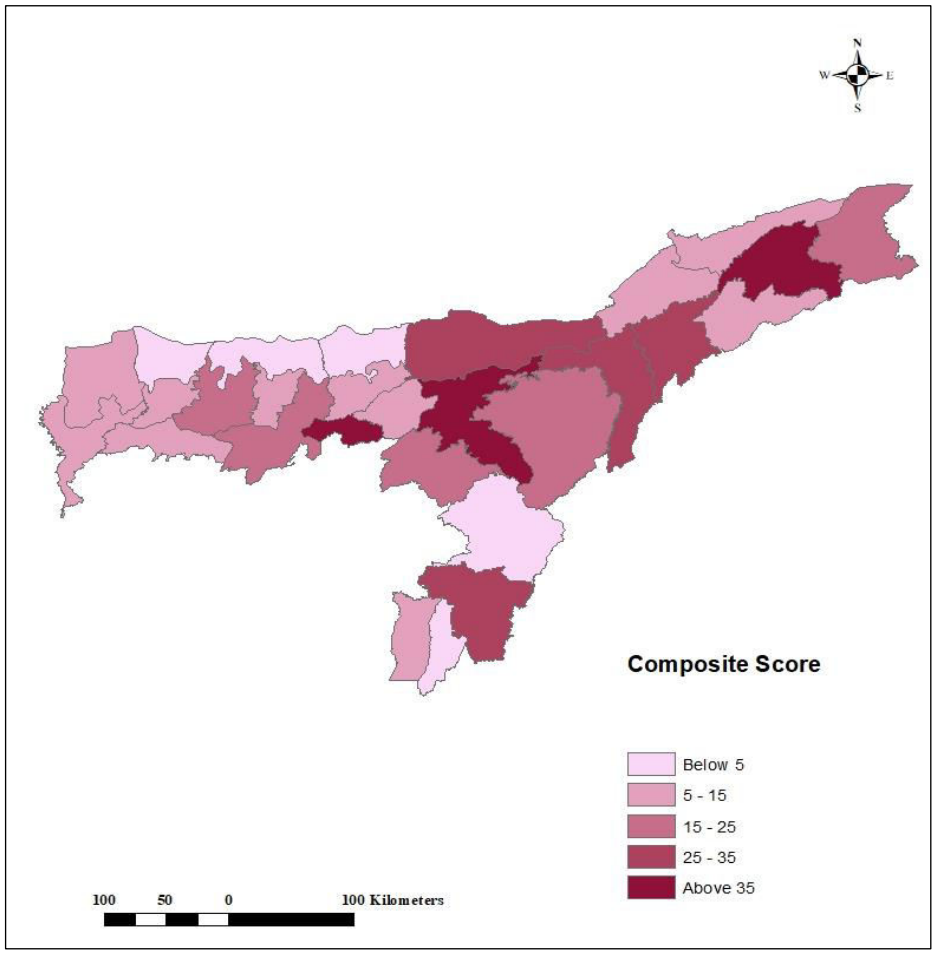
a. Dependent Variable: educational infrastructure index

Source: Computed by authors based on data from Census of Assam, 2011

Spatial Distribution of Educational Infrastructure Index

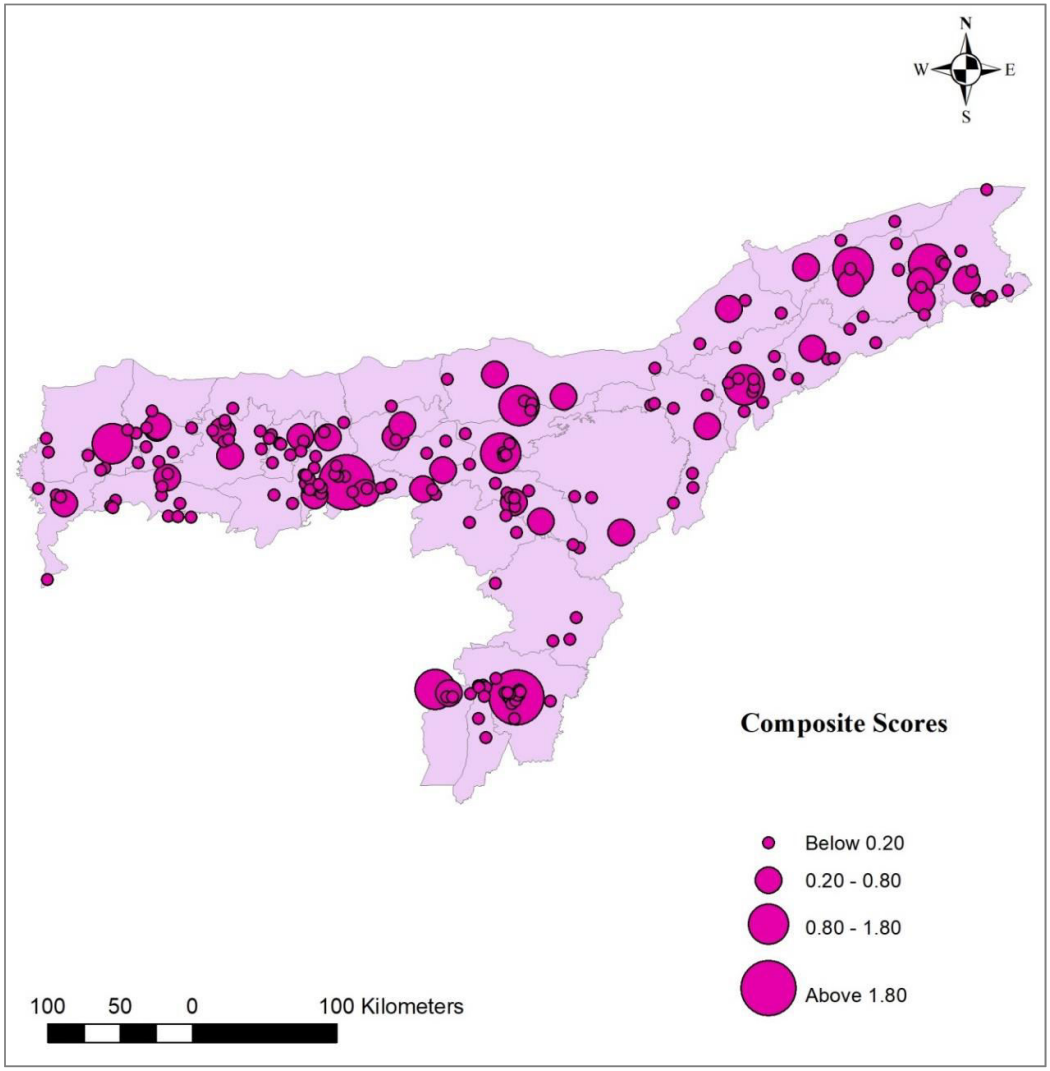
Educational infrastructure of Assam is skewed in nature. As in many other states of India, Assam also has more institutions imparting general education. Better infrastructure exists in the districts of Kamrup Metropolitan, Dibrugarh, Nagaon, and Sonitpur. The highest educational infrastructure index value is recorded by Kamrup Metropolitan District (Figure 2). One of the reasons for disparity in infrastructure can be attributed to the disparity in the level of urbanization, although the state itself is at the lower end of urbanization scale. Thus, districts which are more urbanized have better educational infrastructure, compared to districts which record less urban share like Baksa, Chirrang and Udalgiri.

Figure 3: Spatial Variations in Educational Infrastructure Index in Assam, 2011



Source: Prepared by Authors based on data calculated

Figure 4: Town-wise Educational Infrastructure Index, Assam, 2011



Source: Prepared by Authors based on data calculated

Figure 4 brings out that fact that a significant proportion of education infrastructure scores of larger cities are derived on the basis of vocational and technical education whereas smaller towns derive them from institutions of general education.

The educational infrastructure index distribution among different class size towns reflects the variations as per the size of the town. The larger the city, the higher is the educational infrastructure availability. By being the virtue of more urban than the surrounding region the bigger cities tend to

attract more of government as well as well the private educational institutions along with the other related facilities. In the lower Assam there is concentration of good infrastructure enables urban areas followed by the Upper region. The central and south region has witnessed comparatively less number of towns.

Table 8: Perceptions of Preferences for higher Education in Big cities	
Pull Factors	Per cent respondents' preferences
Better education standards	35
Choices available for courses is more	37
Job opportunities are higher after education	25
Relatives	1
Followed sibling	1
Total	100
Perceptions for Job Locations	
Job location preferences	Per cent respondents' preferences
Delhi	41.25
Other Metropolitan cities	31.42
Smaller cities in Assam	27.33
Total	100
Source: By authors based on primary survey	

Based on the primary survey of 300 under graduate students, it has been observed that the size of town has tremendous impact on the behavioral dimensions and decision making towards higher education. Data revealed a clear preference among students that more than 67 per cent people would like to move to metropolitan cities for higher education. The reasons cited by most of them include better educational standards, availability of more choices of courses and curriculum and better job opportunities. Even for future job scenario, data indicates that most of the respondents have shown interest to work in Delhi and other metropolitan cities. Very few of them has indicated their interest to work in smaller towns of Assam

Conclusion

About 8.1 million persons were in the age group of 16–29 in Assam as per the 2011 Census. It is useful to compare this figure with the intake capacity/enrolment in

educational and skill building institutions in Assam. Against this, the total intake capacity of these institutions is about 0.853 million. Thus, the intake capacity in Assam with reference to education above secondary level could cater to only about 10 per cent of the population in the age group of 16–29. The intake capacity reduces drastically when one moves from undergraduate to post graduate level. Only about 4 per cent of the students enrolled in undergraduate level courses can be accommodated at the post graduate level in Assam. Only about 8 per cent of the students enrolled in post graduate courses take admission in M.Phil., Ph.D, and D.Phil programmes in the state. While there is gender parity in enrolment up to higher secondary level, the proportion of female enrolment reduces noticeably at the degree and post graduate level education. A sharp decline in female enrolment can be seen in all professional courses except nursing.

Educational infrastructure of Assam is skewed in nature. As in many other states of India, Assam also has more institutions imparting general education. The districts of Kamrup Metropolitan, Dibrugarh, Nagaon and Sonitpur have better infrastructure. The highest education infrastructure index value is recorded by Kamrup Metropolitan district. One of the reasons for the disparity in infrastructure can be attributed to the disparity in the level of urbanisation, although the state itself is at the lower end of urbanisation scale. Thus, districts which are more urbanised have better educational infrastructure compared to districts which record less urban share like Baksa, Chirrang, and Udalgiri.

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Appendix 1: Total Intake Capacity and Enrolment by Trades (ITIs)

SN.	*Trade*	*Intake*	*Enrolment*	*Per cent Enrolment to Intake*
1	Basic Cosmetology	173	27	15.61
3	C.O.P.A.	252	16	6.35
5	Draughtsman (Civil)	318	56	17.61
6	Draughtsman (Mech.)	78	0	0.00
7	Dress Making	147	14	9.52
8	Electrician	651	199	30.57
9	Electronics Mech.	162	52	32.10
11	Fitter	651	260	39.94
12	Information Communication Technology & System Maintenance	105	20	19.05

13	Information Technology	126	112	88.89
14	Instrument Mech.	0	0	0.00
15	Machinist	224	88	39.29
16	Maintenance Mechanic Chemical Plant	21	0	0.00
17	Mason (Building Constructor)	26	0	0.00
18	Mech. (Diesel)	294	204	69.39
19	Mech. (Motor vehicle)	483	229	47.41
20	Mech. Agri. Machinery	21	0	0.00
21	Mechanic Radio & T.V.	168	0	0.00
22	Mech. Tractor	84	20	23.81
25	Photographer	21	0	0.00
27	Plastic Processing Sector	0	0	0.00
28	Plumber	78	17	21.79
29	Pump Operator- Cum-Mechanic	21	17	80.95
30	Ref. & A.C. Mech.	104	29	27.88
31	Secretarial Practice	84	17	20.24
32	Sewing Technology	357	60	16.81
33	Soil Testing & Crop Technician	0	0	0.00
34	Stenographer Secretarial Assistant.	338	198	58.58
35	Surface Ornamentation Techniques	63	15	23.81
36	Surveyor	52	0	0.00
37	Turner	336	131	38.99
38	Welder	636	388	61.01
39	Wireman	420	160	38.10
	Total	6641	2431	36.61

Source: Directorate of Employment and Labour, Government of Assam.

Table 2: Assam – Total Intake Capacity and Enrolment (Polytechnics)

SN.	*Programme*	*Intake*	*Enrolment (2017-18)*	*Enrolment to Intake Capacity (%)*
1	Agricultural Engineering	83	59	71.08
2	Architectural Assistantship	40	40	100.00
3	Automobile Engineering	90	59	65.56
4	Biomedical Engineering	60	51	85.00
5	Chemical Engineering	155	112	72.26
6	Civil Engineering	1060	1026	96.79

8	Computer Engineering	110	107	97.27
9	Computer Science & Engineering	60	55	91.67
10	Electrical Engineering	640	625	97.66
11	Electronics & Tele-Communication Engineering	210	193	91.90
12	Fashion Technology	20	20	100.00
13	Garment Technology	20	0	0.00
14	Industrial Production Engineering	60	44	73.33
15	Instrumentation Technology	30	30	100.00
16	Mechanical Engineering	600	558	93.00
17	Mechanical Engineering Automobile	150	149	99.33
18	Mechatronics	20	0	0.00
19	Modern Office Management	40	26	65.00
24	Printing Technology	60	29	48.33
25	Textile Chemistry	30	10	33.33
26	Textile Technology	30	30	100.00
	Total	**3568**	**3223**	90.33
Source: Government of Assam, Directorate of Technical Education				

References

Aghion, P. and P.W. Howitt (2009), The Economics of Growth, MIT Press.

Arouri, M. El. Hedi *et al.* (2014), Effects of Urbanisation on Economic Growth and Human Capital Formation in Africa.

Berry, C.R. and E.L. Glaeser (2005), The Divergence of Human Capital Levels across Cities, *Papers in Regional Science*, Vol. 84, No. 3, pp. 407–444.

Bertinelli, L. (2003), Does Urbanisation Always Foster Human Capital Accumulation? Core Discussion Papers 2003040, Universitécatholique de Louvain, Centre for Operations Research and Econometrics (CORE).

Clark, T.N. *et al.* (2002), Amenities Drive Urban Growth, *Journal of Urban Affairs*, Vol. 24, No. 5, pp. 493–515.

Elgin, C. and C. Oyvat (2013), Lurking in the Cities: Urbanisation and the

Informal Economy, *Structural Change and Economic Dynamics*, Vol. 27(C), pp. 36–47.

Glaeser, E.L. (2005), Smart Growth: Education, Skilled Workers, and the Future of Cold-Weather Cities, Policy Briefs, John F. Kennedy School of Government, Harvard University.

Henderson, V. (2003), The Urbanisation Process and Economic Growth: The So-What Question, *Journal of Economic Growth*, Vol. 8, No. 1, pp. 47–71.

Jaffe, A.B., M. Trajtenberg, and R. Henderson (1993), Geographic Localisation of Knowledge Spillovers as Evidenced by Patent Citations, *The Quarterly Journal of Economics*, Vol. 108, No. 3, pp. 577–598.

Jones, C.I. (2004), Growth and Ideas, NBER Working Paper 10767, Cambridge, MA.

Jonasson, E. (2007), *Non-agricultural Employment as Rural Poverty Exit Path? Evidence from Peru* (Mimeo), Lund University.

Lucas Jr, R.E. (1988), "On the Mechanics of Economic Development," *Journal of Monetary Economics*, Vol. 22, No. 1, pp. 3–42.

McCormick, B. and J. Wahba (2005), Why Do the Young and Educated in LDCs Concentrate in Large Cities? Evidence from Migration Data, *Economica*, Vol. 72, No. 285, pp. 39–67.

Saiz, A. and E.L. Glaeser (2004), The Rise of the Skilled City," Brookings-Wharton Papers on Urban Affairs, Brookings Institution Press, pp. 47–105.

Schultz, Theodore W. (1961), Investment in human capital. The American Economic Review 1-17.

Storper, M. and A.J. Scott (2009), Rethinking Human Capital, Creativity and Urban Growth, *Journal of Economic Geography*, Vol. 9, No. 2, pp. 147–167.

World Economic Forum 2015, *Global Challenge Insight Report, Skills and Human Capital*

World Economic Forum 2016, *The Human Capital Report*

World Bank, *2019, World Development Report 2019: The Changing Nature of Work*.

Yang, D.T. and M.Y. An (2002), Human Capital, Entrepreneurship, and Farm Household Earnings, *Journal of Development Economics*, Vol. 68, No. 1, pp. 65–88.

Yang, D.T. (2004),Education and Allocative Efficiency: Household Income Growth during Rural Reforms in China, *Journal of Development Economics*, Vol. 74, No. 1, pp. 137–162.