Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa

Fikirte Munaye Gezahegn

A Thesis Submitted to the Department of Architecture

School of Civil Engineering and Architecture

Presented in Partial Fulfillment of the Requirement for the Degree of Master's in Urban Planning and Design

Office of Graduate Studies

Adama Science and Technology University

June, 2024

Adama, Ethiopia

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DECLARATION

I declare that this thesis entitled **"Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa"** is my own work and has not been submitted to any university for similar purpose. The references used in this paper are duly recognized by proper citations.

Fikirte Munaye Gezahegn _____ _____

Name of student Signature Date

RECOMMENDATION OF ADVISORS/ SUPERVISORS

I, the major supervisor of this research, hereby certify that I have closely supervised the student while developing this paper and read the final thesis entitled **"Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa"** prepared under my guidance by Fikirte Munaye Gezahegn. Therefore, I recommend the submission of the revised version of the thesis to the department following the applicable procedures.

Yared Girma (Ph.D.) _____ _____

Major Advisor/Supervisor Signature Date

APPROVAL PAGE FOR THESIS

I hereby certify that the recommendation and suggestion given by the thesis review committee are appropriately incorporated into the final thesis entitled **"Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa"** by Fikirte Munaye Gezahegn.

Yared Girma (Ph.D.) _____ _____

Major Advisor/Supervisor Signature Date

APPROVAL BOARD OF REVIEWERS

We, the undersigned, members of the Board of Reviewers of the thesis open defense by Fikirte Munaye Gezahegn have read and evaluated the thesis paper entitled **"Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa"** and assessed the understanding of the candidate about the conducted research. This is, therefore, to certify that the thesis is accepted for partial fulfillment of the requirement of the degree of Master of Science in Urban Planning and Design.

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ACP	African, Caribbean and Pacific Group of States,
BGC	Bole-Gerji Condominium
DQI	Design Quality Indicators
EC	the European Commission
EUROSTAT	European Statistical Office
HPEM	Housing Performance Evaluation Model
HQD	Housing Quality Determinants
HQI	Housing Quality Indicators
KC	Kilinto Condominium
OECD	The Organization for Economic Cooperation and Development
PSUP	Participatory Slum Upgrading Program
QOL	Quality of Life
SEL	Systeme d'evaluation delogments (housing evaluation system)
UNDP	United Nation Development Program
WHO	World Health Organization
WHOQOL	World Health Organization Quality of Life

ABSTRACT

Urban areas are adopting creative strategies to enhance housing accessibility and affordability. Provision of condominium housing buildings is one form of a strategy. While these high-density housing developments offer an affordable option for many residents, their impact on residents' quality of life remains a subject of debate especially for aging peoples. Quality of life in condominium housing is the determinant of residents' satisfaction and well-being. An understanding of factors that affect the satisfaction level can be a backbone for better alternative in housing programs and policies. This study compared the impact of condominium housing development on the preferences of aging populations in Bole-Gerji and Kilinto condominiums, in Addis Ababa. Using a descriptive research design mixed method employed with qualitative and quantitative approach, the study conducted case-based observations, field surveys, questionnaires, and interviews on a sample of 338 willing households. The result reveals that there are significant differences between the two locations in terms of age distribution, employment status, income levels, ownership status, and rental property values. The level of satisfaction also varies based on factors such as proximity to amenities, design features, safety, and facility provision. Correlation analysis reveals differences in the relationship between age and factors like occupancy duration, ownership, employment status, income level, safety, and overall satisfaction between the two locations. There is a strong negative correlation between age and overall satisfaction in BGC, while the correlation in KC is moderate. Regression analysis shows that the impact of various factors on overall satisfaction differs between BGC and KC. The study concludes that the effectiveness of condominium housing development varies between BGC and KC, with BGC having a higher proportion of satisfied residents. From regression analysis, proximity to town center has a positive impact in BGC and proximity to work place has a marginally negative effect in KC. Additionally, the analysis identified entrance, bathroom, communal areas, room size and vertical circulation as a key design features that affect QOL. The research concludes that age is a significant predictor of overall satisfaction, with older individuals tending to be less satisfied in both locations. Therefore, developing and implementing appropriate policies and programs that enhance housing conditions for aging populations is necessary to support healthy aging-in-place.

Key Words: Condominium housing, Housing quality, Quality of Life, Satisfaction, Aging population

CHAPTER ONE: INTRODUCTION

1.1. Background

Globally, urban areas are adopting creative strategies to enhance housing accessibility and affordability (Palani, 2023). In Western Europe, social housing programs cater to working-class and middle-class individuals, while the US employs a mixed approach involving public housing and subsidies. South American countries, such as Chile, have introduced rental subsidy initiatives for low- and middle-income households. In contrast, policies in Africa and South Asia prioritize addressing informal settlements, with programs like the Participatory Slum Upgrading Program (PSUP), a collaborative effort by the African, Caribbean and Pacific (ACP) Group of States, the European Commission (EC), and UN-Habitat (UN-Habitat, 2024). One possible way to handle the housing challenges brought on by the fast urbanization of the country is through development of condominium housing (UN-HABITAT, 2010). Residents benefit from more affordability and sustainability, alongside the possibility to reduce urban sprawl and encourage more effective land use (Bajaj, 2023). However, concerns arise regarding the design and living standards in high-density housing, along with potential adverse health effects associated with condominium architecture (Nouri, 2022).

The quality of life of occupants in high-density housing designs can vary based on a number of factors including location, design quality, and management (Workineh, 2021). Poor design decisions such as inaccessible facilities, unsafe infrastructure, poor ventilation and lighting, noise pollution, lack of green spaces and inadequate waste management might worsen health problems, with underlying inequalities serving as a major contributing factor (Nouri, 2022).

Aging and housing are closely linked, with significant implications for the well-being and quality of life of older adults. As the global population ages, it is crucial to provide age-friendly housing that caters to the needs and preferences of older adults. The aging population undergoes various physical, cognitive, and social changes that can affect their ability to live independently and safely in their homes. For instance, older adults may experience physical decline, cognitive impairment, and sensory loss, making it challenging to navigate their living environments and perform daily tasks (Sanders, 2020).

Housing plays a vital role in supporting the health and well-being of older adults. A well-designed and well-maintained home can provide a sense of security, comfort, and independence, which are crucial for maintaining physical and mental health. Conversely, a house that does not meet the needs of older adults can worsen their health issues and reduce their quality of life. The relationship between aging and housing is complex and complicated. Housing can influence the health and well-being of older adults by providing a safe and supportive environment. Conversely, the health and well-being of older adults can impact their ability to live independently and safely in their homes (Seo & Lee, 2023).

High-density housing frequently has encounters in terms of accessibility for individuals with mobility issues. The limited space, crowded areas, and lack of proper infrastructure like ramps or elevators can significantly obstruct their mobility and independence, making it difficult for them. While offering proximity to amenities and services, it can also lead to social isolation for aging individuals. Limited personal space and high population density may hinder opportunities for social interaction and community engagement, impacting mental health and overall well-being. Additionally, increased population density can also lead to higher levels of stress due to noise pollution, limited privacy, and potential exposure to transmissible diseases. For individuals with compromised health, these factors can aggravate existing conditions and reduce overall quality of life (Zhang et al., 2021)

1.2. Statement of the Problem

Aging significantly impacts state housing systems because it creates a distinct type of demand that influences overall housing needs. The appropriateness of housing for an aging population heavily affects the demand for community support services and care. Therefore, it is crucial to offer housing alternatives and maximize choices for older adults. A major concern for the elderly is maintaining a high quality of life in their later years (Abd Aziz et al., 2015).

The aging population encounter significant challenges for the housing industry, as the current housing stock often lacks the necessary accessibility features to support the needs of this target group (Davern et al., 2020). Living in high-density housing can have negative effects on the physical and mental health of residents, the effect may depend on various factors, such as age, cultural context, health conditions and availability of safe and accessible outdoor spaces (Wang et al., 2019).

A major worry for aging individuals is the possibility of having to leave their homes. As people age, they may face physical and psychological decline, necessitating assistance from others. This situation often requires them to leave behind a familiar and comfortable environment, along with a cherished community and many memories. Additionally, moving away from home results in a loss of control, which is fundamental to their sense of dignity, quality of life, and independence (Yun et al., 2009). Similarly, in Addis Ababa, the majority of older individuals who own condominium units are forced to rent or sell their properties and relocate to detached single-storey houses in areas that provide them with the necessary comfort and accessibility for their daily activities, resulting in a significant loss of housing equity and a potential decline in their overall quality of life. They prefer to do this because they are not comfortable with the condominium housing environment.

However, this trend may not be easy in the future since there will be more high-density housing provision as the city become populous and redevelop. According to (Gebrewold, 2015) the availability of single storey detached house will become scarce and their option will be limited. Thus, age friendly mid or high-density housing provision should be considered in the government's policy and city development act. In order to provide age friendly housing models, the needs and preference of these groups should be consulted. As Ethiopians older age population projected to significantly increase in number from 3.6 million in 2007 to about 10.0 million in 2037 (Seid & Babbel, 2023), it is necessary to understand how housing design can be optimized to improve the quality of life for the aging population.

Residential satisfaction is crucial factor influencing the quality of life (QOL) of the elderly. This satisfaction is largely subjective and depends on their feelings about various aspects, including their indoor environment, nearby shops and services, familiarity with elderly housing, and satisfaction with housing and neighborhood relationships. Additionally, the elderly have a greater need for retention, accessibility, and identifiability, and places that provide these elements tend to meet their needs better (Mu et al., 2022). Currently, wide-ranging research on the influence of condominium housing design on the quality of life of aging individuals poses a critical gap in understanding how architectural and urban elements, spatial layout, and accessibility features directly affect their daily living experiences based on cultural and geographical context. Exploring and evaluating the specific impact of these

aspects could provide valuable insights into creating more inclusive, supportive, and adaptable living environments accustomed to the unique needs of this demographic.

While Bole Gerji condominiums have faced criticism for various issues such as being against environmental sustainability, social interaction problems, drainage and sewer pipes failures and unwise utilization of open space. And studies and discussion that assess to the specific need of aging populations on the housing developments are rare to find. As part of IHDP, Kilinto Condominium transferred to the owners on the 11th round justifying that as it is the recent development with some modification from the previous condominium housing design by offering green spaces, recreational areas, and social amenities, intended to promote a holistic and sustainable living environment for its residents. Both sites were also a subject of a research for some scholars related to quality challenges, planning issue, management issues and affordability concerns. However, concerns that support age-in-place or assessing aging population current condition in the condominiums was not a major issue yet.

1.3. Objectives

1.3.1. General Objective

The general objective of the study is to investigate the relationship between condominium housing development and the preference of aging populations through comparative analysis of a case studies between Bole-Gerji condominium and Kilinto condominium project in Addis Ababa.

1.3.2. Specific Objectives

- To examine the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing.
- To identify the key physical urban features that are most important for the quality of life of aging populations in condominium housing.
- To investigate the effectiveness of current Bole-Gerji and Kilinto condominium housing developments in meeting the needs of aging populations.
- To suggest planning guideline that would encourage healthy aging in condominium housing based on residents' preference

1.4. Research Questions

- What is the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing?
- What are the key physical urban features that are most important for enhancing the quality of life of aging populations in condominium housing?
- How effective are current Bole-gerji and Kilinto condominium housing development in meeting the needs of aging populations?
- What planning guidelines can be suggested to encourage healthy aging in condominium housing based on residents' preferences?

1.5. Significance of The Study

The significance of this thesis lies in the possibility of providing relevant information and knowledge that could assist the future planning and design approaches by giving insight in to the present desires and needs of its users.

Theoretical significance

It is reasonable to argue that housing is a necessary component of life and that improving housing conditions contributes significantly to people's well-being and life quality (Al Betawi, 2013). This fact alone explains the widespread and growing interest in housing studies among academic disciplines. Various studies have focused on various aspects of housing, and the history of housing research is rich in theories, conceptions, points of view, approaches, and inferences that investigate the significance of housing and how it affects people's lives. Despite the significant benefits gained from such studies, what appears to be urgent is an approach that encompasses the broad nature of housing and investigates, in a comprehensive sense, the consequences it has on people's lives and happiness.

The current trend of social housing provision in Ethiopia aimed at giving citizens a space/shelter to live in with a minimal standard in order to minimize cost. The residential environment, as a physical setting, is critical for human well-being. We spend the majority of our working hours in buildings and the majority of our leisure time at home or in our immediate surroundings. This fact justifies the need to investigate the role that housing and space play in the quality of life of individuals and communities. A compromising common ground that can be agreeable in majority of the dwellers have to be identified as every person have different kind of desires. Thus, there have to be common base line to assess the

satisfaction level of the dwellers this mean identification of the indicators is necessary and on this ground the evaluation should be done to understand their interrelation effect on peoples' life.

Methodological significance

The comparative analysis on two specific condominium sites within Addis Ababa provides context-specific insights that are directly relevant to local urban planners, policymakers, and stakeholders. This localized study helps in understanding the unique challenges and opportunities within these environments, which can inform more effective housing policies and practices.

Policy Implication

The holistic overarching concept of quality of life is the most appropriate measure to look at such influence (QOL). This type of metric is thought to provide a better understanding of the effects of housing wellbeing, which aids in the development of effective housing policies and programs.

The demand for inclusive housing is projected to increase, and there is a strong need to understand how housing design can be optimized to improve the quality of life for the aging population. Therefore, this study can contribute to the development of guidelines for designing accessible and inclusive condominium housing that meets the needs of aging populations in Addis Ababa, eventually improving their overall quality of life.

Practical Applications

The study's results can inform practical applications in the design and development of future housing projects. Developers and architects can use these insights to create more age-friendly living environments that cater to the specific needs of the elderly, promoting better health and social outcomes

1.6. Scope

Thematic Scope

This thesis was intended to investigate the relationship between condominium housing development and the preference of aging populations focusing on the satisfaction of residents through analyzing users' preference on spatial features which was physical domain of housing quality. The reasons for focusing on aging population was based the idea of having specific needs and preferences that differ from other age groups and growing of aging

demographics rapidly in both global and national context. Additionally, health and well-being of older adults mainly depend on their housing as they spend most of their time in it.

Spatial Scope

The research focus area was at Addis Ababa in two sub-cities, the one was Bole Gerji site which is located in Bole sub-city and the other located at Akaki-Kality sub-city locally known as Kilinto Condominium. As a comparative analysis research there had to be at least two cases so the researcher chose these two locations. The selection of the sites lies on being the first (Bole-Gerji) with diverse plan layout and inclusion of working class or employed groups and the recent development (Kilinto) with a large number of populations, inclusion of lower income groups and relatively longer occupancy from recent ones.

Temporal Scope

The study was conducted over the course of one academic year spanning from beginning of September, 2023 to the end of May, 2024.

1.7. Limitation of The Study

The primary challenge faced during the study related to the nature of the research itself. This type of study requires a deep understanding of user perspectives, which are fundamentally subjective and influenced by individual preferences. As a result, obtaining accurate and full data relies heavily on the willingness of participants to share their viewpoints openly and honestly. However, some individuals have been unwilling to take part due to various reasons such as lack of interest or privacy concerns. This unwillingness to participate limited the research, by skewing the data and affecting the reliability and validity of the study outcomes.

The researcher tried to overcome the challenges through approaching each respondent as they may feel comfortable, by approaching them through their close person who understood the study objectives clearly, via building trust in highlighting how it can positively impact their experiences and by combining the interview and questioner technique.

1.8. Organization of The Study

This thesis is categorized into five chapters. Each chapter systematically and effectively examines the content and data of the study accordingly. The fundamentals of each chapter in the paper are further demonstrated as follows.

Chapter one - Introduction to the study introduce the thesis by emphasizing the main topic of the study, statement of problems, objectives, research questions, significance and the scope in detail.

Chapter two - This chapter describes the theoretical review and empirical review of housing design and quality of life relationships in condominium housing. Contextual review also performed in this section to understand current trend of housing scheme.

Chapter three - The section explains the methods used for the study and the process of data collection and analysis in detail.

Chapter four - This is the section where the data is analyzed and discussed in detail with the aim of summarizing major findings.

Chapter five - It is the closing part of the paper which consists of conclusion of the thesis and sets recommendation based on the finding outcomes.

1.9. Operational Definition

Housing

Housing, or more broadly, living spaces, refers to the construction and assigned use of houses or buildings, either individually or collectively, for the purpose of shelter (Oxford English Dictionary).

Quality of Life

According to WHO definition; “Quality of Life is an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.”

Satisfaction

“The good feeling you get when you accomplish something or when something you wanted to happen occurs; something that gives you this feeling.” according to Oxford Dictionary definition.

Housing Quality Indicators

The Housing Quality Indicators (HQI) system is a measurement and assessment tool that allows potential or existing housing schemes to be evaluated based on quality rather than cost.

Aging Populations

The United Nations defines aging as the share of the population over 60. For developed countries, a line drawn at age 65 is preferred, as this is normally when people can claim social security.

CHAPTER TWO: LITERATURE REVIEW

2.1. Housing Quality

The availability of adequate space in a dwelling is crucial for housing quality, with overcrowding being a significant issue. The overcrowding rate measures the proportion of people living in overcrowded conditions based on room availability, household size, and the ages and family situation of members. This indicator, though informative, has limitations such as ignoring the trade-off between dwelling size and proximity to public services, and not accounting for the overall size of rooms. It is crucial for understanding privacy needs (Streimikiene, 2015; Štreimikienė, 2014).

Other indicators of housing quality include the housing deprivation rate, which assesses deficiencies such as the lack of basic sanitary facilities and problems with the general condition of the dwelling. Indicators like indoor flushing toilets and bathrooms are essential for health and dignity. The quality of roofs, floors, doors, and window frames also impacts health and comfort. EUROSTAT provides data on these aspects, including the share of the population who find their home too dark (Štreimikienė, 2015).

Housing satisfaction is another critical measure, reflecting the perceived gap between people's needs and their actual housing conditions. This subjective indicator captures dissatisfaction not evident from objective measures. Satisfaction is influenced by cultural norms and personal expectations and is assessed through direct questions about happiness with current housing (Mridha, 2015).

Quality of life indicators emphasize the importance of access to green spaces for well-being. Green spaces promote physical activity, help alleviate stress, and are linked to lower obesity levels. Areas with more greenery generally see higher physical activity rates and better overall health (Balestra & Sultan, 2013).

Generally, the analysis of housing quality involves multiple indicators, including overcrowding rates, housing deficiencies, subjective satisfaction, and access to green spaces, all of which impact overall well-being and quality of life.

2.2. Housing Quality and Satisfaction of User's

Quality of housing encompasses both objective and subjective dimensions. Many important aspects are included in the objective dimension, such as the type of dwelling, the number of rooms, the availability of facilities, and the overall condition of the dwelling (Elsinga &

Hoekstra, 2005). The subjective dimension depend-on user characteristics that lead to specific needs, desires, and expectations. In summary, housing quality criteria include physical environment characteristics and user characteristics (Štreimikienė, 2015).

Housing satisfaction, as defined by Streimikiene, 2015, is the "perceived gap between a respondent's needs and aspirations and the reality of the current residential context". Housing satisfaction can also be defined as the pleasure or gratification derived from residing in a specific location (Mridha, 2015).

Residential satisfaction is regarded as a useful criterion for assessing housing quality because it indicates the level of success, measures users' affective and cognitive responses, identifies unappealing aspects of the housing environment, and predicts user responses to future conditions. It also aids in determining the contribution of various factors to satisfaction, differences between different types of factors, and the relationship between different housing dimensions. The most important measure of housing quality is user satisfaction (Amole, 2009); the higher the quality of the apartment, the higher the expected satisfaction of its user.

2.3. Components of Quality of Life (QOL)

Assessing quality of life (QOL) as a comprehensive concept involves breaking it down into fundamental components, often referred to as "domains," that can be assessed reasonably. These components encompass the breadth of the QOL concept and collectively represent the entire QOL framework. Domains differ across different research fields and perspectives on QOL, as well as among different social groups within the population (Sedaghatnia et al., 2013). These domain span from the most abstract attributes derived from philosophical viewpoints on quality of life to more practical aspects addressed with social and urban planning approaches. Variances in the outcomes of quality of life studies can be attributed to variations in the selected variables, the weighting methods applied to these variables, the demographics of the study participants, and the uniformity of the geographic units analyzed in the research (Ülengin et al., 2001). Researchers generally concur on the essential domains for evaluation, including aspects such as environment, health, housing, education, economy, social well-being, community assets, democracy, transportation, culture and recreation, and land utilization (Wegener & Huner, 2001).

According to Schalock, (2004) most of the elements discussed in literature categorized into eight fundamental areas: interpersonal relationships, social integration, personal growth, physical health, autonomy, material welfare, emotional wellness, and rights. In contrast, the

World Health Organization Quality of Life (WHOQOL) outlines six overarching domains: physical well-being, psychological well-being, autonomy, social connections, environment, and spiritual well-being (Levy et al., 2008).

Felce and Perry (1995) proposed a comprehensive framework for understanding quality of life, organizing it into five distinct domains. The first domain, physical well-being, encompasses factors such as health, fitness, and physical safety. Material well-being, the second domain, encompasses aspects related to finance or income, the quality of the living environment, privacy, possessions, meals, transportation, neighborhood, security, and stability. Social well-being, the third domain, focuses on interpersonal relationships and community involvement, recognizing the importance of social connections for overall well-being. The fourth domain, development and activity, addresses the acquisition and utilization of skills, self-determination, competence, choice, control, and engagement in functional activities such as work, leisure, housework, education, and productivity or contribution. Finally, emotional well-being, the fifth domain, encompasses affect or mood, satisfaction, fulfillment, self-esteem, status or respect, and religious faith, recognizing the significance of emotional and psychological factors in shaping individuals' quality of life.

Understanding the interconnections among QOL domains can be complex and challenging to separate. Consequently, employing multiple attributes within a multifaceted framework becomes essential to comprehensively capture these relationships (Zhu et al., 2006). It's crucial to understood the connection between various attributes, as well as to measure and compare the evaluation of the diverse domains comprising QOL. This enables us to ascertain the extent to which each domain clarifies the quality of life experienced. (Marans, 2003).

2.4. Housing Quality and Housing Quality Indicators

Various social, economic, and physical factors contribute to housing, including decisions regarding its location, longevity, cost, financing duration, stability, occupancy, evolution over time, accessibility, and utilization by individuals (Strassmann, 1998). Government authorities and urban planners need to understand the mechanisms of housing markets, the broader impacts of policies, regulations, and institutions on these markets, the interplay between the housing sector and the economy at large, the effectiveness of housing interventions targeting the needy, and the environmental consequences of housing development. Such knowledge is essential for tackling these challenges and facilitating effective housing provision. Furthermore, in formulating and implementing housing

policies, a comprehensive assessment of the existing housing inventory's characteristics and quality is crucial (Meng & Hall, 2006).

In broad terms, a normative interpretation of housing quality or standards pertains to the level of acceptability of residential units and their surrounding environment, encompassing factors such as the design and functionality of dwellings, the materials used in construction, the available interior and exterior space, utilities, and basic service provisions. In legal contexts where there is uncertainty regarding compliance with prevailing regulations or conventions within the residential building sector, housing quality standards often serve as benchmarks or criteria. However, the concept of housing quality is multifaceted and carries broader social and economic implications. It considers not only the immediate vicinity of residential units but also the quantitative and qualitative aspects of neighboring conditions and the needs of occupants. Moreover, perceptions of housing quality are influenced by regional standards and contextual factors. What may be deemed acceptable quality in one locale could be considered subpar in another, and vice versa (Meng & Hall, 2006).

The quantitative aspect of housing quality pertains to the measurable structural, material, social, and economic aspects of housing outcomes, which stem from the efficiency of the housing sector. This dimension focuses on variables such as cost, quantity, tenure, economic and environmental impacts, and adherence to structural regulations governing housing standards. Conversely, the qualitative dimension is more subjective and difficult to quantify. It encompasses the perceived meanings and values associated with elements like "comfort" or "quality of life" offered by different types of homes, lifestyles, and the preferences and expectations of the general population (Garg et al., 2014).

Developing a single set of standards and indicators that universally apply to all locations and contexts is challenging due to significant local and regional variations in both the quantitative and qualitative dimensions of housing quality. Relying solely on quantitative measures also fails to capture the nuanced meanings and values associated with qualitative concepts such as comfort and quality of life. One approach to address these challenges is to implement a comprehensive set of housing criteria and indicators, allowing local communities to assess them based on locally relevant norms and standards that incorporate qualitative "values." While this method may not fully capture the subjective meanings of concepts like comfort and quality of life, incorporating locally pertinent, subjective weightings of objective indicator values serves as a practical alternative (Amao & Ilesanmi, 2013).

Numerous objective indicators have been employed globally to evaluate different aspects of housing quality. However, consensus is lacking regarding the methods and strategies necessary to assess, enhance, and regulate housing quality within specific communities. Diverse stakeholders, regions, and even different government departments within the same administration hold varying perspectives on what constitutes quality housing. Consequently, indicators and measures are often implemented with significant variability, reflecting the differing viewpoints involved (Meng & Hall, 2006).

2.5 Housing Quality Assessment Models

There are a number of models developed to evaluate the quality of housing programs around the world. For this study, nine models from different countries were consulted; Each of them uses a ranking system based on a set of indicators. The Qualitel model developed in France includes 7 indicators ranked from 1 to 5 and is simple even for non-experts. The Swiss SEL has 39 indicators with scores ranging from 0 to 4 (Mazur et al., 2022). The SMSM model proposed in India uses 47 factors divided into seven indicators. The UK HQI model evaluates ten indicators and instead of weighting them, users can change the weight applied to each indicator (Brkanić Mihić, 2023; Mazur et al., 2022). The DQI model also from the UK has 3 main categories with 10 subdivisions that mainly evaluate building design, and the Korean HPEM model evaluates housing performance through 41 indicators divided into three dimensions (Brkanić Mihić, 2023).

Furthermore, the HQD model designed in Pakistan has 24 quality determinants grouped into seven parts(Brkanić Mihić, 2023) and the Vietnamese model evaluates social housing quality using 12 indicators with 55 specific components (Brkanić Mihić, 2023; Le et al., 2016). Ultimately, Mexico's housing assessment methodology includes 51 indicators divided into four dimensions: social, physical, spatial and urban environments.

All the models listed above are tools to evaluate the quality of housing programs based on quality and not just on cost. All use an index system to evaluate certain aspects of the housing program. However, they differ in the number and types of indicators they use to evaluate the quality of housing programs, as well as the weight assigned to each indicator and the level of detail of the evaluation method. Some models focus more on the architectural and design aspects of the housing project, such as the Qualitel (France) or SEL (Switzerland) models. Other models, such as HQI (UK) or HQD (Pakistan), evaluate housing programs based on

more comprehensive criteria. The DQI (UK) model is unique in that it specifically evaluates the quality of building design.

2.6. Housing Design and Quality of Life

The architectural layout of housing significantly influences the well-being of its inhabitants. Findings from a survey conducted in London between the COVID-19 pandemic underscored the recognition among individuals of the crucial role that housing design plays in shaping their daily experiences (Alonso & Jacoby, 2023). Another study focusing on elderly people in need of care states that good housing design can improve the quality of life (Kuboshima & McIntosh, 2022). Effective design can optimize space utilization, lower operational expenses, increase property valuation, and enhance overall well-being. Adapted architectural and interior design solutions can mirror personal preferences and beliefs, strengthening a sense of identity and enriching quality of life. Additionally, housing designs that foster diversity in age, life stages, and income levels have the potential to enhance overall quality of life (Haan, 2012). So, housing design plays an important role in the quality of life of its residents, and advancing a design can have substantial benefits.

2.7. Relationship between Housing Design and Health

Substandard housing conditions, such as dampness, mold, and structural disrepair, are associated with negative health impacts, including respiratory problems and mental stress. Enhancing housing conditions through measures like better insulation, improved ventilation, and adequate heating has been proven to have a positive impact on both physical health and overall quality of life. Government programs, such as the Cozy Homes in Lancashire initiative in the UK, which provides grants for home improvements, highlight the significant impact that policy interventions can have on living conditions. The aesthetics and social environment of a neighborhood significantly influence residents' cognitive and mental well-being. Improvements, such as the addition of green spaces, can enhance respiratory health and decrease depression rates. Furthermore, social networks within neighborhoods positively impact mental health by offering support and cultivating a sense of community (Simpson et al., 2024).

Homeownership is often associated with improved health outcomes, although the impact and effectiveness of homeownership assistance programs is somewhat mixed. Policies that support affordable homeownership or enhance rental housing conditions can positively

affect mental well-being. Embracing a balanced strategy that acknowledges the advantages of both owning and renting, as demonstrated in various European models, may provide more comprehensive health benefits (Rolfe et al., 2020).

2.8. Relationship between High-density Housing Design and Disability

Universal design principles can be implemented in high-density housing to ensure accessibility for individuals with disabilities. This includes features like open doorways and corridors, entrances without steps, bathrooms and kitchens that are easy to navigate, adaptable countertops and shelves, lever-style door handles, and well-positioned lighting. Moreover, incorporating accessible design elements and making home modifications can facilitate aging in place for individuals with disabilities. Policymakers can promote the creation of accessible housing by integrating universal design principles, ensuring outdoor accessibility, and providing targeted financial mechanisms. Developers would be more inclined to produce universally accessible housing if there were some incentives, such as special tax benefits, accelerated approval processes, or construction bonuses for those who offer them (Shahrom & Zainol, 2015).

2.9. Relationship between High-Density Housing Design and Aging

Higher-density housing can have both positive and negative impacts on residents, including its influence on physical activity levels. Efforts have been made to explore accessible design features and home modifications to support aging in place for individuals. Despite the growing need for accessible housing, the U.S. housing stock is found to be notably inadequate, with only a small fraction of housing units considered livable by people with moderate mobility difficulties. Furthermore, the concept of universal design in housing, emphasizing the need for improved policies in housing design for aging people. While the literature is still evolving, these studies highlight the importance of considering the built environment's impact on the physical health and well-being of the elderly in high-density housing (Zhang et al., 2021).

2.10. Universal Design

The built environment has negative impact on elderly population by creating various obstacles that hinders their participation in various aspect of life. Due to this environmental barriers, social bonds and community connection of these population can be affected. In

order to make these groups socially engaged and productive thoughtful design and modification should be incorporated in the environment. Thus, it is the dominant issue for designers to take into consideration changing demand of the user as its' aging (Carr et al., 2013).

There are lots of design theories that have principles in order to accommodate the aging process in the design of the built environment. Beside universal design, these theories include accessible design, adaptable design, and transgenerational design. While accessible and adaptable design features provide housings that could be supportive for older adults, these features are often fixed in place and recognizable and may promote a sense of segregation among end-users and of stigmatization as being "seniors" or "disabled". Since these features involve specialized adaptations or equipment, they may also come at a substantial financial cost, particularly if they are added as retrofits to existing spaces. Transgenerational design pursues to create built products and environments that are compatible with the physical and sensory impairments associated with aging, often from the initial planning stages (Carr et al., 2013; Shahrom & Zainol, 2015)

While all thoughtful design has the potential to reduce or eliminate barriers related to aging and disability, universal design aims to create accessible environments without stigmatization or ageism. These design principles are not specialized and are integrated into the environment during the initial planning stages. Universal design is based on the idea that there is only single population with varying characteristics, rather than a "normal" and "abnormal" population. Therefore, it eliminates the need to justify the importance of different vulnerable population groups. This approach removes the segregation of older populations and promotes successful aging across the lifespan. It is also known as inclusive design and design for all, is a contemporary movement in professional, academic, and social spheres. When effectively applied, it aims to establish safe, accessible, and functional environments for a wide range of individuals. There is documented empirical support for the positive impact of universal design principles both in professional fields such as architecture and in theoretical applications within academia (Carr et al., 2013)

2.11. Review of Previous Studies

The main topic covered in the reviewed documents is housing and its impact on quality of life. Even if reviewed articles have different approaches and focus areas, they all try to address various aspects of housing quality and its impact on people's well-being. Every article takes a sole approach, but all have the same goal that is to understand how housing affects human outcomes and experiences, and how to create buildings and environments that meet user needs and improve quality of life. The raised issues vary from the physical conditions of homes to the environment, from economic and social factors to the structural design of buildings.

The reviewed documents present a comprehensive evaluation of the relationship between housing quality and quality of life, focusing on diverse aspects of housing quality, including physical conditions, social and economic factors (Brkanić, 2017; Zainal et al., 2012), and overall housing design and layout (Kurian & Thampuran, 2011; Mazur et al., 2022; Sadrian et al., 2015). The researchers emphasize the need for interdisciplinary approaches to address housing quality, especially as it relates to user preferences and the accommodation of different populations in need (Brkanić, 2017; Teston & Marcon, 2014).

There is similarities in the researches in terms of mentioning housing quality and its impact on quality of life (Becerik-Gerber et al., 2022; Berköz & Kellekçi, 2007; Bougouffa & Permana, 2018; Brkanić, 2017; Kurian & Thampuran, 2011; Streimikiene, 2015; Teston & Marcon, 2014; Zainal et al., 2012; Zumaya & Motlak, 2021), emphasizing the importance of interdisciplinary and user-centred approaches to addressing housing quality (Berköz & Kellekçi, 2007; Kurian & Thampuran, 2011; Štreimikienė, 2014) , highlighting the significance of taking into account the diverse needs and experiences of various target groups when designing and assessing housing quality (Osborne et al., 2003; Pimchan & Darawong, 2022; Teston & Marcon, 2014).

In the contrary differences exist in considering different approach, focus, and research methods (e.g., survey-based vs. literature review -based), in discussing different types of housing, including public housing, mass housing, and apartments for specific target groups like low-income and elderly. In addressing various aspects of housing quality, from physical conditions to economic and social factors to overall building design and layout. And finally in focus area specifically on the relationship between housing quality and satisfaction with

the neighborhood or community (Jechoniah & Folasade, 2014; Murat et al., 2023; Nedučin et al., 2023), while others focus more broadly on the impact of housing quality on with assets - personal and social(Brkanić, 2017; Kurian & Thampuran, 2011).

According to reviewed papers there are several viewpoints and methods for examining housing quality and its relationship to quality of life, even though there aren't any overt disputes or arguments in the papers. For instance, whereas some studies look at the environment and the physical state of homes (Becerik-Gerber et al., 2022; Brkanić, 2017; Mazur et al., 2022), others look at the social, cultural, and economic (Brkanić, 2017; Zainal et al., 2012) aspects that influence housing quality.

The strength of the researches include addressing a wide variety of physical, social, cultural, and economic aspects of housing quality and how it affects quality of life; examining housing quality using a range of approaches, such as surveys, assessments by experts, and data analytic techniques (Berköz & Kellekçi, 2007; Mazur et al., 2022; Sima, 2015) and stressing the value of multidisciplinary and cooperative methods for researching housing quality and how it affects overall quality of life. Also, few of the articles include suggestions for policies and useful applications aimed at enhancing the standard of living and housing quality. These include creating systems for assessing housing quality (Streimikiene, 2015), identifying important indicators of housing quality(Kurian & Thampuran, 2011; Štreimikienė, 2014), and creating building certification programs(Mazur et al., 2022). Generally, the reviewed document provides a worldwide perspective on housing quality and quality of life by drawing on research from various situations and nations.

The first gap found is some publications only focus on particular demographics or geographical areas, which restricts the applicability of their conclusions (Djafri et al., 2020; Jechoniah & Folasade, 2014; Kurian & Thampuran, 2011; Nedučin et al., 2023; Zainal et al., 2012). The second gap is a significant portion of the publications mostly depend on surveys or expert assessments, which could not adequately convey the complexity of housing quality and how it affects overall quality of life (Mazur et al., 2022). There is also disagreement over the precise metrics and indicators used to evaluate the standard of living and housing, which might make research findings less comparable. The articles mostly concentrate on the concrete, material components of housing quality and quality of life; they do not investigate more ethereal elements, such the influence of social and cultural capital

on housing and community experiences. Finally, limited number of longitudinal studies on the quality of life and housing, which might be useful in spotting patterns and trends across time, is another gap.

Several data analysis techniques are employed in the articles, depending on the research questions and methodologies employed in every investigation. Statistical analysis with software such as SPSS is one of the data analysis techniques employed in the papers (Sadrian et al., 2015). Frequency distribution, descriptive statistics, logistic regression analysis, and reliability analysis(Teston & Marcon, 2014), Multi-criteria analysis to assess energy efficiency and housing quality(Mazur et al., 2022). Another method is Comparing housing indicators across nations (Štreimikienė, 2014). Also other studies investigate the relationship between housing quality and quality of life using a variety of techniques, such as surveys, expert reviews, and data visualizations (Brkanić, 2017).

There are several documents that discuss how house design affects people's quality of life, but they do it in various ways and with diverse approaches. Certain studies concentrate on the physical components of housing design, such the dimensions, arrangement, and state of housing units, and how these elements affect the quality of life for dwellers. Additionally, studies examine the social and economic backgrounds of housing and the ways in which community attributes, social support, and economic instability affect people's quality of life. They stressed the need of taking into account the various demands and experiences of various groups as well as the necessity of multidisciplinary approaches to the problem of housing quality.

All things considered, offers crucial information on the deep and complex connection between housing quality and overall quality of life. The findings of this research will be helpful to planners, legislators, and experts in the housing industry by assisting in the creation and execution of suitable policies and procedures targeted at enhancing the quality of life and happiness of individuals as they integrate into society.

Reviewed researches emphasize the significance of user input, with some research activities centering on user compliance with specific aspects of housing quality and the correlation between them with overall life happiness. Researchers also emphasize the necessity of suitable design standards and guidelines that account for user preferences and support a range of demands.

Review of Local Studies

The paper by Gebrewold, (2015) focus on assessing the perception and satisfaction of condominium dwellers' housing quality in Addis Ababa, Ethiopia, with an emphasis on the variation of satisfaction between inner city and urban periphery condominium sites. The research also examines the variation of condominium quality between floors of both inner city and urban periphery condominium sites and explores the significance of dwellers' perception and satisfaction for housing development. The document describes a housing quality evaluation model. In this study, 30 housing quality indicators were identified, which were grouped into seven domains to assess satisfaction. These domains are structure and space, affordability, utility and service, accessibility, sanitation, neighborhood attraction, noise, and security.

According to Kelkay, (2019) studies some criticisms of the IHDP program are highlighted, such as its disregard for social and cultural values of the community, malfunctioning infrastructure, poor housing management, lack of skill in utilizing shared facilities, potential risks for young children, poor housing unit area and construction material, and poor location of construction sites. These criticisms may suggest potential areas of failure or challenges faced by the program. According to the paper, the unaddressed part of quality housing is the absence of children's playgrounds, lack of an adult recreation center, neighborhood cleanliness, day and night bar noise, and lack of living experience in multi-story houses, which are contributing factors to the lower satisfaction level of residents.

Another study by Kidane, (2018) assesses the satisfaction of residents regarding affordability, construction quality, infrastructure, quality of accessories, and proximity to public facilities. According to the research paper, the limitations of the program are absence of infrastructure. Housing agency workers noted that the infrastructure should be ready prior to transfer of the houses. The other limitation of the program is that the houses are located far from public utilities and city centers. As a result of these limitations, the residents have gone under financial pressure to cover their housing related expenses.

2.12. Critique of the Existing Literature Relevant to The Study

As described in the above section, most of literatures concerning assessment of quality of life in housing are supportive to each other. There exist no controversial arguments on the reviewed documents for this study. The major difference on those various literature is the

level of detailing, perspective and the baseline they took to begin the studies. Therefore, findings from those literatures are repeatedly tested and truthful that can be used as an input and reliable source for other researches. However, literature at local context is limited leading not to accept all the findings as it is. Contextualization is necessary for better analysis and results.

2.13. Current Housing Scheme Trend in Addis Ababa

Integrated Housing Development Scheme/Condominiums

Under The Integrated Housing and Development Program (IHDP), as a way of addressing housing shortage through inner-city and new periphery development, there are lots of massive developments in various sites. In this scheme the homeownership is facilitated by Grand Addis Housing Authority. This mean the government is responsible for affordable urban housing demand fulfillment by involving directly in the whole process which is building, financing, and administering. The transfer mechanism is by dealing subsidized condos through randomized lottery system. However, this scheme is criticized by users in achieving its' objective and in terms of various issues as mentioned slightly in the above section of this paper. Additionally, issue related to specific target group, aging population, is analyzed further in next section of this paper.

Emerging Housing Scheme

This scheme is a result of riverside project development impact on the project site residents. And it is important to note that it is not accommodated in formal housing policy scheme rather it's an immediate solution for local residents specifically for those who live in kebele houses and prefer to dwell around the area. Nonetheless, it can be an example for current trend in Addis Ababa in housing scheme and most of the user of this schemes are older peoples.

The Fluha riverside project is a large-scale urban development initiative that involves the rehabilitation and development of the green areas along the river, which stretches from Mount Entoto to Akaki, covering a distance of 56 kilometers. The project aims to transform the riverbanks into a vibrant and sustainable urban space that integrates green infrastructure, and recreational facilities. The project has resulted in the displacement of individuals who were living in the areas earmarked for the project. To address this issue, a specific housing

project was designed to accommodate these displaced individuals. This project is intended to provide a new and improved living environment for the displaced people, ensuring that they are not left without adequate housing and support. The housing project is an important aspect of the Fluha riverside project, as it demonstrates a commitment to the well-being of the local community and a recognition of the social and economic impacts of urban development. By providing quality housing for the displaced individuals, the project can help to minimize the negative consequences of displacement and promote social inclusion and equity.

Case 1: Lideta

The housing project is designed to meet the needs and preferences of the displaced people and to provide them with a comparable living environment. The housing project is constructed on previously vacant land, which indicates that the land was not being used for any purpose before the project. This is an important aspect of the project, as it ensures that there is no relocation of existing residents. Furthermore, the project includes a portion of land acquired from Medrock Ethiopia, indicating that the project is a collaborative effort between the government and private entities. This partnership can help to ensure the sustainability and success of the project, as both parties bring different resources and expertise to the table. The project consists of three buildings, each with eleven stories as illustrated as in Figure 2.1. This suggests that the project is of a significant scale and can accommodate a large number of people.

Figure 2.1: Lideta PPP Housing (Source: researcher, 2024)

Case 2: Riche

The housing provided in this project is an alternative option for those who have chosen the governmental kebele rental housing instead of opting for condominiums or site plots for constructing their own houses. This means that the housing project is intended to provide a more affordable and accessible housing option for individuals who may not have the financial resources to purchase a condominium or build their own house. The project represented in Figure 2.2 consists of approximately 50 households, making it a relatively small-scale development compared to other housing projects in the area. Initially, the Riche project placed on an area of six residential houses for kebele residents. However, these houses were demolished to create an opportunity for the residents to obtain new housing units after the construction. This allowed the Riche kebele residents to secure one housing unit each, ensuring that they had a stable and secure living environment after being displaced. The entire construction process was completed within a span of 49 days, which is a relatively short period of time for a housing development project of this scale. This suggests that the project was well-planned and efficiently executed, minimizing disruptions and delays for the

residents. At present, the building is officially operational, and all 50 households have commenced their residence in the premises. This indicates that the housing project has been successful in providing a new and improved living environment for the displaced individuals, ensuring that they have access to quality housing and support.

Figure 2.2: Riche PPP Housing (Source: researcher, 2024)

2.5. Research Gap

The identified research gaps in the existing literature on housing preferences for older adults highlight several key areas that require further attention. Firstly, there is a lack of conventional indicators and assessment models accustomed to the local context, indicating a need for more localized and culturally relevant approaches to evaluating housing preferences. Secondly, the research gaps point to a deficiency in addressing specific groups, particularly the aging population, while also emphasizing the absence of an inclusive design approach in housing development that caters to diverse needs and preferences. Lastly, the absence of a strong and organized framing policy underscores the need for comprehensive and structured guidelines or frameworks to guide housing development initiatives that prioritize the well-being and quality of life of aging populations. Addressing these research gaps is essential to enhancing the effectiveness and inclusivity of housing solutions for older adults.

2.6. Conceptual Framework

The diagram in Figure 2.3 illustrates how various elements interrelate to influence the overall quality of life, with satisfaction serving as a measure for the evaluation. Among different domains in the literature emotional and physical domains were chosen for this study. The assessment model Qualitel was used as a base for indicator identification. The spatial characteristics such as adaptability, accessibility and flexibility, connected to quality of life suggesting that the physical environment's attribute impact overall satisfaction based on personal character of aged groups.

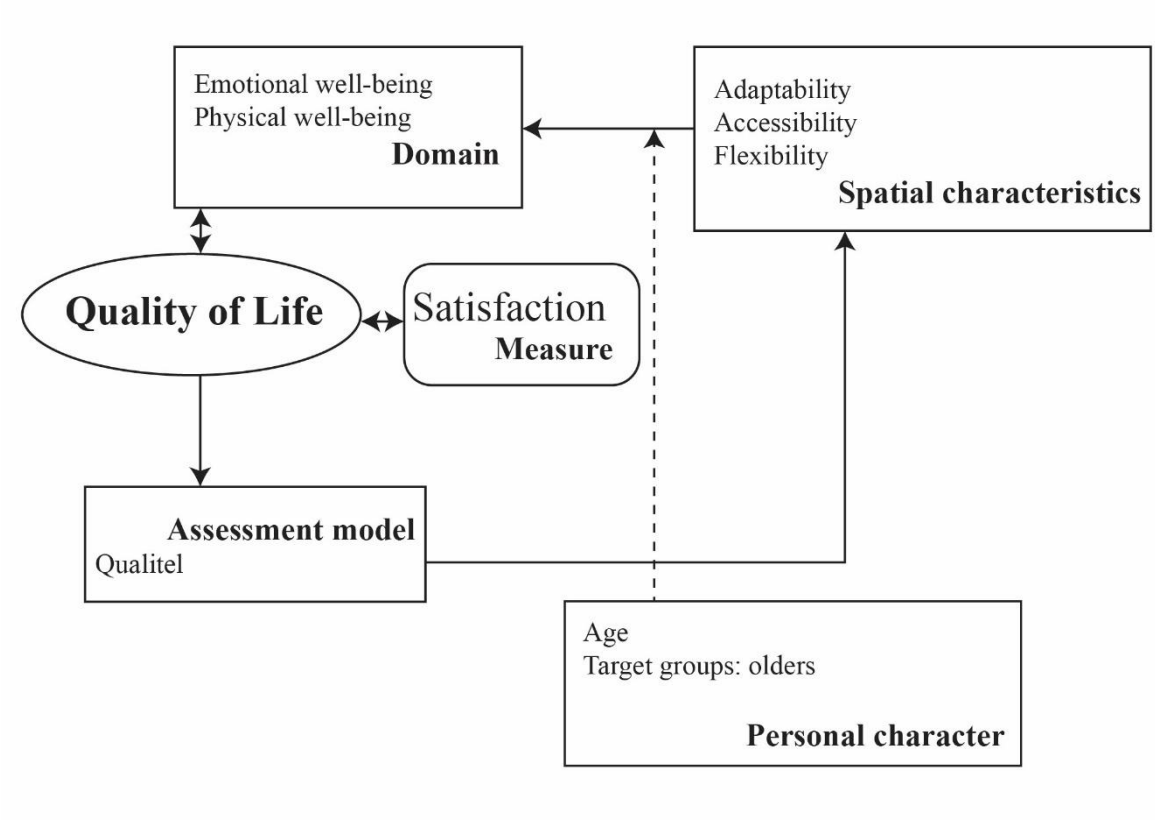

Figure 2.3: Conceptual framework plotted for the study (Source: researcher, 2024)

CHAPTER THREE: MATERIALS AND METHODS

3.1. Introduction

This chapter outlines the methods in which the researcher prepared to obtain and analyze data to conduct comparative analysis of condominium housing development impact on quality of life of aging population between Bole-Gerji and Kilinto condominium sites in Addis Ababa.

3.2. Description of Study Area

The study is conducted with in the boundary of Addis Ababa city specifically at Bole Gerji and Kilinto condominium sites located in Bole sub-city and Akaki Kality subcity respectively (Figure 3.1). Bole district is located in the southeastern part of the city with 9°0′8.64″N longitude and 38°47′59.64″E latitude coordinates. The area covers around 122.08 km^2. Whereas, Akaki Kality subcity lies in the geographical location of 8°53′40.92″N longitude and 38°46′23.52″E latitude. And it is the southernmost suburb borders with the districts of Nifas Silk-Lafto and Bole. The district covers an area of 118.08km^2 (City Government Of Addis Ababa, 2013).

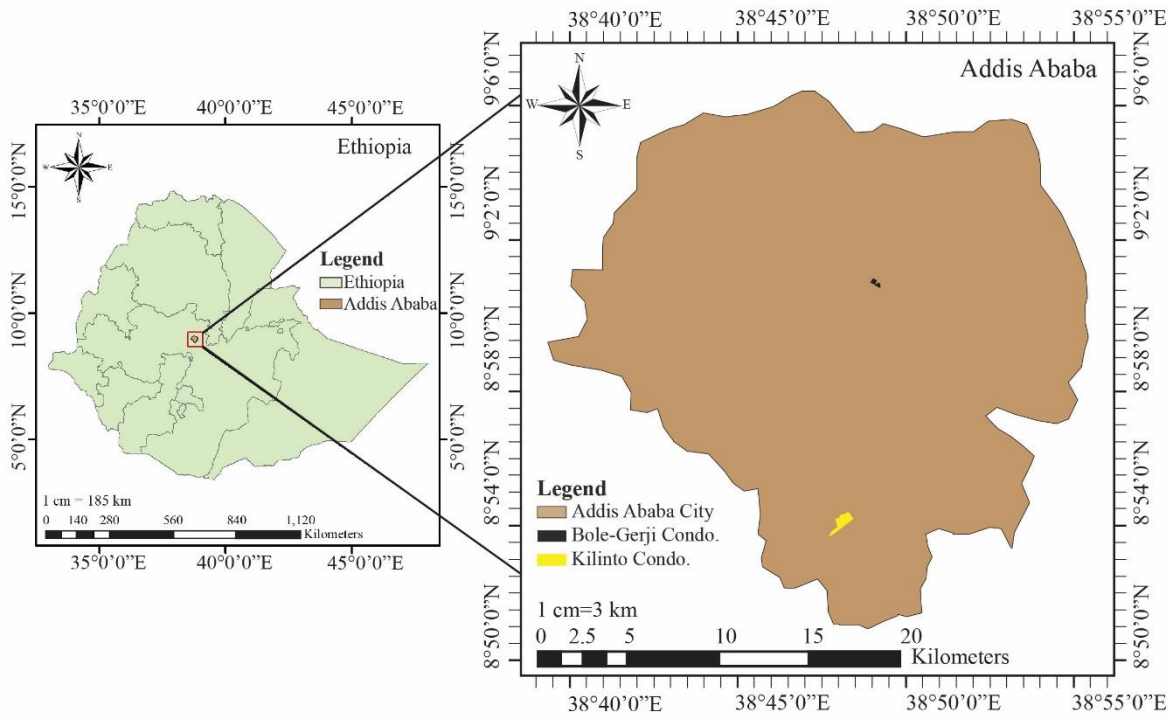

Figure 3.1: Location Map of the study area (Source: researcher, 2024)

Specific site boundary for both condominium site is illustrated by Figure 3.2. The BGC site includes two sites namely Gerji-1 and Gerji-5.

Figure 3.2: Satellite map of Bole-Gerji Condominium site (Left) and Kilinto Condominium site (Right)

(Source: researcher, 2024)

Site Selection Reasoning

The selection of Bole-Gerji and Kilinto condominiums as the study sites offers several advantages for the research in affordable housing. Bole-gerji condominium has been the subject of various critiques and analyses and Kilinto Condominium, being a more recent development, has been known for some modification from the earlier development. However. the specific issue of aging populations has not been thoroughly explored in both cases. This presents an opportunity to contribute new insights to an area that has received limited research attention thus far. Additionally, the presence of diverse housing designs, layouts, and building heights across the two sites allows for a comparative analysis of how these elements impact the quality of life for aging residents. By examining the variations in design features, the study can identify which aspects are most effective in supporting the needs and preferences of older adults living in condominium housing. Furthermore, the urban context in which the condominiums are situated can significantly influence residents' overall well-being. By assessing the surrounding neighborhood characteristics and infrastructure, the research can shed light on how the broader environment interacts with the housing design to shape the quality of life for aging populations. Finally, the sites offer a longitudinal perspective, as the impact of housing design on quality of life may become more

apparent over time. By examining the progression from the pilot project (Bole-Gerji) to the most recent development (Kilinto), the study can observe potential changes or trends in residents' well-being, providing valuable insights into the long-term effects of condominium housing on aging populations.

For comparative analysis in considering the first and the recent development there are lots of sites emerged. The researcher categorized those sites based on condominium transfer rounds as indicated in the Table 3.1.

Table 3.1: Site selection reasoning

Category	***Round***	***Location***	***Transferred Sites***	***Selected Site***	***Inclusion factor***	***Exclusion factor***
Recent	14th R	Outer area	Bereket, Bole Arabsa (sites 3, 4 and 5), Wetader, Yeka Tafo, Jemo Gara, Goro Silassie, Fari Hana and Fanuel	Bole Arabsa (sites 3, 4 and 5)	Availability of large number population	Status-unoccupied
	13th R	Outer area	Koye feche and Yeka abado (minimal)	Koye feche	Availability of large number population	Status-geographic boundary and short duration of occupancy
	12th R	Middle areas and Outer areas	Genet menafesha, yeka abado13, project 14, gelan, ayat, lafto 1,2, kilinto,bole arabsa,bole bulbula, jemo2,3,tuludimtu,mekanisa kotari, gofa camp, yeka ayat, gelan 3, bole ayat3,4,5, koye feche	None		Difficult to compare due to limited time
	11th R	Middle areas and Outer areas	Kilinto, Bole Arabsa Lideta Kirkos and Project 15 Sites, Koyo Feche, Bole Hayat Sites 3, 4 and 5.	Kilinto	Availability of large number population, Inclusion of 10/90 condominium, relatively longer occupancy	
Older	1st R	Inner area and Middle area	Lideta and Bole-gerji	Bole Gerji	Diversity of plan layout	

(Source: researcher, 2024) (Transferred sites information source: allaboutETHIO,2024)

3.3. Study Approaches

The research took mixed research method approach because qualitative or quantitative research methods are inadequate in their own. So, the combination of case studies' qualitative and quantitative research method was held. Research approaches vary depending on the specific objectives and types of data available for each particular analysis. The following Table 3.2 outlines the methods and approaches used in the query, including case studies, qualitative and quantitative methods, and specific techniques and tools used for data collection.

Table 3.2: Summary of study approach

Method	***Approach***	***Question***	***Technique***	***Tools/ ways***
Case Study	Qualitative	What? How? Why?	• Ethnography • Phenomenology	photos, observation, interview
	Quantitative	How much?	• Purposive sampling • Random sampling	counting, measuring,

(Source: researcher, 2024)

3.4. Research Design

For this study, descriptive type of research design was considered by the researcher. This approach is chosen due to the study nature of being describing existing condition of what is happening with no control over the variables involved. So, non-experimental design (survey) was used that includes adaptation of both quantitative and qualitative dimension.

The starting point of the research in the process for a study as illustrated in Figure 3.3, was identifying the title and the associated problem based on reviewing existing literature to identify relevant indicators and frameworks that inform the research. Then, involved establishing the objectives, formulating specific research questions, selecting the specific cases to study based on field observations and surveys, collecting data through various means such as questionnaires and interviews, analyzing the collected data using software

tools like SPSS version 25 and MS Excel, presenting the results and engaging in a discussion of the findings, summarizing the key findings , drawing conclusions based on the findings and making recommendations at last.

The general research flow is:

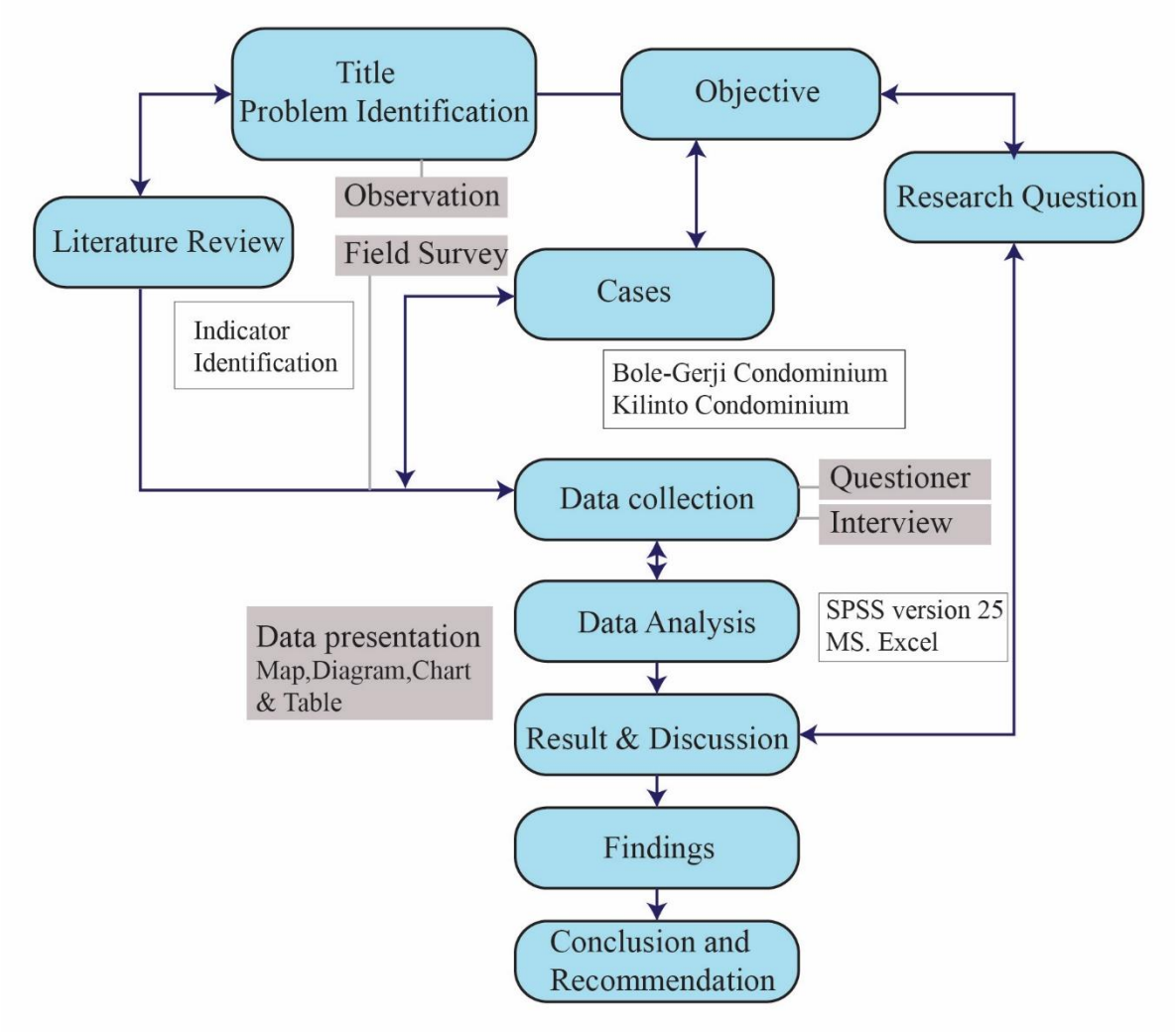

Figure 3.3: Research design flow chart (Source: researcher, 2024)

3.5. Data Type and Source

Two types of data were collected in this research, these are:

Primary Data

The primary data for this research was obtained from two main sources: households and committee members. The data collection methods employed included observations, direct interviews, field surveys, and discussions, which were facilitated through questionnaires and

interviews. This primary data was instrumental in answering the following research questions: What is the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing? What are the key physical urban features that are most important for enhancing the quality of life of aging populations in condominium housing? And, How effective are current Bole-Gerji and Kilinto condominium housing developments in meeting the needs of aging populations?

By gathering data directly from households and committee members through various methods, such as observations, interviews, surveys, and discussions, the researchers were able to gain valuable insights into the preferences, needs, and experiences of aging populations in condominium housing.

Secondary Data

The secondary data utilized in this research was sourced from various trustworthy channels, including government organizations websites, research journals, articles, newspapers, books, and the internet. This data played a crucial role in providing additional insights and context to complement the primary data collection efforts, thereby enhancing the overall reliability of the research findings. By incorporating secondary data, the study was able to address research questions related to the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing, as well as identify planning suggestions to enhance the quality of life for older residents based on their preferences and needs.

3.6. Study Population

Target population of the study was Bole- Gerji and Kilinto condominium housing residents, specifically head of the household who aged above 50. According to WHO (2015) and UN (2015) report aged 60 and above are considered as older age groups. However, this study purposively included aged 50 and above due to reasons of pilot survey output, lower life expectancy and cultural factors such as being ashamed or unable to tell the exact age. Similarly, in order to select the site included in the research purposive sampling technique was used. It is non-probability sampling method in which researcher relies on personal judgment while choosing members of population to participate in the study.

3.7. Sampling Frame

A simple random sampling procedure was used for selecting the participants in this study. This is because the population willingness is the key and affects the data collection process. Thus, this technique was employed to ensure a fairly equal representation of the variables for the study.

The sample size is determined using Yamane's formula:

$$n = N/(1+N(e)2$$

The variables in this formula are:

- n = the sample size
- N = the population of the study
- e = the margin error in the calculation (0.05)

This formula was used because the number of populations is known in this case the population represents to the household numbers. According to the report by French and Hegab (2011), Bole Gerji Condominium 1 has 750 housing units, while Bole-Gerji Condominium 5 has 666 housing units. The information for Bole-Gerji 5 was obtained directly from the committees responsible for these condominium developments. Then at Kilinto site the number of housing blocks are 250 among these 138 blocks have three storey and the rest 112 blocks have five storey accommodating total number of 5844 housing units. Therefore, among the total of 7260 housing unit the sample size became:

$$n = N/(1+N(e)^2$$

$$n = 7260/(1+ 7260(0.05)^2)$$

$$n = 7260/19.15$$

$$\mathbf{n = 379.11}$$

So, sample size was 379 households and the respondent for the questioner was the head of the housing units. Initially, the committee of every block was contacted and consulted about the issue. Then based on the information given by the committee the households that have older residents was identified and the researcher tried to contact them. They were

communicated through approaching each respondent as they may feel comfortable, by approaching them through their close person who understood the study objectives clearly, via building trust in highlighting how it can positively impact their experiences and by combining the interview and questioner technique.

Since the selected sites for the study is limited to three in number the ratio of the sample head of household that was taken in each site was in proportion to the respective site household. Thus, the proportion for each site is represented in Table 3.3.

Table 3.3: Sampled household per sites

Sites	*No. HH*	*No. sampled HH*
S1	750	750*379/7260 = 39
S2	666	666*379/7260 = 35
S3	5844	5844*379/7260 = 305
Total	**7260**	**379**

(Source: researcher, 2024)

3.8. Instruments/Tools

For this study, the qualitative approaches include interview of housing block committees and observation methods. So, there is some electronic tools like voice recording machines for the interviews and camera for the observation in order to capture images. The interview focused on understanding the general site character and identifying indicators that had impact on the elders. There was also a questioner prepared for collecting the specific data from the target groups. The data acquired includes socio-demographic data, housing characteristics, their level of satisfaction on various features and their recommendation of place preference.

The instruments used for this research is summarized in Table 3.4.

Table 3.4: Instruments/tools

No.	*Instruments/ tools*	*Function*
1	Camera (mobile)	To capture image and record audio
2	Google earth pro	To get baseline map
3	SPSS version 25	To process and analyze statistical data from survey

4	MS-Excel 2016	For statistical data management
6	Adobe illustrator 2021	For graphical illustration and diagrams
7	MS-Word 2016	For document preparation

(Source: researcher, 2024)

3.9. Data Process and Presentation Technique

The research used a mixed-methods approach, integrating both quantitative and qualitative data collection and analysis techniques. The quantitative approach of the study involved surveying an elder sample of condominium residents to assess their socio-demographic data, housing characteristics, their level of satisfaction on various features and their recommendation of place preference. The 5-point Likert scale was used in order to measure perceptions of the residents. Statistical analysis, was used to identify the key factors that influence aged resident satisfaction. Correlation analysis was performed to understand the relationship between age and various factors such as socio-demographic attributes, location proximity factors, design features and facility provided without considering causation effect. Additionally, the relationship of overall satisfaction (quality of life) and various factors such as socio-demographic attributes, location proximity factors, design features and facility provided was analyzed using Spearman's rho correlation analysis. The spearman's rho method was chosen due to uneven measurement of variables. Next, the regression analysis was conducted to identify the factors that affect the overall satisfaction while considering cause and effect. The dependent variable was overall satisfaction and independent variables included several factors categorized in to location proximity factors, design features and facility provided.

The following types of diagrams was used to present data for this research.

- **Maps and Diagrams**: was used to show the location of a site and illustrates the ideas in summarized form.
- **Table**: in order to condense raw data and to demonstrate it in compressed form
- **Charts**: Bar charts was used to present data gathered using questionnaires and interviews.
- **Graph:** was used to represent the distribution of the data

The summarized methodology for this research presented in Table 3.5.

Table 3.5: Summarized methodology

Objectives	***Research questions***	***Data type***	***Data source***	***Data collection***	***Data analysis***
· *To examine the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing.*	· What is the impact of socio-demographic attributes and housing quality indicators on the quality of life of aging populations in Bole-Gerji and Kilinto condominium housing?	Primary and secondary data	Committees of condominiums, Residents,	In depth field survey, Observation	Statistical analysis, Descriptive analysis
· *To identify the key physical urban features that are most important for the quality of life of aging populations in condominium housing.*	· What are the key physical urban features that are most important for enhancing the quality of life of aging populations in condominium housing?	Primary data	Residents	In depth field survey	Statistical analysis, Descriptive analysis
· *To investigate the effectiveness of current Bole-Gerji and Kilinto condominium housing developments in meeting the needs of aging populations.*	· How effective are current Bole-Gerji and Kilinto condominium housing developments in meeting the needs of aging populations?	Primary data	Residents	In depth field survey	Statistical analysis, Descriptive analysis
· *To suggest planning guideline that would encourage healthy aging in condominium housing based on residents' preference.*	· What planning guidelines can be suggested to encourage healthy aging in condominium housing based on residents' preferences?	Primary and secondary	Review documents, online sources, guidelines, standards	Grounded theory & referring design standards & guidelines	Descriptive analysis

(Source: researcher, 2024)

3.10. Ethical Considerations and Interpretation

In order to ensure the integrity of the research participants were informed on the nature and objectives of the study. Their willingness to take part in the research were considered. The researcher ensured that the identities and response of the respondents are kept confidential. The research was conducted in a way that it does not imply any harm.

CHAPTER FOUR: RESULT AND DISCUSSION

4.1. Introduction

This chapter presents the result of collected data which is analyzed in a way of addressing the objectives of the research. Initially, 19 respondents, who are representatives of the committees, were participated on the survey to identify the major indicator of condominium housing quality that affect the quality of life of aging population. A total of 338 respondents that includes 56 samples in Bole-Gerji condominium and 282 samples in Kilinto condominium site, were participated in the survey for detail analysis. And the remaining 22 samples were not participated due to various reasons.

4.2. Socio-Demographic Characteristics of Sample Respondents

4.2.1. Gender

Gender was identified to understand how gender influences the experiences and needs of older adults in condominium housing. The percentage of gender that participated on the survey process across the two sites are presented in Figure 4.1. In BGC, 30.40% of the respondent are females, and 69.60% are males. In KC, 44.30% of the sample population are females, and 55.70% are males. The chart presents that the percentage of females in KC is higher than in BGC, while the percentage of males in KC is lower than in BGC. This suggests that there is a difference in gender distribution between the two areas, with a higher proportion of females in KC and a higher proportion of males in BGC.

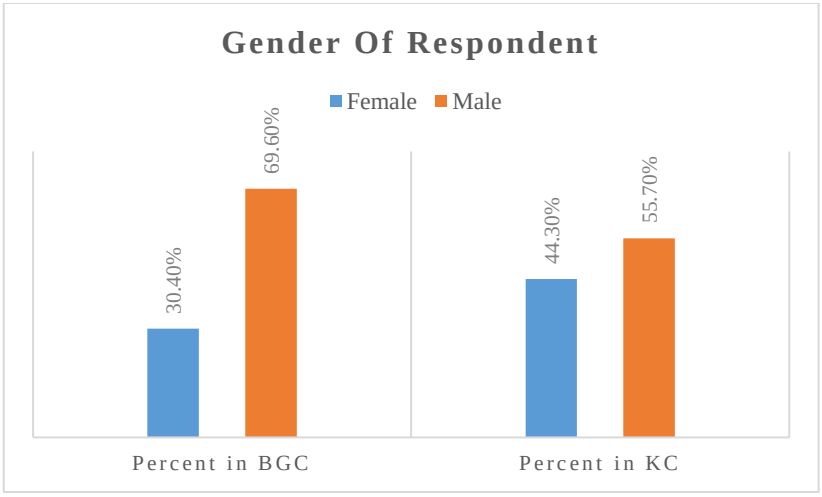

Figure 4.1: Gender of respondent (Source: survey data, 2024)

4.2.2. Age

The survey categorizes individuals into different age groups as shown in Figure 4.2, ranging from 50-54 years to over 85 years. For the age group of 50-54 years, 19.60% of the sample population in Bole-Gerji Condominium (BGC) falls within this category, while only 5.30% of the sample population in Kilinto Condominium (KC) is in this age group. The age group of 55-59 years has a similar trend, with 28.60% of the sample population in BGC and 6.40% in KC. For the age group of 60-64 years, the distribution is more balanced, with 39.30% of the sample population in BGC and 20.20% in KC. However, for the age group of 65-69 years, there is a significant difference, with only 7.10% of the sample population in BGC and 43.60% in KC. Similarly, for the age group of 70-74 years, 5.40% of the population in BGC and 21.60% in KC fall within this category. The age group of 75-84 years has a very small representation, with 2.50% in KC. The age group of over 85 years has an even smaller representation, with only 0.40% in KC.

In summary, the age distribution in BGC is more evenly spread across the age groups compared to KC, where there is a higher concentration of individuals in the older age groups of 65-69 years.

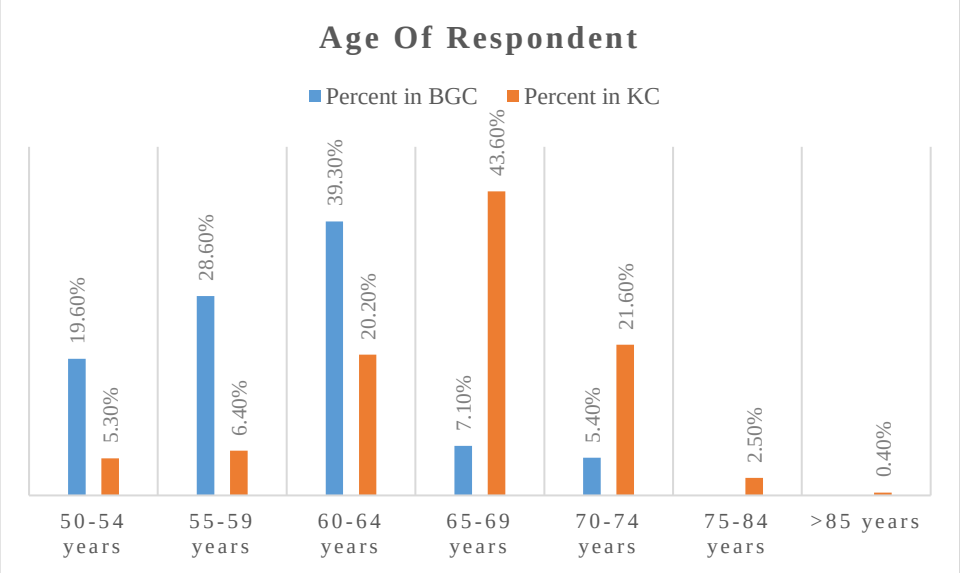

Figure 4.2: Age of respondent (Source: survey data, 2024)

4.2.3. Employment

Different employment status within the elderly population might result in different life experiences and expectations from housing. For instance, those who are employed might have different expectations and experiences compared to those who have been retired. The employment status distribution in two sites, Bole-Gerji Condominium (BGC) and Kilinto Condominium (KC) represented by Figure 4.3. The most significant difference between the two regions is the proportion of individuals employed in private institutions, with 23.20% of BGC's sample population and 34.80% of KC's sample population falling into this category. BGC has a higher percentage of individuals who are business owners or self-employed (51.80%) compared to KC (30.10%). Similarly, BGC has a higher percentage of individuals employed in government institutions (8.90%) compared to KC (6.00%). The proportion of retired individuals is relatively similar in both areas, with KC having a slightly higher percentage (21.30%) compared to BGC (14.30%). Lastly, KC has a significantly higher percentage of unemployed individuals (7.80%) compared to BGC (1.80%).

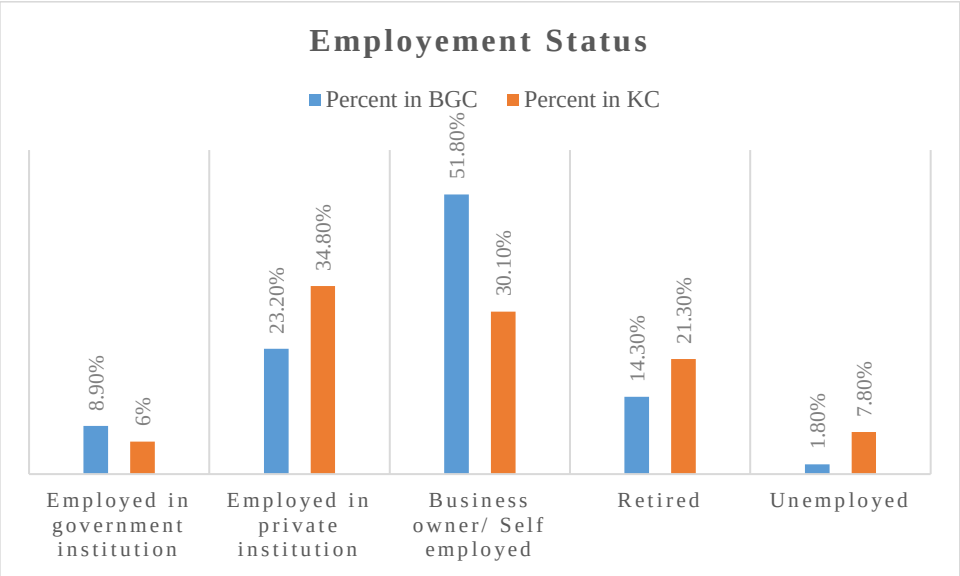

Figure 4.3: Employment Status (Source: survey data, 2024)

4.2.4. Income Level

Economic resources such as income level often change with age, affecting housing affordability and financial security. The income earned by individuals ranges from less than 1500 birr to greater than 9000 Birr. In BGC, none of the sample population has an income of less than 1500 birr, while in KC, 21.30% of the sample population falls within this income

range. For the income range of 1500-3000 birr, only 1.80% of the sample population in BGC and 29.80% in KC have an income within this range. The income range of 3000-5000 birr has a higher percentage of the population in KC (30.90%) compared to BGC (8.90%). The income range of 5000-7000 birr has a similar pattern, with 5.40% of the sample population in BGC and 16% in KC having an income within this range. The income range of 7000-9000 birr has a higher percentage of the population in BGC (17.90%) compared to KC (2.10%). Lastly, the income range of greater than 9000 birr has a significantly higher percentage of the population in BGC (66.10%) compared to KC, where no one in sample respondent reported the data to earn this amount income. Generally, Figure 4.4 shows that the target population in BGC earn higher income compared to KC.

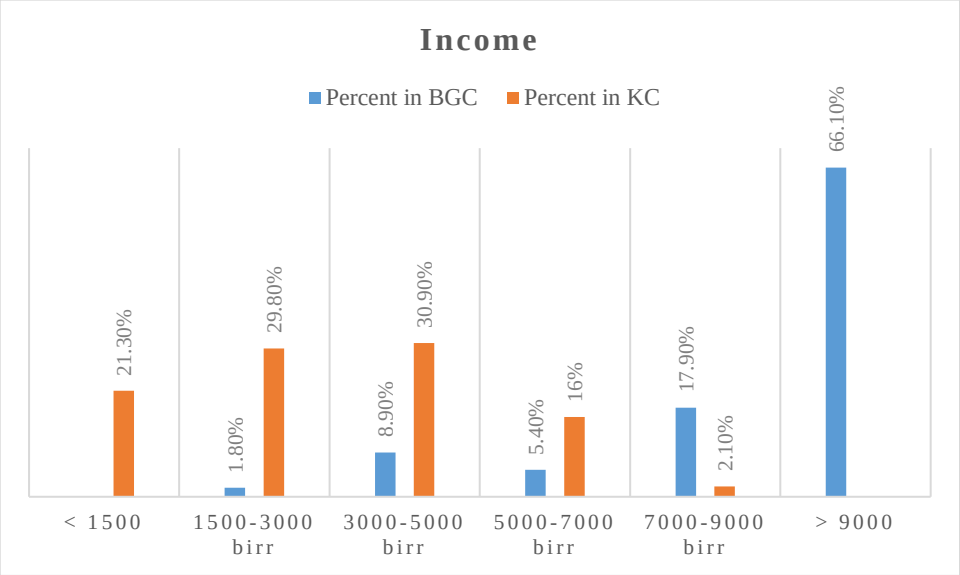

Figure 4.4: Income level of respondent (Source: survey data, 2024)

4.2.5. Health Condition

Health condition report highlight how housing developments accommodate or fail to accommodate these issues. Accordingly, Figure 4.5 presents data on the prevalence of various health conditions among respondents in two areas: BGC and KC. Both areas, BGC and KC, have a similar percentage of respondents reporting physical disabilities (3.57% and 3.90%, respectively), hearing problems (1.79% and 1.77%, respectively) and heart disease (1.79% and 1.42%, respectively). Sight problems are reported by respondents only in the KC area, with 4.26% prevalence. Diabetes is prevalent in both areas, with slightly higher prevalence reported in KC. High blood pressure appears to be more dominant among respondents in BGC compared to KC. Breathing difficulties are reported more frequently

among respondents in KC with 25.53% compared to BGC having 14.29%. Blackouts are reported by a similar percentage of respondents in both areas, with slightly higher prevalence in BGC. Stress is reported by a small percentage of respondents in both areas, with slightly higher prevalence in BGC. The category of combined/other health conditions is reported by a higher percentage of respondents in BGC with 12.50% compared to KC of 7.80 %.

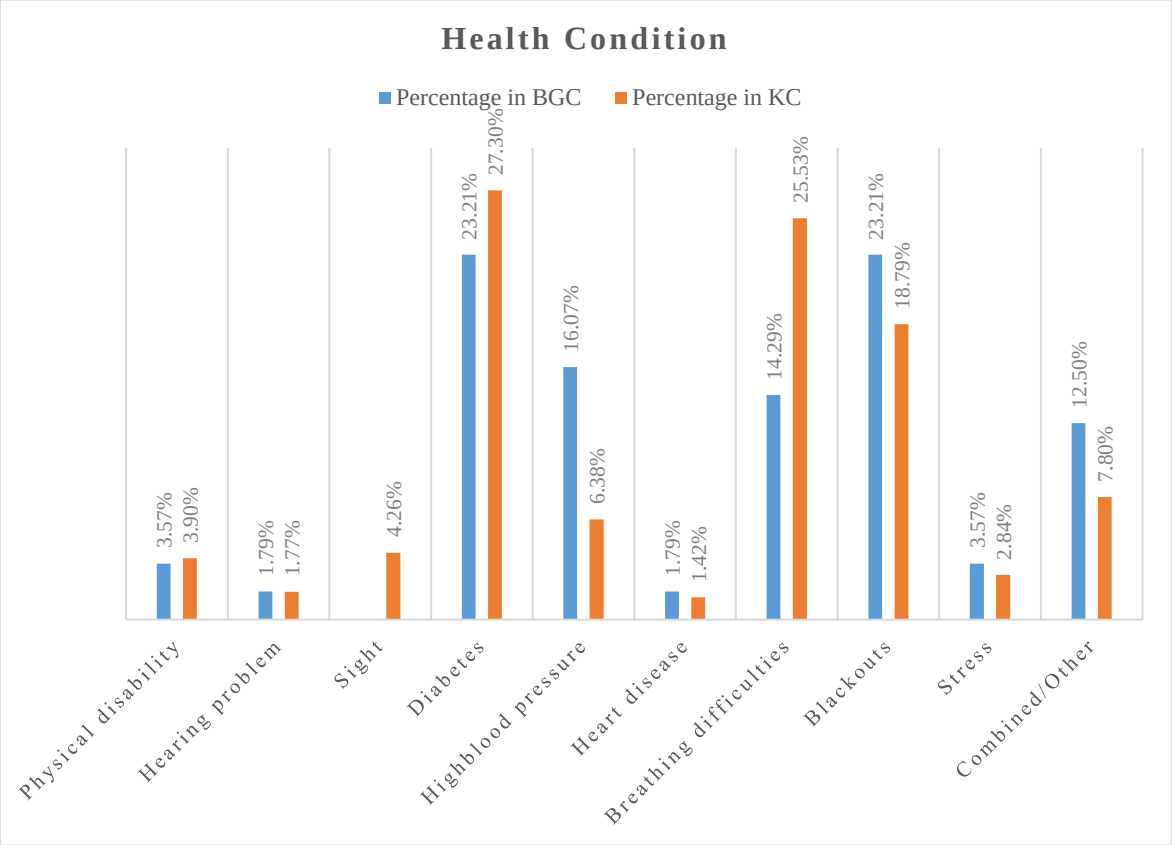

Figure 4.5: Health condition of the respondent (Source: survey data, 2024)

The percentage comparison of respondents in BGC and KC who have various health conditions related to the restriction of activities illustrated by Figure 4.6. These restriction shows the severity of the health condition. The activities include self-care, mobility, communication, and other. In BGC, 3.57% of respondents have a restriction of activities related to self-care, while in KC, 3.19% of respondents have this restriction. For mobility, 26.79% of respondents in BGC and 27.30% of respondents in KC have this restriction. For communication, 1.79% of respondents in BGC and 1.77% of respondents in KC have this restriction. For other health conditions related to the restriction of activities, no respondents in BGC reported this restriction, while 5.67% of respondents in KC have this restriction. Both areas have a similar percentage of respondents reporting restriction in self-care,

mobility and communication activities. However, restriction in activities classified as "Other" was reported only in the KC area, with 5.67% rate.

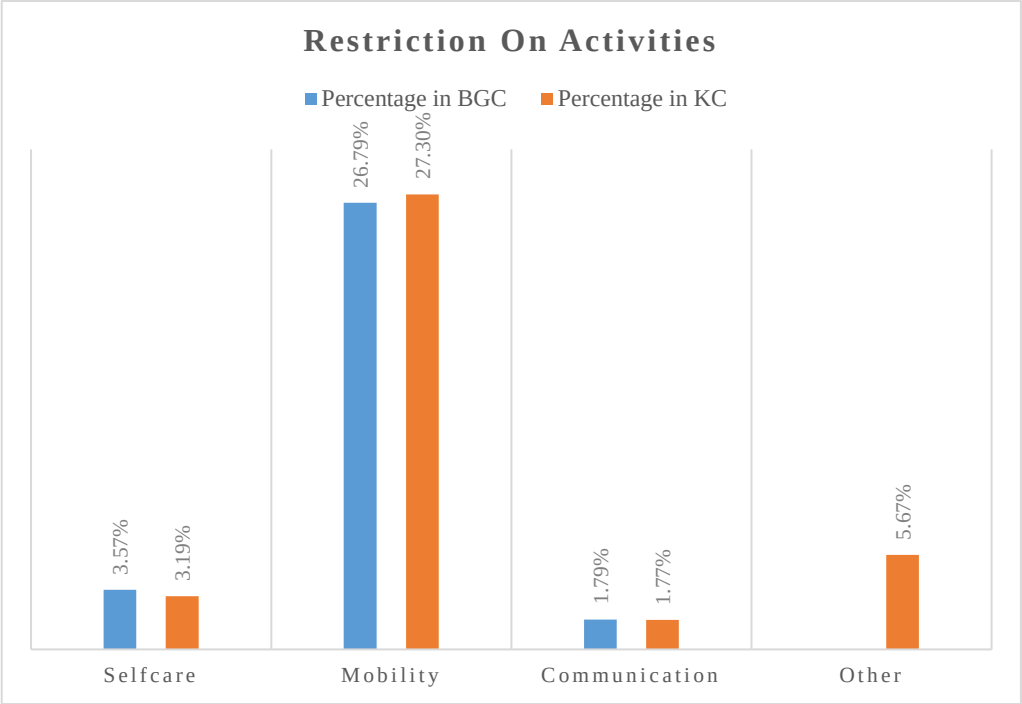

Figure 4.6: Restriction on activities due to severe health condition

(Source: survey data, 2024)

4.3. Housing Characteristics

4.3.1. Ownership

According to Figure 4.7 the ownership status is compared in two study sites, BGC and KC. In BGC, 33.90% of the population owns their residence, while in KC, a significantly higher percentage of 73% own their residence. Regarding rented properties, 58.90% of the sample population in BGC resides in rented accommodations, whereas in KC, only 2.80% of the sample population rents their residence. In the category of "Other" which includes various forms of housing arrangements like living with their children and living in relatives house, 7.10% of the sample population in BGC falls into this category, while in KC, a higher percentage of 24.10% is classified under Other-category. This data indicates a considerable difference in homeownership rates between BGC and KC, with KC having a significantly higher percentage of homeowners compared to BGC.

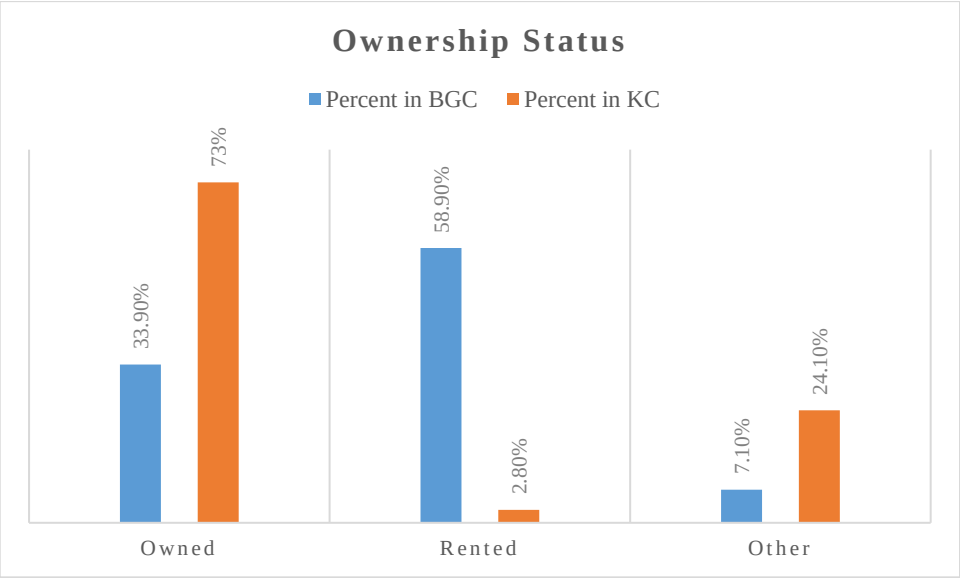

Figure 4.7: Ownership status (Source: survey data, 2024)

4.3.2. Length of Occupancy

The BGC and KC study area occupancy duration comparison is illustrated in Figure 4.8. According to the data shown, in KC, 2.80% of the sample population has an occupancy duration of less than 2 years. For 2-4 years occupancy, 1.80% of sample population in BGC and 25.20% of the sample population in KC falls within this category. The majority of residents in both regions have lived in their current residence for 5-9 years, with a higher percentage in KC (72.00%) compared to BGC (46.40%). A significant proportion of residents in BGC have lived in their current residence for 10-14 years (21.40%), while no data is available for KC. Additionally, 30.40% of residents in BGC have lived in their current residence for over 15 years. This data indicates a notable contrast in the occupancy duration between BGC and KC, especially in the 10-14 years and above 15 years category, where BGC has a significantly higher percentage of long-term residents.

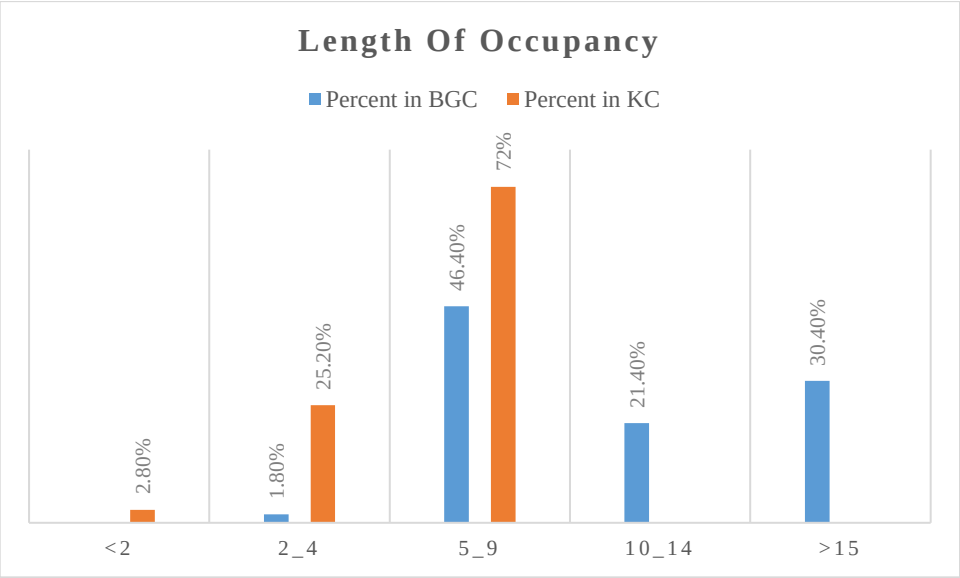

Figure 4.8: Length of occupancy (Source: survey data, 2024)

4.3.3. Rental Property Value

The Figure 4.9 illustrates comparison of the rental values for different types of residential units in two locations: BGC and KC. The rental values are categorized based on the type of unit, including studios, 1-bedroom, 2-bedroom, and 3-bedroom housing unit. As summary of the interview data from the committee representative provides, there are clear comparison of the rental values between BGC and KC for different types of residential units, showing a significant difference in rental prices between the two locations with rental range of 17,000-45,000 Birr in BGC and 7,000 – 18,000 Birr in KC. This analysis serves as a proof for older residents prefer renting their unit because of their high price.

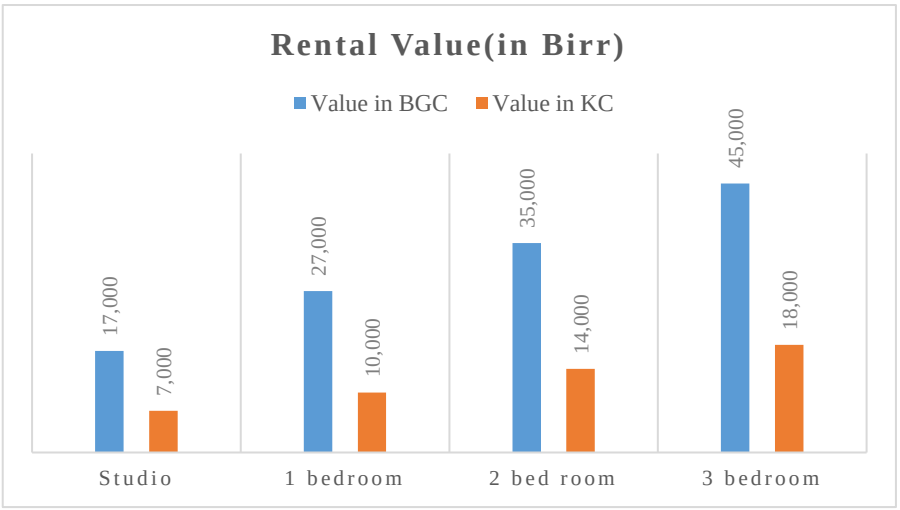

Figure 4.9: Rental value in birr (Source: survey data, 2024)

4.4. Perception of Sample Respondents on Various Factors

4.4.1. Perception on Undesirable Area

Different individuals within the aging population might have different life experiences and expectations from housing. Based on this fact Figure 4.10 presents the percentages of individuals in BGC and KC who identified certain areas as undesirable. The most common undesirable area in both locations is construction quality, with 55.40% of individuals in BGC and 44.30% in KC identifying it as an issue. Unaffordability is the second most common undesirable area in both locations, with 25% of individuals in BGC and 20.60% in KC identifying it as an issue. Social issues are the third most common undesirable area, with 8.90% and 16.70% of individuals in BGC and KC respectively, identifying it as an issue. Design is the fourth most common undesirable area in BGC, with 7.10% of individuals identifying it as an issue, while 6% in KC. Infrastructure is the least common undesirable area in both locations, with 3.60% of individuals in BGC and 12.40% in KC identifying it as an issue.

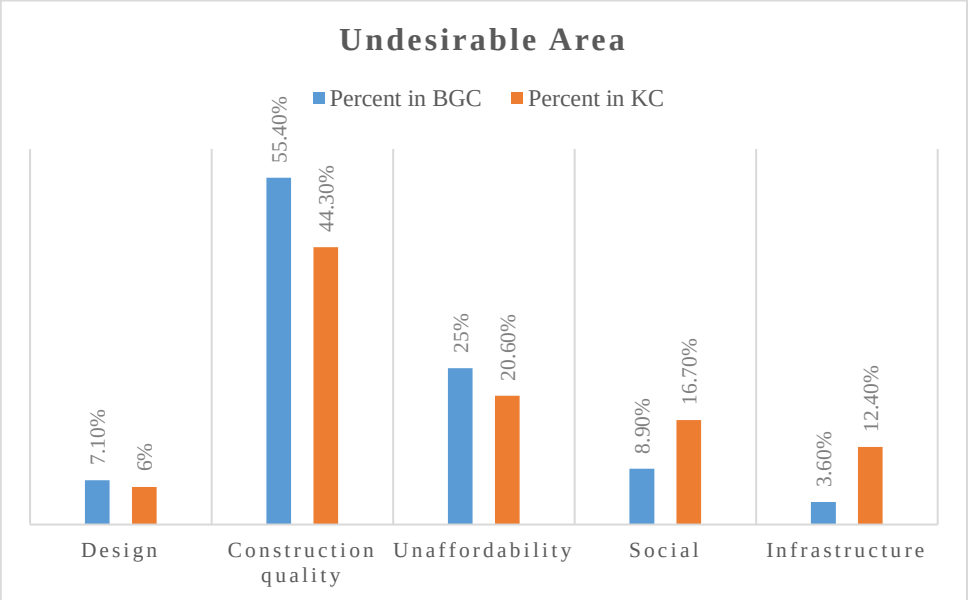

Figure 4.10: Undesirable Area (Source: survey data, 2024)

4.4.2. Perception on Location

The satisfaction levels of individuals in two locations, BGC and KC, regarding various proximity factors is represented by Table 4.1.

For the factor of proximity to the town center: In BGC, 44.7% of the individuals are Completely Satisfied, indicating a high level of satisfaction with the factor. Additionally, 48.2% of the population is Satisfied, which further highlights the positive perception of the factor in BGC. Only 7.1% of the sample respondents have a Neutral perception, indicating that the majority of individuals in BGC have a positive view of the factor. In contrast, the scenario in KC is significantly different. A 71.6% of the sample population is Unsatisfied with the factor, indicating a high level of dissatisfaction. The remaining 28.4% of the population is Completely Unsatisfied, which further emphasizes the negative perception of the factor in KC. The data indicates the majority of individuals in BGC are satisfied or completely satisfied, the majority of individuals in KC are unsatisfied or completely unsatisfied.

For the factor proximity to the workplace: In BGC, 67.9% of individuals are completely satisfied with their living conditions, while 32.1% are satisfied. This means that a total of 100% of individuals in BGC are either completely satisfied or satisfied with their living conditions in terms of work place proximity. On the other hand, in KC, only 2.5% of individuals are completely satisfied with their living conditions, while 31.9% are satisfied. Furthermore, in KC, 58.5% of individuals are unsatisfied with their living conditions, while 7.1% are completely unsatisfied. This means that a total of 65.6% of individuals in KC are either unsatisfied or completely unsatisfied with their living conditions. This data shows, the satisfaction levels in BGC are significantly higher than in KC, with a much larger percentage of individuals in KC expressing dissatisfaction with their living conditions in work place proximity factor.

For the factor proximity to religious places: In BGC, 26.8% of individuals are Completely Satisfied, and 44.7% are Satisfied, making a total of 71.5% of the population expressing satisfaction. Similarly, 31.9% of individuals in KC are Completely Satisfied, and 49.3% are Satisfied, totaling 81.2% of the population expressing satisfaction. This indicates that a percentage of individuals in both sites are satisfied with religious place proximity.

For the factor proximity to religious place: In BGC, 16.1% of individuals are Completely Satisfied with the proximity to recreational areas, while 64.3% are Satisfied, and 19.6% have a Neutral perception. This means that a total of 80.0% of individuals in BGC are satisfied with the proximity to recreational areas. On the other hand, in KC, only 9.9% of individuals

are Completely Satisfied with the proximity to recreational areas, while 35.1% are Satisfied, and a significant 55% have a Neutral perception. This means that a total of 45.0% of individuals in KC are satisfied with the proximity to recreational areas. This suggests that the satisfaction level with proximity to recreational areas is higher in BGC (80.0%) compared to KC (45.0%).

For the factor proximity to public transport routes: In BGC, 76.8% of individuals are Completely Satisfied with the proximity to public transport routes, while 23.2% are Satisfied. This indicates that a high percentage of individuals in BGC are satisfied with the proximity to public transport routes. In contrast, in KC, only 4.3% of individuals are Completely Satisfied with the proximity to public transport routes, while 57.5% are Satisfied. Additionally, 38.3% of individuals have a Neutral perception towards this factor showing some concerns regarding the proximity to public transport routes. The data suggests that individuals in BGC are more satisfied with the proximity to public transport routes compared to those in KC.

Table 4.1: Satisfaction level of respondents in location proximity factors

Location	*Completely Satisfied*		*Satisfied*		*Neutral*		*Unsatisfied*		*Completely Unsatisfied*	
	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC
Proximity to town center	44.7	-	48.2	-	7.1	-	-	71.6	-	28.4
Proximity to work place	67.9	-	32.1	2.5	-	31.9	-	58.5	-	7.1
Proximity to religious place	26.8	31.9	44.7	49.3	28.6	18.8	-	-	-	-
Proximity to recreational area	16.1	-	64.3	9.9	19.6	35.1	-	55	-	-
Proximity to public transport routes	76.8	4.3	23.2	57.5	-	38.3	-	-	-	-

(Source: survey data, 2024)

4.4.3. Perception on Housing Design Features

The satisfaction levels of individuals regarding design features listed in Table 4.2 varies along the two sites.

For BGC site, 83.9% of individuals are satisfied with the entrance design feature, while 16.1% have a neutral perception. This indicates that a majority of individuals in BGC are satisfied with the entrance design feature. In contrast, in KC, 53.6% of individuals have a

neutral perception, while 19.5% are unsatisfied and 27% are completely unsatisfied. This suggests that a significant portion of individuals in KC are not satisfied with the entrance design feature, with a substantial number being completely unsatisfied. The survey suggests that individuals in BGC are more satisfied with the entrance design feature compared to those in KC.

Among BGC sample population, 35.7% of individuals are satisfied with the landscape design feature, while 55.4% have a neutral perception, and 8.9% are unsatisfied. This indicates that a majority of individuals in BGC have a positive or neutral perception of the landscape design feature. In contrast, in KC, only 5% of individuals are satisfied with the landscape design feature, while 88% have a neutral perception, and 7.1% are unsatisfied. This suggests that a majority of individuals in KC have a neutral or negative perception of the landscape design feature, with only a small percentage being satisfied. The survey suggests that individuals in BGC have a more positive perception of the landscape design feature compared to those in KC.

In the case of BGC, 19.6% of individuals have a neutral perception of the vertical circulation feature, 6.7% are unsatisfied, and a significant 50% are completely unsatisfied. This indicates that a large proportion of individuals in BGC are dissatisfied with the vertical circulation aspect. On the other hand, in KC, a substantial 79.1% of individuals have a neutral perception of the vertical circulation feature, 30.4% are unsatisfied, and 14.2% are completely unsatisfied. This suggests that a majority of individuals in KC have a neutral or negative perception of the vertical circulation feature. The survey highlights a notable difference in satisfaction levels between BGC and KC regarding the vertical circulation feature, with a higher level of dissatisfaction observed in BGC compared to KC. Some reason for this includes due to the nature of the stairs provided and their location.

Among older peoples in BGC, 25% of individuals are satisfied with the corridors, while 8.9% are neutral, 33.9% are unsatisfied, and 32.1% are completely unsatisfied. This indicates that a significant proportion of individuals in BGC are unsatisfied with the corridor design feature. In contrast, in KC, 75.5% of individuals are unsatisfied towards the corridor design feature, and 1.1% are completely unsatisfied. This suggests that a majority of individuals in KC have a negative perception of the corridor design feature, with a slightly higher

percentage compared to KC. In summary, the corridor design feature appears to be unsatisfying in both cases.

In BGC, 69.6% of individuals are completely satisfied with the room size, and 12.5% are satisfied, indicating a high level of satisfaction with this feature. Additionally, 17.9% of individuals have a neutral perception, which suggests that they are neither satisfied nor dissatisfied with the room size. In contrast, in KC, only 7.5% of individuals are satisfied with the room size, and no one is completely satisfied. Instead, 22.7% have a neutral perception, 61.3% are unsatisfied, and 8.5% are completely unsatisfied. This indicates a much lower level of satisfaction with the room size feature in KC compared to BGC. Based on this survey, it suggests that room size is a more significant issue for individuals in KC, with a much higher percentage expressing dissatisfaction compared to BGC.

For BGC site, only 7.14% of individuals are satisfied with the room arrangement, while 10.7% are neutral, and a significant majority of 82.1% are unsatisfied. This suggests that the room arrangement feature in BGC is a significant source of dissatisfaction for a majority of individuals. In contrast, in KC, a higher percentage of individuals are satisfied with the room arrangement, at 10%, while a larger proportion is neutral, at 71.6%. However, a significant minority of 18.4% are still unsatisfied with the room arrangement feature. Accordingly, the room arrangement feature appears to be a more significant source of dissatisfaction in BGC compared to KC, with a much higher percentage of individuals expressing dissatisfaction in BGC.

In BGC, 10.7% of individuals are satisfied with the bathroom, while 41.1% are neutral and 48.2% are unsatisfied. This indicates that a majority of individuals in BGC are either neutral or unsatisfied with the bathroom feature. In contrast, in KC, no one is completely satisfied with the bathroom, while 30.5% are neutral, 58.9% are unsatisfied, and 10.6% are completely unsatisfied. This suggests that a majority of individuals in KC are either unsatisfied or completely unsatisfied with the bathroom feature. Consequently, the bathroom feature appears to be a source of dissatisfaction for a majority of individuals in both BGC and KC, with a higher percentage of individuals in KC expressing dissatisfaction compared to BGC.

In the case of BGC site, 14.3% of individuals have a neutral perception of the communal areas, while 67% are unsatisfied and 85.7% are completely unsatisfied. This indicates that a

majority of individuals in BGC have a negative perception of the communal areas feature. In KC, 11% of individuals have a neutral perception of the communal areas, while 67% are unsatisfied and 22% are completely unsatisfied. This suggests that the communal areas feature is also a source of dissatisfaction for a majority of individuals in KC, but to a lesser extent than in BGC.

According to BGC sample respondent, 26.8% of individuals are satisfied with the green areas, while 53.6% are neutral, and 19.6% are unsatisfied. This indicates that a significant portion of individuals in BGC have a neutral perception of the green areas feature. In contrast, in KC, a slightly higher percentage of individuals, 32.6%, are satisfied with the green areas, while 41.8% are neutral, and 25.5% are unsatisfied. This suggests that individuals in KC have a more positive perception of the green areas feature compared to those in BGC. Therefore, the analysis indicates that individuals in KC have a slightly higher level of satisfaction with the green areas feature compared to those in BGC, where a larger proportion have a neutral perception.

Table 4.2: Perception of respondent toward design features

Design Features	*Completely Satisfied*		*Satisfied*		*Neutral*		*Unsatisfied*		*Completely Unsatisfied*	
	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC
Entrance	-	-	83.9	-	16.1	53.6	-	19.5	-	27
Landscape	-	-	35.7	5	55.4	88	8.9	7.1	-	-
Vertical circulation	-	-	-	-	19.6	6.7	50	79.1	30.4	14.2
Corridors	-	-	25	-	8.9	23.4	33.9	75.5	32.1	1.1
Room size	69.6	-	12.5	7.5	17.9	22.7	-	61.3	-	8.5
Room arrangement	7.14	-	10.7	10	82.1	71.6	-	18.4	-	-
Bathroom	-	-	10.7	-	41.1	30.5	48.2	58.9	-	10.6
Communal areas	-	-	-	11	14.3	67	85.7	22	-	-
Green areas	-	-	26.8	32.6	53.6	41.8	19.6	25.5	-	-

(Source: survey data, 2024)

4.4.4. Perception on Safety in the Housing Environment

The safety satisfaction levels between two locations, BGC and KC, in relation to two categories of safety from crime and safety from injury summarized by Table 4.3.

According to the table, the level of satisfaction in BGC, 25% of individuals are completely satisfied with safety from crime, while 48.2% are satisfied, and 26.8% have a neutral perception. This indicates that a majority of individuals in BGC are either satisfied or neutral about safety from crime. In contrast, in KC, a higher percentage of individuals, 57.8%, are Satisfied with safety from crime, while 29.4% are neutral, and 12.8% are unsatisfied. This suggests that individuals in KC generally have a more positive perception of safety from crime compared to those in BGC.

In BGC, 16.1% of individuals are satisfied with safety from injury, while 23.2% are neutral and 60.7% are unsatisfied. Similarly, in KC, only 7.5% of individuals are neutral about safety from injury, while 78.4% are unsatisfied, and 14.2% are completely unsatisfied. This suggests that a significant proportion of individuals in both sites are dissatisfied with safety from injury.

Table 4.3: Perception of sample respondent toward safety

Safety	*Completely Satisfied*		*Satisfied*		*Neutral*		*Unsatisfied*		*Completely Unsatisfied*	
	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC
From Crime	25	-	48.2	57.8	26.8	29.4	-	12.8	-	-
From Injury	-	-	16.1	-	23.2	7.5	60.7	78.4	-	14.2

(Source: survey data, 2024)

4.4.5. Perception on Sufficiency of Facilities Provided

As stated in Table 4.4 information about the satisfaction levels of individuals in BGC and KC with various facilities are provided.

In BGC, a majority of individuals, 87.5%, are completely satisfied with transportation routes, while 10.7% are satisfied, and only 1.8% are neutral. This indicates that a vast majority of

individuals in BGC are satisfied with transportation routes. On the other hand, in KC, a smaller percentage of individuals, 67.4%, are satisfied with transportation routes, while 20.9% are neutral, and 11.7% are unsatisfied. This suggests that a significant proportion of individuals in KC are not completely satisfied with transportation routes. The analysis suggests that transportation routes are perceived more positively in BGC, with a higher percentage of individuals being completely satisfied, compared to KC, where a significant proportion of individuals are only satisfied or neutral.

For BGC, 8.9% of individuals are completely satisfied with electricity service, while 85.7% are satisfied, and 5.4% are neutral. This indicates that a majority of individuals in BGC are satisfied with electricity service. In contrast, in KC, only 7.8% of individuals are satisfied with electricity service, while 4.6% are neutral, and a significant proportion, 87.6%, are unsatisfied. This suggests that a majority of individuals in KC are not satisfied with electricity service.

Among respondents in BGC, 48.2% of individuals are satisfied with water service, while 37.5% are neutral, and 14.3% are unsatisfied. This indicates that a majority of individuals in BGC are satisfied or neutral towards water service. In contrast, in KC, a very small proportion of individuals, 3.2%, are neutral towards water service, while a significant proportion, 65.6%, are unsatisfied, and 31.2% are completely unsatisfied. This suggests that a majority of individuals in KC are dissatisfied with water service.

In BGC, only 7.1% of individuals have a neutral perception of sanitary and drainage services, while a significant majority of 66.1% are unsatisfied, and 26.8% are completely unsatisfied. This indicates that a large proportion of individuals in BGC are dissatisfied with the sanitary and drainage services provided. On the other hand, in KC, a very small percentage, 3.9%, are satisfied with sanitary and drainage services, while 27% are neutral, and a substantial majority of 69.2% are unsatisfied. This suggests that a significant proportion of individuals in KC are not satisfied with the sanitary and drainage services available.

A majority of individuals, in BGC, 62.5%, are satisfied with health facilities, while 23.2% are neutral, and 14.3% are unsatisfied. This indicates that a significant proportion of individuals in BGC have a positive perception of the health facilities available. In contrary, in KC, 44.7% of individuals are satisfied with health facilities, 35.8% are neutral, and 19.5% are unsatisfied. This suggests that while a majority of individuals in KC are satisfied with

health facilities, there is a notable percentage who are either neutral or unsatisfied. These values indicates that health facilities are perceived more positively in BGC, with a higher percentage of individuals being satisfied, compared to KC where there is a more balanced distribution between satisfied, neutral, and unsatisfied perceptions.

Table 4.4:Perception of sample respondent toward provided facilities

Facilities	*Completely Satisfied*		*Satisfied*		*Neutral*		*Unsatisfied*		*Completely Unsatisfied*	
	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC
Transportation routes	87.5	-	10.7	67.4	1.8	20.9	-	11.7	-	-
Electricity service	8.9	-	85.7	7.8	5.4	4.6	-	87.6	-	-
Water service	-	-	48.2	-	37.5	3.2	14.3	65.6	-	31.2
Sanitary and Drainage service	-	-	-	3.9	7.1	27	66.1	69.2	26.8	-
Health facilities	-	-	62.5	44.7	23.2	35.8	14.3	19.5	-	-

(Source: survey data, 2024)

4.5. Future Living Status Preference of Sample Respondents

In BGC, 19.60% of individuals plan to live in their current location, while 35.70% plan to move out. Some reason for their decision to move out includes need of more comfortable spaces, rental value escalation, in search of their own home (currently rented residents) and health related issues. Additionally, 28.60% are undecided and 16.10% have not given it any thought. In contrast, in KC, 56.00% of individuals plan to live in their current dwelling, while only 6.40% plan to move out. 16.00% are undecided, and 21.60% have not given it any thought. Therefore, according to Figure 4.11, a higher percentage of individuals in KC plan to live in their current location compared to BGC, while a higher percentage of individuals in BGC plan to move out compared to KC.

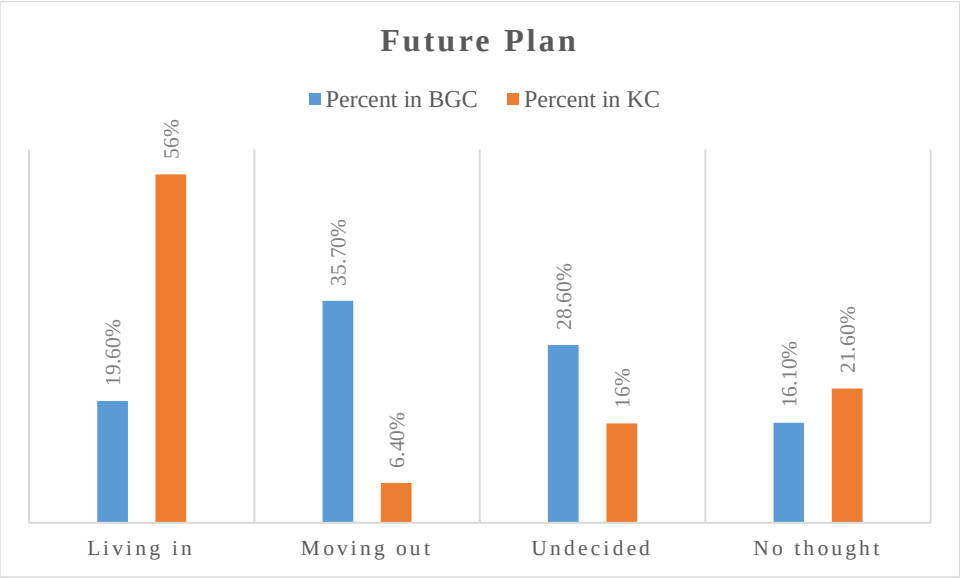

Figure 4.11: Future plan of sample respondent (Source: survey data, 2024)

4.5.1. Place Choice for Activities

The activity engagement of individuals across various settings, as shown in Table 4.5, demonstrates distinct preferences. For sitting activities, in BGC, 41.1% of sample population prefer café/restaurant, and the least preferred location for sitting is religious place accounting 1.8%. The other 26.8% of populations doing so around housing, 19.6% in their neighbors' houses, and 10.7% in green spaces. In KC the most preferable place for sitting is around housing with 31.2% followed by green spaces with 22%. And the least preferred place is neighbors' house representing only 2.5% of the population.

Walking place preference in BGC accounts 48.2% of individuals doing so around housing and 44.6% near green spaces. Similarly, in KC 33.7% of individuals do walk around housing and 32.3% in green spaces. Additionally, respondents also prefer walking to religious places covering 27.3% of the population.

For reading, in BGC, 3.6% of individuals do read in their own homes and 11% in around housing. The most preferable location for reading is green space covering 26.8%. In contrary, in KC, the most preferable location for this activity is in the house representing 45.4% of the sample population followed by green space and around housing accounting a value of 23.4% and 22.7%, respectively.

Exercise area preference in BGC, is green space representing 46.4% of sample population and the second most preferred location is other places far from their neighborhood covering a significant amount of sample population (32.1%). While in KC, 57.1% of individuals doing so around housing and 38.3% in green spaces.

In BGC site, meeting is most common at café/restaurant with 51.8% of individuals and 25% in their own house. However, in KC, meeting is most common in the house accommodating 62.1% of sample population followed by café/restaurant and neighbors' house covering relatively similar amount with 18.4% and 15.3%, respectively.

Praying is most preferred in religious place on both sites with 60.7% in BGC and 75.5% in KC. Additionally, 30.4% of individuals in BGC and 15.2% in KC do pray in their own homes.

Table 4.5: Place choice for activities

Activities	*Place*													
	In the house		Around housing		Neighbor's house		Café/ Restaurant		Green spaces		Religious place		Other	
	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC	BGC	KC
Sitting	-	18.1	26.8	31.2	19.6	2.5	41.1	14.2	10.7	22	1.8	12.1	-	-
Walking	-	2.1	48.2	33.7	-	-	-	4.6	44.6	32.3	7.1	27.3	-	-
Reading	3.6	45.4	11	22.7	-	-	14.3	1.8	26.8	23.4	-	6.7	-	-
Exercise	-	-	21.4	57.1	-	-	-	-	46.4	38.3	-	-	32.1	4.6
Meeting	25	62.1	-	0.7	10.7	15.3	51.8	18.4	7.1	3.6	5.4	-	-	-
Praying	30.4	15.2	8.9	6.4	-	2.8	-	-	-	-	60.7	75.5	-	-

(Source: survey data, 2024)

4.6. Relationship of Socio-Demographic Attributes and Housing Quality Indicators with the Quality of Life

4.6.1. Correlation of Age and Various Factors

The objective of analyzing the relationship of socio-demographic attributes and housing quality indicators with quality of life was carried out through the use of Spearman's rho correlation of age and/satisfaction and various factors. This type of correlation was chosen because the measurement of the variables was not uniform. According to Evans, (1996), the interpretation of correlations for this research is considered very weak if the correlation coefficient is less than 0.20, weak if it is between 0.20 and 0.39, moderate if it lies between 0.40 and 0.59, strong if it is between 0.60 and 0.79 and very strong if greater than 0.80.

I. Age and Occupancy

The information in Table 4.6 indicates the correlation coefficient between age and occupancy in BGC, which is 0.846. The correlation coefficient of 0.846 indicates a very strong positive correlation between age and occupancy. The significance level is 0.000, which indicates that the correlation is statistically significant and indicating a low probability of the observed results occurring by chance alone. Additionally, the table presents the correlation between age and occupancy in KC, with a correlation coefficient of 0.114 and a significance level of 0.057. This indicates a very weak positive correlation between age and occupancy, moreover it is not statistically significant since it is slightly above the threshold value of 0.05. Generally, the survey data of BGC showing very strong positive correlation between age and occupancy suggest that in BGC site older individuals occupy longer period than in the context of KC in which the weak positive correlation between age and occupancy suggests older individuals slightly occupy a property for longer duration. This effect related to being a recent development compared to BGC site.

Table 4.6: Age and Occupancy Correlation

			Age in BGC	Age in KC
Spearman's rho	Occupancy	Correlation Coefficient	.846**	.114
		Sig. (2-tailed)	.000	.057
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed). (Source: computed in SPSS software by the researcher, 2024)

II. Age and Ownership

The relationship between age and ownership in BGC, as depicted in Table 4.7, demonstrates a moderate negative correlation, with -0.574 coefficient and 0.000 significance value indicating that as age increases, ownership decreases, and this correlation is statistically significant. In this case, the older individuals in this site move out from their residence by renting, and use it as extra income earning business. The table also presents the correlation between age and ownership in KC, with a Spearman's rho of 0.122 and a significance level of 0.040. This indicates a very weak positive correlation between age and ownership, implies that individuals who are older are more inclined to own property compared to BGC residents. This is due to several factors one of them is the location and another is lack of option for respondents, since most of them are relocated from city center due to various inner-city development. This correlation is statistically significant, as the significance level is less than 0.05.

Table 4.7: Age and Ownership correlation

			Age in BGC	Age in KC
Spearman's rho	Ownership	Correlation Coefficient	-.574**	.122*
		Sig. (2-tailed)	.000	.040
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

III. Age and Employment

The Spearman's correlation coefficient between age and employment status in BGC illustrated by Table 4.8, with a correlation coefficient of 0.393 and a significance level of 0.003, indicating a weak positive (tend to moderate) correlation between age and employment status. This means that there is a weak (tend to moderate) positive relationship between age and employment status. The correlation coefficient between age and employment in KC as presented in the table is 0.541, indicating a moderate positive correlation. This means that as age increases, employment also tends to increase. In this case the highest rank for the analysis were unemployed and retired, then self-employed or business owner. The significance level of this correlation is 0.000, which is less than the usual threshold of 0.05, indicating that the correlation is statistically significant.

Table 4.8: Age and Employment correlation

			Age in BGC	Age in KC
Spearman's rho	Employment	Correlation Coefficient	.393**	.541**
		Sig. (2-tailed)	.003	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

IV. Age and Income

With a correlation coefficient of -0.691 and a significance level of 0.000, indicating a strong negative correlation between age and income in BGC presented by Table 4.9. This means that older individuals tend to have lower income levels, and this correlation is statistically significant. The correlation coefficient between age and income in KC site is -0.361. This indicates a weak negative correlation between age and income. This suggests that as age increases, income tends to decrease slightly. This indicates that older individuals in the sample tend to have lower incomes.

Table 4.9: Age and Income correlation in BGC

			Age in BGC	Age in Kc
Spearman's rho	Income	Correlation Coefficient	-.691**	-.361**
		Sig. (2-tailed)	.000	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

V. Age and Undesirable Area

The findings presented in Table 4.10 indicates a strong positive correlation between age and undesirable area in BGC, which is 0.615 (p = 0.000). Meaning that older individuals are more likely to live in undesirable areas of low quality housing and unaffordable units. Meanwhile, as table shows the correlation coefficient is 0.284 in KC, indicating a weak positive correlation. This means that as age increases, the likelihood of living in an undesirable area also increases slightly. The significance level is 0.000, which is less than the typical threshold of 0.05, indicating that the correlation is statistically significant. Those undesirable areas are construction quality along with design, unaffordability, social problem and infrastructure defects.

Table 4.10:Age and Undesirable Area correlation in BGC

			Age in BGC	Age in KC
Spearman's rho	Undesirable Area	Correlation Coefficient	.615**	.284**
		Sig. (2-tailed)	.000	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

VI. Age and Location

According to Table 4.11 shows the Spearman's rho correlation coefficients between age and various factors such as Proximity to Town center, Proximity to Work place, Proximity to Religious place, Proximity to Recreational area, and Proximity to Public Transport routes. For BGC, the correlation coefficient between age and proximity to town center is -0.907, which is statistically significant (p=0.000). This means that there is a very strong negative correlation between age and the distance to the town center, indicating that older individuals tend to live closer to the town center. Similarly, there is a strong negative correlation between age and proximity to workplace (-0.717, p=0.000), indicating that older individuals tend to live closer to their workplace. The correlation coefficient between age and proximity to religious place is -0.175, which is not statistically significant (p=0.197). This means that there is no significant relationship between age and the distance to religious places. There is a strong negative correlation between age and proximity to recreational area (-0.665, p=0.000), indicating that older individuals tend to live closer to recreational areas. Finally, there is also a strong negative correlation between age and proximity to public transport routes (-0.636, p=0.000), indicating that older individuals tend to live closer to public transportation routes. Overall, the table suggests that older individuals tend to live closer to various amenities, such as the town center, their workplace, recreational areas, and public transportation routes proving that the housing is located in city center.

In the case of KC, the correlation coefficient between age and proximity to town center is -0.105, which is not statistically significant (p=0.077). This suggests a very weak negative correlation between age and the distance to the town center, and also it is not significant. The correlation coefficient between age and proximity to workplace is 0.330, which is statistically significant (p=0.000). This indicates a moderate positive correlation between age and the distance to the workplace, suggesting that older individuals may live farther from their workplace. The correlation coefficient between age and proximity to religious place is

-0.076, which is not statistically significant (p=0.203). This implies a very weak negative correlation between age and the distance to religious places, beside it is not significant. The correlation coefficient between age and proximity to recreational area is -0.176, which is statistically significant (p=0.003). This shows a very weak negative correlation between age and the distance to recreational areas, indicating that older individuals may not be bothered by the distance to recreational areas. The correlation coefficient between age and proximity to public transport routes is -0.167, which is statistically significant (p=0.005). This suggests a very weak negative correlation between age and the distance to public transportation routes, indicating that older individuals may live closer to public transportation routes. Overall, the correlations indicate that age is moderately correlated with the distance to the workplace with older individuals tending to live farther but closer to the remaining amenities.

When comparing the two sites BGC have strong relationship with the factors unlike KC. This is due to KCs' site location which doesn't depend on age factor rather its' location has impacts on the whole age group.

Table 4.11: Age and Location correlation in BGC and KC

			Age in BGC	Age in KC
Spearman's rho	P to Town center	Correlation Coefficient	-.907**	-.105
		Sig. (2-tailed)	.000	.077
		N	56	282
	P to Work place	Correlation Coefficient	-.717**	.330**
		Sig. (2-tailed)	.000	.000
		N	56	282
	P to Religious place	Correlation Coefficient	-.175	-.076
		Sig. (2-tailed)	.197	.203
		N	56	282
	P to Recreational area	Correlation Coefficient	-.665**	-.176**
		Sig. (2-tailed)	.000	.003
		N	56	282
	P to P Transport routes	Correlation Coefficient	-.636**	-.167**
		Sig. (2-tailed)	.000	.005
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

VII. Age and Design Features

An analysis of Table 4.12 presents the correlation coefficients between age and various factors, such as entrance, landscape, vertical circulation, corridor, room size, room arrangement, bathroom, communal, and green areas.

In BGC site, the correlation coefficient between age and entrance is -0.563, which is statistically significant (p=0.000). This means that there is a moderate negative correlation between age and entrance, indicating that older individuals are slightly more likely intimidated by entrance accessibility ease. The correlation coefficient between age and landscape is -0.228, which is not statistically significant (p=0.090). This means that there is a weak negative correlation between age and landscape, indicating that there is no significant relationship between them. The correlation coefficient between age and vertical circulation is -0.815, which is statistically significant (p=0.000). This means that there is a very strong negative correlation between them, indicating that older individuals are more likely to live in house with less comfortable vertical circulation system. The correlation coefficient between age and corridor is -0.815, which is statistically significant (p=0.000). This means that there is a very strong negative correlation between age and corridor, indicating that older individuals are more likely to live a house with less corridor space. The correlation coefficient between age and room size is -0.667, which is statistically significant (p=0.000). This means that there is a strong negative correlation between age and room size, indicating that older individuals are more likely to live in a house with smaller room sizes. The correlation coefficient between age and room arrangement is -0.550, which is statistically significant (p=0.000). This means that there is a moderate negative correlation between age and room arrangement, indicating that older individuals are more likely to live in a property with a rigid and uncomfortable room arrangement. The correlation coefficient between age and bathroom is -0.630, which is statistically significant (p=0.000). This means that there is a strong negative correlation between age and bathroom, indicating that older individuals are more likely to live in a property with smelly bathrooms that have sanitary installation defects. The correlation coefficient between age and communal is -0.373, which is statistically significant (p=0.005). This means that there is a weak negative correlation between age and communal, indicating that older individual's utilization of communal space is less. At last, the table suggests that there is a statistically significant moderate negative correlation (correlation coefficient of -0.334) between age and green areas. This implies that as the age

increases extent of green areas available tends to minimal, so there will be more demand of green area spaces. In summary, the table shows that there is a very strong negative correlation between age vs vertical circulation and corridor, strong negative correlation between age vs room size and bathroom, moderate negative correlation between age vs entrance and room arrangement, and weak negative correlation between age vs communal and green space. However, the correlation between age and landscape is not statistically significant, indicating that there is no significant relationship between age and landscape.

For KC site, the table describes the correlation coefficient between age and entrance is -0.768, which is statistically significant (p = 0.000). This indicates a strong negative correlation between age and entrance, meaning that older people are less likely to have accessible and comfortable entrance to their housing. The correlation coefficient between age and landscape is -0.056, which is not statistically significant (p = 0.345). This indicates a very weak negative correlation between age and landscape, meaning that there is no significant relationship between age and the presence of a landscape in the housing. The correlation coefficient between age and vertical circulation is -0.522, which is statistically significant (p = 0.000). This indicates a moderate negative correlation between age and vertical circulation, meaning that older people are less likely to have comfortable vertical circulation in their housing. The correlation coefficient between age and corridor is -0.342, which is statistically significant (p = 0.000). This indicates a weak negative correlation between age and corridor, meaning that may be older people are less likely to have a sufficient corridor in and around their housing unit. The correlation coefficient between age and room size is -0.072, which is not statistically significant (p = 0.227). This indicates a very weak negative correlation between age and room size, meaning that there is no significant relationship between age and the size of the rooms in the housing. The correlation coefficient between age and room arrangement is 0.139, which is statistically significant (p = 0.019). This indicates a very weak positive correlation between age and room arrangement, meaning that older people may have an acceptable specific arrangement of rooms in their housing. The correlation coefficient between age and bathroom is 0.046, which is also not statistically significant (p = 0.439). This indicates a very weak positive correlation between age and bathroom, meaning that there is no significant relationship between age and the presence and character of a bathroom in the housing according to surveyed data in KC site. The correlation coefficient between age and communal areas is -0.285, which is statistically significant (p = 0.000). This indicates a weak negative correlation between age and

communal areas, meaning that older people are less likely to use communal areas around their housing. The correlation coefficient between age and green areas is -0.177, which is statistically significant (p = 0.003). This indicates a very weak negative correlation between age and green areas, meaning that older people are less likely to have suitable green areas in their housing. Overall, the Table 4.12 summarizes that age is negatively correlated with entrance, vertical circulation, corridor, communal areas, and green areas, indicating that older people are less likely to have these features in their housing in comfortable and suitable manner. Age is positively correlated with room arrangement, indicating that older people are more likely to have an acceptable arrangement of rooms in their housing. The other factors, such as landscape and room size, are not significantly correlated with age.

Table 4.12:Age and Design features correlation

			Age in BGC	Age in KC
Spearman's rho	Entrance	Correlation Coefficient	-.563**	-.768**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Landscape	Correlation Coefficient	-.228	-.056
		Sig. (2-tailed)	.090	.345
		N	56	282
	Vertical Circulation	Correlation Coefficient	-.815**	-.522**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Corridor	Correlation Coefficient	-.815**	-.342**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Room size	Correlation Coefficient	-.667**	-.072
		Sig. (2-tailed)	.000	.227
		N	56	282
	Room Arrangement	Correlation Coefficient	-.550**	.139*
		Sig. (2-tailed)	.000	.019
		N	56	282
	Bathroom	Correlation Coefficient	-.630**	.046
		Sig. (2-tailed)	.000	.439
		N	56	282
	Communal	Correlation Coefficient	-.373**	-.285**
		Sig. (2-tailed)	.005	.000
		N	56	282

	Green Areas	Correlation Coefficient	-.334*	-.177**
		Sig. (2-tailed)	.012	.003
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

VIII. Age and Safety

As detailed in Table 4.13, there are a difference in correlation coefficients between age, safety for crime, and safety for injury across the two areas. In BGC, the correlation coefficient between age and safety for crime is -0.595, which is statistically significant (p = 0.000). This indicates a moderate negative correlation, meaning that older age is associated with a moderate rate satisfaction from safety related to crimes. The correlation coefficient between age and safety for injury is -0.792, which is statistically significant (p = 0.000). This indicates a strong negative correlation, meaning that older age is associated with a lower rate satisfaction for safety related to injuries. Meanwhile in KC, the correlation coefficient between age and safety for crime is -0.002, which is also not statistically significant (p = 0.972). This means that there is no significant correlation between age and safety-related crimes. The correlation coefficient between Age and safety for injury is -0.401, which is statistically significant (p = 0.000). This means that there is a moderate negative correlation between age and safety-related injuries, indicating that older age is associated with some injuries. In summary, the table shows that age is negatively correlated with safety-related injuries, indicating that older age is associated with more injuries and crimes in BGC site and fewer injuries in KC site. There is no significant correlation between age and safety-related crimes in KC according to the survey data.

Table 4.13:Age and Safety correlation

			Age in BGC	Age in KC
Spearman's rho	Safety F Crime	Correlation Coefficient	-.595**	-.002
		Sig. (2-tailed)	.000	.972
		N	56	282
	Safety F Injury	Correlation Coefficient	-.792**	-.401**
		Sig. (2-tailed)	.000	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software version 25 by the author, 2024)

IX. Age and Facility Provided

The data in Table 4.14 presents the Spearman's rho correlation coefficients between Age and various factors such as transportation routes, electricity service, water service, drainage service, and health facilities. Age and transportation routes relation in BGC has the correlation coefficient of -0.279, which is statistically significant (p = 0.037). This indicates a weak negative correlation between age and transportation routes, suggesting that as age increases, the satisfaction related to availability and quality of transportation routes decreases. The age and electricity service relation in the site resulted the correlation coefficient of 0.215, which is not statistically significant (p = 0.111). This indicates a weak positive correlation between age and electricity service, but the relationship is not significant. The age and water service correlation coefficient is -0.201, which is not statistically significant (p = 0.138). This indicates a weak negative correlation between age and water service, but still the relationship is not significant. Finally, the age and drainage service correlation coefficient is -0.601, which is statistically significant (p = 0.000). This indicates a strong negative correlation between age and drainage service, suggesting that as the older the individuals become the satisfaction related to the drainage service tends to decrease. In age and health facilities relationship the correlation coefficient is -0.304, which is statistically significant (p = 0.023). This indicates a weak negative correlation between age and health facilities, implying that as the age increases, the satisfaction related to availability and service of health facilities tends to decrease slightly.

In this table, the Spearman's rho correlation coefficient between age and transportation routes in KC is -0.086, which is also not statistically significant (p = 0.148). This means that there is no significant relationship between age and transportation routes. Similarly, the correlation coefficient between age and electricity service is -0.018, which is still not statistically significant (p = 0.767). This indicates that there is no significant relationship between age and electricity service. The correlation coefficient between age and water service is -0.085, which is not statistically significant (p = 0.155). This suggests that there is no significant relationship between age and water service. The correlation coefficient between age and drainage service is -0.019, which is not statistically significant (p = 0.755). This implies that there is no significant relationship between age and drainage service. However, the correlation coefficient between age and health facilities is -0.373, which is statistically significant (p = 0.000). This indicates around moderate negative correlation between age and

health facilities, suggesting that older age is associated with less satisfaction of health facilities.

Table 4.14:Age and Facilities Provided correlation

			Age in BGC	Age in KC
Spearman's rho	Transportation Routes	Correlation Coefficient	-.279*	-.086
		Sig. (2-tailed)	.037	.148
		N	56	282
	Electricity Service	Correlation Coefficient	.215	-.018
		Sig. (2-tailed)	.111	.767
		N	56	282
	Water Service	Correlation Coefficient	-.201	-.085
		Sig. (2-tailed)	.138	.155
		N	56	282
	Drainage Service	Correlation Coefficient	-.601**	-.019
		Sig. (2-tailed)	.000	.755
		N	56	282
	Health Facilities	Correlation Coefficient	-.304*	-.373**
		Sig. (2-tailed)	.023	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

4.6.2. Correlation of Overall Satisfaction and Various Factors

I, Overall Satisfaction and Socio-Demographic Profile

The analysis in Table 4.15 reveals that demographic factors have varying correlations with overall satisfaction in BGC and KC. Gender shows a very weak and insignificant correlation in both locations. Age, however, has a strong negative correlation in BGC and moderate negative correlation in KC, indicating that older residents tend to be less satisfied. Occupancy is negatively correlated with satisfaction in BGC, but the relationship is very weak and insignificant in KC. Ownership is positively correlated with satisfaction in BGC, but negatively correlated in KC, although the latter is only marginally significant. Employment status has a weak negative correlation with satisfaction in both locations, suggesting that retired and unemployed residents tend to be slightly less satisfied. Lastly, income has a strong positive correlation with satisfaction in BGC and a weak positive correlation in KC, indicating that higher-income residents tend to be more satisfied.

Table 4.15: Correlation of overall satisfaction with socio-demographic profile

			Overall Satisfaction in BGC	Overall Satisfaction in KC
Spearman's rho	Gender	Correlation Coefficient	.049	-.081
		Sig. (2-tailed)	.721	.173
		N	56	282
	Age	Correlation Coefficient	-.777**	-.493**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Occupancy	Correlation Coefficient	-.712**	-.069
		Sig. (2-tailed)	.000	.251
		N	56	282
	Ownership	Correlation Coefficient	.426**	-.118*
		Sig. (2-tailed)	.001	.048
		N	56	282
	Employment	Correlation Coefficient	-.290*	-.286**
		Sig. (2-tailed)	.030	.000
		N	56	282
	Income	Correlation Coefficient	.613**	.224**
		Sig. (2-tailed)	.000	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

II, Overall Satisfaction and Location

The Table 4.16 presents Spearman's rank correlation coefficients between various proximity factors and overall satisfaction in BGC and KC revealing significant differences. In BGC, proximity to the town center, workplace, recreational areas, and public transport routes exhibit strong to moderate positive correlations with overall satisfaction, while proximity to religious places shows a weak positive correlation. Conversely, in KC, only proximity to the workplace demonstrates a weak negative correlation with overall satisfaction, with other factors displaying very weak positive relationships that are not statistically significant. The correlations emphasize the varying impact of proximity factors on overall satisfaction in the two locations, highlighting the importance of factors like workplace proximity in KC and a more comprehensive range of factors influencing satisfaction in BGC.

Table 4.16: Correlation of overall satisfaction with location proximity factors

			Overall Satisfaction in BGC	Overall Satisfaction in KC
Spearman's rho	P to Town center	Correlation Coefficient	.701**	.002
		Sig. (2-tailed)	.000	.969
		N	56	282
	P to Work place	Correlation Coefficient	.602**	-.126*
		Sig. (2-tailed)	.000	.034
		N	56	282
	P to Religious place	Correlation Coefficient	.180	.001
		Sig. (2-tailed)	.184	.984
		N	56	282
	P to Recreational area	Correlation Coefficient	.546**	.067
		Sig. (2-tailed)	.000	.264
		N	56	282
	P to P Transport routes	Correlation Coefficient	.524**	.056
		Sig. (2-tailed)	.000	.347
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

III, Overall Satisfaction and Design Features

The correlation coefficients between housing design features and overall satisfaction in BGC and KC reveal varying degrees of correlation as

Table 4.17 represents. In BGC, entrance, room arrangement, communal areas, room size, corridor, vertical circulation, and bathroom show moderate to strong positive correlations with overall satisfaction, respectively, with significant relationship. While landscape and green areas have weak positive correlations. Conversely, in KC, entrance and vertical circulation exhibit weak positive correlations with overall satisfaction, while room size, corridor, green areas, communal and room arrangement have very weak negative relationships. Additionally, landscape and bathroom have negligible relationship which is not statistically significant.

Table 4.17: Correlation of overall satisfaction with design features

			Overall Satisfaction in BGC	Overall Satisfaction in KC
Spearman's rho	Entrance	Correlation Coefficient	.396**	.390**
		Sig. (2-tailed)	.003	.000
		N	56	282
	Landscape	Correlation Coefficient	.281*	.092
		Sig. (2-tailed)	.036	.122
		N	56	282
	Vertical Circulation	Correlation Coefficient	.698**	.292**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Corridor	Correlation Coefficient	.640**	.156**
		Sig. (2-tailed)	.000	.008
		N	56	282
	Room size	Correlation Coefficient	.524**	.199**
		Sig. (2-tailed)	.000	.001
		N	56	282
	Room Arrangement	Correlation Coefficient	.436**	-.114
		Sig. (2-tailed)	.001	.057
		N	56	282
	Bathroom	Correlation Coefficient	.707**	-.077
		Sig. (2-tailed)	.000	.195
		N	56	282
	Communal	Correlation Coefficient	.460**	.117*
		Sig. (2-tailed)	.000	.049
		N	56	282
	Green Areas	Correlation Coefficient	.278*	.145*
		Sig. (2-tailed)	.038	.015
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

IV, Overall Satisfaction and Facility Provided

The correlation coefficients between safety factors, service provisions, and overall satisfaction in BGC and KC represented by Table 4.18. In BGC, safety from injury show

stronger positive correlations with overall satisfaction, while drainage service and health facilities show moderate positive correlations. The remaining factors like transportation routes, electricity service, and water service exhibit very weak or negligible correlations. Conversely, in KC, safety from injury and health facilities demonstrate weak positive correlations with overall satisfaction, while drainage service shows a very weak negative correlation. Transportation routes, electricity service, and water service in KC have negligible positive or negative relationships with overall satisfaction that are not statistically significant.

Table 4.18: Correlation of Overall satisfaction with facility provided

			Overall Satisfaction in BGC	Overall Satisfaction in KC
Spearman's rho	Safety F Crime	Correlation Coefficient	.423**	.014
		Sig. (2-tailed)	.001	.814
		N	56	282
	Safety F Injury	Correlation Coefficient	.694**	.216**
		Sig. (2-tailed)	.000	.000
		N	56	282
	Transportation Routes	Correlation Coefficient	.187	.028
		Sig. (2-tailed)	.167	.645
		N	56	282
	Electricity Service	Correlation Coefficient	-.055	.027
		Sig. (2-tailed)	.687	.650
		N	56	282
	Water Service	Correlation Coefficient	-.007	-.045
		Sig. (2-tailed)	.957	.457
		N	56	282
	Drainage Service	Correlation Coefficient	.491**	-.112
		Sig. (2-tailed)	.000	.060
		N	56	282
	Health Facilities	Correlation Coefficient	.254	.169**
		Sig. (2-tailed)	.059	.004
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

4.7. Key Physical Urban Features

In order to identify the key physical urban features regression analysis of satisfaction vs physical urban features was done. The detail discussion of result presented as follow:

4.7.1. Regression of Satisfaction vs Locations

The information in Table 4.19 and Table 4.20 present the results of a regression analysis with overall satisfaction as the dependent variable. The independent variables are proximity to town center, proximity to work place, proximity to religious place, proximity to recreational area, and proximity to public transport routes. The unstandardized coefficients (B) represent the change in overall satisfaction associated with a one-unit increase in the independent variable, holding all other variables constant. The standardized coefficients (Beta) represent the change in overall satisfaction in standard deviation units associated with a one-standard deviation increase in the independent variable, holding all other variables constant. The t-values test the null hypothesis that the corresponding coefficient is zero. The Sig. column presents the p-values associated with the t-values.

For BGC, the constant term has a coefficient of -1.906 with a standard error of 0.951 and a significance level of 0.050, indicating it is statistically significant at the 0.05 level. Among the independent variables, proximity to town center has a coefficient of 0.632 with a standard error of 0.182 and a highly significant p-value of 0.001. This suggests that proximity to the town center positively influences overall satisfaction. Proximity to workplace, proximity to religious place, proximity to recreational area, and proximity to public transport routes variables have coefficients close to zero and non-significant p-values ($p > 0.05$), indicating that their influence on overall satisfaction is not statistically significant in this model.

Meanwhile in KC, the constant term has a coefficient of 2.404 with a standard error of 0.479 and a significance level of 0.000, indicating it's statistically significant. The independent variables including proximity to town center, proximity to religious place, proximity to recreational area, and proximity to public transport routes have coefficients close to zero and p-values greater than 0.05, suggesting that they do not have statistically significant effects on overall satisfaction at the 0.05 significance level. However, proximity to work place has a coefficient of -0.127 and a significance level of 0.065, indicating it's marginally significant

but not significant at the 0.05 level. This suggests that proximity to the work place might have a slight negative effect on overall satisfaction.

Generally, the model in KC is not statistically significant in predicting overall satisfaction than in BGC. This suggests that most of independent variables do not have a significant linear relationship with the dependent variable of overall satisfaction.

Table 4.19: Regression of Satisfaction and Locations for BGC data

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-1.906	.951		-2.006	.050
	P to Town center	.632	.182	.483	3.466	.001
	P to Work place	.263	.272	.168	.965	.339
	P to Religious place	.000	.111	.000	-.003	.998
	P to Recreational area	.228	.186	.169	1.223	.227
	P to P Transport routes	-.033	.308	-.017	-.108	.915

a. Dependent Variable: Overall Satisfaction

Table 4.20: Regression of Satisfaction and Locations for KC data

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.404	.479		5.023	.000
	P to Town center	.012	.095	.008	.129	.897
	P to Work place	-.127	.069	-.111	-1.852	.065
	P to Religious place	-.007	.061	-.007	-.115	.908
	P to Recreational area	.069	.064	.064	1.078	.282
	P to P Transport routes	.093	.077	.072	1.207	.228

a. Dependent Variable: Overall Satisfaction

(Source: computed in SPSS software by the researcher, 2024)

The residuals in BGC data are approximately normally distributed, as Figure 4.12 illustrates, but with the change in slope, the plot exhibit a stable region where the slope remains relatively consistent for some time. In this region, the residuals still deviate from the expected normal distribution, but the degree of deviation remains relatively constant. This indicates a systematic departure from normality that persists over a range of values. The

residuals in KC suggests that the residuals are no longer conforming to the expected distribution.

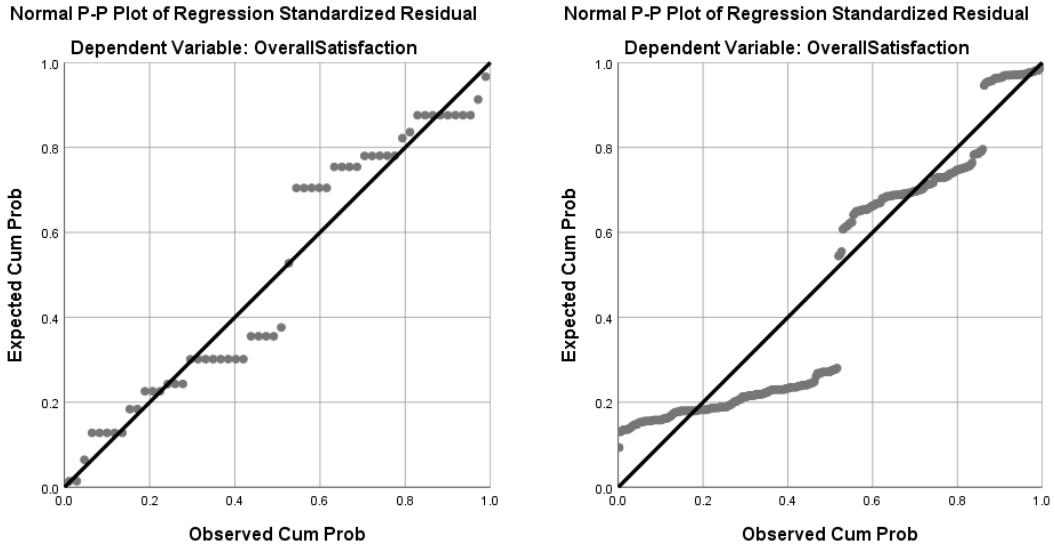

Figure 4.12: Normal P-P plot of regression between overall satisfaction and proximity to amenities for BGC (left) and KC (right)

(Source: generated in SPSS software by the researcher, 2024)

4.7.2. Regression of Satisfaction vs Design Features

Reviewing Table 4.21 and Table 4.22 it is evident that the results of a regression analysis with overall satisfaction as the dependent variable and entrance, landscape, vertical circulation, corridor, room size, room arrangement, bathroom, communal, and green areas as independent variables show slight variation across the two location.

The constant term in BGC dataset has a coefficient of -0.453 with a standard error of 1.148 and a significance level of 0.695, indicating it may not be statistically significant at the 0.05 level. The independent variables such as entrance, landscape, corridor, room size, room arrangement, and green areas have coefficients close to zero and non-significant p-values ($p > 0.05$), indicating that their influence on overall satisfaction is not statistically significant in this model. Bathroom and communal area variables have coefficients with values greater than zero and p-values less than 0.05. These variables have a statistically significant positive impact on overall satisfaction, while vertical circulation shows a marginally significant positive impact on overall satisfaction. The other variables do not have a statistically significant relationship with overall satisfaction in this analysis.

According to Table 4.18 Table 4.22summarizes data in KC, entrance and room size variables have positive coefficients with high t-values and low p-values ($p < 0.05$), indicating that they have statistically significant positive effects on overall satisfaction. As entrance quality and room size increase, overall satisfaction tends to increase. Also, vertical circulation variable has a positive coefficient with a moderate t-value and a p-value close to 0.05 ($p = 0.056$), suggesting that it may have a marginally significant positive effect on overall satisfaction. Landscape, corridor, room arrangement, bathroom, communal and green areas variables have coefficients close to zero and non-significant p-values ($p > 0.05$), indicating that their influence on overall satisfaction is not statistically significant in this model.

Table 4.21: Regression of Overall satisfaction and Design features for BGC data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.453	1.148		-.395	.695
	Entrance	-.078	.273	-.036	-.286	.776
	Landscape	.087	.134	.067	.651	.518
	Vertical Circulation	.381	.203	.331	1.879	.067
	Corridor	.050	.105	.071	.471	.640
	Room size	.068	.144	.066	.474	.638
	Room Arrangement	-.037	.146	-.027	-.255	.800
	Bathroom	.371	.148	.309	2.515	.015
	Communal	.528	.244	.230	2.163	.036
	Green Areas	.053	.117	.045	.457	.650

a. Dependent Variable: Overall Satisfaction

Table 4.22: Regression of Overall satisfaction and Design features for KC data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.502	.588		.854	.394
	Entrance	.192	.059	.230	3.262	.001
	Landscape	.180	.114	.087	1.579	.116
	Vertical Circulation	.199	.104	.126	1.921	.056
	Corridor	.094	.091	.058	1.037	.301
	Room size	.191	.054	.193	3.530	.000
	Room Arrangement	-.047	.076	-.034	-.611	.542
	Bathroom	-.044	.065	-.037	-.672	.502

	Communal	.063	.071	.049	.882	.379
	Green Areas	.055	.053	.058	1.039	.300

(Source: computed in SPSS software by the researcher, 2024)

The information Figure 4.13 illustrates the residuals conform to a normal distribution across the range of values and deviates between a range of approximately 0.6 to 0.8 values in BGC data of P-P plot. In contrast in KC P-P plot, residuals suggest approximate normality.

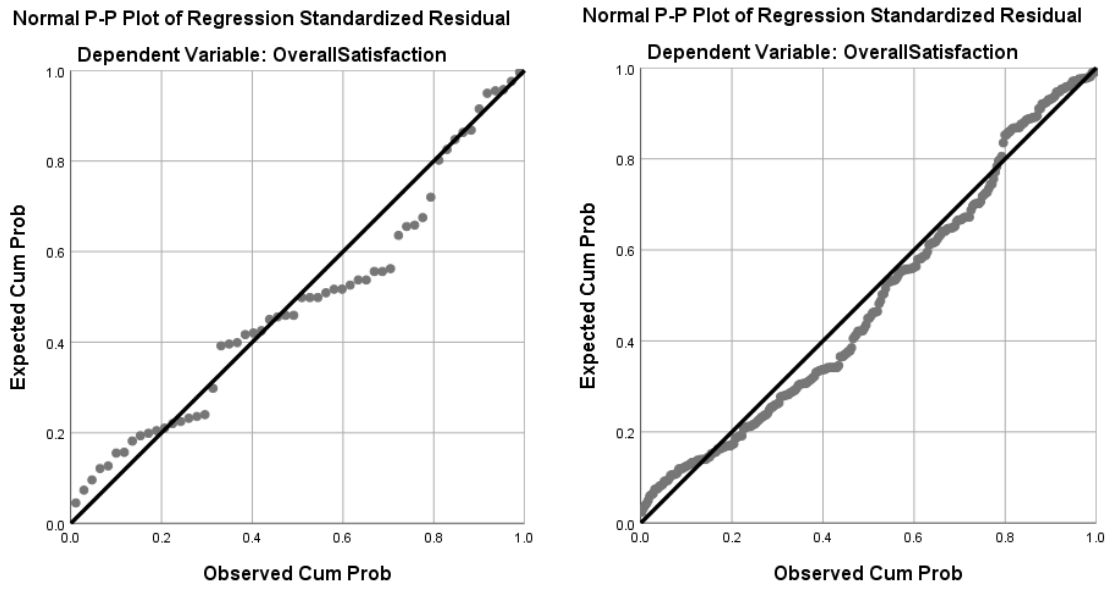

Figure 4.13: Normal P-P plot of regression between overall satisfaction and design features for BGC (left) and KC (right)

(Source: generated in SPSS software by the researcher, 2024)

4.7.3. Regression of Satisfaction vs Provided Facilities

The results of a multiple linear regression analysis depicted in Table 4.23 and

Table 4.24 show overall satisfaction as the dependent variable and safety for crime, safety for injury, transportation routes, electricity service, water service, drainage service and health facilities as the independent variables.

For BGC data, the constant term has a coefficient of 0.819 with a standard error of 1.187 and a significance level of 0.494, indicating it may not be statistically significant at the 0.05 level. The independent variable safety for injury has a positive coefficient of 0.543 with a

low p-value ($p < 0.001$), indicating that it has a statistically significant positive effect on overall satisfaction. As the perception of safety from injuries improves, overall satisfaction tends to increase. Safety for crime, transportation routes, electricity service, water service and health facilities variables have coefficients close to zero and non-significant p-values ($p > 0.05$), indicating that their influence on overall satisfaction is not statistically significant in this model. However, the coefficient for drainage service has a p-value close to 0.05 ($p = 0.084$), suggesting that it may have a marginally significant positive effect on overall satisfaction.

The constant term in KC, has a coefficient of 1.489 with a standard error of 0.484 and a significance level of 0.002, indicating it is statistically significant at the 0.05 level. Among the independent variables safety for injury has a positive coefficient of 0.315 with a low p-value ($p = 0.001$), indicating that it has a statistically significant positive effect on overall satisfaction. This mean that as the perception of safety from injuries improves, overall satisfaction tends to increase. Similarly, health facilities variable also has a positive coefficient of 0.136 with a low p-value ($p = 0.014$), indicating that it has a statistically significant positive effect on overall satisfaction. This suggests that better access to health facilities is associated with higher overall satisfaction. Other variables such as safety for crime, transportation routes, electricity service, water service, and drainage service have coefficients close to zero and non-significant p-values ($p > 0.05$), indicating that their influence on overall satisfaction is not statistically significant in this model.

Table 4.23: Regression of satisfaction and provided facilities for BGC data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.819	1.187		.690	.494
	Safety F Crime	.126	.141	.111	.896	.375
	Safety F Injury	.543	.145	.509	3.741	.000
	Transportation Routes	-.048	.229	-.024	-.211	.833
	Electricity Service	.020	.105	.022	.195	.846
	Water Service	-.148	.123	-.132	-1.209	.233
	Drainage Service	.317	.180	.216	1.762	.084
	Health Facilities	.056	.130	.049	.429	.670

a. Dependent Variable: Overall Satisfaction

Table 4.24: Regression of satisfaction and provided facilities for KC data

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.489	.484		3.076	.002
	Safety F Crime	.026	.059	.025	.436	.663
	Safety F Injury	.315	.091	.203	3.462	.001
	Transportation Routes	.054	.061	.052	.892	.373
	Electricity Service	.061	.075	.048	.819	.414
	Water Service	-.076	.081	-.055	-.934	.351
	Drainage Service	-.087	.075	-.067	-1.153	.250
	Health Facilities	.136	.055	.144	2.465	.014

a. Dependent Variable: Overall Satisfaction

(Source: computed in SPSS software by the researcher, 2024)

The P-P plot illustrated in Figure 4.14 indicates approximate normal distribution with some plateau along some ranges such as 0.0 - 0.2 and 0.4 - 0.6 in BGC and between 0.0 to approximately 0.1 and 0.2 to approximately 0.5 in KC data however, the sufficiency of the sample size allows to consider the residual as approximately normal.

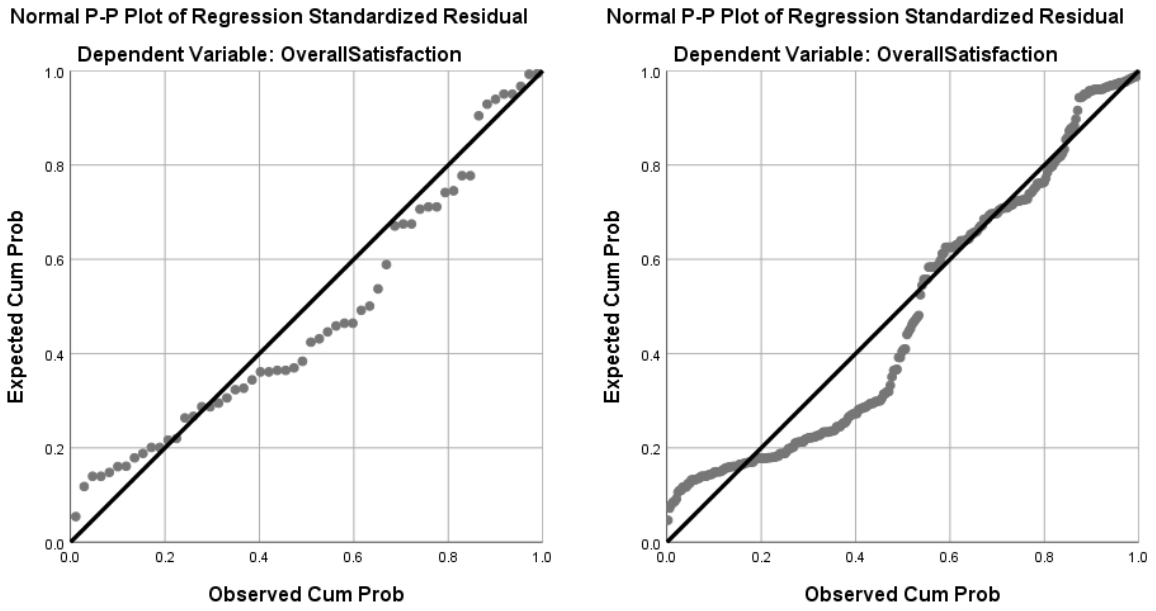

Figure 4.14: Normal P-P plot of regression between overall satisfaction and provided facility for BGC (left) and KC (right)

(Source: generated in SPSS software by the researcher, 2024)

4.8. Effectiveness of Current Condominium Housing Developments

The effectiveness of current condominium housing development analysis was rated by the overall satisfaction level of residents, specifically aging population, based on comparative analysis of the two cases (BGC and KC). This refers to the level of contentment and fulfillment that older adults experience in their living conditions.

4.8.1. Frequency of Overall Satisfaction in Each Site

In BGC, there are 42.90% of individuals who are unsatisfied, 32.10% individuals who are neutral and 25% who are satisfied as presented by Figure 4.15. While in KC, there are 51.80% of individuals who fall into unsatisfied category, 34.40% individuals under neutral, and 13.80% under satisfied. It shows that a higher percentage of individuals in KC are unsatisfied compared to BGC, while a higher percentage of individuals in BGC are satisfied compared to KC. The neutral category falls in between these two extremes in both locations.

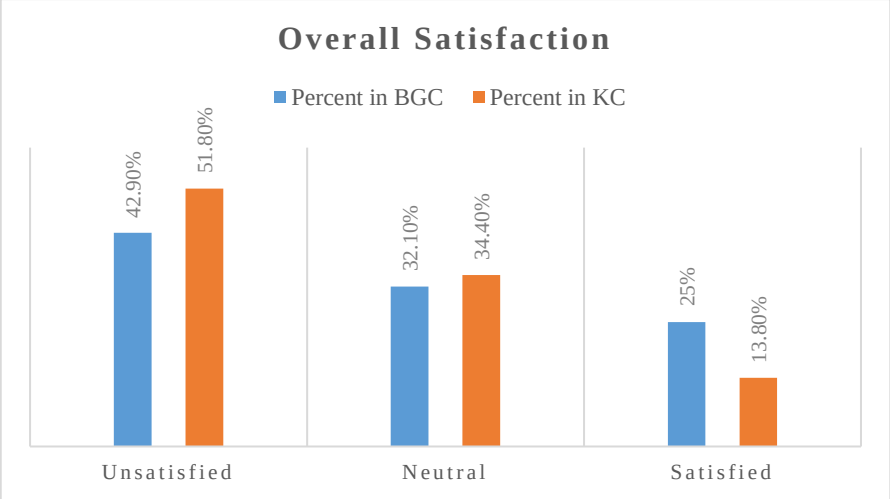

Figure 4.15: Overall satisfaction percentage in BGC and KC (Source: survey data, 2024)

4.8.2. Correlation of Overall Satisfaction and Age

The analysis in Table 4.25 displays the Spearman's rank correlation coefficient between age and overall satisfaction. In BGC data correlation coefficient is -0.777 (significant at the 0.01 level). This indicates a strong negative correlation between age and overall satisfaction, meaning that older individuals tend to be less satisfied with their living condition. In this case, the significance level is 0.000, indicating a highly significant correlation. On the other

hand, the correlation coefficient between age and overall Satisfaction in KC is -0.493, which is statistically significant at the 0.01 level (p = 0.000). This indicates a moderate negative correlation between age and overall satisfaction. In other words, as age increases, overall satisfaction tends to decrease. In summary, the table reveals a significant negative correlation between age and overall satisfaction, suggesting that as individuals get older, their overall satisfaction tends to decrease.

Table 4.25: Correlation between Age and Overall Satisfaction

			Age in BGC	Age in KC
Spearman's rho	Overall Satisfaction	Correlation Coefficient	-.777**	-.493**
		Sig. (2-tailed)	.000	.000
		N	56	282

**. Correlation is significant at the 0.01 level (2-tailed).

(Source: computed in SPSS software by the researcher, 2024)

4.8.3. Regression of Overall Satisfaction and Socio-Demographic Profile

Table 4.26 below presents the results of a regression analysis with overall satisfaction as the dependent variable. The analysis includes the independent variables gender, age, occupancy, ownership, employment and income. The dependent variable, overall satisfaction, has a negative correlation with age, occupancy and ownership, indicating that higher values of these independent variables are associated with lower levels of overall satisfaction. Specifically, a one-unit increase in age, occupancy or ownership is associated with a 0.338, 0.320 or 0.133 decrease in overall satisfaction, respectively. The significance level for age is 0.017, indicating that the relationship between age and overall satisfaction is statistically significant at the 0.05 level. Additionally, occupancy variable may have marginally significant impact as its p-value is 0.064. However, the relationships between overall satisfaction and the other independent variables are not statistically significant, as their significance levels are greater than 0.05.

As shown in Table 4.27 the results of a constant term in the model which is 4.162, representing the expected value of overall satisfaction when all independent variables are zero. The coefficient for gender is -0.140, and it is marginally statistically significant (p = 0.059). This suggests that gender have a slight significant impact on overall satisfaction in this model. The coefficient for age is -0.328, and it is statistically significant (p = 0.000). This indicates that age has a significant negative impact on overall satisfaction. Specifically,

as age increases, overall satisfaction tends to decrease. None of the remaining variable such as occupancy, ownership, employment and income have statistically significant coefficients, as their p-values are greater than 0.05. This suggests that these variables do not significantly influence overall satisfaction in this model.

In summary, in both case the model suggests that age is a significant predictor of overall satisfaction, with older individuals tending to have lower levels of satisfaction. Occupancy also has slight impact in BGC case as gender in KC. Though, other variables such as ownership, employment and income do not appear to have a significant impact on overall satisfaction in this analysis.

Table 4.26: Regression of demographic profile and satisfaction for BGC data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.364	1.209		3.609	.001
	Gender	-.072	.218	-.041	-.330	.743
	Age	-.338	.136	-.442	-2.480	.017
	Occupancy	-.320	.169	-.356	-1.896	.064
	Ownership	-.133	.187	-.096	-.710	.481
	Employment	.113	.122	.122	.922	.361
	Income	.128	.142	.166	.900	.373

a. Dependent Variable: Overall Satisfaction

Table 4.27:Regression of demographic profile and satisfaction for KC data

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.162	.291		14.295	.000
	Gender	-.140	.074	-.097	-1.895	.059
	Age	-.328	.041	-.511	-7.986	.000
	Occupancy	-.057	.071	-.041	-.799	.425
	Ownership	-.075	.044	-.089	-1.713	.088
	Employment	.026	.048	.038	.534	.594
	Income	.045	.041	.067	1.102	.272

a. Dependent Variable: Overall Satisfaction

(Source: computed in SPSS software by researcher, 2024)

The normality of the residuals in the regression models between overall satisfaction and socio-demographic profile represented by Figure 4.16 which deviates somehow in BGC data within a range of 0.6 to 0.8 and lacks consistency along the line. While in KC data plot, even if there is a slight variation from the line, the residuals show continuity and consistency.

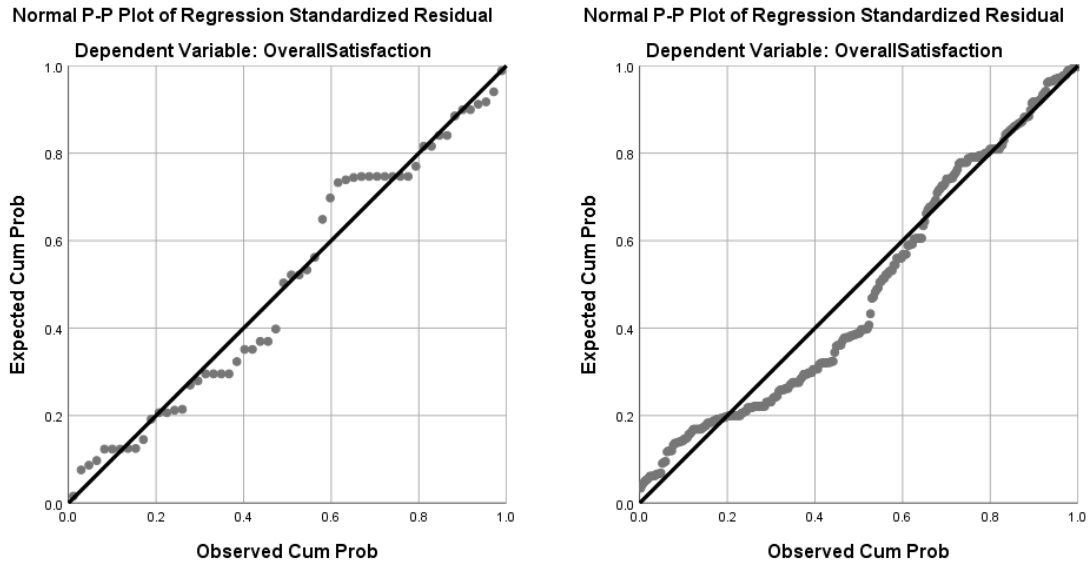

Figure 4.16: Normal P-P plot of regression of overall satisfaction and socio-demographic profile for BGC (left) and KC (right)

(Source: generated in SPSS software by researcher, 2024)

4.9. Summary of Discussion

The analysis includes the socio-demographic characteristics of the aging population in two locations, Bole-Gerji Condominium (BGC) and Kilinto Condominium (KC). BGC and KC differ in various socio-demographic characteristics of their aging population. Regarding gender distribution, BGC has a higher percentage of male respondents than KC, indicating a difference in gender distribution between the two locations. For age distribution, BGC residents are more evenly spread across the age groups, while there is a higher concentration of individuals in the older age groups of 65-69 years and 70-74 years in KC. The employment status distribution is significantly different in the two regions, with a higher proportion of individuals employed in private institutions in KC and a higher proportion of individuals self-employed or business owners in BGC. The income level data shows that the target population in BGC earns higher income compared to KC, with a significantly higher percentage of the population in BGC having an income range of greater than 9000 birr.

Ownership status and rental property value also show significant differences between the two locations, with KC having a significantly higher percentage of homeowners compared to BGC and a significant difference in rental prices between the two locations with extremely higher rental price in BGC.

The level of satisfaction of the two locations, BGC and KC, based on different factors, varies. Regarding location, the proximity to religious places is a factor in which both regions exhibit fairly high levels of satisfaction, with over 70% of respondents in both locations expressing satisfaction. In contrast, the proximity to town center, proximity to work place, proximity to recreational areas and public transportation routes presents a significant difference between BGC and KC, with a much higher percentage of individuals in BGC expressing satisfaction regarding these factors. The survey results suggest that individuals in BGC have a more positive perception towards the entrance, landscape, and room size feature compared to those in KC, while a higher level of dissatisfaction is observed in BGC regarding the vertical circulation feature, room arrangement feature, and communal areas feature compared to KC. The corridor design feature appears to be more polarizing in BGC, while individuals in KC have a more positive perception towards the green areas feature compared to those in BGC. In perceptions of safety from crime and injury, in BGC, while a majority of individuals express satisfaction than KC. On the contrary, there's a significant dissatisfaction with safety from injury in both locations, with a larger proportion of unsatisfied individuals in KC. Facilities, such as transportation routes, electricity service, water service, sanitary and drainage service, and health facilities, vary in terms of satisfaction levels, but overall, BGC residents tend to express higher satisfaction rates. However, both areas share concerns about sanitary/drainage services, with a large proportion expressing dissatisfaction in both BGC and KC.

The correlation results indicate that there are differences between BGC and KC in terms of the correlation between age and different factors. Regarding occupancy duration, the correlation in BGC is very strong and statistically significant ($p < 0.01$), while in KC, the correlation is weakly positive and not statistically significant ($p = 0.057$) or marginally significant. The correlation between age and ownership is moderate in BGC, indicating that as age increases, ownership decreases, while in KC, the correlation is weakly positive, implying that older individuals are more inclined to own property than BGC residents. In terms of employment status, the correlation coefficient in BGC is higher than that in KC.

For instance, the correlation coefficient between age and employment status is 0.393 in BGC and 0.193 in KC. This indicates that BGC has a stronger relationship between age and employment status than KC. For income level, the correlation between age and income in BGC is stronger than that in KC. There is a moderate negative correlation between age and income in KC, indicating that as age increases, income tends to decrease moderately, while in BGC, it is stronger. The correlation between age and design features is weak in both BGC and KC, indicating that there is no significant relationship between age and design features. The correlation between age and safety in BGC is moderately negative, implying that as age increases, safety concerns decrease, while in KC, the correlation is weakly negative, indicating that older individuals are slightly more concerned about safety than younger individuals. The correlation between age and facility provision is weak in both BGC and KC, indicating that there is no significant relationship between age and facility provision. The overall satisfaction levels of individuals in BGC are high, and there is a strong negative correlation between age and overall satisfaction, while the correlation between age and overall satisfaction in KC is moderate.

The regression results showed that the impact of various factors on overall satisfaction was different in BGC and KC. Proximity to the town center positively influenced overall satisfaction in BGC but didn't have a significant effect in KC. However, proximity to the work place might have a slight negative effect on overall satisfaction in KC. Furthermore, design features such as entrance and room size significantly impacted overall satisfaction for KC residents but not for residents of BGC. In case of vertical circulation, it has significant impact on overall satisfaction. In contrast, bathroom and communal facilities significantly impacted overall satisfaction for BGC residents but not for those in KC. Among the factors relating to provided facilities, better access to health facilities positively influenced the overall satisfaction of KC residents, while safety for injury positively influenced overall satisfaction for both site residents. Finally, demographic factors had a negative correlation with overall satisfaction in both BGC and KC, but the coefficient was stronger in BGC. Age, in particular, had a significant negative effect on overall satisfaction for both cases. On the other hand, other factors such as ownership, employment, and income did not have a significant effect on overall satisfaction for either BGC or KC.

The analysis of condominium housing development effectiveness was conducted based on the overall satisfaction level of residents, and found that in BGC, 25% of individuals were

completely satisfied with their housing conditions, while 48.2% were satisfied and 32.1% had a neutral perception. In contrast, KC had a 13.8% of satisfied individuals but also a larger proportion of unsatisfied residents (51.8%). The correlation between age and overall satisfaction showed a strong negative relationship in BGC (-0.777) and a moderate negative relationship in KC (-0.493), indicating that older individuals tend to be less satisfied with their housing conditions. Regression analysis confirmed that age is a significant predictor of overall satisfaction, with older individuals having lower levels of satisfaction in both locations. The study also found that occupancy and ownership have a negative correlation with overall satisfaction in BGC, suggesting that higher values of these variables are associated with lower levels of satisfaction. However, gender, employment, and income did not significantly influence overall satisfaction in this analysis.

In general, from reviewed literatures some research compares the experiences and satisfaction levels of older adults living in different types of social housing, such as sheltered housing and standard housing, while others focus on a single housing type. While some study examines the overall impact of housing density on quality of life (Kurian & Thampuran, 2011; Mazur et al., 2022; Sadrian et al., 2015), another delves deeper into the specific impact of interior design features on elderly independence and activity (Berköz & Kellekçi, 2007; Kurian & Thampuran, 2011; Štreimikienė, 2014). Additionally, some publications only focus on particular demographics or geographical areas, which restricts the applicability of their conclusions (Djafri et al., 2020; Jechoniah & Folasade, 2014; Kurian & Thampuran, 2011; Nedučin et al., 2023; Zainal et al., 2012). Accordingly, the above facts implies that the researches consistently emphasize the relevance of understanding influence of housing design in the quality of life of older people with varies studies focusing on high-density social housing, the specific target group, context, and methodological approaches.

4.10. Major Findings

From the analysis of the data, here are some of the major findings of the study:

- Approximately 27% of respondents with health issue struggle to perform activities that require mobility.
- Construction quality (along with design) and unaffordability is the most undesirable issue.

- Age is a significant predictor of overall satisfaction in both locations. Older individuals tend to be less satisfied with their housing conditions. Housing characteristics like ownership and length of occupancy have a negative impact on quality of life. Most renters from 58.90% rented residents in BGC have a plan of moving out.
- Proximity to town center has a positive impact on overall satisfaction in BGC but not in KC. Proximity to work place has a marginally negative effect on overall satisfaction in KC. Proximity to religious and recreational areas is strongly associated with overall satisfaction.
- Entrance, bathroom, communal areas, room size and vertical circulation have an impact on overall satisfaction. Green areas show a positive relationship with overall satisfaction among residents.
- There is a strong wish for the presence of outdoor space around housing and more green areas in the neighborhood as a suggestion.
- A significant proportion of individuals in both locations have dissatisfaction with safety from injury, especially in KC. Safety from injury have a significant impact on overall satisfaction.
- A vast majority of individuals in BGC are satisfied with transportation routes, while in KC, residents generally view transportation routes less favorably. Health facilities are perceived more positively in BGC, with a higher percentage of individuals being satisfied, compared to KC. Accessibility to health facilities have a significant impact on overall satisfaction.
- There is a significant relationship between housing quality and the quality of life of aging populations in condominium housing, and improvements in housing design and facilities can positively affect the well-being of aging populations.
- Some regression analysis model indicates insignificance in the analysis this was mainly due to the existence of multi-collinearity of the data. Thus, some features like corridors, electricity service, water service and sanitary and/or drainage service were reported as insignificant to be the determining factors for overall satisfaction or quality of life.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Individuals with health problem struggle with mobility-related activities and the most undesirable issues identified suggests a critical need for accessible (both physically and financially), inclusive and well-constructed environments to enhance the quality of life for aging population.

The research findings indicate that age is a significant predictor of overall satisfaction among residents in both Bole-Gerji and Kilinto condominium housing developments. Older individuals tend to have lower levels of satisfaction with their living conditions. Additionally, housing characteristics such as rented ownership and longer occupancy duration have been identified as factors that negatively impact the quality of life for residents in these condominium housing projects. These results suggest the importance of considering age-related factors and housing characteristics when designing and managing condominium housing to enhance the well-being and satisfaction of residents, particularly older adults. By addressing these factors, housing providers and policymakers can better accommodate to the diverse needs and preferences of residents, ultimately improving the quality of life within these housing environments.

Comparing the two sites, Bole Gerji Condominium (BGC) and Kilinto Condominium (KC), had a significant effect on the research outcome. The comparative analysis provided a clearer understanding of the factors that have the most considerable impact on the quality of life of aging populations and how these factors align with the specific location of each site. For instance, the study found that proximity to the town center positively influenced overall satisfaction in BGC but didn’t have a significant effect in KC. At the same time, proximity to the workplace had a significant negative effect on overall satisfaction in KC but not in BGC. Being closer to various amenities like the town center, workplace, recreational areas, and public transportation routes can have a positive impact on residents' well-being and satisfaction with their housing conditions.

Physical urban features that were identified as needing modification include entrance, bathroom, communal areas, room size and vertical circulation. The study found that these physical features can impact the overall satisfaction of residents in very different ways, depending on the site and population characteristics. Thus, providing well-designed,

adequate indoor and outdoor spaces can improve overall satisfaction with condominium housing.

In addition, the study also identified social urban features and facilities provision that could be modified, such as improving access to recreational facilities, improving safety concerns related to injury and crime and improving accessibility to health facilities.

Therefore, the paper identifies the need for sound housing policies and programs targeted at enhancing the quality of life and happiness of individuals as they integrate into society. In other words, findings suggest that urban development schemes must be inclusive and responsive to the needs of the aging population. Governments and policymakers should develop and implement appropriate policies and programs that enhance housing conditions for aging populations and the social welfare of the society as a whole.

In this paper, a comparative analysis of the impact of condominium housing development on the quality of life of the aging population was conducted. The study uses a case study approach to evaluate the two different condominium sites in Bole-Gerji (1 and 5) and Kilinto in Addis Ababa. These sites were analyzed to identify the impact of housing development on the satisfaction and preference of aging populations. The research found that housing design has a significant impact on the preference and satisfaction of aging populations regarding their quality of life. This paper also reviewed the previous local and international studies relevant to the housing and its impact on the quality of life. Several physical and social urban features were identified as essential for the quality of life of aging populations in condominium housing. The research reveals that user input is essential in the evaluation of housing quality, and it is necessary to consider user preferences when developing design standards and guidelines to meet demands. This study acknowledges limitations in obtaining the accurate and full data's due to the subjective nature of the user perspectives and the unwillingness of participants to share their viewpoints.

5.2. Recommendation

Based on the research findings, to support aging-in-place and improve quality of life of aging population in housing developments the following measures are recommended by the researcher:

- **Prioritize accessibility:** This includes both physical and financial accessibility strategies. For physical accessibility, improvements of infrastructure and features such as ramps, handrails and elevators and implementing smart city technologies to create barrier-free environments including smart transportation system and accessible spaces. For financial accessibility, providing subsidies or financial assistance programs and implementing social protection floors to guarantee income security.
- **Responsive design:** This can be achieved by adopting age-inclusive design principles and embracing a user-centric design approach.
- **Adaptable design:** Introducing possible number of free of columns housing flat designs in urban housing development for allowing a space to flexible and adaptable. Encouraging elastic spaces that can be changed any time.
- **Securing house ownership:** Developing policy and implementing strategies for downsizing, rightsizing, and transitioning to more suitable housing arrangements as needed.
- **Refining urban models:** Locating major amenities within acceptable distance from housing developments and creating refined urban housing models like developing mixed income and inclusive housing developments where the high-income groups own a flat with fair price than private real states, in which this approach able to contribute to the financial burden of the government and to construct and own high quality housings with affordable price by all groups. As another strategy senior housing development should be included in the policy, even if it seems a stigma kind of act there are cases that limit other choices.
- **Retrofitting approach:** Taking action to adapt existing housing units to the needs of aging residents. This may include installing stair lifts on the existing staircases and exchanging space utilizations. And also defining spaces by color for ease of identification of neighborhood and urban features.

- **Encouraging more open spaces:** Integrating communal conservatories instead of individual balconies. In this case the space will have less chance to be utilized for other individual purpose. Considering design of multi-functional spaces in new housing developments that can serve the needs of different age groups.
- **Developing and enforcing safety measures:** Establishing well-lit streets, spaces and environments. Encourage pedestrian movement through creating walkable streets and also designating safe zones equipped with communication devices that serve as points of refuge where seniors can seek help if they feel threatened or unwell.
- **Alternative transportation routes:** Introducing flexible route bus systems. Flexible route bus transport is defined as a user responsive service where instead of travelling along a fixed route the bus passes through zones and is dynamically redirected to go past users' residences.
- **Promoting seniors' health facilities:** Creating specialized senior health facilities within urban areas that provide to the unique healthcare needs of older adults.

Further research implication

Since multicollinearity can lead to insignificant results, future studies should employ techniques to detect and mitigate multicollinearity, such as using Lasso or Ridge regression, exploring alternative model specifications, replicate the study in different contexts, exploring alternative measures of satisfaction or other methods. In this paper this issue is addressed by conducting qualitative analysis which simply depend on how residents perceive and prioritize these features in relation to their overall satisfaction and quality of life.

REFERENCE

Abd Aziz, W. N. A. W., Aini, A. M., & Hanif, N. R. (2015). Addressing the Housing Needs for Elderly Society in Malaysia: Policies and Guidelines: Policies and Guidelines.

Al Betawi, Y. (2013). *Housing & quality of life implications of the three qualities of housing in Amman, Jordan* Cardiff University].

Alonso, L., & Jacoby, S. (2023). The impact of housing design and quality on wellbeing: lived experiences of the home during COVID-19 in London. *Cities & Health*, *7*(4), 615-627.

Amao, F., & Ilesanmi, A. (2013). Housing Quality in the Urban Fringes of Ibadan, Nigeria Serial.

Amole, D. (2009). Residential satisfaction in students' housing. *Journal of environmental psychology*, *29*(1), 76-85.

Bajaj, S. (2023). *High-Density Housing: Making Urban Living Affordable* https://swiftlane.com/blog/high-density-housing/

Balestra, C., & Sultan, J. (2013). Home sweet home: The determinants of residential satisfaction and its relation with well-being.

Becerik-Gerber, B., Lucas, G., Aryal, A., Awada, M., Berges, M., Billington, S. L., Boric-Lubecke, O., Ghahramani, A., Heydarian, A., & Jazizadeh, F. (2022). Ten questions concerning human-building interaction research for improving the quality of life. *Building and Environment*, *226*, 109681.

Berköz, L., & Kellekçi, Ö. L. (2007). Mass housing: Residents satisfaction with their housing and environment. *Open House International*, *32*(1), 41-49.

Bougouffa, I., & Permana, A. S. (2018). A study on the linkages between residential satisfaction and the overall quality of life in Bandar Tun Razak Area of Kuala Lumpur City, Malaysia. *Applied Research in Quality of Life*, *13*, 991-1013.

Brkanić, I. (2017). Housing quality assessment criteria. *Electronic Journal of the Faculty of Civil Engineering Osijek-e-GFOS*, *8*(14), 37-47.

Brkanić Mihić, I. (2023). Housing Quality Assessment Model Based on the Spatial Characteristics of an Apartment. *Buildings*, *13*(9), 2181.

Carr, K., Weir, P. L., Azar, D., & Azar, N. R. (2013). Universal design: A step toward successful aging. *Journal of aging research*, *2013*.

City Government Of Addis Ababa. (2013). *Sub Cities*. http://www.addisababacity.gov.et/index.php/en/sub-cities

Davern, M., Winterton, R., Brasher, K., & Woolcock, G. (2020). How can the lived environment support healthy ageing? A spatial indicators framework for the assessment of age-friendly communities. *International Journal of Environmental Research and Public Health*, *17*(20), 7685.

Djafri, R., Mohamed Osman, M., Suzilawati Rabe, N., & Shuid, S. (2020). Investigating quality of life by residents of social housing in eastern Algeria: a structural equation modelling. *Journal of Engineering, Design and Technology*, *18*(6), 1907-1926.

Elsinga, M., & Hoekstra, J. (2005). Homeownership and housing satisfaction. *Journal of housing and the built environment*, *20*, 401-424.

Evans, J. D. (1996). *Straightforward statistics for the behavioral sciences*. Thomson Brooks/Cole Publishing Co.

Garg, Y., Dhagat, N., & Shrivastava, B. (2014). Housing quality and customer satisfaction with reference to delivery methods. *Global Journal of Engineering, Design & Technology, 3*(1), 1-4.

Gebrewold, T. A. (2015). *Condominium Dwellers' Housing Quality Perception and Satisfaction in Addis Ababa*. University of Twente Faculty of Geo-Information and Earth Observation (ITC).

Haan, E. H. d. (2012). Essay: Housing Trends for the 21st Century. *Marquette Elder's Advisor*, *5*(2), 201.

Jechoniah, A., & Folasade, O. J. (2014). Housing quality of residential neighbourhoods in Nigeria: focus on low density areas of Birnin Kebbi, Kebbi state. *Covenant journal of research in the built environment*, *2*(2).

Kelkay, N. S. (2019). *Satisfaction Level Assessment of The Integrated Housing Development Program (IHDP) residents: The case of Key Bahir and Mickey lay land condominium sites* Addis Ababa].

Kidane, T. (2018). *RESIDENTS SATISFACTION WITH HOUSING CONDITIONS PROVIDED BY CONDOMINIUM HOUSING PROJECTS* St. Mary's University].

Kuboshima, Y., & McIntosh, J. (2022). Housing Design and the Quality of Life for Older People with Care Needs: Gaps in Knowledge. *Journal of Aging & Social Change*, *12*(1).

Kurian, S. M., & Thampuran, A. (2011). Assessment of housing quality. *Institute of Town Planners, India Journal*, *8*(2), 74-85.

Le, L. H., Ta, A. D., & Dang, H. Q. (2016). Building up a system of indicators to measure social housing quality in Vietnam. *Procedia engineering*, *142*, 116-123.

Levy, D., Murphy, L., & Lee, C. K. (2008). Influences and emotions: exploring family decision-making processes when buying a house. *Housing Studies*, *23*(2), 271-289.

Marans, R. W. (2003). Understanding environmental quality through quality of life studies: the 2001 DAS and its use of subjective and objective indicators. *Landscape and Urban Planning*, *65*(1-2), 73-83.

Mazur, Ł., Bać, A., Vaverková, M. D., Winkler, J., Nowysz, A., & Koda, E. (2022). Evaluation of the quality of the housing environment using multi-criteria analysis that includes energy efficiency: a review. *Energies*, *15*(20), 7750.

Meng, G., & Hall, G. B. (2006). Assessing housing quality in metropolitan Lima, Peru. *Journal of housing and the built environment*, *21*, 413-439.

Mridha, M. (2015). Living in an apartment. *Journal of environmental psychology*, *43*,42-54.

Mu, J., Zhang, S., & Kang, J. (2022). Estimation of the quality of life in housing for the elderly based on a structural equation model. *Journal of Housing and the Built Environment*, *37*(3), 1255-1281.

Murat, D., Gür, M., & Sezer, F. Ş. (2023). Interaction between life satisfaction and housing and neighborhood satisfaction:“privileged” housing areas in the city of Bursa, Turkey. *Journal of Housing and the Built Environment*, 1-26.

Nedučin, D., Škorić, M., Marić Ognjenović, M., & Polić, D. (2023). Neighborhood satisfaction in large housing estates of Central and East European cities: insights from Novi Sad, Serbia. *Journal of Housing and the Built Environment*, 1-39.

Nouri, M., Holden, Meg, Sones, Meridith, Winters, Meghan and Mahmood, Atiya. (2022). *Social Quality of Life in High-Density Built Environments*.

Osborne, R. H., Hawthorne, G., Lew, E. A., & Gray, L. C. (2003). Quality of life assessment in the community-dwelling elderly: validation of the Assessment of Quality of Life (AQoL) Instrument and comparison with the SF-36. *Journal of clinical epidemiology*, *56*(2), 138-147.

Palani, M. (2023). *Housing Crisis in Cities: Causes, Consequences, and Solutions*

Pimchan, K., & Darawong, C. (2022). Elderly condominium attributes that enhance resident satisfaction and word of mouth: evidence from Thailand. *International Journal of Housing Markets and Analysis*.

Rolfe, S., Garnham, L., Godwin, J., Anderson, I., Seaman, P., & Donaldson, C. (2020). Housing as a social determinant of health and wellbeing: Developing an empirically-informed realist theoretical framework. *BMC public health*, *20*(1), 1138.

Sadrian, Z., Yazdanfar, S.-A., Hosseini, S.-B., & Norouzian-Maleki, S. (2015). An evaluation of factors affecting the quality of life in low-income housing environments. *Iran University of Science & Technology*, *25*(2), 76-83.

Sanders, A. (2020). Housing: Often Overlooked but a Critical Pillar for Older Adults. *Generations*, *44*(2), 1-7.

Schalock, R. L. (2004). The concept of quality of life: what we know and do not know. *Journal of intellectual disability research*, *48*(3), 203-216.

Sedaghatnia, S., Lamit, H., Ghahramanpouri, A., & Mohamad, S. B. (2013). An evaluation of residents quality of life through neighborhood satisfaction in Malaysia. *Environmental Management and Sustainable Development*, *2*(1), 114-125.

Seid, A. M., & Babbel, N. F. (2023). Ethiopian ageing policy: A review of existing frameworks in relation to the Madrid International Plan of Action on Aging. *Public Health in Practice*, 100432.

Seo, E., & Lee, S. (2023). Implications of Aging in Place in the Context of the Residential Environment: Bibliometric Analysis and Literature Review. *International Journal of Environmental Research and Public Health*, *20*(20), 6905.

Shahrom, S. K., & Zainol, R. (2015). Universal design in housing for people with disabilities: A review. *Journal of Design and Built Environment*, *15*(1).

Sima, L. (2015). A study on small apartment design in China: Evaluation on the impressions of and preferences for the floor plans. *Journal of Asian Architecture and Building Engineering*, *14*(2), 307-314.

Simpson, A., Filipe, L., Benedetto, V., & Hill, J. E. (2024). The impacts of housing conditions on physical and mental health–A mini-review informed by a rapid conversion of evidence from Alidoust and Huang (2021). *Frontiers In Environmental Health*, *3*(2024).

Strassmann, W. P. (1998). Third World Housing: The Encyclopedia of Housing. *Journal of Architecture and Urban Planning. Ed. Willem Van Vliet. Thousand Oaks, CA: Sage*, 589-592.

Streimikiene, D. (2015). Quality of life and housing. *International Journal of Information and Education Technology*, *5*(2), 140.

Štreimikienė, D. (2014). Housing indicators for assessing quality of life in Lithuania. *Intelektinė ekonomika*, *8*(1), 25-41.

Štreimikienė, D. (2015). Environmental indicators for the assessment of quality of life. *Intelektinė ekonomika*, *9*(1), 67-79.

Teston, E. F., & Marcon, S. S. (2014). Quality of life and living conditions from the viewpoint of residents in a seniors condominium. *Revista Gaúcha de Enfermagem*, *35*, 124-130.

Ülengin, B., Ülengin, F., & Güvenç, Ü. (2001). A multidimensional approach to urban quality of life: The case of Istanbul. *European Journal of Operational Research*, *130*(2), 361-374.

UN-HABITAT. (2010). The Ethiopia Case of Condominium Housing: The Integrated Housing Development Programme. (United Nations Human Settlements Programme).

UN-Habitat. (2024). Affordable housing in developing countries. https://www.habitat.org/emea/about/what-we-do/affordable-housing

Wang, Z., Qin, Z., He, J., Ma, Y., Ye, Q., Xiong, Y., & Xu, F. (2019). The association between residential density and physical activity among urban adults in regional China. *BMC public health*, *19*(1), 1-7.

Wegener, A., & Huner, A. (2001). Quality of life indicator programs for strategic management in local government. Cities of Tomorrow Expert Workshop,

Workineh, B. A. (2021). Perceptions and key challenges towards sustainable condominium housing development in Gondar City, Ethiopia.

Yun, H.-Y., Ziebarth, A., & Hwang, E. (2009). HOUSING FOR THE ELDERLY: RECENT RESEARCH AND POLICY IN KOREA. *THE HOUSING EDUCATION AND RESEARCH ASSOCIATION*, 47.

Zainal, N. R., Kaur, G., Ahmad, N. A., & Khalili, J. M. (2012). Housing conditions and quality of life of the urban poor in Malaysia. *Procedia-Social and Behavioral Sciences*, *50*, 827-838.

Zhang, R., Liu, S., Li, M., He, X., & Zhou, C. (2021). The effect of high-density built environments on elderly individuals' physical health: A cross-sectional study in Guangzhou, China. *International Journal of Environmental Research and Public Health*, *18*(19), 10250.

Zhu, S.-W., Yee, B. K., Nyffeler, M., Winblad, B., Feldon, J., & Mohammed, A. H. (2006). Influence of differential housing on emotional behaviour and neurotrophin levels in mice. *Behavioural Brain Research*, *169*(1), 10-20.

Zumaya, J. Q., & Motlak, J. B. (2021). Sustainable housing indicators and improving the quality of life: the case of two residential areas in Baghdad City. IOP Conference Series: Earth and Environmental Science,

APPENDICES

Appendix I – Interview Questions

Dear Respondents, this interview questions are prepared to conduct a study on "Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa" for the partial fulfillment of MSc degree in Urban Planning and Design. Information you provided is only used for academic purposes and it is confidential, so you are kindly requested to answer all the questions.

Thank you for your kind cooperation!

1. How many households are present on the site?
2. What is the status of the initial owners? Have they retained occupancy, rented out, or sold their units, and what are the reasons behind their decisions?
3. What is the average rental and selling prices of the housing units on the site?
4. What are the undesirable areas and concerns within the site?
5. Which location aspects impact residents' satisfaction?
6. Which specific design aspect are considered as a threat for older people?
7. Which facilities are praised or criticized by the residents?

Appendix II - Questioner

Dear Respondents, this questionnaire is prepared to conduct a study on "Comparative Analysis of Condominium Housing Development Impact on Quality of Life of Aging Population: Among Bole-Gerji and Kilinto Condominium Sites in Addis Ababa" for the partial fulfillment of MSc degree in Urban Planning and Design. Information you provided is only used for academic purposes and it is confidential, so you are kindly requested to answer all the questions.

Thank you for your kind cooperation!

No.____

1, Gender Female ☐ Male ☐

2, Age 50-54 ☐ 55-59 ☐ 60-64 ☐ 65-69 ☐ 70-74 ☐
75-84 ☐ >85 ☐

3, Length of occupancy <2 ☐ 2_4 ☐ 5_9 ☐ 10_14 ☐ >15 ☐

4, Ownership status Owned ☐ Rented ☐ Other ☐

5, Employment status

Employed in government institution ☐ Employed in private institution ☐

Business owner/Self-employed ☐ Retired ☐ Unemployed ☐

6, Health Condition

Physical disability ☐ Hearing problem ☐ Sight ☐ Diabetes ☐

High blood pressure ☐ Heart disease ☐ Breathing difficulties ☐

Blackouts ☐ Mental ☐ Other ☐

7, In Q#6 the health condition indicated is restricting routine activities? If so, what restriction of activities?

Selfcare ☐ Mobility ☐ Communication ☐ Other ☐

8, Undesirable area

Design ☐ Construction quality ☐ Unaffordability ☐

Social ☐ Infrastructure ☐ Other ☐

Answer the following questions as apply to yourself by circling the appropriate level using 1-5 scales. Where 1= Completely Unsatisfied (CU), 2= Unsatisfied, 3=Neutral, 4= Satisfied and 5= Completely Satisfied (CS)

9, Overall Satisfaction	1	2	3	4	5
10, Location	CU				CS
Proximity to town center	1	2	3	4	5
Proximity to work place	1	2	3	4	5
Proximity to religious place	1	2	3	4	5
Proximity to recreational area	1	2	3	4	5
Proximity to public transport routes	1	2	3	4	5
11, Design Features					
Entrance	1	2	3	4	5
Landscape	1	2	3	4	5
Vertical circulation	1	2	3	4	5
Corridors	1	2	3	4	5
Room size	1	2	3	4	5
Room arrangement	1	2	3	4	5
Bathroom	1	2	3	4	5
Communal areas	1	2	3	4	5
Green areas	1	2	3	4	5
12, Safety					
From Crime	1	2	3	4	5

From Injury	1	2	3	4	5

13, Facilities

Transportation routes	1	2	3	4	5
Electricity service	1	2	3	4	5
Water service	1	2	3	4	5
Drainage service	1	2	3	4	5
Health facilities	1	2	3	4	5

14, For the following listed activities mark “X” to the place that you prefer

Activities	Place							
		In the house	Around housing	Neighbor's house	Café, Restaurant	Green spaces	Religious place	Other
	Sitting							
	Walking							
	Reading							
	Exercise							
	Meeting							
	Praying							

15, Future plan

- ☐ Living in
- ☐ Moving out
- ☐ Undecided
- ☐ No thought

16. If you have any recommendation/s please state here:

_____

_____

_____