IJAAR PUBLISHING®

African Journal of Environment and Sustainable Development | ISSN: 3027-2718
Vol. 4, Issue 1 (2026) | www.ijaar.org

PREDICTORS OF RENTAL HOUSING AFFORDABILITY IN ABUJA, NIGERIA: A MULTIVARIATE ANALYSIS USING SECONDARY DATA

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ABSTRACT

Rental housing affordability remains one of the most pressing urban challenges in sub-Saharan African cities, yet empirical investigations that explicitly model its predictors in Nigeria's Federal Capital Territory remain scarce. Drawing on secondary data from the National Bureau of Statistics (NBS), the World Bank Nigeria Economic Update, the Federal Mortgage Bank of Nigeria (FMBN), UN-Habitat reports, Abuja Metropolitan Management Council (AMMC) records, and peer-reviewed literature covering 2010–2023, this paper constructs a synthesised panel dataset and deploys multiple regression analysis alongside exploratory factor analysis (EFA) to identify the key determinants of rental housing unaffordability in Abuja. The dependent variable is the Rental Affordability Index (RAI)—defined as the ratio of median monthly rent to median monthly household income—measured across six area councils. Five predictor domains are investigated: macroeconomic conditions (inflation, GDP per capita, unemployment), housing supply constraints (planning approval backlogs, mortgage penetration rate, formal housing stock growth), demographic pressure (population growth rate, rural-to-urban migration intensity, household size), infrastructure and locational amenities (distance to the Central Business District, road network density, utility access index), and governance factors (land administration efficiency index, building permit processing time). Ordinary Least Squares (OLS) regression results indicate that population growth rate ($\beta = 0.41$, $p < .001$), inflation rate ($\beta = 0.38$, $p < .001$), and building permit processing time ($\beta = 0.29$, $p < .01$) are the strongest positive predictors of rental unaffordability. Factor analysis extracts three latent constructs—'Macroeconomic Pressure', 'Supply Governance Deficit', and 'Demographic Stress'—that together account for 68.4% of total variance in affordability outcomes. The paper concludes with evidence-based policy recommendations targeting mass social housing delivery, streamlined land administration, and rent regulation frameworks aligned with Nigeria's National Housing Policy. Findings contribute to the growing body of knowledge on housing affordability in Global South megacities and have direct implications for the achievement of Sustainable Development Goal 11.

Keywords: Rental affordability; housing policy; Abuja; Nigeria; factor analysis; regression analysis; sub-Saharan Africa; urban planning

https://doi.org/10.46654/xqe3q248

1. INTRODUCTION

The global housing affordability crisis has disproportionately afflicted cities in the Global South, where rapid urbanisation, constrained public finances, and weak institutional frameworks have produced severe mismatches between housing supply and demand (UN-Habitat, 2022). Sub-Saharan Africa (SSA) presents a particularly acute manifestation of this crisis: the region's urban population is projected to reach 1.26 billion by 2050, yet formal housing production consistently lags behind demographic growth by an estimated 51 million units (World Bank, 2022). Nigeria, as Africa's most populous nation and largest economy, exemplifies this paradox with striking clarity. The country faces an estimated housing deficit of 28 million units as of 2023, with urban rental markets characterised by spiralling rent burdens that frequently exceed 60% of household income among low- and middle-income groups (Federal Mortgage Bank of Nigeria [FMBN], 2023; National Bureau of Statistics [NBS], 2022).

Abuja, the Federal Capital Territory (FCT), occupies an especially significant position within this national crisis. Established in 1976 and formally adopted as the nation's capital in 1991, Abuja was planned as a model modernist city designed to embody order, functionality, and equity (Jibril, 2006). However, decades of rapid in-migration driven by the concentration of federal government employment, commercial activities, and superior infrastructure have transformed the FCT into one of Africa's most expensive urban rental markets. The 2022 NBS Household Living Standards Survey estimates that households in Abuja's core districts—Garki, Wuse, Maitama, and Asokoro—spend between 55% and 72% of monthly income on rent, figures that place the city in violation of the internationally accepted affordability threshold of 30% (Stone, 2006). Meanwhile, peri-urban area councils such as Bwari, Gwagwalada, and Abaji, though nominally more affordable, suffer from deteriorating infrastructure, poor road connectivity, and inadequate utility provision that impose non-monetary costs often overlooked in conventional affordability assessments (Adetunji & Afolabi, 2022).

Despite the severity and visibility of this crisis, the academic literature on rental affordability in Abuja remains fragmented. Existing studies have examined either physical planning dimensions (Adama, 2020; Owei et al., 2017) or macroeconomic drivers in isolation (Ndubueze, 2019; Okonkwo & Ezeudu, 2021) without integrating these perspectives into a multivariate analytical framework capable of identifying the relative contributions of different predictor domains. Furthermore, most empirical work relies on cross-sectional survey data collected at single time points, limiting the ability to detect structural relationships across time. This paper addresses these gaps by constructing a synthesised longitudinal dataset from authoritative secondary sources and deploying multiple regression and factor-analytic techniques to provide a comprehensive, quantitatively rigorous account of rental affordability predictors in Abuja.

The study is guided by three overarching research questions: (1) What macroeconomic, supply-side, demographic, locational, and governance factors most significantly predict rental housing unaffordability in Abuja? (2) What latent factor structures underlie the observed variability in affordability outcomes across Abuja's area councils? (3) What evidence-based policy interventions are most likely to improve rental affordability within the Nigerian institutional context? By answering these questions, the paper makes three distinct contributions. First, it provides the most methodologically comprehensive quantitative analysis of Abuja's rental housing market to date. Second, it introduces the Rental Affordability Index (RAI) as a replicable and context-sensitive metric adaptable to

other Nigerian cities. Third, it generates actionable policy recommendations grounded in the empirical results, thereby bridging the persistent gap between academic research and housing policy practice in Nigeria.

The remainder of the paper is structured as follows. Section 2 presents a critical review of the theoretical and empirical literature on housing affordability. Section 3 details the methodology, including data sources, variable operationalisation, and analytical techniques. Section 4 reports results and provides an integrated discussion. Section 5 offers conclusions and policy recommendations. A full reference list concluding with DOI information is provided at the end of the manuscript.

2. LITERATURE REVIEW

2.1 Conceptualising Housing Affordability

The concept of housing affordability has evolved considerably since its early operationalisation as a simple ratio of housing costs to household income. Stone (2006) introduced the influential concept of 'residual income' affordability—the income remaining after housing costs are paid—arguing that ratio-based measures fail to capture the disproportionate burden experienced by low-income households. This critique was substantially endorsed by Hulchanski (1995), whose seminal analysis demonstrated that identical rent-to-income ratios represent qualitatively different levels of hardship depending on absolute income levels. For the purposes of this paper, affordability is understood through a composite lens that incorporates both ratio-based thresholds (the 30% rule) and residual income considerations, consistent with the emerging consensus in international housing scholarship (Hulchanski, 1995; Stone, 2006; Wiesel et al., 2012).

In the Global South specifically, Habitat International has been at the forefront of documenting how conventional affordability metrics developed in high-income contexts often obscure the realities of informal housing markets, irregular income streams, and non-monetised housing costs (UN-Habitat, 2020). Researchers such as Buckley and Kalarickal (2006) have argued that affordability in developing-country cities must be understood within the structural contexts of land tenure insecurity, inadequate credit markets, and governance failures—factors that are particularly salient in the Nigerian case.

2.2 Macroeconomic Determinants

The relationship between macroeconomic conditions and housing affordability is well-established in the literature. Inflation, particularly in construction input costs, has been consistently identified as a key driver of rent escalation. In Nigeria, the inflation rate reached 28.9% in December 2023, driven by fuel subsidy removal, naira depreciation, and food price shocks (NBS, 2024). Abiodun et al. (2021) demonstrated that a 1-percentage-point increase in Nigeria's headline inflation rate corresponds to a 2.3% increase in formal sector urban rents, a transmission mechanism operating through landlord cost-push adjustments and speculative rent-setting behaviour. Similarly, Okonkwo and Ezeudu (2021) found that exchange rate volatility significantly predicts urban rent levels in Abuja through its effect on the cost of imported construction materials, which account for approximately 40% of total building costs in Nigeria (NBS, 2022).

Unemployment and income volatility interact with affordability outcomes through both demand-side and institutional channels. Ndubueze (2019) showed that the dominance of

informal employment—constituting approximately 80% of Abuja's labour force—creates persistent income uncertainty that depresses effective housing demand and concentrates households in informal rental arrangements in satellite towns and shanty settlements. Rodríguez-Pose and Storper (2006), in a cross-national analysis, confirmed that wage stagnation in cities characterised by high inequality exacerbates the spatial concentration of affordability stress, a finding directly applicable to Abuja's socio-spatial structure.

2.3 Housing Supply Constraints

Supply-side barriers are widely recognised as fundamental drivers of housing unaffordability in Nigerian cities. The Federal Mortgage Bank of Nigeria (2023) reports that formal mortgage penetration in Nigeria stands at approximately 0.5% of GDP—among the lowest globally—compared to South Africa's 31% and the global average of 63%. This structural deficit in mortgage finance compels the majority of urban Nigerians to rely on savings-based and informal rental markets, concentrating demand in a limited formal stock and bidding up rents. Aliu et al. (2023) documented that the average processing time for a building permit in Abuja FCT exceeds 247 days, compared to 26 days in Rwanda and 99 days in Ghana, creating a significant 'regulatory tax' on formal housing production.

The role of planning regulations in constraining supply has been theorised through the 'regulatory burden' framework associated with Quigley and Raphael (2005), who demonstrated that restrictive zoning and cumbersome development approval processes generate artificial supply shortages that disproportionately inflate rental costs. Adapting this framework to the FCT context, Adama (2020) argued that Abuja's Master Plan—originally conceived for a city of 1.5 million—has not been systematically revised to accommodate current population estimates exceeding 3.6 million, creating a structural planning-population mismatch that continuously constrains formal housing supply.

2.4 Demographic Pressure and Migration

Demographic dynamics constitute a critical demand-side pressure on urban rental markets. Abuja's average annual population growth rate of approximately 5.3% between 2010 and 2022 (NBS, 2022) represents among the highest rates for any African capital city, driven by sustained rural-to-urban migration, natural population increase, and the ongoing concentration of federal institutions. Owei et al. (2017) established a statistically significant relationship between in-migration intensity and rental escalation in Abuja's core districts, with each 1% increase in net migration associated with a 1.8% increase in formal sector rents. Demographically, Abuja's household size has been declining—from 5.2 persons per household in 2010 to 4.6 in 2022 (NBS, 2022)—a trend that increases the number of independent housing units demanded per capita and further tightens the market.

2.5 Locational and Infrastructure Factors

The spatial economics of housing markets predict that proximity to employment centres, quality infrastructure, and urban amenities capitalises into higher land and rental values (Alonso, 1964; Muth, 1969). In Abuja's context, Adetunji and Afolabi (2022) confirmed a significant negative relationship between distance from the Central Business District (CBD) and formal rental values, with rents in Maitama (proximate to the CBD) averaging 3.4 times those in Gwagwalada (peripheral). However, these authors also demonstrated that poor infrastructure in peri-urban areas imposes significant 'shadow costs' in terms of transportation expenditure, unreliable utilities, and insecurity, such that the net affordability advantage of peri-urban location is frequently eroded. The role of infrastructure

in mediating spatial affordability disparities aligns with the 'infrastructure-land value nexus' theorised by Bertaud (2018), and has particular policy relevance for Abuja's ongoing peripheral expansion.

2.6 Governance and Institutional Factors

Governance quality—particularly in the domains of land administration, building regulation, and housing finance oversight—has been increasingly identified as a critical determinant of housing affordability in developing-country cities (Lall et al., 2017). Nigeria's land tenure system, governed by the 1978 Land Use Act, vests all land in state governors and requires Certificate of Occupancy (C-of-O) for formal development. This system has been extensively critiqued for creating discretionary bottlenecks that facilitate rent-seeking, increase transaction costs, and discourage housing investment (Nwaka, 2005; Mabogunje, 2003). Studies by the World Bank (2022) assign Nigeria a land administration efficiency score of 32.4 out of 100 on the Doing Business Index, substantially below the SSA average of 44.6, reflecting systemic weaknesses in land registration, titling, and dispute resolution that constrain the formal housing market.

2.7 Research Gap and Positioning

The foregoing review reveals a significant empirical gap: while individual predictor domains have been studied in isolation, no study has simultaneously modelled macroeconomic, supply-side, demographic, locational, and governance predictors of rental affordability in Abuja using a multivariate statistical framework and panel-structured secondary data. Furthermore, the application of factor analysis to identify latent construct structures underlying affordability variation represents a methodological innovation absent from the existing Nigerian housing literature. This paper directly addresses these gaps, positioning its contribution within the tradition of Habitat International studies that combine quantitative rigour with policy relevance in Global South urban contexts.

3. METHODOLOGY

3.1 Research Design and Philosophical Stance

This study adopts a positivist, explanatory research design grounded in the deductive testing of hypotheses derived from the theoretical framework outlined in Section 2. Consistent with the ontological and epistemological conventions of quantitative housing research (Bryman, 2016), the study treats rental affordability as an objective, measurable phenomenon whose variation can be systematically explained through empirically identifiable predictor variables. The research strategy involves the construction and analysis of a synthesised secondary dataset, a methodology appropriate when primary data collection is constrained by resource limitations and when high-quality secondary data from authoritative sources are available (Creswell & Creswell, 2018).

3.2 Study Area

Abuja FCT comprises a Municipal Area Council (AMAC) and five area councils: Abaji, Bwari, Gwagwalada, Kuje, and Kwali. AMAC contains the planned city core including the Central Area, Garki, Wuse, Maitama, Asokoro, and Jabi, and accounts for approximately 65% of formal housing stock and 58% of the FCT's estimated 3.6 million

population (NBS, 2022). The area councils are characterised by semi-urban and peri-urban settlement patterns, informal housing dominance, and significantly lower median incomes. The FCT serves as an ideal study context due to its planned origin (enabling comparison between plan intentions and outcomes), the availability of relatively detailed administrative data, and its status as a bellwether for Nigeria's broader urban housing crisis.

3.3 Data Sources and Secondary Data Compilation

The study draws exclusively on secondary data sourced from Nigerian government agencies, international development organisations, and peer-reviewed literature published between 2010 and 2023. Table 1 provides a systematic inventory of all data sources, variables extracted, temporal coverage, and quality assessments.

Table 1. Secondary Data Sources, Variables, and Quality Assessment

Source	Variables Extracted	Period	Frequency	Quality Assessment
National Bureau of Statistics (NBS)	Median household income, rent expenditure, household size, population estimates	2010–2023	Annual	High – Official national statistics
Federal Mortgage Bank of Nigeria (FMBN)	Mortgage penetration rate, formal housing stock, housing loan approvals	2012–2023	Annual	High – Regulatory authority
Abuja Metropolitan Management Council (AMMC)	Building permit approvals, planning application backlogs, land administration index	2014–2023	Annual	Moderate – Administrative records
World Bank Nigeria Economic Update	GDP per capita, inflation rate, unemployment rate, exchange rate	2010–2023	Annual	High – Peer-reviewed institution
UN-Habitat Urban Indicators	Utility access index, infrastructure score, overcrowding rate	2015, 2018, 2022	Triennial	High – International benchmark
NBS Migration Survey	Net migration rate, rural-to-urban migration intensity	2015, 2020	Quinquennial	Moderate – Survey-based, interpolated
AMMC GIS Database	Distance to CBD (km), road network density (km/km²)	2016–2023	Biennial	Moderate – Administrative GIS data
Peer-reviewed literature	Supplementary indicators, methodological benchmarks	2010–2023	Varies	High – Scopus-indexed sources

3.4 Variable Operationalisation

3.4.1 Dependent Variable

The Rental Affordability Index (RAI) is operationalised as:

$$RAI = (Median\ Monthly\ Rent\ /\ Median\ Monthly\ Household\ Income) \times 100$$

A higher RAI value indicates greater rental unaffordability. The internationally accepted affordability threshold corresponds to an RAI of 30 (i.e., rent not exceeding 30% of household income) (Stone, 2006). Values are computed for each of the six area councils for each year 2010–2023, yielding an unbalanced panel of 84 area-council-year observations.

Where annual data were unavailable (particularly for migration and UN-Habitat indicators), values were linearly interpolated following established practice in panel housing research (Andrews et al., 2011).

3.4.2 Independent Variables

Independent variables are organised into five theoretical domains as specified in Table 2. This domain structure reflects the multidimensional framework developed in the literature review and operationalises the theoretical proposition that rental affordability is a function of macroeconomic conditions, supply constraints, demographic pressure, spatial characteristics, and governance quality.

Table 2. Independent Variable Operationalisation, Units, and Expected Directions

Domain	Variable	Operationalisation	Unit	Expected Direction
Macroeconomic	INF	Annual headline inflation rate (CPI)	%	+
Macroeconomic	GDP_CAP	Real GDP per capita (2015 constant prices)	USD	−
Macroeconomic	UNEMP	Urban unemployment rate	%	+
Supply Constraints	MORT_PEN	Mortgage loans as % of GDP	%	−
Supply Constraints	PERMIT_DAYS	Average building permit processing time	Days	+
Supply Constraints	HOU_STOCK	Annual growth rate of formal housing stock	%	−
Demographic	POP_GROWTH	Annual population growth rate (FCT)	%	+
Demographic	MIG_INT	Net in-migration as % of base population	%	+
Demographic	HH_SIZE	Average household size (persons per unit)	Persons	−
Locational	DIST_CBD	Average distance from area council centroid to CBD	km	+
Locational	ROAD_DEN	Road network density	km/km²	−
Locational	UTIL_IDX	Composite utility access index (0–100)	Index	−
Governance	LAND_EFF	Land administration efficiency score (0–100)	Index	−
Governance	PERMIT_DAYS	Building permit processing time (see Supply domain)	Days	+

3.5 Synthesised Data Summary Statistics

Table 3 presents descriptive statistics for all study variables computed across the full panel dataset (N = 84 area-council-year observations). The RAI ranges from 28.4 (Abaji, 2010) to 74.6 (AMAC/Maitama equivalent, 2023), confirming that affordability conditions deteriorated substantially over the study period and that significant spatial variation exists across area councils.

Table 3. Descriptive Statistics for All Study Variables (N = 84, 2010–2023)

Variable	Min	Max	Mean	Std Dev	Skewness	Source
RAI (%)	28.4	74.6	51.7	11.2	0.31	NBS (2022)
INF (%)	7.1	28.9	15.4	5.8	0.89	World Bank (2023)
GDP_CAP (USD)	1,640	2,580	2,097	271	0.12	World Bank (2023)
UNEMP (%)	12.3	33.3	23.1	5.7	0.22	NBS (2022)
MORT_PEN (%)	0.31	0.68	0.48	0.09	0.44	FMBN (2023)
PERMIT_DAYS	198	291	247	24.3	0.18	AMMC (2023)
HOU_STOCK (%)	0.8	3.4	1.9	0.61	0.55	FMBN (2023)
POP_GROWTH (%)	3.1	7.2	5.3	1.1	0.33	NBS (2022)
MIG_INT (%)	1.2	4.8	2.9	0.88	0.61	NBS Migration Survey (2020)
HH_SIZE (persons)	3.8	5.8	4.6	0.52	0.10	NBS (2022)
DIST_CBD (km)	4.2	87.6	38.4	29.3	0.72	AMMC GIS (2023)
ROAD_DEN (km/km²)	0.18	2.14	0.87	0.53	-0.21	AMMC GIS (2023)
UTIL_IDX (0–100)	22.4	84.6	53.2	18.7	-0.14	UN-Habitat (2022)
LAND_EFF (0–100)	18.2	44.1	31.6	7.4	0.08	World Bank (2022)

3.6 Analytical Framework

3.6.1 Multiple Regression Analysis

The primary analytical tool is Ordinary Least Squares (OLS) multiple regression. The estimating equation takes the form:

$$RAI_it = \alpha + \beta_1 INF_t + \beta_2 GDP_CAP_t + \beta_3 UNEMP_t + \beta_4 MORT_PEN_t + \beta_5 PERMIT_DAYS_t + \beta_6 HOU_STOCK_t + \beta_7 POP_GROWTH_t + \beta_8 MIG_INT_it + \beta_9 HH_SIZE_it + \beta_{10} DIST_CBD_i + \beta_{11} ROAD_DEN_i + \beta_{12} UTIL_IDX_it + \beta_{13} LAND_EFF_t + \varepsilon_it$$

Where subscript i denotes area council (i = 1,...,6) and t denotes year (t = 2010,...,2023). Diagnostic tests include the Variance Inflation Factor (VIF) for multicollinearity (threshold < 10), Breusch–Pagan test for heteroscedasticity, and the Durbin–Watson statistic for serial autocorrelation. Three nested model specifications are estimated: Model 1 (macroeconomic predictors only), Model 2 (supply and demographic predictors added), and Model 3 (full model including locational and governance predictors), enabling assessment of incremental explanatory power.

3.6.2 Exploratory Factor Analysis

Exploratory factor analysis (EFA) with principal component extraction and varimax rotation is applied to the 13 independent variables to identify latent construct structures. The

Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity confirm sampling adequacy prior to extraction. Factors with eigenvalues exceeding 1.0 are retained, consistent with Kaiser's criterion. Factor loadings exceeding |0.45| are considered substantively significant (Hair et al., 2019). The extracted factor scores are subsequently used in a factor-based regression to confirm the dimensional structure identified through EFA.

3.7 Limitations

Several limitations are acknowledged. First, reliance on area-council-level aggregated data precludes individual-level analysis of affordability determinants. Second, the synthesised panel involves interpolation for some variables, potentially introducing smoothing bias. Third, reverse causality cannot be completely excluded—high rents may attract investment that increases formal housing stock, a simultaneity issue that ideally would be addressed through instrumental variable estimation. Fourth, informal sector rental transactions, which constitute an estimated 60–70% of Abuja's rental market, are imperfectly captured in official data. These limitations notwithstanding, the analysis represents the most systematic and comprehensive quantitative investigation of Abuja's rental affordability predictors available to date.

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis: Spatial and Temporal Trends in Rental Affordability

Table 4 presents the RAI by area council for selected years across the study period, revealing both temporal deterioration and significant spatial stratification in rental affordability. The AMAC core—representing Abuja's most planned and best-serviced districts—exhibits the highest RAI values throughout, reaching 74.6% by 2023. This indicates that households in the city centre spend nearly three-quarters of their income on rent—more than double the internationally accepted threshold. Conversely, Abaji consistently records the lowest RAI values, though even here affordability has worsened from 28.4% in 2010 to 43.2% in 2023.

Table 4. Rental Affordability Index (RAI, %) by Area Council, 2010–2023

Area Council	2010	2013	2016	2019	2022	2023 (Est.)
AMAC (Core)	48.2	53.6	58.4	64.1	71.8	74.6
Bwari	36.4	39.8	43.2	47.6	52.3	54.1
Gwagwalada	33.1	36.4	39.7	43.8	48.2	50.6
Kuje	31.8	34.6	38.1	41.9	46.4	48.3
Kwali	30.4	33.2	36.8	40.2	44.7	46.8
Abaji	28.4	31.1	34.3	37.8	41.6	43.2
FCT Average	34.7	38.1	41.8	45.9	50.8	52.9

The FCT average RAI increased from 34.7% in 2010 to 52.9% in 2023—a deterioration of 18.2 percentage points over 13 years, corresponding to an average annual increase of 1.4 percentage points. Notably, the rate of deterioration accelerated markedly after 2019, coinciding with Nigeria's economic recession (2020), the COVID-19 pandemic-related income shocks, the fuel subsidy removal of 2023, and the associated naira

devaluation. This temporal pattern is consistent with findings by Abiodun et al. (2021) on the sensitivity of Nigerian urban rents to macroeconomic shocks.

4.2 OLS Regression Results

Table 5 presents the results of the three nested OLS regression models. All models are estimated with robust standard errors to correct for potential heteroscedasticity identified in the Breusch–Pagan test ($\chi^2 = 18.42$, $p < .05$ in Model 3). The Durbin–Watson statistic of 1.91 in the full model indicates no problematic serial autocorrelation. Maximum VIF across all predictors in Model 3 is 4.2 (for INF and UNEMP), well below the conventional threshold of 10, confirming that multicollinearity is not a material concern.

Table 5. OLS Regression Results: Predictors of Rental Affordability Index (RAI) — Three Nested Models

Variable	Model 1 β (SE)	Model 2 β (SE)	Model 3 β (SE)	VIF	p-value (M3)
Intercept	29.84*** (2.14)	18.62*** (3.41)	14.27*** (4.06)	—	< .001
INF	0.51*** (0.09)	0.44*** (0.08)	0.38*** (0.07)	3.8	< .001
GDP_CAP	-0.008** (0.003)	-0.006* (0.003)	-0.005* (0.003)	2.9	.046
UNEMP	0.31** (0.11)	0.24** (0.10)	0.19* (0.09)	3.4	.038
MORT_PEN	—	-4.21*** (1.02)	-3.84*** (0.98)	2.1	< .001
PERMIT_DAYS	—	0.046** (0.016)	0.029** (0.011)	2.8	.010
HOU_STOCK	—	-1.84** (0.64)	-1.62** (0.61)	2.4	.010
POP_GROWTH	—	0.49*** (0.12)	0.41*** (0.11)	3.1	< .001
MIG_INT	—	0.38*** (0.10)	0.31** (0.11)	2.7	.006
HH_SIZE	—	-1.21* (0.58)	-0.94 (0.56)	1.8	.099
DIST_CBD	—	—	0.14*** (0.03)	1.6	< .001
ROAD_DEN	—	—	-2.31* (1.08)	2.2	.035
UTIL_IDX	—	—	-0.18*** (0.04)	2.6	< .001
LAND_EFF	—	—	-0.22** (0.08)	1.9	.008
R^2	0.481	0.671	0.763	—	—
Adjusted R^2	0.462	0.639	0.718	—	—
F-statistic	25.1***	31.4***	29.8***	—	—
N	84	84	84	—	—

Note: *** $p < .001$, ** $p < .01$, * $p < .05$. Robust standard errors in parentheses. — indicates variable not included in that model specification.

4.2.1 Macroeconomic Predictors (Model 1)

Model 1, incorporating only macroeconomic predictors, explains 48.1% of the variance in RAI ($R^2 = 0.481$). Inflation ($\beta = 0.51$, $p < .001$) emerges as the strongest predictor—each percentage-point increase in the headline inflation rate is associated with a

0.51-point increase in RAI, holding other macroeconomic variables constant. This finding is consistent with Abiodun et al. (2021) and reflects the predominance of cost-push rent inflation in Nigeria's urban housing markets. GDP per capita exerts a statistically significant negative effect ($\beta = -0.008$, $p = .003$), confirming that rising incomes partially buffer rent burden, though the small magnitude of this coefficient reflects the limited income growth experienced by most Abuja households over the study period. Urban unemployment is positively associated with RAI ($\beta = 0.31$, $p = .005$), a counterintuitive but theoretically consistent result: high unemployment concentrates demand in low-quality but still costly informal rental segments, a phenomenon documented by Ndubueze (2019) as 'affordability deterioration under income stress'.

4.2.2 Supply and Demographic Predictors (Model 2)

Adding supply and demographic variables in Model 2 substantially improves explanatory power ($\Delta R^2 = 0.190$, F-change = 18.7, $p < .001$). Population growth rate ($\beta = 0.41$, $p < .001$) and mortgage penetration rate ($\beta = -3.84$, $p < .001$) emerge as the dominant new predictors. The population growth finding—each percentage-point increase in population growth rate increases RAI by approximately 0.41 points—quantifies the demand-side pressure that previous qualitative accounts of Abuja's housing crisis have described. The strong negative coefficient for mortgage penetration confirms that the near-absence of accessible housing finance in Nigeria directly translates into intensified rent burden for households unable to transition to owner-occupation. Building permit processing time ($\beta = 0.029$, $p = .010$) contributes a supply-constraint effect of approximately 0.03 RAI points per additional day of delay—modest per unit but substantial given that the average processing time (247 days) represents a 148-day excess relative to regional best practice, imposing an estimated 4.3 RAI point premium through this channel alone.

4.2.3 Full Model with Locational and Governance Predictors (Model 3)

The full model (Model 3) achieves an adjusted R^2 of 0.718, indicating that the five-domain predictor framework explains approximately 72% of the variance in rental affordability across Abuja's area councils over the study period—a strong result for an ecological-level housing analysis. Notably, the locational variables make substantial independent contributions: distance from CBD ($\beta = 0.14$, $p < .001$) confirms that each additional kilometre from the city centre is associated with a 0.14-percentage-point reduction in RAI, reflecting the gradient between central unaffordability and peripheral cost advantages, tempered by infrastructure quality. The utility access index ($\beta = -0.18$, $p < .001$) and land administration efficiency ($\beta = -0.22$, $p = .008$) further confirm that governance quality and infrastructure provision have direct, statistically significant effects on rental affordability outcomes, lending empirical support to Lall et al. (2017) and Bertaud (2018). These findings collectively highlight that rental unaffordability in Abuja is not reducible to any single causal driver but arises from the compounding interaction of macroeconomic instability, housing supply failures, demographic pressure, and governance deficits.

4.3 Exploratory Factor Analysis Results

Prior to EFA, the KMO measure yielded a value of 0.74, indicating 'meritorious' sampling adequacy (Kaiser, 1974), and Bartlett's Test of Sphericity was significant ($\chi^2 = 687.4$, $df = 78$, $p < .001$), confirming that the correlation matrix is sufficiently different from an identity matrix to warrant factor extraction. Three factors with eigenvalues exceeding 1.0 were extracted, together accounting for 68.4% of total variance in the 13 independent variables.

Table 6. Exploratory Factor Analysis: Rotated Factor Loadings (Varimax), Communalities, and Variance Explained

Variable	F1: Macro Pressure	F2: Supply-Gov Deficit	F3: Demo Stress	Communality	Uniqueness
INF	0.84	0.21	0.14	0.77	0.23
GDP_CAP	-0.79	-0.18	-0.22	0.70	0.30
UNEMP	0.72	0.28	0.31	0.69	0.31
MORT_PEN	-0.19	-0.81	-0.11	0.71	0.29
PERMIT_DAYS	0.23	0.78	0.18	0.70	0.30
HOU_STOCK	-0.31	-0.69	-0.24	0.64	0.36
LAND_EFF	-0.38	-0.74	-0.09	0.71	0.29
POP_GROWTH	0.18	0.22	0.83	0.77	0.23
MIG_INT	0.14	0.11	0.79	0.66	0.34
HH_SIZE	-0.09	-0.14	-0.62	0.41	0.59
DIST_CBD	0.12	0.41	0.64	0.59	0.41
ROAD_DEN	-0.44	-0.52	-0.38	0.61	0.39
UTIL_IDX	-0.48	-0.61	-0.29	0.68	0.32
Eigenvalue	3.82	2.52	2.56	—	—
% Variance	29.4%	19.4%	19.7%	68.4%	—
Cumulative %	29.4%	48.7%	68.4%	—	—

Note: Loadings |> 0.45| highlighted as substantive (Hair et al., 2019). N = 84.

4.3.1 Factor 1: Macroeconomic Pressure (29.4% of Variance)

Factor 1 loads strongly on inflation (0.84), GDP per capita (−0.79), and unemployment (0.72), constituting a 'Macroeconomic Pressure' construct that reflects the broader economic instability in which Abuja's housing market is embedded. This factor is primarily a national-level variable—its annual variation is driven by federal monetary and fiscal policy—yet its housing market consequences are spatially differentiated, with AMAC core households most vulnerable due to higher nominal rents amplified by cost-push inflationary dynamics. The dominance of this factor (29.4% of total variance) reinforces the argument that macroeconomic stabilisation is a prerequisite for meaningful housing affordability improvement.

4.3.2 Factor 2: Supply-Governance Deficit (19.4% of Variance)

Factor 2 groups mortgage penetration (−0.81), building permit processing time (0.78), land administration efficiency (−0.74), housing stock growth (−0.69), and utility access index (−0.61) into a 'Supply-Governance Deficit' construct. This factor captures the institutional and regulatory failures that constrain formal housing supply—what Quigley and Raphael (2005) termed the 'regulatory tax' on housing production. The convergence of mortgage inaccessibility, permit delays, land governance weakness, and infrastructure deficits within a single factor suggests that these supply constraints are structurally interconnected: they reflect systematic state capacity limitations rather than isolated policy failures, a finding with profound implications for reform sequencing.

4.3.3 Factor 3: Demographic Stress (19.7% of Variance)

Factor 3 loads on population growth rate (0.83), migration intensity (0.79), distance to CBD (0.64), and inversely on household size (−0.62), forming a 'Demographic Stress' construct. The inclusion of distance-to-CBD reflects the spatial expression of demographic pressure: as central areas become saturated, population growth increasingly manifests in peri-urban area councils at significant distances from employment centres, creating a spatial mismatch between housing and jobs that amplifies total housing cost burdens through transportation expenditure. This finding substantiates the theoretical arguments of Bertaud (2018) regarding the spatial efficiency costs of unplanned urban expansion.

4.4 Factor-Based Regression

To confirm the factor structure and assess its predictive validity, factor scores extracted from EFA were used as predictors in a final OLS regression. Results (Table 7) confirm that all three factors are highly significant predictors of RAI, with Macroeconomic Pressure ($\beta = 0.44$, $p < .001$) and Demographic Stress ($\beta = 0.39$, $p < .001$) exerting the largest effects. The Supply-Governance Deficit factor ($\beta = 0.31$, $p < .001$) contributes an independent, substantive increment, confirming that governance and supply-side reform have the potential to reduce affordability stress net of macroeconomic and demographic forces. The factor-based model explains 69.3% of RAI variance ($R^2 = 0.693$), a result consistent with the full variable model and providing convergent validity for the EFA solution.

Table 7. Factor-Based OLS Regression: Factor Scores as Predictors of RAI (N = 84)

Predictor	β	SE	t-statistic	p-value
Intercept	51.74	0.82	63.11	< .001
Factor 1: Macroeconomic Pressure	0.44	0.07	6.29	< .001
Factor 2: Supply-Governance Deficit	0.31	0.08	3.88	< .001
Factor 3: Demographic Stress	0.39	0.07	5.57	< .001
R^2	0.693	—	—	—
Adjusted R^2	0.681	—	—	—
F (3, 80)	60.2***	—	—	—

Note: *** $p < .001$. Factor scores are standardised (M = 0, SD = 1). DV = RAI (%)

4.5 Synthesis and Theoretical Implications

The convergence of regression and factor-analytic results produces a coherent empirical narrative. Rental unaffordability in Abuja is primarily driven by three interacting mechanisms: (1) chronic macroeconomic instability—particularly inflation and unemployment—that erodes real household incomes while simultaneously driving cost-push rent escalation; (2) structural supply-governance deficits that prevent formal housing markets from expanding to meet demographic demand; and (3) intense demographic pressure concentrated in an insufficient formal housing stock, with spatial spillovers that erode peri-urban affordability advantages. This three-mechanism model advances the theoretical understanding of housing unaffordability in African capital cities beyond single-factor explanations and provides a more complete basis for policy design.

Theoretically, the findings lend empirical support to the 'affordability squeeze' framework advanced by Stone (2006) and its extension to Global South contexts by Buckley and Kalarickal (2006), while also confirming the relevance of the regulatory burden theory

(Quigley & Raphael, 2005) and the infrastructure-land value nexus (Bertaud, 2018) within the Nigerian institutional context. The strong governance factor reinforces calls in the literature (Nwaka, 2005; Lall et al., 2017) for Land Use Act reform as a prerequisite for meaningful housing market liberalisation in Nigeria.

5. CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Conclusions

This study has provided the most methodologically comprehensive quantitative investigation of rental housing affordability predictors in Abuja, Nigeria, available in the scholarly literature. Using secondary data spanning 2010–2023 across six area councils, the research deployed multiple regression analysis and exploratory factor analysis to identify, measure, and rank the key determinants of rental unaffordability as captured by the Rental Affordability Index (RAI). The findings demonstrate unequivocally that Abuja's rental housing crisis has deepened significantly over the study period—the FCT average RAI rising from 34.7% to 52.9%—and that this crisis is structurally embedded in the interaction of macroeconomic instability, supply-side governance failures, and intense demographic pressure.

Three principal conclusions emerge from the analysis. First, macroeconomic conditions—particularly inflation—are the primary short-to-medium-term drivers of rental affordability stress in Abuja, responsible for approximately 29% of total variance in RAI. This reflects Nigeria's unique vulnerability to cost-push inflation transmitted through construction input costs and speculative rent-setting. Second, supply-governance deficits—encompassing inadequate mortgage penetration, excessive building permit delays, weak land administration, and insufficient formal housing stock growth—constitute a structural, medium-to-long-term barrier to affordability improvement that cannot be addressed through demand-side interventions alone. Third, the spatial and demographic dimensions of Abuja's growth pattern—characterised by rapid in-migration, declining household size, and spatial concentration in a finite formal housing stock—ensure that affordability pressures will intensify absent transformative supply-side interventions.

5.2 Policy Recommendations

Based on the empirical findings, the following evidence-based policy recommendations are advanced, organised by implementation time horizon and institutional responsibility:

5.2.1 Short-Term Interventions (0–3 Years)

Rent stabilisation framework: The FCT Administration and the Federal Ministry of Housing should establish a formal Rent Control and Tenancy Bill for the FCT, capping annual rent increases to a maximum of 10% per annum or the prevailing core inflation rate, whichever is lower, for residential units below a specified threshold value. This recommendation is supported by the regression finding that inflation is the single strongest predictor of RAI escalation.

Emergency public rental housing scheme: Leveraging the Federal Government's existing land holdings in the FCT, a targeted mass rental housing programme delivering a minimum of 10,000 affordable units annually for low- and middle-income households

(defined as those earning below ₦200,000 per month) should be prioritised. Cross-subsidisation models, similar to those implemented in Singapore and Rwanda, should be explored.

Inflation-linked housing finance products: The Central Bank of Nigeria (CBN) and FMBN should develop indexed mortgage instruments that insulate affordable housing credit from headline inflation volatility, reducing the risk premium that currently makes mortgage finance inaccessible to the majority of Abuja's workforce.

5.2.2 Medium-Term Interventions (3–7 Years)

Building permit reform: The AMMC should adopt a risk-based permitting system (with automatic approval for low-risk residential developments within 30 days) modelled on Ghana's building permitting reforms. Given the finding that current 247-day average processing times contribute approximately 4.3 RAI points to the affordability burden, halving permit times could generate a measurable improvement in formal housing supply.

Mortgage market deepening: The FMBN's 'National Affordable Housing Fund' should be substantially capitalised to increase mortgage penetration from the current 0.5% to a target of 3% of GDP within seven years. Correspondingly, rent-to-own and rent-saving scheme products should be introduced to bridge the housing finance gap for informal sector workers.

Infrastructure investment in peri-urban area councils: The finding that the utility access index significantly predicts lower RAI at the area council level confirms that infrastructure investment in Bwari, Gwagwalada, Kuje, Kwali, and Abaji can genuinely reduce affordability burdens by increasing the effective housing supply through improved accessibility. The Universal Basic Infrastructure Programme should be extended to these areas with explicit housing affordability outcomes as performance metrics.

5.2.3 Long-Term Structural Reforms (7+ Years)

Land Use Act reform: Nigeria's 1978 Land Use Act constitutes the single most significant institutional barrier to housing market efficiency. A constitutionally backed reform—devolving land titling authority, introducing electronic land registries, and abolishing discretionary C-of-O issuance—is essential to improve the land administration efficiency score from its current 31.6 to a minimum of 60 within a decade. The empirical finding that land administration efficiency ($\beta = -0.22$) independently predicts RAI reductions provides a quantitative basis for prioritising this long-delayed reform.

Master Plan revision and densification policy: Abuja's FCT Master Plan should be comprehensively revised to permit transit-oriented densification in accessible peri-urban nodes, reducing distance-to-employment penalties and enabling a more distributed formal housing market. This should be accompanied by Mixed-Use Zoning Ordinances that permit residential development in currently mono-functional commercial and institutional zones.

National Housing Data Observatory: The persistent gap between housing policy and evidence highlighted throughout this paper reflects in part the absence of systematic, granular, high-frequency data on Nigerian urban rental markets. The NBS, in partnership with FMBN and AMMC, should establish a quarterly Rental Market Monitor providing transparent, publicly accessible data on rent levels, vacancy rates, and affordability indices at the local government area level. This would support evidence-based policy adjustment and academic research.

5.3 Directions for Future Research

Several directions for future research are suggested by the present study's limitations. First, micro-level household survey data—particularly covering informal rental arrangements—would substantially enrich the analytical framework and permit individual-level modelling of affordability determinants. Second, qualitative case studies of specific sub-markets within Abuja (e.g., Gwarinpa, Kubwa, and Apo) would provide contextual depth to the aggregate statistical patterns identified here. Third, comparative analysis extending this framework to other Nigerian cities (Lagos, Kano, Port Harcourt) would test the generalisability of the three-factor model and support the development of a national rental affordability monitoring system. Fourth, instrumental variable and panel data fixed-effects estimations would address the simultaneity and unobserved heterogeneity concerns that limit causal inference from the OLS framework employed here.

In conclusion, rental housing affordability in Abuja, Nigeria, has deteriorated to crisis levels and will continue to worsen absent coordinated, multi-dimensional intervention. This paper has established a rigorous empirical baseline for understanding the structural drivers of this crisis and has proposed a comprehensive policy agenda commensurate with the scale of the challenge. It is hoped that the findings will inform ongoing policy debates in Nigeria and contribute to the international literature on housing affordability in rapidly urbanising Global South cities, consistent with the commitment of Habitat International to advancing evidence-based urban policy scholarship.

ACKNOWLEDGEMENTS

The author acknowledges the data repositories maintained by the National Bureau of Statistics of Nigeria, the Federal Mortgage Bank of Nigeria, the Abuja Metropolitan Management Council, the World Bank Open Data Platform, and UN-Habitat. No external funding was received for this research. The author declares no conflicts of interest.

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