



# FACTORS RESPONSIBLE FOR SOCIO-SPATIAL SEGREGATION IN THE HOUSING NEIGHBOURHOODS OF MINNA, NIGERIA

## CZYNNIKI ODPOWIEDZIALNE ZA SEGREGACJĘ SPOŁECZNO-PRZESTRZENNĄ W DZIELNICACH MIESZKANIOWYCH MIASTA MINNA W NIGERII

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### Abstract

*Segregation in the housing sector has exposed urban dwellers to series of unfavourable conditions in most cities of developing countries, which are as a result several factors. This paper is aimed at examining the factors influencing segregation in the housing neighbourhoods of Minna, Nigeria. Two-stage cluster sampling methods were adopted in the selection of neighbourhoods and households across the entire sample frame in the administration of 374 questionnaires across the 25 clustered neighbourhoods. Chi-square and Relative Importance Index (RII) as well as mean score to determine neighbourhood geographical segregation indicators pattern across all the 25 neighbourhoods in the study area. The study established that there is a significant difference between low, medium, and high density neighbourhoods in terms segregation factors in the study area. It was therefore suggested that a good urban governance structure should be put in place that will discourage class divisions among spatial entities of the city.*

**Keywords:** segregation, factors, urban space, neighbourhoods, housing

### Streszczenie

*W większości miast krajów rozwijających się segregacja w sektorze mieszkaniowym postawiła mieszkańców miast w obliczu szeregu niekorzystnych warunków, wynikających z kilku czynników. Niniejszy artykuł ma na celu zbadanie czynników wpływających na segregację w dzielnicach mieszkaniowych miasta Minna w Nigerii. Zastosowano dwuetapowe metody próbkowania klastrowego w doborze dzielnic i gospodarstw domowych w całym operacie losowania w celu rozdania 374 kwestionariuszy w 25 klastrach dzielnic. Wykorzystano wskaźnik chi-kwadrat i wskaźnik względnego znaczenia (RII), a także średni wynik w celu określenia wzorca wskaźników segregacji geograficznej we wszystkich 25 dzielnicach na badanym obszarze. Badanie wykazało, że istnieje znacząca różnica między dzielnicami o niskiej, średniej i wysokiej gęstości zaludnienia pod kątem czynników segregacji na badanym obszarze. W związku z tym zasugerowano, że należy wprowadzić dobrą strukturę zarządzania miastem, która zniechęci do podziałów klasowych między jednostkami przestrzennymi miasta.*

**Słowa kluczowe:** segregacja, czynniki, przestrzeń miejska, dzielnice, mieszkalnictwo

## 1. INTRODUCTION

Housing segregation is generally understood to be the concentration of ethnic, national-origin, or socioeconomic groups in given neighbourhoods of a city or metropolitan area (Iceland, 2014). Kemper (1998a, 1998b) cited in Muhammad, Kasim, and Martin (2015a) viewed housing segregation as a spatial separation of population sub-groups within a specific geographical area like a large city. Such sub-groups can be defined formally in terms of age, occupation, income, birthplace, ethnic origin or other measures; or they could equally be specified as social minorities separated from the dominant groups of power differentials (Berkes Gaetani, 2019). Although, segregation is an innately spatial concept, the geographical dimension of social segregation is understood and analysed using quite simple spatial descriptions theories on the relation between spatial and social phenomena (Legeby, 2010).

Segregation in the housing sector has exposed urban dwellers to series of unfavourable conditions in most cities of developing countries, which resulted in series of infringement on their opportunities, prospects and welfare (Seethaler-Wari, 2018; Dzukogi et al., 2022). This enhances physical and social depletion of neighbourhoods, growing poverty, isolations, slum and squatter development, underemployment, and susceptibility to crimes and toxic pollutants (Aliyu et al., 2012; Muhammad, Kasim, Martin, 2015a; Muhammad, Kasim, Martin, et al., 2015). Residential segregation is a situation where population groups are sorted into various neighbourhood context and shapes within an environment living and social space, classifying inhabitants on numbers of unique peculiarities like race/ethnicity, religion and economic/social status of individuals and groups within the population (Muhammad, Kasim, Martin, 2015b).

Contrary to the faster and more complex process of recent urbanization, spatial segregation, inequality and separation is on the rise (Schütz, 2014; Aliyu et al., 2020). The influencing factors of segregation are complex and differ from place to place. The complexity starts with the fact that segregation can be coercive or in other cases, sought by marginalized groups (Schütz, 2014). Deliberate segregation can happen either in order to strengthen their community or because of fear from violence and pandemics. Recently, COVID-19 pandemic has exposed some of the segregations in the global cities (Mohammed et al., 2021).

Recently, it has become lucid that the issue of segregation in the housing neighbourhoods

of developing world has become apparent and increasingly is on the rise. In the urban areas of the developing world, different groups are geographically, economically and socially separated (Catney, 2015). In most developing world cities, housing segregations are based on ethnicity, income, occupational structure, nationality, political affiliation, religion and the likes (Muhammad et al., 2018). This is common in South African cities (Rodrigues, 2009). Other contributing factors of segregation are: gaps in income, obsolete legal frameworks, marginalization and stigmatization of an area (UN Habitat, 2001).

In Nigeria, housing segregation existed prior to the arrival of colonialist (Aliyu et al., 2012; Muhammad, Kasim, Martin, 2015a). Housing segregation before the British colonial rule was based on political class not income, ethnicity or race, for example, people of diverse tribes and nationals cohabited in the north. The colonial administrators' form of housing segregation brought about the emergence of the Sabon Gari and Tudun Wada settlements (new towns) which housed the southern Nigerians living in the north and northern Nigerians living in the south respectively.

Several factors influence residential segregation in Nigeria as observed by Mohammed et al. (2015b), separation and differentiation of neighbourhoods surfaced along the line of ethnicity, and religious affiliation in the past and recently enhanced by individual aggregate socioeconomic characteristics, preference, choice and taste of neighbourhood all showing a significant relationship and influencing residential segregation. Minna is not an exception to this phenomenon (Mohammed et al., 2019). It is on this that the paper examines the factors influencing segregation in the housing neighbourhoods of Minna, Nigeria.

## 2. METHODOLOGY

### 2.1. Study Area

Minna, the capital city of Niger State and a renowned railway town, is located at approximately latitude 9°71' North and longitude 6°33' East. Over the years, the town has undergone a significant transformation from a small traditional settlement to a bustling urban center, equipped with modern facilities and amenities. The total population of Minna is estimated to be around 201,429 people, out of the total population of Niger State, which stands at 3,950,249, with an annual growth rate of 2.3% (NPC, 2006). The town is composed of 25 neighborhoods, including Bosso Town, Shango, Sauka Kahuta, Barkin Sale, Kpakungu, Minna central, Tudun Fulani, Chanchaga, Bosso

Estate, Tayi Village, Angwan Daji, Tunga, Tudun Wada North, Tudun Wada South, Makera, Sabon Gari, Maitumbi, Nassarawa, F-Layout, Limawa, Fadikpe, GRA, Dutsen Kura Hausa, Dutsen Kura Kwari and Tungan Goro, as presented in Figure 1.

**2.2. Data and Analysis**

This empirical research employed a survey research method to collect primary data on the factors influencing urban segregation. The data was collected based on the research structure, taking into account the number of segregation indicators. The selection of neighbourhoods and households was carried out using a two-stage cluster sampling method, and a sample of 374 households was selected across 25 clustered neighbourhoods. The primary data was collected through various means, including field survey, physical observations and

measurements, and questionnaire administration. The data generated included population, ethnic composition, employment status, household income, occupation, education level, gender, age, religion, housing occupation status, political affiliation, rental value, indigene status, family size, social inclination, infrastructure, general health status, crime rate, and security.

The study measured various factors influencing segregation, including mean score and Relative Importance Index (RII) for individual and aggregate socioeconomic characteristics, neighbourhood choice or preferences, physical characteristics of the urban environment, and political/institutional factors. The study then used Chi-square to test the significant difference between low, medium and high densities based on the outcomes of the RII of the factors influencing urban segregation.

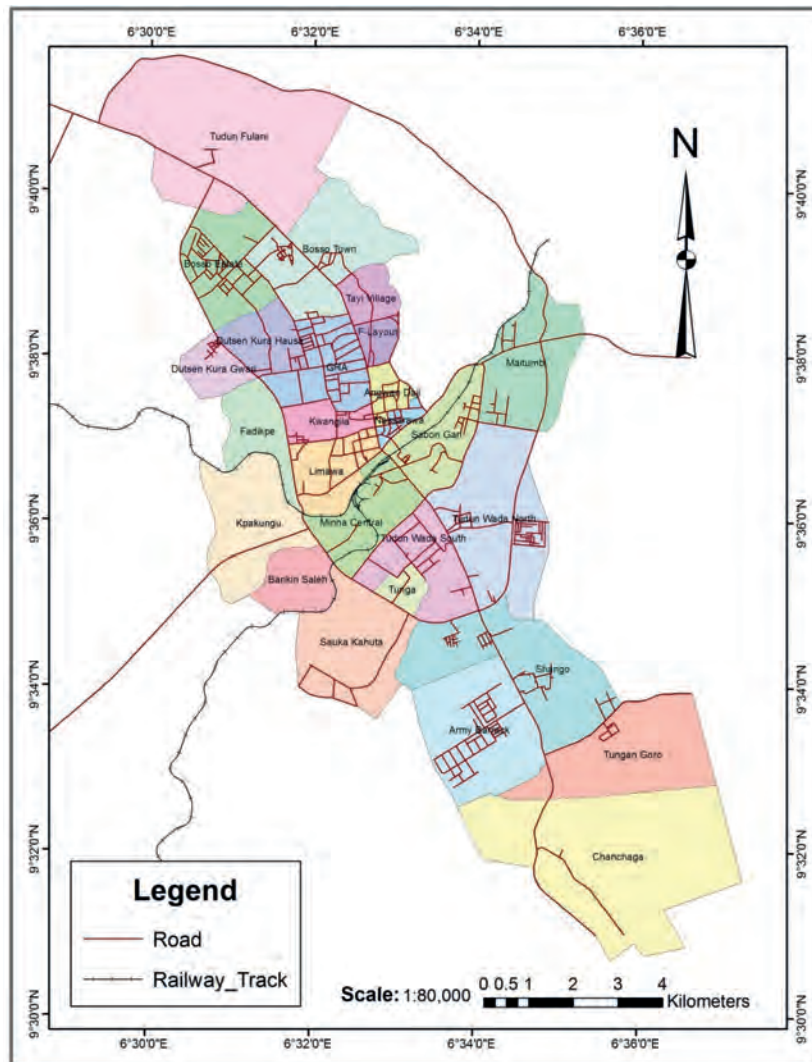


Figure 1. Research sample points  
Source: Niger State Ministry of Lands and Housing, 2018.

### 3. FINDINGS

#### 3.1. Physical characteristics of the urban environment

The result in Table 1 indicates that the factors under the physical characteristics of the urban environment influence urban segregation differently across low, medium and high density neighbourhoods of Minna. RII of these factors (physical characteristics of the urban environment) revealed that they influence residential segregation in low density except for topography which has less influence with RII of 0.473. Similarly, in the medium density all the physical characteristics of the urban environment influence urban segregation except condition of road and topography with RII of 0.472 and 0.376 respectively. The implication of this finding is that topography have less influence on urban segregation, this is because in Minna, topography is not a setback for development as most part of the city is characterised with hills and all densities could be found in such areas. The study also revealed that in high density neighbourhoods, almost all physical characteristics of the urban environment has less influence on urban segregation.

Table 1. Physical characteristics of the urban environment

Density	Variables	N	Mean	RII
Low density	The physical layout	33	4.58	0.915
	Accessibility	33	4.46	0.891
	Condition of roads	33	4.00	0.8
	Drainage condition	33	3.85	0.77
	Density	33	4.49	0.897
	Topography	33	2.36	0.473
	Type of housing	33	4.36	0.873
Medium density	The physical layout	83	3.63	0.725
	Accessibility	83	4.23	0.846
	Condition of roads	83	2.36	0.472
	Drainage condition	83	3.24	0.648
	Density	83	2.65	0.53
	Topography	83	1.88	0.376
	Type of housing	83	3.02	0.605
High density	The physical layout	257	1.86	0.371
	Accessibility	257	1.51	0.302
	Condition of roads	257	1.76	0.351
	Drainage condition	257	2.75	0.55
	Density	257	1.64	0.328
	Topography	257	1.51	0.301
	Type of housing	257	1.77	0.353

Source: Field survey, 2020.

The outcomes of the RII of the physical characteristics of the urban environment as factors influencing urban segregation were tested to ascertain the significant difference between low, medium and high densities in Minna and the result is shown in Table 2. The chi-square calculated value of 42.00 and *p* value of 0.227 were obtained for the difference between low and medium densities, low and high densities and medium and high densities respectively. The chi-square *p* value is greater than the 5 percent (0.05); therefore the result indicates that there is statistically significant difference between low, medium and high densities in terms of physical characteristics of the urban environment as a factor influencing urban segregation.

Table 2. Chi-squared tests for physical characteristics of the urban environment

	Value	df	p
<b>High and Low Densities</b>			
χ <sup>2</sup>	42.00	36	0.227
N	7		
<b>High and Medium Densities</b>			
χ <sup>2</sup>	42.00	36	0.227
N	7		
<b>Medium and Low Densities</b>			
χ <sup>2</sup>	42.00	36	0.227
N	7		

#### 3.2. Individual and aggregate socioeconomic characteristics

The findings of this study revealed in Table 3 that some factors under individual and aggregate socioeconomic characteristics influence housing segregation in the city of Minna. It reveals clearly that family status determines people’s choice of where to live in the low density neighbourhoods with an RII value of 0.903. In the low density neighbourhoods, income is the second most influential factor that determines choice of neighbourhoods of residence with RII of 0.806.

In the medium density neighbourhoods, ethnicity accounts for an RII of 0.795 which is the most influential factor under individual and aggregate socioeconomic characteristics. This is followed by income which accounts for an RII of 0.745. In the high density, ethnicity account for highest RII with 0.914, followed by indigene with 0.861 RII, and religion and language spoken with RII of 0.858 each respectively.

It can be deduced from the finding that income clearly influences choice of neighbourhoods of residence in all densities of Minna. It is also clear

that ethnicity and language spoken highly influenced choice of neighbourhoods of residence in the medium and high densities. It can also be deduced that religion highly influenced choice of neighbourhoods of residence in the high densities of Minna.

Table 3. Individual and aggregate socioeconomic characteristics

Density	Variables	N	Mean	RII
Low density	Sex	33	1.24	0.248
	Age	33	1.55	0.309
	Religion	33	2.58	0.515
	Income	33	4.03	0.806
	Ethnicity	33	2.76	0.552
	Family status	33	4.52	0.903
	Language spoken	33	3.12	0.624
	Ancestor	33	1.21	0.242
	Indigene	33	3.39	0.679
	Non-indigene	33	2.33	0.467
Medium density	Sex	83	1.33	0.265
	Age	83	1.30	0.26
	Religion	83	2.96	0.593
	Income	83	3.72	0.745
	Ethnicity	83	3.98	0.795
	Family status	83	2.69	0.537
	Language spoken	83	3.27	0.653
	Ancestor	83	2.90	0.581
	Indigene	83	2.55	0.511
	Non-indigene	83	2.71	0.542
High density	Sex	257	1.60	0.321
	Age	257	1.67	0.334
	Religion	257	4.29	0.858
	Income	257	3.60	0.719
	Ethnicity	257	4.57	0.914
	Family status	257	3.94	0.788
	Language spoken	257	4.29	0.858
	Ancestor	257	3.84	0.768
	Indigene	257	4.31	0.861
	Non-indigene	357	2.29	0.458

Source: Field survey, 2020.

The chi-square test in Table 4 shows a calculated value of 80.00 for high and low densities and high and medium densities respectively, and calculated value of 90.00 for medium and low densities. The calculated *p* value of 0.242 were obtained for high and low densities and high and medium densities. For medium and low densities, calculated *p* value of 0.231 was obtained. All the chi-square *p* values were greater than 0.05, which indicates statistically significant difference among the low, medium and high densities in term of individual and aggregate socioeconomic characteristics as factors responsible for the choice of neighbourhood of residence.

Table 4. Chi-squared tests for individual and aggregate socioeconomic characteristics

	Value	df	p
High and Low Densities			
X <sup>2</sup>	80.00	72	0.242
N	10		
High and Medium Densities			
X <sup>2</sup>	80.00	72	0.242
N	10		
Medium and Low Densities			
X <sup>2</sup>	90.00	81	0.231
N	10		

### 3.3. Individual preferences of neighbourhood

The analysis of factors under individual preferences/choice of neighbourhood shows that in the low density neighbourhoods only three factors in Table 5 highly influence urban segregation which includes adequate security, ease of transportation and adequate electricity with RII value of 0.897, 0.873 and 0.83 respectively.

In the medium density neighbourhoods of Minna, the findings revealed that proximity to markets and shopping malls, availability of health care facility and adequate electricity were strong factors that determines the choice of neighbourhoods by the residence which amount to RII of 0.761 for proximity to markets and shopping malls, 0.728 for availability of health facilities and 0.704 for adequate electricity.

In contrast, the finding revealed in the table that proximity to place of worship is most determinants factor for the choice of neighbourhood of residents with RII of 0.925. Another factor under individual preference of neighbourhood that is high is housing affordability with RII of 0.899. However, for the both medium and high densities, proximity to markets and shopping malls were important factors that influence individual's choice of neighbourhood of residence.

Table 5. Individual preferences of neighbourhood

Density	Variables	N	Mean	RII
Low density	Various ethnic groups living in the neighbourhood	33	2.12	0.424
	Quality and accessibility of schools around	33	2.39	0.479
	Near to place of work	33	1.85	0.37
	Houses are affordable	33	1.70	0.339
	Ease of transportation	33	4.36	0.873
	Proximity to markets and shopping malls	33	2.27	0.455
	Proximity to place of worship	33	1.88	0.376
	Adequate electricity	33	4.15	0.83
	Availability of health care facility	33	2.70	0.539
	Adequate security	33	4.49	0.897
Medium density	Various ethnic groups living in the neighbourhood	83	2.82	0.564
	Quality and accessibility of schools around	83	3.39	0.677
	Near to place of work	83	3.19	0.639
	Houses are affordable	83	2.58	0.516
	Ease of transportation	83	3.41	0.682
	Proximity to markets and shopping malls	83	3.81	0.761
	Proximity to place of worship	83	2.34	0.467
	Adequate electricity	83	3.52	0.704
	Availability of health care facility	83	3.64	0.728
	Adequate security	83	3.24	0.648
High density	Various ethnic groups living in the neighbourhood	257	2.16	0.431
	Quality and accessibility of schools around	257	1.78	0.356
	Near to place of work	257	4.13	0.826
	Houses are affordable	257	4.49	0.899
	Ease of transportation	257	1.57	0.314
	Proximity to markets and shopping malls	257	4.22	0.844
	Proximity to place of worship	257	4.63	0.925
	Adequate electricity	257	1.50	0.3
	Availability of health care facility	257	1.78	0.356
	Adequate security	257	1.81	0.361

Source: Field survey, 2020.

The chi-square test in Table 6 shows a calculated value of 80.00 for high and low densities and high and medium densities respectively, and calculated value of 9.00 for medium and low densities. The calculated *p* value of 0.242 were obtained for high

and low densities and high and medium densities. For medium and low densities, calculated *p* value of 0.231 was obtained. All the calculated *p* values were above 5% (i.e. 0.05), therefore, there is statistically significant difference among all densities in terms of individual preferences of neighbourhoods.

Table 6. Chi-squared tests for individual preferences of neighbourhood

	Value	df	p
High and low densities			
χ <sup>2</sup>	80.00	72	0.242
N	10		
High and medium densities			
χ <sup>2</sup>	80.00	72	0.242
N	10		
Medium and low densities			
χ <sup>2</sup>	90.00	81	0.231
N	10		

### 3.4. Political/institutional factors

The study revealed in Table 7 that most of the political and institutional factors do not influence urban segregation in the medium and high density neighbourhood in the study area. However, rental price influence the choice of neighbourhood of residence in the medium and high densities with RII of 0.872 and 0.932 respectively.

In the low density neighbourhoods, local housing policies, zoning laws and estate agent advise influence the residence choice of their neighbourhoods with RII of 0.836, 0.836 and 0.624 respectively.

Table 7. Political/institutional factors

Density	Variables	N	Mean	RII
Low density	Local housing policies	33	4.18	0.836
	Zoning laws	33	4.18	0.836
	Estate agent advise	33	3.12	0.624
	Rental price	33	1.88	0.376
Medium density	Local housing policies	83	2.31	0.463
	Zoning laws	83	2.48	0.496
	Estate agent advise	83	3.00	0.6
	Rental price	83	4.36	0.872
High density	Local housing policies	257	1.25	0.25
	Zoning laws	257	1.27	0.254
	Estate agent advise	257	1.32	0.263
	Rental price	257	4.66	0.932

Source: Field survey, 2020.

The chi-square analysis revealed in Table 8 that a calculated value of 8.00 for high and low densities and medium and low densities respectively, and calculated value of 12.00 for high and medium densities. The calculated *p* value of 0.238 were obtained for high and low densities and medium and low densities. For high and medium densities, *p* value of 0.213 was obtained. All the *p* value of the chi-square table were above 0.05 and therefore, there is a significant statistical difference between the low, medium and high densities in terms of political/institutional factors responsible for the residence choice of neighbourhoods.

Table 8. Chi-squared tests for political/institutional factors

	Value	df	P
High and low densities			
X <sup>2</sup>	8.00	6	0.238
N	4		
High and medium densities			
X <sup>2</sup>	12.00	9	0.213
N	4		
Medium and low densities			
X <sup>2</sup>	8.00	6	0.238
N	4		

#### 4. DISCUSSIONS

As presented by the result of this study, the physical characteristics of urban environment greatly influence urban segregation in different ways across all residential density of Minna. It was revealed by the RII of the physical factors that all other factors influence segregation in the low density neighbourhoods except topography with 0.473 RII while round condition and topography was found to be influencing factor of segregation in medium density with 0.472 and 0.376 RI respectively. It can therefore be said that topography is a physical characteristics of urban settlement with less effect on segregation owing to the fact that it is not a setback for development in Minna as the city is characterised with hills where all densities could be found. The study also revealed that in high density neighbourhoods, almost all physical characteristics of the urban environment has less influence on urban segregation.

In the low residential neighbourhoods of Manna with a RII of 0.903, it was revealed that the family socioeconomic status determines individual family's choice of where to live with income being the second most influential factor having 0.806 RII.

However, ethnicity accounted for an RII of 0.795 under individual and aggregate socioeconomic characteristics in medium density neighbourhoods with income following suit at 0.914 RII. The highest RII of 0.914 was recorded for ethnicity in the high density neighbourhoods followed by indigene with 0.861 and religion as well as spoken language with 0.858 RII respectively. This indicated that income is a common influencing factor for choice of neighbourhoods in all densities of Minna while it was clearly revealed that ethnicity and religion influences choice of neighbourhood residence in medium and high densities while religion greatly influences high densities choice of neighbourhood residence in Minna. This finding is similar to that of Muhammad et al. (2015b) where individual preference and socioeconomic characteristics were the leading factors influencing segregation in Bauchi city of Nigeria.

In relation to individual preference and choice of neighbourhood as an influencing factor of segregation, results shows that adequate security, constant power supply and ease of transportation are the three main factors determining urban segregation while for the medium density neighbourhoods, nearness to market and commercial centres, availability of healthcare facilities and adequate power supply are key determinants of choice of neighbourhoods by the residence. However, proximity to place of worships and housing affordability is the highest influencing factor of neighbourhood choice by residents of high density areas of Minna. However, for the both medium and high densities, proximity to markets and shopping malls were important factors that influence individual's choice of neighbourhood of residence.

Furthermore, it was evident from the findings that political and institutional factors plays no role in enhancing urban segregation in the medium and high density neighbourhood of the area understudied. Contrastingly, rental price shares a strong relationship with choice of neighbourhood of residence in the medium and high densities with RII of 0.872 and 0.932 respectively. More so, findings revealed that in low density neighbourhoods of Minna, local housing policies, zoning laws, and estate agents advice plays a role in residence choice of neighbourhood having 0.836, 0.836 and 0.932 respectively as its RII.

#### 5. CONCLUSION

The findings of this study establish that there are several factors that contribute to spatial segregation

in the housing neighbourhoods of the study area. It is concluded that the social divide and inequities in the urban space of the study area were largely due to individual preference and choice of neighbourhood as an influencing factor of segregation. Also, some households choose their neighbourhood of residence according to their earnings. Minna metropolis is characterised by a spatial mismatch in terms of residence by household employment status. Some neighbourhoods in the study area are characterised by the type of ethnic composition and

some residents choose neighbourhoods based on the religious composition of the neighbourhoods. The research has established that there is a significant difference between low, medium, and high density neighbourhoods in terms of segregation factors in the study area. It is therefore imperative that a good urban governance structure should be put in place that will discourage class divisions among spatial entities of the city, which will promote the integration of religious, ethnic, economic, and social groups in the city.

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