

Spatial Distribution Pattern of Outdoor Recreation Centres in Port Harcourt Metropolis, Rivers State, Nigeria

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Abstract: This study examined the spatial distribution of outdoor recreation centers in Port Harcourt Metropolis, Rivers State, Nigeria. The recreation centers were geo-located using global positioning system (GPS). Both descriptive and inferential statistics were employed to analyze data in this study using Statistical Package for Social Science (SPSS) 20.0 version. Nearest neighbour analysis was used to determine the spatial distribution pattern of recreation centers using ArcGIS 10.1. Findings revealed that twenty seven outdoor recreation centers were identified in the study area in which 66.7% were owned by government and 33.3% were privately owned. However, 18.5% of total recreation centers were found in Obio/Akpor LGA while 81.5% were found in Port Harcourt LGA. The spatial distribution pattern of recreation centers was slightly clustered ($Z=0.266$; $p=0.790$). The study recommended that policymakers should always provide for open spaces where recreation exercises should take place in order to generate revenue for government.

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Keywords: Spatial pattern, Ownership, Nearest neighbour analysis, Outdoor, Port Harcourt Metropolis

1. Introduction

Nigeria being a developing country is characterized by highly rated urbanization which has been making urban dwellers to be deprived or insufficient by some basic public facilities (Rahaman and Salauddin, 2009). As a result, recreation centers are needed to keep the urban life sound. Recreation being a form of play or amusement, refreshment of the body and mind, is practically motivated by leisure and satisfaction. According to Yukic (1970) in Veal (1992), recreation is an activity of leisure, leisure being discretionary time. The need to do something for recreation is an important factor of human biology and psychology (Chen, 2007). Studies have identified the benefits of engaging in outdoor recreational activities to include promotion of healthy living; encouragement of social interaction; increased productivity; prevention of crimes and anti-social behaviours and enhancement of the economic base of the society among others (Obi-Ademola, 2008; Simon, 2015). However, outdoor recreational facility availability has been shown to associate positively with youth physical activity levels (Ries *et al.*, 2011). Physical activity has a potential ability to reduce cardiovascular disease risk factors such as body mass index, blood pressure and blood lipid levels (Strazzullo, *et al.*, 1988) as well as the psychological benefits of higher self-esteem and lower anxiety and stress (Calfas *et al.*, 1994).

According to Simon (2015), since most Nigerian cities adopted British's Town and Country Planning System, with a large number of ranked cities which have undergone preparation of comprehensive urban

plans has now become a policy document to guide physical development. This has made many cities like Port Harcourt, Kaduna, Enugu, Jos and so on to gain maximally from this colonial planning system. As a result, the comprehensive plan has assisted to organize the land-use activities in such a manner that it expresses the aims and ambitions of the community and at the same time delineates the form and character it seeks to achieve (Simon, 2015).

This mission has led to the establishments of many outdoor recreation centers in Port Harcourt Metropolis. In the United States of America, the shrinking percentage of areas occupied by residential land use averaging 39.61 per cent is amazing compared with most Nigerian cities with an average of 55 per cent (Obateru, 2005; Simon, 2015). Basically, outdoor recreation space ranks third in land areas occupied by the various land uses, after the residential and institutional uses. This proves that most residents in American cities enjoy recreational activities outside the home base areas.

Outdoor recreation is likened to tourism which is a major revenue generation sector that has not been fully harnessed in Nigeria (Ojiako *et al.*, 2015). As thought by Adedunrin (2000), tourism alone if properly harnessed could earn the nation more than what the nation is currently earning from crude oil. No wonder, in the United States of America outdoor recreation-related business contributes to one-third of the total revenue generated next to financial services and insurance and outpatient health care.

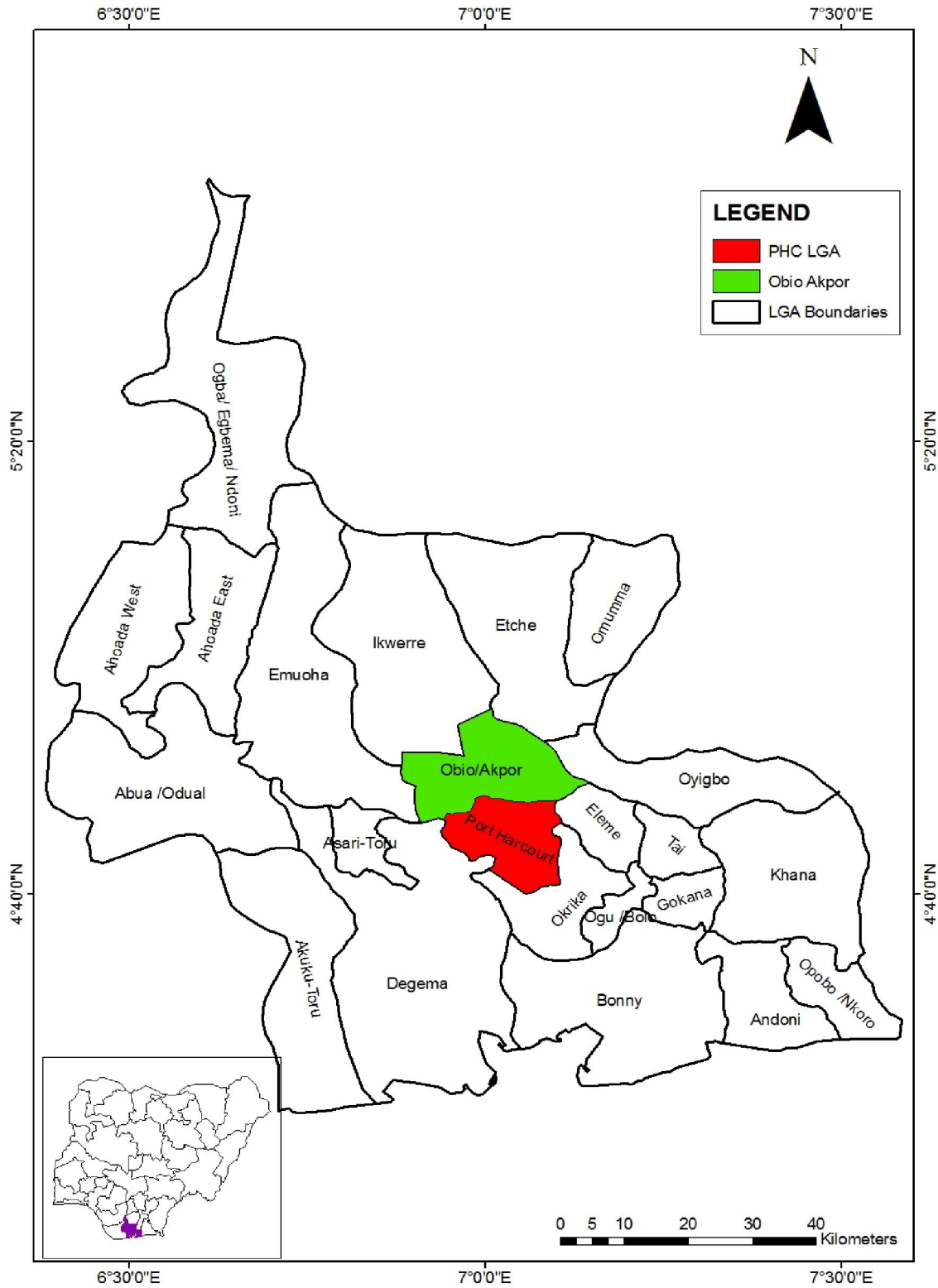


Figure 1: Rivers State Showing Study Area
Source: Rivers State Ministry of Planning (2016)

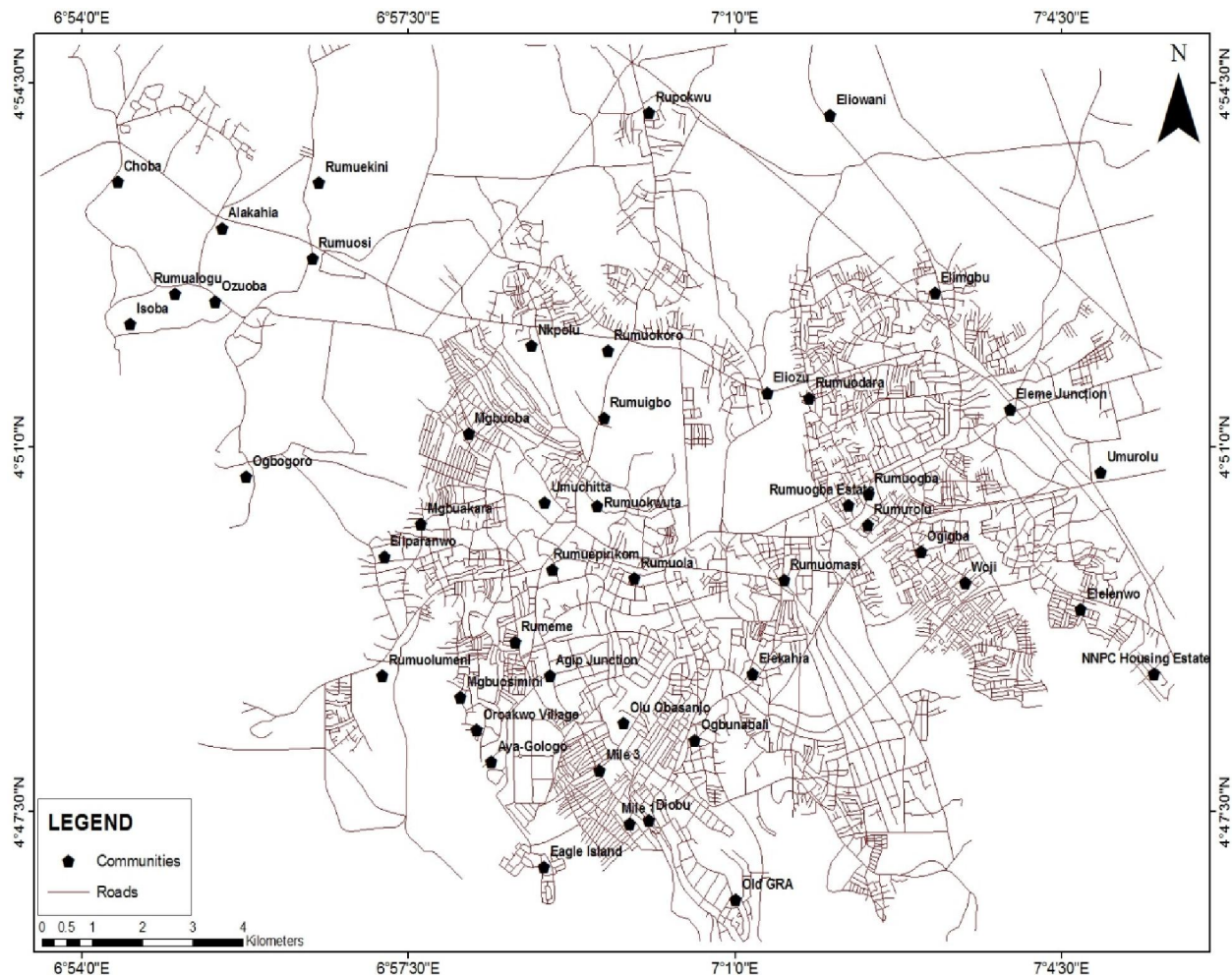


Figure 2: Study Area Showing Communities
Source: Rivers State Ministry of Planning (2016)

It generates \$646 billion each year, supports 6.1 million direct jobs and \$80 billion in federation, state and local tax revenue. According to Harris (2010), the state economic impact and jobs impact would be substantially larger as it becomes \$1.6 trillion in economic impact and 12million jobs created and rank it the first in the country between 2005 and 2011. The continued growth of 5% annually and success of this great American industry hinges on outdoor recreation opportunities for everyone.

There are some peculiarities that easily manifest themselves as strong forces that control the entire process and level of outdoor recreation participation. Studies have revealed that cost, supply (provisions), accessibility factor and residents behaviour have been identified as the factors influencing outdoor recreation participation (Simon, 2015). In the recent time, culture and ethnic dimensions have been reckoned with as important factors that also affect the level of frequency of attending the outdoor recreation centers (Michells and Kugler, 1998). It was found out that in 1977, more

whites participated more in outdoor recreation activities than blacks especially in the outdoor recreation activities like camping, boating, hiking/backpacking, hunting, skiing and sightseeing at historical sites or natural wonders (Washburn and Wall, 1980). Hartmann and Overdeest (1990) also observed that only 2% of blacks out of 11.7% of the US population participated in outdoor recreation activities through an on-site survey carried out on a nation-wide sample of Federal and State Parks and outdoor recreation area.

Several studies like Obateru (1981), Falade (1985), Obateru (2005), Tomori (2010), and Simon (2015) have carried out research on recreation activities in Nigeria in various dimensions but none of these studies put spatial analysis of outdoor recreation centers into consideration. Against this background, the present study examined the spatial distribution of recreation centers in Port Harcourt Metropolis.

2. Methodology

The study was conducted in Port Harcourt Metropolis comprising of both Obio/Akpor and Port Harcourt City Local Government Areas. Port Harcourt is located between latitudes 4° 45'E and 4°60'E and longitudes 6° 50'E and 8°00'E (Figure 1 and 2). The study area is influenced by urbanization or urban sprawl whereby smaller communities have merged together and form megacity. The reason is due to high influx of people resulting to rapid growth of the population in the study area. This in turn is largely due to the expansion of the oil and allied industries, which have also attracted many, varied manufacturing industries. The population of the city therefore increases on a daily basis. The study area enjoys tropical climate due to its latitudinal position. The tropical climate is characterized by heavy rainfall from April to October ranging from 2000 to 2500 mm with high temperature all the year round and a relatively constant high humidity (Eludoyin *et al.*, 2011). The relief is generally lowland which has an average of elevation between 20 and 30m above sea level. The geology of the area comprises basically of alluvial sedimentary basin and basement complex. The vegetation found in this area includes raffia palms, thick mangrove forest and light rainforest (Eludoyin *et al.*, 2011). The soil is usually sandy or sandy loam underlain by a layer of impervious pan and is always leached due to the heavy rainfall experienced in this area. The study area is well drained with both fresh and salt water. The salt water is caused by the intrusion of seawater inland, thereby making the water slightly salty.

The data on the longitudes and latitudes were collected through the use of global positioning systems (GPS) were used to map the outdoor recreation centers in ArcGIS 10.1 software. Descriptive statistics were used to explain the percentages of the frequency of the outdoor recreation centers in terms of the ownership (Public or Private) and entrance mode. The spatial

distribution pattern of outdoor recreation was analyzed using the Nearest Neighbour Index (Zhang *et al.*, 2014; Asl *et al.*, 2014). If pattern is clustered or nucleated, then there will be one or more groups with a relatively short distance between one facility and its nearest neighbour, and is indicated by zero though there may be large areas in which no facility is located. If the pattern of distribution is random or dispersed it means that facilities are widely distributed, and so have an index of one 1. If the pattern is regular or uniform, the distance between a recreational facility and its nearest neighbour will be approximately the same and it is indicated by 2.15. Data were represented in tables and maps.

3. Results

Global Positioning System readings of the recreation centres are presented in Table 1. It showed that twenty seven (27) outdoor recreation centers were found in the study area. Only 5 (18.5 %) outdoor recreation centers were found in Obio/Akpor LGA, 22 (81.4%) were found in Port Harcourt City LGA (Figure 3). Out of the 27 recreation centers, 66.7% were publicly owned while 33.3% were owned by private (Table 2; Table 3). Of this publicly owned recreation centers, 14.8% were owned by Federal Government while 51.9% were owned by Rivers State Government (Table 2; Table 3). The method of accessibility in Table 2 and Table 3 present that 7.4% were opened during festival and for public/members only free of charge/pay and use, 55.6% entered through pay and use while 25.9% were open to public free of charge and 11.1% were strictly for members. It was also observed that 43 major facilities were found in the recreation centers within Port Harcourt Metropolis in which facilities for entertainment (11.3%) and relaxation/restaurant (10.8) dominated (Table 4). The spatial distribution pattern of outdoor recreation centers in Port Harcourt Metropolis was slightly clustered ($Z=0.266$; $p=0.790$) (Table 5).

Table 1: Names, Coordinates and Uses of Facilities in the Study Area

S/N	Name of Centre	Coordinates	Facility present
1.	Nigerian Navy Play Ground Borikiri	4° 44' 29.0"N 7° 02' 17.0"E	Football pitch, parade ground, all sports and for relaxation.
2.	Port Harcourt Boat Club	4° 45' 22.4"N 7° 00' 17.5"E	All types of river crafts on hiring for transportation to riverine communities and for crushing and relaxation.
3.	Nigerian Prison Play Ground	4° 45' 32.6"N 7° 01' 0.5"E	Football field, playground and sports. Learning driving and for entertainments.
4.	Tourist Beach	4° 45' 22.4"N 7° 02' 35.0"E	All types of river crafts for cruising, transportation to riverine communities, horse riding, relaxation, site seeing entertainment and swimming.
5.	Number 1 Field	4° 45' 36.6"N 7° 01' 12.0"E	Football pitch for tournaments, leagues for senior and junior soccer.
6.	Number 2 Felid	4° 45' 37.4"N	Judo pitch, weight structures, gymnastic arena for competition

S/N	Name of Centre	Coordinates	Facility present
		7° 01' 20.1"E	and leagues
7.	Number 3 Field	4° 45' 37.6"N 7° 01' 32.4"E	Football pitch, weight structures, gymnastic arena, and exercise.
8.	Number 4 Field	4° 45' 37.7"N 7° 01' 37.9"E	Agbani Daerego Halls for hiring, cultural materials, Christian services, ceremonies and relaxation
9.	Number 5 Field	4° 45' 37.8"N 7° 01' 50.3"E	Table tennis, lawn tennis, volleyball court. Football pitch for junior teams and exercise
10.	Number 6 Field	4° 45' 38.0"N 7° 01' 53.0"E	Table tennis, lawn tennis, volleyball court. Football pitch for junior teams and exercise
11.	Jubilee Park	4° 45' 37.6"N 7° 01' 41.5"E	Relaxation, entertainment, meetings, bicycle riding, nature friendly, skateboard and restaurants.
12.	State cultural center	4° 45' 33.7"N 7° 02' 23.2"E	Arts and cultural exhibition, historical relics and studies, centre under reconstruction now.
13.	Chief Alfred Diette Spiff Civic Center	4° 45' 3.0"N 7° 01' 14.9"E	Football pitch, swimming pool, weight lifting, lawn and table tennis, judo games, hockey, baseball, athletics, entertainment, Jogging, hosting national and international games, banquet halls, kits trading.
14.	Rivers State Museum	4° 46' 22.5"N 7° 00' 54.3"E	Arts and entertainment, historical.
15.	Spar Enterprise	04° 45' 30.5"N 07° 00' 47.0"E	Swimming, entertainments, shopping and eating homes, and relaxation.
16.	Port Harcourt Golf Club	04° 45' 22.4"N 07° 00' 54.3"E	Golf course competition for register members,, exercise and relaxation
17.	Port Harcourt Club	4° 47' 5.3"N 7° 00' 30.7"E	Football field, lawn and table tennis, basketball, volley ball, swimming, restaurant, relaxation, exercise for members, sports and entertainment.
18.	Silver Bird cinema	4° 47' 5.9"N 7° 00' 14.8"E	Entertainment, relaxation, cinema, packing lots, accommodation and exercise.
19.	Isaac Boro Park	4° 47' 16.0"N 7° 00' 17.9"E	Relaxation, site seeing, entertainment, historical, events gallery, sports, commercial, and exhibition.
20.	Polo Club	4° 49' 23.2"N 7° 00' 4.2"E	Horse riding, field competition, horse stalls, Site-seeing and entertainment.
21.	Garden City Amusement	4° 49' 40.0"N 7° 00' 5.5"E	Merry go-round, helicopter riding, horses & bicycle riding, tri-pulley, castle (powered by panels) trails, picnic and entertainment.
22.	Peoples Club of Nigeria	4° 49' 59.4"N 7° 00' 03.9"E	Entertainment, relaxation and meeting halls.
23.	Port Harcourt Zoo park	4° 48' 44.6"N 7° 02' 42.2"E	Entertainment, animal park, natural view
24.	Liberation Stadium	4° 49' 26.7"N 7° 01' 19.9"E	Football fields, jogging path, athletes, skateboards, dog parts, sports and exercise for public on supervision, walking lane.
25.	Dr. Obi Wali Cultural Centre	4° 50' 35.5"N 7° 00' 51.9"E	Entertainment. Cultural exhibitions and meetings
26.	Nigeria Television Authority Play Ground	4° 51' 59.0"N 6° 51' 49.0"E	Entertainment, relaxation, events gallery, ceremonies and parties.
27.	University of Port Harcourt Sport Complex	4° 53' 55.4"N 7° 55' 7.2"E	Football field, lawn and table tennis, volley ball, soccer, gymnastics, swimming pools, basketball, indoor sports, athletics, weight lifting, jogging paths, trails and exercise.

Source: Authors' Fieldwork, 2016

Table 2: Ownership and Method of Accessibility into Recreation Centers

S/N	Name of Centre	Ownership	Public/Private	Method of Accessibility
1.	Nigerian Navy Play Ground Borikiri	Federal Government	Public	Free/pay and use (Public and Members during festivals)
2.	Port Harcourt Boat Club	Private	Private	Pay and use
3.	Nigerian Prison Play Ground	Federal Government	Public	Pay and use
4.	Tourist Beach	Private	Private	Pay and use
5.	Number 1 Field	Rivers State Government	Public	Open to public free of charge
6.	Number 2 Felid	Rivers State Government	Public	Open to public free of charge
7.	Number 3 Field	Rivers State Government	Public	Open to public free of charge
8.	Number 4 Field	Rivers State Government	Public	Open to public free of charge
9.	Number 5 Field	Rivers State Government	Public	Open to public free of charge
10.	Number 6 Field	Rivers State Government	Public	Open to public free of charge
11.	Jubilee Park	Rivers State Government	Public	Open to public free of charge
12.	State cultural center	Rivers State Government	Public	Pay and use
13.	Ch. Alfred Diette Spiff Civic Center	Rivers State Government	Public	Pay and use
14.	Rivers State Museum	Rivers State Government	Public	Pay and use
15.	Spar Enterprise	Private	Private	Pay and use
16.	Port Harcourt Golf Club	Private	Private	Strictly for members
17.	Port Harcourt Club	Private	Private	Strictly for members
18.	Silver Bird cinema	Private	Private	Pay and use
19.	Isaac Boro Park	Rivers State Government	Public	Pay and use
20.	Polo Club	Private	Private	Strictly for members
21.	Garden City Amusement	Private	Private	Pay and use
22.	Peoples Club of Nigeria	Private	Private	Pay and use
23.	Port Harcourt Zoo park	Rivers State Government	Public	Pay and use
24.	Liberation Stadium	Rivers State Government	Public	Pay and use
25.	Dr. Obi Wali Cultural Centre	Rivers State Government	Public	Pay and use
26.	Nigeria Television Authority Play Ground	Federal Government	Public	Pay and use
27.	University of Port Harcourt Sport Complex	Federal Government	Public	Free/pay and use (Public/Members during festivals)

Source: Research's Fieldwork, 2016

Table 3: Summary of the Ownership and Mode of Entrance into Recreation Centers

Ownership	Frequency	Percentage (%)
Federal Government	4	14.8
Rivers State Government	14	51.9
Private	9	33.3
Total	27	100.0
Method of Accessibility		
Free/pay and use (Public/Members during festivals)	2	7.4
Pay and Use	15	55.6
Open to public free of charge	7	25.9
Strictly for members	3	11.1
Total	27	100.0

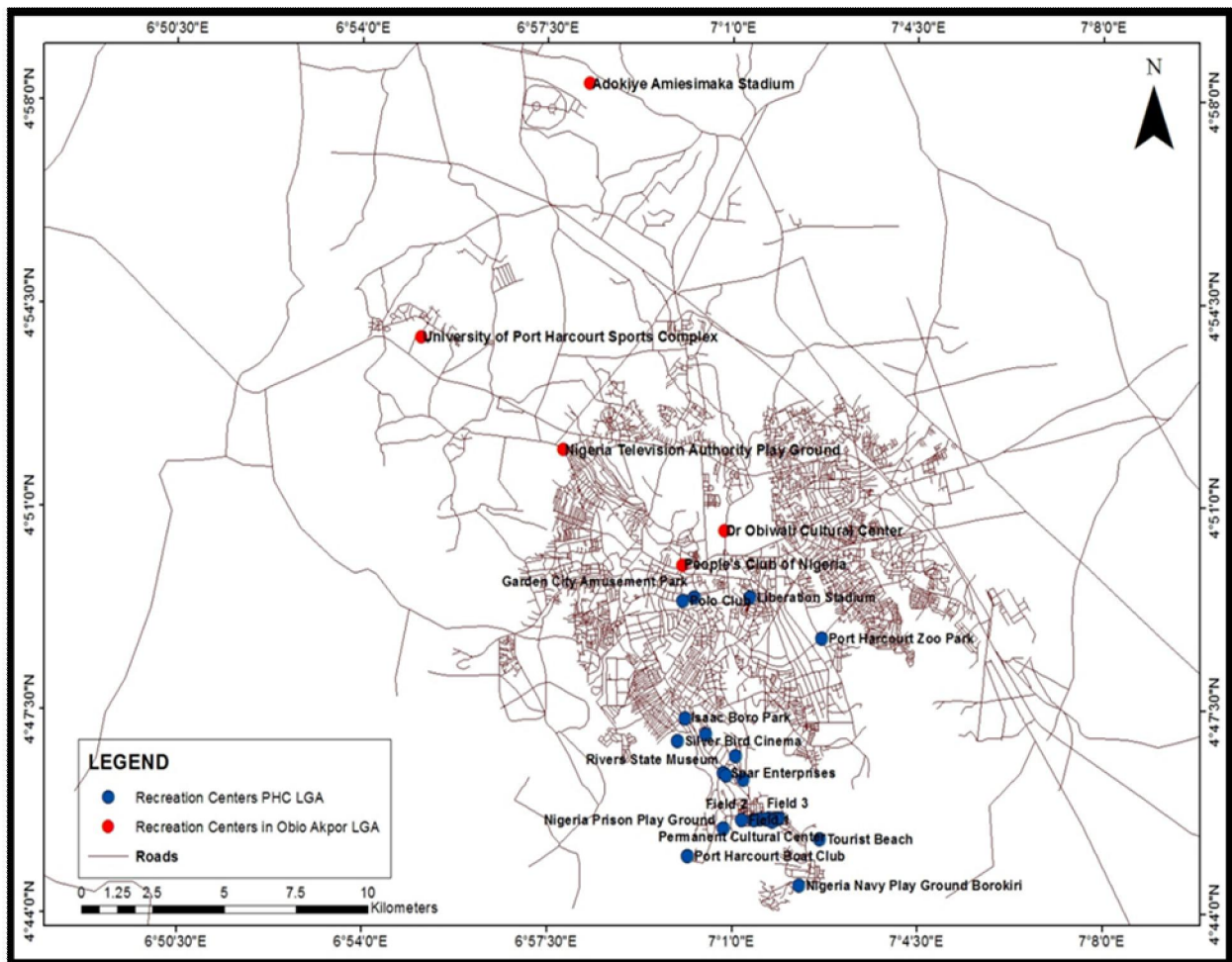


Figure 3: Spatial Distribution of Outdoor Recreation Centers in Port Harcourt Metropolis
 Source: Author's Analysis, 2016

Table 4: Summary of Major Facility Present in the Recreation Centers in Port Harcourt Metropolis

SN	Facility Present	Frequency	Percentage (%)
1	All Sports	1	0.8
2	All type of River Crafts	2	1.6
3	Animal park	1	0.8
4	Arts/Cultural Materials	4	3.2
5	Athletics	3	2.4
6	Baseball	1	0.8
7	Basketball	2	1.6
8	Bicycle riding	2	1.6
9	Castle trails	2	1.6
10	Ceremonies/Event Gallery	1	0.8
11	Christian Services	1	0.8
12	Cinema	1	0.8
13	Dog parts	1	0.8
14	Entertainment	14	11.3
15	Field competition	1	0.8
16	Football/Soccer Pitch	10	8.1
17	Golf	1	0.8
18	Gymnastics & Exercise	6	4.8
19	Halls for hiring	2	1.6
20	Helicopter riding	1	0.8
21	Historical relics & Studies	3	2.4
22	Hockey	1	0.8
23	Horse riding	4	3.2
24	Bike/Jogging path	3	2.4
25	Judo Pitch	2	1.6
26	Kits Trading	1	0.8
27	Lawn tennis	5	4.0
28	Learning Driving	1	0.8
29	Meetings	3	2.4
30	Merry go round	1	0.8
31	Nature Friendly	2	1.6
32	Parade ground	1	0.8
33	Parking Lots	1	0.8
34	Relaxation joint/Restaurant	13	10.5
35	Shopping & Eating Houses	1	0.8
36	Site Seeing	3	2.4
37	Skateboards	2	1.6
38	Swimming Pools	5	4.0
39	Table tennis	5	4.0
40	Tri Pulley	1	0.8
41	Volleyball	4	3.2
42	Walk Lane	1	0.8
43	Weight Lifting/Structure	4	3.2

Table 5: Nearest Neighbour Analysis

Summary	Obio/ Akpor LGA	Port Harcourt City LGA	Both LGAs
Observed Mean Distance	0.045	0.0065	0.0132
Expected Mean Distance	0.0225	0.00636	0.0128
Nearest Neighbour Ratio	2.027	1.015	1.026
Z Score	4.39314	0.138	0.266
P value	0.0001	0.889	0.790
Decision	Dispersed	Slightly Clustered	Slightly Clustered
Significance (p<0.05)	Significantly Dispersed	No Significance	No Significance

Source: Author's Analysis, 2016

4. Discussions

Findings revealed that the spatial distribution of outdoor recreation in Port Harcourt Metropolis was slightly clustered. This is possible because of the location of majority of the recreation centers are found around the same neighbourhood in Port Harcourt Metropolis. This finding is in agreement with the study of Abomeh *et al.*, (2013) where it was shown that the spatial distribution of hotels, restaurants, night clubs, bars and cinemas in Victoria Island are clustered. The imbalance location of the recreation centers could be linked with the planning type established for long by the colonial masters. Thus, this could have brought about the disparity in the number of recreation centers located between Port Harcourt LGA and Obio Akpor LGA. Jahan (2000) and Rahaman and Salauddin (2009) reported that disparity takes place in the city as a result of the growing urban population creates pressure on the public services like school, playground, health facilities, marketing facilities. Thus, disparity is seen between the planned and unplanned areas (Rahaman and Salauddin, 2009). Also, inequalities in recreation centers could be linked to population threshold of an area and absolute development.

5. Conclusion and Recommendations

The study can be concluded that outdoor recreation centers are not evenly distributed in the study area, rather it was slightly distributed and that majority of the recreation centers in Port Harcourt Metropolis were owned by government and majority collected fees before an individual can be allowed to use the facility. The study therefore recommended that government should deliberately establish more parks and recreation centres especially in Obio-Akpor LGA where few recreation centers were found. More facilities should be provided in the existing recreation centres especially those lacking essential facilities.

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