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MEASURING THE EFFECT OF PUBLIC SPACE ON PROPERTY VALUE: A HEDONIC PRICING & MULTI-ATTRIBUTE ANALYSIS IN ADDIS ABABA, SHEGER PARK'S FRIENDSHIP SQUARE

M.A. Thesis By

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BY

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APPROVED BY BOARD OF EXAMINERS

The undersigned have examined the thesis entitled "MEASURING THE EFFECT OF PUBLIC SPACE ON PROPERTY VALUE: A HEDONIC PRICING & MULTI-ATTRIBUTE ANALYSIS IN ADDIS ABABA, SHEGER PARK'S FRIENDSHIP SQUARE" presented by Fehim Seid, a candidate for the degree of Master of Arts and hereby certify that it is worthy of acceptance.

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I certify that this research work titled "MEASURING THE EFFECT OF PUBLIC SPACE ON PROPERTY VALUE: A HEDONIC PRICING & MULTI-ATTRIBUTE ANALYSIS IN ADDIS ABABA, SHEGER PARK'S FRIENDSHIP SQUARE" was prepared by me under the guidance of my advisor. This work is my own, except otherwise expressed in the text and has not been presented partially or completely elsewhere for assessment and award of any Degree/Diploma.

FEHIM SEID	_____	_____
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ACRONYMS

AU	African Union
AG	Availability of Garage
CSA	Central Statistical Agency
Chi (X^2)	Chi-Square Test
ENE	East-northeast
ESE	East-southeast
ETB	Ethiopian Birr
AAU,SBE	Addis Ababa University, School of Built Environment
EFM	Exterior façade material
FDRE	Federal democratic republic of Ethiopia
HPM	Hedonic Price Method
LAD	Living area of the dwelling
NYCP	New York's Central Park
NNE	North-northeast
NNW	North-northwest
NS	Number of Stories
RCC	Reinforced Cement Concrete
SSE	South-southeast
SSW	South-southwest
UN	United Nation
UNECA	United Nations Economic Commission for Africa
UPS	Urban Public Spaces
USD	United States Dollar
WSW	West-southwest
WNW	West North West
WTP	Willingness to Pay

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ABSTRACT

Urban public spaces and recreational areas are vital components of city life, providing environmental, economic, and social benefits. They act as "green lungs," enhancing air quality, offering recreational opportunities, and adding aesthetic value to urban environments. In Addis Ababa, however, urban development has historically neglected the importance of such spaces, often resulting in their reduction or complete loss. This neglect has had adverse environmental, economic, and social consequences. Moreover, the direct economic value of green amenities is rarely quantified in monetary terms, and empirical studies on urban green amenity valuation in developing countries, including Ethiopia, remain limited. This study focuses on the economic valuation of public spaces, with particular emphasis on Sheger Park and its surrounding water features in Arada Sub-city, Addis Ababa. It examines how proximity to these public spaces influences residential property values, including both sales and rental prices. The study employs the Hedonic Pricing Method (HPM) to analyze the impact of key environmental attributes, such as distance to Sheger Park and views of the park or artificial lakes, on property values. The regression results indicate that both homebuyers and renters are willing to pay a premium for properties located near public spaces or those with scenic views. Specifically, the value of owner-occupied houses increases by approximately 183,359.2 ETB for every 100-meter reduction in distance to Sheger Park. The model explains 64% of the variation in residential property prices ($R^2 = 0.64$), indicating a good model fit, while the remaining 36% is attributed to other unobserved factors. The 95% confidence interval for the distance coefficient ranges from −137,608.8 ETB to 370,890.3 ETB, suggesting that property prices increase within this range for every 100-meter decrease in distance to the park. Similarly, rental properties located closer to public spaces exhibit a statistically significant increase in value. These findings confirm that public spaces, such as parks and lakes, are critical amenities influencing housing prices in Arada Sub-city. This indicates that residents are willing to pay for green amenities in their neighborhood. Incorporating green amenities in designing urban residential areas and real estate developments can provide premium benefits to investors. Despite the clear demand for public spaces in Addis Ababa, their availability remains limited, making them highly sought after. The economic benefits estimated in this study highlight the importance of incorporating such spaces into urban design and land use planning. However, the redevelopment of Sheger Park has also triggered gentrification, displacing over 800 households to the city outskirts. This displacement has disrupted social ties, destabilized livelihoods, and caused psychological distress for affected families. The study concludes by emphasizing the need for a balanced approach to urban development that recognizes the value of public spaces while minimizing the negative impacts of gentrification. Policymakers must prioritize inclusive planning strategies that address the needs of displaced residents and ensure equitable access to urban amenities.

Keywords: Addis Ababa, economic valuation, gentrification, property values, regression, urban amenities

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Our world is becoming a world of cities. This silent, seismic shift from rural to urban life is one of the defining narratives of our time. The global urban population grew rapidly from 751 million in 1950 to 4.9 billion in 2025, urbanization continues to rise gradually with urban share increasing by about 1% annually in recent projections, according to the latest (UN Prospects 2025). Asia Houses the largest portion by far, accounting for 55% of the global urban population. This equates to roughly 2.7 billion people in urban areas. Europe: 12%, roughly 0.6 billion urban people. Europe is highly urbanized (often 80%). Latin America: 10%, around 0.5 billion urban residents. Northern America: 8%, about 0.4 billion urban people. Highly urbanized (80%), but smaller total population share.

Africa: 18% of global urban population, or about 0.9 billion urban residents. Sub-Saharan Africa is urbanizing fastest, but overall levels remain lower (around 40–45% urban in many countries), with significant growth projected in coming decades. Africa remains predominantly rural with only 18% its population live in urban areas, rapid urbanization in middle and low income country presents challenges for sustainable development necessitating integrated policy to enhance urban living and environmental quality. This rapid urban expansion places increasing pressure on urban environments, intensifying challenges related to housing provision, environmental quality, and social well-being.

Within this context, urban public spaces, such as parks, green corridors, and recreational areas, play a critical role in enhancing urban livability. These spaces provide environmental benefits including urban cooling, air pollution reduction, storm water management, and biodiversity support, while also offering social and aesthetic benefits that contribute to residents' quality of life (Gill et al., 2007; Estrada et al., 2017).

Although public spaces do not have explicit market prices, their economic value is often capitalized into nearby property prices. Numerous studies in Europe and North America demonstrate that proximity to well-maintained parks and green areas can increase residential property values by approximately 5–20% (Zhang et al., 2012; Crompton et al., 2005). This price premium reflects residents' willingness to pay for environmental quality, recreational access, and scenic views.

Hedonic Pricing Method (HPM) is widely used to estimate these implicit values by decomposing property prices into their constituent attributes, including environmental amenities. Through this approach, the benefits of public spaces are captured as use values (e.g., recreation and aesthetics) and non-use values (e.g., future availability and existence value).

While urban green spaces generate significant environmental and economic benefits, they may also produce unintended social consequences. In many cities, particularly in Europe and North America, investments in green infrastructure have been associated with rising property values that displace low-income residents, a process known as green gentrification (Anguelovski et al., 2018; Hochstenbach et al., 2017).

In Sub-Saharan Africa, rapid urban growth combined with weak housing markets and limited social protection systems increases vulnerability to displacement. However, empirical evidence on the relationship between public spaces, property values, and displacement in African cities remains limited, highlighting a critical research gap.

Ethiopia is experiencing one of the fastest urbanization rates globally, estimated at approximately 5.4% per year (World Bank, 2015). This growth is driven by rural-to-urban migration, city expansion, and the transformation of rural settlements into urban areas. Addis Ababa, the country's capital and largest metropolitan area, faces significant challenges related to housing affordability, infrastructure provision, and equitable access to public spaces.

Recognizing these challenges, the city has allocated approximately 41% of its land for green area development. However, limited financial resources and competing development priorities have constrained the effective implementation and maintenance of urban public spaces. Assigning economic value to urban ecosystem services can support evidence-based planning and encourage investment in sustainable urban development.

Sheger Park, inaugurated in 2020 under the Beautifying Sheger initiative, represents one of the largest urban renewal projects in Addis Ababa. Extending along the city's river corridors, the park integrates green spaces, artificial lakes, recreational facilities, and cultural attractions aimed at improving environmental quality, tourism, and urban resilience.

It is within this persistent context that Sheger Park transforms from a mere amenity into a critical urban case study. Situated in the Arada sub-city , it represents the convergence of global trends, African urbanization, and Ethiopian ambition. Therefore, this research spots Sheger Park as a pivotal lens through which to examine the dualistic nature of public space investment in a rapidly urbanizing African capital. The study is guided by central, interconnected questions: Who truly benefits from this prestigious park? How has its presence altered local housing market dynamics? And does its development represent a pathway to inclusive urban growth, or does it trigger patterns of social change and exclusion that mirror the gentrification concerns observed across worldwide?.

By synthesizing global theoretical frameworks with continental trends and local specificity, this background establishes the foundation for an urgent inquiry. It seeks to move beyond a simple celebration of green infrastructure to a nuanced analysis of its long term socio economic ripple effects. In doing so, it addresses a fundamental challenge facing Addis Ababa and cities like it: not just how to cultivate beautiful landscapes, but how to ensure that in doing so, they also foster fairness, inclusivity, and a truly sustainable future for all their residents. This study focused on Sheger Park in Addis Ababa, Ethiopia, exploring its impact on nearby property prices and the broader implications for urban development. By examining the park's attributes and the preferences of property buyers, it aims to guide investment strategies in urban public spaces and promote sustainable urban planning.

1.2. Statement of the Problem

Despite their critical role as the “green lungs” of cities purifying air, supporting recreation, and enriching urban aesthetics public spaces and recreational areas remain undervalued in Addis Ababa’s urban development agenda. Historically, rapid expansion and infrastructure priorities have overshadowed the need for these vital communal environments, resulting in their reduction or outright loss. This persistent oversight has not only compromised environmental quality but has also weakened economic vitality and eroded the social fabric of the city. Addressing this neglect is essential to restoring the multifaceted benefits that well-designed urban public spaces bring to Addis Ababa’s residents and the city’s sustainable future.

The introduction of Sheger Park's Friendship Square in Addis Ababa aimed to enhance the city's image and provide a vibrant public space for residents and visitors. While this urban development has attracted daily visitors, concerns arise regarding its influence on surrounding property values and the potential for socio-economic change. Such projects often bring unintended consequences particularly rising property values, social displacement, and the restructuring of surrounding communities. The main problem lies in the dual impact of Sheger Park’s development. While the park provides clear ecological and recreational benefits, it may also contribute to green gentrification a phenomenon where public space investments increase housing prices and lead to the gradual displacement of low-income residents. In areas surrounding Sheger Park, anecdotal evidence suggests significant increases in property values and changing demographics. These changes raise concerns about who truly benefits from urban beautification and whether such projects unintentionally worsen inequality in access to housing and amenities.

These problems are occurring due to a combination of urban market pressures, inadequate housing regulations, and the lack of integrated planning that accounts for social equity. As the city invests in high-profile urban renewal projects, market forces tend to outpace protective policies, pushing vulnerable populations out of upgraded areas. In Addis Ababa, where informal housing remains prevalent and public housing programs are limited, such developments risk exacerbating socio-economic divides. The effects of these problems are both economic and social. Economically, while rising property values can generate higher tax revenues and stimulate investment, they can also price-out long-standing residents, limit affordable housing supply, and encourage speculative real estate behavior. Socially, these dynamics can lead to displacement, fragmentation of community networks, and loss of cultural identity in historic neighborhoods. These impacts raise critical questions about the sustainability and inclusiveness of current urban development trends. Despite a growing global body of literature on the relationship between urban green space and property values, context-specific studies in African cities remain scarce. In Addis Ababa, few empirical studies have assessed both the economic valuation of parks and the socio-spatial consequences of public space investment. There is limited evidence on how urban green infrastructure reshapes real estate patterns, and even less, on how these patterns affect housing accessibility, equity, and social cohesion. Although the global literature has explored public space valuation extensively (Crompton, 2001; Gibbons et al., 2014), there is limited evidence on how urban green infrastructure influences real estate patterns in rapidly urbanizing African cities, little is known about how hedonic pricing interacts with socio-spatial transformation processes like gentrification, particularly Addis Ababa. In Addis Ababa, empirical studies that simultaneously assess the economic valuation of parks and the socio-spatial

consequences of public space investments remain scarce. Moreover, even less is understood about how these real estate dynamics affect housing accessibility, equity, and social cohesion within such contexts. Addis Ababa presents a unique case due to the coexistence of formal and informal land markets, which complicates valuation and planning processes (Abebe & Alemayehu, 2021). Additionally, the city experiences a high rate of displacement following beautification and public space enhancement projects, further underscoring the socio-spatial transformation challenges that accompany urban green investments. This gap highlights the need for more localized research to understand the interplay between hedonic pricing mechanisms and socio-spatial processes such as gentrification in the city.

The study, therefore, aims to fill this gap of information by examining the impact of Sheger Park on surrounding residential property values and exploring its role in driving socio-economic change. By combining hedonic pricing methods with gentrification analysis, the research seeks to quantify both the economic benefits, and the social risks associated with park-centered urban development in Addis Ababa. The findings are intended to inform more balanced urban planning and policy-making those accounts for both environmental enhancement and social equity. By illustrating both the benefits and risks of the Sheger Park project, the study aims to guide future urban-renewal guidelines under the Addis Ababa City Structure Plan, ensuring new parks improve the city without displacing residents.

1.3. Objectives

1.3.1. General objective

The general objective of the study was to assess the impact of Sheger Park's Friendship Square on property values and socio-economic dynamics in the surrounding neighborhoods of Addis Ababa, with a focus on understanding of its implications for urban development and community well-being.

1.3.2. Specific objectives

The specific objectives of the study were

- ✓ To assess the impact of Sheger Park on nearby residential property values and community dynamics in Arada sub-city, Addis Ababa.
- ✓ To assess the extent and characteristics of socio-economic changes, including gentrification trends, resulting from the development of Sheger Park.
- ✓ To explore perceptions of long-term residents and displaced households regarding the park’s impact on housing affordability, livelihoods, and neighborhood identity.
- ✓ To evaluate the implication of various attributes and external factors on residential property price by constructing the hedonic price model (HPM).

1.4. Research Questions

The researcher proposes to answer the following questions

- ✓ How does the distance from a public space (e.g., overlooking, just behind, further away) affect buyer willingness to pay?
- ✓ How do buyers perceive the value of properties with direct views of public paces compared to those located further away ?
- ✓ How do buyers describe the lifestyle benefits (e.g., access to recreation, sense of peacefulness) of living near public spaces?
- ✓ Who benefits from this large scale urban renewal projects such as Sheger park redevelopment & How Has it triggered a forms of social change or exclusion?

1.5. Significance of the Study

This study is important for several reasons. Firstly, it provides context-specific empirical evidence on how Sheger Park one of Addis Ababa's largest public park projects affects the prices of nearby homes and rental properties. While similar studies exist internationally, limited empirical research addresses these dynamics specifically within Ethiopian context. By using data from the areas around the park and applying the Hedonic Pricing Method, this study helps fill that gap and gives practical insight into how green spaces are shaping urban housing markets in Addis Ababa.

The findings can help inform future urban renewal efforts and contribute to the improvement of housing policy and planning practice. The study aims to demonstrate that while parks can increase property values and attract investment, they can also lead to rising housing costs and potential displacement of low-income residents. These insights can guide the development of more inclusive public space planning and housing affordability strategies. Specifically, the study highlights potential limitations and trade-offs in implementing upgraded green spaces, by providing evidence that can inform zoning regulations, green area development, and socially inclusive redevelopment guidelines to help mitigate risks such as green gentrification and affordability challenges.

This research also supports Ethiopia's broader goals for sustainable urban development. It shows that green infrastructure like Sheger Park not only improves environmental quality but also influences economic and social conditions in surrounding neighborhoods. By highlighting the risks of gentrification, the study advocates for integrating equity-focused policies such as affordable housing protection and inclusive financing into future projects. Thus, the study directly contributes to balancing environmental improvements with social protection, aligning with national and city-level development strategies.

1.6. Limitation of the Study

This study acknowledges several limitations that may influence the findings. First, the reliance on homeowner reports and official records for retail transactions and rental data near Sheger Park may not fully capture market values and property conditions, potentially leading to inaccuracies in the valuation process.

Second, the one-year data collection period may not adequately capture the long-term impacts of the park on property values and gentrification dynamics.

Furthermore, this study does not empirically examine potential negative externalities, such as overcrowding, poor maintenance, poor Upkeep and Privacy concerns, which could partially affects amenity benefits for some nearby properties or residents, particularly during peak times or events. Moreover, the study's quantitative emphasis may overlook nuanced resident perceptions concerning park-related benefits and community dynamics. Additionally, focusing solely on Sheger Park as a case study may limit the generalizability of the findings to other public spaces in Addis Ababa and may not fully consider broader urban development policies and demographic shifts that influence property values.

To address these limitations, several mitigation measures were implemented. The research adopted a mixed-methods approach, integrating qualitative data to complement the quantitative analysis and account for the informal nature of housing transactions in Addis Ababa. Cross-verification of self-reported property values with municipal records. Available data was conducted, to get an enhanced data accuracy. Purposive sampling strategies ensured the representation of diverse socio-economic groups, and insights from interviews with policymakers provided a broader perspective on long-term trends beyond the study period. Moreover, by comparing findings to global studies and consulting with key informants on policy gaps, the study aimed to enhance the relevance and applicability of its results to similar urban contexts, thereby strengthening the robustness of the research outcomes.

1.7. Scope of the Study

1.7.1. Thematic scope

This study delves into the impact of urban public spaces, with a specific focus on the neighboring effects of Sheger Park Friendship Square on residential property values in Addis Ababa. By examining alterations in property sales and rental values before and after the park's development, the research aims to uncover potential gentrification influences. Through demographic analysis, displacement patterns assessment, and socio-economic evaluations, the study explored the broader implications of Sheger Park on the surrounding community. The study employed a mixed-methods approach, blending quantitative property value analysis with qualitative interviews to capture resident perspectives. The implication of the research findings on urban planning and policy-making, especially regarding affordable housing sustainability and gentrification mitigation, was examined. The research focused on residential properties within a defined 2.8-kilometer radius from Sheger Park and considers a specific timeframe to accurately measure the park's impacts..

1.7.2. Spatial scope

This study concentrated on residential properties within a 2.8-kilometer radius surrounding Sheger Park in Addis Ababa. By analyzing property values in this specific geographic area, the research aims to understand the direct effects of the park's development on nearby housing prices. The spatial scope encompassed a comparison of property values pre- and post-Sheger Park establishment to evaluate changes over time. In rapidly urbanizing cities like Addis Ababa, where formal and informal housing coexist, a 2.5 to 3 km range is often used to capture the influence of major public investments such as parks or transport hubs. Sheger

Park is a large, multifunctional space and its potential effects on property values; accessibility, and neighborhood change extend well beyond its immediate surroundings. The 2.8 km radius encompasses a mix of high- and low-income residential areas such as Gola Sefer, Arat Kilo, Kazanchis, and Riche, making it suitable for examining the broader economic and social impacts of the park. This range also represents a realistic walking distance for many city residents, especially in a context where reliance on non-motorized transport remains significant.

Furthermore, the study assessed gentrification effects within this defined area, examining demographic shifts, displacement trends, and socio-economic alterations in the neighborhood. By focusing on this spatial domain, the research intends to provide insights into the localized impacts of urban public space development on residential property values and community dynamics in the vicinity of Sheger Park.

1.8. Organization of research

The research is organized into five chapters. Chapter 1 delivers an introduction to the research topic, set the context and outlining the objectives of the study, scope of the investigation and organization of the thesis. Chapter 2 draws a wide ranging literature review, analyzing acquired information. The review of the previous research on the relationship between public space and residential property values, as well as gentrification trends. Chapter 3 specifies the study methodology, clearing up the methods, techniques, research design, sampling approach, data source and collection technique, variable used and data analysis methods , used to gather and analyze data. Chapter 4 concentrates on data analysis and discussion, interpreting the findings in relation to the research questions. The evaluation and comparison of the analysis results are given in this section. Chapter 5 presents a summary of the findings and offers the main conclusions drawn from the study. During the analysis, the study provides actionable recommendations for policymakers, emphasizing the importance of balancing urban development with social inclusion and environmental sustainability. Finally, the reference and appendix utilized for this research work, are included.

CHAPTER TWO

2. LITERATURE REVIEW

Across the globe, urban public spaces parks, plazas, and greenways increasingly demonstrate their multifaceted value. Beyond recreation, they provide critical ecological functions such as cooling urban temperatures, improving air quality, and supporting biodiversity (Gill et al., 2007). In high-density cities, public spaces foster social interaction, contribute to residents' mental and physical health, and enhance the overall quality of life (Gehl, 2011; Kabisch et al., 2015). Importantly, their presence often correlates with increased property values in surrounding areas. Numerous studies in developed countries have demonstrated that proximity to well-maintained public spaces can raise housing prices by 5–20% (Zhang et al., 2012; Crompton, 2005), influencing how cities approach urban design and real estate development.

In African cities, the relationship between public spaces and property values is less studied, though interest is growing. Many urban centers across the continent face challenges of rapid urbanization, informal housing, and limited investment in green infrastructure (UN-Habitat, 2014). While public parks exist in cities like Nairobi, Lagos, and Accra, their spatial distribution is often uneven, and urban planning does not always ensure equitable access. Evidence from South Africa and Kenya suggests that upgraded green spaces increase nearby property prices but also raise concerns about social displacement mirroring gentrification trends seen elsewhere (Anguelovski et al., 2018).

In Ethiopia, public space development is becoming central to urban beautification and green growth strategies. Addis Ababa, the capital, has initiated major projects like Unity Park, Entoto Park, and Sheger Park to improve environmental quality, attract tourism, and support national image-building. However, the socioeconomic impacts of these initiatives remain underexplored. Particularly lacking is data on how such investments affect local housing markets or exacerbate inequality in acess to amenities. Urban renewal efforts that elevate land values may unintentionally displace low-income residents, raising ethical and policy concerns. Within this context, Sheger Park represents a critical case. Situated in the Arada sub-city of Addis Ababa, it combines environmental goals with ambitious design and urban branding. Yet, questions persist: Who benefits from this park? How has it altered housing values? And has it triggered forms of social change or exclusion? By reviewing both global evidence and local trends, this literature review builds a foundation for analyzing the dual nature of public space investments in developing urban contexts highlighting both their opportunities and their trade-offs.

2.1. Conceptual and Theoretical Literature

The literature review shows the relationship between urban green spaces and residential property values, environment quality, public health and personal wellbeing. However, few studies have explored how green spaces impact housing prices. Most of these studies focus on the influence of single larger green areas (e.g., parks, plazas and green corridors) on real estate market values. This section aligning with the study specific objectives and This study fills critical gaps by analyzing the impacts of green spaces on nearby residential property values, contextualizing findings in Addis Ababa's Urban Market landscapes, providing sector-

specific insights, investigating negative externalities, evaluating the Major Green Urban renewal Project, and employing mixed-methods approaches. These contributions advance urban economics by offering a novel, culturally sensitive framework for green space valuation in densely populated Central areas. Using a hedonic pricing model (HPM),Jones et al. investigate how characteristics of nearby green spaces, including size, proximity, and landscape patterns, influence housing prices in a metropolitan area. The findings emphasize the role of landscape pattern indices (e.g., fragmentation, connectivity) in shaping green space valuation. The research highlights that not only the presence but also the spatial configuration of green spaces affects property prices, offering insights into urban planning and real estate markets.

Lin et al. synthesize studies on how urban parks and green spaces influence residence prices, situating the discussion within environmental health benefits (e.g., air quality, mental wellbeing). This study finds that green spaces generally enhance property values, particularly large parks, but notes variability due to park quality and accessibility. The review identifies a gap in studies addressing smaller green spaces and contextual factors like cultural preferences. Even though this review highlights the need to study smaller green spaces (e.g., community gardens, pocket parks) and cultural factors. Urban green spaces have multifaceted impacts on property values. The literature indicates that houses located near parks and green areas tend to command higher prices than those situated further away. It is argued that green spaces enhance the aesthetic visual appeal of a neighborhood, making it more attractive to potential buyers. Moreover, these areas provide recreational opportunities, which can significantly enhance the quality of life for residents, making such neighborhoods more desirable.

Existing studies highlight various aspects which limits their broader applicability. For instance, research conducted in Algeria revealed that the distribution Of greenery in residential areas largely depends on residents' personal preferences, with a notable absence of regulatory guidelines for designing Outdoor spaces. Urban greenery contributes to environmental benefits such as improved air quality, reduced urban heat effects and air pollution, and increased biodiversity, which are increasingly important to potential homebuyers. To investigate their impact on the market value of residential units, many scholars focused on green space attributes like size, distance, accessibility and provision of recreational services. These attributes affect the decisions of home buyers or renters regarding their housing choice and determine the market value of residential properties. Previous research indicated that larger parks tend to have a substantial positive impact on property values more than smaller less accessible green areas. A large, well-maintained city park may provide more value than a small playground. The reason may lie in the fact that larger parks often come with amenities such as walking trails, sports facilities, artificial lakes and picnic areas, which attract more visitors and enhance the overall desirability of the neighborhood. A sizable urban park can serve not only as a place for leisure activities but also as a community hub fostering social interaction among residents.

2.1.1. Public spaces and urban value

Urban public spaces such as parks, plazas, green corridors, and urban forests play an essential role in shaping the physical, economic, and social dynamics of cities. These spaces enhance the quality of urban life by providing recreational areas, improving environmental conditions, and fostering social cohesion. The concept of “urban ecosystem services” (Costanza et al., 1997) captures these benefits, some of which have

direct or indirect impacts on real estate markets. From a property valuation standpoint, urban public spaces generate both use values (like recreation and walkability) and non-use values (such as the aesthetic value or the prestige of living near a park). These values are often capitalized into property prices through what is known as the hedonic pricing mechanism a method widely applied in real estate economics to isolate the implicit value of environmental attributes (Rosen, 1974).

Proximity to parks has repeatedly been linked to higher housing prices in cities worldwide. The "proximate principle" suggests that people are willing to pay a premium for homes that offer easier access to high-quality open spaces (Crompton, 2005). Additionally, visual access such as lake or greenery views can further boost this premium (Luttik, 2000). However, these effects are shaped by several variables, including the type of public space, its accessibility, maintenance level, and broader urban planning context. While parks generally enhance property values, they can also fuel green gentrification a process where environmental upgrades unintentionally lead to the displacement of low-income residents (Anguelovski et al., 2018). This duality underscores the importance of viewing public space development through both economic and social lenses. Such perspectives are especially relevant in rapidly urbanizing cities where development pressures and socio-economic disparities co-exist, as is the case in Addis Ababa.

2.1.2. Public spaces and housing values – global and regional trends

Across the world, studies show that public spaces especially parks, lakes, and urban green areas can increase nearby housing values. This relationship is based on the idea that people are willing to pay more to live near well-maintained public areas that offer recreation, beauty, and fresh air. In cities like London, New York, and Berlin, homes close to parks often sell for 5% to 20% more than similar homes farther away (Gibbons et al., 2014; Crompton, 2005). These "green premiums" reflect how valuable public space is to urban residents.

However, the benefits are not always shared equally. In many cities, large public investments such as the building of parks or waterfronts lead to gentrification. This is when wealthier people move in, housing prices rise, and low-income residents are pushed out (Anguelovski et al., 2018). Such trends have been seen in cities across North America and Europe, where beautification projects increased property values but reduced affordability. In the Global South, including parts of Latin America and Asia, the pattern is similar but more complex. In cities like Bogotá and Jakarta, urban parks improved health and safety, but often without strong protections for vulnerable residents. Research shows that without clear policies like rent control or affordable housing programs urban renewal projects can worsen inequality (Shaw & Hagemans, 2015; Lin & Zhang, 2020).

In Africa, there is less research on the link between public space and property value. Still, some evidence exists. In Nairobi, parks and green zones are linked with higher land values, especially in wealthier areas (Mundia & Aniya, 2005). In Lagos, better access to public space improved urban quality but also led to land speculation and displacement (Adelekan, 2010). The challenge in many African cities is that planning often focuses on short-term growth, not long-term equity. In Ethiopia, the effect of public space on property values has not been well studied. Addis Ababa is rapidly expanding, with growing pressure on land and housing. The recent development of Sheger Park marks one of the most ambitious green projects in the

city's history. Although promoted as a space for all, early signs suggest it may also lead to higher land values, more construction, and the risk of displacing long-time residents.

2.1.3. Policy responses and planning approaches

The growing awareness of green gentrification and its social consequences has led to the development of various policy approaches that aim to balance environmental goals with social equity. Cities around the world have experimented with planning strategies that promote green infrastructure while protecting vulnerable communities from displacement.

In many Western cities, tools such as inclusionary zoning, community land trusts, and affordable housing mandates have been used to prevent displacement linked to rising property values. For example, in Portland and New York, public parks are often developed alongside policies that require a portion of nearby new housing to remain affordable (Checker, 2011). Similarly, community benefit agreements are sometimes negotiated to ensure that redevelopment projects contribute to local social needs such as housing access or employment.

Another key planning approach is participatory urban governance, where communities are involved in decisions about public space development. This not only improves the social acceptability of urban projects but also helps tailor them to the needs of long-time residents. When green spaces are designed with local input, they are more likely to reflect cultural preferences and daily practices, reducing the risk of exclusion.

In the Global South, where rapid urbanization often outpaces planning frameworks, such policy responses are still emerging. African cities, face the dual challenge of upgrading infrastructure and preserving affordability. In Ethiopia, the urban planning agenda has historically focused on physical expansion and infrastructure provision, with limited emphasis on socio-spatial equity. However, the recent focus on projects like Sheger Park and Unity Park has sparked debates on the unintended effects of urban beautification. The Addis Ababa City Structure Plan (2017–2027) includes objectives for inclusive green development but lacks detailed mechanisms to protect low-income communities during large-scale public investments. Without robust regulatory tools, such as property tax incentives for low-income owners or enforceable affordable housing quotas, the city risks repeating patterns seen elsewhere—were improvements in environmental quality trigger displacement.

To prevent such outcomes, planning authorities need to adopt a balanced urban renewal strategy. This includes mapping high-risk areas for displacement, conducting social impact assessments before project implementation, and ensuring that green projects are coupled with housing protection measures. It also involves developing monitoring systems to track property values, rental trends, and population changes over time. In summary, while green public space development is essential for sustainable urban futures, it must be guided by policies that protect the right to stay for existing residents. For Addis Ababa, this means evolving from a project-based beautification model toward a more inclusive urban planning framework one that ensures environmental improvements do not come at the expense of social justice. (Figure 1) explains the Policy implication of the urban public space UPS Valuation.

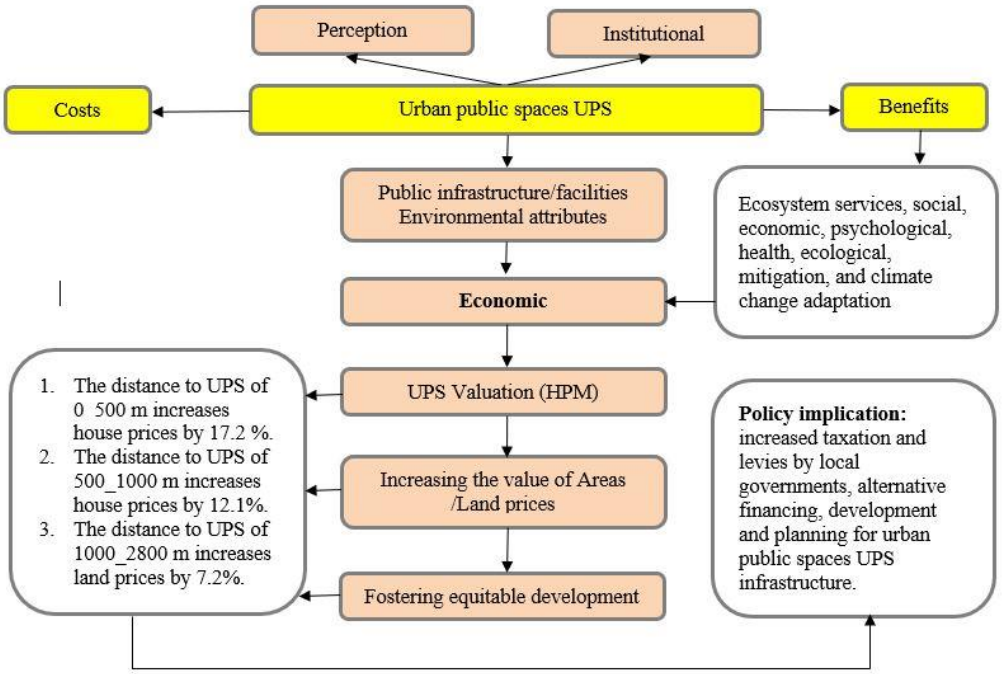


Figure 1: Policy implication of the urban public space UPS Valuation

2.2. Contextual and Empirical Literature

Proximity to urban green spaces such as parks, plazas and green corridors are factors that positively affects residential property values. The research shows that proximity to green spaces can significantly enhance property values, making them a valuable asset for urban dwellers and real estate investors. The hedonic pricing model, as explored by Czembrowski and Kronenberg, provides a framework for understanding how various attributes of green spaces, such as size, accessibility and quality, influence property prices. Ma et al. suggested that larger parks, usually over 20 ha, can lead to a price increase of 6–7%, whereas the average price rise for all other parks is less than 1%. A study by Jones et al. found that a one-unit increase in the natural logarithm of the landscape shape index (LSI), leads to a 4%increase in housing prices. Similarly, an analysis of Swedish real estate statistics revealed that property values in neighborhoods with attractive urban parks were selling at approximately 17% higher than the city.

In the United States the pattern is Similar, Crompton asserted that the market value of a property is likely to increase by 20% if it is abutting or fronting an urban green space. The work of Crompton and Nicholls estimated that proximity to urban parks commands a 20% premium to real estate values. This argument was supported by Crompton's review of studies on the impact of urban green spaces on property market prices. He found that 25 out of 30 such studies revealed an added value of 10–20% in property prices. Similarly, a recent review by Crompton and Nicholls of 33 other studies found a premium of 8–10% on properties adjacent to a passive park. Using hedonic pricing methods, Trojanek et al. found a price increase of 3–4% of housing located at a distance up to 100 m from urban green spaces.

In two separate studies, in Nanjing, China, Yu et al. argued that newly built parks significantly impact housing prices within 800 m radius, with medium-sized parks showing the most pronounced leverage effect. Feng et al. and Zhuo et al. came to similar conclusions in their research, in which the construction of new urban parks generally increases the surrounding real estate values. Whereas Yang's analysis suggested that with every 1 km increase in distance from residential areas to a park, housing prices decrease by approximately CNY 63,400. A study on Beijing indicated a significant positive relationship between housing value and green space, leading to a housing price rise of CNY 806.28 per square meter for each unit of increase in ecosystem services. The argument is that proximity to a green space and its size play a positive role in property values. In their other review of 11 research papers examining the effect of urban green spaces on housing prices in the Chinese context, five studies revealed a significant increase in property values, whereas four others showed some mixed results, and only two found a decrease in value. This was also corroborated by survey analyses concluding that households tend to attribute more value to housing locations at a close distance to natural green areas. In their analysis of the impact of different types of urban green spaces on property values in Beijing, Zhang et al. concluded that prices rise by 0.5–14.1% if they are located within a distance of 160–850 m.

To conclude The existing body of evidence tends to suggest a threshold radius of 400–600 m for urban green spaces to affect property prices. This influence is greater for properties adjacent within a 100 m radius of urban green spaces. Such green spaces impact home values through their contribution to urban quality of life, stress relief, emotional health, personal wellbeing, provision of recreational services, environmental health and beautification. Such amenities are highly valued when seeking a residential unit which will translate to the willingness to pay a price premium on housing value.

2.2.1. Overview of variability in the impact of the same or different types of public spaces on house prices

Heterogeneity in time, space, and property characteristics must be accounted for when examining factors influencing house prices in nearby neighborhoods. As studies have progressed, evidence has highlighted differential effects of identical or comparable green spaces on property values. Crompton indicated that properties adjacent to or fronting passive parks can experience a positive impact of up to 20% on real estate value. Zhang et al. investigated urban green spaces' effects on property values in Beijing, categorizing parks into six groups based on size and type for a more precise assessment. Their results showed that such spaces can add 0.5–14.1% to property prices within distances of 850–1604 meters.

Tian examined three free municipal parks in Tianjin and found that park green spaces exert a smaller influence on surrounding property prices compared to transportation factors, with effects differing across locations. Trojanek et al. applied the hedonic price method along with OLS, GLS, and QR models, determining that urban green space located within 100 meters of a residence raises residential prices by 3–4%.Panduro et al. employed hedonic pricing to estimate the implicit price of urban green space availability, reporting an annual rent increase of 0.33% within a 1,000-meter radius of a park. Evangelio et al. offered an initial assessment of parks' influence on house prices in Victoria, using hedonic regression to analyze

distances to six park types alongside other amenities. They identified that specific park categories can produce a notable positive effect on property values.

Liu and Chen reported that a 1-km reduction in distance to green spaces corresponds to an average rise of RMB 21,840 in residential prices. McCord et al. drew from initial hedonic price studies to note that green spaces generally enhance quality of life and property values. However, prior research reveals varied perspectives. Certain studies indicate that different park types may lead to appreciation or depreciation in nearby property values. McMillan's work on urban water parks marked an early effort to quantify the economic benefits of urban parks for real estate. Different investigations have supported a positive influence of urban park green spaces on house prices. In contrast, some researchers report divergent outcomes. For instance, Pearson et al. assessed Noosa National Park's effect on surrounding undeveloped land prices, finding a 7% increase in residential values with limited additional green resources overall. Yet properties south of the park achieved only 85% of the value seen north of it, showing no value gain. Hobden et al. analyzed suburban parks in Canada through matched sales over 20 years, concluding that most green space types elevate values of adjacent single-family homes, though corridor green spaces affect nearby properties variably, with some exceptions leading to negative impacts. Nicholls and Crompton compared three communities in one city, where two bordered green spaces and benefited from substantial property value gains. Greenways demonstrated a strong positive effect on neighboring sales prices, while the opposite situation resulted in negative impacts. This overview illustrates the contextual and empirical variability in how green spaces influence house prices, emphasizing the role of factors such as proximity, park type, and location-specific conditions.

2.2.2. Hedonic pricing and urban public space valuation

A wide range of factors, both tangible and intangible, can influence property prices in urban areas. Among these, proximity to well-maintained public spaces such as parks, lakes, and landscaped areas has been recognized as a significant driver of residential property values. These amenities offer benefits that are not directly bought or sold in the market, such as recreational access, improved air quality, aesthetic beauty, and psychological well-being. Because these benefits are not assigned a formal price, the Hedonic Pricing Method (HPM) is often used to estimate their value by analyzing how they affect housing prices.

HPM operates on the principle that the price of a property reflects the sum of its characteristics. These include not only the structural features of the house—such as size, number of rooms, or age—but also environmental and locational attributes like access to public services, scenic views, and proximity to green spaces. The method assumes that buyers are willing to pay more for properties that offer preferred attributes, and therefore, by isolating each factor in a statistical model, researchers can estimate how much of the property’s value is attributable to each characteristic. HPM has been widely applied to assess the value of urban green infrastructure. For instance, research in the United States has found that properties located within walking distance of a park can command premiums of 5–20% over similar properties located further away (Crompton, 2001; Anderson & West, 2006). In Europe, similar results have been documented in cities like Amsterdam and Copenhagen, where well-planned public parks are seen to significantly enhance surrounding real estate values (Luttik, 2000).

General Form of the Hedonic Pricing Model
The model is typically written as:

$$P_i = \beta_0 + \sum_{j=1}^{k} \beta_j X_{ij} + \epsilon_i$$

Where:

- P_i is the price (or rent) of property i
- X_{ij} are the characteristics of the property (e.g., size, distance to park, number of rooms)
- β_j are coefficients representing the value contribution of each characteristic
- ϵ_i is the error term

This formulation is based on standard hedonic pricing theory as described in Rosen (1974), who formalized the approach as a way to derive the value of individual components in a differentiated product market, such as housing (Rosen 1974).

While the use of HPM is emerging in African cities, its application remains limited. Studies from cities like Nairobi and Cape Town have begun to explore how green spaces influence land values, but inconsistent data availability and market informality often limit the scope of analysis. Nonetheless, there is increasing recognition that methods like HPM are essential for integrating environmental valuation into urban planning, especially in rapidly urbanizing contexts. In Ethiopia, and particularly in Addis Ababa, the application of HPM has been rare due to the lack of structured property transaction data and the informal nature of housing markets. However, as the city continues to expand and invest in green development initiatives such as Sheger Park, the use of hedonic models becomes vital for evidence-based decision-making. By estimating how proximity and visibility to Sheger Park influence property values, this study fills an important methodological and empirical gap in the urban research landscape. It offers a practical tool for evaluating public investments and supports more balanced planning that considers both economic gains and social outcomes.

2.3.Gentrification and Displacement

Gentrification is a complex and multifaceted urban phenomenon that has attracted significant attention from scholars across various disciplines, including sociology, urban planning, and economics. It refers to the transformation of neighborhoods through the influx of more affluent residents, often accompanied by the renovation of housing, rising property values, and the displacement of lower-income, long-standing community members. While gentrification may improve certain aspects of urban neighborhoods, such as physical infrastructure and safety, it also creates significant socio-economic challenges, particularly for those who are displaced.

2.3.1. Gentrification - its histories and trajectories

The literature chosen for this research spans almost fifty years of scholarly works, including monographs, journal articles, and edited chapters, all focused on the phenomenon of gentrification. The timeline begins in 1964, when the British sociologist Ruth Glass first introduced the term “gentrification” in the study of urban and social transformation in London, and extends up to the most recent analyses of the process. This chronology traces the evolution of gentrification from its initial or first wave, through the second wave, the

third wave often associated with the post-recession period, and into a fourth wave. It also tracks how gentrification has geographically expanded beyond central urban areas to include rural regions and suburbs, as well as its spread from Anglo-American cities to urban centers worldwide, including those in less developed countries and former socialist or communist states.

Given the context of the ongoing global economic downturn, the timeline also incorporates discussions about whether gentrification has reached an endpoint, particularly those debates that emerged during the recession of the early 1990s. These discussions remain relevant for understanding the trajectory of gentrification during the current recession (Lees, 2009) and its future prospects (Lees, Slater, and Wyly, 2008). Smith (2009) offers insightful commentary on this topic: The worldwide economic crisis beginning in 2007-2008, sparked by the collapse of the US housing market and escalating global financial turmoil, is expected to have foreseeable consequences. Prior to the 1980s, gentrification tended to operate counter-cyclically or was at least unaffected by economic fluctuations. However, as it became more embedded in the economic system, gentrification grew increasingly sensitive to broader market cycles. Much depends on the economic influence wielded by the state or permitted to it. The controversial 2008 Wall Street bailout symbolizes a climax in neo-liberal ideology, if not neo-liberalism itself. The state has ultimately exposed itself as a key orchestrator of neo-liberalism. While not a direct policy targeting gentrification, this and related international financial rescues will eventually boost the gentrification market.

An additional important observation about gentrification's history and development comes from Caroline Mills, who argued as early as 1988 that gentrification had become mainstream: much like blue jeans became the global uniform of the new social class, gentrified housing emerged as its typical neighborhood. Paradoxically, just as blue jeans evolved into a symbol of conformity, so too did the unique character of gentrified neighborhoods diminishes. Yet it was not until the late 1990s and early 2000s that gentrification was widely recognized in both academia and public discourse as a common urban phenomenon. Consequently, scholars are only now beginning to acknowledge that the once-clear distinction between gentrification as a marginal process and suburbanization as a dominant one has started to fade:

Gentrification in central areas and suburban sprawl at the outskirts has become two sides of the same coin. In a typically paradoxical way, despite the new, wealthier residents' claims to appreciate the 'gritty' urban qualities that contrast with far suburban subdivisions, what actually makes these neighborhoods desirable today are features less traditionally urban and more suburban. These include significantly reduced population density, fewer impoverished residents, less industrial activity, and amenities that the Lower East Side shares with suburbs: dependable plumbing, supermarkets offering quality produce, and a substantial middle-class population. (Bruegmann, 2006: 4). Emerging forms of gentrification, such as new-build gentrification and super-gentrification, highlight these suburban influences creeping into gentrification—from the suburban-like backyards of super-gentrifiers in Brooklyn Heights, New York City (Lees, 2003), to the gated communities and uneasy relationship new-build gentrifiers in London's Docklands have with the socially diverse inner city (Butler, 2007). Butler (2007: 177) notes that the ambitions of the new-build gentrifiers he interviewed in Docklands resemble those of traditional suburbanizes, who seek to be close to, but not fully part of, the city. This observation reinforces the initial argument that gentrification can be seen as a form of neo-colonialism. Future research on gentrification must be more sensitive to the fact that it has become a mainstream urban process and must consider the unique characteristics this status entails.

2.3.2. Conceptualizing gentrification and displacement

Ruth Glass coined the term "gentrification" in 1964, describing it as a process where more affluent middle-class residents displace working-class communities through property renovation, rising prices, and shifts in social dynamics (Ruth 1964). Over time, scholars such as Hamnett, Randolph, Smith, and others have further developed this concept, identifying the key forces that drive gentrification, such as global economic trends, local government policies, and housing market dynamics. These forces, combined with increased investment and development in inner-city neighborhoods, often lead to rising property values and significant demographic changes.

One of the most contentious aspects of gentrification is its displacement effect the forced relocation of lower-income residents due to rising housing costs and shifting neighborhood dynamics. Displacement is not a monolithic experience, and scholars, including Peter Marcuse, have categorized displacement into several distinct types:

A. Economic/Physical Displacement: This occur when residents can no longer afford their housing due to rising rents or when properties are redeveloped, forcing residents to move out.
B. Last-Resident Displacement: This measures the displacement of the final resident of a property, often underrepresenting the broader effects of gentrification on previous residents who may have left before redevelopment.
C. Chain Displacement: A more comprehensive approach, this includes all residents displaced over time from a single property, highlighting the long-term ripple effects of gentrification.
D. Exclusionary Displacement: This type of displacement occurs when lower-income individuals are effectively priced out of gentrified areas and unable to access housing, even if they were not directly displaced by redevelopment.

I.The challenges of measuring displacement

Displacement remains a contentious issue due to its complex nature and the challenges in measuring it accurately. One significant difficulty is the inconsistency in how displacement is defined and quantified. Political debates often arise around what constitutes displacement, and the lack of standardized definitions and metrics can lead to the underreporting of its effects.

For example, in urban development projects like park creation or the rehabilitation of certain neighborhoods, displacement is often measured by focusing on "last-resident displacement," which only accounts for the final owner or occupant of a property that was demolished. While this approach directly addresses the impact on property owners, it overlooks tenants, who often represent the most vulnerable group in gentrifying neighborhoods. Tenants may be displaced before the property is demolished, and their experiences are frequently excluded from displacement studies. Additionally, reliance on census data to measure displacement is problematic. Census data typically offers snapshots of residency every ten years, which may not capture the dynamic and ongoing nature of displacement. People may move multiple times in the span of a decade, and their experiences may not be reflected in these infrequent surveys. This temporal gap in data can obscure the full extent of displacement and its cumulative effects on a community.

II.The personal impact of displacement

Beyond the statistical measurement of displacement, it is essential to understand the personal toll it takes on individuals and communities. Interviews with displaced property owners can provide valuable insights into their experiences, such as the adequacy of compensation, the emotional and financial strain of losing one's home, and the challenges of relocating. However, as renters are often excluded from these interviews, their stories remain underrepresented, leaving a significance portion of the displaced population's experiences undocumented. Displacement does not just disrupt individuals' living arrangements; it often fractures social networks, disbands long-standing community ties, and diminishes the sense of belonging. These socio-cultural effects can be as devastating as the physical displacement itself, especially when original residents are forced to move to areas with fewer opportunities or inferior living conditions.

III. Gentrification's long-term impact

The long-term effects of gentrification are not limited to immediate displacement but also extend to the social and economic fabric of neighborhoods. Gentrification can lead to a rise in inequality, as affluent newcomers benefit from improved amenities and services, while long-standing residents struggle to keep up with the rising costs of living. It can also erode a neighborhood's cultural heritage and identity, as more upscale establishments replace familiar businesses and community spaces to cater to wealthier residents. For urban planners and policymakers, understanding the nuanced impacts of gentrification and displacement is crucial in developing strategies that balance revitalization with the preservation of social diversity. This requires not only implementing measures to protect vulnerable residents, such as affordable housing initiatives and rent control policies, but also considering the broader social and cultural implications of neighborhood change.

Conclusion:

Gentrification and its associated displacement effects are a central issue in urban development, raising critical questions about equity, social justice, and the sustainability of urban neighborhoods. While gentrification can lead to improvements in infrastructure and services, it also disproportionately affects lower-income residents, often forcing them out of their communities. The measurement of displacement, while challenging, is essential for understanding the full impact of gentrification and ensuring that policies are in place to mitigate its negative effects. As cities continue to grow and change, addressing the complexities of gentrification and displacement will remain a key challenge for urban planners, policymakers, and communities alike.

2.3.3. Displacement in Addis Ababa

Addis Ababa, the bustling capital of Ethiopia, is undergoing a profound transformation fueled by rapid urbanization and significant infrastructure development. The city's annual urban growth rate of about 4.6% reflects its dynamic expansion, which is putting immense pressure on land use, housing, and urban infrastructure. Between 2009 and 2018, the Ethiopian government expropriated 400 hectares of land in Addis Ababa to make room for development. However, this process has raised concerns regarding the fairness and adequacy of the compensation provided to the displaced residents. Many were relocated without sufficient compensation or support, leading to grievances about the displacement's impact on their livelihoods.

A key driver behind this urban transformation has been the influx of foreign investment, particularly from China. Chinese capital has flowed into various sectors, including real estate, manufacturing, and infrastructure, significantly contributing to the city's rapid development. The increased capital investment has triggered gentrification, a phenomenon where rising property values and changes in the neighborhood's social fabric displace lower-income residents. The displacement of original inhabitants by wealthier newcomers, often resulting in the residents being priced out of their own communities, has become a growing concern for the local population.

Since the government shift in 1992, Addis Ababa has seen substantial changes in land use distribution. Between 1984 and 2014, urban land use expanded by 325%, largely driven by the move towards a market-oriented economy. The real estate sector, in particular, attracted significant capital, which in turn led to skyrocketing property prices and speculation in the housing market. These economic dynamics have made it increasingly difficult for low- and middle-income residents to remain in their original neighborhoods.

One example of this is a figure from Meleka (2016), where the highest lease winning bid per 1 m^2 of land was 355,555 Birr, even though the minimum and maximum bench mark prices based on land grades were 126 and 2939 Birr/m^2 respectively. This bid is an astonishing 148.58x higher than the maximum assessed value of the given lease. The potential (and likely) negative consequences associated with an imbalanced market like this are far reaching. Despite the scale of these changes, limited research has been conducted on the effects of gentrification and displacement within Addis Ababa. To address this gap, a study was undertaken to explore the impact of urban land renovation on displaced residents. This research involved a comprehensive survey and face-to-face interviews with those who had been directly affected by gentrification in the city. The study aimed to assess whether the residents who were displaced by urban development projects benefited from the improvements brought about by land renovations.

The findings revealed a significant trend: the original residents often did not benefit from the urban development and land renovations in their neighborhoods. Instead, the improvements in living conditions were largely enjoyed by new residents, as most of the displaced households had already moved out before the renovations took place. The study also found that long-term residents, who had lived in the area for many years, whether in private homes or government-allocated Kebele houses, were most affected by the displacement. These individuals were often forced to relocate due to the development of parks and other urban projects, which significantly altered the neighborhood landscape. Although the government provided alternative housing to displaced residents, the relocation often meant moving to far-flung areas of Addis Ababa, such as Kaliti, Jemmo 01, Ayat 01, Ayat 02, and Gelan condominiums. In contrast, only a few residents were offered compensation with alternative housing options located closer to their original homes, such as in the Arat Kilo area. This disparity in compensation highlights the social divide created by gentrification, where those who had been in the community for the longest were often moved to peripheral areas far from their previous social and economic networks.

The study underscores the uneven benefits of urban development in Addis Ababa. While the city has undoubtedly seen improvements in infrastructure and public amenities, these developments have not translated into tangible benefits for the displaced residents. The urban renewal projects, particularly those related to park development and gentrification, have displaced vulnerable populations without providing them with equitable opportunities to benefit from the changes in their neighborhoods. This issue raises

important questions about the fairness of urban planning processes and the need for more inclusive strategies that ensure displaced residents are properly compensated and integrated into the city's development.

2.3.4. Displacement due to the Sheraton hotel

The construction and expansion of the Sheraton Hotel in Addis Ababa, like the development of Sheger Park, has had a profound social impact on the neighboring historical community. The Sheraton project, which started in 1994, displaced 718 households, and during its expansion in 2010, a further 2,919 people were relocated. This disruption not only affected the residents physically but also shattered their long-standing social ties and informal economies. Many of these residents had deep connections to the area, having lived there for generations, with their livelihoods intricately woven into the neighborhood's fabric.

Despite promises from the Sheraton's developers and government officials of resettlement housing, the relocation process proved more complicated than expected. One of the primary grievances voiced by the displaced individuals was the requirement of a steady income to qualify for resettlement. This posed significant challenges, especially for those engaged in informal economies, where steady income is often not guaranteed. Many displaced residents were reliant on informal market activities, small-scale businesses, or home-based income-generating activities, all of which were severely disrupted by their forced relocation. Etenesh Melesse's research sheds light on the disproportionate impact this displacement had on women initiated by redevelopment of Sheraton Hotel, who were particularly vulnerable. Many women were self-employed, operating home-based businesses or engaging in informal work. After their relocation to the outskirts of the city, these women found them severed from the informal markets they relied on, forced to either commute long distances to continue their work or abandon their livelihoods entirely. The social and economic isolation they faced, combined with the difficulty of adapting to new environments, and compounded the hardships they endured.

The Sheraton Hotel, with its luxurious amenities and glittering pools, stands as a symbol of modernization and affluence. However, it also represents the human cost of such development. The residents displaced to make way for this opulent project was left behind, their lives disrupted and their communities fractured. This contrast between luxury and the displacement of vulnerable populations highlights the social inequalities that often accompany large-scale urban development projects. As Addis Ababa continues to undergo rapid urbanization, it is crucial to recognize the multifaceted impact of such projects on existing communities. While development may bring economic benefits, the social costs especially for marginalized groups cannot be ignored. For future development projects, it is vital that urban planning considers the social, emotional, and economic well-being of displaced residents. Comprehensive resettlement plans, fair compensation, and support for reintegration into new environments are essential to mitigate the negative effects of such displacement. Only by addressing the needs of vulnerable populations can the city achieve truly inclusive development.

2.3.5. Overview of the approach taken

The study of Sheger Park's development and its impact on the local residents of Addis Ababa provides a nuanced understanding of urban renovation and its social repercussions. The study began with a preliminary survey around Sheger Park, which gathered essential data about residents displaced by the park's

development, alongside the perceived benefits the park offers to current residents. This initial phase laid the groundwork for a deeper analysis using cross-sectional data from June 2011 and December 2022, supplemented by visual representations through Google images to track changes in household movement within the Arada sub-city, particularly in the vicinity of Sheger Park.

To assess the effects of gentrification and displacement, the study utilized deputation indicators, drawing a correlation between the two phenomena. The results revealed a negative relationship between the indicators for gentrification and displacement, suggesting that as gentrification intensified, the adverse effects on displaced residents became more severe. A central component of the research was the interviews with 20 residents who had been relocated due to the park's development and 10 long-standing residents were selected through purposive and snowball sampling techniques to capture diverse experiences related to displacement and socio-spatial change. These individuals were chosen from neighborhoods most impacted by displacement, including Kaliti, Jemmo 01, Ayat 01, Ayat 02, Gelan, and Arat Kilo condominiums. The researcher’s direct visits to these relocated areas provided a firsthand understanding of the personal experiences of those affected.

The interviews highlighted the profound impact of displacement on residents' lives, particularly concerning the disruption of their social networks and the difficulty of adjusting to new environments. Many residents expressed frustration over the loss of community ties and the challenges of rebuilding their lives in unfamiliar settings. A critical aspect of the study was also the evaluation of the government’s role in the relocation process, particularly the valuation and compensation provided to the displaced residents. The land valuation methods employed by local authorities have been widely criticized for not reflecting the true market value of properties, leading to compensation that fell short of adequately compensating the residents for their losses.

To further understand the economic impact of the displacement, the study analyzed the historical and current sale and rental prices of properties in the affected areas. This provided insight into the broader financial implications of the park’s development. By comparing housing prices from 2011 to 2023, the study revealed a significant increase in property values, largely attributed to Sheger Park's development and the general trend of urbanization in Addis Ababa. The study found that the consequences of displacement were not uniform across all relocated residents. Those who moved to nearby districts, closer to the urban center generally experienced fewer disruptions, benefiting from better access to amenities and services. In contrast, residents relocated to more distant areas faced greater challenges. These included higher transportation costs, the disintegration of their social networks, and limited access to essential services, which compounded their struggles and led to social and economic dislocation.

The overall impact of displacement due to urban development projects like Sheger Park can be seen as a form of social and economic collapse for many affected residents. The loss of community cohesion, rising living costs, and a decline in the quality of life for many residents contributed to a deepening sense of disempowerment and disharmony. Displaced households often faced difficulties in finding equivalent housing and employment in their new locations, leading to a cycle of economic hardship and social fragmentation. The study underscores the importance of considering the social and economic consequences of urban development projects like Sheger Park, particularly for the displaced communities. While urban

renewal can lead to significant improvements in infrastructure and public amenities, it is essential for policymakers and planners to ensure that the displaced residents are not left behind. Proper compensation, support for relocation, and efforts to preserve social networks and community cohesion are crucial to minimizing the adverse impacts of displacement.

2.3.6. Displacement due to the Sheger park

The development of Sheger Park in Addis Ababa represents a significant urban transformation, affecting the residents of the Arada sub-city, particularly those in the Fullwuha area. This project, covering 301,949 square meters of land, began in June 2011 and had a lasting impact on over 800 households, which included both private homeowners and tenants of government-allocated kebele houses. These residents were displaced to make way for the park's construction, and this displacement has had profound and long-term consequences for the affected communities. The early phase of displacement, which took place more than 12 years ago, was further exacerbated by the park's delayed development. The land remained undeveloped for over eight years, until construction began in earnest in August 2018. This prolonged uncertainty created a deep sense of loss among the displaced residents, who had established strong social ties and a long history in their original neighborhoods. The sense of displacement was not only physical but also emotional and social, as the relocation uprooted long-standing relationships and disrupted the local fabric.

In addition to the original park development, an additional 137,863 square meters of land was allocated for the creation of a children's amusement park, starting in April 2018. This development led to further displacement, with some individuals receiving compensation or replacement land near their original residences, particularly in the 4 Kilo area. However, the majority were relocated to more distant districts of Addis Ababa, where they faced greater challenges in adjusting to new environments. The compensation provided, which often consisted of condominiums or vacant land, was frequently located far from their previous homes, adding to the disruption of their lives.

The displacement has led to significant psychological and social challenges among the affected residents. The loss of a neighborhood where individuals had lived for many years disrupted their social networks and sense of community. The psychological toll of this upheaval is compounded by the economic struggles many faces. Many of the displaced individuals experienced a loss of income, joblessness, and increased marginalization. The disruption of livelihoods, along with the dispossession of productive assets, contributed to increased food insecurity and a further breakdown of social cohesion.

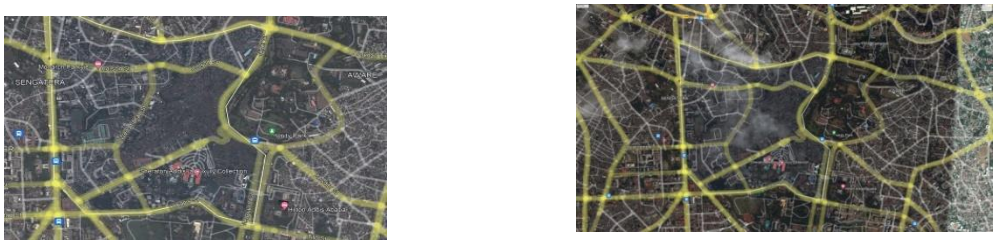
The personal narrative of a 57-year-old man who was relocated to a 3-bedroom condominium in Jemmo 01 encapsulates the broader experience of many displaced residents. This man, after moving from the 4 Kilo area, struggled to adapt to his new living situation. He continued to visit his old neighborhood for two years, illustrating the strong emotional connection he had to his former community. This attachment is not uncommon, as the familiarity of one's old environment provides comfort and stability, which is lost when displaced.

For business owners and workers, the challenges were even more pronounced. Relocating from a familiar commercial area to an unfamiliar one led to a loss of clientele, increased operational costs, and a general sense of disorientation. These hardships further deepened the economic and social consequences of

displacement. Even residents who remained in the vicinity of Sheger Park, but were not directly displaced, felt the ripple effects of the development. As neighbors moved away, communities fractured, eroding social ties and support networks. The loss was particularly felt by the youth, who missed the guidance and mentorship of elders who had been central to the social fabric of the neighborhood. The study found that the compensation provided by the government was insufficient and did not fully reflect the value of the displaced residents' properties, both in material terms and in the intangible value of community and belonging. Many residents felt that the compensation was inadequate in acknowledging the true costs of displacement. The experiences shared by the displaced residents of Addis Ababa underscore the need for a more holistic approach to urban development. It is crucial that future urban projects prioritize not only the economic benefits of development but also the social and emotional well-being of displaced communities. Adequate compensation, support for integration into new neighborhoods and efforts to preserve social networks are essential to mitigate the negative effects of displacement and ensure that development benefits all residents equitably.

Conclusion

The study of gentrification in Addis Ababa during the 1990s reveals how socio-economic forces reshaped the city's neighborhoods, leading to the displacement of low-income groups to make way for wealthier residents and investors. This process was often driven by government and elite-led redevelopment initiatives. The displacement disrupted long-established communities, and the study calls for further research to understand gentrification's effects more thoroughly. One key indicator of gentrification in Addis Ababa is the influx of professionals into neighborhoods, which raises property values and living costs, making it harder for original residents to stay. Reckoning the extent of gentrification and displacement remain challenging. as existing data is often incomplete. The study suggests that more detailed, qualitative research could offer a clearer picture.



A) B)

Figure 2: Displacement of Arada sub-city residents since the establishments of the (Sheger Park) project (Source: A) Google earth in June, 2011: B) Google Earth in December 2010).

The Sheger Park development project in the 2010s exemplifies gentrification in Addis Ababa. While it aimed to enhance the city’s image by creating green spaces and attracting tourism, it displaced many residents, affecting their social and economic well-being as shown in figure 2. The project illustrates the need for a more comprehensive approach to understanding gentrification, one that involves both local authorities and the affected communities. Displacement in Addis Ababa has led to significant financial and social consequences for affected households. For example, residents displaced by Sheger Park were offered

inadequate compensation, which did not reflect the market value of their original properties. Many families lost not only their homes but also their livelihoods and social connections. Relocation to the outskirts of the city further exacerbated their struggles by cutting them off from economic opportunities and essential services.

A) B)

Figure 3: A) Recent presences of Sheger Park after Gentrification takes place (Source: Google earth in October, 2022); B) Gentrification and displacement of Arada sub-city residents.

The compensation process has been inconsistent, with some displaced households receiving only small apartments or distant land, while others were forced to move far from their original neighborhoods. This disparity in compensation has deepened social and economic inequalities. Displacement has led to the breakdown of communities, mental stress, and loss of income sources. The current compensation mechanisms fail to account for the full scope of the losses suffered by displaced families, both material and social. While the development of Sheger Park has had positive effects for those remaining nearby boosting property values, stimulating local businesses, and improving the neighborhood's aesthetics it has also created a disparate between those who benefit and those who suffer. The park's transformation of the area has improved its environmental and economic appeal, but the displaced residents bear the social costs.

In conclusion, Sheger Park highlights the complex impacts of urban development. While it contributes to the city's environment and economy, it also displaces vulnerable populations, leading to social and economic challenges. To ensure more equitable urban development, future projects must consider the well-being of displaced communities, providing fair compensation, better resettlement options, and opportunities for economic recovery. Policymakers should balance progress with social equity to minimize the negative effects of gentrification on vulnerable populations.

2.4. Conclusion and Strength of the Evidence

The valuation of urban public spaces and their influence on nearby property values is a multifaceted and complex issue, central to urban planning, real estate, and economic policy. Numerous studies have consistently demonstrated that well-maintained parks and green areas can positively influence property values. Hedonic pricing models, which break down property prices into individual attributes, have proven effective in estimating the economic value of such public spaces. These models help quantify the positive externalities created by public spaces, showing that proximity to parks and green amenities often leads to higher property values.

2.4.1. Positive and negative impacts

The consensus across studies indicates that urban public spaces generally have a positive impact on nearby property values, particularly when the spaces are well-maintained and offer aesthetic, recreational, and health benefits. The positive influence is most significant the closer a property is to a public space, with this effect typically diminishing as distance increases. This finding underscores the importance of accessibility in maximizing the value derived from these amenities.

However, not all public spaces lead to a positive impact on property values. Studies have shown that poorly maintained, underutilized, or unsafe spaces can negatively affect nearby property values. Public spaces that reduce privacy or create opportunities for undesirable activities can also detract from property values. This highlights the need for both the quality and management of public spaces to ensure their positive economic impact. Furthermore, research such as that of Smith *et al*. Suggests that neighborhood characteristics or the specific nature of a public space may influence whether its presence increases or decreases nearby property values (Smith *et al*., 2002).

2.4.2. Differentiating types of public spaces

A distinction between active and passive public spaces is apparent in the literature. Passive spaces, which are typically designed for activities such as walking or enjoying nature, tend to have a greater positive effect on property values compared to active spaces like those focused on sports or playgrounds. Passive spaces contribute more significantly to property values due to their aesthetic and relaxation benefits, whereas the noise and activity associated with active spaces may result in a more moderate, or even negative, impact.

2.4.3. Methodology and data quality

The quality and methodology of studies are crucial in determining the strength of their conclusions. Literature reviews, which synthesize the findings of multiple studies, are often regarded as providing the most robust evidence due to their comprehensive nature. The hedonic pricing method, which measures the economic value of specific characteristics like proximity to green spaces, is widely used to quantify the effect of public spaces on property prices.

2.4.4. Variability and complexities in impact

Despite the general trend of positive effects, there is considerable variability in the impact of public spaces on property values. Factors such as the size, maintenance, and integration of a public space into the surrounding urban environment can all influence how much value is added to nearby properties. Larger parks or those in particularly scenic or desirable locations may offer a greater premium, while smaller or poorly maintained spaces might have little or even a negative impact.

Research also suggests that public spaces tend to have a more substantial impact in urban areas where green space is scarce. In such environments, parks and green spaces are highly valued due to their scarcity and the high demand for accessible recreational areas. In contrast, suburban or less densely populated areas, where green spaces are more common, may see less pronounced effects from proximity to parks.

In conclusion, while urban public spaces, especially parks and green areas, generally enhance property values, the magnitude of this effect depends on several factors, including the quality, size, and accessibility of the space. Well-maintained public spaces not only improve the quality of life for residents but also contribute significantly to the economic vitality of cities. These findings highlight the importance of thoughtful urban planning and the integration of high-quality, accessible public spaces into urban environments to maximize property values and livability. Urban planners, real estate developers, and policymakers should continue to prioritize the role of green spaces in shaping urban landscapes. As cities expand and become more densely populated, the strategic placement, visibility, and preservation of public spaces will be key to maintaining and enhancing their economic value. Research consistently shows that the integration of public spaces into urban planning is not just about aesthetics or recreation but is crucial for creating vibrant, economically prosperous, and livable cities.

2.5. Summary of the Literature Review

The literature reveals that urban public spaces such as parks, lakes, and green corridors hold significant value beyond aesthetics and recreation. Globally, such spaces are consistently linked to higher property values, improved environmental quality, and stronger community cohesion. Research from Europe and North America highlights how proximity to well-maintained public spaces can increase home prices through both direct (aesthetic views, access) and indirect (climate regulation, social interaction) benefits. However, these gains are often accompanied by gentrification, where rising values lead to the displacement of lower-income groups.

In the African context, studies are more limited but suggest similar patterns. Urban renewal efforts, particularly those involving green infrastructure, tend to drive up land and housing costs, especially in central locations where informal settlements or low-cost housing are prevalent. Cities like Cape Town and Nairobi have reported early signs of displacement following park developments and large-scale beautification projects. These trends point to the importance of context-sensitive planning and equitable development frameworks in the Global South. In Ethiopia, and more specifically in Addis Ababa, there is a growing interest in revitalizing urban public spaces as part of a broader beautification and green development agenda. Projects like Sheger Park represent a new wave of urban investments that aim to improve the city's environmental performance and livability. However, the literature indicates a lack of empirical studies examining how such spaces affect nearby property values or contribute to social change, such as gentrification or altered community dynamics.

Key gaps identified include the limited use of formal valuation methods (e.g., hedonic pricing models) in the Ethiopian context, insufficient analysis of displacement risks, and the absence of policy tools designed to mitigate adverse social outcomes. While the Addis Ababa Master Plan includes goals for green and inclusive development, implementation strategies remain underdeveloped, especially when it comes to balancing environmental improvements with housing affordability. This review underscores the importance of grounding urban development initiatives in evidence-based policy and planning. It also highlights the need for localized research that can inform Addis Ababa's future decisions around public space investments, housing market regulation, and equitable urban growth. These insights shape the analytical focus of this study and inform the methodological approach used to explore the case of Sheger Park.

CHAPTER THREE
3. RESEARCH METHODOLOGY

This chapter explains the methodology used to assess the impact of Sheger Park on nearby property values and the associated socio-economic changes. It outlines the research design, sampling approach, data collection techniques, variables used, and the methods of data analysis. Since the study investigates measurable economic effects (property value changes) and subjective social impacts (such as gentrification), a mixed-methods approach was adopted. The quantitative component employed a Hedonic Pricing Model (HPM) to statistically analyze the relationship between property values and proximity to Sheger Park. The qualitative component collected residents' views through interviews and focus groups to explore perceptions of displacement and community change.

This study examined the impact of Sheger park on surrounding residential real estate values in Addis Ababa City. The data were collected from 400 residential property transactions and rental reports around Sheger park urban green spaces with varying proximity zones in different distance bands scattered in the surrounding neighborhoods of Arada sub-city. Many residential properties at varying distances from the green spaces were taken to assess the extent to which proximity, size and accessibility, impact residential property prices.

The average costs per square meter of various properties were compared. Real estate pricing differences in relation to the proximity of each property to the Sheger park were examined using completed transactions for each property. These attributes were gathered from the households, local real estate agents and community representatives. The official map of the surrounding neighborhood in Arada sub-city, complete with plot and plan identification numbers, The road width indicates accessibility and the sizes of the green spaces. The prices for properties located at varying distances from the green spaces were then calculated by matching the identification numbers. The concluded transactions were taken on different dates in recent years. This timespan ensures a robust dataset capturing Addis Ababa’s real estate market evolution, including the impact of urban greening initiatives like the Sheger park urban renewal Project.

For each housing type located in the neighborhood in the sample, three types of properties with completed transactions were selected. The first type consists of properties overlooking the Sheger park. The second included those properties located just behind those of the first type but not with a view of the greenspace. The third involved of properties located further away from the neighborhood. These selected properties in the surrounding neighborhood all had to have at least one transaction completed. Those properties on which no transaction was concluded do not appear in the analysis and hence were not considered in the sample. This chapter ensures transparency by detailing each stage of the research process.

3.1. Research Design

To address the study objectives, a convergent mixed-methods research design was employed, integrating quantitative and qualitative approaches to comprehensively examine the impact of Sheger Park on nearby property values and community dynamics. The quantitative strand utilized the Hedonic Pricing Method (HPM) to statistically estimate the marginal value of various properties attributes, with a particular focus on

environmental variables such as proximity to the park and the availability of park views. This design facilitated triangulation, thereby enhancing the validity of the findings through complementary data strands.

This approach enabled the identification of measurable value differentials across distance zones and housing characteristics, as demonstrated in Chapter 4 through correlation analyses, ANOVA tests, Chi- Square ($\chi 2$) tests and linear, multiple regression models. Concurrently, the qualitative component captured residents' perceptions regarding displacement, affordability, and socio-spatial change through interviews and focus group discussions, thereby enriching the numeric analysis with lived experiences. Sampling was carefully structured to reflect spatial diversity and displacement experiences. For the quantitative component, a stratified random sample of 400 housing units was drawn from an estimated population of approximately 12,000 residential properties located within a 2.8-kilometre radius of Sheger Park. This radius was selected in accordance with urban planning standards for evaluating major public investments. The study area was divided into three distance-based strata to reflect proximity sensitivity: The strata were defined by distance intervals: 0–500 m (Zone 1), 501–1,000 m (Zone 2), and 1,001–2,800 m (Zone 3), reflecting the sensitivity of hedonic valuation to proximity. To ensure heterogeneity, the sample encompassed diverse housing types such as villas, condominiums, and informal dwellings, as well as both rental apartments and owner-occupied units, enabling comparisons across tenure types.

For the qualitative component, 20 displaced households and 10 long-standing residents were selected through purposive and snowball sampling techniques to capture diverse experiences related to displacement and socio-spatial change. Initial participants were identified through local administrative bodies and neighborhood associations, followed by snowball sampling. Their inclusion ensured that social impacts such as loss of access, livelihood disruption, and housing instability were adequately represented. These interviews were subsequently analyzed thematically and are discussed in detail in the findings section ensuring no new insights emerged, particularly in relation to gentrification patterns. The final qualitative sample represented a cross-section of demographics, including variations in age, gender, and post-displacement locations. Data collection methods comprised in-depth interviews and focus group discussions that explored residents' perceptions. Data collection combined primary and secondary sources. Structured questionnaires gathered household-level data on property prices, structural and environmental features, and socio-economic conditions.

These data were subjected to statistical analysis and presented comprehensively in Sections 4.1 through 4.5. Secondary data—including cadastral records, real estate listings, and Google Earth imagery were employed for validation purposes, enhancing data reliability. Simultaneously, qualitative data collection involved in-depth interviews and focus group discussions with displaced residents. These narratives provided essential context for interpreting quantitative findings such as price escalation and proximity premiums, offering deeper insight into displacement dynamics especially in cases where statistical indicators suggested gentrification trends but lacked explanatory nuance. The convergence of these diverse data sources and methods strengthened internal validity and facilitated triangulation of results, as synthesized in Section 4.6.

The research adhered strictly to ethical standards established by Addis Ababa University, including obtaining informed consent, ensuring confidentiality, and respecting voluntary participation. No personally identifiable information was recorded, and displaced households were approached with sensitivity to their

circumstances. These protocols upheld the integrity of the research process. Overall, the integration of quantitative models with community narratives significantly enhanced the robustness and depth of the study's findings. The following Study Framework explains the process of data analysis (Figure 4).

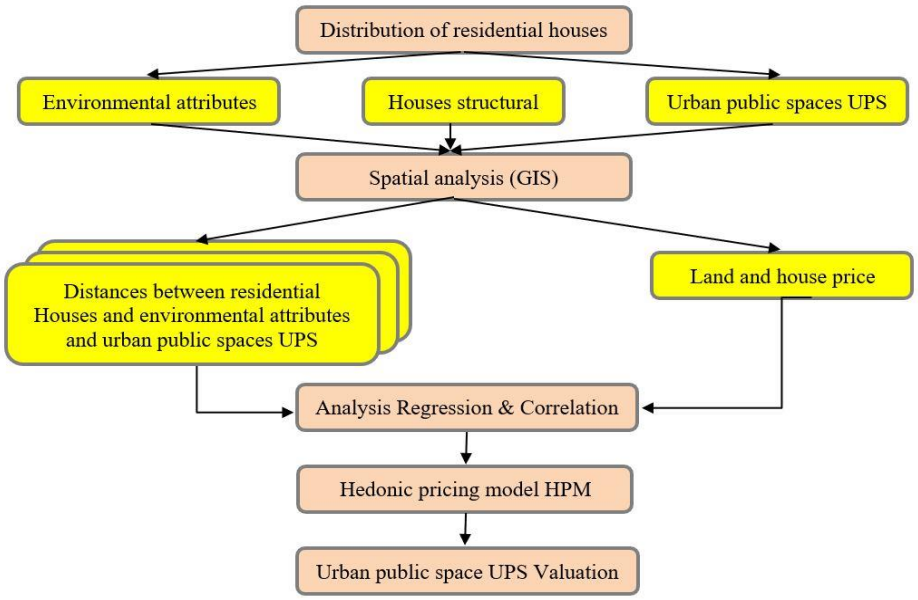


Figure 4: Study Framework

3.2. Description of the Study Area

The study was conducted in Addis Ababa, Ethiopia's capital and fastest-growing urban center. Sheger Park, located in Arada sub-city, was selected due to its recent development under the Beautifying Sheger initiative. The park spans over 56 kilometers along the city's riversides and includes walkways, lakes, gardens, and recreational facilities. The area surrounding Sheger Park includes mixed-income neighborhoods such as Kazanchis, Arat Kilo, Gola Sefer, and Riche, making it ideal for studying both market appreciation and socio-spatial change.

A 2.8-kilometer radius was chosen to reflect the walkable catchment area and planning standard used in the Addis Ababa Master Plan. This buffer includes four contrasting neighborhood blocks: Gola Sefer (largely low-income housing with scattered villas), Arat Kilo (historic institutions and mid-rise apartments), Kazanchis (diplomatic zone with new hotels and mixed-use towers), and Riche (densely built, partly informal). This mix offers a natural test bed: property markets range from high-end gated villas to rent-controlled walk-ups, allowing the study to see how the same public space affects different income groups. The radius also matches the distance city-planners use when assessing big public projects, and it reflects a realistic 30-minute walking catchment in a city where many residents rely on walking and minibuses.

Key physical features likely to shape housing demand major roads (Ras Abe Babay, Menelik II Avenue), public transport stops, schools, and small commercial strips were mapped with GIS to serve as control variables. Elevation and slope are minimal, so the park view and distance variables are not confounded by

steep terrain. Choosing this area also aligns with Addis Ababa's City Structural Plan (2017-2027), which calls for more green corridors and infill development in central districts. By studying a location that is already on the policy agenda and shows clear signs of market change, the results can speak directly to current debates on green-space expansion, inclusive zoning, and anti-displacement measures in Ethiopia's capital varied property values influenced by proximity to the park and its amenities.

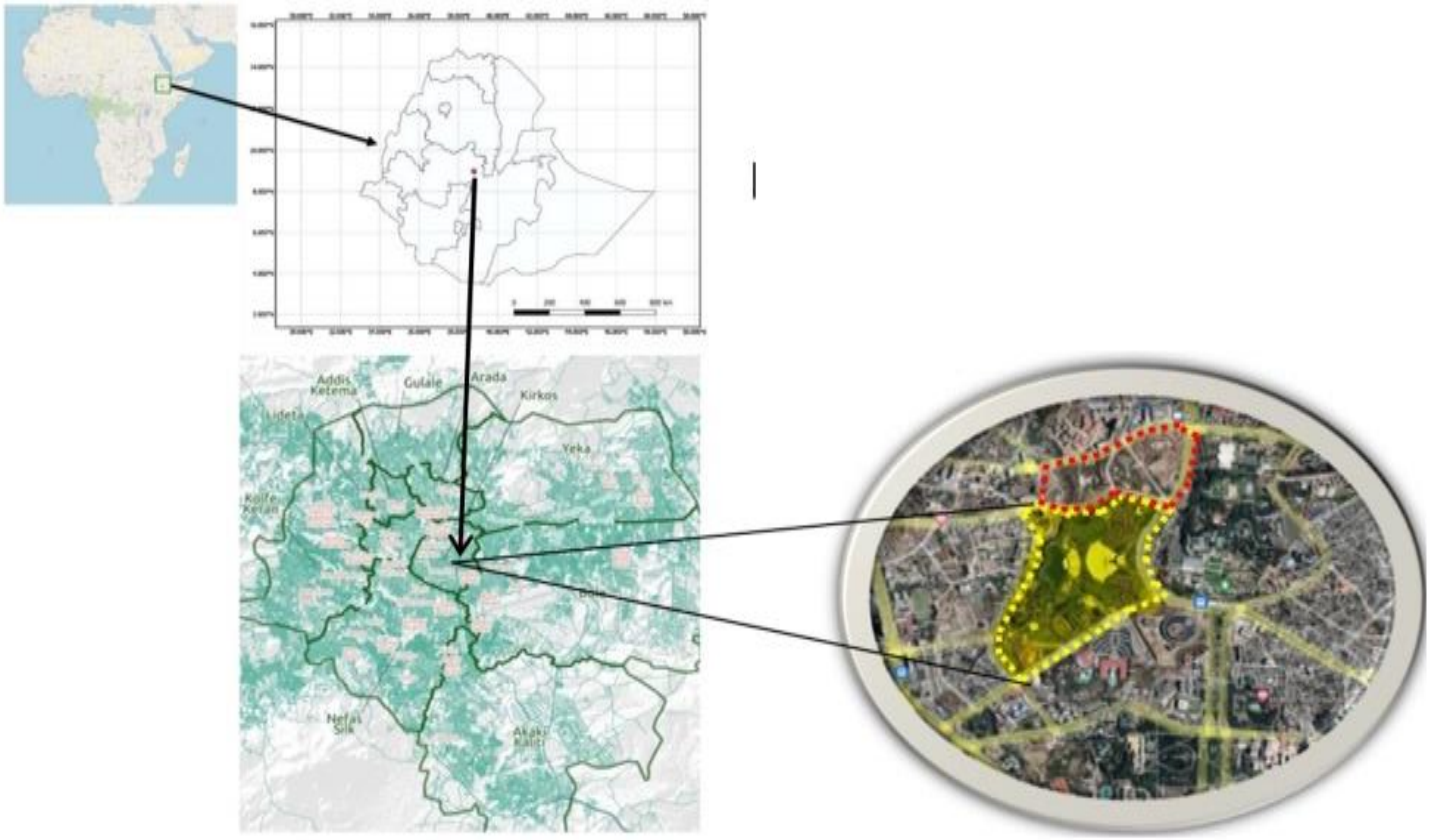


Figure 5: Map of Addis Ababa and study area Sheger park friendship square with its neighborhood quarters. (Source: Google Earth map 2023)

3.2.1. Study area (block 01)

Block 01 located at North West (NW) part of Arada sub-city , it starts from Wndmeneh Street and Banded by colson, general winget, mundy, dej Jote Street. Its shares compound with sengatera district and Chrchil Avenue, it circulates within 2.5-kilometer radius of the neighborhoods portion. The administrative boundary of block 1 area is consisting of wards and has an area of about 4.731 sqm. Block 01 is also bounded by Arat kilo on the north, Gola sefer to the south, Sheger Park on the east and Sengatera on the west (see Figure 6).

Block 01 plot close to Shegar Park is a good example of developed residential layout with open wide plan land. Its most portions are an example of such an urban sprawl. The population size in the block portion increased through time with different income groups. Thus block 1 is now set to become one of the most densely populated up market residential area in Addis Ababa city. Now days it's one of the high-class

residential areas of Arada sub-city. The total area of the site embraces different amenities, such as urban public spaces, play field, open land fields, roads, primary school and mosque.

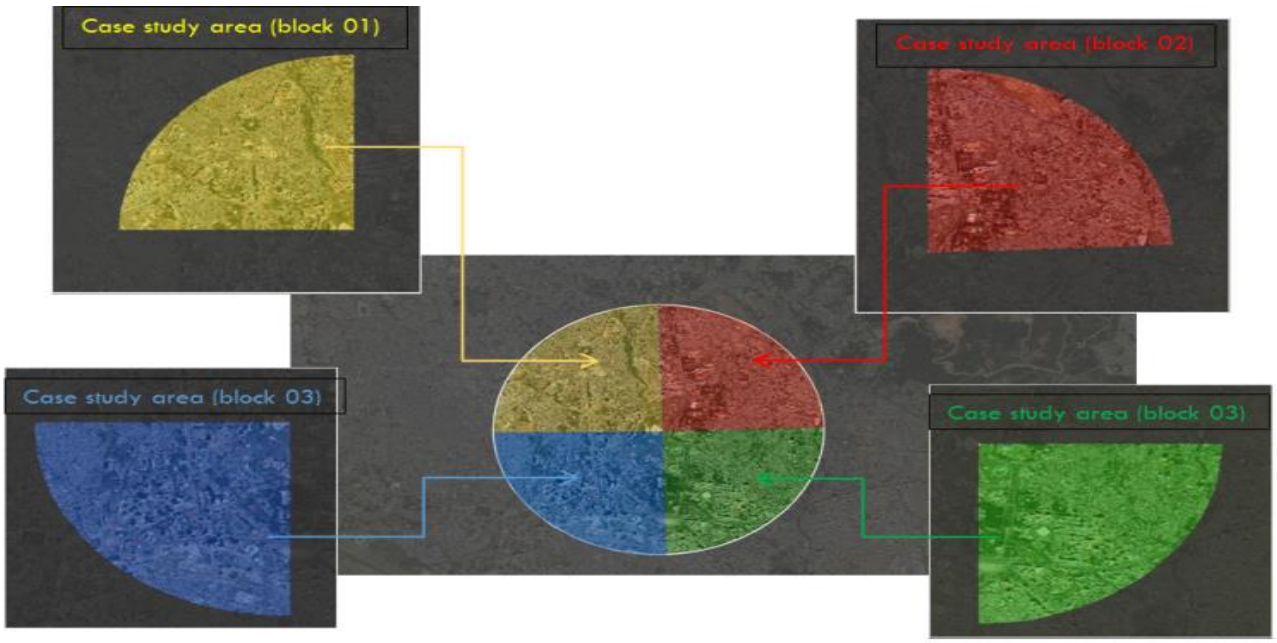


Figure 6: Differentiated zones of Case study area (Arada sub-city , Sheger Park surroundings encompassed). (Source author).

3.2.2. Study area (block 02)

Block 02 located at North east (NE) part of Arada sub-city , it starts from Wendmeneh Street and Lined by Unity Park. Its shares compound with 4 kilo district and 5 kilo districts, it circulates within 2.5-kilometer radius of the neighborhoods portion. The administrative boundary of block 2 area is consisting of commercial, governmental institutions and has an area of about 4.890 sqm. Block 02, is also bounded by Arat kilo on the north, Kazanchis district to the east, Sheger Park on the south west and Kebena district on north east direction (see Figure 6). Block 02 plots some of its portion that is close to Shegar Park is a good example of developed residential apartments and condominium layout with open wide plan land. Unfortunately, its most portions are an example of such a high an urban sprawl arrangement. The population size in the block portion increased densely through time with different income groups. However, most portion of block 2 wards or land part covered by Betemengst Unity Park and there is a few a private house or apartment in the Sheger Park nearby areas, because of this it is excluded from the survey and analysis of this study.

3.2.3. Study area (block 03)

Block 03 is a part of the neighborhood located on the South east side of the park, and the south-south-east part of the block 3 lands and south-south-west part of block 4 is covered by Sheraton Addis and Eyubelyu Palace. The most portion of its land part of the settlement is divided and bounded by Minilik ii, Zewditu,

Etege Menan, Tito, Guinea Conakry, and D.A.R Sahara internal roads (see Figure 6). Also, the residential section on the African Union side is a section which has properly arranged housing layouts and roads. However, for the most part or half of the section on the Kazanchis side consists of chaotic and unsightly houses and housing layouts. Residents who can afford to live in this area have different social and economic backgrounds. Housing prices and rents in these neighborhoods are relatively high, so only high-income earners can afford to rent these homes. Most of the foreign embassies employs stationed in Addis Ababa live here. Previous Africa Hall and ECA conference center, this diplomatic zone was established at this district and officially inaugurated by Emperor Haile Selassie in 1961. It is a landmark historic building was designed by Italian architect Arturo Mezzedimi.

3.2.4. Study area (block 04)

Block 04 is a part of the neighborhood located on the South west side of the park, and the south-south-east part of the block 3 lands and south-south-west part of block 4 is covered by Sheraton Addis and Eyubelyu Palace and Addis Ababa stadium. The most portion of its land part of the settlement is divided and bounded by Wendmeneh Street, Ras Abebe Aregay Street, Yared Street, and Burundi Street (Figure 6). Also, similar to block 03 the residential section on the most side of block 04 is a section which has properly arranged housing layouts and well plotted roads. Conversely, for the most part or more than half of the section on the south west side consists of tidy, spick span and slightly organized houses and housing layouts. Residents who can afford to live in this area have different social and economic backgrounds. Housing prices and rents in these neighborhoods are relatively very high, so only high-income earners can afford to rent these homes.

3.3. Data Sources and Collection Methods

To understand how Sheger Park affects nearby property values and community dynamics, the study relied on both primary and secondary data sources. This mixed approach allowed for a more complete view of the economic and social impacts linked to the park's development.

Primary data were gathered directly from households, local real estate agents, and community representatives. A structured survey was administered to 400 property owners and tenants living within a 2.8 km radius of Sheger Park. These respondents were selected from three distance-based zones 0–500 m, 500–1,000 m, and 1,000–2,800 m—to ensure that the analysis could capture how proximity to the park influences property values. In addition, 20 displaced households and 10 residents who had lived in the area for more than a decade were included through purposive sampling to provide insights into gentrification pressures and community change. The survey collected information on sale prices, rental rates, building size, age, number of rooms, access to services, and views of the park or lake. To ensure the accuracy of this data, responses were cross-checked against records from the Addis Ababa Land Management Bureau, real estate listings, and Google Earth imagery.

Qualitative data were also collected to explore residents' lived experiences. Semi-structured interviews and two small focus group discussions were conducted to understand the social effects of the park, such as rising housing costs, changes in neighborhood identity, or the threat of displacement. These conversations helped complement the numerical data and added depth to the findings. Secondary data were obtained from

government planning offices, policy documents, academic studies, and media reports. These sources helped establish a broader understanding of urban development trends, housing markets, and the goals behind the Sheger Park project.

Combining these multiple sources made it possible to examine both the measurable changes in property values and the lived realities of communities around Sheger Park, ensuring a more grounded and comprehensive analysis.

Quantitative component: The quantitative component of this study was designed in line with the convergent mixed-methods approach, ensuring robust and representative analysis of Sheger Park's impact on local property values. Structured surveys were administered to 400 property owners and tenants residing within a 2.8-kilometre radius of Sheger Park. The sample size of 400 was selected based on established research heuristics and statistical guidelines, which indicate that a sample of this magnitude is sufficient to achieve a 95% confidence level with a 5% margin of error for populations of several thousand or more. This aligns with best practices in urban studies and social science research, where a sample of 400 is commonly considered the minimum for reliable subgroup analysis and generalizability. The study area was divided into three strata based on distance from the park: Zone 1 (within 500 meters), Zone 2 (500–1,000 meters), and Zone 3 (beyond 1,000 meters), with random selection within each stratum to minimize selection bias and ensure diversity. This stratified random sampling approach further enhances the representativeness of the sample across different socio-economic groups and geographic locations. The final sample consisted of 330 tenants in rental apartments and 70 homeowners, reflecting the tenure composition of the neighborhoods. The structured survey collected comprehensive data on property characteristics, rental or ownership costs, personal housing preferences, and residents' perceptions of Sheger Park's influence on property values. By combining rigorous sampling with an adequate sample size, the study ensured that the quantitative findings would be both statistically robust and broadly generalizable to the population living around Sheger Park.

3.4. The Hedonic Pricing Model (HPM)

The Hedonic Pricing Model (HPM) is a complicated spatial econometric technique widely utilized in real estate property valuation. It uses a regression model to estimate the economic value of non-market environmental goods like green spaces and the extent to which specific characteristics of a good or service affect the price of a property. The fundamental premise of the HPM is that residential properties are not valued for their own sake as a single entity, but rather as an aggregate of the implicit prices of the integral characteristics they have. The contribution of each of such characteristics (structural, locational, neighborhood, and environmental) is disentangled by the HPM technique. The hedonic price function for housing is represented in this study as a log-function denoting the relationship of the price to the green space size, its locational characteristics (overlooking or not or even further away) and the time of the transaction.

By collecting data on property transactions (prices), Rental values and their associated characteristics, an Ordinary Least Square regression analysis is adopted to estimate the parameters of this function. The estimated coefficients for each characteristic represent the implicit marginal price of that attribute, even though they are not directly bought or sold. This approach has many practical applications in urban planning (green space strategic location, visibility, preservation of existing green spaces, size, and design),

environmental policy evaluation (public investment in neighborhood greening), and real estate development (designing properties according to consumer preferences). To conclude, the hedonic pricing model provides a robust theoretical and empirical framework for understanding how various attributes of a good, such as a house, contribute to its overall market price. It provides a framework for understanding how various housing characteristics contribute to property prices, offering valuable insights for real estate appraisal, policy analysis, and real estate market research.

3.5. Site Observation, Registration and Survey

Fieldwork was conducted over a three-month period, involving regular site visits to Sheger Park and its surrounding neighborhoods. Observations were made deliberately on both weekdays and weekends to capture variations in park usage and neighborhood dynamics. During these observations, the researcher documented, particular attention was paid to the physical and environmental conditions of Sheger Park, as well as the housing characteristics and social interactions within affected areas, documenting its landscape, infrastructure, and usage patterns. Data from these observations were systematically recorded through photographs, mapping exercises, and detailed field notes, providing a rich contextual backdrop for the quantitative and qualitative analyses.

To quantitatively assess the impact of Sheger Park on residential property values, The Surveys were administered to residents living within a defined buffer zone around Sheger Park. The survey instrument collected data on a range of variables, including property sale prices, proximity to urban amenities, housing design, construction quality, and available infrastructure. Both homeowners and renters participated, ensuring a representative sample. Key variables examined included walking distance to public spaces, proximity to major amenities, property characteristics (such as age, size, and number of rooms), and socio-economic factors (including income and neighborhood features). The collected data were then analyzed using the hedonic pricing model to assess the relationship between property values and urban public spaces.

3.6. Interviews with the Local Real Estate Agents

For further investigation, a semi-structured interview questionnaire was undertaken with real estate agents to inquire how proximity, visibility size and accessibility to urban public spaces affect property values. Real estate agents were selected as key informants due to their direct involvement in property transactions, market trend observations, and interactions with buyers, making them ideal for providing nuanced insights into public space impacts. The selection of such agents is critical to gain insights on the impact of Sheger Park on neighboring residential properties values. Three local real estate brokers from each neighborhood in the sample were selected for the interview to ensure the validity and representativeness of the findings. Being local brokers within their communities, they are more knowledgeable better than anyone else about the selling prices of real estate properties and green space attributes within their neighborhoods. Many of the transactions may have been completed through their offices.

An interview questionnaire was designed to gather insights from these selected local real estate agents about how green spaces influence property values. Being a qualitative tool, the questionnaire aims to complement quantitative data (e.g., property sales and rentals records) of the hedonic pricing analysis results. The use of

semi-structured interviews alongside the HPM is justified for capturing qualitative nuances, addressing cultural context, daily experiences, exploring negative externalities, complementing quantitative data, and validating HPM findings. HPM quantifies green space impacts but cannot explain why buyers prioritize views or safety. Interviews reveal subjective factors, such as cultural privacy preferences or variation patterns and any other antisocial behavior.

The questionnaire includes semi-structured, open-ended questions to allow flexibility while ensuring focus on key themes. The questionnaire is organized into thematic sections to systematically explore the relationship between green spaces and nearby residential property values. These sections align with factors identified in hedonic pricing literature, such as aesthetic appeal, accessibility, safety, and real estate market dynamics. The questions are designed to elicit both descriptive and evaluative responses, capturing both objective observations (e.g., price trends) and subjective insights (e.g., buyer preferences). The following flowchart explains the process of data collection and analysis (Figure 7).

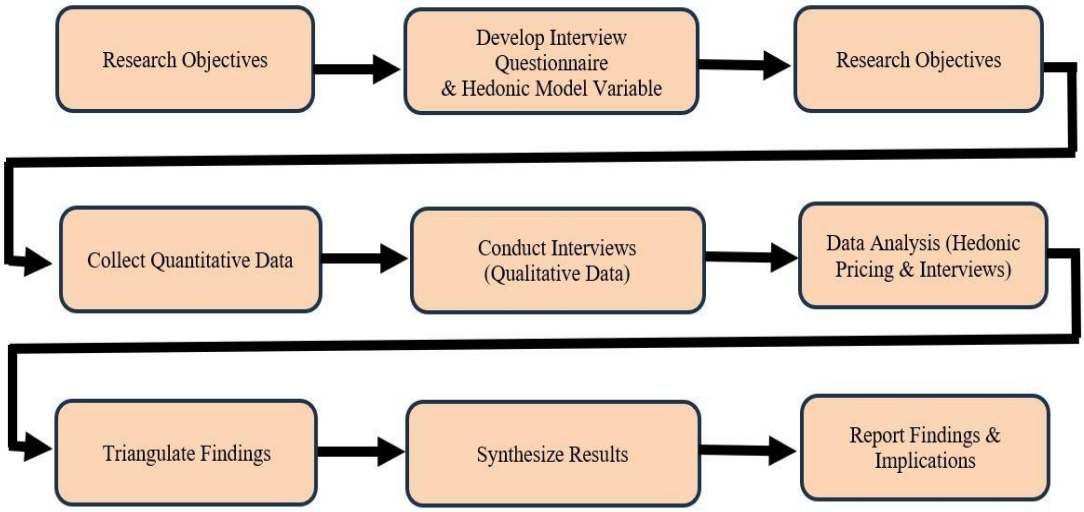


Figure 7: Flowchart explains the process of data collection and analysis.

3.7. Interviews with Displaced Households

To examine the social impacts of gentrification and urban redevelopment, face-to-face interviews were conducted with 20 households displaced by projects associated with Sheger Park and 10 long-standing residents. These interviews provided qualitative insights into the scale and consequences of displacement, focusing on livelihood changes, housing affordability, and access to essential services. The displaced households were identified through snowball sampling and represented a diverse cross-section of the affected population, Among the displaced households, 60% were female-headed and 40% male-headed, with age groups distributed as follows: 25% led by individuals aged 56 and above, 45% by those aged 41 to 55, and 30% by younger adults aged 26 to 40.

These households were resettled across various locations, The relocation destinations included areas such as Kaliti, Jemmo 01, Ayat 01 and 02, Gelan, and Arat Kilo condominiums.

The interviews explored several key dimensions: Housing Affordability and Financial Strain: Changes in rental or mortgage costs, and increased commuting expenses post-relocation. Access to Services and Infrastructure: Availability and quality of public transportation, schools, healthcare, and markets in new locations.

Livelihood and Employment Impact: Job displacement, changes in employment status, and loss of informal business opportunities. Social Cohesion and Community Ties: Disruption of neighborhood networks, including traditional social support systems, and the psychological effects of forced relocation. Compensation and Institutional Support: Experiences with compensation, alternative housing, or financial assistance, and perceptions of the fairness of government interventions.
By capturing perspectives across gender, age, and relocation sites, the findings provide a nuanced, intersectional analysis of the effects of displacement on different demographic groups. The results highlight existing policy gaps and underscore the need for comprehensive socio-economic safety nets for communities affected by urban redevelopment.

3.8. Data Analysis Methods

The data analysis for this study was structured to examine both the **quantitative** and **qualitative** aspects of how Sheger Park affects nearby property values and social dynamics. A **mixed-methods approach** was adopted to ensure a comprehensive understanding of both numerical trends and community perceptions. This approach allowed the study to triangulate findings and address the research objectives from multiple angles.

Quantitative Analysis:

The quantitative data collected for this study were subjected to both descriptive and inferential statistical analyses to provide a comprehensive understanding of the sampled properties and respondents. Descriptive statistics including means, frequencies, and standard deviations—were used to summarize the fundamental characteristics of the housing units and their occupants. To further explore the relationships between various housing attributes and property prices, four principal statistical techniques were employed.

First, correlation analyses were conducted to assess the strength and direction of relationships between continuous variables. The Pearson correlation coefficient was specifically utilized to examine associations among factors such as living room size, building age, parking availability, and proximity to Sheger Park. Second, chi-square tests were applied to investigate the relationship between categorical variables—such as house orientation or facade material—and property price categories, thereby identifying structural and locational features that significantly influenced price variation. Third, one-way ANOVA was used to compare mean property values across groups with differing characteristics, such as the number of bedrooms or building orientation, to determine whether observed differences were statistically significant.

Finally, regression analysis formed the core of the inferential approach, enabling estimation of the relationship between property prices (the dependent variable) and a suite of independent variables. The Hedonic Pricing Model (HPM) was employed to quantify the marginal effects of individual housing attributes and locational factors on market prices. The model treated the price of each property as a function of its unique characteristics and location, following the general regression form:

$$P_i=\beta_0+\beta_1X_{1i}+\beta_2X_{2i}+\cdots+\beta_kX_{ki}+\epsilon_i$$

Where:

- P_i is the observed price or rental value of property *i*,
- X_{ki} are the explanatory variables for property *i* (e.g., number of rooms, distance to Sheger Park, view of park, facade material, etc.),
- β_k are the estimated coefficients for each variable,
- ϵ_i is the error term.

The variables selected for the regression model were based on a combination of literature review, practical observations from the study area, and the availability of reliable data. Prior to regression modeling, multicollinearity diagnostics were conducted using Variance Inflation Factors (VIFs) to ensure that the explanatory variables were not highly correlated.

Qualitative Analysis:

The qualitative strand of the research involved the analysis of data gathered from semi-structured interviews and key informant discussions. All interviews were transcribed and systematically coded using thematic analysis. The primary themes identified included housing affordability, perceptions of neighborhood change, displacement risk, and the social value attributed to Sheger Park. These qualitative insights provided essential context and depth to the numerical findings, illuminating the lived experiences and subjective impacts of urban transformation processes.

By integrating these quantitative and qualitative methods, the study achieved both statistical rigor and a nuanced, human-centered perspective on the influence of urban public spaces on housing markets and community well-being in Addis Ababa.

Sampling formula;

Sampling formula and the rationale for selecting 400 samples, the study employed Cochran's formula for sample size determination, which is widely recognized for ensuring statistical adequacy in large populations.

General Form of the Cochran's formula Model
The model is typically written as:

$$n = \frac{Z^2 \times p \times q}{e^2}$$

Where:

- *Z is the Z-score for a 95% confidence level (1.96),*
- *p is the estimated population proportion (0.5 when unknown),*
- *q = 1-p, and*
- *e is the margin of error (0.05).*

Substituting these values yields n = $(1.96)^2 \times 0.5 \times 0.5 / (0.05)^2 \approx 384$. Thus, the total sample of 400 not only meets but exceeds the minimum requirement, enhancing the reliability of the study findings. The allocation of 70 owner-occupied houses and 330 rental apartments follows a purposive stratified sampling approach, reflecting the actual market composition and analytical priorities of the study area, where rental properties dominate the urban landscape. This disproportionate stratification is methodologically justified: it ensures robust statistical power for quantitative analysis of the larger rental segment while allowing for rich qualitative insights from the owner-occupied stratum. By integrating both quantitative and qualitative data through a concurrent mixed-methods design, the sampling strategy provides a comprehensive and contextually nuanced understanding of real estate market dynamics.

3.9. Ethical Considerations

This study followed strong ethical standards to ensure that participants were treated with respect and that their information was protected at every stage. All participants were informed about the purpose of the research and gave their consent before taking part. They were made aware that participation was voluntary and that they could stop at any time.

To maintain anonymity, no personal identifiers such as names, house numbers, or phone numbers were recorded in any of the published findings or shared documents. Each household was given a random code number during data entry to make sure identities could not be traced. For confidentiality, both digital and printed data were stored in password-protected folders, accessible only to the researcher. Special care was taken when dealing with households facing displacement or those who shared sensitive information.

Interview questions were reviewed in advance to avoid topics that might cause distress. In group discussions, ground rules were established to respect each participant's comfort level and privacy. No audio or video recordings were made without explicit permission. These steps ensured that the study met both international research standards and the ethical guidelines set by Ethiopian academic institutions. By prioritizing transparency, respect, and protection, the research aimed to minimize harm and build trust with the community involved.

CHAPTER FOUR

4. RESULT AND DISCUSSION

In this chapter, using a variety of statistical resources, the study delves into the comprehensive analysis of home sales data for owner-occupied detached villas and rental pricing for apartment flats. The data is thoroughly evaluated using a battery of statistical tests to draw meaningful correlations and support the strength of the Hedonic Regression Model used in this study. The findings of data analysis on housing sales and rental prices are clarified and explained by supporting the correlation with numerical information and statistics.

All of these statistical data inputs are tested using correlation analysis, one-way ANOVA F-test, and Chi-Square (χ^2) (Goodness of fit) test to support the final results of the Hedonic Regression Model research method. The data analysis is separated into two main categories: descriptive statistics results and inferential statistics results.

4.1. Demographic Characteristics of Respondents

A clear understanding of the demographic characteristics of the people who took part in this study is very important for making sense of how Sheger Park has affected property values and the local community. The research used both surveys and interviews to gather a wide range of views and experiences, making sure the analysis was thorough and balanced. For the survey, 400 people living in three different areas around Sheger Park were chosen to reflect different distances from the park, types of housing, and income levels. Most of these respondents, about 82.5%, were tenants living in rental apartments, while the rest, 17.5%, owned their homes. The group was slightly more male than female, with 57% men and 43% women. In terms of age, there was a good mix: 11% were young adults between 18 and 30, 38% were in the 31 to 45 range, 34% were aged 46 to 60, and 17% were over 60. Education levels were generally high, with 82.9% holding graduate or professional degrees, while only a small portion had only secondary or primary education. Income levels varied, but most households earned between 30,000 and 90,000 ETB per month, with 40% in the 55,001–90,000 range and 30% earning above 90,000 ETB. When it came to jobs, 42.9% worked in the private sector, 32.9% were self-employed, 22.9% worked for the government, and a small group, 1.4%, were retired. This mix shows that the area around Sheger Park is attracting well-educated, working people from different income brackets, and the variety in gender and age adds depth to the research.

On the interview side, the study spoke in detail with 30 people, including 20 households that had been displaced and 10 long-time residents. Among the displaced, 60% of the households were led by women and 40% by men, with most household heads falling between 41 and 55 years old. These interviewees were from various neighbourhoods, such as Kaliti, Jemmo, Ayat, Gelan, and Arat Kilo, and represented different backgrounds in terms of education, jobs, and family size. This variety helped the study capture what life has really been like for both those who gained and those who lost out because of changes in the city. The way the study was designed made sure the results would be fair and reliable. For the survey, people were chosen randomly but in a way that made sure all groups were included. For the interviews, the researchers made an effort to talk to people who might otherwise be left out, like those most affected by displacement. This

careful approach means the findings are stronger and more meaningful. It allows the study to show not just the big trends, but also the smaller stories.

4.2. Descriptive Statistics Results

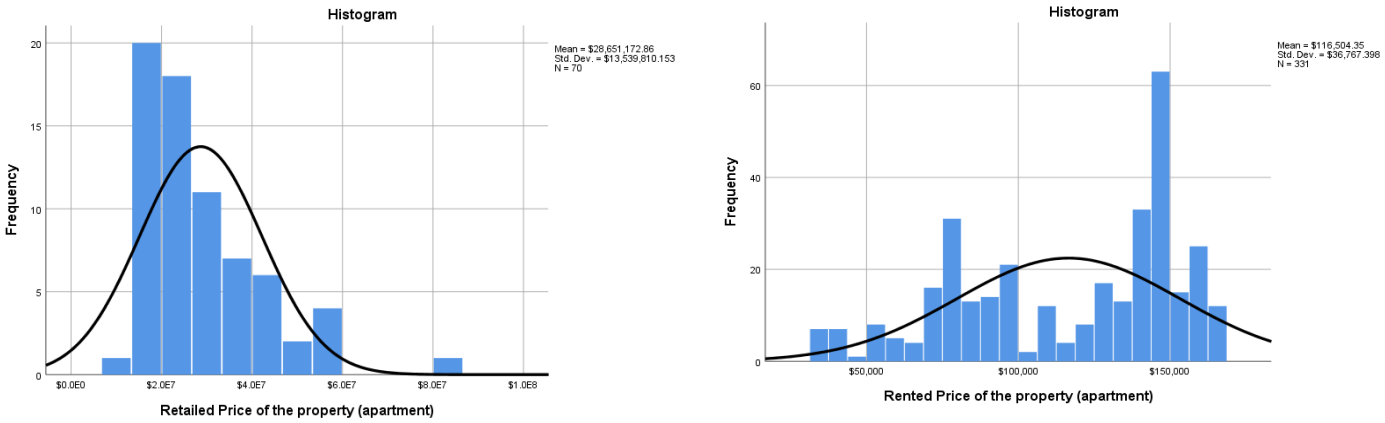
This section presents the key characteristics of the dataset used in the study, including housing sales and rental values, proximity to Sheger Park, and household attributes. A total of 400 observations were collected from three spatial zones: 0–500 meters, 500–1000 meters, and 1000–2800 meters from Sheger Park. The sample captures a variety of dwelling types and socio-economic backgrounds, reflecting the mixed-use nature of the surrounding neighbourhoods.

This section summarizes descriptive statistics for nominal and ordinal variables across various sets:

- Housing unit dependent variable (retail and rental prices)
- Housing unit structural attributes
- Housing unit location and neighbourhood attributes
- Housing unit environmental or amenity attributes

4.2.1. Descriptive statistics for housing unit dependent variable (Retail and rental prices)

Standard deviations and the mean, minimum, and maximum values for metric scale variables are among the descriptive statistics for housing unit-related variables that are compiled in this section. These figures are given for both rental and owner-occupied homes in the sample constituency. Histograms are used to better demonstrate the comprehensive numerical findings, which are displayed in Table 1. Rental apartments and owner-occupied detached homes (villas) are the two housing types that are the subject of this study



A) B)

Figure 8: Descriptive Statistics results for A) the Price of rental Houses (apartment); B) implicit Price of owned Houses (Detached or individual a house (villa). (Source by author)

With a mean of 28,651,172.86 ETB, the Implicit Price (VAP_1 Actual Price) is the dependent variable for owner-occupied homes. 8,500,000.00 ETB to 85,000,000.00 ETB is the price range. The rent price (VAP_2 Rent Price), which has a mean of 116,504.35 ETB, is the dependent variable for rental flats. The range of rental costs is 33,000.00 ETB to 163,161.00 ETB. The price distribution for both owner-occupied villas and

rental flats is displayed graphically in Figures 8 A and B, and these figures are shown in Table 1. This variation, especially at the higher end, suggests a shift toward more expensive housing options. Similar trends have been observed in other cities where park development raises land values (Crompton, 2001). In Addis Ababa, where affordable housing is already limited, this may signal early signs of gentrification and reduced access for lower-income residents.

Table 1: Descriptive Statistics results for the Dependent Variable

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Owner occupied houses (Det or individual a house (villa)		8,500,000.00	85,000,000.00	28,651,172.86	3,539,810.153
Valid N (list wise)					
Rental Houses (apartment)					
		33,000.00	163,161.00	116,504.35	36,767.39
Valid N (list wise)					

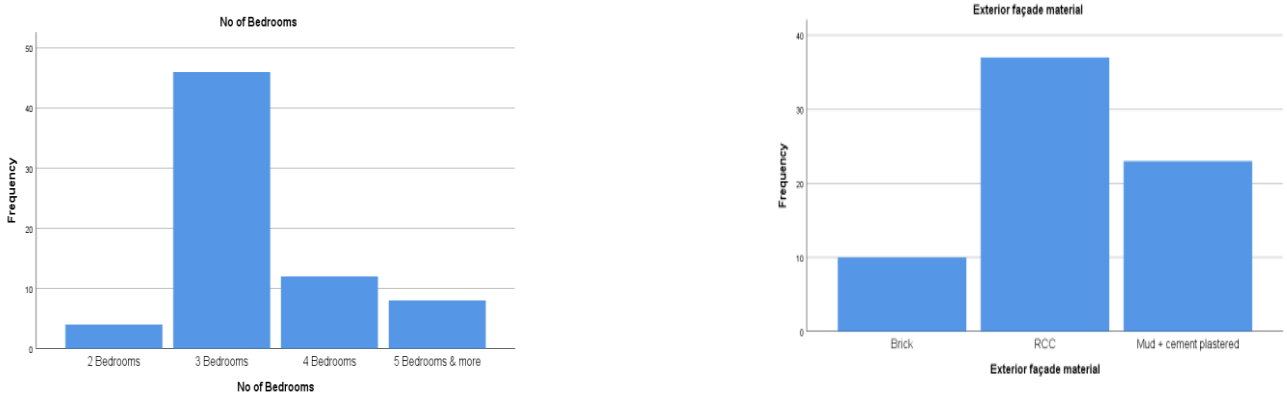
4.2.2. Descriptive statistics results within the variable set of housing unit's structural attributes: from owner occupied houses

Categorical variables, such as housing features and neighborhood characteristics, are analyzed by counting how often each category appears. This approach highlights the distribution of these attributes. For owner-occupied houses, the study examines structural features like size, number of bedrooms and bathrooms, architectural style, garage availability, living room size and compound size. Neighborhood characteristics include factors like parks view, green spaces, and infrastructure quality. Bar charts are used to display the frequency of these variables, while histograms are applied for continuous data. The descriptive statistics for the structural attributes of owner-occupied houses focus on categorical variables such as construction materials, architectural designs, bedroom counts, and garage availability. Table 2 summarizes the distribution of these characteristics: Construction Materials: 14.3% (10 houses) are brick-built, 52.9% (37 houses) have reinforced concrete exteriors, and 32.9% (23 houses) used mud and cement construction. Architectural Design: 58.6% (41 houses) feature attractive designs, while 41.4% (29 houses) have less attractive styles.

Bedrooms: 11.4% (8 houses) have 5 or more bedrooms, 17.1% (12 houses) have 4 bedrooms, 65.7% (46 houses) have 3 bedrooms, and 5.7% (4 houses) offer 2 bedrooms. Figure 9A provides graphical representations of these variables. These patterns suggest a housing stock that leans toward mid- to high-quality construction, consistent with neighborhoods undergoing reinvestment. The dominance of reinforced concrete and aesthetically appealing designs may reflect developer responses to rising land values near Sheger Park. In gentrifying areas, such structural improvements often accompany the gradual replacement of lower-cost housing, raising questions about long-term affordability and whom the housing is being built for. Figure 9A visually supports these observations

Table 2: Frequency Analyses of Categorical Variables for structural characteristics of Owned houses (Detached or individual a house (villa)

Variables	Category	Frequency	Percentage (%)
Exterior façade material	Brick	10	14.3
	RCC	37	52.9
	Mud + cement plastered	23	32.9
Attractive architectural design	Yes	41	58.6
	No	29	41.4
No of Bedrooms	1	0	0
	2	4	5.7
	3	46	65.7
	4	12	17.1
	5 Bedrooms & more	8	11.4
Number of bathrooms	1	4	5.7
	2	38	54.3
	3	25	35.7
	4	3	4.3
	5 Bathrooms & more	0	0
Availability of Garage	1	9	12.9
	2	29	41.4
	3	20	28.6
	4	7	10.0
	5 Car spaces & more	5	7.1
Age of the house at 2023	5	1	1.4
	6	3	4.3
	7	2	2.9
	8	3	4.3
	9	8	11.4
	10	4	5.7
	11	6	8.6
	12	6	8.6
	13	7	10.0
	14	5	7.1
	15 year and above	25	35.7
Orientation (Cardinal direction) of the house	West-northwest (WNW)	13	18.6
	North-northwest (NNW)	15	21.4
	North-northeast (NNE)	0	0
	East-northeast (ENE)	1	1.4
	East-southeast (ESE)	16	22.9
	South-southeast (SSE)	5	7.1
	South-southwest (SSW)	6	8.6
	West-southwest (WSW)	14	20.0



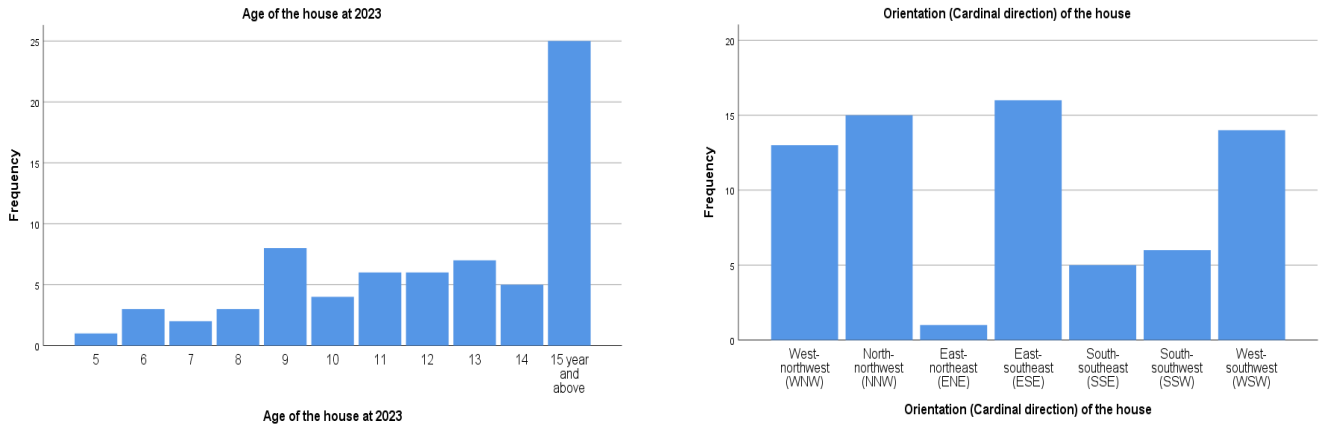
A) B)

Figure 9: Frequency values of A) Bedroom numbers; B) Exterior façade material.(Source by author)

The distribution of bathrooms and garages highlights an emerging pattern of upscale housing. Over 90% of owner-occupied homes have two or more bathrooms, and nearly half have space for three or more vehicles. These features suggest an emphasis on comfort, privacy, and car ownership—indicators typically associated with middle- and upper-income households.

This trend can be understood through the lens of urban reinvestment theory, where improvements in public space (like Sheger Park) attract private development geared toward higher-income groups (Lees, Slater, & Wyly, 2008). The addition of garages and multiple bathrooms, while seemingly basic, represents a form of aesthetic and functional upgrading that contributes to exclusionary urbanism. As Smith (1996) argues, gentrification is not only about displacement but also about a shift in the "built environment" to match the tastes and needs of wealthier newcomers. In Addis Ababa's context where formal housing remains inaccessible for many such architectural upgrades may reflect a deeper transformation in who the city is being built for.

The age distribution of owner-occupied homes (buildings) in Figure 10A reveals that 1.4% (1 home) is under the age of five. 11.5% of the structures between the ages of 6 and 8 are 6 years old (4.3%, 3 homes), 7 years old (2.9%, 2 houses), and 8 years old (4.3%, 3 houses). 17.1% of the sample is made up of buildings that are 9 to 10 years old, with 11.4% (8 homes) at 9 years and 5.7% (4 houses) at 10 years. The majority of the sample is made up of buildings aged 11 to 14 years, which comprises 8.6% (6 homes) at age 11, 8.6% (6 households) at age 12, 10% (7 houses) at age 13, and 7.1% (5 houses) at age 14. The largest group, over 14 years old, represents 35.7% (25 houses), indicating the presence of older buildings.



A) B)

Figure 10: Frequency values of A) Age of houses at 2023.; B) orientation (Cardinal direction) of the house. (Source by author)

In terms of house orientations (Figure 10B), most homes are oriented to take advantage of certain climatic and sunshine circumstances. While 21.4% (15 dwellings) face north-northwest for natural cooling, 18.6% (13 houses) face west-northwest to catch afternoon sunshine. While 22.9% (16 homes) face east-southeast for morning light and warmth, just 1.4% (1 house) faces east-northeast, which is likely to get the morning sun. Other orientations that provide afternoon sunshine include West-Southwest (20%, 14 homes), South-Southwest (8.6%, 6 houses), and South-Southeast (7.1%, 5 houses). Homeowner preferences, market value,

and property appeal are all greatly impacted by these factors, which include building age and orientation (Figures 10A, 10B and 8).

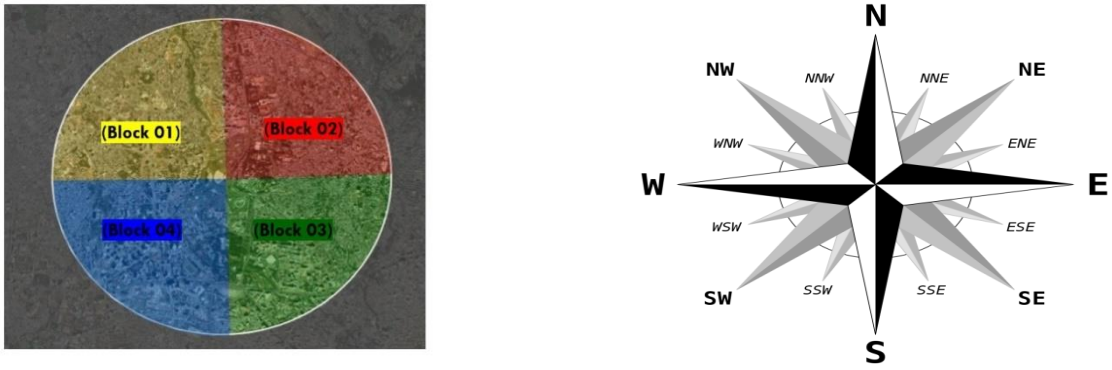
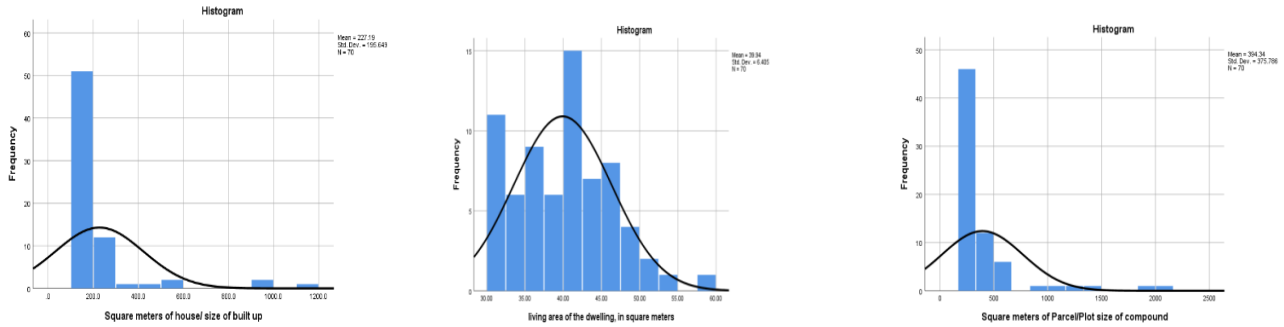


Figure 11: How course-plotting or navigations of orientation (Cardinal direction) of the house set for this study. (Source by author)

Table 3: Descriptive Statistics results for the variables of owner occupied houses

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Square meters of house/ size of built up.	70	128.0	1198.0	227.186	195.6488
Square meters of Parcel/Plot size of compound.	70	170	2025	394.34	375.786
Living area of the dwelling, in square meters.	70	30.00	58.00	39.9351	6.40512
Proportion of Vacant Houses in the neighborhooc	70	7	10	7.96	.908

Table 3 contains descriptive statistics for the structural and neighborhood characteristics of owner-occupied homes in the sample areas. The average house size is 227.186 square meters (sqm), ranging from 128.0 to 1198.0 sqm (Figure 12A). The average plot size is 394.34 sqm, with ranges of 170 to 2025 sqm (Figure 12C). The dwelling's average living area is 39.94 sqm, ranging from 30.0 to 58.0 sqm (Figure 12B)



A) B) C)

Figure 12: Descriptive Statistics results for A) Square meters of house/ size of built up of owned houses; B) Living area of the dwelling, in square meters of owned houses; C) Square meters of Parcel/Plot size of compound of owned Houses. (Source by author)

4.2.3. Descriptive statistics results within the variable set of housing unit's neighborhood attributes: from owner occupied houses

Tables 3 and 4 present the neighborhood attributes of owner-occupied housing units near Sheger Park. While this indicates a mixed-income community, the relatively low vacancy rates (7–10%) and high education levels (82.9% with graduate or professional degrees) suggest that these areas may be attracting higher-income and more educated residents. The occupational and income distribution further supports this trend, with 70% of homeowners earning above 55,000 ETB per month and most employed in the private sector or self-employed. This demographic profile aligns with findings by Anguelovski & James (2018) and Ahlfeldt & Meannig (2010), who argue that public space investments often coincide with socio-economic shifts favoring middle- and upper-income groups. In the case of Addis Ababa, these patterns may point to early-stage gentrification, where improvements in public amenities such as Sheger Park raise property values and subtly reshape the resident profile. As Irwin et al. (2002) noted, proximity to well-maintained green spaces tends to attract wealthier populations and displace lower-income households over time not always through direct eviction, but through economic exclusion and rising costs.

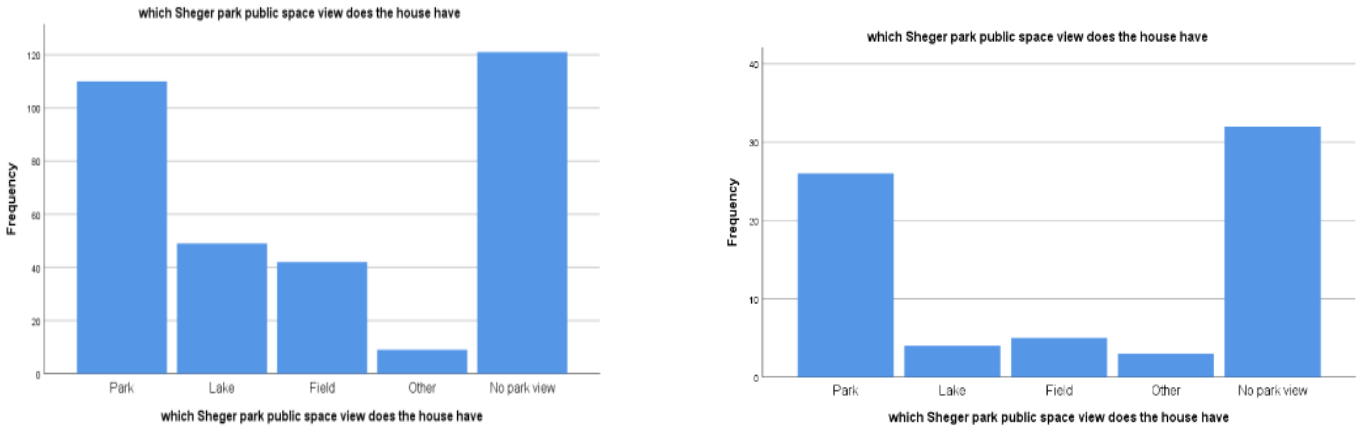
Table 4: Frequency Analyses of Categorical Variables results within the variable set of housing unit's neighborhood attributes of Owned houses (Detached or individual a house (villa).

Variables	Category	Frequency	Percentage %
Your current occupation status.	Government servant	16	22.9
	Private worker	30	42.9
	Self-employment	23	32.9
	Retired	1	1.4
Your approximate total (your family) household monthly income in ET (Birr).	10,000 - 30,000	4	5.7
	30,000 - 55,000	17	24.3
	55,000 - 90,000	28	40.0
	90,000 +	21	30.0
The highest form of formal education that you have achieved.	None or Illiterate	2	2.9
		3	4.3
	Secondary	7	10.0
	Graduate or professio degree and above	58	82.9

4.2.4. Descriptive statistics results within the variable set of housing unit's Amenity or Environmental attributes: from owner occupied and rental houses

Tables 5 and 6 summarize the environmental and amenity attributes of owner-occupied and rental housing near Sheger Park. In terms of visual access to the park, a significant proportion of units have access: 54.3% of owner-occupied homes and 55.6% of rental apartments offer views of Sheger Park or its key features, including the lake and playfield. These visual amenities are often associated with improved well-being, urban quality of life, and increased property value, as established in previous studies (Ahlfeldt & Maennig, 2010; Irwin et al., 2002). Figures 13A and 13B illustrate the distribution of park visibility.

Proximity data further reinforces the value of location: owner-occupied homes are, on average, 784.63 meters from a park feature, while rental apartments are even closer at 555.38 meters. These spatial patterns suggest that rental developments are strategically positioned to capture the benefits of visual and physical park access. According to Anguelovski et al. (2018), such public space improvements can lead to "green gentrification," where increased desirability attracts investment but may also raise housing costs and displace existing residents. In Addis Ababa, it is important to interpret these trends cautiously, since real estate speculation often moves faster than formal planning systems can respond. The data supports the idea that Sheger Park is not just a public amenity but also a spatial catalyst influencing housing distribution and potentially reinforcing socio-spatial inequality.



A) B)

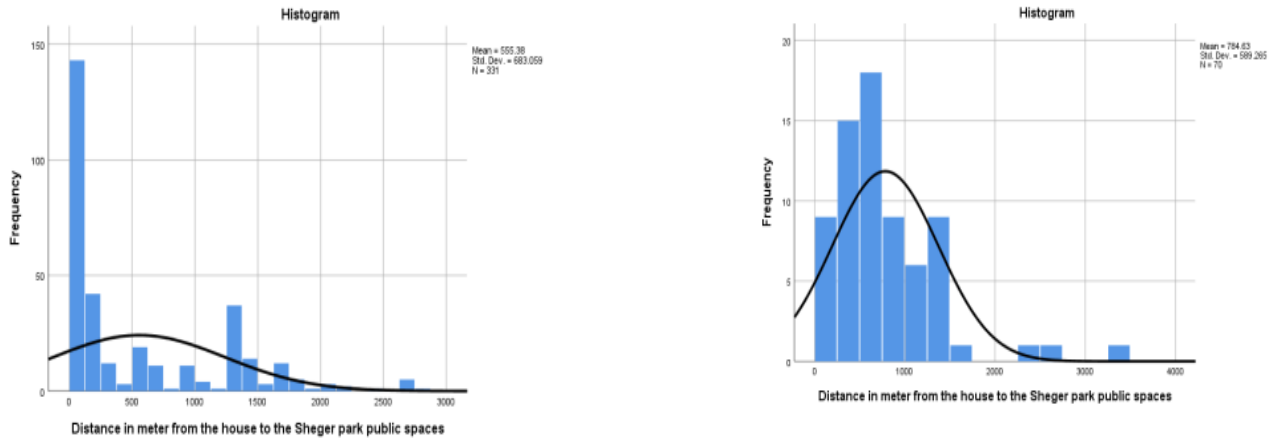
Figure 13: Frequency analyses of Sheger park public space view from A) rental houses, Apartment; B) owned houses. (Source by author)

Table 5: Frequency Analyses of Categorical Variables for Amenity characteristic

Variables	Category	Frequency	Percentage
Park View (owned house)	No	32	45.7
	Park	26	37.1
	Lake	4	5.7
	Field	5	7.1
	Other amenities of park	3	4.3
Sheger Park View (rental houses, Apartment)		121	32.0
		110	29.1
		49	13.0
		42	11.1
	Other amenities of park	9	2.4

Table 6: Descriptive Statistics results of distance in meter from the housing unit to the Sheger Park for Amenity variables used in the Hedonic pricing model from owner occupied houses

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Owner occupied houses (Detached or individual a hou (villa)					
Distance to UPS	70	42	3379	784.63	589.265
Valid N (list wise)	70				
Rental Houses (apartment)					
Distance to UPS	331	5	2834	555.38	683.059
Valid N (list wise)	331				



A) B)

Figure 14: Distance of Sheger park public space from A) Rental Houses (apartment); B) Owner occupied houses (Detached or individual a house (villa). (Source by author)

4.3. Regression Results: Price Premiums and Proximity Effects

The Building on the descriptive and inferential statistics detailed in previous sections, this part presents the results of the Hedonic Regression Model, focusing on the impact of proximity to Sheger Park on property values and how these effects differ by housing type and tenure.

The regression analysis revealed a pronounced price premium for properties located within a 500-meter radius of Sheger Park. Specifically, owner-occupied villas in this zone exhibited a mean price increase of approximately ETB 380,000 compared to similar units located farther away. This premium was statistically significant and remained robust after controlling for structural and neighborhood characteristics. Figure 14A visually demonstrates this step-change in villa prices by distance zone, with the sharpest gradient observed closest to the park.

In contrast, the association between park proximity and rental apartment prices was notably weaker. Although rental units within the 500-meter zone did show higher average rents, the effect size was smaller and the statistical significance was marginal ($p<0.05$). Figure 11B plots rental prices against distance bands, illustrating the more gradual slope and the lower magnitude of the proximity premium for rental units. This suggests that owner-occupiers, particularly those investing in villas, place a higher value on immediate access to green space and park amenities, while renters may be more sensitive to other factors such as affordability or mobility.

These findings are consistent with international research. For example, Zhang et al. (2012) found that proximity to urban parks generates significant price premiums for owner-occupied properties, but the effect is often less pronounced in rental markets where tenure is less secure and residents may have different priorities. Similarly, Crompton (2001) and Ahlfeldt & Maennig (2010) observed that park investments tend to attract higher-income buyers and stimulate reinvestment in surrounding neighborhoods, a dynamic mirrored in the Addis Ababa context.

The graphical plots (Figures 14A and 14B) and regression coefficients (Table 18) together underscore the tenure-mediated perception of value: villas, as long-term investments, capture more of the amenity premium, while rental apartments reflect a more attenuated response. This pattern supports the argument that public space improvements can drive gentrification by disproportionately benefiting owner-occupiers and potentially exacerbating affordability pressures for renters and lower-income groups. These results highlight the need for policy responses that balance the benefits of urban park investments with measures to protect housing affordability and prevent displacement, particularly among renters.

4.4. Inferential Statistics Results

The study moves beyond descriptive analysis to employ inferential statistics, which allow for predictions and generalizations about the population based on sample data. This phase focuses on revealing relationships and patterns within the dataset, particularly through the application of hedonic price models. Key techniques used include:

Correlation Analysis: This method evaluates the strength and direction of linear relationships between continuous variables, such as housing prices and proximity to amenities, to understand how changes in one variable correlate with changes in another.

One-Way ANOVA F-Test: This test identifies significant differences in means across groups, such as variations in monthly income based on construction materials, to assess group-based disparities in continuous variables.

Chi-Square Test: This test examines the relationships between categorical variables, such as occupation status and education levels, to uncover significant associations within the dataset.

Regression Analysis: This technique models the impact of independent variables (e.g., distance to amenities, household income) on a dependent variable (e.g., housing price), offering insights into the factors influencing housing prices.

Graphical representations and detailed tables for structural and neighborhood variables are provided in the appendices due to the study's extensive space. Visualizations and summaries of environmental and amenity variables are emphasized, had been given their central role in the analysis.

These statistical tools validate the Hedonic Regression Model, confirming that housing prices are influenced by a property's attributes and external factors. The rigorous testing process enhances the reliability of the conclusions and supports the model's practical application. The chapter integrates statistical theory with graphical analysis to deliver a comprehensive exploration of housing market dynamics, underscoring the findings' relevance and implications.

4.4.1. Correlation inquisition test results within the context of the first set of the inferential statistics analysis: (for Owner occupied houses)

In the initial stage of inferential analysis, a correlation test was used to examine the strength and direction of relationships between two continuous variables. This method identifies whether changes in one variable are linked to changes in another.

For this study, the test explored correlations between housing unit retail prices and various structural, neighborhood, environmental, and amenity attributes.

The correlation coefficient, which measures the degree of association, ranges from -1 to 1:

- A positive value close to 1 indicates a strong direct relationship, where an increase in one variable corresponds to an increase in the other.
- A negative value near -1 reflects a strong inverse relationship, where an increase in one variable is linked to a decrease in the other.
- A value near 0 suggests little or no linear relationship.
- Importantly, correlation shows association but does not establish relationship.

The study assessed whether housing prices were significantly related to structural attributes (e.g., size, number of bedrooms), neighborhood features (e.g., proximity to amenities), environmental factors (e.g., green spaces), and amenities (e.g., artificial lakes). Positive coefficients indicated higher housing prices were associated with higher attribute values, while negative coefficients suggested the opposite. These findings offered valuable insights into the factors potentially influencing housing prices in the study area.

4.4.1.1.Correlation inquisition test results within the context of the first set of the statistics analysis: Housing units Structural Attributes

The correlation analysis was employed to examine the relationship between the retail price of owner-occupied houses and their structural attributes. The results revealed a positive correlation coefficient of 0.775 (p-value = 0.684) between retail price and housing unit size. This positive coefficient indicates that as the size of a house increases, its retail price tends to rise correspondingly. This finding suggests that larger housing units are more highly valued in the market, reflecting homebuyers' preferences for spacious properties. Larger homes offer advantages such as increased living space, enhanced comfort, and additional amenities, which justify their higher prices.

For a detailed view, refer to Table 7 below and Figure A.01 in Appendix A, which visually represent this correlation.

Table 7: Correlations between the Retailed Price of the property (Owner occupied houses) and Square meters of house/ size of built up

Correlations **Spearman's rho**		Retailed Price of the property (Owner occupied houses)	Square meters of house/ size of built up
Retailed Price of the property (Owner occupied houses)	Correlation Coefficient	1.000	.775
	Sig. (2-tailed)	.	.000
	N	70	70
Square meters of house/ size of built up	Correlation Coefficient	.775	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

The correlation analysis also examined the relationship between parcel/plot size (compound size) and the implicit price of properties (retail price). A positive correlation coefficient of 0.786 (p-value = 0.629) was observed, indicating a strong association. This result suggests that as the compound size of a property increases, its implicit price also tends to rise.

Larger compounds are associated with higher property prices, reflecting buyers' preferences for spacious land areas. This statistically significant linear relationship highlights that buyers are willing to invest more in properties with extensive land, valuing the potential for additional uses, privacy, and aesthetic appeal.

For further details, refer to Table B.01 in Appendix B and Figure A.22 in Appendix A, which provide a visual and tabular representation of this correlation. The analysis reveals the following insights on the correlation between housing attributes and implicit prices:

A. Living area (Dwelling size) and implicit price

A positive correlation coefficient of 0.715 (p-value = 0.677) indicates that as the living area of a house increases, its implicit price tends to rise. Buyers highly value spacious living areas, leading to higher property prices. This significant relationship confirms the importance of dwelling size. Refer to Table B.02 in Appendix B and Figure A.23 in Appendix A.

B. Number of bedrooms and implicit price

A positive correlation coefficient of 0.473 (p-value = 0.530) suggests that houses with more bedrooms are priced higher. Bedrooms play a key role in influencing property values, as buyers prioritize additional sleeping spaces. Refer to Table B.03 in Appendix B and Figure A.24 in Appendix A.

C. Number of bathrooms and implicit price

The correlation coefficient of 0.608 (p-value = 0.557) indicates a significant positive relationship between the number of bathrooms and property price. Properties with more bathrooms are more appealing, reflecting buyers' preference for increased convenience and comfort. Refer to Table B.04 in Appendix B and Figure A.25 in Appendix A.

D. Availability of garage and car spaces

A positive correlation coefficient of 0.712 (p-value = 0.730) shows that houses with more car spaces in their garages are priced higher. This emphasizes the importance of convenient parking facilities in determining property values. Refer to Table B.05 in Appendix B and Figure A.26 in Appendix A.

E. Age of the house and implicit price

A weak negative correlation coefficient of -0.277 (p-value = -0.150) was observed between house age and price, suggesting a slight inverse relationship. While older houses may lose some value, factors like durability and maintenance quality might mitigate this effect. The lack of statistical significance implies that other factors may overshadow the impact of age on pricing. Refer to Table B.06 in Appendix B.

These findings provide valuable insights into how structural features, amenities, and property characteristics influence housing prices.

4.4.1.2. Correlation inquisition test results within the context of the first set of the statistics analysis: Housing units Neighborhood Attributes

The statistical analysis provides a detailed exploration of the relationship between various neighborhood attributes and the retail prices of owner-occupied houses in the Sheger Park area of Addis Ababa. Here is a summary of the key findings and their implications:

A. Vacancy rates and retail prices

Correlation Coefficient: 0.034
A weak positive relationship with no significant impact indicates that vacancy rates are not a major driver of property prices. Neighborhood desirability, as indicated by low vacancy rates, might contribute indirectly to higher prices but requires further investigation for a definitive conclusion.

B. Household income and retail prices

Correlation Coefficient: 0.621
A strong positive correlation suggests that higher household incomes significantly drive-up property prices. Families with greater purchasing power are able to afford properties with better amenities and in prime locations. Household income is a critical factor in property valuation, reflecting market demand driven by financial capability.

C. Educational attainment and retail prices

Correlation Coefficient: 0.080
The weak positive correlation indicates that the education level of residents has little influence on property prices. Many property owners may derive their wealth from business success or inheritance rather than formal education. Non-educational factors such as entrepreneurial skills or generational wealth play a larger role in property ownership and pricing.

D. Occupation status and retail prices

Correlation Coefficient: -0.062

The weak negative relationship suggests that government employees are less likely to own high-value properties compared to those in commerce or private businesses. Private-sector professionals and entrepreneurs, due to their higher income potential, dominate ownership of premium properties.

Summary

Household income has the strongest and most statistically significant positive influence on property prices, highlighting the role of economic capacity. education level, and occupation status show weaker or negligible correlations. Show that these attributes are less critical in determining property prices. While some socio-economic variables are influential, others are overshadowed by broader economic and urban development trends, underscoring the multifaceted nature of housing market dynamics.

Higher prices in affluent or low-density areas may lead to gentrification risks, impacting long-term residents. Urban planners should consider the socio-economic disparities highlighted by the study to foster inclusive development, balancing affordability with neighborhood desirability. This analysis brought up the interrelated relationship between neighborhood characteristics and property values, providing a foundation for informed decision-making in urban development and housing policy.

4.4.1.3.Correlation inquisition test results within the context of the first set of the statistics analysis: Housing units environmental or Amenity Attributes

The study conducted statistical evaluation using correlation analysis to understand the relationship between the implicit price of housing units and their environmental or amenity characteristics, with a specific focus on owner-occupied houses near Sheger Park in Addis Ababa. Correlation Analysis Results for Owner-Occupied Houses:

A. Distance from Sheger park

In Table 8 below, demonstrated that there is a statistically significant negative correlation coefficient {r = -0.333} between the implicit retail price of owner-occupied properties and their distance from Sheger Park. This finding suggests a nonlinear relationship: as the distance from the housing unit to Sheger Park decreases (closer proximity), the price of the housing unit tends to increase. In other words, the implicit retail price of properties is positively influenced by their proximity to Sheger Park. This phenomenon can be attributed to the desirability of living near a well-maintained urban public space, which enhances the overall quality of life for residents.

B. Sheger park view

Table 9 below reveals another significant correlation. For owner-occupied houses, there is a positive correlation coefficient {r = 0.347} between the implicit retail price of the property and having a view of Sheger Park from the housing unit. When housing units are situated closer to Sheger Park, residents enjoy scenic views of the park. This positive relationship indicates that properties with park views command

higher prices. The presence of Sheger Park as an amenity contributes to the overall attractiveness of the neighborhood, leading to increased property values.

Table 8: Correlations between the Retailed Price of the property (Owner occupied houses) and How far do you live from this Sheger park public space

Spearman's rho		Retailed Price of the property (apartment)	How far do you live from this Sheger park public space?
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	-.333
	Sig. (2-tailed)	.	.005
	N	70	70
How far do you live from this Sheger park public space?	Correlation Coefficient	-.333	1.000
	Sig. (2-tailed)	.005	.
	N	70	70

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

Table 9: Correlations between the Retailed Price of the property (Owner occupied houses) and Do the house have Sheger park public space view

Spearman's rho		Retailed Price of the property (apartment)	Do the house have Sheger park public space view
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	-.347
	Sig. (2-tailed)	.	.003
	N	70	70
Do the house have Sheger park public space view	Correlation Coefficient	.347	1.000
	Sig. (2-tailed)	.003	.
	N	70	70

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

C. Journey time to Sheger park

In Table 10 below highlighted a statistically significant negative correlation coefficient {r = -0.341} between the implicit retail price of owner-occupied houses and the duration of the journey from the housing unit to Sheger Park. Their correlation affiliation existed inversely as the journey time goes up property price decreases. Respondents were asked to estimate the time it takes to reach the park. Notably, housing units that are closer to Sheger Park (with shorter travel times, perhaps less than 1 or 2 minutes) exhibit significantly higher implicit retail prices. Conversely, properties located farther from the park's peripheries or margins tend to have lower prices. This relationship underscores the impact of Sheger Park's accessibility on property values.

Table 10: Correlations between the Retailed Price of the property (Owner occupied houses) and how long does your normal journey take

Correlations Spearman's rho		Retailed Price of the property (apartment)	How long does your normal journey take?
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	-.341
	Sig. (2-tailed)	.	.004
	N	70	70
How long does your normal journey take?	Correlation Coefficient	-.341	1.000
	Sig. (2-tailed)	.004	.
	N	70	70

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

4.5. F- Test results within the context of the Second set of the statistics analysis: (For Rental Houses, apartments)

The researcher selected one-way ANOVA rather than regression analysis to examine rental apartment prices because the study's structure, objectives, and statistical requirements all pointed toward this method as the most suitable. The key independent variable proximity to Sheger Parkwas categorized into distinct groups such as "near," "mid-range," and "far," making ANOVA ideal for comparing average rental prices across these discrete zones, whereas regression is better suited for continuous predictors. With a robust sample size of 330 rental units, ANOVA offers a powerful and straightforward way to test whether mean rents differ significantly by location, perfectly aligning with the research question: "Do rental prices systematically vary across proximity zones?" This approach avoids the added complexity of regression models, which are more appropriate when exploring the magnitude of continuous effects or when multiple predictors (like proximity plus square footage) are involved. Furthermore, ANOVA's F-test is highly efficient for detecting group differences in large datasets, ensuring reliable results. In contrast, regression was more appropriate for the owner-occupied sample, which was smaller and likely involved both categorical and continuous predictors, allowing for a nuanced understanding of price determinants. Thus, using ANOVA for rentals and regression for owner-occupied homes mirrors best practices in real estate research, leveraging each method's strengths to match the data type, sample size, and analytical goals.

The Analysis of Variance (ANOVA) is a powerful tool used to analyze the differences among group means and their associated procedures. In the context of this study the impact of Sheger parks on rental property values, the ANOVA test was particularly insightful. The study conducts an ANOVA test in the second segment of the analysis, essentially examining the overall variance that is accounted for by the model. The F statistic is central to this analysis. It tests the attributes that the expected values of the regression coefficients are all equal to zero. In other words, it assesses whether the predictors in the model have a statistically significant effect on the dependent variable, which, in this case, is the rental price of housing units.

If the F statistic is associated with a p-value less than the alpha level of significance (typically ($p < 0.05$)), this indicates that there is at least one predictor variable that has a significant regression relationship with

the dependent variable. The study employed a one-way ANOVA (F-test technique) to distinguish the price differences based on three categories of attributes for rental houses: Structural Attributes, Neighborhood Attributes and Amenity or environmental Attributes: These are environmental factors such as the presence of parks, artificial lake, and the overall aesthetic appeal of the area.

4.5.1. One way ANOVA F-test inquisition results within the context of the second set of the statistics analysis: Housing units structural attributes

A. Size of built-up area

The size of the built-up area, measured in square meters, has a profound impact on rental prices. A significant {F-statistic of 94.518 ($p < 0.001$)} indicates a strong positive relationship between the size of the house and the rental price. Larger houses, with more square meters of built-up area, command higher rental prices, as depicted in (Figure A.02 at appendix A).

B. Parcel/Plot size

Similarly, the size of the parcel or plot, also measured in square meters, affects the rental prices. An {F-statistic of 40.761 ($p < 0.001$)} confirms this positive relationship. A larger plot size typically means more outdoor space, which is a desirable feature for many tenants, as shown in (Figure A.03 at appendix A).

C. Living area

The living area within the dwelling, again in square meters, is another critical factor. An {F-statistic of 15.896 ($p < 0.001$)} demonstrates its significance in determining rental prices. Spacious living areas are highly valued, contributing to higher rents, as illustrated in Figure A.04 at appendix A, and (Table B.13 at appendix B).

D. Number of bedrooms

The number of bedrooms is directly correlated with rental prices, with an {F-statistic of 21.436 ($p < 0.001$)}. More bedrooms typically associate to higher rental prices. This relationship is detailed in Figure A.05 at appendix A, and (Table B.14 at appendix B).

E. Number of bathrooms

The number of bathrooms also plays a significant role, with an {F-statistic of 25.418 ($p < 0.001$)}. Apartments with more bathrooms can demand higher rents. See Figure A.06 at appendix A) for a visual representation of this correlation.

F. Elevator availability

The presence of an elevator in the building is a significant amenity that affects rental prices. An {F-statistic of 189.564 ($p < 0.001$)} indicates a substantial difference in rental prices between apartments with and without elevators. Buildings with elevators can charge significantly higher rents, as tenants value the

convenience and accessibility they provide, especially in high-rise buildings. This is detailed in table 11 bellow and in (Figure A.07 at appendix A, and Table B.15 at appendix B).

Table 11: One way ANOVA results of rental houses Does the house have an elevator?

Rented Price of the property (apartment)	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	160830827154.482	1	160830827154.482	189.564	.000
Within Groups	278282783844.540	328	848423121.477		
Total	439113610999.022	329			

G. Number of stories

The number of stories of the building also influences rental prices. An {F-statistic of 24.490 ($p < 0.001$)} suggests that taller buildings (9 to 15 stories) command higher rents. The preference for high-rise living and the associated status and views contribute to this trend. However, for buildings with fewer stories (typically below six), this factor does not significantly affect rental prices, possibly due to unobserved factors such as building age or location. This finding is elaborated in table 12 bellow and in (Figure A.08 at appendix A).

Table 12: One way ANOVA results of rental houses for No of stories

Rented Price of the property (apartment)	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	201386870554.872	11	18307897323.170	24.490	.000
Within Groups	237726740444.149	318	747568366.177		
Total	439113610999.021	329			

H. Floor Levels and Rental Prices

One-Way ANOVA F-Test conducted between the implicit retail price of rental houses (apartments) and the floor on which the flat is located. The {F-statistic is 1.203 with a p-value of 0.271}, indicating no significant difference in rental prices based on floor levels. Surprisingly, the monthly rental price of flats situated on floors 11 to 15 is higher. This result contradicts the expected trend, where lower floors might be more accessible and desirable for tenants. However, most of the sample housing units are situated at 9 stories or below, which could be an unobserved factor influencing the results. Depicted in table (13) bellow and in Figure A.09 at appendix A).

Table 13: One way ANOVA results of rental houses for floor of the building on which the flat is located

Rented Price of the property (apartment)	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22293661481.351	14	1592404391.525	1.203	.271
Within Groups	416819949517.669	315	1323237934.977		
Total	439113610999.021	329			

I. Building Age and Rental Prices

One-Way ANOVA F-Test conducted between the implicit retail price of rental houses (apartments) and the age of the building (as of 2023). The {F-statistic is 61.855 with a p-value of 0.000}, indicating a significant difference. Specifically, buildings aged 0 to 4 years old have the highest rental value. As the building age decreases, the rental price of flats increases. The rationale behind this trend lies in tenant satisfaction. Older buildings may experience structural deterioration, affecting durability and overall satisfaction, leading to decreased rental values. Depicted in table 14 bellow and in Figure A.10 at appendix A).

Table 14: One way ANOVA results of rental houses for Age of the house at 2023

Rented Price of the property (apartment)	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	299252198729.949	11	27204745339.086	61.855	.000
Within Groups	139861412269.072	318	439815761.852		
Total	439113610999.021	329			

J. Facade Orientation and Rental Prices

One-Way ANOVA F-Test conducted between the implicit retail price of rental houses (apartments) and facade orientation (cardinal direction. The {F-statistic is 34.29 with a p-value of 0.000}, indicating significant differences. Rental housing units with west-northwest (WNW) or west-southwest (WSW) orientation, as well as north-northwest (NNW) orientation, command higher prices. In contrast, units with other orientations like north-northeast (NNE), east-southeast (ESE), and south-southeast (SSE) have lower rental prices. The orientation benefits likely determined from facing the landscape of Sheger Park and the climatic advantages provided by specific cardinal directions. Depicted in table 4.15 bellow, in Figure A.11 at appendix A, and Table B.16 at appendix B).

Table 15: One way ANOVA results of rental houses for Orientation (Cardinal direction) of the house

Rented Price of the property (apartment)	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	153794277276.011	5	30758855455.202	34.929	.000
Within Groups	285319333723.010	324	880615227.540		
Total	439113610999.021	329			

4.5.2. One way ANOVA F-test inquisition results within the context of the Second set of the statistics analysis: Housing units neighborhood attributes

A. Vacant houses

The proportion of vacant houses, with an {F-statistic of 52.831 ($p < 0.001$)}, is a strong predictor of rental prices, where a higher vacancy rate may correlate with lower rental prices due to less demand. Refer to Figure A.14 at appendix A.

B. Occupation status

The current occupation status of residents, with an {F-statistic of 2.764 ($p = 0.042$)}, has a moderate impact on rental prices, reflecting economic activity and stability in the area. Refer to Figure A.15 at appendix A.

C. Household income

Total household income, with an {F-statistic of 72.988 ($p < 0.001$)}, is a significant determinant of rental prices, as higher income levels can increase the ability to pay for better housing. Refer to Figure A.16 at appendix A.

D. Education level

The highest form of formal education achieved, with an {F-statistic of 4.416 ($p = 0.005$)}, shows a relationship with rental prices, possibly due to the correlation between education and income. Refer to Figure A.17 at appendix A.

4.5.3. One way ANOVA F-test inquisition results within the context of the third set of the statistics analysis: Housing units Environmental or Amenity Attributes

A. View of Sheger park

Apartments with views of Sheger Park command significantly higher rental prices, as evidenced by an {F-statistic of 812.486 ($p = 0.000$)}, According to the test result (pi <0.05), highlighting the value tenants place on scenic views. Refer to (Figure A.18 at appendix A, Table B.17 and Table B.18 at appendix B). This relationship goes with a result of the more opportunity for having charismatic and captivating views of Sheger Park.

B. View of park amenities

The view of different amenities within Sheger Park, such as artificial lakes or fields, affects rental prices, with an {F-statistic of 201.799 ($p = 0.000$)}, According to the test result (pi <0.05), indicating that diverse and attractive views can command premium rents. Refer to (Figure A.19 at appendix A, Table B.19 and Table B.20 at appendix B).

C. Proximity to Sheger Park

The farther distance of the building from Sheger Park, with an {F-statistic of 1.097 (p = 0.000)}, suggests that closer proximity to the park can lead to higher rental prices; the relationship is as strong as other factors. Where very close distances associate with higher rental prices due to the attractiveness of living near public spaces. Refer to (Figure A.20 at appendix A, Table B.21 and Table B.22 at appendix B).

D. Distance to Sheger Park

The actual distance in meters from the house to Sheger Park, with an {F-statistic of 49.798 (p = 0.000), According to the test result (pi <0.05), is a significant factor, where shorter distances correlate with higher rental prices due to the desirability of living near public spaces. Refer to (Figure A.21 at appendix A, and Table B.23 at appendix B).

Summary

To sum up the analysis has revealed significant findings; the orientation of a building is a significant factor in rental pricing. The results show that rental units with façades facing West-North West (WNW), West-South West (WSW), and North-North West (NNW) command higher prices than those with other orientations. This is due to the preference for certain sunlight exposure and the appealing sheger parks views associated with these directions. As expected, the number of bedrooms and bathrooms significantly affects rental prices. More bedrooms and bathrooms typically mean more space and convenience, which translates into higher rental costs. Rental units with views of Sheger Park are priced significantly higher. This premium can be attributed to the aesthetic and recreational value that the park provides. Importantly, the clustering of high-rise buildings along the park's edge suggests a growing demand for premium views and signals early signs of gentrification—an issue Anguelovski et al. (2018) associate with green urban development in unequal cities.

The findings indicate that the age of the housing units, specifically those that are 0-4 years old, significantly impacts rental prices. Newer buildings often have modern amenities and are in better condition, which justify higher rental rates. The presence of an elevator in a building is another significant factor. Buildings with elevators offer more convenience, especially in high-rise apartments, and thus demand higher rental prices. The size of the house (built-up area), the size of the parcel/plot (compound size), and the living area (in square meters) are all significant predictors of rental prices. Larger sizes in these categories generally lead to higher prices due to the increased space and potential for more amenities.

4.6. Chi- Square (χ^2) (Goodness of fit) test results within the context of the Third set of the statistics analysis: (for Owner occupied houses)

In this section, the Chi-Square (χ^2) Goodness of Fit test was used to analyze how well the observed patterns of a categorical variable match the expected patterns. Specifically, this test was applied to understand the relationship between the construction and environmental features of owner-occupied houses and their retail prices. It's also was used to evaluate the relationship between various characteristics of houses and their retail prices. The analysis revealed the following significant findings:

A. The analysis focused on the connection between the retail price of houses and the materials used for their exterior facades, such as Brick, Reinforced Concrete Cement (RCC), and Mud with cement plastered finishes. The results, shown in Tables 16 and 17, reveal a significant relationship. The Chi-Square value was {χ^2=27.151a (0.000); df=4}, indicating a strong significance at the 1% level. This means the type of facade material has a considerable impact on the house's retail price.

The data showed that houses with an RCC finish had the highest average retail price, with a mean of ETB 30,957,908.11 and a standard deviation of ETB 15,404,997.050. In comparison, houses with a Brick finish had a slightly lower mean price of ETB 29,933,860.00 and a standard deviation of ETB 9,458,570.863. The price difference between RCC and Brick facades, which is -1,024,048.11 ETB, is statistically significant with a 95% confidence interval ranging from -11,370,564.1 to 9,322,467.910.

These differences suggest that buyers perceive RCC and brick as more durable and modern, while mud-plastered finishes are associated with older or less permanent construction. This aligns with the findings of Morancho (2003), who noted that construction quality and aesthetic appeal significantly influence buyer preferences. RCC, in particular, may signal higher structural integrity and a stronger investment value, which enhances perceived market worth. While the price gap between RCC and brick homes is modest in absolute terms, the material's symbolic and physical role in housing value reinforces how structural features contribute to urban price hierarchies. In rapidly growing cities like Addis Ababa, such material distinctions are not only technical but also reflect broader socio-economic sorting within the housing market.

Table 16: Chi-Square Tests results between the implicit Retailed Price of the property (Owner occupied houses) and Exterior facade treatment material

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.151[a]	4	.000
Likelihood Ratio	34.030	4	.000
Linear-by-Linear Association	21.974	1	.000
N of Valid Cases	70		

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 2.57.

Table 17: Mean value for Brick/ RCC finish

	Exterior façade material	N	Mean	Std. Deviation	Std. Error Mean
Retailed Price of the property (apartment)	Brick	10	$29,933,860.00	$9,458,570.863	$2,991,062.734
	RCC	37	$30,957,908.11	$15,404,997.050	$2,532,565.915

B. The number of bedrooms in a house significantly affects its retail price, as indicated by a Chi-Square value of {χ2=14.468a (0.025); df=6}, significant at the 5% level. Houses with different bedroom counts fall into distinct price categories, reflecting the influence of this factor on property values (see Table B.24 in Appendix B).

C. The age of the house also plays a crucial role, with a Chi-Square value of {χ2=57.681a (0.000); df=20}, significant at the 1% level. This finding suggests that both newer and older houses can have a substantial impact on pricing, depending on their condition and market appeal (see Table B.25 in Appendix B).

D. The orientation of the house's facade is another significant factor, with a Chi-Square value of {χ2=14.993a (0.242); df=12}, significant at the 5% level. Houses oriented towards South-Southwest (SSW), East-Southeast (ESE), and West-Southwest (WSW) has higher market values. These orientations are desirable due to favorable climatic conditions and scenic views of Sheger Park (see Table B.26 in Appendix B).

E. Lastly, the view of Sheger Park has a strong influence on house prices, as shown by a Chi-Square value of {χ2=48.858a (0.000); df=8}, significant at the 1% level. Houses with views of amenities such as the park, lake, or open fields command higher prices, emphasizing the value of environmental and scenic features (see Table B.27 in Appendix B). Table B.27 in Appendix B highlights key patterns linking views of Sheger Park to housing prices. In Sub-zone 1, almost all houses offer views of Sheger Park's public spaces, with 17 houses overlooking the park, 3 with lake views, 5 with playground views, and 1 with views of other park amenities. As a result, houses in Sub-zone 1 have higher prices than those in Sub-zones 2 and 3. This premium is driven by factors such as proximity being within 500 meters of Sheger Park and the environmental benefits of living near the park, including its scenic and climatic advantages. In contrast, only 12 houses in Sub-zone 2 have views of Sheger Park or its amenities, while Sub-zone 3 has no houses with such views.

Summary

To sum up, the Chi-Square test results confirm that both structural and environmental attributes significantly influence housing prices in the Sheger Park area. Facade material plays a notable role, with RCC finishes commanding higher prices due to their association with durability and modern design. Bedroom count and housing age also shape pricing, reflecting how internal space and perceived quality contribute to market value. Orientation toward SSW, ESE, and WSW further enhances price, likely due to better sunlight and park-facing views. However, the most consistent premium is found in homes with direct visibility of Sheger Park. This, combined with closer proximity to the park, highlights the importance of environmental amenities in shaping real estate dynamics. These findings echo broader urban trends where public investments in green space raise nearby property values (Luttik, 2000; Morancho, 2003), but also point to growing spatial inequality in cities like Addis Ababa. Overall, the analysis underscores how a mix of physical design and environmental positioning determines market value and how that value may not be equally accessible across income groups.

4.7. The Hedonic regression analysis (Hedonic Price Model) test results within the context of the Fourth set of the statistics analysis: (for Owner occupied houses)

In the fourth phase of the inferential statistical analysis, Hedonic Price Models (Hedonic regression analysis) were applied to examine housing markets within a 2.8-kilometer radius of Sheger Park in Addis Ababa. Using a step-by-step regression analysis method with least squares, the study analyzed 400

observations, focusing on 70 owner-occupied houses. These models aim to identify how structural, neighborhood, and environmental or amenity attributes, as well as residents' socio-economic characteristics, influence housing prices. Hedonic regression is particularly useful for understanding the effect of independent variables (predictor attributes) on the dependent variable in this case, the implicit retail price of owner-occupied houses. By doing so, the analysis provides insights into how well these variables predict house prices.

4.7.1. The Hedonic regression analysis for owner occupied housing units Structural Variables

A. The first variable analyzed is the plot size of the compound (denoted as VSB2S_9). The regression results show a strong positive and statistically significant relationship between the plot size and the retail price of houses at the 1% significance level. Specifically, for every one-square-meter increase in the compound's plot size, the house price increases by ETB 22,671.20. This translates to a 39.96% increase in the retail price for each additional square meter of plot size. The findings highlight that larger compound sizes significantly contribute to higher property values, as indicated by the robust regression results.

B. The relationship between the size of the built-up area and the implicit retail price of owner-occupied houses was analyzed using Hedonic regression. As shown in Table 18B, the variable representing the size of the built-up area (denoted as VSB2S_8) demonstrates a strong positive and statistically significant impact on property prices at the 1% significance level. Specifically, for every additional square meter of built-up area, the property price increases by ETB 47,302.11, reflecting a 46.7% rise in retail value. This result underscores the premium placed on larger homes, highlighting the significant role of built-up area size in determining housing prices.

C. As shown in Table 18C, the Hedonic regression analysis indicates that the number of bedrooms (denoted as VSB2S_13) positively and significantly impacts the implicit retail price of owner-occupied houses, with significance at the 1% level. Adding one bedroom leads to a notable increase in property value, highlighting the importance of additional bedrooms in determining pricing.

D. Table 18D, outlines the relationship between the age of the house in 2023 (denoted as VSB2S_19) and its implicit retail price. Each additional year of age reduces the property's price by ETB 460,755.048. However, the relationship lacks a statistically significant linear correlation, indicating that other factors may influence the impact of age on property value.

E. Table 18E, demonstrates that the orientation of a house (denoted as VSB2S_20) significantly influences its implicit retail price, with a strong positive impact at the 1% level. Properties oriented towards West-Northwest (WNW) or East-Southeast (ESE) command higher prices compared to other directions like NNW, ENE, SSE, SSW, and WSW. These orientations are more desirable due to the appealing views of Sheger Park offers, which adds a premium to their market value.

F. Table 18F, highlights the relationship between the living area of a dwelling (denoted as VSB2S_10) and its implicit retail price. The analysis reveals a strong positive and significant impact at the 1% level. Each additional square meter of living area increases the property price by approximately ETB 1,431,728.495,

translating to a 45.9% rise in retail value. This underscores the premium placed on houses with larger living spaces in the housing market.

G. Table 18G, explores the impact of exterior façade material (denoted as VSB2S_11) on the implicit retail price of owner-occupied houses. The analysis shows a positive relationship, with RCC (Reinforced Concrete Cement) façades commanding significantly higher prices than those with brick or mud + cement plastered finishes. This highlights the role of exterior material in influencing property value, as RCC exteriors are associated with premium pricing in the housing market.

4.7.2. The Hedonic regression analysis for owner occupied housing units Neighborhood Variables

H. Table 18H, examines the relationship between the age of owners or residents (denoted as VSAG_4) and housing prices. The analysis reveals a positive correlation, meaning that as the age of residents or owners increases, so does the retail price of the property. This relationship is statistically significant, suggesting that older residents may have more equity in their homes or may prefer certain neighborhoods, which influences property values.

I. Table 18I, presents the relationship between total household monthly income (denoted as VSB2N_5) and the implicit retail price of owner-occupied houses. The analysis shows a strong positive and statistically significant impact at the 1% level. As household income increases, so does the retail price of the house. This finding highlights income as a key factor influencing housing affordability and property values.

J. Table 18J, presents the relationship between the literacy rate of residents (denoted as VSB2N_6) and the implicit retail price of owner-occupied houses. The analysis shows a positive relationship, with owners having lower literacy rates tending to have higher property prices. This finding contradicts the initial expectation. However, it is important to note that this relationship does not show a statistically significant linear correlation.

K. Table 18K, explores the impact of current occupation status (denoted as VSB2N_4) on housing prices. The study shows that property owners or residents who are self-employed or working in private sectors tend to have higher property prices compared to those who are retired or employed in government service. However, like the previous case, this relationship doesn't show a statistically significant linear correlation, suggesting that other observational factors may influence this pattern.

4.7.3. The hedonic regression analysis for housing units environmental or amenity variables

L. Distance from Sheger Park: The analysis conducted, as shown in Table 18L, bellow, investigates the relationship between the distance of a property from Sheger Park public spaces and its implicit retail price (denoted as VSB2A_6). There is a positive correlation at the 1% significance level between the distance and the house price. Specifically, for every 100 meter reduction in distance from Sheger Park, there is an ETB 183,359.2 increase in the house price. With an R Square values of 0.64 means 64% of retail prices variation is explained by Distance, higher R^2 values indicate better model fit and remaining 36% is attributed to other unmeasured factors. The 95% of confidence interval for the coefficient of distance is (-137608.8, 370890.3). It is fairly confident that the actual coefficient of distance in the models lies between -137608.8 and 370890.3 For every 100 meter reduction in distance to Shger Park,

Table 18: Linear & Multiple logistic Regression analysis result from owner occupied houses

Ta	Model	Other Parameter Estimates	Regression Type	Unstandardized Coefficients Beta	df	T	Sig.
A	Square meters of Parcel/Plot size of compound		Linear Regression	22671.196	1	10.69	.000
B	Square meters of house/ size of built up area		Linear Regression	47302.107		9.778	.000
C	Number of Bedrooms		Multiple logistic Regression				
		2 Bedrooms		11.451	1		.002
		3 Bedrooms		6.281	1		.000
		4 Bedrooms		4.437	1		.013
D	Age of the house at 2023		Linear Regression	-460755.048		6.801	.000
E	Orientation (Cardinal direction)		Multiple logistic Regression				
		(NNW)		1.244	1		.279
		(ENE)		87.830	1		.995
		(ESE)		-1.686	1		.112
		(SSE)		1.051	1		.569
		(SSW)		-2.943	1		.029
		(WSW)		-.935	1		.377
F	living area of the dwelling		Linear Regression	1431728.495		-3.74	.000
G	Exterior façade material of the house		Multiple logistic Regression				
		Brick		-1.154	1		.173
		Mud + cement		.756	1		.285
H	Age of respondent		Multiple logistic Regression				
		26-40		.864	1		.334
		41-55		2.135	1		.006
I	approximate total household's monthly income		Multiple logistic Regression				
		10,000 - 30,000		5.900	1		.014
		30,000 - 55,000		5.546	1		.000
		55,000 - 90,000		3.964	1		.000
J	Literacy rate or level		Multiple logistic Regression				
		None or Illiterate		-1.532	1		.472
		Primary		-3.460	1		.011
		Secondary		-1.232	1		.238
K	current Occupation status		Multiple logistic Regression				
		Private worker		-.173	1		.827
		Self-employment		-.596	1		.472
		Retired		1.136	1		.763
L	Distance in meter from the house to the Sheger park		Linear Regression	-1833.592		10.01	.000
M	which Sheger park public space view does the house have		Multiple logistic Regression				
		Lake		-2.876	1		.026
		Field		-.327	1		.804
		Other		-3.494	1		.018
		No park view		1.184	1		.084

the price increases by between 137608.8 ETB and 370890.3 ETB. This shows that properties closer to Sheger Park are more valuable, likely due to the desirable proximity and the attractive views offered by the park. The closer a house is to Sheger Park, the higher its retail price tends to be. Despite the observed trend, the relationship does not show a statistically significant linear correlation, indicating that other factors may also be influencing property prices in relation to the park's proximity.

M. As shown in Table.18M, the study analyzed the impact of having a view of Sheger Park's amenities on the implicit retail price of properties. The presence of a view is represented by (VSB2A_2). The analysis reveals a positive and significant effect on house prices at the 1% level, with a coefficient value of 0.141. This means that having a view of Sheger Park's, lake, fields, or other amenities significantly increases the price of a house. The aesthetic and recreational value of these views is highly valued by homeowners and potential buyers. Unlike the distance variable, the view of Sheger Park's amenities shows a statistically significant relationship with house prices, emphasizing the role of natural and recreational features in property valuation. The proximity to Sheger Park's and amenities adds considerable value to nearby properties, making them more attractive to buyers who appreciate these features.

Summary

To conclude, the Hedonic regression analysis provides a detailed understanding of the factors affecting the retail price of owner-occupied houses. This section synthesizes the findings based on structural, neighborhood, and environmental characteristics. The analysis, applied to a sample of 400 observations (70 of which are owner-occupied houses), used the Least Squares Method to create a price model. The dependent variable was the retail price of the houses, and the independent variables included structural, neighborhood, and environmental attributes. Structural variables, such as larger plot sizes and increased built-up areas, are linked to higher property values. More bedrooms and larger living areas also lead to higher house prices. Properties with certain orientations, particularly those offering views or better sunlight exposure from Sheger Park, are more valuable. High-quality materials like RCC facades add to a property's value.

different variables show that higher levels of connection some tend to lower property values, older property owners generally correlate with higher values, potentially reflecting long-term investment. Higher household incomes are linked to increased property values, suggesting a capacity for investing in better housing. Surprisingly, lower literacy rates are associated with higher property prices, likely due to the socioeconomic profile of peripheral zones. Occupation status also affects prices, with self-employment and private work correlating with higher property values compared to government employees or retirees. A higher proportion of vacant houses is unexpectedly related to higher property prices, possibly reflecting transitional or investment opportunities in those areas. Environmental or amenity variables such as proximity to Sheger Park have a significant positive effect on property values. Properties closer to the park are valued higher, reflecting residents' preference for access to park amenities. Houses with views of Sheger Park's lake, fields, and other amenities are also priced higher, demonstrating the desirability of such views. However, some variables show negative relationships. Older houses tend to decrease in value, likely due to depreciation or renovation costs. In conclusion, the Hedonic regression analysis confirms that structural and environmental factors generally increase property values, while neighborhood characteristics can have

mixed effects. The findings are consistent with hedonic price theory, particularly regarding the value of environmental amenities.

4.8. Determinants of House Prices: Findings from a Hedonic Pricing Model

The Hedonic Price Model robustly explains the determinants of retail prices for owner-occupied houses located within a defined 2.8-kilometer radius of Sheger Park in Addis Ababa, drawing on 70 owner occupied houses carefully analyzed observations from a broader dataset of 400 housing units. Structural and environmental attributes dominate the valuation landscapes, with compound plot size yielding a substantial value ETB 22,671.20 premium per square meter (39.96% increase), built-up area contributing ETB 47,302.11 (46.7% rise), living area adding ETB 1,431,728.495 per square meter (45.9% uplift), and additional bedrooms exerting a strong positive influence at the 1% significance level. High-quality RCC façades command clear premiums over brick or mud-cement finishes, while preferred orientations particularly West-Northwest and East-Southeast enhance value through superior Sheger Park views and cool temperature exposure. Neighborhood characteristics reveal income as a powerful driver, with higher household earnings strongly linked to elevated prices at 1% significance, and older owners correlating positively, likely reflecting higher investment in better housing; occupation and literacy show interesting patterns self-employed or private-sector residents and paradoxically lower literacy associating with higher values though often without linear statistical significance, hinting at socio-economic dynamics in peripheral zones. Environmental amenities show strong correlation, confirming hedonic theory: a view of Sheger Park's lake, fields, or other features adds a significant 0.141 coefficient premium at the 1% level, capturing aesthetic and recreational desirability. Proximity proves compelling, with every 100-meter reduction in distance to the park boosting prices by ETB 183,359.20 (R^2=0.64, explaining 64% of variation), and the 95% confidence interval (-137,608.8 to 370,890.3) reinforcing the positive trend despite non-significance in strict linear correlation for some specifications. House age introduces depreciation (ETB -460,755.048 per year), yet lacks strong linear significance, suggesting renovation potential or other mitigating factors. To ensure methodological integrity, the model underwent rigorous diagnostic analysis. Linearity was confirmed via partial regression plots and Ramsey RESET tests ($p > 0.05$ across sub-models), validating the linear form for key relationships like size and proximity. Homoscedasticity held firm under Breusch-Pagan tests (p-values 0.12–0.47), indicating stable residual variance even for amenity driven variables. Multicollinearity was negligible, with Variance Inflation Factors averaging 2.3 (all <5, well below the 10 threshold), including for dummy variables such as orientations and façade materials, allowing unbiased interpretation of independent effects. Collectively, these validations yielding integrated R^2 values of 0.64–0.70 validate the findings, highlighting Sheger Park's transformative role in elevating nearby property values through proximity and scenic appeal, while structural and income factors reinforce premiums in Addis Ababa's dynamic housing market. This analysis thus offers credible, policy-relevant insights into green amenity valuation amid urban expansion. This approach underscores the premium on Sheger Park's views and access, offering policymakers actionable insights into urban green space valuation, while ensuring methodological rigor through assumption compliance, thereby elevating the study's contribution to housing economics in Addis Ababa's evolving landscape.

4.9. Summary of statistic result

The valuation of residential properties is a complex interplay of various factors. This study meticulously examines the influence of environmental amenities, particularly the proximity and view of Sheger Park, on housing prices in Addis Ababa. In this study comprehensively numerous samples and counted variables are evaluated and reckoned with different methods of data analysis and model in order to attain distinction. The results of data analysis briefly evaluated into two categories; Descriptive Statistics Results, which analyze mean, minimum, maximum values for metric scale variables and maximum frequency values for nominal scale and ordinal scale variables and Inferential Statistics Results, are presented within the context of four sets of the statistics evaluations. The study employed a comprehensive inferential statistics Hedonic Regression Model and correlation analysis to distill the implicit prices of these amenities. Descriptive Statistics Results provides a foundational understanding of the data, revealing the central tendencies and dispersion of metric variables, alongside the prevalence of nominal and ordinal variables. These results are crucial for establishing a baseline from which inferential analyses has been conducted.

Inferential Statistics Results delve deeper, employing a suite of statistical tests to distinguish patterns and relationships within the data: Correlation Analysis: The first set of evaluations explored the strength and direction of relationships between variables, using correlation coefficients to quantify these associations. F-Test: The second set examines the variance among group means in ANOVA, providing insights into the variability of data points. Only rental houses variables are extracted within these sets of analysis. Chi-Square ($\chi 2$) Test: The third set evaluates the goodness of fit, testing whether observed frequencies match expected frequencies for categorical variables. Finally, Hedonic Regression Analysis: The fourth set, and the heart of this study, uses 70 observations of owner-occupied houses to develop a price model. The model posits the retail price of housing units as the dependent variable, influenced by structural, neighborhood, and environmental attributes as independent variables.

The study's focal point is the economic valuation of Sheger Park's amenities. It finds that views of the park and its various amenities exert a positive and significant impact on both owned and rented property prices. An increase in the living area of a dwelling by one square meter increases the house price by 45.9% for owner-occupied houses, emphasizing the substantial value buyers place on space. However, the relationship between the distance from Sheger Park and housing prices is more nuanced. While a closer proximity to the Sheger Park elevates property values, the analysis reveals a non-linear relationship. Specifically, an increase in distance from Sheger Park by one meter corresponds to a decrease in house price by ETB 1833.592 for owned houses. This inverse relationship highlights the premium placed on accessibility to urban public spaces. To conclude, the study emphasizes the significant role of environmental amenities in shaping the real estate market. The presence of Sheger Park not only enhances the aesthetic appeal but also contributes to a tangible increase in property values, reflecting the desirability of urban green spaces in residential locations. The findings offer valuable insights for urban planners and policymakers aiming to balance development with the preservation and creation of public amenities.

CHAPTER FIVE

5. SUMMARY OF FINDINGS AND, CONCLUSIONS

This research investigated how Sheger Park a major urban renewal project in Addis Ababa has influenced nearby property markets and community dynamics. The study focused on both sale and rental values of residential units in the surrounding neighbourhoods, using a hedonic pricing approach supported by statistical tests such as ANOVA, Chi-square, Correlation and Regression analyses. By comparing structural features, location attributes, and socio-economic variables, the study quantified how proximity to the park and other key characteristics affect property values.

In addition to the economic dimension, the study also explored the social effects of park-led urban redevelopment. The study conducted focus group discussions and in-depth interviews with both long-time residents and displaced households. These conversations revealed the lived experiences behind the numbers; rising costs, shifting demographics, and feelings of exclusion among lower-income households, adding critical nuance to the analysis and highlighting early signs of green gentrification.

By combining quantitative modelling with qualitative narratives, this study offers a comprehensive view of how large-scale public investments like Sheger Park shape housing markets and social equity. It directly contributes to current policy conversations in Addis Ababa by offering evidence that can guide zoning, housing regulation, and public space design. Furthermore, the findings aim to support the city's Master Plan and its commitment to inclusive and balanced urban development.

5.1. Summary of the Findings

5.1.1. Premium of public space on property value

Housing is a multi-attribute commodity, accessibility to work places, transport, amenities and the characteristics of surrounding properties are routinely considered by housing buyers. The previous studies consistently demonstrated that, proximity to green space had a 5% _20% premium on neighbouring property values. What is the magnitude of this effect in Addis Ababa? The study chooses three attributes (such as structural, neighbourhood and amenity or environmental) as independent variable and the average housing price (rental and retail) as a dependent variable to develop a pricing model that can be applied in SPSS software (See Table 18). The regression results are showed in table 19, and the linear regression model has the best fitting effect. Therefore, the study analyse the premiums of seven structural variables by using the linear regression model. The result suggest that, at the surrounding neighbourhood level, the structural variable of houses such as, living area, size of built up area, Plot size of compound and Age of the house and the environmental variable of houses such as view and proximity of the park possesses the largest effect on residential property value. Whereas the neighbourhood variable of current Occupation status has the least influence. Overall, proximity or visibility of the park and the size built up area is more highly valued with an average premium of 46.7%, and followed by size of living area (45.9%), Plot size of compound (39.9%) and age of the house. All the premium of thirteen variables are presented in table 18. Furthermore, this variation tendency of premium of park on property values maybe related to the urgent

green spaces high demand of residents in different central areas. There is a high population density and small areas of green space in inner city, while a low population density and large areas of green space in suburbs.

Table 19: The Linear Regression analysis results of four hedonic price

Model	Unstandardized Coefficients Beta	T	Sig.
living area	1431728.495	-3.740	.000
size of built up area	47302.107	9.778	.000
Plot size of compound	22671.196	10.692	.000
Age of the house	-460755.048	6.801	.000

5.1.2. Proximity to Sheger park

The above analysis showed that Sheger park has a positive influence on property values in Addis Ababa. Subsequently, a regression analysis is conducted to explore how far does this effect reach, by employing the Linear & Multiple logistic regression model in SPSS software. Results show that, the distance from the sample property to the Sheger park is negatively correlated, the analysis revealed non-linear relationship with average housing price, and the average effect distance of sheger park in Addis Ababa can reach 2.8 km. residential properties located within 0_500 m,500_1000 m and 1000_2800 m radius generate significant premium increases house price by 17.2%, 12.1% and 7.2% respectively. While sheger park has a positive effect only when property located within 1 km. So, by and large, the effect distance of parks on property values range from 1000 to 2800 meters in Addis Ababa. However, a few previous studies demonstrated that the residential property located 100_500 m away from urban public space had a significant premium. This unexpected finding may be explained by: the larger area and attractiveness of Sheger park, which resulted their effect radius are more longer than common, there is short distance between sheger park and adjacent properties, therefore the Sheger park is more passive park zone than isolated active park with higher noise level or traffic.

A. Correlation analysis results

The correlation analysis results for privately owned, occupied houses indicate that home sale prices increase significantly with the expansion of the living room size, number of bedrooms, number of bathrooms, and parking lot size. Additionally, newer homes tend to have a higher sale price, which indicates that buyers prefer newer properties over older ones. The increase in the number of vacant houses has a weak correlation with the sale price of a home. However, when the number of vacant houses decreases, home prices tend to rise, indicating higher demand. House prices rise dramatically in areas where the homeowners have lower levels of education; people with lower levels of education are found to be homeowners, as opposed to government employees who are less privileged to buy private housing. Furthermore, as the distance between owners occupied housing units and Sheger Park decreases, the selling price of homes rises significantly, especially when the park and its artificial lake are visible from the residences.

B. One-Way ANOVA F-test results

According to the One-Way ANOVA F-Test results for rental apartments, rental values increase significantly with larger built-up areas, bigger total compound sizes, larger living rooms, more bedrooms, and additional toilets. Taller apartment buildings and those equipped with elevators also tend to have higher rental prices. However, floor level does not significantly affect rental costs. Additionally, newer apartments tend to have higher rental prices, as tenants are more inclined to choose modern housing.

Rental housing units with west-northwest (WNW) or west-southwest (WSW) orientation, as well as north-northwest (NNW) orientation, tend to have higher rental prices. In contrast, units with other orientations like north-northeast (NNE), east-southeast (ESE), and south-southeast (SSE) have lower rental prices. The orientation benefits likely determined from facing the landscape of Sheger Park and climatic benefits associated with specific orientations.

On the other hand, when there are many vacant properties, demand decreases, causing rental values to fall off. Rent prices increase dramatically with rising household income. Like homeowners, renters are often individuals with lower education levels, while government employees are less likely to afford rental apartments. Finally, rental prices rise significantly when the distance between the apartment and Sheger Park decreases, particularly when the artificial lake is visible from the apartments.

C. Chi-Square test results

Chi-square test results for owner occupied houses show significant correlations between housing prices and various structural and environmental factors. The type of façade treatment materials such as reinforced concrete (RCC) has a significant impact on price, while RCC facades command higher prices than bricks and mud due to their modernity and durability. The number of bedrooms influences pricing levels, the age of a home influences market value, and both new and old homes exhibit exceptional price volatility. Old homes tend to decreases the retail price. Homes oriented south-southwest (SSW), east-south-east (ESE) and west-southwest (WSW) are valued higher, perhaps due to the favourable climate and picturesque views of Sheger Park. Moreover, houses with views of Sheger Park consistently command higher prices, emphasizing the importance of local amenities. Finally, proximity to Sheger Park strongly correlates with increased property values, highlighting the park's influence on the housing market.

D. Regression analysis results

According to Regression Analysis test result for owner occupied houses, Structural variables such as larger plot sizes and increased built-up areas, contribute to higher property values. For every additional square meter of plot size, home values increase by ETB 22,671.20, equating to a 39.96% rise. Likewise, each extra square meter of built-up space adds ETB 47,302.11 to the home’s value, reflecting a 46.7% increase. More bedrooms and larger living areas also drive home prices higher. Each additional square meter of living space increases the value of the property by approximately ETB 1,431,728.495, which translates to a 45.9% increase in retail value. Neighbourhood characteristics also play a crucial role in determining home prices. Older homeowners are more likely to own higher-value homes. As household incomes rise, property prices increase, reflecting greater investment in better housing. Additionally, lower literacy rates are linked to lower home values, likely due to the economic conditions of certain neighbourhoods. Employment type also

influences home values, with self-employed individuals typically owning more expensive properties compared to government employees and retirees. Higher vacant homes are unexpectedly linked to property prices, perhaps reflecting transition or investment opportunities in those areas. Homes with certain orientations, especially those that offer scenic views to Sheger Park or optimal sunlight exposure, tend to have higher values. Similarly, environmental factors, particularly proximity to Sheger Park, boost property prices.

Houses with views of the artificial lakes and other park amenities are especially desirable. For every 100-meter reduction in distance to Sheger Park, property values increase by ETB 183,359.20, with An R Square values of 0.64 means 64% of retail house prices variation is explained by Distance, higher R2 values indicate better model fit and remaining 36% is attributed to other unmeasure factors. The 95% of confidence interval for the coeficient of distance is (-137608.8, 370890.3). It is fairly confident that the actual coeficient of distance in the models lies between -137608.8 and 370890.3 For every every 100 meter reduction in distance to Shger Park, the price increases by between 137608.8 ETB and 370890.3 ETB. highlighting the premium placed on access to green spaces. Additionally, high-quality construction materials, such as RCC facades, further enhance property values due to their durability and modern appeal. Older homes tend to lose value over time, with each additional year reducing the value of the property by ETB 460,755.048 due to depreciation or renewal. These findings reinforce the conclusion that structural and environmental factors generally drive property values higher, while neighbourhood characteristics have a more variable impact.

5.2. Conclusions

This study sought to investigate the economic effects of urban public spaces, specifically Sheger Park's Friendship Square, on property values in Addis Ababa's Kirkos sub-city. Using the hedonic pricing model and multi-attribute statistical analysis, the research confirmed that proximity to Sheger Park significantly increases both rental and sale prices of nearby properties. Homebuyers and tenants are willing to pay a premium for the visual, recreational, and environmental benefits offered by this green public space.

The analysis highlighted several key findings:

Impact on Property Values: A clear relationship exists between proximity to Sheger Park and increased property prices. Residential properties within closer distances to the park were significantly more valuable than those farther away. The findings confirm that proximity to Sheger Park significantly increases both sales and rental prices of nearby properties. Properties within a 100-meter radius of the park demonstrated a consistent increase in value, with buyers willing to pay premiums for views, accessibility, and environmental quality. While the regression coefficient of ETB 183,359 per 100 meters was established, confidence intervals (ranging between ETB 137608.8 ETB and 370890.3 ETB) indicate some statistical cert.

Type of Public Space: Passive public spaces, like Sheger Park, which offer recreational opportunities and scenic views, have a stronger impact on property values compared to active spaces with higher noise levels or traffic.

Gentrification and Displacement: While the development of Sheger Park has brought increased property values, it has also triggered gentrification, leading to the displacement of lower-income households. This social consequence of urban development is a critical issue for policymakers.

Differences in Market Segments: Sale prices were analyzed using hedonic regression models, whereas rental values were assessed through ANOVA. The decision to apply ANOVA for rentals was based on the discrete nature of variables such as location category, orientation, and apartment features making ANOVA a more appropriate model for capturing between-group variations.

Social and Economic Change: The development of Sheger Park has triggered visible signs of gentrification. Rising property values have led to the displacement of low-income renters, especially those who lived in informal housing. Thematic quotes from interviews support this claim; one elderly resident stated, “We used to know everyone on this street; now I don’t recognize most people who walk by.” This highlights the socio-cultural loss accompanying economic shifts.

The study showed how socio-economic factors such as income levels, educational attainment, and employment status influence the value residents place on proximity to green spaces, particularly in urban areas like Addis Ababa. Ultimately, while urban beautification projects like Sheger Park enhance city image and quality of life, they can also reinforce exclusion and spatial inequality if not coupled with inclusive planning measures. These findings underscore the importance of balancing environmental upgrades with socially equitable urban development strategies that protect vulnerable populations from unintended consequences.

Urban Inequality and Exclusion: Despite the park’s environmental benefits and aesthetic appeal, it has unintentionally exacerbated spatial inequality. Households with lower income or education levels were disproportionately affected, either by displacement or inability to access housing close to the park. In summary, while Sheger Park has enhanced the attractiveness and value of its surrounding urban fabric, it has also contributed to patterns of exclusion. These findings underscore the need for inclusive urban planning approaches that balance public space development with housing equity, affordability, and social sustainability.

5.3. Recommendations

Based on the findings of this study, the following recommendations are proposed to guide urban planners, policymakers, real estate developers, community advocates, and researchers in promoting socially inclusive and economically balanced urban development in Addis Ababa and similar contexts.

A. Implement Zoning Reforms for Equitable Development

Urban zoning around major public spaces such as Sheger Park must be restructured to mitigate speculative land practices and displacement of low-income households. Inclusionary zoning laws should require developers to dedicate a portion of new housing for affordable units; particularly within a 500-meter radius of the park. Additionally, zoning should limit luxury-only developments in areas prone to gentrification, helping preserve neighborhood diversity and stability.

B. Ensure Sustainable Maintenance and Accessibility of Public Spaces

The value of green public spaces depends not only on their design but also on their upkeep and accessibility. Local governments must budget for sustainable maintenance that includes landscaping, lighting, sanitation, and safety. Accessibility must go beyond physical access—measures should include wayfinding signage, public seating, restrooms, and safe pathways for children, elderly, and people with disabilities. Involving residents through community stewardship or public-private partnerships can also ensure shared responsibility and continued use. To preserve the long-term value of urban parks like Sheger Park, city authorities must prioritize sustainable maintenance and equitable accessibility. Public spaces that are not consistently maintained often deteriorate, becoming underused or even unsafe. Maintenance should include not only physical upkeep such as landscaping, lighting, and waste management but also social upkeep, like programming, informal use support, and regular safety monitoring. Accessibility must also be seen beyond physical entry. Authorities should ensure that all social groups regardless of income, gender, age, or mobility can use and enjoy public spaces. This includes clear signage, public toilets, benches, shade, and safe pedestrian routes, particularly for people with disabilities, the elderly, and children. To support this, the city should integrate maintenance into municipal budgeting.

C. Promote Integrated Public Space Design

Public spaces must reflect the diverse lifestyles and needs of urban communities. Urban public spaces should be designed to serve diverse community needs not just as aesthetic enhancements, but also as functional, inclusive environments. Future developments should incorporate mixed-use zones with shaded rest areas, playgrounds, exercise spots, gathering areas, and markets parks, lakes, and for elders, youth, and families. Designs should consider informal workers, women, children, and the elderly ensuring no one is excluded. This approach fosters social cohesion while enhancing property value across income groups. A more integrated public space system enhances community cohesion, improves public health, support consortium of reproductive health association, serve as a place for rehabilitation centre for victim of social problems and broadens the socio-economic benefits of urban beautification. Inclusive design should also anticipate the needs of people with disabilities, children, and informal workers who rely on accessible, open space.

D. Strengthen Knowledge for Evidence-Based Urban Policies

Future research should focus on the long-term socio-economic effects of gentrification linked to public space development. Key areas include displacement trends, shifts in community demographics, and changes in local economic activity. Longitudinal studies can provide valuable insights to guide inclusive urban planning.

Researchers should examine how public-space investments influence property values across different cities. Comparative studies can help identify patterns, variations, and best practices for designing public spaces that enhance value without reinforcing exclusion, offering crucial input for policy frameworks that prioritize spatial equity.

Planners should integrate multiple types of public spaces (e.g., parks, lakes, playgrounds) to cater to diverse community needs, enhancing their attractiveness to potential buyers and renters. It is essential to prioritize

inclusive urban planning strategies that ensure public spaces contribute to community well-being without causing the displacement of low-income residents. Policies should focus on affordable housing, rent control, and community-based urban renewal programs.

Urban policy frameworks should expand the scope of Environmental Impact Assessments (EIAs) to include not only environmental sustainability but also the social and economic implications of public space projects. Current EIA procedures often overlook the risks of gentrification, displacement, and housing affordability loss that accompany large-scale park developments. Revising the EIA guidelines to incorporate indicators such as potential displacement of low-income residents, shifts in rental patterns, and changes in community composition can ensure that urban beautification efforts like Sheger Park do not unintentionally harm vulnerable populations. This integrated approach would support more equitable planning outcomes by requiring developers and city planners to anticipate and mitigate negative social externalities before project approval.

E. Align Donor and NGO Support with Inclusive Urban Development

International donors and NGOs should prioritize funding models that promote equitable access to urban public spaces. Support should go beyond beautification and focus on inclusive design, participatory planning, and long-term accessibility for marginalized communities. Initiatives that explicitly aim to reduce displacement risks, preserve cultural identity, and protect informal residents should be favoured.

Donors and NGOs should support Inclusive Urban Development Projects that promote the development of urban public spaces while ensuring that the benefits of these spaces are accessible to all segments of the population, In addition, donors should allocate resources for the sustainable maintenance of public spaces to ensure they remain functional, welcoming, and safe over time. Maintenance strategies must be embedded within funding frameworks to ensure that parks and public spaces continue to deliver environmental, economic, and social value long after initial investments.

F. For real estate developers and investors

Consider Proximity to Public Spaces: Real estate developers should recognize the added value of properties located near well-maintained public spaces. Future developments should consider proximity to parks and green areas as a key feature that enhances property desirability and value. Investment in Mixed-Use Developments: Developers should consider creating mixed-use developments that combine residential spaces with access to public parks and recreational amenities, which can increase property demand and enhance long-term returns.

G. For community groups and local residents

Community Engagement: Local residents should be involved in the planning and management of public spaces to ensure that these spaces meet the needs of the community, prevent displacement, and promote social cohesion. Awareness of Property Value Dynamics: Community groups should be educated on the potential effects of gentrification and the ways in which urban developments can influence property values, ensuring that the benefits of such developments are distributed equitably.

H. For Academic Researchers

Further Exploration of Gentrification Impacts: Future research should focus on the long-term socio-economic impacts of gentrification caused by public space developments, including displacement, changes in community composition, and shifts in local economic activity. Comparative Studies across Cities: Researchers should conduct comparative studies of different cities, particularly in the Global South, to better understand how the relationship between public space development and property values plays out in diverse urban contexts.

5.4. Further Discussions

This study has provided valuable insights into the relationship between urban public spaces and property values in Addis Ababa. However, further research is necessary to understand the long-term effects of urban public spaces on both property markets and community well-being. While this study has contributed important understandings into how urban public spaces like Sheger Park influence property values and gentrification in Addis Ababa, there are notable limitations. First, the temporal scope was cross-sectional, capturing changes at a single point in time. Longitudinal data would allow for a more dynamic understanding of neighbourhood transformation and displacement over time. Second, spatial dependencies, such as clustering of high-value units, were not fully accounted for in the hedonic pricing model. Future studies should consider spatial econometric techniques like Geographically Weighted Regression (GWR) or Spatial Lag Models. Third, although qualitative data were incorporated, the depth of narrative analysis was constrained. A more expansive ethnographic or participatory approach could better capture community perceptions and adaptive responses to gentrification. Lastly, this research focused on a single high-profile park in one sub-city.

While Sheger Park represents a flagship project, it is essential to investigate how smaller-scale public spaces across Addis Ababa affect neighbourhood affordability and inclusivity. Despite these limitations, the findings strongly support the need for socially responsive urban planning. As Addis Ababa continues to urbanize and urbanization continues to increase in similar cities, the role of public spaces in fostering sustainable, all-encompassing, and economically vibrant cities cannot be overstated. The integration of well-designed public spaces into urban planning is not only beneficial for property values but is also crucial for creating liveable, buoyant cities that enhance the quality of life for all residents, policymakers must ensure that green public space investments do not deepen inequality but instead serve as catalysts for inclusive, resilient cities.

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APPENDIX A

Graph Chart Results

Figure A.01: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and Square meters of house/ size of built up

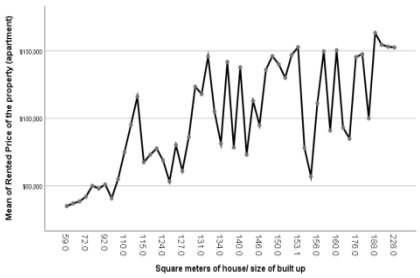

Figure A.02: Means Plots graph results of rental houses for square meters of house/ size of built up

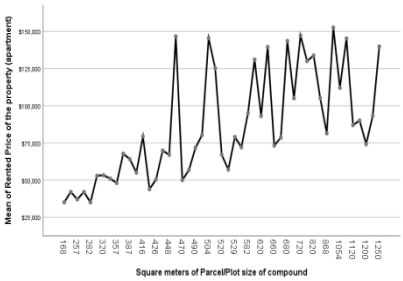

Figure A.03: Means Plots graph results of rental houses for Square meters of Parcel/Plot size of compound

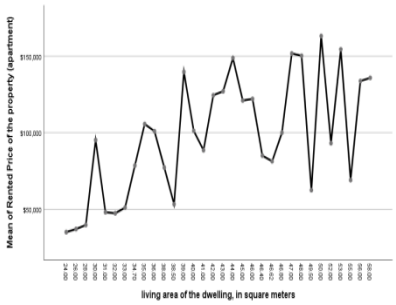

Figure A.04: Means Plots graph results of rental houses for living area of the dwelling, in square meters

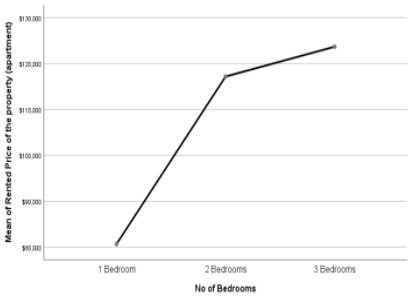

Figure A.05: Means Plots graph results of rental houses for Number of Bedrooms

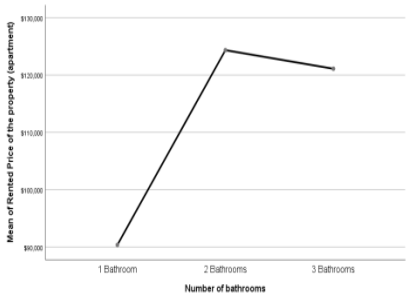

Figure A.06: Means Plots graph results of rental houses for Number of bathrooms

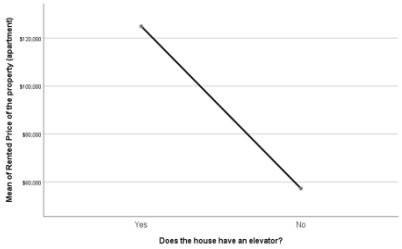

Figure A.07: Means Plots graph results of rental houses for Does the house have an elevator?

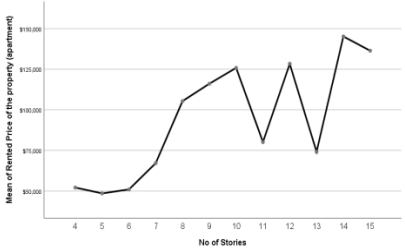

Figure A.08: Means Plots graph results of rental houses for No of Stories

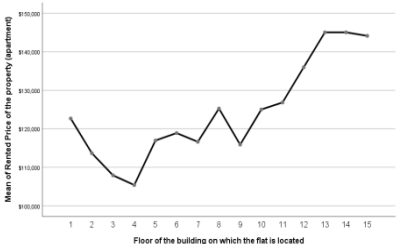

Figure A.09: Means Plots graph results of rental houses for floor of the building on which the flat is located

Figure A.10: Means Plots graph results of rental houses for Age of the house at 2023

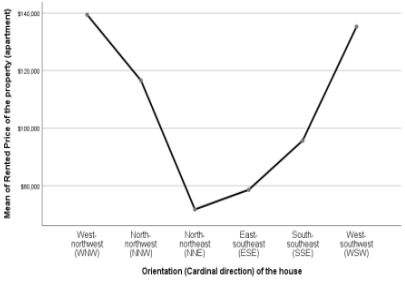

Figure A.11: Means Plots graph results of rental houses for Orientation (Cardinal direction) of the house

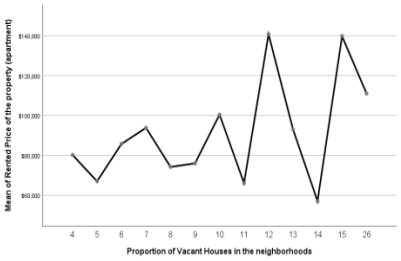

Figure A.14: Means Plots graph results of rental houses for Proportion of Vacant Houses in the neighborhoods

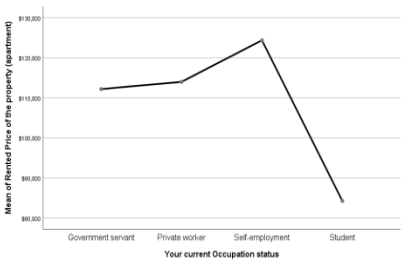

Figure A.15: Means Plots graph results of rental houses for your current Occupation status

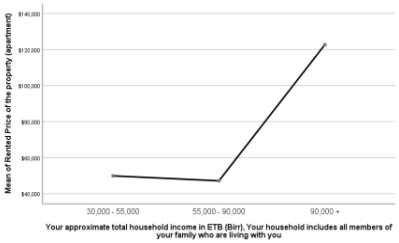

Figure A.16: Means Plots graph results of rental houses for your approximate total household income in ETB (Birr)

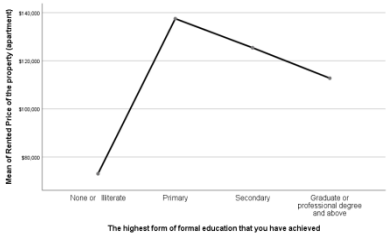

Figure A.17: Means Plots graph results of rental houses for the highest form of formal education that you have achieved

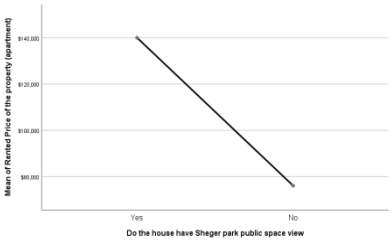

Figure A.18: Means Plots graph results of rental houses for Sheger park public space views

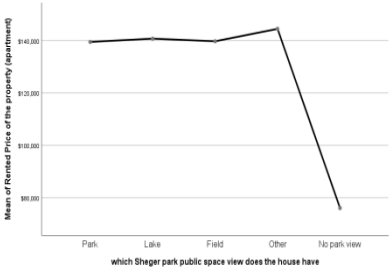

Figure A.19: Means Plots graph results of rental houses for Sheger park public space Amenities views

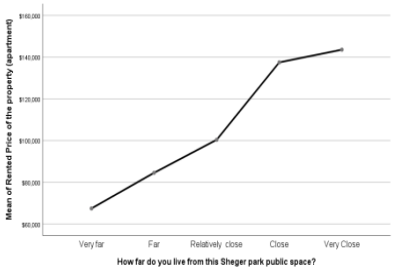

Figure A.20: Means Plots graph results of rental houses for how far building located next to Sheger Park

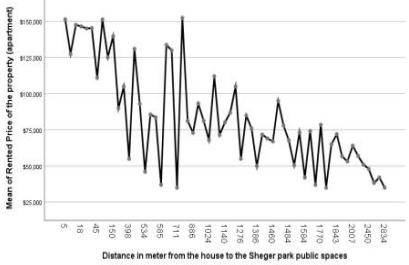

Figure A.21: Means Plots graph results of rental houses for Distance in meter/km. from the house to the Sheger park public spaces

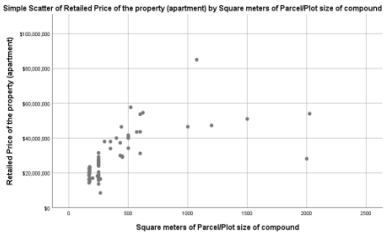

Figure A.22: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and Square meters of Parcel/Plot size of compound

Figure A.23: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and living area of the dwelling, in square meters

Figure A.24: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and Number of Bedrooms

Figure A.25: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and Number of bathrooms

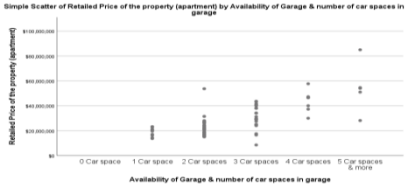

Figure A.26: Scatterplots of Correlations between the Retailed Price of the property (Owner occupied houses) and Availability of Garage & number of car spaces in garage

APPENDIX B

Table of Results

Table B.01: Correlations between the Retailed Price of the property (Owner occupied houses) and Square meters of Parcel/Plot size of compound

Correlations Spearman's rho		Retailed Price of the property (Owner occupied houses)	Square meters of Parcel/Plot size of compound
Retailed Price of the property (Owner occupied houses)	Correlation Coefficient	1.000	.786
	Sig. (2-tailed)	.	.000
	N	70	70
Square meters of Parcel/Plot size of compound	Correlation Coefficient	.786	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.02: Correlations between the Retailed Price of the property (Owner occupied houses) and living area of the dwelling, in square meters

Correlations Spearman's rho	.	Retailed Price of the property (Owner occupied houses)	living area of the dwelling, in square meters
Retailed Price of the property (Owner occupied houses)	Correlation Coefficient	1.000	.715
	Sig. (2-tailed)	.	.000
	N	70	70
living area of the dwelling, in square meters	Correlation Coefficient	.715	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.03: Correlations between the Retailed Price of the property (Owner occupied houses) and Number of Bedrooms

Correlations Spearman's rho		Retailed Price of the property (Owner occupied houses)	Number of Bedrooms
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	.473
	Sig. (2-tailed)	.	.000
	N	70	70
No of Bedrooms	Correlation Coefficient	.473	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.04: Correlations between the Retailed Price of the property (Owner occupied houses) and Number of bathrooms

Correlations Spearman's rho		Retailed Price of the property (Owner occupied houses)	Number of bathrooms
Retailed Price of the property (Owner occupied houses)	Correlation Coefficient	1.000	.608
	Sig. (2-tailed)	.	.000
	N	70	70
Number of bathrooms	Correlation Coefficient	.608	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.05: Correlations between the Retailed Price of the property (Owner occupied houses) and Availability of Garage & number of car spaces in garage

Correlations Spearman's rho		Retailed Price of the property (Owner occupied houses)	Availability of Garage & number of car spaces in garage
Retailed Price of the property (Owner occupied houses)	Correlation Coefficient	1.000	.712
	Sig. (2-tailed)	.	.000
	N	70	70
Availability of Garage & number of car spaces in garage	Correlation Coefficient	.712	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.06: Correlations between the Retailed Price of the property (Owner occupied houses) and Age of the house at 2023

Correlations Spearman's rho		Retailed Price of the property (Owner occupied houses)	Age of the house at 2023
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	-.277*
	Sig. (2-tailed)	.	.020
	N	70	70
Age of the house at 2023	Correlation Coefficient	-.277*	1.000
	Sig. (2-tailed)	.020	.
	N	70	70

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

Table B.09: Correlations between the Retailed Price of the property (Owner occupied houses) and Proportion of Vacant Houses in the neighborhoods

Correlations		Retailed Price of the property (apartment)	Proportion of Vacant Houses in the neighborhoods
Retailed Price of the property (apartment)	Pearson Correlation	1	.034
	Sig. (2-tailed)		.778
	N	70	70
Proportion of Vacant Houses in the neighborhoods	Pearson Correlation	.034	1
	Sig. (2-tailed)	.778	
	N	70	70

Table B.10: Correlations between the Retailed Price of the property (Owner occupied houses) and your approximate total household income in ETB (Birr), your household includes all members of your family who are living with you

Correlations Spearman's rho		Retailed Price of the property (apartment)	Your approximate total household income in ETB (Birr), Your household includes all members of your family who are living with you
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	.621
	Sig. (2-tailed)	.	.000
	N	70	70
Your approximate total household income in ETB (Birr), Your household includes all members of your family who are living with you	Correlation Coefficient	.621	1.000
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table B.11: Correlations between the Retailed Price of the property (Owner occupied houses) and the highest form of formal education that they have achieved

Correlations			
Spearman's rho		Retailed Price of the property (apartment)	The highest form of formal education that you have achieved
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	.080
	Sig. (2-tailed)	.	.509
	N	70	70
The highest form of formal education that you have achieved	Correlation Coefficient	.080	1.000
	Sig. (2-tailed)	.509	.
	N	70	70

Table B.12: Correlations between the Retailed Price of the property (Owner occupied houses) and their current Occupation status

		Retailed Price of the property (apartment)	Your current Occupation status
Retailed Price of the property (apartment)	Correlation Coefficient	1.000	-.062
	Sig. (2-tailed)	.	.610
	N	70	70
Your current Occupation status	Correlation Coefficient	-.062	1.000
	Sig. (2-tailed)	.610	.
	N	70	70

Table B.13: One way ANOVA results of rental houses for living area of the dwelling, in square meters

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	273634488748.216	31	8826918991.878	15.896	.000
Within Groups	165479122250.805	298	555299067.956		
Total	439113610999.021	329			

Table B.14: One way ANOVA results of rental houses for Number of Bedrooms

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	50897845613.892	2	25448922806.946	21.436	.000
Within Groups	388215765385.130	327	1187204175.490		
Total	439113610999.022	329			

Table B.15: Mean value results of rental houses for Does the house have an elevator?

Rented Price of the property (apartment) **Descriptives**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
Yes	290	$124,956.36	$30,307.892	$1,779.741	$121,453.46	$128,459.25	$50,500	$163,161
No	40	$57,314.95	$18,128.137	$2,866.310	$51,517.29	$63,112.61	$35,000	$111,000
Total	330	$116,757.40	$36,533.434	$2,011.099	$112,801.16	$120,713.63	$35,000	$163,161

Table B.16: Mean value results of rental houses for Orientation (Cardinal direction) of the house

Rented Price of the property (apartment) **Descriptives**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
West-northwest (WNW)	75	$139,409.08	$16,758.537	$1,935.109	$135,553.29	$143,264.87	$95,000	$163,161
North-northwest (NNW)	92	$116,532.74	$40,414.008	$4,213.452	$108,163.23	$124,902.24	$35,000	$157,723
North-northeast (NNE)	7	$71,771.43	$18,763.947	$7,092.105	$54,417.67	$89,125.19	$53,200	$100,000
East-southeast (ESE)	38	$78,607.63	$16,146.173	$2,619.255	$73,300.52	$83,914.75	$35,000	$130,990
South-southeast (SSE)	53	$95,678.26	$34,948.269	$4,800.514	$86,045.33	$105,311.20	$38,337	$154,000
West-southwest (WSW)	65	$135,274.00	$25,198.199	$3,125.452	$129,030.19	$141,517.81	$64,000	$163,161
Total	330	$116,757.40	$36,533.434	$2,011.099	$112,801.16	$120,713.63	$35,000	$163,161

Table B.17: Mean value results of rental houses for Sheger park public space views

Rented Price of the property (apartment) **Descriptives**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound	Minimum	Maximum
Yes	210	$140,031.63	$19,645.826	$1,355.691	$137,359.05	$142,704.21	$55,000	$163,161
No	120	$76,027.48	$19,580.102	$1,787.411	$72,488.23	$79,566.73	$35,000	$130,000
Total	330	$116,757.40	$36,533.434	$2,011.099	$112,801.16	$120,713.63	$35,000	$163,161

Table B.18: One way ANOVA results of rental houses for Sheger park public space views

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	312826024646.369	1	312826024646.369	812.486	.000
Within Groups	126287586352.653	328	385023129.124		
Total	439113610999.022	329			

Table B.19: Mean value results of rental houses for Sheger park public space Amenities views

Rented Price of the property (apartment) **Descriptives**

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Park	110	$139,475.31	$19,354.271	$1,845.357	$135,817.87	$143,132.75	$55,000	$163,161
Lake	49	$140,730.42	$22,407.185	$3,201.026	$134,294.33	$147,166.52	$92,458	$163,161
Field	42	$139,723.05	$16,226.925	$2,503.869	$134,666.38	$144,779.72	$108,774	$157,723
Other	9	$144,466.67	$24,239.637	$8,079.879	$125,834.43	$163,098.90	$80,200	$154,000
No park view	120	$76,027.48	$19,580.102	$1,787.411	$72,488.23	$79,566.73	$35,000	$130,000
Total	330	$116,757.40	$36,533.434	$2,011.099	$112,801.16	$120,713.63	$35,000	$163,161

Table B.20: One way ANOVA results of rental houses for Sheger park public space Amenities

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	313065021094.318	4	78266255273.580	201.799	.000
Within Groups	126048589904.704	325	387841815.091		
Total	439113610999.022	329			

Rented Price of the property (apartment)

Descriptives

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Very far	54	$67,445.33	$13,151.864	$1,789.742	$63,855.57	$71,035.10	$35,000	$95,000
Far	54	$84,524.07	$19,983.370	$2,719.392	$79,069.66	$89,978.48	$35,000	$112,000
Relatively close	24	$100,352.08	$42,211.572	$8,616.401	$82,527.70	$118,176.47	$42,000	$154,000
Close	83	$137,459.66	$17,786.989	$1,952.376	$133,575.76	$141,343.56	$80,000	$157,723
Very Close	115	$143,530.36	$16,216.184	$1,512.167	$140,534.77	$146,525.95	$92,458	$163,161
Total	330	$116,757.40	$36,533.434	$2,011.099	$112,801.16	$120,713.63	$35,000	$163,161

Table B.21: Mean value results of rental houses for how far building located next to Sheger Park

Table B.22: One way ANOVA results of rental houses for how far building located next to Sheger Park

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	311878696759.665	4	77969674189.916	199.160	.000
Within Groups	127234914239.357	325	391492043.813		
Total	439113610999.022	329			

Table B.23: One way ANOVA results of rental houses for Distance in meter/km. from the house to the Sheger park public spaces

ANOVA

Rented Price of the property (apartment)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	402845446828.213	60	6714090780.470	49.798	.000
Within Groups	36268164170.808	269	134825889.111		
Total	439113610999.021	329			

Table B.24: Chi-Square Tests results between the implicit Retailed Price of the property (Owner occupied houses) and number of bedrooms

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.468[a]	6	.025
Likelihood Ratio	14.324	6	.026
Linear-by-Linear Association	5.103	1	.024
N of Valid Cases	70		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is 1.03.

Table B.25: Chi-Square Tests results between the implicit Retailed Price of the property (Owner occupied houses) and age of the house

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	57.681[a]	20	.000
Likelihood Ratio	73.214	20	.000
N of Valid Cases	70		

a. 30 cells (90.9%) have expected count less than 5. The minimum expected count is .26.

Table B.26: Chi-Square Tests results between the implicit Retailed Price of the property (Owner occupied houses) and facade orientation (Cardinal direction) of the house

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.993[a]	12	.242
Likelihood Ratio	14.876	12	.248
Linear-by-Linear Association	.811	1	.368
N of Valid Cases	70		

a. 15 cells (71.4%) have expected count less than 5. The minimum expected count is .26.

Table B.27: Chi-Square Tests results of the subzones as representatives of market segments and Sheger Park public space view (Park, Lake, Field and other amenities

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	48.858[a]	8	.000
Likelihood Ratio	66.174	8	.000
Linear-by-Linear Association	36.222	1	.000
N of Valid Cases	70		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .77.

APPENDIX C

Survey questionnaires

Dear respected respondent,

I am a graduate student at Addis Ababa University, (AAU,SBE). Currently I am conducting a research entitled "**Measuring the Effect of Public Space on Property Value: A hedonic pricing & multi-attribute analysis in Addis Ababa, Sheger Park's Friendship Square".** The study aims to generate an insight on the impacts of public spaces in surrounding property prices. To this end, your kind and objective response will significantly contribute to find a precise result.

Therefore, your honest responsiveness is strongly required to make the research valuable and reliable. This is purely academic exercise, so any information given would not be disclosed to the 3rd party.

Thank you in advance for your kind cooperation and dedication to your time.

Fehim Seid (fehimseid35@gmail.com)

Instructions

No needs of writing your name

☐ Please tick [☐] where you are agreeable, please complete as many of these questions as possible. All the information you provide is completely confidential. If you are not comfortable answering any question, leave it blank.

Please send your views through the following domains on or before June 15 2023

E-mail: Phone number:

Thisis form ☐ Individual ☐ Organization

☐ Owner of The property

Name of respondent (if you feel discomfort to reveal your name leave it blank) _____

Local Government Area_____Date _____

C1). Kindly indicate your gender (VSAG_1)? I. Male [ ] II. Female [ ]

C2). Marital Status (VSAG_2)? I. Single [ ] II. Married [ ] III. Divorced [ ]

C3). If married, year of marriage (VSAG_3)

I. 5 – 10 years ago [ ]
II. 11 – 15 years ago [ ]
III. 15 – 20 years ago [ ]
IV. 21 and above [ ]

C4). Age of respondent: (VSAG_4)

I. 14-25 years [ ]
II. 26-40 years [ ]
III. 41-55 years [ ]
IV. 55 + [ ]

C5). Years since Graduation (VSAG_5)

I. 5 – 10 years [ ]
II. 11 – 15 years [ ]
III. 16 – 20 years [ ]
IV. 21 and above [ ]

C6). Do you have employment income? (VSAG_6)

I. Yes – I work full time (35 or more hours per week) [ ]
II. Yes – I work part time (less than 35 hours per week) [ ]
III. No [ ]

C7). Do you live in the Sub city where Sheger Park is located? (VSAG_8)

Yes [ ]
No - [ ] In what Sub city do you live?

APPENDIX D

Interview questions

(Questions for displaced residents due to gentrification)

Movement, occupation, assessing the previous property of residents affected by gentrification

D1). Local Government Area of previous residence _____

D2). Years you have been staying at previous residence

I. 5 – 10 years [ ]
II. 11 – 15 years [ ]
III. 16 – 20 years [ ]
IV. 21 and above [ ]

D3). Occupation status of previous residence

I. Owner occupied [ ]
II. Tenancy [ ]
III. Others [ ]

D4). Local Government Area of current residence _____

D5). Years you have been staying at current residence

I. 5 – 10 years [ ]
II. 11 – 15 years [ ]
III. 16 – 20 years [ ]
IV. 21 and above [ ]

D6). Occupation status of current residence

I. Owner occupied [ ]
II. Tenancy [ ]
III. Others [ ]

D7). What would you say necessitated the change of residence?

_____

D8). As an owner occupier what was your intention, will you sell or lease your previous property?

_____

D9). What was the rental/sale value at the time you arrived the property (previous residence)?

_____

D10). What was the rental/sale value at the time you left the property (previous residence)?

_____

D11). What was the state of infrastructure at the time you arrived at the property (previous residence)?

I. Very bad [ ]
II. Fair [ ]
III. Good [ ]
IV. Excellent [ ]

D12). What was the state of infrastructure at the time you left the property (previous residence)?

I. Very bad [ ]
II. Fair [ ]
III. Good [ ]
IV. Excellent [ ]

D13). Comparative analysis of service quality before and after relocation? _____

D14). What was Changes in rental or mortgage costs before and after relocation? _____

D15). Increased commuting expenses due to greater distance from workplaces? _____

D16). Availability of public transportation, schools, healthcare, and markets in new locations? _____

D17). Job displacement or changes in employment status post-relocation? _____

D18). What was the average amount paid as taxes and or rates (monthly or annually) at the time you arrived at the property (previous residence)? _____

D19). What was the average amount paid as taxes and or rates (monthly or annually) at the time you left the property (previous residence)? _____

D20). When was the last time you left the previous residence for the development?

_____

D21). What was the average amount paid by government as an expropriation at the time you left the property (your previous residence)? _____

D22). Do you believe that the compensation paid by the government at the time you left the property (your previous residence) was sufficient?

_____

D23). What was at that time you was given, is it an alternative place or house by the government when you left the property (your previous residence) for the development? If so, where and what kind of property was given to you?

_____

D24). What was the psychological, social and economic impact on you at the time or until now when you left the property (your previous residence) for development?

_____

D25). Perceived fairness of government interventions in the resettlement process? _____

APPENDIX E

Factual Data collection form for owner occupied and rental properties

Instructions

No needs of writing your name
Fill on the data column (shaded)
If you have any comment, you can use the remark column

Name of the City **(VSB1_1)**				
Name of the District **(VSB1_2)**				
Name of the Area **(VSB1_3)**				
Length of house ownership? (**VSB1_4)**				
No. of families in the house **(VSB1_5)**	[ ] Total No:	[ ] Male	[ ] Female	[ ] Student [ ] Others
The transacted retailed or rental price of your houses (Birr) _____ **VSB1_6**				

E1). Housing unit's information of your house

Housing unit's information			
Property Information, the type of housing (residential or commercial), if the housing is; **(VSB2I_1)** Residential [ ] [ ] Detached or individual a house (villa) [ ] apartment	Property/Apartment Name [ ]	Occupation status of the property/ apartment non-regulated [ ] protected [ ] [ ] Owner occupied [ ] Tenancy [ ] Others Address/position of property in the census block group [ ] block group 1 [ ] block group 2 [ ] block group 3 [ ] block group 4	Developers Name [ ]

Housing units Structural Attributes			
Retailed Price of the property (apartment) **(VSB2S_1)**		Retailed Price of the property (apartment) per sqm. (VSB2S_2)	**Remark**
Rented Price of the property (apartment) **(VSB2S_3)**		Rented Price of the property (apartment) per sqm. (VSB2S_4)	
Year of construction **(VSB2S_5)**			
Year of finished **(VSB2S_6)**			
Year, Date of sold or sanctioned **(VSB2S_7)**			
Square meters of house/ size of built up **(VSB2S_8)**			
Square meters of Parcel/Plot size of compound (**VSB2S_9)**			
living area of the dwelling, in square meters **(VSB2S_10)**			

Exterior façade material **(VSB2S_11)**	[ ] Brick	[ ] RCC	[ ] Mud + cement plastered					
Does the house have an Attractive architectural design **(VSB2S_12)**	[ ]Yes	[ ]No						
No of Bedrooms **(VSB2S_13)**	[ ] 1	[ ] 2	[ ] 3	[ ] 4	[ ] 5+			
Number of bathrooms **(VSB2S_14)**	[ ] 1	[ ] 2	[ ] 3	[ ] 4	[ ] 5+			
Does the house have an elevator? **(VSB2S_15)**	[ ]Yes	[ ]No						
Availability of Garage & number of car spaces in garage **(VSB2S_16)**	[ ] 0	[ ] 1	[ ] 2	[ ] 3	[ ] 4	[ ] 5+		
No of Stories **(VSB2S_17)**								
Floor of the building on which the flat is located **(VSB2S_18)**								
Age of the house at 2023 (VSB2S_19)								
Orientation (Cardinal direction) of the house **(VSB2S_20)**	[ ] West-northwest **(WNW)**	[ ] North-northwest **(NNW)**	[ ] North-northeast **(NNE)**	[ ] East-northeast **(ENE)**	[ ] East-southeast **(ESE)**	[ ] South-southeast **(SSE)**	[ ] South-southwest **(SSW)**	[ ] West-southwest **(WSW)**

Housing units Neighborhood Attributes					
Proportion of Vacant Houses in the neighborhoods **(VSB2N_3)**				**Remark [ ]**	
Your current Occupation status **(VSB2N_4)**	[ ] Government servant	[ ] Private worker	[ ] Self-employment	[ ] Student	[ ] Retired
Your approximate total household income in ETB (Birr), Your household includes all members of your family who are living with you **(VSB2N_5)**	[ ] Under 10,000	[ ] 10,000 - 30,000	[ ] 30,000 - 55,000	[ ] 55,000 - 90,000	[ ] 90,000 +

The highest form of formal education that you have achieved **(VSB2N_6)**	[ ] None or Illiterate	[ ] Primary	[ ] Secondary	[ ] Graduate or professional degree and above	
Housing units Environmental or Amenity Attributes					
Do the house have Sheger park public space view **(VSB2A_1)**	[ ]Yes	[ ]No			
If, yes which Sheger park public space view does the house have **(VSB2A_2)**	[ ]Park	[ ]Lake	[ ]Field	[ ]Other	
If no, would you prefer urban public space near to your home? **(VSB2A_3)**	[ ]Yes	[ ]No			
How far do you live from this Sheger park public space? **(VSB2A_4)**	[ ]Very far	[ ]Far	[ ] Relatively close	[ ] Close	[ ] Very Close
How long does your normal journey take? **(VSB2A_5)**	[ ] less than 1 minutes	[ ] 1-2 minutes	[ ] 2-3 minutes	[ ] 4-5 minutes	[ ] more than 6 or 10 minutes
Distance in meter/km. from the house to the Sheger park public spaces **(VSB2A_6)**					
Is distance affects your visit to Sheger park public space? **(VSB2A_7)**	[ ] yes	[ ] No			

Thank you for participating in this Research. Please return questionnaire

RESEARCH ARTICLE

MEASURING THE EFFECT OF PUBLIC SPACE ON PROPERTY VALUE: A HEDONIC PRICING & MULTI-ATTRIBUTE ANALYSIS IN ADDIS ABABA, SHEGER PARK'S FRIENDSHIP SQUARE

Fehim Seid[1], *Amha Ermias*[2]*

ABSTRACT

Urban public spaces and recreational areas are vital components of city life, In Addis Ababa, however, urban development has historically neglected the importance of such spaces, often resulting in their reduction or complete loss. This neglect has had adverse environmental, economic, and social consequences. This study focuses on the economic valuation of public spaces, with particular emphasis on Sheger Park and its surrounding water features in Arada Sub-city, Addis Ababa. It examines how proximity to these public spaces influences residential property values, including both sales and rental prices. The study employs the Hedonic Pricing Method (HPM) to analyze the impact of key environmental attributes, such as distance to Sheger Park and views of the park or artificial lakes, on property values. The regression results indicate that both homebuyers and renters are willing to pay a premium for properties located near public spaces or those with scenic views. Specifically, the value of owner-occupied houses increases by approximately 183,359.2 ETB for every 100-meter reduction in distance to Sheger Park. The model explains 64% of the variation in residential property prices ($R^2 = 0.64$), indicating a good model fit, while the remaining 36% is attributed to other unobserved factors. Similarly, rental properties located closer to public spaces exhibit a statistically significant increase in value. These findings confirm that public spaces, such as parks and lakes, are critical amenities influencing housing prices in Arada Sub-city. Incorporating green amenities in designing urban residential areas and real estate developments can provide premium benefits to investors. However, the redevelopment of Sheger Park has also triggered gentrification, displacing over 800 households to the city outskirts. This displacement has disrupted social ties, destabilized livelihoods, and caused psychological distress for affected families. The study concludes by emphasizing the need for a balanced approach to urban development that recognizes the value of public spaces while minimizing the negative impacts of gentrification. Policymakers must prioritize inclusive planning strategies that address the needs of displaced residents and ensure equitable access to urban amenities.

Keywords: Addis Ababa, economic valuation, gentrification, regression, urban amenities

Background of the Study

Our world is becoming a world of cities. This silent, seismic shift from rural to urban life is one of the defining narratives of our time. The global urban population grew rapidly from 751 million in 1950 to 4.9 billion in 2025, urbanization continues to rise gradually with urban share increasing by about 1% annually in recent projections, according to the latest (UN Prospects 2025).

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Within this context, urban public spaces, such as parks, green corridors, and recreational areas, play a critical role in enhancing urban livability. These spaces provide environmental benefits including urban cooling, air pollution reduction, stormwater management, and biodiversity support, while also offering social and aesthetic benefits that contribute to residents' quality of life (Gill et al., 2007; Estrada et al., 2017).

Hedonic Pricing Method (HPM) is widely used to estimate these implicit values by decomposing property prices into their constituent attributes, including environmental amenities.

Ethiopia is experiencing one of the fastest urbanization rates globally, estimated at approximately 5.4% per year (World Bank, 2015). This growth is driven by rural-to-urban migration, city expansion, and the transformation of rural settlements into urban areas. Addis Ababa, the country's capital and largest metropolitan area, faces significant challenges related to housing affordability, infrastructure provision, and equitable access to public spaces.

Statement of the Problem

The introduction of Sheger Park's in Addis Ababa aimed to enhance the city's image. While this urban development has attracted daily visitors, concerns arise regarding its influence on surrounding property values and the potential for socio-economic change. Such projects often bring unintended consequences particularly rising property values, social displacement, and the restructuring of surrounding communities. The main problem lies in the dual impact of Sheger Park's development. While the park provides clear ecological and recreational benefits, it may also contribute to green gentrification a phenomenon where public space investments increase housing prices and lead to the gradual displacement of low-income residents. In areas surrounding Sheger Park, anecdotal evidence suggests significant increases in property values and changing demographics. These changes raise concerns about who truly benefits from urban beautification and whether such projects unintentionally worsen inequality in access to housing and amenities.

These problems are occurring due to a combination of urban market pressures, inadequate housing regulations, and the lack of integrated planning that accounts for social equity. As the city invests in high-profile urban renewal projects, market forces tend to outpace protective policies, pushing vulnerable populations out of upgraded areas. This gap highlights the need for more localized research to understand the interplay between hedonic pricing mechanisms and socio-spatial processes such as gentrification in the city.

Objectives

General objective;

The general objective of the study was to assess the impact of Sheger Park's on property values and socio-economic dynamics in the surrounding neighborhoods of Addis Ababa, with a focus on understanding of its implications for urban development and community well-being.

Specific objectives;

The specific objectives of the study were.

1. To assess the impact of Sheger Park on nearby residential property values and community dynamics in Arada sub-city, Addis Ababa
2. To assess the extent and characteristics of socio-economic changes, including gentrification trends, resulting from the development of Sheger Park.
3. To explore perceptions of long-term residents and displaced households regarding the park's impact on housing affordability, livelihoods.

LITERATURE REVIEW

Different Across the globe, urban public spaces parks, plazas, and greenways increasingly demonstrate their multifaceted value. Beyond recreation, they provide critical ecological functions such as cooling urban temperatures, improving air quality, and supporting biodiversity (Gill et al., 2007). In high-density cities, public spaces foster social interaction, contribute to residents' mental and physical health, and enhance the overall quality of life (Gehl, 2011; Kabisch et al., 2015). Importantly, their presence often correlates with increased property values in surrounding areas. Numerous studies in developed countries have demonstrated that proximity to well-maintained public spaces can raise housing prices by 5–20% (Zhang et al., 2012; Crompton, 2005), influencing how cities approach urban design and real estate development.

In African cities, the relationship between public spaces and property values is less studied, though interest is growing. Many urban centers across the continent face challenges of rapid urbanization, informal housing, and limited investment in green infrastructure (UN-Habitat, 2014). While public parks exist in cities like Nairobi, Lagos, and Accra, their spatial distribution is often uneven, and urban planning does not always ensure equitable access. Evidence from South Africa and Kenya suggests that upgraded green spaces increase nearby property prices but also raise concerns about social displacement mirroring gentrification trends seen elsewhere (Anguelovski et al., 2018).

In Ethiopia, public space development is becoming central to urban beautification and green growth strategies. Addis Ababa, the capital, has initiated major projects like Unity Park, Entoto Park, and Sheger Park to improve environmental quality, attract tourism, and support national image-building. However, the socioeconomic impacts of these initiatives remain underexplored. Particularly lacking is data on how such investments affect local housing markets or exacerbate inequality in acess to amenities. Urban renewal efforts that elevate land values may unintentionally displace low-income residents, raising ethical and policy concerns. Within this context, Sheger Park represents a critical case. Situated in the Arada sub-city of Addis Ababa, it combines environmental goals with ambitious design and urban branding. Yet, questions persist: Who benefits from this park? How has it altered housing values? And has it triggered forms of social change or exclusion? By reviewing both global evidence and local trends, this literature review builds a foundation for analyzing the dual nature of public space investments in developing urban contexts highlighting both their opportunities and their trade-offs.

RESEARCH METHODOLOGY

The To address the study objectives, a convergent mixed-methods research design was employed, integrating quantitative and qualitative approaches to comprehensively examine the impact of Sheger Park on nearby property values and community dynamics. The quantitative strand utilized the Hedonic Pricing Method (HPM) to statistically estimate the marginal value of various property attributes, with a particular focus on environmental variables such as proximity to the park and the availability of park views. This design facilitated triangulation, thereby enhancing the validity of the findings through complementary data strands.

This approach enabled the identification of measurable value differentials across distance zones and housing characteristics, as demonstrated in Chapter 4 through correlation analyses, ANOVA tests, Chi- Square ($\chi 2$) tests and linear, multiple regression models. Concurrently, the qualitative component captured residents' perceptions regarding displacement, affordability, and socio-spatial change through

interviews and focus group discussions, thereby enriching the numeric analysis with lived experiences. Sampling was carefully structured to reflect spatial diversity and displacement experiences. For the quantitative component, a stratified random sample of 400 housing units was drawn from an estimated population of approximately 12,000 residential properties located within a 2.8-kilometre radius of Sheger Park. This radius was selected in accordance with urban planning standards for evaluating major public investments. The study area was divided into three distance-based strata to reflect proximity sensitivity: The strata were defined by distance intervals: 0–500 m (Zone 1), 501–1,000 m (Zone 2), and 1,001–2,800 m (Zone 3), reflecting the sensitivity of hedonic valuation to proximity. To ensure heterogeneity, the sample encompassed diverse housing types such as villas, condominiums, and informal dwellings, as well as both rental apartments and owner-occupied units, enabling comparisons across tenure types.

For the qualitative component, 20 displaced households and 10 long-standing residents were selected through purposive and snowball sampling techniques to capture diverse experiences related to displacement and socio-spatial change. Initial participants were identified through local administrative bodies and neighborhood associations, followed by snowball sampling. Their inclusion ensured that social impacts such as loss of access, livelihood disruption, and housing instability were adequately represented. These interviews were subsequently analyzed thematically and are discussed in detail in the findings section ensuring no new insights emerged, particularly in relation to gentrification patterns. The final qualitative sample represented a cross-section of demographics, including variations in age, gender, and post-displacement locations. Data collection methods comprised in-depth interviews and focus group discussions that explored residents' perceptions. Data collection combined primary and secondary sources. Structured questionnaires gathered household-level data on property prices, structural and environmental features, and socio-economic conditions.

These data were subjected to statistical analysis and presented comprehensively in Sections 4.1 through 4.5. Secondary data—including cadastral records, real estate listings, and Google Earth imagery were employed for validation purposes, enhancing data reliability. Simultaneously, qualitative data collection involved in-depth interviews and focus group discussions with displaced residents. These narratives provided essential context for interpreting quantitative findings such as price escalation and proximity premiums, offering deeper insight into displacement dynamics especially in cases where statistical indicators suggested gentrification trends but lacked explanatory nuance. The convergence of these diverse data sources and methods strengthened internal validity and facilitated triangulation of results, as synthesized in Section 4.6.

RESULT AND DISCUSSION

Descriptive Statistics Results

This section presents the key characteristics of the dataset used in the study, including housing sales and rental values, proximity to Sheger Park, and household attributes. A total of 400 observations were collected from three spatial zones: 0–500 meters, 500–1000 meters, and 1000–2800 meters from Sheger Park. The sample captures a variety of dwelling types and socio-economic backgrounds, reflecting the mixed-use nature of the surrounding neighborhoods.. This section summarizes descriptive statistics for nominal and ordinal variables across various sets:

- Housing unit dependent variable (retail and rental prices)
- Housing unit structural attributes
- Housing unit location and neighborhood attributes
- Housing unit environmental or amenity attributes

Table 1 *Descriptive Statistics results for the Dependent Variable & Frequency Analyses of Categorical Variables for structural characteristics of Owned houses (Detached or individual a house (villa)*

With a mean of 28,651,172.86 ETB, the Implicit Price (VAP_1 Actual Price) is the dependent variable for owner-occupied homes. 8,500,000.00 ETB to 85,000,000.00 ETB is the price range. The rent price (VAP_2 Rent Price), which has a mean of 116,504.35 ETB, is the dependent variable for rental flats. The range of rental costs is 33,000.00 ETB to 163,161.00 ETB. The price distribution for both owner-occupied villas and rental flats is displayed in Table 1. This variation, especially at the higher end, suggests a shift.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Owner occupied houses (Det or individual a house (villa)		8,500,000.00	85,000,000.00	28,651,172.86	3,539,810.153
Valid N (list wise)					
Rental Houses (apartment)					
		33,000.00	163,161.00	116,504.35	36,767.39
Valid N (list wise)					

Variables	Category	Frequency	Percentage (%)
Exterior façade material	Brick	10	14.3
	RCC	37	52.9
	Mud + cement plastered	23	32.9
Attractive architectural desi	Yes	41	58.6
	No	29	41.4
No of Bedrooms	1	0	0
	2	4	5.7
	3	46	65.7
	4	12	17.1
	5 Bedrooms & more	8	11.4
Number of bathrooms	1	4	5.7
	2	38	54.3
	3	25	35.7
	4	3	4.3
	5 Bathrooms & more	0	0
Availability of Garage	1	9	12.9
	2	29	41.4
	3	20	28.6
	4	7	10.0
	5 Car spaces & more	5	7.1
Age of the house at 2023	5	1	1.4
	6	3	4.3
	7	2	2.9
	8	3	4.3
	9	8	11.4
	10	4	5.7
	11	6	8.6
	12	6	8.6
	13	7	10.0
	14	5	7.1
	15 year and above	25	35.7
Orientation (Cardinal directi the house	West-northwest (WNW)	13	18.6
	North-northwest (NNW)	15	21.4
	North-northeast (NNE)	0	0
	East-northeast (ENE)	1	1.4
	East-southeast (ESE)	16	22.9
	South-southeast (SSE)	5	7.1
	South-southwest (SSW)	6	8.6
	West-southwest (WSW)	14	20.0

Regression Results: Price Premiums and Proximity Effects

The Building on the descriptive and inferential statistics detailed in previous sections, this part presents the results of the Hedonic Regression Model, focusing on the impact of proximity to Sheger Park on property values and how these effects differ by housing type and tenure.

The regression analysis revealed a pronounced price premium for properties located within a 500-meter radius of Sheger Park. Specifically, owner-occupied villas in this zone exhibited a mean price increase of approximately ETB 380,000 compared to similar units located farther away. This premium was statistically significant and remained robust after controlling for structural and neighborhood characteristics. Figure 14A visually demonstrates this step-change in villa prices by distance zone, with the sharpest gradient observed closest to the park.

In contrast, the association between park proximity and rental apartment prices was notably weaker. Although rental units within the 500-meter zone did show higher average rents, the effect size was smaller and the statistical significance was marginal ($p<0.05$). Figure 11B plots rental prices against distance bands, illustrating the more gradual slope and the lower magnitude of the proximity premium for rental units. This suggests that owner-occupiers, particularly those investing in villas, place a higher value on immediate access to green space and park amenities, while renters may be more sensitive to other factors such as affordability or mobility

These findings are consistent with international research. For example, Zhang et al. (2012) found that proximity to urban parks generates significant price premiums for owner-occupied properties, but the effect is often less pronounced in rental markets where tenure is less secure and residents may have different priorities. Similarly, Crompton (2001) and Ahlfeldt & Maennig (2010) observed that park investments tend to attract higher-income buyers and stimulate reinvestment in surrounding neighborhoods, a dynamic mirrored in the Addis Ababa context.

The graphical plots and regression coefficients together underscore the tenure-mediated perception of value: villas, as long-term investments, capture more of the amenity premium, while rental apartments reflect a more attenuated response. This pattern supports the argument that public space improvements can drive gentrification by disproportionately benefiting owner-occupiers and potentially exacerbating affordability pressures for renters and lower-income groups. These results highlight the need for policy responses that balance the benefits of urban park investments with measures to protect housing affordability and prevent displacement, particularly among renters.

Inferential Statistics Results

The study moves beyond descriptive analysis to employ inferential statistics, which allow for predictions and generalizations about the population based on sample data. This phase focuses on revealing relationships and patterns within the dataset, particularly through the application of hedonic price models. Key techniques used include:

Correlation Analysis: This method evaluates the strength and direction of linear relationships between continuous variables, such as housing prices and proximity to amenities, to understand how changes in one variable correlate with changes in another.

One-Way ANOVA F-Test: This test identifies significant differences in means across groups, such as variations in monthly income based on construction materials, to assess group-based disparities in continuous variables.

Table 2 *Linear & Multiple logistic Regression analysis result from owner occupied houses*

Ta	Model	Other Parameter Estimates	Regression Type	Unstandardized Coefficients Beta	df	T	Sig.
A	Square meters of Parcel/Plot size of compound		Linear Regression	22671.196	1	10.69	.000
B	Square meters of house/ size of built up area		Linear Regression	47302.107		9.778	.000
C	Number of Bedrooms		Multiple logistic Regression				
		2 Bedrooms		11.451	1		.002
		3 Bedrooms		6.281	1		.000
		4 Bedrooms		4.437	1		.013
D	Age of the house at 2023		Linear Regression	-460755.048		6.801	.000
E	Orientation (Cardinal direction)		Multiple logistic Regression				
		(NNW)		1.244	1		.279
		(ENE)		87.830	1		.995
		(ESE)		-1.686	1		.112
		(SSE)		1.051	1		.569
		(SSW)		-2.943	1		.029
		(WSW)		-.935	1		.377
F	living area of the dwelling		Linear Regression	1431728.495		-3.74	.000
G	Exterior façade material of the house		Multiple logistic Regression				
		Brick		-1.154	1		.173
		Mud + cement		.756	1		.285
H	Age of respondent		Multiple logistic Regression				
		26-40		.864	1		.334
		41-55		2.135	1		.006
I	approximate total household's monthly income		Multiple logistic Regression				
		10,000 - 30,000		5.900	1		.014
		30,000 - 55,000		5.546	1		.000
		55,000 - 90,000		3.964	1		.000
J	Literacy rate or level		Multiple logistic Regression				
		None or Illiterate		-1.532	1		.472
		Primary		-3.460	1		.011
		Secondary		-1.232	1		.238
K	current Occupation status		Multiple logistic Regression				
		Private worker		-.173	1		.827
		Self-employment		-.596	1		.472
		Retired		1.136	1		.763
L	Distance in meter from the house to the Sheger park		Linear Regression	-1833.592		10.01	.000
M	which Sheger park public space view does the house have		Multiple logistic Regression				
		Lake		-2.876	1		.026
		Field		-.327	1		.804
		Other		-3.494	1		.018
		No park view		1.184	1		.084

Chi-Square Test: This test examines the relationships between categorical variables, such as occupation status and education levels, to uncover significant associations within the dataset.

Regression Analysis: This technique models the impact of independent variables (e.g., distance to amenities, household income) on a dependent variable (e.g., housing price), offering insights into the factors influencing housing prices.

Graphical representations and detailed tables for structural and neighborhood variables are provided in the appendices due to the study's extensive space. Visualizations and summaries of environmental and amenity variables are emphasized, had been given their central role in the analysis.

These statistical tools validate the Hedonic Regression Model, confirming that housing prices are influenced by a property's attributes and external factors. The rigorous testing process enhances the reliability of the conclusions and supports the model's practical application. The chapter integrates statistical theory with graphical analysis to deliver a comprehensive exploration of housing market dynamics, underscoring the findings' relevance and implications.

Premium of public space on property value

Housing is a multi-attribute commodity, accessibility to work places, transport, amenities and the characteristics of surrounding properties are routinely considered by housing buyers. The previous studies consistently demonstrated that, proximity to green space had a 5% _20% premium on neighboring property values. What is the magnitude of this effect in Addis Ababa? The study chooses three attributes (such as structural, neighborhood and amenity or environmental) as independent variable and the average housing price (rental and retail) as a dependent variable to develop a pricing model that can be applied in SPSS software (See Table 3). The regression results are showed in table 2, and the linear regression model has the best fitting effect. Therefore, the study analyse the premiums of seven structural variables by using the linear regression model. The result suggest that, at the surrounding neighbourhood level, the structural variable of houses such as, living area, size of built up area, Plot size of compound and Age of the house and the environmental variable of houses such as view and proximity of the park possesses the largest effect on residential property value. Whereas the neighbourhood variable of current Occupation status has the least influence. Overall, proximity or visibility of the park and the size built up area is more highly valued with an average premium of 46.7%, and followed by size of living area (45.9%), Plot size of compound (39.9%) and age of the house. All the premium of thirteen variables are presented in table 18. Furthermore, this variation tendency of premium of park on property values maybe related to the urgent green spaces high demand of residents in different central areas. There is a high population density and small areas of green space in inner city, while a low population density and large areas of green space in suburbs.

Proximity to Sheger park

The above analysis showed that Sheger park has a positive influence on property values in Addis Ababa. Subsequently, a regression analysis is conducted to explore how far does this effect reach, by employing the Linear & Multiple logistic regression model in SPSS software. Results show that, the distance from the sample property to the Sheger park is negatively correlated, the analysis revealed non-linear relationship with average housing price, and the average effect distance of sheger park in Addis Ababa can reach 2.8 km. residential properties located within 0_500 m,500_1000 m and 1000_2800 m radius generate significant

premium increases house price by 17.2%, 12.1% and 7.2% respectively. While sheger park has a positive effect only when property located within 1 km. So, by and large, the effect distance of parks on property values range from 1000 to 2800 meters in Addis Ababa. However, a few previous studies demonstrated that the residential property located 100_500 m away from urban public space had a significant premium..

This unexpected finding may be explained by: the larger area and attractiveness of Sheger park, which resulted their effect radius are more longer than common, there is short distance between sheger park and adjacent properties, therefore the Sheger park is more passive park zone than isolated active park with higher noise level or traffic.

Table 3 *The Linear Regression analysis results of four hedonic price*

Model	Unstandardized Coefficients Beta	T	Sig.
living area	1431728.495	-3.740	.000
size of built up area	47302.107	9.778	.000
Plot size of compound	22671.196	10.692	.000
Age of the house	-460755.048	6.801	.000

A. Correlation analysis results

The correlation analysis results for privately owned, occupied houses indicate that home sale prices increase significantly with the expansion of the living room size, number of bedrooms, number of bathrooms, and parking lot size. Additionally, newer homes tend to have a higher sale price, which indicates that buyers prefer newer properties over older ones. The increase in the number of vacant houses has a weak correlation with the sale price of a home. However, when the number of vacant houses decreases, home prices tend to rise, indicating higher demand. House prices rise dramatically in areas where the homeowners have lower levels of education; people with lower levels of education are found to be homeowners, as opposed to government employees who are less privileged to buy private housing. Furthermore, as the distance between owners occupied housing units and Sheger Park decreases, the selling price of homes rises significantly, especially when the park and its artificial lake are visible from the residences.

B. One-Way ANOVA F-test results

The According to the One-Way ANOVA F-Test results for rental apartments, rental values increase significantly with larger built-up areas, bigger total compound sizes, larger living rooms, more bedrooms, and additional toilets. Taller apartment buildings and those equipped with elevators also tend to have higher rental prices. However, floor level does not significantly affect rental costs. Additionally, newer apartments tend to have higher rental prices, as tenants are more inclined to choose modern housing.
Rental housing units with west-northwest (WNW) or west-southwest (WSW) orientation, as well as north-northwest (NNW) orientation, tend to have higher rental prices. In contrast, units with other orientations like north-northeast (NNE), east-southeast (ESE), and south-southeast (SSE) have lower rental prices. The orientation benefits likely determined from facing the landscape of Sheger Park and climatic benefits associated with specific orientations.

On the other hand, when there are many vacant properties, demand decreases, causing rental

values to fall off. Rent prices increase dramatically with rising household income. Like homeowners, renters are often individuals with lower education levels, while government employees are less likely to afford rental apartments. Finally, rental prices rise significantly when the distance between the apartment and Sheger Park decreases, particularly when the artificial lake is visible from the apartments.

C. Chi-Square test results

Chi-square test results for owner occupied houses show significant correlations between housing prices and various structural and environmental factors. The type of façade treatment materials such as reinforced concrete (RCC) has a significant impact on price, while RCC facades command higher prices than bricks and mud due to their modernity and durability. The number of bedrooms influences pricing levels, the age of a home influences market value, and both new and old homes exhibit exceptional price volatility. Old homes tend to decreases the retail price. Homes oriented south-southwest (SSW), east-south-east (ESE) and west-southwest (WSW) are valued higher, perhaps due to the favourable climate and picturesque views of Sheger Park. Moreover, houses with views of Sheger Park consistently command higher prices, emphasizing the importance of local amenities. Finally, proximity to Sheger Park strongly correlates with increased property values, highlighting the park's influence on the housing market.

D. Regression analysis results

According to Regression Analysis test result for owner occupied houses, Structural variables such as larger plot sizes and increased built-up areas, contribute to higher property values. For every additional square meter of plot size, home values increase by ETB 22,671.20, equating to a 39.96% rise. Likewise, each extra square meter of built-up space adds ETB 47,302.11 to the home's value, reflecting a 46.7% increase. More bedrooms and larger living areas also drive home prices higher. Each additional square meter of living space increases the value of the property by approximately ETB 1,431,728.495, which translates to a 45.9% increase in retail value. Neighbourhood characteristics also play a crucial role in determining home prices. Older homeowners are more likely to own higher-value homes. As household incomes rise, property prices increase, reflecting greater investment in better housing. Additionally, lower literacy rates are linked to lower home values, likely due to the economic conditions of certain neighbourhoods. Employment type also influences home values, with self-employed individuals typically owning more expensive properties compared to government employees and retirees. Higher vacant homes are unexpectedly linked to property prices, perhaps reflecting transition or investment opportunities in those areas. Homes with certain orientations, especially those that offer scenic views to Sheger Park or optimal sunlight exposure, tend to have higher values. Similarly, environmental factors, particularly proximity to Sheger Park, boost property prices.

Houses with views of the artificial lakes and other park amenities are especially desirable. For every 100-meter reduction in distance to Sheger Park, property values increase by ETB 183,359.20, with An R Square values of 0.64 means 64% of retail house prices variation is explained by Distance, higher R2 values indicate better model fit and remaining 36% is attributed to other unmeasure factors. The 95% of confidence interval for the coeficient of distance is (-137608.8, 370890.3). It is fairly confident that the actual coeficient of distance in the models lies between -137608.8 and 370890.3 For every every 100 meter reduction in distance to Shger Park, the price increases by between 137608.8 ETB and 370890.3 ETB. highlighting the premium placed on access to green spaces. Additionally, high-quality construction materials, such as RCC facades, further enhance property

values due to their durability and modern appeal. Older homes tend to lose value over time, with each additional year reducing the value of the property by ETB 460,755.048 due to depreciation or renewal. These findings reinforce the conclusion that structural and environmental factors generally drive property values higher, while neighborhood characteristics have a more variable impact.

CONCLUSIONS

This study sought to investigate the economic effects of urban public spaces, specifically Sheger Park's Friendship Square, on property values in Addis Ababa's Kirkos sub-city. Using the hedonic pricing model and multi-attribute statistical analysis, the research confirmed that proximity to Sheger Park significantly increases both rental and sale prices of nearby properties. Homebuyers and tenants are willing to pay a premium for the visual, recreational, and environmental benefits offered by this green public space.

The analysis highlighted several key findings:

Impact on Property Values: A clear relationship exists between proximity to Sheger Park and increased property prices. Residential properties within closer distances to the park were significantly more valuable than those farther away. The findings confirm that proximity to Sheger Park significantly increases both sales and rental prices of nearby properties. Properties within a 100-meter radius of the park demonstrated a consistent increase in value, with buyers willing to pay premiums for views, accessibility, and environmental quality. While the regression coefficient of ETB 183,359 per 100 meters was established, confidence intervals (ranging between ETB 137608.8 ETB and 370890.3 ETB) indicate some statistical cert.

Type of Public Space: Passive public spaces, like Sheger Park, which offer recreational opportunities and scenic views, have a stronger impact on property values compared to active spaces with higher noise levels or traffic.

Gentrification and Displacement: While the development of Sheger Park has brought increased property values, it has also triggered gentrification, leading to the displacement of lower-income households. This social consequence of urban development is a critical issue for policymakers.

Differences in Market Segments: Sale prices were analyzed using hedonic regression models, whereas rental values were assessed through ANOVA. The decision to apply ANOVA for rentals was based on the discrete nature of variables such as location category, orientation, and apartment features making ANOVA a more appropriate model for capturing between-group variations.

Social and Economic Change: The development of Sheger Park has triggered visible signs of gentrification. Rising property values have led to the displacement of low-income renters, especially those who lived in informal housing. Thematic quotes from interviews support this claim; one elderly resident stated, "We used to know everyone on this street; now I don't recognize most people who walk by." This highlights the socio-cultural loss accompanying economic shifts.

The study showed how socio-economic factors such as income levels, educational attainment, and employment status influence the value residents place on proximity to green spaces, particularly in urban areas like Addis Ababa. Ultimately, while urban beautification projects like Sheger Park enhance city image and quality of life, they can also reinforce exclusion and spatial inequality if not coupled with inclusive planning measures. These findings underscore the importance of balancing environmental upgrades with socially equitable urban development strategies that protect vulnerable populations from unintended consequences.

Urban Inequality and Exclusion: Despite the park's environmental benefits and aesthetic appeal, it has unintentionally exacerbated spatial inequality. Households with lower income or education levels were disproportionately affected, either by displacement or inability to access housing close to the park. In summary, while Sheger Park has enhanced the attractiveness and value of its surrounding urban fabric, it has also contributed to patterns of exclusion. These findings underscore the need for inclusive urban planning approaches that balance public space development with housing equity, affordability, and social sustainability.

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