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ANALYSIS OF RESIDENTIAL RENTAL VALUES ACROSS NEIGHBORHOOD DENSITIES IN MINNA, NIGERIA

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ABSTRACT

Purpose: *The aim of this study is to investigate the rental value dynamics of residential properties across low, medium, and high-density neighbourhoods specifically Fadikpe, Tundun Fulani, and Bosso Estate, respectively in Minna, Nigeria, for the period 2013–2025.*

Design/methodology/approach: *primary data were elicited from a sample of 226 tenants and 10 registered Estate Surveyors and Valuers within the selected density zones. The data were analysed using descriptive statistics, including tables, percentages, and charts. To evaluate the pace of appreciation, the Rental Growth Rate (RGR) was calculated annually, while a Two-way Analysis of Variance (ANOVA) was employed to test for statistically significant variations in rental values across different property types and neighbourhood densities.*

Findings: *Findings indicated a sustained increase in demand for rental housing in Minna, exerting significant upward pressure on rental values for all residential categories. The inferential analysis further confirmed statistically significant variations in rental values across the studied density zones.*

Research limitations/Implications*: This research highlights that the rental disparities have profound implications for housing affordability, living conditions, investment patterns, and broader urban development. Where high-yield gentrification in high-density zones threatens housing affordability and overcrowding; conversely, low-density neighbourhoods experienced relative underdevelopment due to limited investment. This implies that without balanced policy intervention and infrastructure upgrades in low-density areas, urban inequality and overcrowding in Minna will continue to intensify.*

Practical implications: *It is recommended that policymakers should implement balanced development strategies, promote infrastructure upgrades in low-density areas and enforce rent control regulations to ensure housing affordability across all neighbourhoods' density.*

Originality/value *– This research uniquely establishes the statistical interaction between property types and neighbourhood density in Minna over a thirteen-year period (2013–2025), uncovering an "investment-infrastructural paradox" where high-yield gentrification in high-density zones contrasts with investment stagnation in low-density areas.*

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Keywords: Rental Growth, Rental Values, Rental Variation, Neighbourhood Density

1.0 INTRODUCTION

Investment in the real estate sector has recently followed a dramatic trajectory, driven primarily by the escalating demand for urban housing and competing land uses (Ankeli, 2022; Lawal, 2023; Babatunde *et al.,* 2021). Aside from food, residential property is a fundamental human requirement and a critical component for physical survival (Olayiwola *et al.,* 2005; Abisuga *et al.,* 2020; Ojo, 2019). These properties serve as essential habitations and shelters; consequently, they command high demand in prime locations (Aina & Somefun, 2007; Oloke *et al.,* 2017; Dabara, 2021).

Residential properties angling from tenements and bungalows to mansions and semi-detached duplexes re typically classified by density (high, medium, or low) and situated in rural, semi-rural, or urban settings (Felix & Adeniran, 2019; Ifediora, 2020; Oni, 2022). Globally, the residential market is a cornerstone of urbanization, as residential land use remains the largest consumer of land in urban centres (World Bank, 2020; Olayiwola, 2000; UN-Habitat, 2022).

The economic return on these land resources is realized through rent -the financial compensation paid for the use of land in production. For tenants, rent represents a significant cost of living, while for landlords, it serves as a primary source of revenue (Udoekanem *et al.,* 2015; Nwosu, 2019; Aliyu *et al.,* 2021). In the modern economy, the availability of rental properties is vital; high construction costs and the complexities of land acquisition have made outright homeownership unattainable for many (Rubaszek, 2019; Gholipour *et al.,* 2022; Olanrele *et al.,* 2020). As a result, approximately 40% of the world's population resides in rental housing, a trend that continues to attract significant interest from real estate developers (Kemiki *et al.,* 2018; Peppercorn & Taffin, 2021; Adewusi *et al.,* 2022).

Identifying the factors that drive variances in rental rates is a complex yet essential task. Analysing rental trends is critical for making informed investment decisions that support and stabilize a nation’s property market (Boon *et al.,* 2007; Olawumi & Chan, 2018; Thontteh, 2022).

Despite the vital role of housing in urban stability, the rental market in Minna, Nigeria, has experienced unprecedented volatility. The city’s population growth rate stands at 8% nearly triple the national average compounded by its strategic proximity to the Federal Capital Territory, Abuja (Bello & Muhammad, 2022; Jimoh *et al.,* 2021). This rapid expansion has created a massive housing deficit. However, there is a distinct lack of empirical data regarding how neighbourhood density (Low, Medium, and High) specifically influences rental values across different property types (Olapade, 2023; Zubairu *et al.,* 2020). This data gap creates several critical challenges:

- Investment Uncertainty: Real estate investors lack the benchmarks necessary to identify which density zones offer the most stable growth and highest returns (Gyamfi-Yeboah *et al.,* 2021; Udobi *et al.,* 2022).
- Affordability Crises: Rapidly rising rents in high-density areas may trigger gentrification and overcrowding, yet the specific drivers of these variations remain under-analysed (Ayedun *et al.,* 2021; Daniel *et al.,* 2023).

- Urban Policy Gaps: Without an analysis of long-term rental trends (2013–2022), urban planners cannot effectively manage land use or address the relative underdevelopment of low-density neighbourhoods (Adama *et al.*, 2022; Garba, 2021).

Based on the aforementioned, this study analyses residential rental value and statistical variations across three distinct neighbourhoods in Minna: Fadikpe (Low Density), Tundun Fulani (Medium Density), and Bosso Estate (High Density). By examining a thirteen-year trend from 2013 to 2025, the research aims to provide a framework for informed investment and strategic urban management.

2.0 LITERATURE REVIEW

Recent academic inquiries into Minna's residential market have largely focused on the broad determinants of property value and the physical state of urban infrastructure. Existing studies have established that housing quality and infrastructure decay are primary drivers of rental variance, particularly in high-density zones where drainage and road failures create a ceiling on potential rent. For instance, the study of Kemiki *et al.* (2018) analysed the determinants of Rental Growth in Urban Residential Properties Minna Niger state. Hedonic Pricing Model (HPM) was applied to 450 residential properties across different density zones. Data was analysed using Ordinary Least Squares (OLS) and Regression. The study found out that rental growth is non-uniform; structural factors (bedrooms) matter in low-density zones, while "security" and "water" dominate in high-density areas.

Abisuga *et al*. (2020) examined the Residential Satisfaction and Housing Quality by administering questionnaires to 384 residents in Lagos Nigeria. The data collected was analysed using Descriptive Statistics and Mean Satisfaction Score (MSS). The revealed that High-density areas suffer from "spatial compression," leading to lower satisfaction despite proximity to jobs. Infrastructure quality was established as the primary predictor of rental premium. Jimoh *et al.* (2021) assessed Infrastructure Decay in High-Density Residential Areas of Minna, Nigeria. Using Descriptive Survey & Physical Condition Mapping evaluated 12 specific high-density neighbourhoods using Condition Index Ratings. The study revealed a direct inverse relationship between density and maintenance. High-density areas have 60% higher drainage failure, keeping rents low despite high demand. Aliyu *et al.* (2021) determined the Impact of Location on Residential Property Rental Values in Bida, Niger State. The study used ArcGIS (Inverse Distance Weighted interpolation) to model rental values across 196 properties. The study confirmed a "South-ward Value Gradient" where properties in the southern axes command significantly higher rents (up to ₦200k for 3-bedroom) compared to the northern and core areas. It proved that distance from the city centre inversely affects value for 1-bedroom units but positively affects 2-bedroom units

Furthermore, other researches highlight the external pressures of urban sprawl and Minna's proximity to Abuja as catalysts for rapid appreciation in southern corridors. This is noticed in the research of Bello & Muhammad (2022) that analysed the impact of Abuja's Proximity on the Housing Market of Minna, Nigeria. The research analysed 10-year rental trends (2012–2022) and used Multiple Regression to correlate rental growth with distance from Abuja. The study revealed that proximity to Abuja acts as a value driver for Minna's southern corridors (Tunga/Shango), leading to a 15% annual rental appreciation compared to the city average of 9%. Adewusi *et al.* (2022) analysed the dynamics of Rental Housing Markets in Developing Economies using Selected Developing Urban Centres (Lagos/Ibadan) in Nigeria. Qualitative Interviews were conducted on 25 Estate Surveyors and Valuers in the study area to identify "under-the-table" rental dynamics and informal market shifts. The study identified a "gentrification gap" where high-density neighbourhoods near institutions see rapid rent hikes that displace original low-income residents.

Adama *et al.*, (2022) examined Urban Sprawl and Land Use Dynamics in Minna Peri-urban Fringe, Niger State. The study utilized Remote Sensing & GIS Analysis, using satellite imagery from 2000–2020 to map expansion and correlated it with land value changes. The study discovered that, Minna expanded by 45% in two decades, creating "unplanned high-density clusters" on the outskirts with highly volatile rental values. Olapade (2023) analysed Neighbourhood Density and Residential Rental Values in selected cities in South-West & North-Central Nigeria using Cross-Sectional Analysis. The study compared rental datasets from 3 cities using Analysis of Variance (ANOVA) to test value differences across density strata. The study found out that "Medium-Density" neighbourhoods often provide the highest Return on Investment (ROI) for landlords due to balanced maintenance costs and high occupancy,

While these studies provide a foundational understanding of "what" drives value, they often treat neighbourhood density as a static, secondary characteristic rather than a dynamic variable that interacts directly with specific property types over an extended economic cycle. This study establishes a significant departure from the existing body of work by addressing three critical gaps: the temporal gap, the methodological interaction gap, and the perspective gap. Unlike previous cross-sectional studies that offer a "snapshot" of the market, this study 13-year longitudinal analysis (2013–2025) captures the specific impact of Nigeria's recent inflationary volatility on Rental Growth Rates (RGR). Methodologically, while prior research (such as Olapade, 2023) analyses density or property type in isolation, this study uses Twoway ANOVA to provides empirical evidence of the "interaction effect" proving that the value of a specific house type is fundamentally altered by the density of the neighbourhood it occupies. Finally, by triangulating data from both 226 tenants and 10 professional Valuers, this study bridges the gap between consumer experience and expert valuation.

3.0 AREA OF THE STUDY (Minna)

Minna represents a unique case study in North-Central Nigeria. Its expansion is largely fuelled by the "overflow" effect from the Federal Capital Territory, Abuja, as workers seek more affordable housing within commuting distance (Bello & Muhammad, 2022). Neighbourhood density categorized into low, medium, and high serves as a primary determinant of both property value and inhabitant utility.

High-density areas (such as Bosso Estate) often provide higher cumulative yields for investors due to the volume of units, yet they present challenges of infrastructural decay and overcrowding (Adama *et al.*, 2022). Conversely, low-density areas (such as Fadikpe) offer exclusivity and higher per-unit rents but may face slower capital appreciation if the area lacks connecting infrastructure (Felix & Adeniran, 2019). This study builds on these theories by providing a localized, longitudinal analysis of Minna's rental market over the 2013–2025 decade, bridging the gap between general urban theory and local market realities (Jimoh *et al.*, 2021).

4.0 METHODOLOGY

This study adopts a survey research design, which is uniquely suited for addressing the "how, when, where, and what" of residential market trends (Saunders et al., 2012). The geographic scope covers three distinct neighbourhood densities within Minna, Nigeria: Fadikpe (Low Density), Tundun Fulani (Medium Density), and Bosso Estate (High Density). The temporal scope spans a thirteen-year period from 2013 to 2025, allowing for a robust longitudinal analysis of market fluctuations.

The target population comprises tenants of rented residential properties and professional Estate Surveying and Valuation firms operating within the study area.

- Tenants: A sample of 322 tenants was selected using a snowball sampling technique. This method was chosen due to its effectiveness in identifying respondents within specific residential clusters where a formal, centralized directory of tenants may be unavailable (Naderifar *et al.*, 2017).
- Professional Firms: 10 registered Estate Surveying and Valuation firms were selected using purposive sampling. This ensured that data was retrieved from experts with direct custody of historical rental records and professional experience in the Minna property market (Creswell & Creswell, 2018).

Primary data was gathered through structured questionnaires administered to both groups of respondents. The study specifically focused on three prevalent residential property types -self-contained, one-bedroom, and two-bedroom apartments.

To analyse the trends and variations in the market, two primary levels of analysis- The Rental Growth Rate (RGR) and the Two-way Analysis of Variance (ANOVA) were employed:

The annual rate of appreciation for residential rents was calculated to determine the pace of market growth. The Rental Growth Rate is expressed as:

$$\frac{\{RV(t) - RV(t-1)\}}{} * 100\ RV(t - 1)$$

Where RV (t) = Rental Value for current year; and RV (t-1) = Rental Values for previous year.
To determine if the observed differences in rent were statistically significant, a Two-way Analysis of Variance (ANOVA) was utilized. This test was selected to evaluate the simultaneous effect of two independent variables: neighbourhood density and property type on the dependent variable (rental value). This approach identifies whether variations are a result of the location's density, the structural type of the house, or an interaction between both factors (Pallant, 2020).

5.0 PRESENTATION AND DISCUSSION OF RESULTS

5.1 QUESTIONNAIRES DISTRIBUTION

Table 1: Questionnaires distributed and retrieved for the study

Population		Questionnaires distributed	Questionnaires retrieved	Response rate (%)
Estate Surveying and Valuation firms		13	10	76.92
Tenants in the selected residential neighbourhood	Fadikpe	91	64	70.33
		109	76	69.73
	Tudun Fulani	109	76	69.73
	Bosso Estate			
Total		322	226	70.19

As revealed in Table 1 above, out of the 13 registered estate surveying and valuation firms sampled, only 10 correctly filled and returned questionnaires while for the tenants of selected residential neighbourhood 226 questionnaire was retrieved out of 322 questionnaires distributed. After accounting for missing

information, a total of 226 questionnaires were well completed and found practically useful for the analysis. The well completed questionnaires represent an overall 70.19% response rate.

5.2 Socio-Demographic Details of the respondents (Tenants)

Socio-demographic profile of the tenant occupying the selected rented residential apartment in the study area to which the data for analysis was gathered from. The data collected includes; age bracket, occupation, residence duration, monthly income range and accommodation type.

Table 2: Age Bracket of the respondents

	Fadikpe		**Tundun Fulani**		**Bosso Estate**	
Responses	**Frequency**	**Percent (%)**	**Frequency**	**Percent (%)**	**Frequency**	**Percent (%)**
20year and below	7	10.94	8	10.53	7	9.21
21-30years	9	14.06	16	21.05	15	19.74
31-40years	25	39.06	35	46.05	37	48.68
41years and above	23	35.94	17	22.37	17	22.37
Total	**64**	**100.00**	**76**	**100.00**	**76**	**100.00**

Age-Bracket analysis above in Table 2, shows that 44.60% of the respondents are between the age's brackets of 31-40years, 41years and above took 26.89% of the respondents, 18.28% of the respondents are within the age bracket of 21-30years while the remaining 10.23% of the respondents falls under the age bracket of 20years downwards. Therefore, the majority of the respondents were matured and can give adequate information that form the basis to which the analysis of the research work was carried out.

Table 3: Occupation of the respondents

	Fadikpe		**Tundun Fulani**		**Bosso Estate**	
Responses	**Frequency**	**(%)**	**Frequency**	**(%)**	**Frequency**	**(%)**
Civil Servant	26	40.63	30	39.47	36	47.37
Self-Employed	14	21.88	17	22.37	15	19.74
Student/Unemployed	2	3.13	7	9.21	8	10.53
Artisan	13	20.31	3	3.95	3	3.95
Businessman	9	14.06	19	25.00	14	18.42
Total	**64**	**100.00**	**76**	**100.00**	**76**	**100.00**

From Table 3 above, showing the occupation analysis revealed that 42.49% of the respondents are civil servant, 21.30% of the respondents are self-employed, 19.16% of the respondents claimed to be businessman, artisan took 9.40% of the respondents, while remaining 7.62% are student/unemployed. The

occupation of the respondents goes a long way in explaining the level of choice made in respect to residential location or types of accommodation.

Table 4: Period of staying

	Fadikpe		Tundun Fulani		Bosso Estate Responses	Frequency
	(%)	Frequency (%)	Frequency	(%)		
Less than 5years	7	10.94	6	7.89	11	14.47
5-10years	3	4.69	24	31.58	19	25.00
11-15years	21	32.81	36	47.37	30	39.47
16years and above	33	51.56	10	13.16	16	21.05
Total	**64**	**100.00**	**76**	**100.00**	**76**	**100.00**

As shown in Table 4, the years of stays analysis revealed that 39.88% of the respondents have been residing at the study area for 11-15years, 28.59% of the respondents have been staying for 16years and more, 20.42% of the respondents are residents within 5-10years while the remaining 11.10% took the residents with less than 5years period of stays. The implication of this, is that majority of the respondents has much hunch about the situation of the study area because of their lengthy period of stay and their experience makes them more qualified for information gathering for the research purpose.

Table 5: Monthly Income Range

	Fadikpe		Tundun Fulani		Bosso Estate	
Responses	**Frequency**	**(%)**	**Frequency**	**(%)**	**Frequency**	**(%)**
Less than ₦30,000	7	10.94	0	0.00	3	3.95
₦ 30,000-₦ 49,000	12	18.75	4	5.26	5	6.58
₦ 50,000-₦ 89,000	13	20.31	24	31.58	23	30.26
₦90,000-₦129,000	23	35.94	29	38.16	28	36.84
₦ 130,000 & above	9	14.06	19	25.00	17	22.37
Total	**64**	**100.00**	**76**	**100.00**	**76**	**100.00**

From Table 5, the analysis on monthly income range shows that 36.98% of the respondents earned in the range of ₦90,000 - ₦129,000, 27.38% earned in the range of ₦50,000 - ₦ 89,000, 20.48% of the respondents monthly income are in the range of ₦130,000 and above, 10.20% of the respondents earned between ₦30,000 - ₦ 49,000, while the remaining 4.96% of the respondent earned a monthly income less than ₦30,000. Therefore, it can be concluded that the majority of the respondents has good monthly income base to decide their choice of residential location and as well as the accommodation types.

Table 6: Accommodation types

	Fadikpe		Tundun Fulani		Bosso Estate	
Responses	**Frequency**	**(%)**	**Frequency**	**(%)**	**Frequency**	**(%)**
Self-contain	12	18.75	17	22.37	11	14.47
1 Bedroom	25	39.06	22	28.95	23	30.26
2 Bedroom	27	42.19	37	48.68	42	55.26
Total	**64**	**100.00**	**76**	**100.00**	**76**	**100.00**

From Table 6 above, the accommodation type analysis revealed that most of the residential types occupying by the respondents are 2 Bedroom which is evident by 48.71%, 32.76% of the respondents

occupy 1 Bedroom residential accommodation types while the remaining 18.53% of the respondents occupies residential accommodation type called self-contain.

5.3 Rental Values and Growth Rate of Residential Properties

In this section, the authors outline the trend analysis of the average values of different residential properties (self-contained, one-bedroom and two-bedroom) in the three chosen neighbourhoods in Minna, that is, Fadikpe, Tundun Fulani, and Bosso Estate, between the years of 2013 and 2025. The arithmetic means were calculated to investigate the temporal growth trend and the spatial difference in the performance of rentals in these neighbourhoods in order to give a quantitative basis to further interpretative discussion, this is presented in Table 7 and 8 below.

Table 7: Arithmetic Mean Rental trend of Self-contained, 1Bedroom, and 2Bedroom in the selected residential neighbourhood in Minna

Years	Residential neighbourhood and average rental values for Self-contain				Residential neighbourhood and average rental values for 1Bedroom				Residential neighbourhood and average rental values for 2Bedroom			
	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)	Mean (₦)	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)	Mean (₦)	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)	Mean (₦)
2013	43,000	38,000	68,000	49,667	73,000	68,000	128,000	89,667	158,333	121,667	166,667	148,889
2014	43,000	38,000	72,000	51,000	73,000	68,000	128,000	89,667	158,333	121,667	171,667	150,556
2015	55,000	40,000	81,250	58,750	86,667	71,500	127,143	95,103	148,571	135,714	181,429	155,238
2016	59,286	55,714	86,250	67,083	91,429	79,286	135,000	101,905	170,000	148,750	183,750	167,500
2017	61,429	62,857	90,000	71,429	95,714	98,571	170,000	121,428	186,250	158,750	207,778	184,259
2018	67,857	63,571	102,500	77,976	98,571	98,571	181,250	126,131	192,500	171,250	214,444	192,731
2019	65,625	72,857	107,500	81,994	110,000	110,000	191,250	137,083	196,250	178,750	224,444	199,815

2020	76,250	73,571	107,500	85,774	115,000	114,286	200,000	143,095	205,000	195,000	233,333	211,111
2021	81,875	86,429	133,750	100,685	125,000	131,429	211,250	155,893	225,000	218,750	270,000	237,917
2022	83,750	88,571	137,500	103,274	135,000	134,286	236,250	168,512	238,750	222,500	278,889	246,713
2023	85,895	95,434	138,453	106,594	141,435	141,453	247,453	176,780	242,342	234,453	294,564	257,120
2024	86,467	96,983	139,789	107,746	152,345	153,564	253,564	186,491	253,900	244,563	312,094	270,186
2025	88,345	97,458	141,342	109,048	167,675	166,789	268,892	201,119	265,580	267,876	330,342	287,933

Sources: Researcher's Analysis

Table 7 indicates that the general trend of the thirteen-year period shows a steady increase in the value of rentals in all the types of property and neighbourhoods. To self-contained apartments, the average rental value has been rising since 2013 to ₦109,048 by 2025 and is almost doubling in value. The one-bedroom apartments increased between ₦89,667 and ₦201,119 whereas the two-bedroom units increased between ₦148,889 to ₦287,933. Bosso Estate is one of the neighbourhoods, which highlighted the highest rent values in all categories, which shows its relatively high quality of residence and attractiveness. On the contrary, Tundun Fulani had the lowest values in their initial years but had significant growth over time. The figures also show more pronounced increments in the years 2020 to 2025, which may be an indicator that rental appreciation is accelerating over the recent years.

Research has shown that residential property values in Minna have shown consistent market growth without consideration of category of neighbourhood but the rate and extent of growth vary across space. The greater rental performance in Bosso Estate suggests that the factors like neighbourhood attributes such as the level of infrastructure, the quality of planning and security perception can have a big role to rent price. On the other hand, the increase in the overtime convergence in the values of rent in the neighbourhoods could indicate the growing demand of housing and the consequential stresses of the urban growth in Minna.

Table 8: Rental Growth rate for Self-contain, 1Bedroom, and 2Bedroom in the selected residential neighbourhood in Minna

Year	Residential neighbourhood and average rental values for Self-contain			Residential neighbourhood and average rental values for 1Bedroom			Residential neighbourhood and average rental values for 2Bedroom		
	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)	Fadikpe (₦)	Tundun Fulani (₦)	Bosso Estate (₦)
2013	0	0	0	0	0	0	0	0	
2014	0.00	0.00	5.88	0.00	0.00	0.00	0.00	0.00	3.00
2015	27.91	5.26	12.85	18.72	5.15	-0.67	-6.17	11.55	5.69
2016	7.79	39.29	6.15	5.49	10.89	6.18	14.42	9.61	1.28

2016	3.61	12.82	4.35	4.69	24.32	25.93	9.56	6.72	13.08
2017	10.46	1.14	13.89	2.98	0.00	6.62	3.36	7.87	3.21
2018	-3.29	14.61	4.88	11.59	11.59	5.52	1.95	4.38	4.66
2019	16.19	0.98	0.00	4.55	3.90	4.58	4.46	9.09	3.96
2020	7.38	17.48	24.42	8.70	15.00	5.63	9.76	12.18	15.71
2021	2.29	2.48	2.80	8.00	2.17	11.83	6.11	1.71	3.29
2022	2.56	7.75	0.69	4.77	5.34	4.74	1.50	5.37	5.62
2023	0.67	1.62	0.96	7.71	8.56	2.47	4.77	4.31	5.95
2024	2.17	0.49	1.11	10.06	8.61	6.05	4.60	9.53	5.85
2025									

Source: Researcher's Analysis

The empirical study shows that the growth rates in rental are quite heterogeneous between neighbourhoods as well as between types of property, and not a steady upward trend. As showed in Table 8 in self-contained units, Tundun Fulani had the highest percentage increase in 2016 (39.29%) with Fadikpe registering a commendable change in 2015 (27.91%). However, there were instances of the negative growth, i.e., in Fadikpe in 2019 (-3.29%), and two-bedroom units there in 2015 (-6.17%). The apartments with one bedroom also demonstrated a significant increase in Bosso Estate in 2017 (25.93%), as well as in Tundun Fulani (15.00% in 2017; 24.32% in 2021). Two-bedroom apartments were the only ones that experienced moderately, yet steadily positive growth after 2016, with Bosso Estate experiencing regular growth increments between 2021 and 2025. Generally, the 2020-2025 year-range indicates a more stable and a more sustainable growth of the majority of the neighbourhoods and property type in the year-range.

In the case of Minna, the rental market has been shown to be very dynamic and acutely sensitive to neighbourhood-specific conditions. The unpredictability that has been experienced in the previous years is an indicator of sensitivity to local economic dynamics, housing supply facts,

infrastructural development, and possibly security-related factors. The fact that Bosso Estate has higher and more stable growth rates confirms its position as a rather stable and high-demand residential enclave. At the same time, the improvement in the growth performance of Tundun Fulani and Fadikpe in the following years could be a measure of progressive urbanization and increasing housing needs in different density areas.

Using the rental growth rate formula presented in the previous section, the rental growth of residential properties types across the selected neighbourhood was calculated from Table 7 in order to produce Table 8, and these are graphically represented in Fig 1 to 3 below.

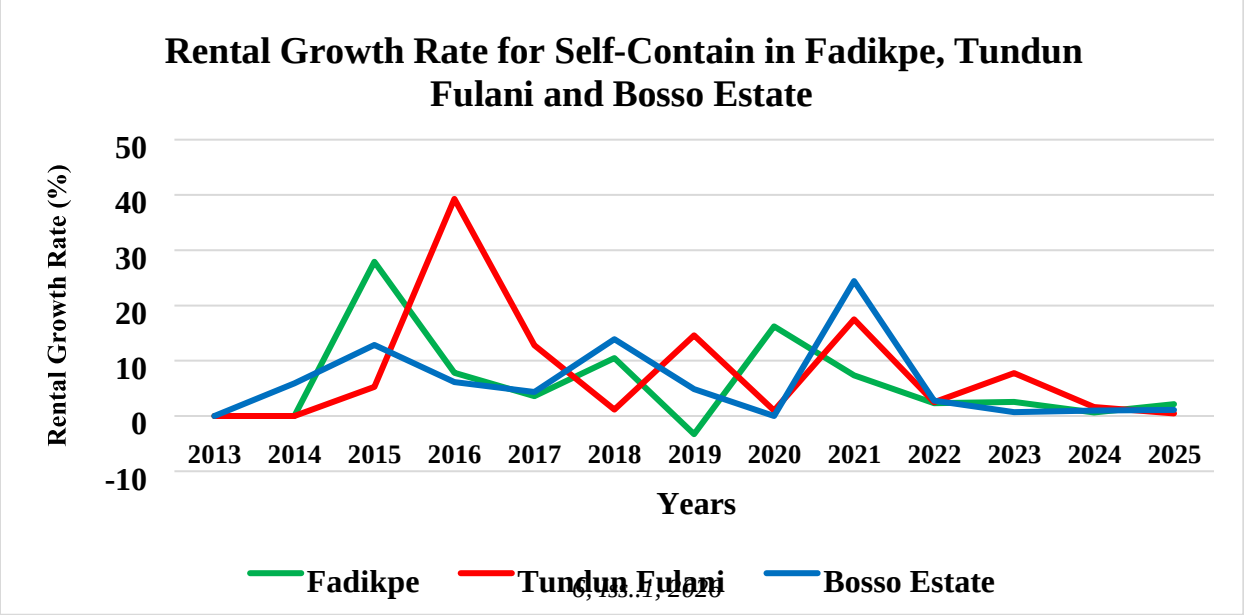


Fig 1: Annual Rental Growth Rate of Self-Contain in the selected Neighbourhood

Source: Computed by the researcher on the basis of Table 8

Fig 1 is a line chart of the annual rental advancement schedule of self-contained units in the residential precincts identified. This trend confirms the strong volatility in Fadikpe, Tundun Fulani, and Bosso Estate in the years 2013-2025, hence the dynamic nature of the rental market. The highest point of growth of 39.29% was reached in 2016 in Tundun Fulani, the highest value recorded when compared to other neighbourhoods surveyed. On the other hand, Fadikpe experienced a significant increase of 27.91% in the year 2015 compared to Bosso Etate which is 24.42% in 2021. The data is also characterized by occasional negative values including a -3.29% decrease in Fadikpe in 2019 which is a short-term market contraction. Overall, the trend does not conform to an upward-sloping, persistent upward trend, which is indicative of the vulnerability of rental valuations to periodic re-evaluation and non-homogenous neighbourhood process.

Furthermore, Fig 1 shows a sharp decline in rent-growth rates in 2022-2025, and each of the precincts is recording small but consistent increases, usually below 10.00%, which is a sign of convergence reflecting stabilization of the market relative to previous turbulence. A sharp rise that was experienced around 2015-2016 and once more in 2021 may be explained by an increase in housing demand, urban sprawl, or inflationary processes that were dominant at those periods.

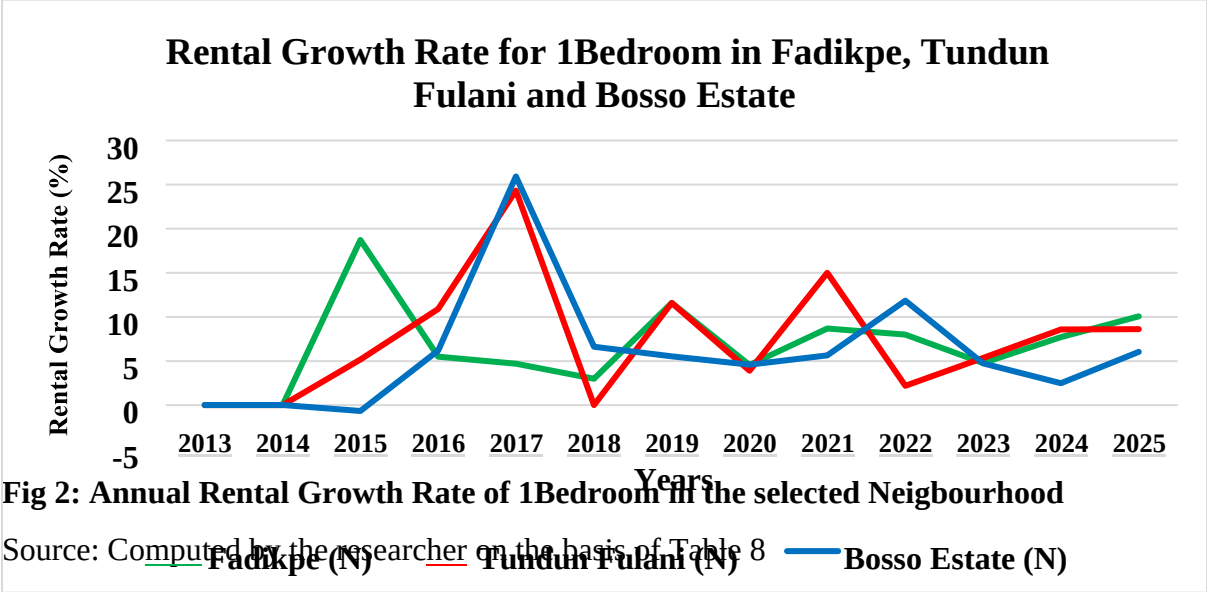


Fig 2: Annual Rental Growth Rate of 1Bedroom in the selected Neigbourhood

Source: Computed by the researcher on the basis of Table 8

Fig 2 presents the annual rent-growth dynamics of one-bedroom dwellings in the residential neighbourhoods of the selected residential areas in a line chart. The graph shows the salient changes in the growth path of Fadikpe, Tundun Fulani, and Bosso Estate over the study period 2013 -2025. In 2017, Bosso Estate grew by about 26.00% with Tundun Fulani coming next at around 24.00% and it is a clear sign that there was a serious rush in rentals within that period. The highest growth of Fadikpe was attained at an earlier time of 2015 at approximately 19.00%, after which the growth rate leveled off. Tundun Fulani in 2018 shows a sharp turn, with growth stagnating at 0, which is the sign that the market is experiencing a temporary contraction and the other neighbourhoods had relatively smooth positive growth. Since 2020, there is some variation

in the growth rates, mostly between 4.00% and 12.00% but the fluctuations vary slightly across the precincts.

Moreover, Fig 2 suggests that overall strongest growth in rental was experienced in 2017, which implies that the market may have been more under demand or in need of economic stimulus in 2017. The trend of stabilization in 2022 to 2025 where all neighbourhoods showed moderate and positive growth, signifies a more balanced rental market as compared to the years before it was very volatile. Convergence of the rates of growth towards 2020 also suggests that there will also be similar reactions of the market in the precincts surveyed.

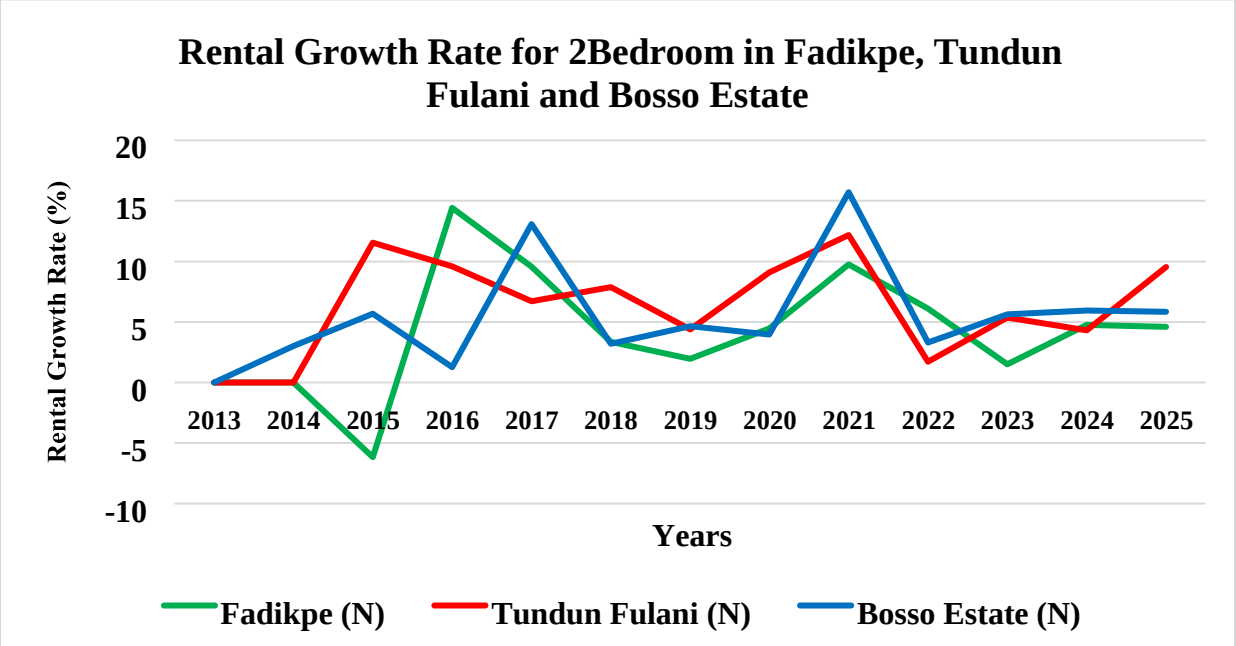


Fig 3: Annual Rental Growth Rate of 2Bedroom in the selected Neighborhood

Source: Computed by the researcher on the basis of Table 8

Fig 3 presents the line chart of the annual increase of rent of two-bedroom properties in the residential precincts chosen. The graph presents changing growth trend between Fadikpe, Tundun Fulani and Bosso Estate between the year 2013 and 2025. In 2021, Bosso Estate had the greatest growth rate which was about 16.00%, meaning that there was a high growth in rental in that year. Its highest growth is recorded at 2016 when Fadikpe experienced a growth of approximately 15.00%, after recording a negative growth of approximately -6.00% in 2015, which is a sharp correction in the market before rebounding. Tundun Fulani showed significant growth in 2015 (11.00%), and once more in 2025 (10.00%), indicating that there were significant growth rates. Fig 3 also shows the moderate falls, especially in Fadikpe in 2015 and Tundun in 2022, which illustrates the transient market deceleration.

The overall trend implies that the rate of growth of two-bedroom rentals is relatively middle-level in comparison with smaller units, as the majority of annual growth falls between 3.50% and

12.50% since the year 2018. The 2021 year has been a key growth year in all neighbourhoods, which implies that the demand was high or there have been macroeconomic factors that have influenced the pricing of rentals in the same year. The growth rates are more stable and in line between the three precincts between the years 2022 to 2025, which indicates stabilization in the market.

5.4 Variation in Annual Rental Value of Residential Properties

Table 9 showed the ANOVA analysis for Self-Contain (SC), 1Bedroom Flat (1BDF), 2Bedroom Flat (2BDF) in Fadikpe, Tudun Fulani and Bosso Estate

Table 9 : ANOVA for self-contain, 1 bedroom and 2 bedroom at Fadikpe, Tundun Fulani and Bosso Estate Minna

Accom. Types	*Source of Variation*	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit.*
Self-Contain	Between Groups	8429799936	2	4214899968	11.206266	0.000286	3.354131
	Within Groups	10155237835	27	376119920			
	Total	**18585037772**	**29**				
1 BDF	Between Groups	34554236491	2	17277118245	19.6428632	0.0000054	3.354131
	Within Groups	23748177062	27	879562113.4			
	Total	**58302413553**	**29**				
2 BDF	Between Groups	10598915890	2	5299457945	4.20561162	0.025704	3.354131
	Within Groups	34022486501	27	1260092093			
	Total	**44621402391**	**29**				

Source: Researcher's computation from Table 7 & 8

Table 9 presents the result of Two-way ANOVA using the mean values of annual rental values of different accommodation types across the three selected residential neighbourhood in the study area. The result revealed that under self-contain F (2, 27) = 11.206 with p value of 0.000286 < 0.05. This shows that there is statistically significance difference in the mean value of annual rental values of self-contains across the selected residential neighbourhood in the study area. The result of 1bedroom accommodation type (F (2, 27) = 19.643 with p value of 0.0000054 < 0.05) also shows that there is statistically significance difference in the mean value of annual rental values of 1bedroom across the selected residential neighbourhood in the study area. Lastly, the Table 9 revealed the ANOVA result of 2bedroom accommodation (F (2, 27) = 4.206 with p value of 0.025704 < 0.05) which also showed a statistically significance difference in the mean value of annual rental values of two-bedroom accommodation type across the selected residential neighbourhood in the study area considering.

6.0 Conclusion and Recommendation

This study evaluated the dynamics of residential rental values across three distinct neighborhood densities Fadikpe (Low), Tundun Fulani (Medium), and Bosso Estate (High) in Minna, Nigeria, over a thirteen-year period (2013–2025). The empirical evidence confirms a sustained upward

trajectory in rental values across all property types. This trend is primarily driven by the synergistic effects of rapid population growth, accelerating urbanization, and the prohibitive costs of outright homeownership, which have shifted the majority of the population toward the rental market.

A significant finding of this longitudinal analysis is the synchronized deceleration of the rental growth rate in 2022 across all density zones. This phenomenon is attributed to broader macroeconomic shocks within the Nigerian economy, specifically the combined pressures of hyper-inflation and the disruptive effects of the national "cashless policy" implemented during that period.

Furthermore, the Two-way ANOVA results established statistically significant variations in rental values across the selected neighbourhood densities. These disparities highlight a critical urban paradox: while high-density neighbourhoods (Bosso Estate) offer attractive yields for real estate investors, they are increasingly prone to overcrowding and the social pressures of gentrification. Conversely, low-density neighbourhoods (Fadikpe) suffer from investment stagnation and underdevelopment. Ultimately, these rental variations have profound implications for housing affordability, tenant living conditions, and the overall stability of Minna's urban economy.

To address the identified challenges in the Minna residential market, a multifaceted strategy is required, beginning with the establishment of a comprehensive and publicly accessible rental value database to provide the transparency necessary for evidence-based decision-making by both tenants and landlords. This data-driven approach should be supported by formal state government interventions, including the implementation of standardized rent-increase regulations, security deposit guidelines, and clear legal frameworks governing eviction procedures to foster a climate of long-term security and trust. Furthermore, urban planners must introduce strategic infrastructural incentives to attract real estate developers to underutilized low-density neighbourhoods, which would effectively decompress overcrowded high-density hubs and ensure a more equitable distribution of housing across the city. Finally, to mitigate the impact of macroeconomic volatility, professional bodies such as the Nigerian Institution of Estate Surveyors and Valuers (NIESV) should collaborate closely with policymakers to develop localized financial buffers and strategies that cushion the real estate sector against the disruptive effects of inflation and national currency fluctuations.

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