Spatial Distribution of Health Facilities in the South-South, Nigeria

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ABSTRACT

This work on spatial inequality and the polarization of development sought to determine the extent and nature of variation in socio-economic development in the 123 Local Government Areas (LGAs) of south-south, Nigeria. A set of socio-economic indicators of development covering health were collected and analyzed using the Gini-coefficient. The result revealed that there is inequality in the distribution of health facilities among the LGAs and states of the region. The result of this work revealed that both deprived and privileged LGAs in the south-south region co-exist in space. The study recommends full involvement of the local people in the design, initiation, and implementation of regional development programmes. Public participation in the development process will not only guarantee the success of any development policy, but will as well ensure its sustenance and the people's consciousness fully mobilized towards collective goal attainment.

Keywords: *Spatial inequality, Polarization, Development, Facilities, Socio-economic*

1. INTRODUCTION

One of the objectives of regional planning is to maintain a high degree of regional balance in development among locations in space. At the heart of planning endeavors is the desire to achieve spatial equity which advocates fairness in the distribution of socio-economic resources of a state. Inequality in living standards is one of the most serious problems facing contemporary world [1]. Given that we live in a world of scarcity, it is likely impossible for everyone's want to be met. Thus, questions of control over resources and appropriation of the benefits generated by their use are at the root of most contemporary political issues, leading to controversy on who gets what.

Expressing his view on the level of inequality, Mabogunje argued that, 'while, there is widespread regional inequality between countries in the developing world, more worrisome is the ever increasing gap in the opportunities for meaningful human existence between industrialized countries and those referred to as underdeveloped'[2]. The problem partly, has to do with the fact that, growth has been unequally distributed between and within countries. The deeper problem is that increased wealth among nations is not being converted into human development at the rate required to engender convergence in inequality.

Regional inequality has also been a source of concern for policy makers in the developing countries. One of the major issues in Nigeria's development today is that, whilst some development is happening albeit slowly, it is uneven, some areas are doing relatively well, others are lagging behind. In many cases, socio-economic differences are linked to long standing unequal relation of power between advantaged and lagging regions, and institutional weaknesses within the latter. More so, when actors in the advantaged regions control the assets, decision-making and policy formulation processes, and terms of the policy debates on which lagging regions depend, regional 'catch up' is much more difficult. In poor regions where regional elites have particularly concentrated power, decentralization may also deepen both intra-and inter-regional inequalities [3].

The recognition of the imbalance in development in the post colonial Nigeria led to deliberate efforts aimed at reducing spatial inequality in the nation's development as contained in the various National Development Plans [4]. For example, the Second National Development Plan (1970-1974) aptly stated 'a situation where some parts of the country are experiencing rapid growth while other parts are lagging behind can no longer be tolerated' [5]. The thrust of the second national development plan therefore, was "to establish Nigeria as a united, strong, and self-reliant nation…a just and egalitarian society". The Third and fourth National Development Plans also aimed at 'establishing the country firmly as a just and egalitarian society putting premium on the need to reducing inequalities in inter personal incomes and promoting balanced development among the various communities in the different geographical areas of the country'.

There have been some efforts by government aimed at developing the delta region especially the setting up of Niger Delta Development Board (NDDB) in 1961, Oil Mineral Producing Areas Development Commission (OMPADEC) in 1992, Niger Delta Development Commission (NDDC) in 2000, and the creation of the Ministry of Niger Delta in 2008. Despite these efforts wide disparities in development outcomes persist amongst the states and various local government areas of the region.

2. STUDY LOCATION

The South-South region of Nigeria comprises the area covered by the natural delta of the Niger River defined by its geology and hydrology. Its approximate northern boundaries are located close to the bifurcation of the Niger River at Aboh, while the western and eastern boundaries are around the Benin River and the Imo River, respectively. The area is approximately 25,900 square kilometers [6] and consists of six states; Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, and

Rivers (see Fig 1). The region is extremely important due to its oil reserves and biological diversity.

The natural delta of the Niger River is a vast sedimentary basin. The deltaic deposits comprise mainly medium to coarse unconsolidated sands, silt, clay, shale, and peat. The delta is mostly a flat, low-lying swampy basin criss-crossed by a dense network of meandering rivers and creeks. There are four broad ecological zones in the region defined by both relief and hydrological characteristics: the coastal sandy barrier ridge, the mangrove swamp, the freshwater swamp and the lowland rainforest zones [7]. The South-South region is extremely heterogeneous with respect to culture and ethnicity comprising five major linguistic and cultural groups-the Ijoid, Edoid, Delta Cross, Yoruboid and Igboid-are each composed of numerous sub-groups. The Ijoid, who are in majority, have the longest settlement history in the south-south and are the most complex linguistically.
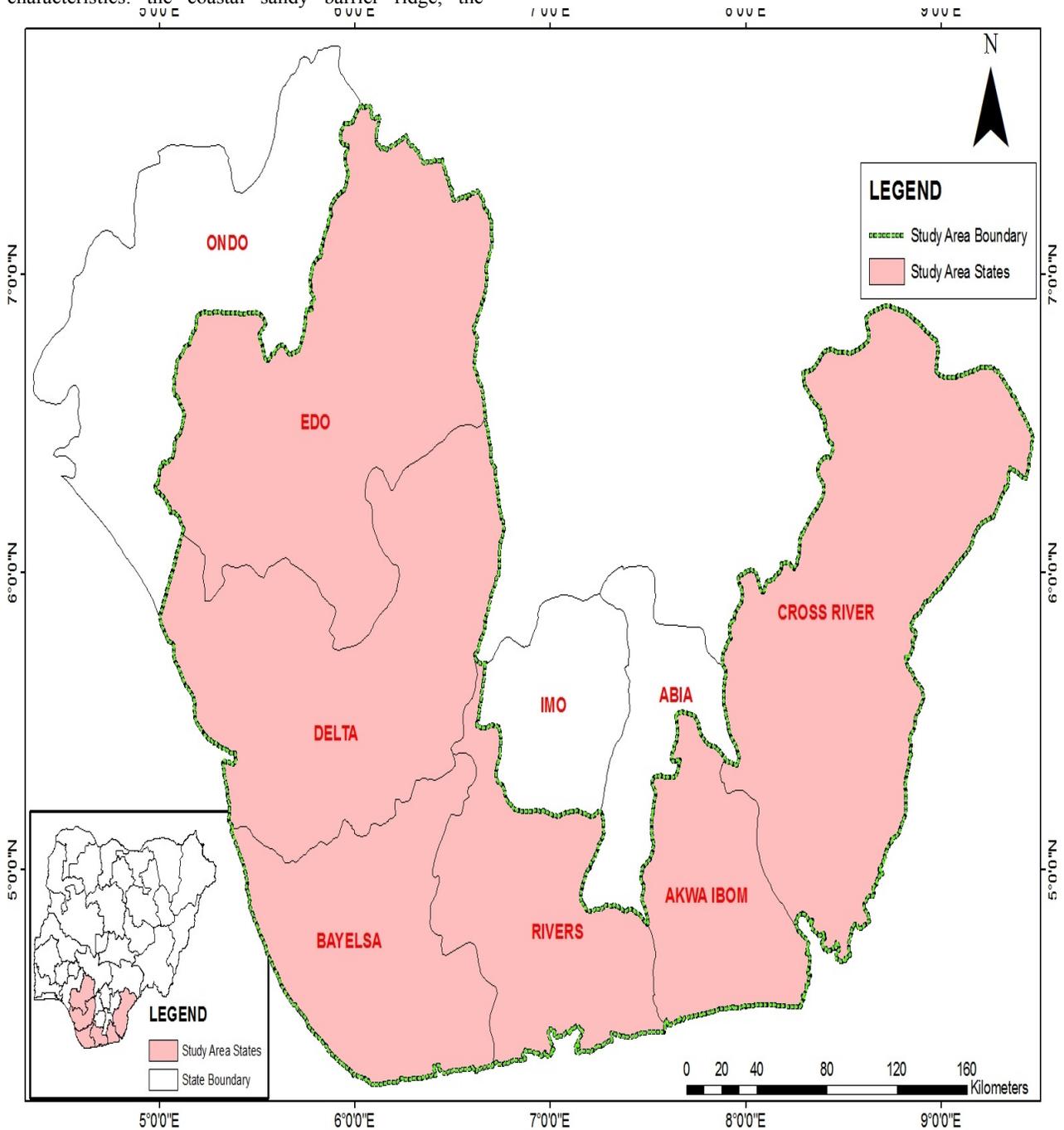

Fig 1: South-South Administrative Region

3. CONCEPTUAL ORIENTATION / PREVIOUS WORK

Several theories have been formulated to explain the incident of regional development and disparities. The aggregate growth theories (international trade, sector, and export) postulate that the development of a region 'may result from either endogenous or exogenous factors or a combination of both' due to the uncontrolled actions of powerful polarizing and centralizing forces inherent in the development process itself. Prominent among these theories, is the theory of cumulative causation pioneered by Myrdal [8] and Hirschman [9]. Perroux in his growth- pole model argues that 'growth does not appear everywhere at the same time, but manifest in points or poles of growth with variable intensities, it spreads by different channels and with variable terminal effects for the economic space to which centripetal forces are attracted and with time, centrifugal forces are emanate throughout the field of influence of activities constituting the pole' [10]. According to Perroux, the promotion of regional development centers will serve as focal point and incentive for further development. This theory is a sort of 'regional unbalanced growth theory', which uses temporary regional imbalances to initiate development

The export-based theory by North [11] has it that, the development of a region is a function of the ratio of its basic and non-basic activities. The input-output model traces the movement of goods in terms of input –output linkages and value creation among sectors or regions. While the concept argues that increase in regional income is determined by increase in export earnings to create inequalities. The failure of these theories to explain the rising tide of inequality among regions is a weakness in their conceptual effectiveness.

With the demise of the rational comprehensive planning as the dominate form of planning theory, there has emerged a range of normative theories aimed at explaining how planning can be conducted to achieve better outcomes. Normative planning theories argue that all forms of knowledge are socially constructed and accept that values are not predetermined but are established in the communicative process itself. The examination of what planners do has revealed the role that planners can play in facilitating or hindering such communication [12]. The communicative planning theory believe so much in the civil society as a potent source of democracy and as well, a vehicle for placing pressure on the state to act responsively to ensure just distribution.

A variant of communicative theory is the multicultural planning theory which postulates that planning in any context must link knowledge to action, to empower the oppressed and marginalized regions, to resist exploitation and the denial of their authenticity [13]. Finally, the just city planning by Fainstein posits that the society is structured by groups rather than class and that planning aims to valorize and promote the claims (material and non material) of these groups [14]. Thus, just processes do not necessarily produce just outcomes as opined by Habermas but, that the 'substantive content' or the impact of planning decisions should be judged as well as their impact on equity [15]. A major setback of the just city planning theory is on how redistribution and equity will play out and whose duty it is to judge what is just or not.

4. METHODOLOGY

The data for this study came from both primary and secondary sources. The primary data was derived through the use of structured questionnaires distributed in the six states that make up the south-south geo-political region. The sampling frame for this study consists of the one hundred and twenty three (123) local government areas of the region. The Niger delta in which the study situates can be broadly classified into two (2) distinct zones viz: the eastern and western delta. Using the stratified simple random sampling technique the study area was divided into the afore mentioned zones eastern delta made up of Akwa-Ibom, Cross-River and Rivers States and western delta comprising of Bayelsa, Delta and Edo states respectively.

Due to cost, and time inherent in total survey, 30% of states (Bayelsa and Cross River) states have 26 LGAs, and 30% of the LGAs were selected across board. That is two LGAs in Bayela state and five LGAs from Cross River State. A sample fraction of 0.005 percent was thereafter taken across board from each selected LGA bringing copies of questionnaires distributed to four hundred and thirty six.

Secondary data was collected from published government statistics from the two states that make up the sample such as Nigeria Year Books, maps, etc. Data were also collected from relevant government agencies such as the ministries of health, information, and local government and chieftaincy affairs. The secondary data relies majorly on the use of some selected indicators of development considered vital for human well-being and seen as basic amenities needed to support effective living in any community.

The local government areas served as aerial units of analysis while the choices of socio-economic indices were based on the appropriateness of the variables and the availability of the data covering all the LGAs in the study region. The selected indicators that cut across health include:

- number of maternity centres/'000 population, 2014
- number of hospitals/'000 population, 2014
- number of doctors/'000 population,2014
- number of doctor/'000 population, 2014
- number of nurses/midwives/'000 population, 2014
- number of hospital beds/'000 population, 2014

- number of maternity beds/'000 population, 2014
- number of pharmacist/'000 population, 2014

In other to show the degree of deprivation or advantage in development among the local government areas in health variables, the Gini index descriptive statistical technique of date analysis was used. The Gini index of concentration examines the extent of concentration of each of our development indicators among the local government areas.
The Gini Coefficient ranges from zero to one, (0-1) with zero representing perfect equality, and 1 total inequality.

The co-efficient equation is given as:

$$Gx = \frac{1}{2} \sum_{i=i}^{N} |xi - pi| \qquad (1)$$

Where:

Gx = Gini co-efficient
Xi = the percentage of the value of variable in the state shared by LGA i
Pi = the percentage of total population in the state shared by LGA i
(Where, population is   assumed the distributional criterion).

5. RESULTS AND DISCUSSIONS

The analysis of the degree of spatial inequality among the local government areas in south-south is presented as set out in table 1. From the table, it is evident that there is variation in the distribution of our chosen indicators of development among the local government areas. The high values of the coefficient indicate that the magnitude of the inequality (as measured by our chosen indicators) is conspicuous over-time.

The inequality is in the range of G=28.82 for number of Pharmacists/'000 population and G=200.13 for number of doctors/'000 population. Generally, it could be said that the distribution of doctors/'000 population (G=200.13) ranks first and are more unevenly distributed among the local government areas, followed by number of Hospitals/'000 population (G=88.33) However, the result show that number of hospital bed/'000 population (G=37.83), and number of Pharmacists/'000 population (G=28.84)   are more localized than other variables examined.

Table 1: Gini-Coefficient of the Health Variables in South-south

S/N	Variables Health	Development Indicators	Gini-coefficient	Rank
1		number of maternity centres/'000 population	68.40	4
2		number of Hospitals/'000 population	88.33	2
3		number of doctors/'000 population	200.13	1
4		number of Midwives/'000 population	84.99	3
5		number of Nurses/'000 population	32.39	5
6		number of hospital bed/'000 population	37.83	5
7		number of Pharmacists/'000 population	28.84	7

The analysis of inter-state performance on the health variables also shows a striking revelation of the distributional pattern of health facilities in the study area. This is evident in the very high gini-values obtained for all the states and shown in table 2. From the table under reference, the distribution of health centers are more unequally distributed in Rivers state, (G=20.21), followed by Edo state (G=18.13), Bayelsa (G=17.19), Cross River (G=15.86), and Delta state (G=15.14) respectively.

Table 2: Performance of South-South States on Health Dimension of   Inequality

State	No of maternity	No of Hospital/ '000 pop	No of Doctors/ '000 pop	No of Nurses/ '000 pop	No of Midwives/ '0000 pop	No of Hospital bed	No of Pharmacis ts/'000 pop	Total
	Development Indicators							
Rivers State	G=20.21	G=19.46	G=49.69	G=37.37	-	G=37.83	G=28.84	G=193.40
Bayelsa State	G=17.19	G=21.08	G=39.33	G=21.77	-	-	-	G=82.18
Delta State	G=15.14	G=23.19	G=31.09	-	-	-	-	G=69.42
Akwa-Ibom State	--	G=24.60	G=40.30	G=28.79	-	-	-	G=93.69
Edo State	G=18.13	G=34.48					G=31.20	G=83.81
Cross River State	G=15.86	G=25.81	39.72	G= 32.39	G=25.85	-	-	G=139.63

Source: Author's Computation (2014)

In terms of number of Doctors/'000 population, Rivers state also led in the state with very high unequal distribution followed by Akwa-Ibom (G=40.30), Cross River (G=39.72), Bayelsa (G=39.33 and delta state (G=31.09) respectively. While, there is inequality in the distribution of all the health variables examined, some variable exhibit greater inequality than others. Generally, it could be said that in the south-south region, the number of Doctor/'000 population are more unequally distributed (G=200.13), followed by number of Hospital/'000 population (G=148.62) while number of nurses/'000 population tend to exhibit a lesser inequality in their distribution (G=25.85)

A closer look at the performance of local government areas on our selected health indicators reveals that there is yet high inequality among the local government areas in the South-South. To appreciate the performance of our local government areas Gini-coefficient was calculated for each local government of

the study area. In other to achieve a categorization, a ranking of LGAs based on their respective performance was done. The mean for all health variables was gotten and thus, LGAs with mean scores of 0.1-0.3 were rated highly deprived, 0.4-0.6, deprived, 0.7-0.9, privileged, while those with score one (1) and above were regarded as highly privileged. Thus, thirteen (13) local government areas are highly deprived while thirty-three (33) came under deprived. In the privileged category, twenty-three (23) local government areas are privileged while fifty-four (54) are in the highly privileged category. (See table 3 for the list of Local Government Areas and their performance on health variables).

The analysis revealed that the distribution of health facilities in the entire south-south region is not only lopsided but the very high Gini-values further highlight the intense nature of inequality problem in the study area. Figure 2 is a schema showing the performance of each local government area on health variables.

Table 3: Performance of LGAs in South-south on Health Variable

	Highly Deprived Local Government Areas on Health Variable
1	Patani (G=0.33),Okpe,(G=0.35),Ethiope-east (G=0.36),Bomadi (G=0.32),Urue-offiong/Oruko (G=0.34), Nsit-Ibom,(G=0.35),Okobo,(G=0.36), Obot Akara,(0.19),Ike-Annang, (G=0.09),Eastern-Obolo, (G=0.26), Igueben, (G=0.20),Odukpani, (G=0.15), and Etung, (G=0.05)
	Deprived Local Government Areas
2	Oyibo (G =0.46), Omuma (G=0.40), Okirika (G=0.62), Aniocha-south, (G=0.47), Oshimili-North (G=0.62), Udu (G=0.66),Ughelli-North (0.69),Warri-southwest (G=0.66), Abak (G=0.64), Essien-Udim (G=0.54), Etim-Ekpo (G=0.69), Ibeno (G=0.50), Ikot-Abasi (G=0.58), Ini (G=0.43),Itu (0.58),Mpat-Enin (G=0.66), Nsit-Atai (G=0.41), Nsit Ubium (G=0.53),Onna (G=0.54), Ukanafun (G=0.60), Udung-Uko (G=0.52),Uran (G=0.56), Essan-central (G=0.52),Essan-northeast (G=0.51),Essan-west (G=0.53), Etsako-central (G=0.53), Ovia-southwest (G=0.69),Owan west (G=0.47),Uhonmwon (G=0.63), Bakassi (G=0.43), Asaritoru (G=0.57), Ndokwa –west (G=0.52) and Bekwarra (G=0.41).

|	**Privileged Local Government Areas**
3	Ahoada-east (G=0.80), Akukutoru (G=0.75), Bonny (G=0.75), Degama (G=0.90), Ikwerre (G=0.77),Ogba/Egbama/Ndoni(G=0.78),Ogu/Bolo (G=0.74), Opopo/Nkoro (G=0.86), Aniocha-north (G=0.94), Ethiope-west (G=0.70), Isoko-north (G=0.75),Ndokwa-east (G=0.82),Ughelli-south (G0.82), Ukwuani (G=0.83), Uvwie (G=0.82), Warri-north (G=0.88), Esan-south east (G=0.71),Etsako-east (G=0.94), Orhionmwon (G=0.89),Ovia-northeast (G=0.77), Owan-west (G=0.82), Abi (G=0.94), and Obudu (G=0.92)
	Highly privileged Local Government Areas
4	Abual/Odua (G=1.44), Ahoada-west (G=1.09), Andoni (G=1.34), Emohua (G=1.04),Etche (1.18), Gokana (G=1.25), Khana (G=1.31), Obio/Akpor (G=2.06),Port-Harcourt (G=11.29),Tai (G=1.43), Brass (G=2.15), Ekeremor (G=2.40), Kolokoma/Opokuma (G=1.52), Nembe (G=3.69), Ogbia (G=1.70), Sagbama(G=3.26), Southern-Ijaw (G=4.39), Yenegoa (G= 5.68), Burutu (G=1.22), Ika-northeast (G=1.13), Ika-south (G=1.33), Isoko-south (G=1.02), Oshimili-south (G=1.00). Others are Sapele (G=1.71), warri-south (G=4.08), Eket (G=3.03), Nsit-Eket (G=3.03), Etinan (G=1.74), Ibesikpo-Asutan (G=1.49), Ibiono-Ibom (G=1.99), Ikono (G=1.20), Ikot-Ekpene (G=5.03),Oron (G=1.74), Oruk/Anam (G=1.07), Uyo (1.99), Akoko-Edo (G=2.54), Egor (G=4.46), Etsako-west (G=1.02), Ikpoba/okha (G=1.95),Oredo (G=12.92), Akamkpa (G=2.74), Akpabuyo (G=2.53), Abaise (G=1,12), Boki (G=1.03), calabar-Municipal (G=4.11), Calabar-south (G=3.61), Ikom (G=2.05), Obanliku (G=1.65), Obubra (G=1.17), Ogoja (G=1.41), Yakuur (G=1.30), and Yala (G=2.17)

Source: Authors computation (see Table 3)
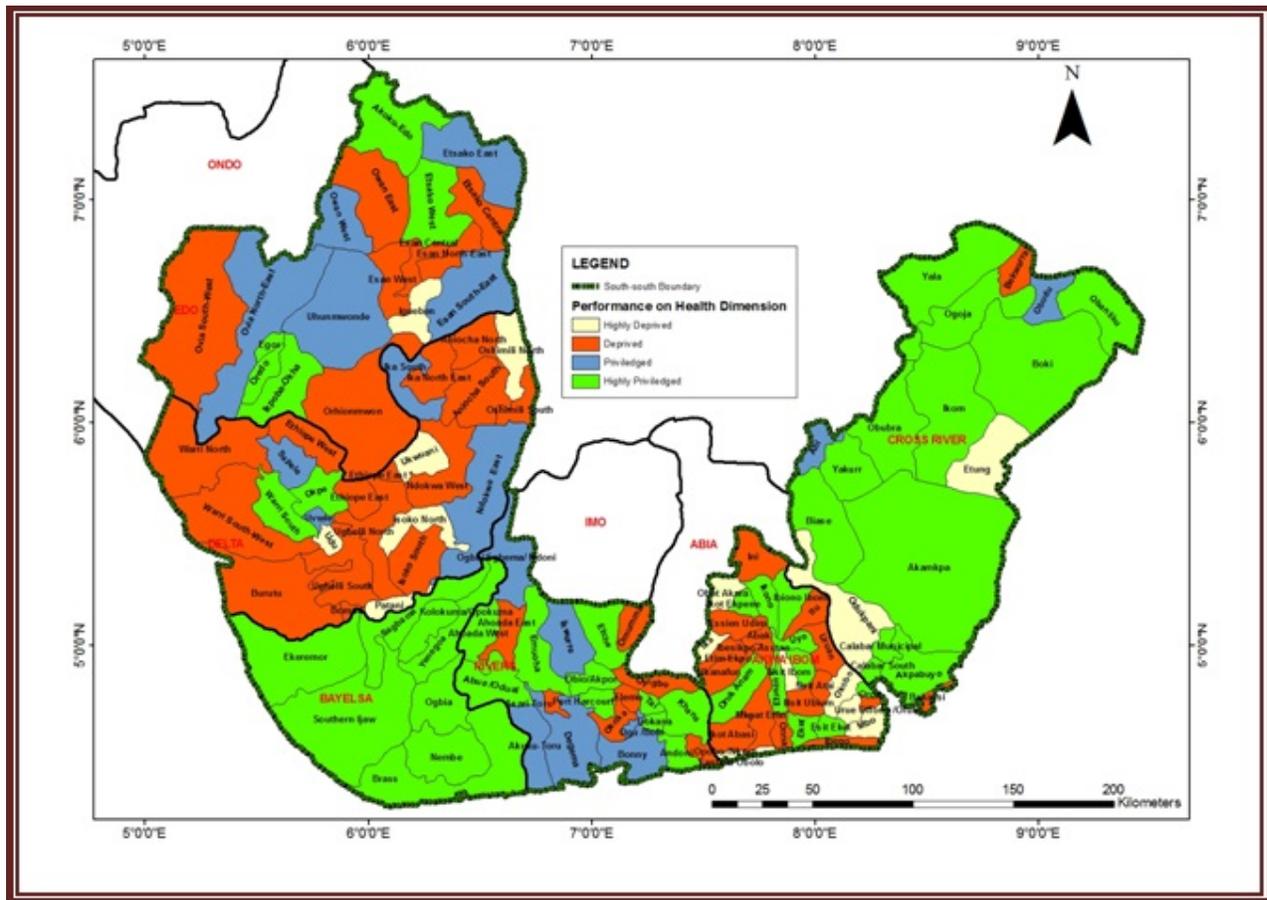
Fig 2: Performance of LGAs of South-South on Health Variable

6. CONCLUSION

This work x-rayed spatial distribution of health facilities in the South-South region of Nigeria using some selected indicators of development. The study uncovered both the existence of privileged and deprived LGAs in the space economy of south in terms of the distribution of health facilities. This work recommends that for effective regional development, the deprived areas (rural) must be effectively incorporated into the privileged areas (urban centers).There should be a well thought out sub-urbanization programme aimed at engendering growth in the lagging areas of south-south by creating secondary cities. This can be achieved through increased information flow, provision of other socio-economic facilities like roads and educational facilities, and through the process of integrated rural development planning. Fiscal transfers, public spending to enhance the assets of the poor and measures to extend market opportunities would all figure in. So also, public investment would play a critical role not just in overcoming immediate disadvantage but as catalyst to socio-economic transformation.

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