Habitat International 155 (2025) 103234

Contents lists available at ScienceDirect

Habitat International

journal homepage: www.elsevier.com/locate/habitatint

Secondary cities at the residential housing frontier: Examining the determinants of private renters' residential satisfaction in Ghana

Stephen Leonard Mensah [a,b,*], Seth Asare Okyere [c,d], Louis Kusi Frimpong [e], Alex Boakye Asiedu [b], Mariama Zaami [b], Matthew Abunyewah [f]

[a] School of Urban Affairs and Public Policy, The University of Memphis, USA
[b] Department of Geography and Resource Development, University of Ghana, Legon, Accra, Ghana
[c] Urban Studies, University of Pittsburg, USA
[d] Graduate School of Engineering, Osaka University, Osaka, Japan
[e] Department of Geography and Earth Sciences, University of Environment and Sustainable Development, Somanya, Ghana
[f] Australasian Center for Resilience Implementation for Sustainable Communities, Charles Darwin University, Darwin, Australia

ARTICLE INFO

Keywords:
Residential satisfaction
Rental housing
Secondary cities
Housing sector
Ghana

ABSTRACT

Decades of political ambivalence, housing injustice, and a neoliberal housing sector aided by the government's lax approach to housing provision have meant that, private rental housing remains the predominant sector for housing urban residents and their shifting geographies into secondary cities. Residential satisfaction in urban areas provides an important socio-spatial view of the housing sector in secondary cities and its implications for the inclusive and sustainable development of small and medium-sized cities. Yet, a large set of studies into the private rental housing sector has paid little attention to the influence of housing services (i.e. satisfaction with maintenance services, utility services and privacy) on residential satisfaction amongst private rental households. Using an ordinal logistic regression model and based on a sample size of 246 private rental households, this paper examined the influence of sociodemographic and housing services (i.e. satisfaction with maintenance services, utility services and privacy) variables on residential satisfaction amongst private rental households living in Cape Coast, Ghana. The chi-square test revealed a significant relationship between duration of stay ($\chi^2 = 15.908$, $p = 0.003$), satisfaction with maintenance service ($\chi^2 = 98.477$, $p = 0.000$), satisfaction with utility services (electricity and water) ($\chi^2 = 45.934$, $p = 0.000$), satisfaction with privacy ($\chi^2 = 41.252$, $p = 0.000$) and residential satisfaction. Further, the logistic regression analysis also showed a significant negative relationship between maintenance services ($\beta = -3.928$, $p < 0.001$), utility services (electricity and water) ($\beta = -1.033$, $p < 0.001$), privacy ($\beta = -2.716$, $p < 0.01$) and residential satisfaction. The findings call for the attention of both researchers and policymakers to recognize the inseparable relationship between housing and the broader built environment and to address challenges confronting the rental housing sector—considering that the quality of the residential environment is directly linked to the quality of life and the socio-physical well-being of residents.

1. Introduction

The population of Ghana increased from 25 million in the last decade to approximately 31 million in 2021, with secondary cities accounting for a sizeable share of this increase (GSS, 2021). This demographic shift implies that demand for urban services and facilities will rise, with housing need rising to the top of the list. For instance, the 2021 Population and Housing Census reports that, of the 9 million physical structures that are fully completed, less than 60% of them are used for residential purposes (GSS, 2021). Studies (e.g. Asante & Ehwi, 2022; Obeng-Odoom, 2011a) have demonstrated that, the public sector is ambivalent about the housing challenges (Boateng & Klopp, 2024) and the relegation of housing provision to the market has created a boom for the upper class and a bust for the majority of low-income residents (Okyere, 2020; Okyere et al., 2018). Consequently, the private rental housing sector seems to be filling the void left by public sector laxity and neoliberal housing market injustices that price out the low-income population. Within the context of historical, political, economic, and socio-cultural factors that have converged to produce a dominant private rental housing sector (Boateng & Klopp, 2024), it is important to

* Corresponding author. School of Urban Affairs and Public Policy, The University of Memphis, USA.
E-mail address: slmensah77@gmail.com (S.L. Mensah).

https://doi.org/10.1016/j.habitatint.2024.103234
Received 22 June 2024; Received in revised form 11 October 2024; Accepted 18 November 2024
Available online 30 November 2024

examine the affordances this sector provides residents from a residential satisfaction perspective. Residential satisfaction, which refers to the "feeling of contentment when one has or achieves what one needs or desires in a house" (Mohit & Al-KhanbashiRaja, 2014), can serve as an important indicator to understand resident anticipated or actual needs in a housing unit which are pertinent in helping them actualize their socioeconomic goals.

Residential satisfaction studies have been conducted in different Global South cities with diverse findings and implications. For example, in China, Zhang and Lu (2016) found a significantly lower level of resident's overall satisfaction with neighborhood facilities and the social and built environment. Sheng et al. (2021) also found a significant relationship between housing type and neighborhood satisfaction. Another study by Yan et al. (2014), using structural equation modelling, revealed a relationship between social support and residential satisfaction. In a related context in Brazil, Carvalho et al. (1997) found a high level of residential satisfaction amongst residents living in exclusive condominiums—with safety, location and uniqueness being the main predictors of residential satisfaction. Kutor et al. (2023) also observed in selected informal settlements in Zimbabwe that residents with strong social networks, high place attachment and longer duration of stay had a higher odd of being associated with very satisfied residential satisfaction. A critical review of the urban studies and housing literature revealed a growing scholarship on residential satisfaction in Ghana (see Addo, 2016; Asiedu & Arku, 2009; Baiden et al., 2011; Bandauko et al., 2023; Danquah & Afram, 2014; Eyiah-Botwe et al., 2014). For example, using a binary logistic regression model, Bandauko et al. (2023), examined the influence of socio-demographic and housing characteristics on privacy in gated communities in Accra and found that factors such as age, level of education and home renovations were positively associated with satisfaction with privacy. Similarly, the study by Baiden et al. (2011) across three neighborhoods in Accra revealed that there is a significant positive relationship between age and housing satisfaction, with older people more likely to be dissatisfied with their housing arrangement. Yet, a careful reading of the emerging scholarship reveals two serious omissions: First, the case of the private rental housing sector in the context of small and medium-sized cities (secondary cities), which are emerging as the new frontiers of the housing crises. Second, the influence of housing services (i.e. maintenance services, utility services and privacy), which impacts on the quality of life in rental accommodation. This paper fills the lacuna in previous studies by focusing on the determinants of residential satisfaction amongst private rental households living in Cape Coast, Ghana. Using an ordinal logistic regression analysis and based on a sample size of 246 private rental households, this study specifically sought to examine (i) the influence of socio-demographic variables on residential satisfaction and (ii) the influence of housing services (i.e. satisfaction with maintenance services, utility services and privacy) on residential satisfaction. This objective is underpinned by the observation that most rental housing is often leased out in sub-standard conditions and defined by the lack of access to essential housing services and poor environmental conditions (Addo, 2016). What constitutes housing services remains unclear—nevertheless it constitutes the services that are derived from the structure and the land on which it sits. This refers to the services that one obtains by residing in a particular house in a particular location (see Zabel, 2004). In this study, we reason with Zabel (2004) and define housing services as the services available in a specific house in a specific location that influences the residential satisfaction of dwellers. We limit these services to maintenance services, utility services (water and electricity) and privacy.

This paper offers three significant contributions to the scholarship and practice of rental housing in Ghana and other Global South countries. First, residential satisfaction is an important component in the assessment of housing quality and the overall well-being of residents (Wang & Wang, 2016). Hence, policymakers' understanding of residential satisfaction among private rental households and what determines it, can facilitate policy efforts to ensure that minimum standards of rental housing quality are met by private rental accommodation providers, which will positively impact on residential satisfaction. Second, housing services are directly linked to housing quality. Hence, examining the role of satisfaction with maintenance services, utility services and privacy in residential satisfaction is an important step for improving the physical and mental health of renters (Babalola et al., 2020). Lastly, relatively little is known about the private rental market in small and medium-sized cities as compared to large cities (see Arku et al., 2012; Osumanu, 2010). Shifting the analytical lens to secondary cities contributes to recent scholarly calls to counter the overlooking of smaller towns and medium-sized cities in southern urban scholarship and practice and thus elevate their contributions to sustainable transitions (See Randolph & Deuskar, 2024; Okyere et al., 2024).

The next section provides the conceptual and theoretical foundations on residential satisfaction and secondary cities nexus, followed by an overview of the study context, and the methodology. This is then followed by the results and the discussion sections respectively. The last section presents the conclusion, policy implications and the limitations of the study.

2. Theoretical foundation of the study

The study of an individual's residential satisfaction has received some attention in the disciplines of planning, geography, architecture, sociology, psychology, and marketing (see Festinger, 1954; Galster, 1985; Lu, 1999; Morris & Winter 1975; Oliver, 1980; Riemer, 1943). It is a term that encapsulates both the objective and subjective components of the residential environment (Amérigo & Aragonés, 1997; Biswas et al., 2021; Galster, 1985). For policymakers, housing developers, and other professionals in the built environments, it is an important tool for gauging residents' perceptions of the residential environment, predicting residential mobility and housing demands, and evaluating housing development (Galster, 1985; Morris et al., 1976).

The extant literature on residential satisfaction is underpinned by three major theories: housing needs theory, housing deficit theory, and the psychological construct theory (Biswas et al., 2021; Mohit & Al-KhanbashiRaja, 2014). The housing needs theory assumes that the discrepancy between resident's current and actual housing needs will result in residential dissatisfaction and subsequently lead to residential mobility from their current dwelling to a desired dwelling (Rossi, 1955). The housing deficits theory asserts that the inability of a household's residential conditions to meet their cultural needs leads to a deficit in housing needs and results in residential dissatisfaction. In response, households resort to residential mobility, family adaptation, and residential adaptation to bridge these deficits (Gong & Söderberg, 2023). Comparatively, the role of the physical and social environments on households is more implicit in housing needs theory than the housing deficits theory. The psychological construct theory by Galster (1985) focuses on the influence of households' cognitive understanding of their residential environment on their residential needs. For the most part, these cognitive understandings are constructed intuitively by households themselves. Hence, the ability of their current residential environment to align with their self-defined referenced conditions will result in residential satisfaction, while the reverse will result in residential dissatisfaction, which could shape housing mobility or modifications (Gong & Söderberg, 2023).

Several studies (e.g., Amerigo, 2002; Emami & Sadeghlou, 2021; Mohit & Al-KhanbashiRaja, 2014; Gong & Söderberg, 2023; Jansen, 2014), have used the ideas from either one or a combination of all the three theories to explain the extent to which residents are satisfied or dissatisfied with the conditions of their residential environment. For example, Jansen (2014), using the non-parametric Mann-Whittney *U* test conducted an in-depth study of the anticipated and actual needs among Dutch households and found that households living in

suboptimal houses and who have no intention to move showed a higher mean appreciation for owner occupied housing and for traditional architectural design as compared to those who had intentions to move. The discrepancy between perceived and actual needs of a household does not always result in residential dissatisfaction. For example, Amerigo (2002) described a study where the actual and ideal residential environment were compared for the house, the neighbors and the neighborhood and the results showed that, one group of the participants living in a low-quality residential environment showed relatively higher residential satisfaction, despite a significant discrepancy between the actual and ideal residential environment. In essence, the theories are based on the principle that the alignment of a household's current residential conditions to physical, social, and psychological needs will result in residential satisfaction, and vice versa, with implications for residential mobility or residential adaptation (Mensah & Nalumu, 2023; Mohit et al., 2010; Gong and Söderberg, 2023).

Several studies (e.g. Baker, 2002; Bandauko et al., 2023; Gong and Söderberg, 2023; Parkes, 2002; Riazi & Emami, 2018), underpinned by the either one or a combination of the theories above and using various quantitative approaches have also shown that sociodemographic variables and features of the residential environment are also significant predictors of residential satisfaction. For example, a study by Gong and Söderberg (2023), using descriptive and inferential statistics revealed among university students in Sweden that participants with shorter residential duration were more satisfied as compared to those with longer residential duration. Similarly, Baker (2002) has observed in Adelaide that locational characteristics are important factors that shape residential satisfaction among public housing tenants. Yet, few of these studies have applied either one or a combination of the three theories among private rental households within the context of a secondary city in Africa. This study therefore draws on insights from the three theories to make two contributions to the residential satisfaction literature in African cities. First, the theories provide the analytical lens to understand the role of sociodemographic factors such as age, income and level of education on residential satisfaction. This helps to desist from offering a blanket solution for improving the residential environment in African cities without recourse to residential 'taste' and the personal characteristics of residents. Second, the theories serve as a guide to tease out the major residential features that shape residential satisfaction among the study participants. Residential or locational characteristics are important factors that shapes residential satisfaction (Baker, 2002), hence understanding the residential features shaping residential satisfaction helps to prioritize the major areas of the residential environments that are considered important for improving the habitability of the residential units. In this study, residential satisfaction is defined as the feeling of contentment by dwelling occupants with their residential or housing features.

3. Secondary cities and residential satisfaction: a review of concepts and predictors

The concept of secondary cities has received some attention concerning their characterization (see Ahmed et al., 2020; Abdulai et al., 2022) in the global south. In the literature, there are different lenses of conceptualization from different scholars depending on their parameters for defining what could be a secondary city. For instance, Rondinelli (1983) defines a secondary city as one with a population of not less than 100,000. For other scholars (e.g. Brand et al., 2021; Chen & Kanna, 2012; Donaldson et al., 2020), secondary cities are neither a metropolitan area nor rural community, but one which provides significant socioeconomic functions and facilitate the provision of goods and services to inner settlements and those around their spheres of influence. Secondary cities are significant for the provision of employment opportunities, pivotal in poverty reduction and crucial in improving people's standard of living compared to primate cities. They are also important settlements where transportation networks converge, trade opportunities are realized and the net receivers of rural-urban migrants (Christiaensen & Kanbur, 2017). In the global south, secondary cities have been noted to have the potential to propel socioeconomic growth and development in inner and surrounding communities, slow down rural-urban migration, and create opportunities for redistributing the benefits of economic growth to adjoining settlements (e.g. Roberts, 2014; Rondinelli, 1983).

In African cities, some scholars (e.g. Smit, 2018) argue that rapid urbanization may derail the opportunities that could be provided by secondary cities. The reason is that opportunities to realize these potentials in the form of urban infrastructure, investment, and services do not exist or are accessed with constrictions (Videla et al., 2020). Some studies have employed residential satisfaction as a proxy to understand the attendant challenges of urbanization in cities of varying sizes in the Global South. A quantitative study by Ogunbajo et al. (2016) in Nigeria reported a low residential satisfaction index for urban infrastructure services such as waste disposal, security, water, and electricity supply, and neighborhood cleanliness. Bandauko et al. (2023) also employed a binary logistic regression analysis and found that the complaints of residents living in a gated community in Accra against security services provision and housing features decreased their level of residential satisfaction. Employing series of quantitative techniques, Bao et al. (2023) revealed in their study in China that spatial function and indoor features of the residential environment had the greatest influence on residential satisfaction. Further, Addo (2016) revealed that community support services and neighborhood characteristics were significant predictors of residential dissatisfaction among low-income households in Accra. In secondary cities, present conditions such as, fragmented spatial planning policies, poor land governance, unplanned urbanization, and the lack of proactive institutions to predict and plan for sustainable urban futures impedes efforts towards the realization of the sustainable development indicators (Osumanu & Akomgbangre, 2020; UN-Habitat, 2022). Nonetheless, secondary cities and their residential environment, despite becoming the new frontier for urban development in the global south, have received little attention in the urban studies scholarship (Bell & Jayne, 2009). More so, the few emerging studies do not integrate residential satisfaction—a determinant of households' quality of life and a predictor of the extent to which households achieve their aspirations (Smith, 2011).

In Ghana and other context, studies on residential satisfaction are rarely undertaken in secondary cities with majority occurring in the major metropolitan areas (e.g. Addo, 2016; Baiden et al., 2011; Bandauko et al., 2023). In these studies, sociodemographic characteristics have been observed to be significant predictors of residential satisfaction. In the study by Bandauko et al. (2023) in Accra, it was revealed that level of education, and age of the respondents, had a positive association with residents' satisfaction with privacy. Mridha (2020) also found in Dhaka, Bangladesh a statistically significant relationship between age and residential satisfaction. The study by Waziri et al. (2014) in Abuja, Nigeria also revealed a statistically significant relationship between age and residential satisfaction. Regarding duration of stay, Maina (2021) study in Nigeria showed that a significant relationship exists between duration of stay and residential satisfaction. In a related study in Sweden, Gong and Söderberg (2023), using descriptive and inferential statistics also revealed a significant relationship between residential duration and residential satisfaction. Sociodemographic predictors of residential satisfaction such as age and duration of stay are crucial for delivering tailor made residential needs that meet the housing needs of the different population sub-groups. Secondary cities are expected to absorb the socioeconomic and population pressures on primate cities as they transition into larger urban centres, however the absence of continued proactive urban planning and decentralization responses to project and plan for future demands in urban services will result in their further marginalization (Galtier, 2023). Amidst rapid urbanization and housing shortages, the gap in affordable housing supply is mediated by rental housing provision, which is largely dominated by the activities of

petty landlords (Addo, 2016). Despite the neglect of private rental housing as an alternative to meeting housing demands in housing policy discussions, it has provided shelter for majority of households in Ghana (Obeng-Odoom, 2011b). In Ghana and many African cities, the adoption of the neoliberal approach in addressing public sector deficiencies and improving service delivery, particularly in the housing sector, has resulted in the increase of private housing developers or sometimes a joint public-private partnership (UN-Habitat, 2008). Whereas the involvement of private developers in housing provision should be commended as it complements government efforts to meet growing housing demands, their focus has been to maximize profit (Obeng-Odoom & Amedzro, 2011; Adu-Gyamfi et al., 2021). This has resulted in widening gaps in access to affordable housing and the development of slums and informal settlements characterized by poor housing and sanitary conditions (Gyimah et al., 2022).

Housing is a multi-dimensional commodity comprised of shelter and critical household facilities and services such as access to electricity and water, sanitation, and a spacious living environment (Danso-Wiredu, 2016). These are significant determinants of improved health, increased productivity, and the safety concerns of households (Arku, 2009), yet few studies have focused on assessing residential satisfaction levels amongst private rental households residing in Ghana's secondary cities. This raises questions about how secondary cities can drive equitable and inclusive urban development. Based on the above theoretical discussion and the review of the predictors of residential satisfaction, the following five hypotheses are formulated:

H1. There is a statistically significant relationship between duration of stay and residential satisfaction

H2. There is a statistically significant relationship between age and residential satisfaction

H3. There is a statistically significant relationship between satisfaction with utility services (electricity and water) and residential satisfaction

H4. There is a statistically significant relationship between satisfaction with maintenance services and residential satisfaction

H5. There is a statistically significant relationship between satisfaction with privacy and residential satisfaction

4. Methodology

4.1. Profile of the study area

In Ghana, the GSS (2014a) accords a settlement an urban status when the population of that settlement reaches 5000 or more. The World Bank (2015) defines a secondary city as the one with a population ranging from 100,000 to 250,000. Given this context, Cape Coast where the study was conducted (see Fig. 1) has the population threshold that describes it status as a secondary city in Ghana (see World Bank Group, 2015). Cape Coast has a total population of 189,925, of which 97,135 are females, while 92,790 are males, and an average household size of 3.2 (GSS, 2021). It is bordered to the east by the Abura-Asebu-Kwamankese district and to the west by the Komenda-Edina-Eguafo-Abrem municipality. It is further bordered to the north by the Twifo-Heman-Lower-Denkyira district and to the south by the Gulf of Guinea (Fig. 1). Cape Coast metropolis covers a land area of about 122 km (approx. 75.81 mi) sq. (GSS, 2014b). The population of the metropolis has significantly increased from 54,123 in 1960 to 189,925 in 2021 (CCMA, 2018; GSS, 2014b). According to the GSS (2021) report, the metropolis is completely urbanized with the Southern part more urbanized than the Northern part. The local economy of the metropolis is dominated by service industries such as education,

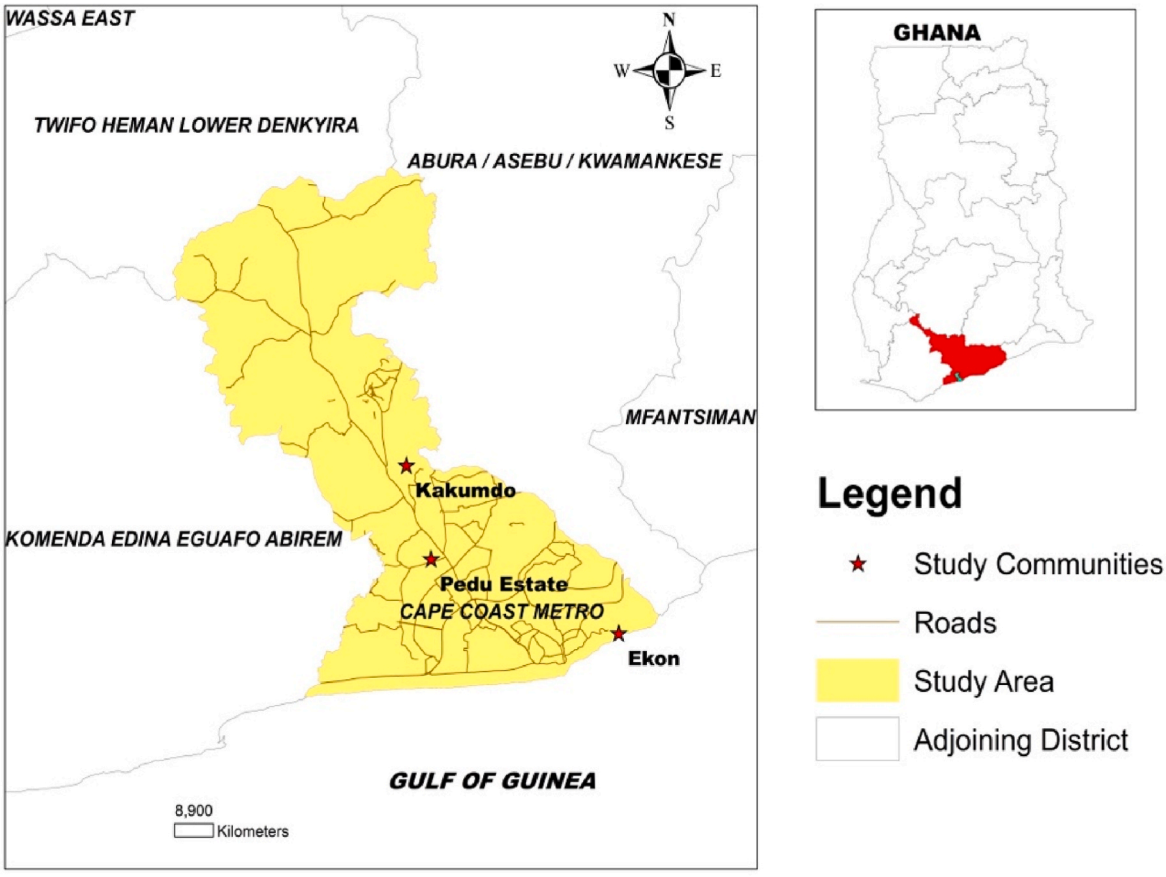

Fig. 1. A map of the study area (source: Author's construct).

banking, and tourism. Other predominant economic activities in the metropolis are commercial driving, farming, and fishing (CCMA, 2018; GSS, 2014b). Cape Coast, like many other secondary cities in Ghana, faces deep urban planning and development challenges, such as inadequate health and educational facilities and challenges with water and electricity supply (Galtier, 2023).

The metropolis has a total of 17,738 housing units of which 66% are found in urban areas. Dwellings in the metropolis are also predominantly compound houses (GSS, 2014b). About one-third of households own their dwellings, while about 13,549 of the households live in a residence owned by a private individual (GSS, 2014b). Previous report has indicated congestion among households, as an increase in household size results in an increase in the number of households residing in one bed-room units (GSS, 2014b). The study was conducted in three varying socioeconomic areas i.e., Ekon, Kakumdo, and Pedu Estate, representing low-income, middle-income, and high-income neighborhoods, respectively. These neighborhoods were selected to represent the main socio-spatial characters in the metropolis. Ekon is a fishing community and has a population of 5506 (GSS, 2014b), with most residents engaged in the buying and selling of various fish products as their main source of economic activity. The neighborhood is experiencing rapid residential development from middle-income earners who migrate from surrounding communities in the metropolis. Houses in the community share housing facilities such as bathrooms and toilet facilities. In some areas, houses do not have toilet facilities, forcing residents to use the beach as a place of convenience. Kakumdo is in the central part of Cape Coast with a population of 7689 (GSS, 2014b). It is a developing community with pockets of low-income residents. Pedu Estate is classified as a high-income community according to data obtained from the Metropolitan Statistical Office, even though the community is characterized by pockets of low-income houses and households. It has 3539 total number of households (GSS, 2014b; Gyimah, 2018).

4.2. Research approach

The cross-sectional research design was adopted to collect data across three (3) urban neighborhoods at one point in time (Creswell & Creswell, 2018). The design is useful for collecting data on the opinions and attitudes of a population subset concerning a particular issue (Creswell & Creswell, 2018). In this study it was useful to study the extent to which sociodemographic variables and residential features shape the level of residential satisfaction amongst private rental households in a secondary city context.

4.3. Questionnaire design

A structured questionnaire was designed through an in-depth literature review process (see Addo, 2016; Mohit et al., 2010; Adewale et al., 2019) and administered with the support of two research assistants. The questionnaire was made up of three sections. The first section was the introductory part that introduced to the respondents the purpose of the study and ethical information regarding confidentiality, respect for their involvement, and the anonymity of their responses and identities. The second part gathered information about the socio-demographic characteristics of the household heads such as age, sex, level of education, income, and length of stay in the community. The last part contained information including the measurement items that were used to measure residential satisfaction among the households as adapted from Mohit et al. (2010); Adewale et al. (2019) and Addo (2016). All the items were assessed on a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Following this, the questionnaire was pilot tested among selected households in each of the neighborhoods to check for reliability and validity of the measurement items. The results from the pilot testing indicated that the questionnaire was reliable ($\alpha \geq 0.7$) and valid (AVE $\geq$0.5), as they conformed to the recommended threshold by (Ursachi et al., 2015).

4.4. Sampling and data collection procedures

The target population for the study was private rental households, while the unit of analysis was household heads. The number of households in each of the selected neighborhoods was obtained from the metropolitan analytical report published by the Ghana Statistical Service (2014b) and Gyimah (2018). To derive the household sample sizes for the respected communities, the proportional-to-size allocation of the total sample was done. Thus, the total number of households in each of the three selected neighborhoods was summed up. This was followed by the calculation of the proportion of the households in each of the selected neighborhoods. By way of detail, the respective population of the communities was divided by the summed population of the three communities and then multiplied by the total sample size to obtain the number of respondents to be selected from each of the study neighborhoods. This approach is consistent with previous studies in both primary and secondary cities in Ghana (see Gyimah, 2018; Mensah et al., 2023; Acquah, 2019; Frimpong et al., 2019). Subsequently, the summed number of households for the three selected neighborhoods (i.e. 1450 for Ekon, 1333 for Kakumdo and 3539 for Pedu Estate) was 6322. The Yamane (1967) sample size determination table was then adopted to select a representative sample size from the 6322 total number of households. At a confidence level of 95% and a margin of error of ±7, the sample size as determined by the table for 6322 households was around 200. However, given that Pedu Estate contained more than half of the total number of households combined for the three study neighborhoods, using a sample size of 200, would have resulted in the sampling of fewer households in the other two study neighborhoods. Hence, in line with previous studies in the metropolis (see Gyimah, 2018; Mensah, 2023), an additional 46 was added to shore up the sample size to 246. The final sample size of 246 does not only conform to previous studies in the metropolis (see Gyimah, 2018), but also meets the minimum sample size of 100 required to conduct a test of statistical significance (Hair et al., 2018). In the end, based on the number of households in each study neighborhood and as a proportion of the total number of households for the three study neighborhoods, the sample sizes were calculated as 138 for Pedu Estate, 52 for Kakumdo and 56 for Ekon.

The multi-stage sampling procedure was used to select the 246 private rental households from the study neighborhoods. This ensured that each private rental household head had an equal chance of taking part in the survey. The first stage involved a purposive sampling of three different socio-economic neighborhoods from the metropolis based on the inputs of representatives of the rent control department, and the metropolitan statistical office after an initial visit and consultations. The second stage involved a systematic sampling of the household heads from the study neighborhoods using housing units (Melese, 2006). The total number of private rental households living in each of the study neighborhoods was unknown, hence a listing exercise was conducted using the stop-and-ask approach (occasionally stopping to ask resident's and housing occupants if the houses being listed were private rental houses) as recommended by Ehwi et al. (2020). The listing exercise ended with 432, 320 and 741 private rental houses being listed for Ekon, Kakumdo and Pedu Estate respectively (see also Mensah & Nalumu, 2023). A systematic sampling interval was then generated for each neighborhood using formula K= N/n, where K = sampling interval, N = estimated number of houses in the neighborhood, and n = estimated sample size. At the end of the calculation, the sample interval for Ekon, Kakumdo and Pedu Estate were 8, 6, and 5 respectively. This implies that in each of the neighborhoods, every 8th, 6th and 5th private rental house were respectively used to select a private rental household head (see Mensah & Nalumu, 2023). This was followed by a simple random sampling of private rental household heads for the questionnaire survey. For a single-habited house, the household head or in his/her absence a representative was selected. For a multi-habited house, which normally has multiple households, only one household head or in their absence a representative was selected. The purpose of the study was explained to

each participant, and the survey commenced after full consent was given.

4.5. Study variables

The dependent variable used in this study was "residential satisfaction". The dependent variable consisted of a 11 item Likert scale statements such as satisfied living in this house, satisfied with in-house interaction or cooperation, satisfied with the quality of the building materials used to construct the dwelling units, satisfied with floor quality, and satisfied with room length. These statements are consistent with what has been used by previous literature (see Gan et al., 2019; Kshetrimayum et al., 2020; Mohit et al., 2010). The dependent variable was initially measured on a five-point ordinal scale (1 = very dissatisfied; 5 = very satisfied). This was recategorized into a three-point ordered variable and coded as: (0 = dissatisfied, 1 = moderately satisfied, and 2 = very satisfied). Recategorizing the dependent variable into a three-point ordered variable was appropriate for meeting the proportional odds assumption. The ordered nature of the dependent variable is appropriate because it demonstrates that individual residential satisfaction is not just a matter of "yes" or "no" (see Kutor et al., 2023).

Two sets of independent variables were used. These were sociodemographic and housing services variables. For the sociodemographic variables, sex, age, duration of stay, household size, and educational status were included in the final model. The initial model included neighborhood type, income and housing type. These variables were removed from the model because they had an insignificant relationship with the dependent variable, their removal also resulted in meeting the proportional odds assumption. The proportional odds assumption, which is also known as the test of parallel lines assesses if the odds of the outcome occurring are similar across values of the ordinal response variable. If the odds ratios are similar across models at different cut-points and to the cumulative odds ratio, then this assumption is assumed to be met (see Heidel, 2024; McNulty, 2021). Sex was coded as: (0 = male, 1 = female), Age was coded as: (1 = 19–25, 2 = 26–30, 3 = 31–40, 4= >40), duration of stay was coded as: (0= <5, 1 = 5–10, 2= >10). Household size was coded as: (1= <5, 2 = 5≥) and educational status was coded as: (0 = no formal education, 1 = basic, 2 = secondary, 3 = tertiary). The housing services variables included satisfaction with utility services (water and electricity), satisfaction with maintenance services and satisfaction with privacy. Satisfaction with utility services (water and electricity) was coded as: (0 = dissatisfied, 1 = satisfied), Satisfaction with maintenance services was coded as: (0 = dissatisfied, 1 = satisfied) and satisfaction with privacy was coded as: (0 = dissatisfied, 1 = satisfied).

4.6. Data analysis

The data were analyzed using univariate, bivariate, and multivariate analytical methods generated using SPSS software version 25. The univariate analysis involved a summary of the dependent and independent variables using frequencies and percentages. The bivariate analysis consisted of a test of the relationship between the dependent and independent variables using the chi-square test of independence. The contingency table and the chi-square test are reported in the result section. The final section of the analysis is the multivariate analysis which includes the ordinal logistic regression analysis. We reported the estimate value for the predictor variables and the level of significance. The estimates are the ordered log-odds (logit) regression coefficients. In terms of interpretation, the ordered log-odds estimate of a category is compared to a reference category to assess the likelihood of response in residential satisfaction given the other variables are held constant in the model. The chi-square tests were used as the first level of analysis to test for the hypotheses, while the ordered logistic regression model was used as a second level of analysis to confirm or disconfirm the findings from the chi-square tests due to its robust predictive power. The general equation used to describe the relationship between the dependent and independent variables in the ordinal logistics regression model is presented as follows:

$$\text{Logit}\,[P\,(Y \leq j)] = \beta_{j0} + \sum \beta_i\, X_i \quad (1)$$

In the logit equation above, Y is the dependent variable representing residential satisfaction, and x_1, x_2, x_3, …. …. …. …., x_i represents the independent variables. B_{j0} is the model intercept and β_i is the regression coefficient of the independent variables obtained through logistic regression. Comparing the B values, we can understand the relevance of the variables that are important or not. The use of this equation is consistent with similar previous studies on satisfaction (see Bilder and Loughin, 2014; Huq and Puthuvayi, 2024).

5. Results

5.1. Univariate analysis

Table 1 provides a summary of the variables used in the study. The table shows that the proportion of female respondents was larger (52%) than the male respondents (48%). With regards to age, the result shows that the age group with the largest proportion of respondents was those within the 31–40 age category (31.7%), followed by those in the 40 years and above age category. For duration of stay in the community, the proportion of respondents in the various categories is evenly distributed. However, the largest proportion of respondents was in the below-five-years category (37.4%). The proportion of respondents in the 5–10

Table 1
Descriptive statistics.

Variables	Categories	Frequency	Percentage
Dependent Variable			
Residential satisfaction	Dissatisfied	102	41.5
	Moderately satisfied	99	40.2
	Very Satisfied	45	18.3
Independent Variables			
Sociodemographic Variables			
Sex	Male	118	48.0
	Female	128	52.0
Age	18–25	20	8.1
	26–30	34	13.8
	31–40	106	43.1
	>40	86	35.0
Duration of Stay	<5	92	37.4
	5–10	78	31.7
	>10	76	30.9
Household Size	<5	240	97.6
	5≥	6	2.4
Educational Status	No Formal Education	51	20.8
	Basic	53	21.5
	Secondary/ Technical	58	23.6
	Tertiary	84	34.1
Housing Services			
Satisfaction with utility services (electricity and water)	Dissatisfied	118	48.0
	Satisfied	128	52.0
Satisfaction with maintenance services	Dissatisfied	62	25.2
	Satisfied	184	74.8
Satisfaction with privacy	Dissatisfied	29	11.8
	Satisfied	217	88.2

years and above 10 years category is similar. On household size, the overwhelming proportion of respondents were in the household size below five. This finding shows that family sizes are relatively small among the respondents in the study. On responses for satisfaction with utility services (electricity and water), Table 1 shows that most respondents were satisfied (52%). Further, regarding satisfaction with maintenance services, the result shows that a large proportion of the respondents were satisfied (74.8%), while results for satisfaction with privacy also indicate that most respondents were satisfied (88.2%).

5.2. Bivariate analysis

This section presents the results of the bivariate analysis between the DV and the IVs. Table 2 presents the values of the crosstabulation, chi-square tests and the level of significance between the relationships. The results showed a significant association between some of the sociodemographic predictor variables and residential satisfaction. Specifically, there was a significant association between duration of stay and residential satisfaction ($\chi^2 = 15.908$, p = 0.003). Observation from the contingency table reveals that respondents who have lived in the communities for less than 5 years were more likely to be dissatisfied with their residential accommodation. The Eta value of 0.219 showed a weak association. The results also revealed a statistically significant association between all the housing services predictor variables i.e. satisfaction with utility services (electricity and water) ($\chi^2 = 45.934$, p = 0.000), satisfaction with maintenance services ($\chi^2 = 98.477$, p = 0.000), satisfaction with privacy ($\chi^2 = 41.252$, p = 0.000) and residential satisfaction. Interpreting further, observation from the contingency table reveals that respondents who were dissatisfied with utility services (electricity and water), maintenance services, and privacy were more likely to be dissatisfied with their residential accommodation. The Eta values of 0.360, 0.554, 0.347 showed a weak, moderate and weak associations between satisfaction with utility services (electricity and water), satisfaction with maintenance services, satisfaction with privacy and residential satisfaction respectively (see Bravo, 2020). The results of the chi-square test have shown that hypotheses 1, 3, 4 and 5 were all supported, whiles hypothesis 2 was not supported.

5.3. Multivariate analysis

Table 3 presents the model statistics of the ordinal logistics regression used to test the relationship between the DV and the IVs. The model fit was statistically significant ($\chi^2 = 165.585$, p = 0.000), suggesting that the model was effective in differentiating between levels of residential satisfaction based on the predictors. The Goodness-of-fit values, Pearson ($\chi^2 = 265.587$, p = 0.737) and Deviant ($\chi^2 = 220.175$, p = 0.997), generally indicate that the model was a good fit. The Pseudo R-Square values (Cox and Snell = 0.490, Negelkerke = 0.559, and McFadden = 0.323), all suggest that a significant proportion of the variation in residential satisfaction can be explained by the predictors. In addition to the model statistics for assessing the quality of the model,

Table 3
Model statistics.

Model	−2 Log likelihood	χ^2	*df*	Sig
Model fitting information				
Intercept Only	439.484			
Final	273.900	165.585	13	0.000
Goodness-of-fit (Link function: Logit)				
Pearson		265.587	281	0.737
Deviant		220.175	281	0.997
Pseudo R^2 (Link function: Logit)				
Cox and Snell	0.490			
Negelkerke	0.559			
McFadden	0.323			
Test of Parallel Lines				
Null Hypothesis	273.900			
General	266.999	6.901	13	0.907

Table 2
Bivariate association between Sociodemographic features, housing services and residential satisfaction.

Variables	Residential Satisfaction Categories					
	Dissatisfied (%)	Moderately Satisfied (%)	Very Satisfied (%)	χ^2	p-values	Eta values
Sociodemographic Variables						
Sex						
Male	46 (39.0)	51 (43.2)	21 (17.8)	0.866	0.648	0.026
Female	56 (43.8)	48 (37.5)	24 (18.8)			
Age						
19–25	12 (60.0)	7 (35.0)	1 (5.0)	9.236	0.161	0.189
26–30	18 (52.9)	13 (38.2)	3 (8.8)			
31–40	41 (38.7)	45 (42.5)	20 (18.9)			
>40	31 (36.0)	34 (39.5)	21 (24.4)			
Duration of Stay						
<5	47 (51.1)	37 (40.2)	8 (8.7)	15.908	0.003	0.219
5–10	27 (34.6)	27 (34.6)	24 (30.8)			
>10	28 (36.8)	35 (46.1)	13 (17.1)			
Household Size						
<5	101 (42.1)	95 (39.6)	44 (18.3)	1.988	0.370	0.050
5≥	1 (16.7)	4 (66.7)	1 (16.7)			
Educational Status						
No Formal Education	21 (41.2)	19 (37.3)	11 (21.6)	11.941	0.063	0.193
Basic	27 (50.9)	24 (45.3)	2 (3.8)			
Secondary/Technical	25 (43.1)	23 (39.7)	10 (17.2)			
Tertiary	29 (34.5)	33 (39.3)	22 (26.2)			
Housing Services						
Satisfaction with utility services (electricity and water)						
Dissatisfied	75 (63.6)	28 (23.7)	15 (12.7)	45.934	0.000	0.360
Satisfied	27 (21.1)	71 (55.5)	30 (23.4)			
Satisfaction with maintenance services						
Dissatisfied	59 (95.2)	2 (3.2)	1 (1.6)	98.477	0.000	0.554
Satisfied	43 (23.4)	97 (52.7)	44 (23.9)			
Satisfaction with privacy						
Dissatisfied	28 (96.6)	0 (0.0)	1 (3.4)	41.252	0.000	0.347
Satisfied	74 (34.1)	99 (40.2)	44 (18.3)			

the proportional odds assumption was also verified. The results (χ^2 = 6.901, p = 0.907), indicate that the odds ratios are the same across all the residential satisfaction categories and that the predictor variables have a similar effect on the different levels of the dependent variable. Lastly, the predictor variables were tested for multicollinearity using spearman correlation coefficients. The correlation coefficient of most pair of the variables were <0.4 (Zanuzdana et al., 2013).

Table 4 shows the parameter estimates, which are the ordered log-odds (logit) regression coefficients. The focus, however, is on the significant estimates, or, in essence, the independent variables that had a higher probability of being in a higher category of residential satisfaction. Table 4 shows that respondents within the age category of 19–25 years were less likely to be in a higher residential satisfaction category when compared with those in the above 40 years' age category (β = −1.110, p < 0.05). In other words, respondents aged 19–25 years were less likely to respond that they were very satisfied with their residential accommodation compared to those above 40 years. The result also shows that respondents with a duration of stay of 5–10 years were more likely to be in a higher residential satisfaction category when compared with those with a duration of stay above 10 years (β = 0.854, p < 0.05). The result further shows that respondents with no formal education were less likely to be in a higher residential satisfaction category when compared with those with tertiary level education (β = −1.244, p < 0.01). Further, respondents with basic education were less likely to be in a higher residential satisfaction category when compared with those with tertiary level education (β = −1.446, p < 0.01).

Also, Table 4 shows that respondents who were dissatisfied with their utility services (electricity and water) were less likely to be in a higher residential satisfaction category when compared with those who responded that they were satisfied with their utility services (β = −1.033, p < 0.001). This implies that respondents who were dissatisfied with their utility services were less likely to respond that they were very satisfied with their residential accommodation compared to those who responded that they were satisfied with their utility services. The results further reveal that respondents who were dissatisfied with their maintenance services were less likely to be in a higher residential satisfaction category when compared with those who responded that they were satisfied with their maintenance services (β = −3.928, p < 0.001). This implies that, respondents who were dissatisfied with their maintenance services were less likely to respond that they were very satisfied with their residential accommodation when compared to those who responded that they were satisfied with their maintenance services. Lastly, the results show that respondents who were dissatisfied with their privacy status were less likely to be in a higher residential satisfaction category when compared with those who responded that they were satisfied with their privacy status (β = −2.716, p < 0.01). This implies that, respondents who were dissatisfied with their privacy status were less likely to respond that they were very satisfied with their residential accommodation when compared to those who responded that they were satisfied with their privacy status. Generally, the results from the model have shown that all five hypotheses were supported. The model also confirms all the hypotheses that were supported by the results from the chi-square tests except for hypothesis 2.

Table 4
Ordinal logistic regression for dependent variable 'Residential Satisfaction'.

Variables	Estimate β	Std. Error	95% C. I.
Sociodemographic Variables			
Sex			
Male	−0.341	0.295	−0.919 to 0.237
Female	0		
Age			
19–25	−1.110*	0.593	−2.271 to 0.051
26–30	−0.786	0.486	−1.739 to 0.167
31–40	0.126	0.328	−0.770 to 0.517
>40	0		
Duration of Stay			
<5	−0.443	0.375	−1.177 to 0.292
5–10	0.854*	0.369	0.131 to 1.577
>10	0		
Household Size			
<5	−0.176	0.914	−1.967 to 1.615
5≥	0		
Educational status			
No Formal Education	−1.244**	0.414	−2.057 to −0.432
Basic	−1.446**	0.416	−2.261 to −0.630
Secondary/Technical	−0.215	0.410	−1.018 to 0.589
Tertiary	0		
Housing Services			
Satisfaction with utility services (electricity and water)			
Dissatisfied	−1.033***	0.313	−1.646 to −0.420
Satisfied	0		
Satisfaction with maintenance services			
Dissatisfied	−3.928***	0.667	−5.235 to −2.621
Satisfied	0		
Satisfaction with privacy			
Dissatisfied	−2.716**	1.053	−4.780 to −0.652
Satisfied	0		

*p-value<0.05.
**p-value<0.01.
***p-value<0.001.

6. Discussion

The growing attention to and projection of secondary cities as the new frontier to the sustainable urban agenda in the Global South (UN-Habitat, 2011; UN-DESA, 2018), especially in Africa's cities, brings to the fore the challenge of housing for the growing urban population. Private rental housing remains and will continue to cater to the increasing deficits in affordable, adequate, and decent housing for the low-income population neglected in the upscale housing development boom that caters to the upper class in both primate and secondary cities (Boateng & Klopp, 2024; Okyere, 2020). Drawing attention to the disregard for the private rental housing sector in small and medium-sized cities, this paper shed insights into the influence of socio-demographic variables and housing features on residential satisfaction among private rental households.

6.1. Residents' sociodemographic differentials matter in residential satisfaction

First, educational status can be an important consideration in improving residential satisfaction and experiences of urban rental households. Even though it is not always the case, private renters with a higher level of education tend to live in a serene residential environment with minimal environmental challenges. The study findings revealed that respondents with no formal education were less likely to be in a higher residential satisfaction category when compared with those with tertiary level education. The findings also indicated that respondents with basic education were less likely to be in a higher residential satisfaction category when compared with those with tertiary level education. The findings point to a downward spiral, where a decrease in educational status amounts to residential dissatisfaction and vice versa. This difference in residential satisfaction could be due to contextual factors such as the preference for certain features like "living within the walls" which is a symbolic preference for quality service that expresses a certain privileged status afforded by higher education opportunities (Obeng-Odoom et al., 2014, p. 544). This corresponds to findings from other relatively smaller non-primate cities in the global south such as Wenzhou in Southeastern China, where Lin and Li (2017) reported that the residential conditions and preferences for different housing types or units are different for different occupants, particularly for renters who have attained different educational statuses. However, the relationship between educational status and housing satisfaction in secondary cities within the general context of housing deficits is nuanced. From socio-cultural perspective, higher education often results in people

moving away from their family homes and aiming towards a more private life which contradicts the realities in low-income neighborhoods where there is barely a lack of individual life and privacy as reported in previous studies (see Bandauko et al., 2023; Ren & Folmer, 2017).

Second, sociodemographic variables such as age matter in residential satisfaction. Regarding age, our study revealed that *"age is not just a number"* when it comes to residential satisfaction in the Ghanaian context but provides an important hint to rethink the provision of residential services that meet the needs of both the young and the old. The findings revealed that respondents aged between 19 and 25 years were less likely to respond that they were very satisfied with their residential accommodation compared to those above 40 years. The chi-square test did not support hypothesis H2, regarding the statistically significant relationship between age and residential satisfaction. The hypothesis was however supported by the ordered logistic regression model. In the Ghanaian context, young renters are often filled with exuberance and have a high expectation of their residential accommodation. These young renters approach their rented accommodation with a utopian picture, where the residential units are in a perfect state to meet their residential needs. However, the discrepancy between their perceived and actual residential needs results in residential dissatisfaction (Milić & Zhou, 2018). For older renters, difficult socioeconomic conditions and rising family needs inform their rental preferences and satisfaction. In Ghana, adults' renters in difficult socioeconomic circumstances with long-term residence may become indifferent to housing conditions over time, settle for basic conditions and give up any expectation of improvement. Here, renters have little choice but to cope with the conditions of the residential environment. This shares similarities with recent findings from primary southern cities such as Accra, Ghana (Bandauko et al., 2023), and Dhaka, Bangladesh (Mridha, 2020), where older people were more satisfied with the conditions of their residential accommodation.

Our findings revealed that respondents with a duration of stay of less than 5 years were more likely to be dissatisfied with their residential accommodation. Regarding hypothesis H1— statistically significant relationship between duration of stay and residential satisfaction— both the chi-square test and the ordered logistic regression model supported it. While the reason for this was not clearly ascertained in the study, we reason based on empirical evidence in other primary significantly urbanized Ghanaian regions (see Ehwi et al., 2024) that this might be due to the normalized advance rental payment system in Ghana where landlords often charge two-to-three-year rents for new tenants. This often creates huge financial burdens that impact rental satisfaction during the early years of tenancy. Thus, the higher satisfaction level among those with a duration of stay of 5–10 years could be due to a more stable rental condition. However, this should be read with caution given that other built environment factors (see below on housing services) combine with landlord-tenant relationships to shape satisfaction levels in primary and secondary cities (Ehwi et al., 2020).

6.2. Satisfaction with housing services significantly predicted residential satisfaction

Beyond the singular unit of the house, housing and its services (e.g. sanitation facilities, utility services, management, and privacy) are instrumental in residential satisfaction and a broader quality of life (Bergenstråhle, 2016). Our study found that respondents who were dissatisfied with their maintenance services were less likely to respond that they were very satisfied with their residential accommodation when compared to those who responded that they were satisfied with their maintenance services. This corresponds to previous studies of primary cities in the urban south contexts such as Accra (Ghana), Chongqing (China), Mumbai (India), and Kuala Lumpur, (Malaysia) (see Addo, 2016; Gan et al., 2019; Kshetrimayum et al., 2020; Mohit et al., 2010). Here we reason that access to physical and social services in the residential environment is crucial for realizing stability and has a positive impact on housing experiences and socioeconomic activities (Alnsour & Hyasat, 2016). This also corroborates observations in previous studies in the secondary city of Al-Salt (Jordan) that the availability and regular maintenance of these services in the residential environment offers opportunities for residents to pursue their daily socioeconomic goals without stress (Alnsour & Hyasat, 2016). This finding is suggestive that attempts at addressing the housing deficits for middle and low-income residents must be situated within a broader contextualization, where associated services and conditions in the built environment are considered inseparable from the dwelling units.

Further, place-based features such as access to utility services (water and electricity) and privacy influence renters' desire to live in a community (Mellander et al., 2011). Findings revealed that respondents who were dissatisfied with their utility services (water and electricity) were less likely to respond that they were very satisfied with their residential accommodation compared to those who responded that they were satisfied with their utility services. This situates the evidence that in global south primary cities, particularly those located in sub-Saharan Africa such as Accra, Ghana, residents rely heavily on access and the regularity of social services such as electricity and water for domestic activities and even house-based enterprises (Amankwaa et al., 2024; Frimpong, Mensah, & Ablo, 2024). Similarly, respondents who were dissatisfied with their privacy status were less likely to respond that they were very satisfied with their residential accommodation when compared to those who responded that they were satisfied with their privacy status. This ties into a recent work by Wokekoro (2015), who found that the lack of access to basic residential facilities and services such as supply of water and power resulted in residential dissatisfaction among residents living in a major city of Port Harcourt (Nigeria). Previous studies in related two primary cities by Osman et al. (2021) in Cairo (Egypt) and Jacob and Chander (2020) in Chennai (India) have also confirmed the significant association between satisfaction with privacy and residential satisfaction. Overall, the findings of a statistically significant relationship, from both the chi-square test and the ordered logistic regression model, regarding the influence of satisfaction with housing services (utility services, maintenance services, and privacy) on residential satisfaction supported hypotheses (H3, H4 and H5).

7. Conclusion and implications for the transformation of the housing sector in secondary cities

Summarily, the findings of this study are situated within the scholarship and discussions on making secondary cities better prepared and positioned to effectively contribute to the global development agenda on sustainable futures (UN-Habitat, 2011). This is anchored in the New Urban Agenda and the African Union Agenda 2063. The findings revealed different sociodemographic and housing service features that could inform the transformation of the housing sector in Ghana, especially in secondary cities. Related to sociodemographic variables, it was revealed that respondents with no formal education, respondents aged between 19 and 25 years, and those with a duration of stay less than 5 years were more likely to respond that they were very dissatisfied with their residential accommodation. Regarding housing features, respondents who were dissatisfied with their maintenance services, utility services and privacy were less likely to respond that they were very satisfied with their residential accommodation when compared to those who responded that they were satisfied with their maintenance services, utility services, and privacy. In essence, the result point that renters who were dissatisfied with their housing features were more likely to be dissatisfied with their residential accommodation. Our findings indicate that the chi-square test supported four of the five hypotheses, while the ordered logistic regression model supported all the five hypotheses.

The study findings offer imperatives to inform policy discourses and practice in the housing sector within the purview of the secondary cities agenda in Ghana and other Global South cities. First, and for practitioners and homeowners, making secondary cities the new spot for

socioeconomic development requires that households live in a conducive residential environment. Hence, urgent attention should be given to addressing rental housing challenges such as poor maintenance culture, increasing access to quality and affordable urban services such as utility services (e.g. water and electricity). Second, and at a policy level, the findings suggest that the rent control department, together with urban planners, housing providers, residents, and local government authorities should engage households/landlords in designing strategies useful for improving the habitability of the residential environment and the dwelling units. Further, statistically significant association and relationships between certain socio-demographic variables and residential satisfaction imply that the residential needs of different population subgroups should be considered in a manner that promotes positive housing experiences for residents. Lastly, there is the need to reduce residential mobility and ensure that urban livelihood capitals (See Okyere et al., 2023) are retained in secondary cities for socioeconomic development. This implies that attention should be given to the provision of residential units that are affordable, habitable, adequately serviced, and connected with the neighborhood living environment to improve the quality-of-life of private rental households in secondary cities.

8. Limitations and future research directions

The paper has some limitations that should be considered in the application of the findings. First, the focus was on the relationship between certain sociodemographic variables and housing features (i.e. maintenance services, utility services, and privacy) on residential satisfaction, hence, future studies should examine how other factors such as the conditions of the built environment and social interactions influence residential satisfaction amongst private rental households. The model did not also control for neighborhood classification, income, and housing type. Future research should examine how these variables influence residential satisfaction as residential satisfaction can be significantly influenced by the quality of the neighborhood one lives in. Further, the use of the proportional-to-size allocation approach in determining the overall sample size might have its shortfall, future research should apply other robust approaches in determining the sample size for a study of similar context. Future studies should also use a qualitative approach to capture residents' subjective views about their residential environment and the implications for building inclusive, sustainable, and resilient housing sector in other secondary cities. Future research should also consider understanding the extent to which renter-property owners and renter-renter disputes influence residential satisfaction.

CRediT authorship contribution statement

Stephen Leonard Mensah: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Seth Asare Okyere:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization. **Louis Kusi Frimpong:** Supervision, Methodology, Conceptualization. **Alex Boakye Asiedu:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Conceptualization. **Mariama Zaami:** Writing – original draft, Supervision. **Matthew Abunyewah:** Writing – original draft, Formal analysis.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The authors show their utmosts appreciation to the study participants who made time to share their knowledge and expereinces on the research topic. The authors also thank the anonymous referees for the comments and suggestions made to improve the quality of the paper.

References

Abdulai, I. A., Ahmed, A., & Kuusaana, E. D. (2022). Secondary cities under siege: Examining peri-urbanisation and farmer households' livelihood diversification practices in Ghana. *Heliyon, 8*(9), Article 12345.

Acquah, M. M. (2019). *Urban growth and access to utilities in sub-urban settlements: A study of effia-Kwesimintsim sub metro, western region (Masters dissertation*. University of Cape Coast).

Addo, I. A. (2016). Assessing residential satisfaction among low-income households in multihabited dwellings in selected low-income communities in Accra. *Urban Studies, 53*(4), 631–650. https://doi.org/10.1177/0042098015571055

Adewale, B. A., Ibem, E. O., Amole, B., & Adeboye, A. B. (2019). Assessment of residential satisfaction in the core area of Ibadan Metropolis, Nigeria. *Journal of Human Behavior in the Social Environment, 29*(2), 206–233. https://doi.org/10.1080/10911359.2018.1502116

Adu-Gyamfi, A., Cobbinah, P. B., Gaisie, E., & Kpodo, D. D. (2021). Accessing private rental housing in the absence of housing information in Ghana. In *Urban forum* (Vol. 32, pp. 67–85). Dordrecht: Springer Netherlands, 1.

Ahmed, A., Korah, P. I., Dongzagla, A., Nunbogu, A. M., Niminga-Beka, R., Kuusaana, E. D., & Abubakari, Z. (2020). City profile: Wa, Ghana. *Cities, 97*, Article 102524.

Alnsour, J. A., & Hyasat, A. S. (2016). Residential satisfaction with low income housing in Jordan: Salt city as a case study. *Jordan Journal of Economic Sciences, 3*(1), 31–44.

Amerigo, M. (2002). A psychological approach to the study of residential satisfaction. *Residential environments: Choice, satisfaction. and, behavior. and*, 81–99.

Amérigo, M., & Aragonés, J. I. (1997). A theoretical and methodological approach to the study of residential satisfaction. *Journal of Environmental Psychology, 17*(1), 47–57. https://doi.org/10.1006/jevp.1996.0038

Amankwaa, E. F., Gough, K. V., & Oteng-Ababio, M. (2024). "It is for home but we use it for work": Intra-urban comparison of infrastructure and home-based enterprises in Accra. *Urban Geography*, 1–23.

Arku, G. (2009). Housing policy changes in Ghana in the 1990s. *Housing Studies, 24*(2), 261–272. https://doi.org/10.1080/02673030902719763

Arku, G., Luginaah, I., & Mkandawire, P. (2012). "You either pay more advance rent or you move out": Landlords/ladies' and tenants' dilemmas in the low-income housing market in Accra, Ghana. *Urban Studies, 49*(14), 3177–3193.

Asante, L. A., & Ehwi, R. J. (2022). Housing transformation, rent gap and gentrification in Ghana's traditional houses: Insight from compound houses in Bantama, Kumasi. In *The planetary gentrification reader* (pp. 248–269). Routledge.

Asiedu, A. B., & Arku, G. (2009). The rise of gated housing estates in Ghana: Empirical insightsfrom three communities in metropolitan Accra. *Journal of Housing and the Built Environment, 24*(3), 227–247. https://doi.org/10.1007/s10901-009-9146-0

Babalola, O. D., Ibem, E. O., Olotuah, A. O., Opoko, A. P., Adewale, B. A., & Fulani, O. A. (2020). Housing quality and its predictors in public residential estates in Lagos, Nigeria. *Environment, Development and Sustainability, 22*, 3973–4005.

Baiden, P., Arku, G., Luginaah, I., & Asiedu, A. B. (2011). An assessment of residents' housing satisfaction and coping in Accra, Ghana. *Journal of Public Health, 19*(1), 29–37.

Baker, E. L. (2002). *Public housing tenant relocation: Residential mobility, satisfaction, and the development of a tenant's spatial decision support system*.

Bandauko, E., Kutor, S. K., Nyantakyi-Frimpong, H., Baiden, P., & Arku, G. (2023). Influence of socio-demographic factors and housing characteristics on satisfaction with privacy in gated communities in Accra (Ghana). *Housing Studies*. https://doi.org/10.1080/02673037.2022.2077920

Bao, X., Zhang, T., Dewancker, B. J., He, J., & Liu, S. (2023). Exploring the unit spatial layout preference for urban multi-unit residential buildings: A survey in Beijing, China. *Sustainability, 15*(15), Article 12013.

Bell, D., & Jayne, M. (2009). Small cities? Towards a research agenda. *International Journal of Urban and Regional Research, 33*(3), 683–699.

Bergenstråhle, S. (2016). *The importance of affordable rental housing*. International Union of Tenants (IUT).

Bilder, C. R., & Loughin, T. M. (2014). Analyzing a multicategory response. In *Analysis of Categorical Data with R* (first ed., p. 170e182). New York: Chapman and Hall/CRC https://doi.org/10.1201/b17211.

Biswas, B., Sultana, Z., Priovashini, C., Ahsan, M. N., & Mallick, B. (2021). The emergence of residential satisfaction studies in social research: A bibliometric analysis. *Habitat International, 109*, Article 102336. https://doi.org/10.1016/j.habitatint.2021.102336

Boateng, F. G., & Klopp, J. M. (2024). Urbanization, legacies of elite capture, and multi-dimensional exclusions in Ghana: Towards just housing and neighborhood policies in African cities. In *Urban forum* (pp. 1–30). Netherlands: Dordrecht: Springer.

Brand, A. D., Drewes, J. E., & Campbell, M. (2021). Differentiated outlook to portray secondary cities in South Africa. *AIMS Geosciences, 7*(3), 457–477.

Bravo, O. (2020). Re: How to interpret the eta value in spss. https://www.researchgate.net/post/How-to-interpret-the-eta-value-in-spss/5f9253698b4b1317271dd108/citation/download.

Cape Coast Metropolitan Assembly (CCMA). (2018). *CCMA medium term development plan for 2018-2021*.

Carvalho, M., George, R. V., & Anthony, K. H. (1997). Residential satisfaction in condominios exclusivos (gate-guarded neighborhoods) in Brazil. *Environment and Behavior, 29*(6), 734–768.
Chen, X., & Kanna, A. (Eds.). (2012). *Rethinking global urbanism: Comparative insights from secondary cities*. Routledge.
Christiaensen, L., & Kanbur, R. (2017). Secondary towns and poverty reduction: Refocusing the urbanization agenda. *Annual Review of Resource Economics, 9*, 405–419.
Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications, Inc.
Danquah, J. A., & Afram, S. O. (2014). Residential user satisfaction of real estate housing in 138 Ghana. *International Journal of Civil Engineering, Construction and Estate Management, 1*(3), 1–21. http://csirspace.csirgh.com/handle/123456789/823.
Danso-Wiredu, E. Y. (2016). *The puzzles of living in urban poor communities: The role of informal governance structures in housing provision in Accra and Winneba* (Ghana).
Donaldson, R., Marais, L., & Nel, E. (2020). Secondary cities in South Africa. In *Urban geography in South Africa* (pp. 121–137). Cham: Springer.
Ehwi, R. J., Asante, L. A., & Gavu, E. K. (2024). Understanding the norms and difficulties with advance rent payments in Ghana. *International Journal of Urban Sustainable Development, 16*(1), 163–181.
Ehwi, R. J., Asante, L. A., & Morrison, N. (2020). Exploring the financial implications of advance rent payment and induced furnishing of rental housing in Ghanaian cities: The case of dansoman, Accra-Ghana. *Housing Policy Debate, 30*(6), 950–971. https://doi.org/10.1080/10511482.2020.1782451
Emami, A., & Sadeghlou, S. (2021). Residential satisfaction: A narrative literature review towards identification of core determinants and indicators. *Housing, Theory and Society, 38*(4), 512–540.
Eyiah-Botwe, E., Owiredu, G., & Owusu, K. (2014). Assessing housing projects end-users satisfaction : The case of SSNIT housing flats in Asuyeboah Kumasi – Ghana. *International Conference on Applied Science and Technology Conference Proceedings, 1*(1), 67–80. https://icast.kstu.edu.gh/index.php/proceedings/article/view/42.
Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117–140. https://doi.org/10.1177/001872675400700202
Frimpong, L. K., Mensah, S. L., & Ablo, A. D. (2024). *Households' access and expenditure on water services: Examining intra-urban differences in the Accra metropolis*. Ghana: Urban Governance. https://doi.org/10.1016/j.ugj.2024.07.002.
Frimpong, L. K., Oteng-Ababio, M., Owusu, G., & Wrigley-Asante, C. (2019). Public confidence in the police: Tests of instrumental and expressive models in a developing country city. *Police Practice and Research, 20*(2), 139–155.
Galster, G. C. (1985). Evaluating indicators for housing policy: Residential satisfaction vs marginal improvement priorities. *Social Indicators Research, 16*(4), 415–448. https://doi.org/10.1007/BF00333289
Galtier, M. (2023). From Cape Coast to Ibadan, Africa's future is in its second cities. *Africa Report*. https://www.theafricareport.com/328928/from-cape-coast-to-ibadan-africas-future-is-in-its-second-cities/#:~:text=Located/20150km/20from/20the/20capital,residents/20came/20from/20Greater/20Accra.
Gan, X., Zuo, J., Baker, E., Chang, R., & Wen, T. (2019). Exploring the determinants of residential satisfaction in public rental housing in China: A case study of Chongqing. *Journal of Housing and the Built Environment, 34*(3), 869–895. https://doi.org/10.1007/s10901-019-09691-x.
Ghana Statistical Service (GSS). (2014). *2010 population and housing census. Ghana: Housing in Ghana*. Accra.
Ghana Statistical Service (GSS). (2014). *2010 population and census district analytical report CapeCoast Municipality*.
Ghana Statistical Service (GSS). (2021). *Ghana 2021 population and housing census volume 1 preliminary report*.
Gong, A., & Söderberg, B. (2023). Residential satisfaction in student housing: An empirical study in Stockholm, Sweden. *Journal of Housing and the Built Environment*, 1–19.
Gyimah, P. (2018). *Households' solid waste separation practices in the Cape Coast Metropolitan area*. Doctoral dissertation, University of Cape Coast.
Gyimah, R. R., Frimpong, L. K., Anambane, G., Akolaa, R. A., Mensah, S. L., & Danso-Abbeam, H. (2022). A comparative appraisal of environmental conditions in two urban low-income communities in Accra, Ghana. *AUC Geographica, 57*(2), 89–108.
Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th ed.). United Kingdom: Cengage Learning.
Zanuzdana, A., Khan, M., & Kraemer, A. (2013). Housing satisfaction related to health and importance of services in urban slums: evidence from Dhaka, Bangladesh. *Social indicators research, 112*, 163–185.
Zhang, C., & Lu, B. (2016). Residential satisfaction in traditional and redeveloped inner city neighborhood: A tale of two neighborhoods in Beijing. *Travel Behaviour and Society, 5*, 23–36.
Heidel, E. Proportional odds regression. Use and interpret proportional odds regression in SPSS - accredited professional statistician for hire (scalestatistics.com).
Huq, S. A., & Puthuvayi, B. (2024). Stakeholders' satisfaction assessment in heritage conservation: Case study of a project performance model for Thiruvananthapuram Fort Area, Kerala, India. *Frontiers of Architectural Research, 13*(2), 285–304.
Jacob, P., & Chander, S. (2020). Post occupancy evaluation of residential satisfaction in gated communities – case study of Chennai metropolitan area. *International Journal of Advanced Research in Engineering & Technology, 11*(2), 57–66.
Jansen, S. J. T. (2014). Why is housing always satisfactory? A study into the impact of cognitive restructuring and future perspectives on housing appreciation. *Social Indicators Research, 116*(2), 353–371. https://doi.org/10.1007/s11205-013-0303-1
Kshetrimayum, B., Bardhan, R., & Kubota, T. (2020). Factors affecting residential satisfaction in slum rehabilitation housing in Mumbai. *Sustainability, 12*(6), 2344. https://doi.org/10.3390/su12062344
Kutor, S. K., Bandauko, E., Kyeremeh, E., Annan-Aggrey, E., & Arku, G. (2023). Residential satisfaction in deprived urban neighbourhoods: A case study of Harare's selected informal settlements. *Journal of Housing and the Built Environment, 38*(2), 1177–1199.
Lin, S., & Li, Z. (2017). Residential satisfaction of migrants in Wenzhou, an 'ordinary city' of China. *Habitat International, 66*, 76–85.
Lu, M. (1999). Determinants of residential satisfaction: Ordered logit vs. regression models. *Growth and Change, 30*(2), 264–287. https://doi.org/10.1111/0017-4815.00113
Maina, J. J. (2021). Socioeconomic and demographic predictors of residential satisfaction within public housing estates in northern Nigeria. *Covenant Journal of Research in the Built Environment, 9*(1). Retrieved from https://journals.covenantuniversity.edu.ng/index.php/cjrbe/article/view/2629.
McNulty, K. (2021). *Handbook of regression modeling in people analytics: With examples in R and Python*. Chapman and Hall/CRC.
Melese, M. (2006). City expansion, squatter settlements and policy implications in Addis Ababa: The case of Kolfe Keranio sub-city. *Department of geography and environmental studies*. Ethiopia: Addis Ababa University.
Mellander, C., Florida, R., & Stolarick, K. (2011). Here to stay—the effects of community satisfaction on the decision to stay. *Spatial Economic Analysis, 6*(1), 5–24.
Mensah, S. L. (2023). *Assessing the influence of socio-spatial factors on residential satisfaction among rental households: A case study of the Cape Coast metropolis*. Legon: MPhil thesis submitted to the University of Ghana.
Mensah, S. L., Frimpong, L. K., Okyere, S. A., Diko, S. K., Enning, S. B., Abunyewah, M., & Attigah, J. M. (2023). *A digital turn for urban management? Residents' perception and utilisation of the digital property address system in Accra*. Ghana: Urban Governance.
Mensah, H., & Nalumu, J. D. (2023). Transforming waste-picking landscape in Ghana: From survival to sustainable enterprise. *Local Environment*, 1–18.
Milić, J., & Zhou, J. (2018). Residential satisfaction among young people in post-socialist countries: The case of Serbia. *Journal of Housing and the Built Environment, 33*(4), 715–730.
Mohit, M. A., & Al-KhanbashiRaja, A. M. M. (2014). Residential satisfaction: Concept, theories and empirical studies. *Planning Malaysia, 12*(3), 25. https://doi.org/10.21837/pm.v12i3.131
Mohit, M. A., Ibrahim, M., & Rashid, Y. R. (2010). Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. *Habitat International, 34*(1), 18–27. https://doi.org/10.1016/j.habitatint.2009.04.002
Morris, E. W., Crull, S. R., & Winter, M. (1976). Housing norms, housing satisfaction and the propensity to move. *Journal of Marriage and Family, 38*(2), 309–320. https://doi.org/10.2307/350390
Morris, E. W., & Winter, M. (1975). A theory of family housing adjustment. *Journal of Marriage and Family, 37*(1), 79. https://doi.org/10.2307/351032
Mridha, M. (2020). The effect of age, gender and marital status on residential satisfaction. *Local Environment, 25*(8), 540–558.
Obeng-odoom, F. (2011). Private rental housing in Ghana: Reform or renounce? *Journal of International Real Estate and Construction Studies, 1*(1), 71–90.
Obeng-Odoom, F. (2011). Urban rental housing in a low-income Society. In *Paper presented at the Korean institute for health and social affairs 4th November, 2011*.
Obeng-Odoom, F., & Amedzro, L. (2011). Inadequate housing in Ghana. *Urbani Izziv, 22*(1), 127–137. https://doi.org/10.5379/urbani-izziv-en-2011-22-01-004
Obeng-Odoom, F., Eltayeb ElHadary, Y. A., & Jang, H. S. (2014). Life within the wall and implications for those outside it: Gated communities in Malaysia and Ghana. *Journal of Asian and African Studies, 49*(5), 544–558.
Ogunbajo, R. A., Bello, M. O., & Adebayo, M. A. (2016). Assessment of urban infrastructure quality and user satisfaction in low income residential neighbourhoods in Minna, Nigeria. *ATBU Journal of Environmental Technology, 9*(1), 98–115.
Okyere, S. A. (2020). Agile or fragile? The future of African cities. https://akzente.giz.de/en/agile-or-fragile.
Okyere, S. A., Abunyewah, M., Erdiaw-Kwasie, M., & Boateng, G. (2024). *Urban slums and circular economy synergies in the Global South*. Springer.
Okyere, S. A., Frimpong, L. K., Abunyewah, M., Diko, S. K., Fatemi, M. N., Mensah, S. L., … Kita, M. (2023). The moderating role of Covid-19-related support on urban livelihood capitals: Evidence from suburban Accra. *Urban Governance, 3*(3), 228–242.
Okyere, S. A., Tasantab, J. C., & Abunyewah, M. (2018). Accra's informal settlements are easing the city's urban housing crisis. *The Conversation*. https://theconversation.com/accras-informal-settlements-are-easing-the-citys-urbanhousing-crisis-104266.
Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*(4), 460–469. https://doi.org/10.2307/3150499
Osman, F. O., Moustafa, Y. M., & Fahmy, A. A. (2021). Residential satisfaction in gated communities according to stages in the life cycle with reference to Cairo, Egypt. *J. Eng. Appl. Sci, 68*(41), 1–19.
Osumanu, I. K. (2010). Financing housing improvement in urban Ghana: Experiences from the rental sector in Accra and Takoradi. *Ghana Journal of Geography, 2*, 1–24.
Osumanu, I. K., & Akomgbangre, J. N. (2020). A growing city: Patterns and ramifications of urban change in wa, Ghana. *Spatial Information Research, 28*(5), 523–536.
Parkes, A., et al. (2002). What makes people dissatisfied with their neighbourhoods? *Journal of urban studies, 39*(13), 2413–2438.
Randolph, G. F., & Deuskar, C. (2024). Urbanization beyond the metropolis: Planning for a large number of small places in the global south. *Journal of Planning Education and Research, 44*(1), 279–291.
Ren, H., & Folmer, H. (2017). Determinants of residential satisfaction in urban China: A multi-group structural equation analysis. *Urban Studies, 54*(6), 1407–1425.

Riazi, M., & Emami, A. (2018). Residential satisfaction in affordable housing: A mixed method study. *Cities, 82*, 1–9. https://doi.org/10.1016/j.cities.2018.04.013
Riemer, S. (1943). Sociological theory of home adjustment. *American Sociological Review, 8*(3), 272. https://doi.org/10.2307/2085080
Roberts, B. H. (2014). Managing systems of secondary cities: Policy reponses in international development. *Cities Alliance* (Brussels, Belgium).
Rondinelli, D. A. (1983). Dynamics of growth of secondary cities in developing countries. *Geographical Review, 73*(1), 42–57.
Rossi, P. H. (1955). *Why families move: A study in the social psychology of urban residential mobility*. Free Press.
Sheng, M., Hu, L., Zhang, B., Deng, L., & Zhao, Y. (2021). Housing tenure and neighbourhood satisfaction in transitional urban China: evidence from Changchun. *Habitat International, 112*, Article 102358.
Smit, W. (2018). Urban governance in Africa: an overview. *African cities and the development conundrum*, 55–77.
Smith, K. M. (2011). *The relationship between residential satisfaction, sense of community, sense of belonging and sense of place in a Western Australian urban planned community*.
UN-DESA. (2018). United nations, department of economic and social affairs, population division, 2018: World urbanization prospects. The 2018 revision. Access: https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf. (Accessed 19 October 2020).
UN-Habitat. (2008). *The state of African cities 2008*. Nairobi: UN-Habitat.
UN-Habitat. (2011). Ghana housing profile. Retrieved from www.unhabitat.org.
UN-Habitat. (2022). *Envisaging the future of cities: World cities report 2022*. Kenya: United Nations Human Settlements Program.
Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance, 20*, 679–686.
Videla, J. T., Roberts, B. H., Allu e, M., & Guerrero, F. (2020). Secondary cities and their development challenges: The case of Central Chile macro region, 1. *IOP Conference Series: Earth and Environmental Science, 503*, Article 12047. May.
Wang, D., & Wang, F. (2016). Contributions of the usage and affective experience of the residential environment to residential satisfaction. *Housing Studies, 31*(1), 42–60.
Waziri, A. G., Yusof, N. A., & Abd Rahim, N. M. S. (2014). Occupants housing satisfaction: Does age really matter? *Urban, Planning and Transport Research, 2*(1), 341–353.
Wokekoro, E. (2015). Residents' satisfaction with residential quality of life in informal settlements in Port Harcourt municipality. *European Journal of Research in Social Sciences, 3*(3), 1–17.
World Bank Group. (2015). *Competitive cities for jobs and growth: What, who and how*. Washington, DC: World Bank.
Yamane, T. (1967). *Statistics, an introductory analysis* (2nd ed.). New York: Harper and Row.
Yan, B., Gao, X., & Lyon, M. (2014). Modeling satisfaction amongst the elderly in different Chinese urban neighborhoods. *Social Science & Medicine, 118*, 127–134.
Zabel, J. E. (2004). The demand for housing services. *Journal of Housing Economics, 13*(1), 16–35.