Bangladesh University of Engineering & Technology

PLAN 434: Regional Planning Studio

A Report on

Spatial Concentration of Public Facilities in the Districts of Bangladesh

Level-4 Term-1

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LIST OF ABBREVIATION

BBS	Bangladesh Bureau of Statistics
CI	Composite Index
GED	General Economic Divisions
LQ	Location Quotient

ABSTRACT

Public facilities are fundamental components of a community to ensure a decent living for the inhabitants. Equitable distribution of public facilities within a country has become a major concern in recent days due to excessive population growth and unplanned urbanization. The availability of public facilities varies significantly among districts in Bangladesh. The study aims to explore the spatial concentration of public facilities in the districts of Bangladesh in order to identify which districts have deficiency of public facilities requiring special attention of the government. For our study, we have selected seven public facilities namely primary school, secondary school, college, private hospital and clinic, government health complex, growth centers and rural market. The required database for these facilities are collected from Bangladesh Bureau of Statistics (BBS). We have applied location quotient method to identify the spatial concentration of public facilities in the districts. We have generated composite score for each district with the LQ values of the public facilities and delineated formal regions. Moreover, we have calculated Gini index for each public facility to identify disparity regarding the provision of the facilities. Our findings reveal that, among all the districts Dhaka, Gazipur, Narayanganj has higher deficiency of primary and secondary schools, colleges but more concentration of private hospitals and clinics. Both northern and southern part of the country have moderate concentration of educational and market facilities but have deficiency of health facility. Findings of this study provide valuable insights about the backward districts regarding the provision of public facilities which can be helpful to reduce spatial disparity of public facilities ensuring a more balanced regional development.

CHAPTER 1: INTRODUCTION

1.1 Background

With 170 million people, Bangladesh is one of the most densely populated nations in the world. The number of people living in urban areas in this nation increased from 62 million in 1974 to 398 million in 2011 (BBS, 2011). However, urbanization in Bangladesh is occurring rapidly yet unevenly. Increase of population and uneven urbanization creates huge demand on natural resources, lands, services and facilities resulting in problems like congestion, poverty, regional disparities (Hasan et al., 2021). Although basic facilities must be equitably dispersed and made accessible to everyone in the region to sustain a decent living, there are relatively few cities or regions that exhibit inclusive growth (Hossain et al., 2021). In Bangladesh, like in many other developing countries, there is a geographical discrepancy in the provision of basic infrastructural services both within and across regions (Islam et al., 2018; Razzaque et al., 2018; Das & Begum, 2019). The deficiencies and surpluses of these public facilities in different regions will eventually affect the livelihood of the inhabitants (Parvez, 2020). Necessary attempts have been taken for the provision of public facilities to cope up with the increased population, but unplanned expansion of such facilities lead to degradation of quality in services and facilities (Jahan & Oda, 2000). Public facilities are the key components of a region designated to establish the supportive features of the residents. In Bangladesh, various facilities in the different field of health, agriculture, education, power and industry are closely related with the growth of economy and wellbeing of the society (Bahauddin, 1989). As public facilities are unevenly concentrated throughout the country, people shift their location for accessing these facilities creating huge pressure on limited resources within a region (Hasan et al., 2021). For maintaining a balanced growth throughout Bangladesh, it is important to comprehend existing regional disparities among different districts regarding the provision of public facilities. This study attempts to identify the spatial concentration of public facilities, which include primary and secondary schools, colleges, hospitals, growth centers and rural markets in the districts of Bangladesh.

1.2 Literature Review

Several researches have been conducted to explore the spatial concentration of facilities in the regions of a country. Location quotient method has been widely used to examine the spatial concentration pattern of amenities in a particular area (Tali et al., 2017). Jahan & Oda (2000) has used this technique to measure the degree to which the public facilities in different wards of Dhaka city in a Thana are in balance. Many studies focused on measuring the spatial

concentration of various public facilities such as schools, healthcare centers, urban parks in different countries (Abdullahi & Abdullahi, 2019; Bulti et al., 2019; Feng et al., 2019; Tali et al., 2017; Ujoh & Kwaghsende, 2014). Using the location quotient value, composite index method can also be applied to delineate formal regions detecting the advanced or backward regions of a country. Islam et al. (2018) has demarcated the 64 administrative districts of Bangladesh into several regions based on the criteria of overall housing quality and provided facility to find the disparities in living condition all through Bangladesh. The districts of Bangladesh was also delineated into different regions based on agricultural productivity and number of growth centers (Islam et al., 2019). Interregional disparities in the distribution of facilities can also be measured using Lorenz curve and Gini index (Salan et al., 2018). The intend of our study is to examine the spatial concentration of public facilities in Bangladesh utilizing the location quotient method. Later, composite index method is applied using the location quotient values of the selected facilities to delineate advanced and backward regions in terms of provision of public facilities. Gini index is also generated to identify the interregional disparities in the districts of Bangladesh.

1.3 Objective of the Study

The main objective of our study is to explore the spatial concentration of public facilities, which include primary and secondary schools, colleges, hospitals, growth centers and rural markets in the districts of Bangladesh as well as delineate the regions that have deficiency and concentration of the facilities.

1.4 Scope of the Study

This study's findings reveal the pattern of spatial concentration of public facilities in the districts of Bangladesh and represent the districts having high deficiency and high concentration of the facilities. The findings of this study will help in regional planning addressing the backward regions which have lower provision of public facilities.

1.5 Limitation of the Study

The study endured a constraint in terms of data sources and collection. The required database of quantity of public facilities in each district were collected from Bangladesh Bureau of Statistics (BBS) dated 2011. Thus, the study may not reflect the most recent situation of these parameters, thereby influencing the accuracy of the analysis.

1.6 Methodology

Location quotient method is broadly used to identify the spatial concentration of public facilities (Islam et al., 2013; Sukumwati et al., 2021). Secondary data of public facilities (number of primary schools, secondary schools, colleges, private hospitals/ clinics, government

health complex, growth centers, rural markets) and population of each district have been collected from Bangladesh Bureau of Statistics (BBS) dated 2011.

The applied equation in location quotient method, L.Q. = $(n_i / p) / (N_i / P)$

Where, n_i = number of facilities i in a given district, p = population of the district, N_i = number of facilities i in Bangladesh, P = total population of Bangladesh. The value of LQ>1 denotes high spatial concentration of public facilities compare to the national average share of public facilities while LQ<1 means less spatial concentration of public facilities and LQ=1 indicates sufficient amount of public facilities in a region (Sukumwati et al., 2021). Later, based on the LQ values, the concentration of each facility in the districts were grouped into five categories and maps were generated in ArcMap 10.8 representing spatial concentration of the facilities.

Table 1: Classification of the Districts Based on LQ Value

Range	Rank	Range	Rank
0.00-0.49	Highly Deficient	1.21-2.00	Moderately Concentrated
0.5-0.85	Moderately Deficient	>2.00	Highly Concentrated
0.86-1.20	Self-sufficient		

(Amin & Tamima, 2008).

For quantitative calculation, composite index is calculated where standardization was not required as LQ value is unit less. Islam et al. (2018) has applied the following equation for calculating composite score. Here, $X_{1\text{-}7}$= LQ value of the selected seven public facilities.

$$W_n = \frac{\text{Mean of } X_n}{\text{Standard deviation of} X_n} \quad \text{Where, n= 1, 2, ..., 7}$$

$$W = \frac{X_{1*}w_1 + X_{2*}w_2 + X_{3*}w_3 + X_{4*}w_4 + X_{5*}w_5 + X_{6*}w_6 + X_{7*}w_7 +}{w_1 + w_2 + w_3 + w_4 + w_5 + w_6 + w_7}$$

By calculating the weighted index of LQ value, formal regionalization of the districts has been done and map representing the regions was prepared using ArcMap 10.8.

Gini index has been calculated to the disparity of distribution of public facilities. The value of Gini coefficient ranges from 0 to 1. If the value of gini index is zero, it means there is no inequality of concentration of public facilities but if it increases to 1, the inequality also increase (Islam et al., 2013). Moreover, the required number of educational facilities were calculated using the threshold population (Jahan & Oda, 2000). Lastly, we have ranked the districts based on LQ values of public facilities in each division of Bangladesh and generated tiles plot to represent the existing scenario regarding availability of public facilities in the districts of each division of Bangladesh.

CHAPTER 2: SPATIAL CONCENTRATION OF PUBLIC FACILITIES IN THE DISTRICTS OF BANGLADESH

2.1 Spatial Concentration of Primary School

About 70.31% districts of Bangladesh have primary schools as a basic facility, with LQ value >1. The rest of the 29.69% districts have primary schools as a non-basic facility. Only 3 districts have high deficiency of primary schools, which include Dhaka, Narayanganj and Cox's Bazar. Though Dhaka has a high population density 8229 per sq. km., there are only 1114 primary schools (BBS, 2011). Migration towards Dhaka increase the expansion of population but the existing institutions are insufficient to accommodate excessive population (Hossain, 2013). Gazipur, Narsingdi, Brahamanbaria, Feni, Chittagong, Chuadanga districts have moderate deficiency of primary schools as shown in the figure 01. In northern and southern districts, primary schools are moderately concentrated while in Rangamati and Bandarban it shows high concentration. Both Rangamati and Bandarban have lower population density compared to number of primary schools.

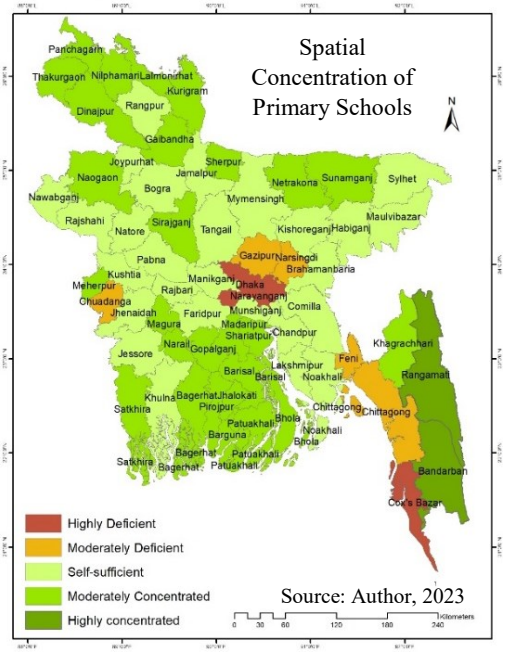

Figure 01: Spatial Concentration of Primary Schools in the Districts of Bangladesh

2.2 Spatial Concentration of Secondary School

Around 57.82% districts of Bangladesh have secondary schools as a basic facility and 42.18% districts have secondary school as a non-basic facility. Again, Dhaka, Narayanganj and Cox's Bazar districts have high deficiency of secondary schools. 26.56% districts of Bangladesh have moderate deficiency of secondary schools. Northwestern and southwestern districts of the country have moderate concentration of secondary schools.

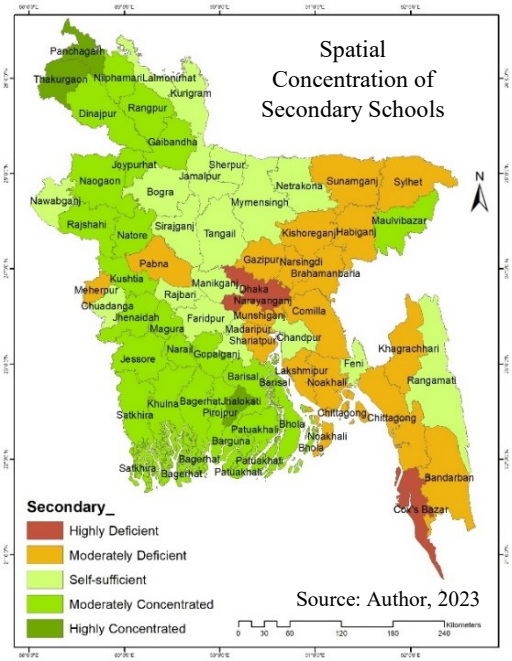

Figure 02: Spatial Concentration of Secondary Schools in the Districts

2.3 Spatial Concentration of College

There are 53.12% districts in Bangladesh having college as a basic facility. The rest 46.88% districts have college as a non-basic facility. 10 districts of Bangladesh have high deficiency of colleges, which include the districts of Dhaka, Chittagong and Sylhet divisions. 23.44% districts of Bangladesh have moderate deficiency of colleges. North-western and south-western districts of the country have moderate concentration of secondary schools. Only Rajshahi and Sylhet districts have high concentration of colleges.

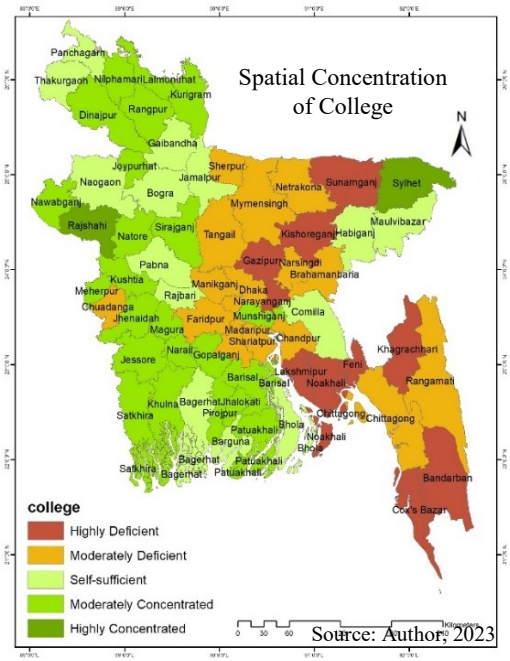

Figure 03: Spatial Concentration of College in the Districts of Bangladesh

2.4 Spatial Concentration of Private Hospital and Clinic

Only 21.88% districts of Bangladesh have private hospitals and clinics as a basic facility. About 40.43% districts of Bangladesh have high deficiency of private hospitals and clinics, mostly northern and southern districts. Dhaka and its adjacent districts have moderate to higher concentration of private hospitals and clinics. The BBS statistics show that Dhaka and its adjacent districts have higher per capita income and lower poverty rate, since the people of these districts can afford the excessive cost of private hospitals. Although the private healthcare sector has seen a significant development in Bangladesh, they are mainly intended to benefit the wealthy (Ashaduzzaman et al., 2005). As a result, private hospitals are more concentrated in wealthy regions. The country's physical facilities for providing healthcare services have increased, but accessibility for the poor people has not (Shamsur et al., 2005).

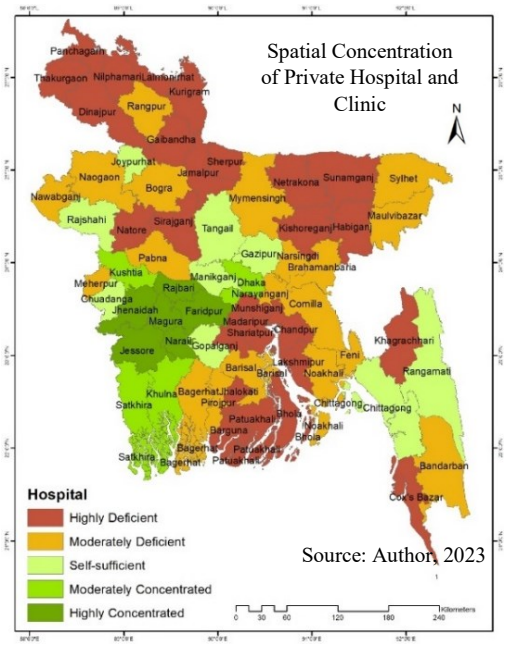

Figure 04: Spatial Concentration of Private Hospital and Clinic in the Districts

2.5 Spatial Concentration of Government Health Complex

There are only 28.13% districts in the Bangladesh having govt. health complex as a basic facility. The remaining 71.87% districts have govt. health complex as a non-basic facility. 18 districts have high deficiency of govt. health complex, which include the districts of Dhaka, Chittagong, Khulna and Rangpur. 39% districts have moderate deficiency of health complex. The nation has a widespread network of public healthcare facilities, extending from the largest city to smaller villages (Shamsur et al., 2005). Bangladesh government tried public health care facilities in those areas where private healthcare facilities are inaccessible and unaffordable. In the northern districts such as Dinajpur, Naogaon, Kurigram, Habiganj, Kishoreganj have high concentration of govt. health complex. Because high deficiency of private hospitals exists in those districts.

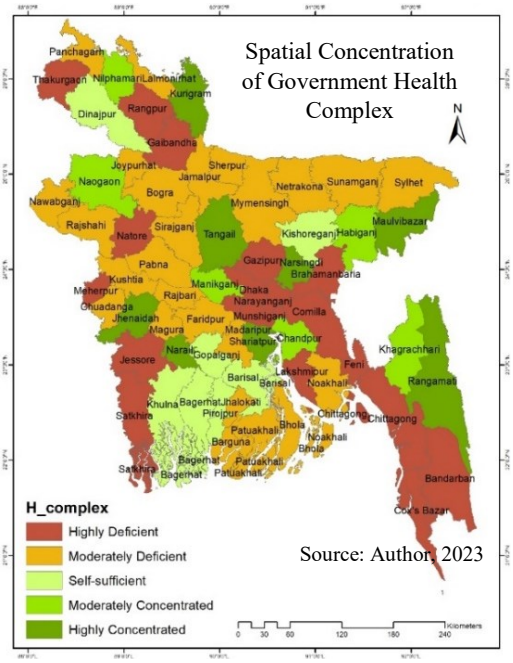

Figure 05: Spatial Concentration of Government Health Complex in the Districts

2.5 Spatial Concentration of Growth Center

64% districts of Bangladesh have growth centers as a basic facility and 36% districts have this facility as a non-basic one. Among the districts, only Dhaka, Narayanganj and Gazipur districts have high deficiency of growth centers. Non-farm activities are very much significant in Dhaka district and only 10.65% holdings are farms (BBS, 2011). In Gazipur, agricultural land are shrinking rapidly due to the development of industrial hub (Arifeen et al., 2021). Because of the decline in agricultural activity, these districts have fewer growth centers available. Northern and southern districts have moderate concentration of growth centers. Availability of different socio-economic structure and economic activities influence the provision of growth centers (Uddin, 2010). Economic activities in Cox's

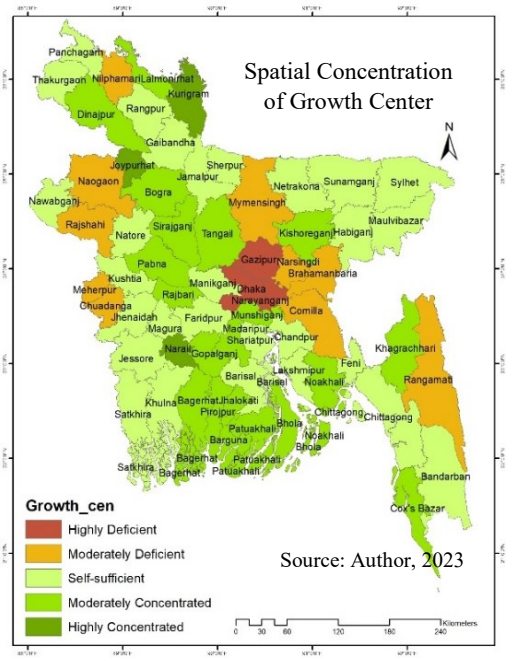

Figure 06: Spatial Concentration of Growth Center in the Districts of Bangladesh

Bazar has grown as majority of the people are engaged in fishing, salt-shrimp practice, fish drying, agriculture, and small trading business and growth centers are the key important factor to support their activities(Hossain & Shamsuddoha, 2008).

2.6 Spatial Concentration of Rural Market

61% districts have rural markets as a basic facility and 39% districts have this facility as non-basic. Only Gazipur, Lakshmipur, Rangamati districts have higher deficiency of rural markets. Since industries are growing in Gazipur, number of rural markets are low. Though Rangamati is an agro-based district having 74.10% farm holdings, there is less provision of rural market (BBS, 2011).This situation could be due to its geographic location in Chittagong Hill Tracts and inadequate infrastructural facilities. 18.75% districts have moderate deficiency of rural markets. Southern districts of the country have moderate to high concentration of rural markets.

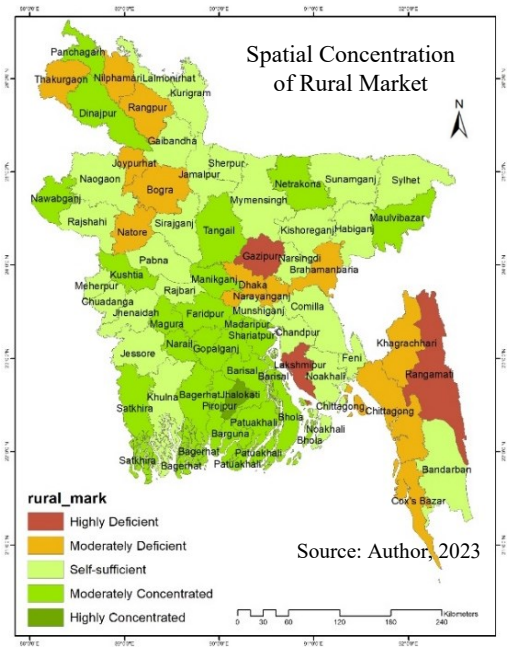

Figure 07: Spatial Concentration of Rural Market in the Districts of Bangladesh

2.8 Spatial Disparity of Public Facilities

Unequal allocation of public facilities lead to spatial disparity among the districts of Bangladesh (Salan et al., 2018). In order to identify the degree of spatial disparity with respect to various public facilities, Lorenz curve has been generated for each selected public facility using cumulative percentage of population and percentage of a facility. For each public facility, Gini coefficient, a measure of inequality, has been determined using the Lorenz Curve. The following table lists the Gini coefficients determined for the selected public facilities. The degree of spatial disparity is higher for private hospital/clinic and government health complex indicating improvement is required for the provision of these facilities in the districts. Private hospitals are more concentrated in Dhaka and its adjacent districts. Primary and secondary schools, growth center, rural show lower level of spatial disparity. Spatial concentration of college shows moderate level of spatial disparity.

Table 2: Gini Index of Public Facilities

Facilities	Gini Index
Primary School	0.21
Secondary School	0.24
College	0.29
Private Hospital/Clinic	0.35
Govt. Health Complex	0.52
Growth Center	0.23
Rural	0.16

2.9 Formal Regionalization

In this study, the 64 districts of Bangladesh is delineated into 5 different regions based on composite score of location quotient value of public facilities namely primary school, secondary school, college, government health complex, private hospital and clinic, growth center, and rural market. Formal regionalization has been done to identify the dissimilarities in spatial concentration all through Bangladesh. The districts are delineated as highly deficient, moderately deficient, self-sufficient, moderately concentrated, highly concentrated in terms of public facilities. 9.38% districts fall under highly deficient regions, which include Dhaka, Gazipur, Narayanganj, Brahamanbaria, Lakshmipur, and Cox's Bazar. 29.68% districts fall under moderately deficient regions most. 39.06% districts are self-sufficient having adequate number of public facilities. 17.19% districts have moderately concentrated public facilities, mostly southern districts in Khulna and Barisal division. 4.69% districts have high concentration of public facilities located in southern part of the country.

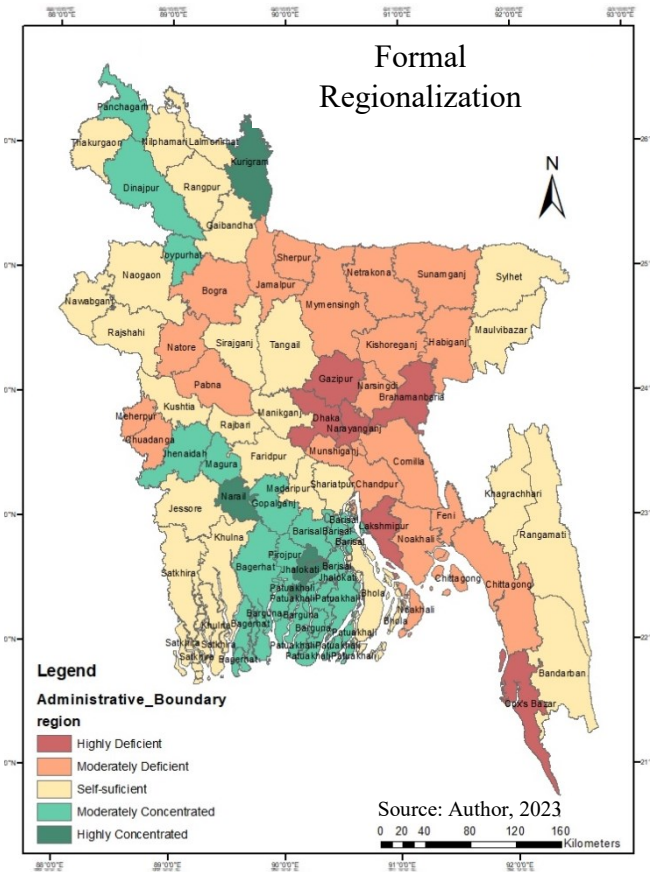

Figure 08: Formal Regionalization on the Basis of Spatial Concentration of Public Facilities

2.10 District Ranking Based on Spatial Concentration Public Facilities in the Divisions of Bangladesh

The districts in each division are arranged in tiles plot using the LQ values of the facilities to identify which divisions have more concentration of public facilities. Ranking of the districts within a particular division has been done following the summation of LQ values of all the facilities. In the tiles plot, the darker shades represent high concentration of facilities and lighter shades indicate deficiency of facilities in the districts in each division (Appendix).

In Dhaka division, Faridpur district ranks first with aggregated score 9.92 indicating that this district has sufficient amount of all the facilities. On contrary, Dhaka, Gazipur and Narayanganj districts have fallen in the lower rank with 4.1, 3.8, 3.41 score respectively, indicating these

districts need more provision of primary and secondary schools, colleges, government health complex and growth centers. In Rajshahi division, Joypurhat and Rajshahi ranked the highest with 8.72 and 8.36 score and Natore ranked at the lowest position with 5.9 score. The key finding from the tiles plot is the gap between the aggregated scores of LQ values of Joypurhat and Natore is 2.82 whereas the gap between the aggregated scores of Faridpur and Narayanganj is 6.51, which implies that more disparities exist in the districts of Dhaka compare to the districts of Rajshahi as shown in the figure.

The tiles plot shows presence of higher deficiency of college, private hospitals and govt. health complex in Chittagong division. However, Rangamati, Chandpur, Khagrachari have higher scores compared to other districts of Chittagong. One of the main reasons behind result could be the density of population in Chittagong Hill Tracts (Rangamati, Khagrachari, and Bandarban) are significantly low than other districts of Chittagong. Thus, these districts are self-sufficient in terms of primary and secondary schools, health complex and growth centers. In Khulna division, districts' aggregate scores of LQ values of the selected public facilities is higher than any other divisions. But only Chuadanga district has deficiency of primary school, college, health complex and growth centers.

The districts of Sylhet, Barisal, Rangpur and Chittagong divisions have high deficiency of private hospitals as represented in the tiles plot. This outcome might be explained by the fact that employment rate is lower in these districts according to BBS, 2011. Hence, people of these districts may have financial incapability to afford services from private hospitals which ultimately results in lesser demand of private hospitals.

2.11 Calculation of Required Facilities Considering Threshold Population

The population threshold for educational facilities such as primary school, secondary school, and college have been calculated for Bangladesh in a previous research (Jahan & Oda, 2000). Considering this threshold, required number of primary schools, secondary schools and colleges was calculated for the districts of Bangladesh and represented as percentage of required facilities in the table. The result shows that in Cox's Bazar, it is needed to increase primary schools up to 86% from existing number to accommodate the population. In terms of provision of secondary school, Dhaka district requires the highest number of this facility to serve its surplus population. The required number of colleges is higher in Feni district. This calculation would be helpful for planners and policymakers to provide educational infrastructure facilities in those districts that have higher deficiency.

CHAPTER 3: MAJOR FINDINGS, RECOMMENDATION AND CONCLUSION

3.1 Major Findings

Among the selected public facilities, the number of primary schools is sufficient for most of the districts of Bangladesh except few districts, which are Dhaka, Narayanganj, Cox's bazar, Gazipur, Narsingdi, Brahmanbaria, Feni, Chittagong, and Chuadanga. Higher population density and lack of intervention of local authorities are the primary cause of deficiency of schools in these districts. Dhaka, Narayanganj and Cox's Bazar districts have deficiency of both primary and secondary schools.

Among the selected educational facilities, the districts shows the highest deficiency of colleges in Bangladesh. College is defined with some specific characteristics according to the terms and conditions of service regulations of 1979 Intermediate and Secondary Education Boards. The teachers required for colleges need higher qualification, high initial payment, capability to adapt advance syllabus. Lack of functional and institutional capabilities and qualified teachers might be the main reasons of higher deficiency of colleges in some districts.

The deficiency of private hospital and clinic is the highest in the northwestern and southeastern districts compared to other selected public facilities. The primary reasons could be the lack of financial investment, private entities' willingness, and more preference for wealthy regions due to higher profit gain.

Dhaka, Narayanganj,Gazipur, Rangamati and Lakshmipur shows higher deficiency of growth centers. But compared to other facilities, the degree of deficiency is lower in the districts in terms of growth centers and rural markets.

3.2 Recommendations

The objective of National Education Policy, 2010 is to ensure compulsory and primary education up to class 8 but the bleak reality is that it is not achieved due to lack of adequate investment and infrastructure. Moreover, SDGs' goal 4 imposes importance on inclusive education, which is also integrated in 7th Five Year Plan to ensure hundred percent enrollment in primary and secondary school (GED, 2016). Paurashava master plans can include the establishments of required number of primary schools, secondary schools and colleges in those particular regions to fulfill the objective of National Education Policy.

The main objective of National Health Policy, 2011 is to ensure health facilities in rural areas for backward communities. The findings demarcate the regions, which requires private hospital

and clinics. Planners, policy makers, governments and stakeholders can take decision to facilitate more private hospitals, clinics and government health complex.

The implications and importance of growth center as well as rural market in national economy are too much. The numbers of these facilities are important but selection of suitable location for these facilities is highly important. Thus, LGED can develop infrastructural facilities such as well-developed roads to connect with growth centers and rural markets. In 8th five-year plan it was mentioned that more growth centers will be established to encourage economic development. This study will help to find the regions that need more growth centers and rural markets and can be implemented in next five-year plan.

3.3 Conclusion

The study has addressed the crucial issue of regional inequalities by highlighting the spatial concentration of public facilities across the districts of Bangladesh. The study has shown that while some districts have adequate public facilities, others, notably in the areas of education and healthcare, have varied degrees of deficiencies. The need for focused efforts is highlighted by the fact that primary and secondary schools, growth centers in Dhaka and the surrounding areas have significant deficiencies. On contrary, northern and southern districts more deficiency in terms of healthcare facilities. In order to address the prevailing deficiencies in the supply of public facilities in the districts, formal regionalization has helped to identify certain districts that need special attention and investment. The results of this study have the potential to direct regional development strategies to achieve a more balanced regional growth.

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GLOSSARY

Spatial concentration -spatial concentration of public facilities refers to the distribution and arrangement of public amenities, services, and infrastructure in a particular area.

Location Quotient - calculated by the ratio of the share of public facilities in a specific geographic area (such as a city or region) to the share of public facilities at a larger scale (like the entire country)

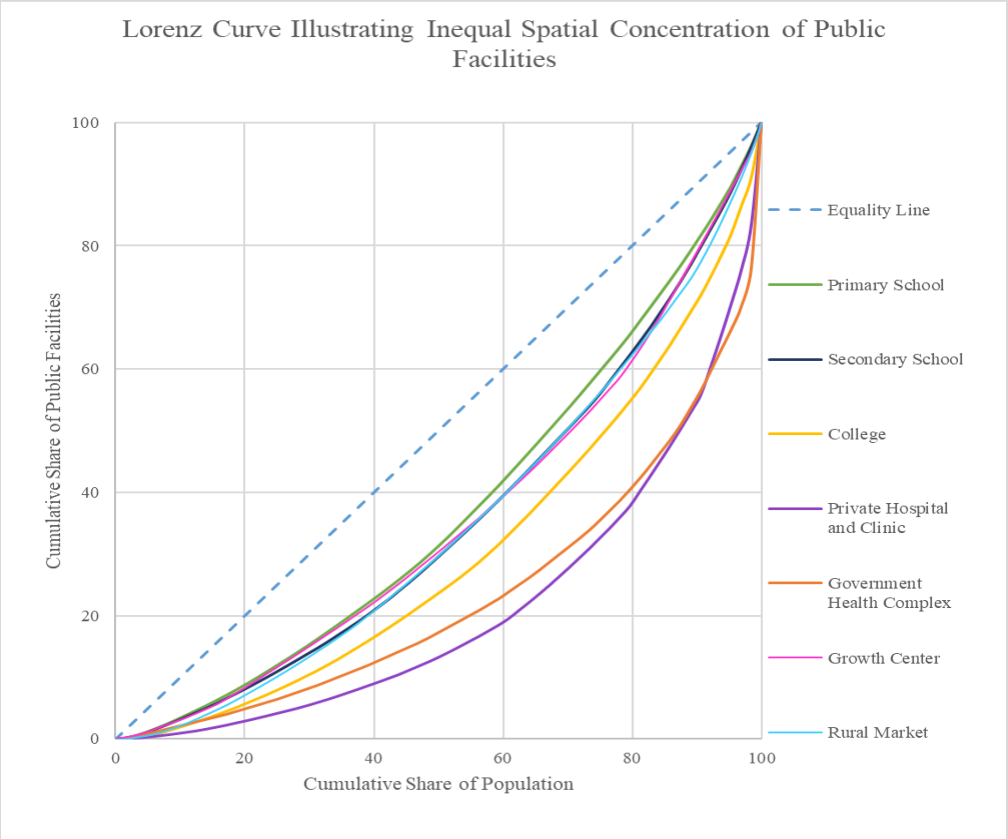
Gini coefficient - measures inequality within a population.

Composite Index- statistical tool to analyze the concentration of public facilities in a particular area.

Public facilities - primary school, secondary school, college, private hospital,/clinic, upazila health complex, growth center and rural market.

APPENDIX

1. Lorenz curve showing inequality in provision of public facilities.



2. Tiles plot representing district ranking based on spatial concentration public facilities in the divisions of Bangladesh

Division	District	Primary School	Secondary School	College	Private Hospital	Health Complex	Growth Center	Rural Market	LQ Sum	Rank
Dhaka	Faridpur								9.92	1
	Gopalganj								9.52	2
	Rajbari								9.36	3
	Tangail								8.91	4
	Shariatpur								8.32	5
	Manikganj								7.54	6
	Madaripur								7.15	7
	Narsingdi								7.11	8
	Munshiganj								6.03	9
	Kishoreganj								5.96	10
	Dhaka								4.1	11
	Gazipur								3.8	12
	Narayanganj								3.41	13
Rajshahi	Joypurhat								8.72	1
	Rajshahi								8.36	2
	Naogaon								7.97	3
	Nawabganj								7.24	4
	Sirajganj								6.73	5
	Pabna								6.67	6
	Bogura								6.05	7
	Natore								5.9	8

Division	District	Primary School	Secondary School	College	Private Hospital	Health Complex	Growth Center	Rural Market	LQ Sum	Rank
Chittagong	Rangamati								8.06	1
	Chandpur								7.07	2
	Khagrachari								6.73	3
	Bandarban								6.42	4
	Noakhali								5.65	5
	Cumilla								5.34	6
	Feni								5.16	7
	Chittagong								4.92	8
	Brahmanbaria								4.73	9
	Lakhsmipur								4.2	10
	Cox's Bazar								4.07	11
Khulna	Narail								15.59	1
	Magura								14.3	2
	Jhenaidah								12.73	3
	Jessore								10.11	4
	Meherpur								9.52	5
	Bagerhat								9.39	6
	Khulna								8.67	7
	Kushtia								8.49	8
	Satkhira								8.09	9
	Chuadanga								5.75	10

Division		Primary School	Secondary School	College	Private Hospital	Health Complex	Growth Center	Rural Market	LQ Sum	Rank
Sylhet	Sylhet								8.86	1
	Habiganj								6.9	2
	Moulvibazar								6.27	3
	Sunamganj								5.08	4
Barishal	Jhalakhati								9.77	1
	Pirojpur								9.67	2
	Patukhali								9.16	3
	Barishal								9.07	4
	Barguna								8.99	5
	Bhola								6.71	6
Rangpur	Kurigram								23.79	1
	Dinajpur								8.67	2
	Panchagarh								8.4	3
	Thakurgaon								7.67	4
	Lalmonirhat								7.57	5
	Nilphamari								7.25	6
	Rangpur								6.95	7
	Gaibandha								5.55	8
Mymensingh	Jamalpur								6.2	1
	Mymensingh								5.87	2
	Netrokona								5.84	3
	Sherpur								5.7	4

3. Calculation of Required Facilities for the Districts of Banlagesh

Educational Facilities	**Population Threshold**
Primary School	5000
Secondary School	7,000
College	52,600

Source: (Jahan & Oda, 2000)

District	Required Primary School (%)
Cox's Bazar	86%
Dhaka	53%
Narayanganj	11%

District	Required Secondary School (%)
Bandarban	33%
Bogura	12%
Brahmanbaria	47%
Chandpur	24%
Cumilla	35%
Cox’s Bazar	34%
Dhaka	77%
Faridpur	5%
Feni	18%
Gazipur	37%
Habiganj	55%

District	Required Secondary School (%)
Kishoreganj	43%
Lakshmipur	32%
Lalmonirhat	6%
Madaripur	7%
Manikganj	23%
Moulvibazar	32%
Munshiganj	40%
Mymensingh	15%
Narayanganj	61%
Narsingdi	32%

District	Required Secondary School (%)
Khagrachari	34%
Netrokona	23%
Noakhali	32%
Pabna	30%
Rajbari	3%
Rangamati	3%
Shariatpur	32%
Sherpur	23%
Sirajganj	15%
Sunamganj	42%
Sylhet	38%
Tangail	6%

District	Required College (%)
Bamdarban	32%
Brahmanbaria	26%
Chattogram	7%
Chuadanga	7%
Cox’s Bazar	51%
Dhaka	24%
Faridpur	4%
Feni	78%
Gazipur	52%
Khagrachari	40%

District	Required College (%)
Kishoreganj	33%
Lakshmipur	33%
Mymensingh	6%
Narayanganj	32%
Netrokona	20%
Noakhali	36%
Shariatpur	18%
Sherpur	26%
Sunamganj	45%