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Associating Gender with Neighbourhood Deprivation in Lagos State, Nigeria
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Abstract

The study examines the effect of neighborhood deprivation on gender. It shows that most residents are deprived and that though, in Lagos State, the gender differences in the level of deprivation may not be too pronounced, yet, women, because of their socio-traditional roles in the society are more at a receiving end. There is gender difference in the distance an individual has to cover to get to the place of work with men having to cover more distance than women to get to their offices. The study shows that there is no difference between men and women in terms of accessibility to electricity and water as all residents are deprived almost equally. An interesting aspect of the study is that the fear of being killed or maimed as a result of crime within the neighborhood does not depend on the gender of the individual concerned. However, in general, there is gender difference in deprivation within the neighborhood with clear difference in the level of neighborhood convenience ($\chi^2 = 97.131$ and $p<0.05$) and availability of Amenities ($\chi^2 = 105.12$, $p<0.05$.) while there is no gender difference in neighborhood Safety ($\chi^2 = 35.097$, $p>0.05$), Health ($\chi^2 = 63.933$, $p>0.05$) and Community Relationship ($\chi^2 = 12.905$, $p>0.05$).

Key Words: *Neighborhood, Deprivation, Environment, Gender, Differences.*

Background and Objectives:
Cities have long been recognized as a powerful force in shaping the health of people (Galea et al, 2005) .The effect of environmental degradation on human health is well documented in literature (Pearce and Watford, 1993 in Franz and FitzRoy, 2006; Ojikutu, 2006; Gopalan, 2003 etc.) and researchers globally are unanimous on the possibility of strong association between health and neighborhood environment (Cummins et al.;, 2004; Picket and Pearl, 2001; Kazunori, 2003). Gilbertson (1964), noted that an indication that early researchers show interest in the subject dated back to 1842, when Edwin Chadwick's report on the 'sanitary Condition of the Laboring Population of Great Britain recommended better housing for workers as a way of improving the level of their health. Gilbertson's position which was supported by Rainham and McDowell (2005) in Franz and FitzRoy (2006), further stressed that the home environment is a cause of many accidents and it is the focus of certain communicable diseases, particularly in children.

Gardner(1973) while reporting causes of death and their relationship to socio-environmental factors in the county Borough of England and Wales confirmed that differences exists in death rates between towns and such are related to changing, changeable and unchangeable aspects of their environment. This assertion was supported in a study conducted by Nakamura (2001) in which he explained that health levels largely depends on resident's living conditions and lifestyle and are mostly due to complicated interactions of a variety of factors in the residential environment. The above stated positions do not deviate from the findings of Stafford and Marmot (2003) in which they posit that where a person lives may influence his health and that individual and neighborhood deprivation generally increase the risk of poor health. They explained that there is the possibility that the health effect of living in a deprived neighborhood may be different for rich and poor individuals. In line with this argument, Gilbert, Devon &Payne-Sturges, (2004) concluded that different residential location comes with different exposure to health risks

According to Stafford et al (2004), men and women may perceive their environment differently. Citing a study conducted by Mohai (1997) in Detroit, they discovered that women are more likely than men to report that pollution and the global environment are of serious concern to them. To buttress this conclusion, Stafford et al (2005) further cited Sooman &

Macintyre(1995), Stafford, Bartley, Mitchell, & Marmot(2001),Collins et al.(1998) ,first to show that perception of the local environment are associated with health and secondly to show that vulnerability to problems inherent in local environment may differ between men and women.

Enrique et al (2005) while observing the role of gender in perceived environmental correlates of physical activities explained that women may face a barrier in doing physical activity than men because of their multiple role, perception of safety and environmental access.

Despite abundant literature in the subject area of this study in many countries of the world, relatively little work has been done in Lagos State, Nigeria on gender differences in relation to deprivation in the neighborhood environment. This oversight is suprising, considering the agreement of researchers that the quality of life in urban Lagos, Nigeria approximates an aesthetic disaster (Sule, 1979). While highlighting the nature of physical and environmental problems in Lagos State, Oduwaye and Gamu-Kaka (2007) observes that the proliferation of shantytowns and slums in Lagos has resulted in unwieldy expansion of urban centers which poses challenges to planning problems such as the provision and maintenance of roads, drainage and sewage systems and also generate a high rate of poverty, diseases and epidemic, traffic congestion, general pollution and crimes as typified in places such as Mushin, Ajegunle, Isale-Eko, Oshodi, Ojo and Orile amongst others.

These problems make Lagos State a central point of a study that will examine how these negative externalities impact on the individual inhabitants with respect to their gender.

The focus of the present study is on the salient deprivation indices in neighborhood environment and whether they impact differently on men and women in Lagos state, Nigeria.

The Study Area:
Lagos State was created on May 27, 1967, through Decree Number 14, by the Federal Government. What was then the Federal Capital of Nigeria was merged with the old colony province of the defunct Western Region of Nigeria to form the new state. The state lies approximately between

longitude 2^042' East and 3^042' East and latitude 6^022' North and 6^052' North. It is bounded in the South by the Guinea Coast of the 180km Atlantic Coastline, in the West by the Republic of Benin and in the North and East by Ogun State (Odumosu, Balogun and Ojo, 1999).

It has a total area of 3,577 square kilometer about 22 percent of which is water. (Oke *et al*., 2000). Despite its position as the smallest State in the Federation in terms of land mass, occupying only 0.4 percent of the area of Nigeria, it has gone through series of administrative transformation to metamorphose into a frontline position amongst the thirty-six states making up the federation of modern day Nigeria.

Lagos State with a population of over 13 million is the most urbanized state in Nigeria. (WHO, 2004) over 50 percent of industries in Nigeria are located in the state, contributing about 70% of the national gross industrial output. (Oke, Adedokun, Ogunlade, Soretire, Adetoro and Faweya, 2001). The state accommodates about 6.2 percent of the total population of Nigeria and its annual population growth rate is over 9 percent.

Data and Methods
The data for this study come from samples of residents drawn from Lagos State, Nigeria.

The Data
A random sample of 320 individuals was given questionnaires in the twenty local government areas in the state. The instrument of data collection which contains thirty seven questions was partitioned into six sections with each section representing an index of deprivation in the neighborhood. There is a section for personal details of the respondents in the questionnaire.

A problem confronting researchers on neighborhood and residential environments is the choice of appropriate evaluation index system. Kazunori & Jian (2003) presented the four concepts of residential environment listed by the World Health Organization (WHO) in 1961 as those that satisfy the basic living requirements of human beings. This includes: Convenience, Amenity, Health and Safety. In addition to these four, he added "Community" as the fifth requirement, which in his opinion would explain the activities of the individual in the community of his residence.

In line with the partitioning suggested by the WHO (1961) and as enunciated by Kazunori and Jian (2003), the present paper divides these as follows:

- **Personal Details** such as Age, Marital Status, Number of Children, Educational Qualification, Income, Local government.
- **Convenience:** Type of residence; Ownership of house; rent paid; Number of rooms occupied; Ownership of a car; Distance of Office or School of children from home; Mode of transportation to and from home to destination; Accessibility of residence to other essential amenities like recreational facilities.
- **Amenity:** Location of Residence, Type of road leading to residence, Accessibility to water; Accessibility to electricity.
- **Health:** health with sanitary; health with no pollution.
- **Safety:** residential safety which includes; crime within residential locality, type of security measures available in the area.
- **Community:** Membership of residential community, friendship with neighbors.

It is the intention of this study to examine how these indices relate to the gender of the individuals in our study.

As a prelude to fitting a model, the study does a simple descriptive analysis of the data using frequency analysis. This enables a brief analysis of the salient features of the data which is intended to guide further understanding of the results.

The Model

Let X_i be the ith deprivation index, i=1,2,....5

where $Xi = \{x_{ij}\}$, and x_{ij} are the values of the jth factor in the ith index. i=1,2,3,....5 and

j = 1,2,3....n where n is the number of factors in the index. Also $\{x_{ij}\}$ is a vector. We intend to fix a model of the form.

$$P(Y) = \frac{1}{1 + e^{-\beta_0 + \sum_{i=1}^{5} \beta_i X_i + \varepsilon}} \quad \dots\dots\dots\dots\dots\dots \quad (i)$$

where Y is a dichotomous assuming the value 1 when the deprived individual whose health is affected by the residential environment is Male and 2 when such individual is Female. P(Y) is the probability of Y occurring.

The ordinary linear regression would have suffice here but for the violation of the assumption that the outcome variable(Y) should be quantitative, that is, it should be continuous, unbounded and measured in interval scale, (.Field, 2000).

Our intention is to fit the logistic regression model in (i), first for each Xi and then for all the Xi combined. The individual fit, that is, the fit for each Xi will give an idea of how sex is affected by each index of deprivation affects .The second stage tests the impact of the five deprivation indices together on gender.

The theory, procedure and computational analysis of the logistic regression techniques have been discussed in many research literature and books (Examples include; Aczel, 1999; Field, 2000; Dillon and Goldstein, 1984; Press and Wilson, 1978; Swafford, 1980; McShane et al., 2005).

The data are analyzed with SPSS 10 using the Backward LR technique.

Results
Preliminary Result
At this stage, simple cross tabulation analyses were done to get a feel of the salient features of the variables in terms of their relationship with gender.

Dependants
There seems to be significant relationship between gender of the respondents and the number of dependants who live with them ($\chi^2 = 36.145$, $p < 0.05$). 59.9 percent of the respondents have one or more relations who depended on them for livelihood, living with them in the same household.

It is noteworthy that a situation similar to the above exits in the case of dependants who are not living with the respondents ($\chi^2 = 16.467$, $p < 0.05$) as 51.5 percent of the respondents have dependants who do not live with them. At least 24.4 percent of the respondents cater for three or more people.

Income and Occupation
There is significant relationship between gender and income (χ^2 = 67.625, p < 0.05), with 22.4 percent of the males and 20.1 percent of the females having no fixed income. Though there is no significant difference between male and female in terms of occupation (χ^2 = 6.340, p > 0.05), over 30 percent of the respondents are self employed.

This in the general language of residents of Lagos State is an indication of no fixed income and outright unemployment. It is also important to infer from the above figures the general deprivation of the residents in terms of employment, Income and number of dependants.

Residential Accommodation
Though, there is no significant relationship between gender and type of residential accommodation (χ^2 = 1.163, p > 0.05), over 48 percent of the respondents live in tenement apartments which is generally a one room apartment with shared toilets, kitchen and other amenities provided for the use of occupants, irrespective of the number of tenants in the household. Only 5.3 per cent live in self contained apartments.

It is noteworthy that 80.2 per cent of the respondents are not the owners of the house they live-in, though there is no significant difference between men and women in this regard (χ^2 = 0.911, p > 0.05).

40.9 percent of the respondents live in one room accommodation while only 35.9 per cent live in accommodations having three or more rooms .Another salient feature of the data is that 77.9 per cent of the respondents believe that their children schools are easily accessible to their residence. This is understandable considering the fact that primary and secondary schools are located in almost all constituencies in the state.

Transportation
About 81 percent of the respondents do not have a car while 69.2 per cent live farther than two kilometers from their places of work. It is important to note that there is gender difference in this regard (χ^2 = 5.733, p < 0.05) with men having to travel more than women to get to their places of work.32.3 percent of the respondents travel by Danfo (a fourteen seater bus), 24.8 per

cent by Okada (Motorbike) and 5.3 per cent by Molue (a 50 seater Bedford bus) to get to their offices every day.

About 48 percent of the respondents live in localities with tarred roads while 44.9 percent live in areas where the roads are either un-tarred or mere footpaths.

Water
Also, only 27.4 percent of the people get their water from government tap, 22.8 per cent from 'Water Mallam' (vendors, of Hausa origin ,who sell water in cans),30.7 percent from borehole and 7.6 percent from well.

Electricity
The study shows that about 90 percent of the respondents do not have more than four hours access to electricity daily and only 12.2 percent have access to electricity for between 4hours and 7 hours in a day. It is important to note that none of the respondents have access to electricity throughout the day. It is also worthy of note that there is no significant gender difference in this regard ($\chi^2 = 7.857$, p > 0.05).

About 87 percent of the respondents have neighbors who use electricity generating plant. This is not unconnected with infrequent availability of electricity in State.

Health and Safety
Only 32.7 per cent of the respondents have not been to the hospital in the past one year while 44.5 percent have to the hospital more than once in the year.0.7 percent have been to the hospital at least ten times. About 51 percent of the respondents have lost at least a neighbor in the past one year. Also, 12.8 percent of the respondents in our study live close to a waste dump site

The general security situation is such that 82.2 percent of the respondents live close to or live within crime prone areas.31.7 percent believe that armed robbery is more common in their areas than any other crime, 33.7 percent feel that attack by area boys is the most common crime within their neighborhood, while 12.9 percent live close to areas invested by drug using and hemp smoking street urchins.

30.5 percent of the respondents feel most unsecured at night, 26.8 percent in the morning, 8.6 percent in the afternoon and 3.0 percent throughout the day while 9.9 percent do not have security worries. There is no significant difference in gender as to the time an individual feels most unsecured (χ^2 = 6.480, p > 0.05).

Only 25.4 percent of the respondents feel that they could be maimed or killed as a result of frequent security problems in their areas while 64 percent do not feel threatened and 10.6 percent are indifferent. In this regard, there is no significant difference between gender and the feeling that one could get killed (χ^2 = 1.974, p > 0.05).

Despite the aforementioned there are high level security provisions by residents to complement the national security forces such as Police, army, Civil Defense and other government funded security units. Only 21.1 percent of the resident neighborhoods are covered by the police while the Ooduwa Peoples Congress (OPC), a none-governmental neighborhood security covers 38.9 percent and the remaining 39 percent go for other security services that are none- governmental.

In addition, about 40 percent of the respondents have high fence and burglar proof installed in their houses to forestall the incursion of hoodlums such as armed robbers, are boys and others.

Communal Life
Only 28.4 percent of the respondents partake in Community Development Association (CDA) meetings while about 50 percent of them do visit their neighbors on regular basis, though, 52 percent do not have friends in the neighborhood.

Logistic Regression Results
The analyses here which use logistic regression are in two segments. First we examine the relationship between gender and each of the deprivation indices. Second, we examine the joint relationship of the five indices with respect to gender.

Convenience
The predictor variables here include: Marital Status, Ownership of car, How the respondents commute to office from home, How convenient is the mode of transport available to him, Type of residential accommodation, Position in office, Whether office is within two kilometers from home, Occupation, Accessibility of residence to places such as recreational facilities, and Accessibility of residence to the school of children. The dependent variable is the gender of the deprived individual.

Table 1 shows that χ^2 = 97.131 and p<0.05 which is an indication that the model is highly significant. Table 2 also shows that the initial -2LL which was 415.235 changed to 318.104 which is an indication of an improvement in the model with the inclusion of the predictor variables for convenience.

The classification table shows that 52.3 per cent of the cases were initially correctly classified but after all the indices of convenience were added, the correctly classified cases change to 70.7 percent.

Safety
The following predictor variables were used as measures of safety: Whether Area is free from crime, Type of crime common in the neighborhood, Time respondents feel most insecure, whether the respondents feel that he could be maimed or killed, Type of community security provision in the respondents neighborhood. Table 3 shows that the model is not significant χ^2 = 35.097, p>0.05. The classification table shows that initially the dependent variable was correctly predicted given the model in 52.3 percent of the cases but this increased to 63.2 percent after the addition of all the predictor variables for safety. Table 4 shows a -2LL of 382.915 which is an improvement over the initial value of 418.012, though, this is not sufficient to make the model significant.

Amenity
The variables used for measuring Amenity include location of residence, access to electricity and access to water. Table 5 shows that the model is significant χ^2 = 105.12, p<0.05. The classification model initially correctly classified 52.7 percent of the cases but with the addition of all the predictor variables for amenity, this increased to74.3 percent. The initial -2LL of 415.035 was also changed to 310.22 with the inclusion of all the variables.

Health
Included in the variables for measuring health are: Accessibility of neighborhood to market, whether the respondents have suffered from any serious ailment in the last one year, Proximity of the neighborhood to waste dump site, Whether the respondents have lost neighbors in the last one year, Number of such dead neighbors, Cause of death of the neighbor and frequency of generating plant usage in the neighborhood.

Table 6 shows that the model of health is not significant $\chi^2 = 63.933$, p>0.05. The classification table shows that initially the dependent variable was correctly predicted given the model in 53 percent of the cases but this increased to 69.5 percent after the addition of all the predictor variables for health which is a marked improvement compared with the initial model with only the constant. With the inclusion of all the variables for Health, -2LL which was 412.028 decreased to 348.095, an indication of an improved predictive power of the new model.

Community
The variables for measuring community participation includes: Whether House has Burglar proof installed, Whether the respondents partake in community Development association activities, Whether respondents have friend in his neighborhood and Whether respondents visit their neighbors.

Table 9 shows that the model is not significant $\chi^2 = 12.904$, p>0.05.The classification table initially correctly classified 52.5 percent of the cases but with the addition of the predictor variables for community relationship in the model, this increased to 58.5. This indicates that there is no significant shift from the initial model and the one that was built with the addition of all the variables. This position is confirmed with the addition of all the predictor variables for community relationship for which the initial -2LL of 416.527 decreased to 403.623. The implication of this is that though,there is a slight improvement in the model but it is not sufficient to increase the predictive power significant.

Overall Model
The overall model contains all the variables in Convenience, Amenity, Health, Safety and Community as shown above.

Table 11 shows that the model is highly significant with χ^2 = 407.732, p<0.05 and the following variables amongst others are identified as highly important in determining the overall functional relationship.

- Type of road leading to house of respondent
- Access to Water
- Access to electricity
- Number of neighbors using electricity generating plants
- Frequency of crime in neighborhood
- Type of crime common in neighborhood
- Type of security provisions in the neighborhood
- Age of respondents
- Number of dependants living with the respondents
- Number of dependants not living in the same household with the respondents
- Income
- Local Government of residence

Discussions and Conclusion:

The findings of the overall logistic regression shows that convenience, Amenity, Health, Safety and Community Relationship have direct effect on the gender of the deprived individual. On the other hand, separate tests for convenience shows that predictor variables such as marital status, Ownership of cars, Mode of transportation from office to home, Convenience of transportation, Type of residential accommodation, Position in office, Distance from home to the office, Occupation and so on, all collectively depend on the gender of the individual in the study.

Similarly, separate test for Safety shows that the predictor variables such as Type of common crime in the neighborhood, Whether the area is free from crime, Time respondents feel most secured, Type of security provisions in the neighborhood and so on, do not depend on gender. Health and Community relationship are also separately not dependent on the gender of the individual concerned but the availability of Amenity to the individual depends on gender.

The study shows that residents in Lagos State, Nigeria are generally deprived of Convenience, Health facilities, Amenities and Safety, while the Community relationship and interactions are poor.

In a situation where over 48 percent of residents live in one room apartment with about 82 percent paying rent and about 60 percent having dependants living with them in the same room, one can infer that such individuals are deprived of good living accommodation. In Nigeria, women suffer more in this type of situation because many of them are housewives, who must contend with the poor living environment in their marital home without complaint. This acceptance of deprivation goes with the societal norm of "for better for worse" in marriages.

The study also shows that about 81 percent of the residents do not have cars or other personal means of transportation. Though, most businesses and work places are clustered around the Lagos Central, the situation is such that the distance of the work place of the people from their office has negative correlation with their income. In fact, the more your income, the closer your residence from the office. The level of deprivation in terms of transportation is so high that over 69 percent of the residents live further than two kilometers from their office.

Only 27.4 percent of the residents have access to government taps while others rely on other sources such as 'Water Malam' and Bore Holes. Water Malams are water vendors who sell water whose sources and hygiene are unverifiable. The study also shows that about 90 percent of residents do not have access to electricity for more than five hours in a day. As a result, most residents use electric generating plant to complement the scanty provisions from the national power line. The fumes and noise from these generators are serious health hazards.

The communal life as shown in our study is far below expectation as only 28.4 percent of the residents partake in CDA meetings and activities while over 50 percent of residents do not have friends in their neighborhood.

The statistics outlined above suggest that most residents are deprived of basic social amenities and that though, not pronounced, there is gender difference in neighborhood deprivation in Lagos State, Nigeria.

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Table 1: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	97.131	49	.000

Table 2: *Model Summary*

Step	-2log likelihood	Cox and Snell R- Square	Nagelkerke R Square
1	318.104	.277	.369

Table 3: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	35.097	30	..239

Table 4: *Model Summary*

Step	-2log likelihood	Cox and Snell R- Square	Nagelkerke R Square
1	382.915	.110	.146

Table 5: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	105.012	62	.001

Table 6: *Model Summary*

Step	-2log likelihood	Cox and Snell R- Square	Nagelkerke R Square
1	310.022	.295	.394

Table 7: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	63.933	49	.074

Table 8: *Model Summary*

Step	-2log likelihood	Cox and Snell R- Square	Nagelkerke R Square
1	348.095	.193	.258

Table 9: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	12.904	11	.300

Table 10: *Model Summary*

Step	-2log likelihood	Cox and Snell R- Square	Nagelkerke R Square
1	403.623	.042	.056

Table 11: *Omnibus Tests of Model Coefficients*

	Chi-square	df	Sig
Model	407.732	196	.000