THE INFLUENCE OF ELDERLY-FRIENDLY PUBLIC SPACES AND STAKEHOLDER PERSPECTIVE ON THE QUALITY OF LIFE IN URBAN MICRO-DISTRICTS OF FUZHOU CITY, FUJIAN PROVINCE, CHINA

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ABSTRACT

Fuzhou City, located in China's Fujian Province, exemplifies the demographic transformation underway. The city's elderly population is growing, with individuals aged 60 and above constituting 16.76% of its municipal population. This demographic shift, coupled with increasing urbanization, underscores the urgent need to enhance public spaces to serve the requirements of elderly individuals better. This study, therefore, aims to investigate the influence of elderly-friendly public space and stakeholder perspective on the quality of life in urban micro-districts of Fuzhou City, Fujian Province. The quantitative method based on questionnaires is applied. Descriptive statistics such as frequency, percent frequency, arithmetic mean, and standard deviation are introduced. Various inferential statistical methods are used to test the hypothesis, particularly the Independent Samples t-test, the One-way ANOVA, and the Multiple Linear Regression analysis. The results obtained from the study indicate that differences in Gender, Marital Status, Duration of Residence, Living Arrangement, Type of Housing, and Mobility Limitation generate differences in Quality of Life in urban micro-districts of Fuzhou City, Fujian Province. Differences in Elderly Utilization Patterns create differences in the Quality of Life in urban micro-districts of Fuzhou City, Fujian Province. Differences in Stakeholder Involvement in Public Space generate differences in Quality of Life in urban micro-districts of Fuzhou City, Fujian Province. The results obtained from the Multiple Linear Regression Analyses show that there are significant positive impacts of all aspects of Public Space Characteristics (Accessibility, Safety Measures, Types of Amenities) on Quality of Life in urban micro-districts of Fuzhou City, Fujian Province.

Keywords: Elderly Utilization Pattern, Stakeholder Involvement in Public Space, Public Space Characteristics, Quality of Life, Fuzhou City

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CHAPTER I

INTRODUCTION

The headings of this chapter include Background and Statement of the Problem, Research Questions, Research Objectives, Research Framework, Research Hypotheses, Scope of the Research Study, Definitions of Key Terms, Benefit of the Study, and the Limitation of the Study.

1.1 Background and Statement of the Problem

1.1.1 Background

The global demographic landscape is profoundly shifting, characterized by an increasing elderly population. This demographic evolution is a testament to a remarkable societal transformation with significant implications across various sectors. Two interrelated factors primarily drive the rise in life expectancy and a decline in birth rates. The designation "elderly people" refers to those in the advanced stages of life, typically encompassing individuals aged 65 years or older, while those from 65 through 74 years old are referred to as "early elderly" and those 75 years old or older as "late elderly" (Orimo, 2006). It is essential to recognize that the term "elderly" encapsulates a broad spectrum of individuals, each with unique physical and cognitive abilities, health statuses, and lifestyles. Hence, addressing the needs and characteristics of elderly people requires consideration of multifaceted factors beyond mere chronological age, including health, functional skills, and social circumstances.

Advancements in healthcare, nutrition, and general living conditions have substantially extended the average lifespan on a global scale. Concurrently, many developed and developing nations are witnessing declining birth rates, leading to an aging demographic structure. This aging of societies presents various challenges for healthcare, social services, the economy, and urban planning. The healthcare sector, for instance, is experiencing increased demand for specialized medical services and long-term care facilities. Social services, including pensions and social security systems, are under significant strain to support a larger aging population. Economically, the potential for a shrinking labor force as a substantial portion of the population enters

retirement threatens productivity and growth. Moreover, urban areas must adapt their public spaces, housing, transportation, and infrastructure to meet the needs of older citizens.

In the People's Republic of China, the proportion of elderly individuals within the population is rising at an unparalleled rate, with the country aging more rapidly than the global average. Data from the National Bureau of Statistics shows that the number and proportion of the elderly population aged 65 and above in China has increased continuously since 1978, with the growth rate showing a trend of fast, slow, and then gradually accelerated during the 4 decades. Changes in the number of elderly people aged 65 and above during the 40 years of reform and opening suggest that the evolution of China's aging population can be roughly divided into three stages: the accumulative stage, the initial stage, and the accelerating stage.

During the accumulative stage (1978–1995), the elderly population aged 65 and above showed a cumulative growth trend, with an average annual growth rate of 3.19%. During the initial stage (1996–2000), the aging population kept growing, with an average yearly growth rate of 2.97%. By 2000, the number of elderly people aged 65 and above had reached 88.21 million, accounting for 7% of China's total population. At this point, China began to become an aging society. During the acceleration stage (2001–2018), the first baby boom population born soon after the founding of the People's Republic of China in 1949 became the elderly. In this stage, the annual growth rate of the elderly aged 65 and above reached 3.28%, significantly exceeding the annual growth rate of 0.66% for the total population (Lu & Liu, 2019).

With a rapidly aging population, there is a vital need to create age-friendly cities and communities where older people can thrive and make meaningful contributions to society. China has been exploring innovative approaches to improving access to integrated care, including establishing an internet-based medical information platform. Continued investment in these innovations and creating an integrated, community-based social and health care system, chronic disease control and prevention, strengthened health services, and a larger workforce are essential to help China face future challenges (World Health Organization, 2024).

In the years to come, China's elderly population is expected to continue developing rapidly, and the aging process will continue to speed up. According to the

projection on the trend of China's population aging in the twenty-first century, in the first half of the century, the size of China's elderly population will keep rising at a relatively fast rate, and then in the second half of the century begin to decline at a slow rate. The size of the elderly population aged 60 and above is expected to peak in the twenty-first century at about 482 million, probably in the year 2053 (Zhai et al., 2017). China's elderly population accounts for one-fifth of the world's total elderly population, so the aging of China's population is of great importance to the global population's aging process. The aging of China's population is profoundly impacting China's economic, social, political, cultural, scientific, and technological development and is putting tremendous pressure on systems that deliver old-age care, medical care, and social services. Population aging will be an essential national condition in China throughout the twenty-first century. Developing an active response to population aging is a long-term strategic task for the country (Lu & Liu, 2019).

Elderly-friendly public spaces are paramount for several reasons. They promote health and well-being by enabling older individuals to engage in physical activity and social interactions, reducing the risk of falls, and combating social isolation. Furthermore, these spaces directly enhance the quality of life for older adults, allowing them to enjoy outdoor activities, nature, and cultural events. Economically, elderly-friendly public spaces can attract older consumers, boosting local economies through tourism, supporting local businesses, and generating employment opportunities. Additionally, these spaces foster community building by promoting intergenerational interaction and a sense of mutual support.

Since the reform and opening up, China's urbanization level has increased significantly, with the urbanization rate of the resident population rising from 17.92% in 1978 to 65.22% in 2021 [http://www.stats.gov.cn/(accessed on 10 February 2022)]. Rapid urbanization has brought new challenges and issues, and the contradiction between the demand and supply of resources has gradually come to the surface. Insufficient resources such as urban public housing, medical care, education, and transportation, while supply differences within cities lead to structural public resource shortages (Ren, 2018). China's "New National Urbanization Plan" requires urban planning to be people-oriented, shifting from emphasizing only quantitative balance to focusing on both quality and quantity to meet the needs of residents and from focusing

only on economic production to meeting the needs of residents for a better life. The government has placed requirements for rational allocation of social resources and matching supply and demand. The 15-minute living circle is a community business circle formed by the clustering of various commercial forms, and its goal is to achieve an equal and precise allocation of public service facilities. The construction of a living circle is an essential part of urban system construction (Li et al., 2021; Sun & Chai, 2017).

1.1.2 Statement of the Problem

In 2021, Fuzhou City was officially identified as one of China's first pilot urban quarter-hour convenience living circle areas. In December of the same year, the Fuzhou Municipal People's Government issued the "Fuzhou City Pilot Program for Promoting the Construction of Urban Quarter-Hour Convenient Living Circle" (Xie et al., 2023).

The problem central to this research is the significant deficiency in elderly-friendly public spaces, which is becoming increasingly critical as the global and local populations age. This deficiency is particularly pronounced in the urban context of Fuzhou City, where the rapid demographic shift towards an older population is not adequately mirrored by the development of public spaces catering to this age group's needs. The issue's core lies in the existing urban design and public infrastructure, which often overlook the unique requirements of the elderly, such as safe pedestrian pathways, ample resting areas, accessible public transportation, and inclusive recreational facilities.

The specific challenges identified within the current urban design and public spaces in Fuzhou regarding the elderly population include a lack of safe, accessible walkways that account for mobility challenges, insufficient seating and rest areas, inadequate shade and shelter in outdoor spaces, and a general absence of amenities designed with the elderly in mind. Furthermore, there is a gap in community engagement processes that should inform the planning and development of these spaces, ensuring they are genuinely inclusive and reflective of elderly needs.

This demographic shift towards an older population necessitates reevaluating urban planning and design strategies to create cities and public spaces that are functional, inclusive, and accommodating to the diverse needs of the elderly. The

development of elderly-friendly public spaces is critical in this context, recognizing the profound impact of aging demographics on societies worldwide and affirming the inherent right of older individuals to access and engage with their urban environments with dignity and comfort. The importance of such spaces transcends urban planning and architecture, touching upon healthcare, social well-being, economics, and even tourism.

Urbanization is a complex process encompassing the urban population, the expansion of the urban scale, and a series of economic and social changes. Its essence is the change of the urban economic, social, and spatial structures (McDonnell et al., 2008; Pickett et al., 2001; Luck & Wu, 2002). In the process of urbanization and industrialization, the problems of landscape fragmentation and green space isolation are of particular concern, as these weaken the stability of the urban ecosystem. The urban ecological environment has thus gained wide attention and become the subject of much scientific research. Recognition of the importance of green space in urban ecosystems has led to considerable work on urban green space planning to improve the urban environment and enhance the quality of life (Yu et al., 2012; Jongman, 2008).

This research is intended to conduct a comprehensive assessment and propose enhancements for making public spaces more elderly-friendly, focusing on Fuzhou City and providing insights applicable to similar urban environments globally. This study aims to highlight the necessity of a holistic approach that encompasses physical design, supportive policies, and community engagement, ensuring that public spaces effectively cater to the needs of the elderly. As the global population ages, the findings from this research are anticipated to be invaluable for creating more inclusive, accessible, and fulfilling urban experiences for older citizens in Fuzhou City and beyond. This study is necessitated by the urgent need to address the challenges faced by the elderly population in accessing and enjoying public spaces in Fuzhou. By focusing on the identified gaps and challenges, the research aims to contribute meaningful solutions that enhance the quality of urban life for older citizens. It endeavors to bridge the current divide between urban planning and the actual needs of the elderly, fostering a more inclusive, accessible, and engaging urban environment. Through its outcomes, this research aims to improve Fuzhou's immediate urban

landscape and serve as a model for similar urban settings globally, where aging populations are becoming increasingly prevalent.

1.2 Research Questions

The research questions are as follows:

(1). How do the utilization patterns of public spaces by the elderly population in urban micro-districts of Fuzhou influence the quality of life regarding elderly needs and preferences and elderly well-being and social inclusion?

(2). How can public space characteristics in urban micro-districts of Fuzhou be optimized to enhance the quality of life regarding elderly needs and preferences and elderly well-being and social inclusion?

(3). How can stakeholder involvement in urban micro-districts of Fuzhou influence the quality of life regarding elderly needs and preferences and elderly well-being and social inclusion?

1.3 Research Objectives

(1) To investigate the influences of the utilization patterns of public spaces on the quality of life in terms of elderly needs and preferences and elderly well-being and social inclusion.

(2) To scrutinize the role of stakeholder involvement in urban micro-districts of Fuzhou on the quality of life in terms of elderly needs and preferences and elderly well-being and social inclusion.

(3) To explore the impacts of public space characteristics in urban micro-districts of Fuzhou on the quality of life regarding elderly needs and preferences and elderly well-being and social inclusion.

1.4 Research Framework

Independent Variables
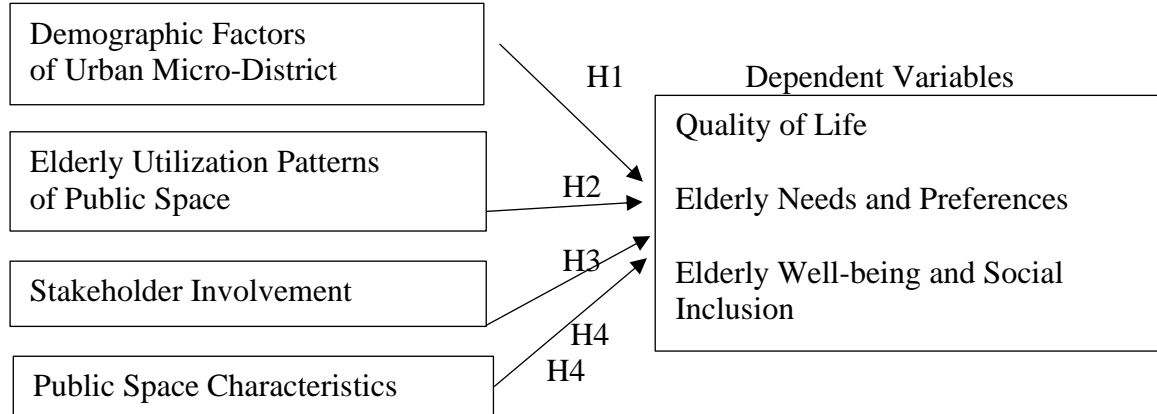
Figure 1. Research Framework

1.5 Research Hypotheses

H1: Differences in Demographic Factors of Urban Micro-District generate differences in Quality of Life

H2: Differences in Elderly Utilization Patterns of Public Spaces generate differences in Quality of Life

H3: Differences in Stakeholder Involvement generate differences in Quality of Life

H4: Public Spaces Characteristics Influence on Quality of Life

1.6 Scope of the Research Study

The scope of this study is meticulously outlined to focus on optimizing elderly-friendly public spaces within specific urban micro-districts of Fuzhou. This study aims to achieve clarity and depth by delimiting the research parameters, addressing several critical areas essential for a nuanced understanding of enhancing public spaces for the elderly population. The precise boundaries and focal points of this research are delineated as follows:

Geographical Focus: The study is geographically concentrated on selected urban micro-districts within Fuzhou, identified based on a combination of demographic

composition, urban density, and the prevalence of public spaces. This targeted approach allows for an in-depth examination of the unique urban dynamics and cultural contexts specific to Fuzhou, facilitating a localized understanding of public space optimization in a manner sensitive to regional particularities.

Target Population: The primary research focuses on the elderly population within these micro-districts, explicitly targeting individuals aged 65 and above. The study further narrows this focus to include subsets of the elderly population characterized by varying mobility and health statuses, aiming to explore a broad spectrum of needs and preferences related to public space utilization. Secondary stakeholders, including urban planners, local authorities, community organizations, and local business entities, were also engaged to gather comprehensive public space development and utilization perspectives.

Time Frame: The research was conducted over six months, starting in July and ending in December 2024. This defined time frame allows for seasonal variations in public space usage and stakeholder availability for data collection, ensuring that the research findings are relevant and reflective of the current conditions and trends.

Public Space Types: This study examined parks, squares, pedestrian walkways, and community centers within the selected micro-districts. These spaces are chosen for their relevance to the elderly population's daily routines and their potential for enhancements to increase elderly friendliness and accessibility.

Methodological Boundaries: Research based on a quantitative method is bound by inherent limitations, particularly the breadth of data achievable via quantitative surveys. Geographical and logistical constraints in data collection were also considered.

Thematic Limitations: While aiming for a comprehensive exploration, the study focuses on urban planning principles, elderly accessibility and mobility, stakeholder involvement in public space management, and quality of life improvements. Broader socio-economic factors and detailed architectural design elements may be acknowledged but not extensively covered within this scope.

Practical Implications: Aimed at generating actionable insights, the research is designed to inform practical recommendations for urban planners, policymakers, and community leaders in Fuzhou. The scope encompasses the analysis

of implementable strategies within the city's existing urban governance and development frameworks. By precisely defining its scope, the study seeks to contribute targeted and significant insights into optimizing public spaces for the elderly within the urban micro-districts of Fuzhou. This delineation ensures a focused and impactful exploration intended to inform urban planning and elderly care practices within the rapidly urbanizing context of this Chinese metropolis.

Theoretical Framework: This study's theoretical framework is constructed upon a foundation of interdisciplinary theories and concepts that span urban planning, gerontology, environmental psychology, and participatory design. This framework serves as a lens through which the research questions are explored, guiding the analysis of data and the development of recommendations. Integrating these theoretical perspectives ensures a holistic understanding of the complex interplay between elderly individuals and their urban environments.

Urban Planning and Sustainable Design: Central to this study is the concept of sustainable urban planning, which emphasizes the creation of spaces that cater to all citizens' needs, promoting inclusiveness and accessibility. As outlined by the World Health Organization, theories related to age-friendly cities provide a foundational principle, suggesting that urban environments should enable people of all ages to actively participate in community activities and treat everyone with respect, regardless of age. Additionally, concepts from New Urbanism, which advocates walkable neighborhoods, diverse public spaces, and community-oriented urban design, are applied to understand how micro-districts can be optimized for the elderly.

Gerontology and Environmental Gerontology: Gerontology, the study of aging and the challenges faced by the elderly offers insights into the physical, cognitive, and social changes associated with aging. Environmental gerontology focuses on the relationship between elderly individuals and their environments, emphasizing the importance of designing spaces that support aging in place and enhance seniors' quality of life. This perspective helps identify specific design features and amenities that public spaces should incorporate to address the needs of the elderly population.

Environmental Psychology examines the psychological impact of physical environments on human behavior and well-being. Concepts such as place

attachment, environmental stressors, and restorative environments are integral to understanding how elderly individuals interact with public spaces. The theory of restorative environments, which posits that specific environments can help reduce stress and improve cognitive function, is particularly relevant for designing public spaces that promote the well-being of the elderly.

Participatory Design: Participatory design emphasizes involving end-users in the design process to ensure that the outcomes meet their needs and preferences. This approach is crucial for creating elderly-friendly public spaces, as it advocates for the active involvement of elderly residents in planning and design decisions. By incorporating their input, urban spaces can be more effectively tailored to support their physical and social needs, fostering a sense of ownership and satisfaction among the elderly community.

Through this theoretical framework, the study aims to explore the optimization of public spaces in Fuzhou's urban micro-districts from a multidimensional perspective. By grounding the research in these theories, it becomes possible to systematically address the needs and preferences of the elderly population, ensuring that urban public spaces are designed to be inclusive, accessible, and conducive to their well-being and active participation in the community. This framework guides the research methodology and informs the interpretation of findings and the formulation of evidence-based recommendations for urban planning and policy interventions.

1.7 Definition of Key Terms

Elderly-friendly Public Spaces refer to public areas intentionally designed or modified to be safe, accessible, and comfortable for older adults. These spaces, which include parks, squares, sidewalks, and recreational areas, are essential for encouraging the active and meaningful participation of older adults in community life. In the context of Fuzhou City, these spaces are critical in fostering an age-friendly urban environment.

Elderly Public Space Utilization refers explicitly to the unique patterns and behaviors exhibited by the city's populations, with a particular emphasis on the elderly, in their use of local public areas such as parks, squares, pedestrian zones, and other communal spaces. This exploration encompasses an analysis of how frequently

these spaces are visited, the duration of each visit, and the diverse types of activities the elderly engage in within the urban landscape of Fuzhou.

Urban Micro-Districts denote smaller, identifiable sectors within a larger urban landscape, each characterized by distinct demographic, cultural, or functional attributes. In Fuzhou, these micro-districts embody the city's diverse urban fabric and significantly influence localized urban planning and community engagement.

Stakeholder Perspective refers to different groups or individuals' diverse views, needs, and preferences, including senior citizens, urban planners, and local authorities. In Fuzhou, this perspective mainly focuses on how these stakeholders perceive and interact with public spaces, especially in accommodating the elderly.

Quality of Life describes the overall health, comfort, and happiness experienced by an individual or group. This term is instrumental in evaluating how well the urban environments, particularly in Fuzhou, meet the needs of their residents, including the elderly, thereby influencing their overall well-being.

1.8 Benefit of the Study

The research "The Influence of Elderly-Friendly Public Spaces and Stakeholder Perspective on the Quality of Life in Urban Micro-Districts of Fuzhou City, Fujian Province, China" makes several critical contributions to urban planning and elderly care. By providing a detailed understanding of the current state of public spaces in Fuzhou City, focusing on their elderly-friendliness, this study enriches existing knowledge on adapting urban environments to better serve the aging population's needs. It delves into the perspectives and preferences of the citizens, especially the elderly, offering a unique and invaluable view of public space design and services. This approach ensures a comprehensive grasp of urban planning, emphasizing the importance of a citizen-centric methodology.

Furthermore, the study identifies key areas for enhancement based on feedback from citizens, offering actionable insights for policymakers, urban planners, and government officials. This guidance is instrumental in making informed decisions to improve public space quality. By evaluating the effectiveness of government

initiatives to increase elderly-friendliness in public spaces, the research contributes to understanding policy impacts on creating age-friendly urban environments.

Focusing on the local context of Fuzhou City in Fujian Province, China, the study highlights the unique challenges and opportunities within this region, providing valuable lessons that are applicable in similar urban settings. Adopting a multidisciplinary approach, incorporating frameworks such as the Age-Friendly Cities Framework, Theory of Planned Behavior, Ecological Systems Theory, and principles of Accessibility and Universal Design adds depth and breadth to the analysis, making the research findings robust and comprehensive.

The practical implications of this research are significant for urban planners, policymakers, and community leaders, who can leverage the insights to forge more inclusive and accessible public spaces. This, in turn, is poised to enhance the quality of life for the elderly population. Moreover, the study paves the way for future research in age-friendly urban development, citizen engagement, and the evaluation of policy effectiveness, encouraging further exploration and development in these critical areas.

Overall, the research offers a holistic view of elderly-friendly design and services in public spaces, combining a citizen-centered perspective, practical recommendations for urban improvements, and a multidisciplinary methodology that could serve as a model for other urban contexts.

1.9 Limitations of the Research

The research encompasses several limitations that might impact the findings' validity and applicability. One primary constraint is the sample size and representativeness of respondents. The results may not accurately portray the broader population's views in Fuzhou City without a sufficiently large and diverse sample. Additionally, the potential for response bias exists, as participants might provide answers they believe are expected rather than their genuine opinions, which could skew the research outcomes.

Another limitation is the reliance on cross-sectional data, which captures information at a single point in time and thus restricts the ability to observe long-term

trends or shifts in attitudes towards elderly-friendly designs in public spaces. Consequently, the findings' generalizability to other cities or regions may be limited, given the study's specific focus on Fuzhou City, whose unique characteristics might not represent other urban environments.

Social desirability bias also presents a challenge, with respondents tailoring their answers to align with what they perceive as socially acceptable, potentially compromising the results' authenticity. Moreover, the study's conclusions might be bound by the data collection timeframe, not accounting for future changes or developments in elderly-friendly public space design and services.

The reliance on the perceived effectiveness of government initiatives rather than an objective evaluation of their actual impact further adds to the limitations. Additionally, while valuable, the study's foundation on subjective citizen perspectives incorporates inherent biases, perceptions, and experiences that could influence the research outcomes.

The study does not fully account for external factors such as economic conditions, political changes, or unforeseen events that could affect elderly-friendly public space design and services. Lastly, the scope of the research may not encompass all elements of elderly-friendly design and services, potentially overlooking critical factors contributing to the elderly population's perspectives and experiences.

Overall, while the study offers significant insights into optimizing public spaces for the elderly in Fuzhou, these limitations should be considered when interpreting the findings and applying them to policy and urban planning.

CHAPTER II
LITERATURE REVIEW

2.1 Related Theory

2.1.1 Public Spaces

2.1.1.1 Urban Planning and the Management of Public Spaces

Urban planning is the process that is applied as a way to organize the dynamics of human actions in cities, with the purpose of stipulating guidelines that order spatial occupation through typological patterns of use, mobility, distribution of equipment, services, and natural areas in the territory, to provide uniformity in the distribution of the onus and advantages generated by the development of the infrastructures. The planning aims to announce in advance what can be done in the face of solving problems that may hinder the dynamics of functioning that involve cities (Eckert & Padilha, 2021). Urban planning is a comprehensive field encompassing cities' design, organization, and development, addressing aspects like land use, transportation, infrastructure, environmental sustainability, and social equity. One critical facet of this discipline involves the thoughtful creation and management of public spaces—areas accessible to the public, such as parks, plazas, and squares. These public spaces serve as vital components shaping the quality of life in urban areas. Land use planning, including zoning regulations, ensures efficient space allocation for residential, commercial, industrial, and recreational purposes. Incorporating green spaces like parks enhances aesthetics and contributes to environmental sustainability.

Urban planning, also known as town planning, city planning, regional planning, or rural planning in specific contexts, is a technical and political process that is focused on the development and design of land use and the built environment, including air, water, and the infrastructure passing into and out of urban areas such as transportation, communications, and distribution networks and their accessibility. Traditionally, urban planning followed a top-down approach in planning the physical layout of human settlements. The primary concern was public welfare, which included considerations of efficiency, sanitation, protection, and use of

the environment, as well as the effects of the master plans on social and economic activities.

2.1.1.2 Inclusivity in Urban Spaces

An inclusive public open space is one where the needs of every single individual are recognized and respected, affording them a positive experience regardless of their background (Pansare & Salama, 2023). Public spaces, including recreational and social spaces, are often not prioritized. Inclusive public spaces are fundamental to participation and inclusion in society. Including people with disabilities in the design and planning of the built environment while applying an intersectional approach supports equal rights and helps identify people's aspirations for inclusive environments (Patrick & McKinnon, 2022).

The shift to inclusive and community-centric planning represents a contemporary evolution in urban planning philosophies, emphasizing the active involvement of diverse community members in decision-making processes. This transformation has been prompted by recognizing the limitations of top-down approaches and a desire to create cities that genuinely reflect the needs and aspirations of their residents. Inclusive planning strongly emphasizes diversity and equality, seeking to address the needs of various demographic groups within a community. It strives to ensure the urban environment is accessible and welcoming to people of all ages, abilities, and socioeconomic backgrounds. The access and availability to public spaces can show how public spaces are, or not, an arena for public life: a place for individual and group expression; a forum for dialogue, debate, and contestation; a space for conviviality, leisure, performance, and display; a place for economic survival and refuge; a site for exchange of information and ideas; and a nature setting to exist in the city and to support the well-being of its inhabitants (Mehta & Palazzo, 2020). Public spaces are essential for just, inclusive, and resilient communities— just as they are essential for the future of environmental equity, public health equity, and an equitable right to the city. To establish genuinely equitable and inclusive public space networks, built environment professionals need to consider the design and planning processes, site selection parameters, standards of quality, and funding mechanisms anew and redesign them when necessary (Odbert, 2022).

By actively engaging with the community, planners aim to incorporate various perspectives, experiences, and cultural contexts into the decision-making process. Community-centric planning goes beyond mere consultation and actively involves residents in planning and developing neighborhoods. This approach acknowledges community members' valuable knowledge and insights about their living environments. Participatory workshops, town hall meetings, and collaborative design sessions are methods employed to empower residents to contribute to shaping their communities. Technology adoption has played a pivotal role in facilitating inclusive and community-centric planning. Online platforms, virtual town halls, and digital tools enable broader participation, allowing individuals facing physical or logistical barriers to engage in the planning process. This democratization of information and decision-making helps ensure that a diverse range of voices is heard. Technology can be used to facilitate inclusive and community-centric planning in several ways.

Inclusivity in urban spaces is paramount for fostering cities that embrace diversity and cater to the varied needs of their residents. Universal design principles form a foundational element, ensuring that public spaces are inherently accessible for individuals with diverse abilities. This involves incorporating features like ramps, elevators, and tactile paving to facilitate seamless navigation. Social inclusion is equally vital, with urban planners aiming to create spaces encouraging community engagement and interaction. Diverse cultural representation, manifested through public art and cultural events, adds richness to the urban fabric, promoting a sense of belonging for all residents. Additionally, prioritizing affordable housing and mixed-use development helps bridge socio-economic gaps, allowing individuals from different backgrounds to coexist and thrive within the same neighborhoods.

A holistic approach to inclusivity extends to public transportation systems, where considerations for accessibility, such as low-floor buses and tactile signage, ensure that everyone can use these services comfortably. Participatory planning processes engage the local community in decision-making and amplify diverse voices and needs. Safety features, well-lit environments, and age-friendly urban design further contribute to the inclusivity of public spaces. Green and nature spaces, designed for accessibility, provide opportunities for relaxation and recreation, fostering a sense of connection with the environment. In prioritizing inclusivity, cities cultivate

environments that celebrate diversity, enhance social cohesion, and improve their residents' overall quality of life. Further study is needed to explore the relationship between these themes and to inform future policy perspectives (Gumbo et al., 2022).

2.1.1.3 Global Urbanization and Its Influence on Planning

Global urbanization, the increasing concentration of the world's population in urban areas, has profound implications for urban planning. As many people migrate to cities seeking economic opportunities and improved living standards, planners must address various challenges related to infrastructure, sustainability, social equity, and quality of life.

Planning can be better adapted to the needs of a globalized world by considering global state constraints and state-dependent action costs (Ivankovic et al., 2019). A comparative approach based on field theory can also compare planning systems in different regions (Zimmermann & Momm, 2022). This approach allows interpreting planning as an emerging practice influenced by globalized or European knowledge communities. To support international students in planning schools, mentorship, explicit recognition of diversity, equity, and inclusion efforts, tailored professional development, and more holistic support systems are needed (Fan et al., 2022). Furthermore, a global planning architecture can be conceptualized to enable plan reuse and environmental state inference worldwide (Janssen et al., 2012).

2.1.1.4 Public Space Features

Public spaces are integral to the fabric of urban environments, playing a diverse and crucial role in enhancing the overall quality of life. As communal hubs, these spaces foster social interaction and community cohesion, providing settings for diverse social activities and events. Additionally, public spaces contribute to cities' cultural vibrancy and identity by hosting artistic displays, performances, and cultural events. Beyond their social and cultural significance, these spaces stimulate economic vitality, attracting businesses and promoting entrepreneurship. They also play a role in environmental sustainability, offering green areas that support biodiversity and contribute to overall environmental health. Public spaces enhance urban residents' physical and mental well-being, providing recreation, leisure, and exercise opportunities. Furthermore, they serve as democratic gathering spaces, facilitating civic engagement and expression. In creating pedestrian-friendly environments, public

spaces contribute to safer, more accessible, and more resilient cities, which are indispensable elements in creating vibrant and livable urban landscapes.

Public spaces play a crucial role in urban environments by providing places for vibrant social life, a wide range of activities, and the interaction between people and the city (Ewertowski, 2023). They are accessible and egalitarian, making them valuable areas for research on the relationship between space and culture (Wicaksana et al., 2023). Public spaces contribute to urban well-being, health, and quality of life and are essential for people of all ages, including children, older adults, and urban youth (Kargina et al., 2022). They are necessary for active aging and rejuvenating urban life (Fejza, 2022). The key elements that create a quality public space are open, artifact, theatrical (Henaff & Strong, 2001), atmosphere, and moods (Pérez--Gómez, 2016). The quality of being open, artifact, and theatrical are all interlinked with human perception, recognition, and interaction within public space. Spatial atmospheres that create moods of positive emotions have a direct connection with the inner human spirit.

2.1.1.5 Social Dynamics in Public Spaces

Factors that contribute to the formation of social dynamics in public spaces include the spatial features of the environment, such as edges and landmarks, which attract social interaction and group activities (Becky et al., 2023). Spatial morphology at different scales, including node, community, and global network, also influences the use of public space by micro-mobility (Mehta & Bosson, 2021). Additionally, the dynamics between street vendors and public security forces, as well as the categories of ethnic belonging, influence the governance and accessibility of public space (Freire et al., 2021). The physical nature of popular neighborhoods is shaped by the needs, expectations, and symbolic constructions of the inhabitants, leading to the transformation and adaptation of social practices in public spaces (Flock & Breitung, 2016).

Public spaces in urban environments are pivotal in shaping social dynamics, influencing how individuals interact and engage with their surroundings. These spaces act as social platforms, facilitating connections and fostering community among diverse urban residents. Parks, plazas, and squares serve as communal hubs where people from different backgrounds converge, promoting social interactions that contribute to a rich tapestry of urban life. Public spaces' design and layout influence human behavior

patterns, encouraging spontaneous gatherings, conversations, and shared activities. Cultural events, performances, and artistic displays in these spaces contribute to expressing local identity and celebrating diversity. Additionally, the inclusivity and accessibility of public spaces play a crucial role in breaking down social barriers and creating environments where people of all ages, abilities, and socio-economic backgrounds can engage in shared urban experiences. Public spaces act as social catalysts, shaping the intricate web of human interactions that define the social dynamics within urban environments.

2.1.1.6 Elements of Urban Public Spaces

The quality of public space depends on the presence of design elements and their orientation within the layout (Tonnelat, 2010). Kenny (2016), in his report on Age Friendly Ireland guidelines, mentioned a set of design elements for urban public spaces that play a vital role in the quality of public spaces. Public seating is the first dimension in achieving the quality of space, and public conveniences are more critical in long-time spending areas. Parking facilities and safe pedestrian crossings need to be considered in the design. Clean and green areas are image, comfortable, and attractive public spaces. Necessary urban elements/street furniture are essential, including way-finding signage, lighting, and trash bins along the walkways. Finally, the place should be accessible by public transport facilities; the location of public transport needs to be within reachable distance.

2.1.1.7 Characteristics of a Good Public Space (Metaphysical)

The essential quality achieved in public space is its welcoming character for all the public. According to Whyte (1980), in his research work on "The Social Life of Small Urban Public Spaces," he conducted time-lapse video observations in various urban public spaces to understand people's behavior in public spaces. In his research, he found that the availability of seating space forms the sociability of space. It is a basic tendency for people to sit where there is a place to sit. Children densely use playgrounds, plazas, and squares used by adults; couples use romantic scenic beauty spaces like parks and fountains, and older adults frequently use street corners and neighborhood parks. Later, his research on public spaces continued by establishing an organization called "Project for Public Spaces (PPS)" to create all urban public spaces. This organization worked on over 3000 urban public spaces and observed four key

attributes for making urban public spaces great. These are Access and Linkages of the Public Space (Ota, 2002); Legibility/Readability of the Public Space (Lynch, 1964; Ujang, 2012); Comfort and Image of the Environment (Whyte, 2010; Francis, 2010; Mahadevia, 2016).; Uses and Activities; and Sociability of the space(https://psychology.tips/sociability/). Each key attribute is further measured in multiple dimensions.

Access and Linkages the visual appearance of the space from a distance and its connectivity between the space and surroundings. It is the primary quality of any public space; access needs to satisfy the ease and safety of entering the space physically, and continuity is defined by the network of walkways leading to all activity destinations. Walkability is the primary indicator for measuring any public space's quality. According to Ota (2002), walkability is defined as "The extent to which the built environment is friendly to the presence of people walking, living, shopping, visiting, engaging or spending time in an area." In age-friendly design, walkability refers to the ease with which the elderly can move around an area or space. Regardless of their age, walkability affects all people; however, the elderly tend to be more conscious of and may be challenged by the obstacles to walkability.

Legibility/Readability is another vital attribute to achieve accessibility of public space (Lynch, 1964), "legibility of a public space defined by a vivid and integrated physical environment that can be identified, organized and navigated by people with ease." It refers to the characteristic of being transparent enough to be understood. Legible public spaces strengthen users' attention toward their perception clarity and mental cognition of the public space (Ujang, 2012).

Comfort and Image: Public spaces should be attractive based on their first impression. It should be safe, clean, green, walkable, stable, and attractive to the public (Whyte, 2010). Cleanliness attracts people to spend time, and liveliness makes people feel safer. Sitting space is essential in measuring public space's comfort dimension. Choice of seating is necessary to provide a comfort level to all kinds of users; seating is achieved by the location of the seating area, design of layout and furniture, choice of material, and cleanliness of the surrounding environment (Francis, 2010). A good image is an attractive feature of any public space; aesthetics, liveliness, and cleanliness achieve it. As said by Mahadevia (2016), in Indian society, crime rates and harassment

of women are up to 57% in urban public spaces where there is a lack of surveillance and liveliness. Public amenities and services like restrooms, drinking water facilities, and nearby eatable spaces also comfort people.

Uses and Activities: Activities are the basic building blocks of a public space (Whyte, 2010). When there is nothing to do, a space will be empty, discouraging people from participating. People visit public spaces for recreational and relaxation purposes; the space should offer diverse activities, be flexible enough for multiple uses like performing various social activities, reflect the identity of local character, and be realistic and fun-filled. Most of the public gathers in many public spaces when there is a presence of any special public event. A space for a musical event, a space for a political meeting, a space for social interaction, a space for playing, a space for sitting, and a space for eating are all different sorts of activities in a public space. Public neighborhood parks are generally hubs for activities, accommodating all user groups to engage in certain activities when children play in the playground, the elderly engage in social interaction, and adults use exercise facilities. Likewise, public space needs to satisfy the requirement of diverse user groups without discrimination.

Sociability is a critical characteristic of any public space; once achieved, it emphasizes the quality of public space. Sociability is achieved by the presence of activities and the welcoming nature of those activities to public participation. When an interesting event occurs in any public space, people interact automatically. Public space is the origin of social life in urban areas. Sociability is measured by the welcoming nature of diverse users regardless of age, gender, race, ability, and religious background. In urban areas, friendship between strangers will start in public spaces. Sociability refers to the inherent ability of an individual to interact and engage with others amicably. It encompasses the desire and aptitude for building and maintaining social relationships and the willingness to participate in various social activities. Key Characteristics of Sociability are as follows. (https://psychology.tips/sociability/)

- **Interpersonal Skills:** Sociable individuals possess effective communication and interpersonal skills, allowing them to engage in meaningful conversations and develop connections.

- **Friendliness:** Sociable individuals demonstrate a warm and welcoming demeanor, making others feel comfortable and at ease in their presence.

- **Approachability:** Sociable individuals are open and accessible, making it easy for others to initiate interaction or seek companionship.

- **Adaptability:** Sociable individuals can easily adapt to different social situations and environments, displaying flexibility in their interactions with diverse groups of people.

- **Empathy:** Sociable individuals show genuine interest and concern for others' emotions and perspectives, allowing them to establish deeper connections and foster mutual understanding.

2.1.1.8 Elderly-Friendly Design in Public Spaces

Elderly-friendly urban design adheres to several key principles aimed at creating environments that prioritize the specific needs of the aging population. These principles encompass ensuring accessibility by incorporating features like ramps and wide pathways, promoting pedestrian-friendly infrastructure with well-maintained sidewalks, and implementing age-appropriate features in public transportation, such as low-floor buses. Mixed-use development is encouraged to facilitate proximity between essential services, recreational facilities, and housing, reducing the need for extensive travel. The design also includes social spaces and community centers catering to seniors' diverse interests, ensuring safety through well-lit pathways and visible emergency services, and creating inclusive public facilities. The concept extends to age-friendly housing options with features that support aging in place, the integration of accessible green spaces for relaxation and exercise, and participatory planning methods that involve the elderly population in decision-making processes. Technological integration, such as smart city initiatives, enhances accessibility and information dissemination, while dementia-friendly design principles incorporate features to reduce confusion and stress. By embracing these principles, urban design becomes more conducive to the comfort, accessibility, and engagement of the elderly, fostering environments that support their independence and overall well-being.

Elderly-friendly design in public spaces is a critical aspect of urban planning, focusing on creating environments that are accessible, safe, and comfortable for older adults. This approach encompasses various considerations, such as accessibility, safety, comfort, and provision of amenities, all tailored to support the mobility and well-being of seniors. Elderly-friendly design recognizes the diverse

needs of older individuals, emphasizing social inclusion and active participation in community life. The design includes well-maintained pathways, seating areas, appropriate lighting, and strategically placed facilities like restrooms and resting spots. Sensory considerations and ergonomic elements are also integrated to address potential impairments in vision, hearing, and physical dexterity, ensuring public spaces are inclusive for all ages. The increasing number of elderly citizens in developed countries, coupled with the movement of people to city centers, necessitates a change in the design of cities and public spaces.

Designing urban spaces for the elderly requires incorporating humanized design strategies that meet their physiological and psychological needs. Good practices in this regard include considering the principles of universal design, ensuring accessibility and safety for seniors, and addressing both functional and aesthetic aspects (Fabisiak et al., 2023). The design of urban spaces should consider the impact on the mood and behaviors of people with mental illnesses and conditions, promoting walkability, free flow, and harmonious interaction indoors and outdoors (Tracada, 2022). Green space is considered as the lungs of the city. It has immense health benefits, mainly for elderly people. Regular physical activity in green spaces considerably reduces the health risk of cardiovascular disease, respiratory problems, high blood pressure, paralysis, diabetes, and other chronic diseases. Besides, it facilitates social interactions and promotes a sense of community among the citizens, which is very important for the health and well-being of people, especially for the elderly, because they predominantly suffer from social isolation problems (Ali et al., 2023).

Elderly-friendly design, also known as geriatric design or age-inclusive design, focuses on creating environments and spaces that cater to the unique needs and abilities of older individuals. It considers factors such as Accessibility and Mobility, sensory perception, cognitive function, and overall well-being. Here are some key principles and considerations for elderly-friendly design:

(1) Accessibility and Mobility

Accessibility for the elderly is accessible in urban planning and is crucial to creating inclusive and age-friendly cities. Recognizing the specific needs of the elderly population, urban planners focus on designing environments that promote ease of mobility and overall well-being. This involves implementing accessible

infrastructure, well-maintained pedestrian walkways, and age-friendly public transportation options. In addition to physical considerations, urban planning for elderly accessibility encompasses creating social spaces that encourage community engagement and cater to the diverse interests of seniors. Ensuring safety through well-lit areas, seating arrangements, and proximity to essential services further enhances the elderly's ability to navigate and participate in urban life. By incorporating these elements, urban planning strives to provide an environment that supports the aging population, enabling them to remain active, connected, and engaged participants in the urban landscape.

Designing urban spaces focusing on the elderly necessitates integrating universal design principles. This approach ensures that public spaces, buildings, and transportation systems are easily accessible for individuals with varying levels of mobility. Creating an environment where everyone can navigate effortlessly promotes inclusivity and addresses the diverse needs of the aging population.

Pedestrian-friendly Infrastructure: To pursue an elderly-friendly urban design, well-maintained and marked pedestrian walkways must be prioritized. Features such as ramps and sloped surfaces, handrails and grab bars, broad pathways, and doorways, clear signage, accessible seating, elevators and lifts, tactile paving, curb cuts and pedestrian crossings, proper lighting, accessible restrooms, and strategically placed benches contribute to a safe and comfortable environment for seniors, facilitating their mobility and encouraging outdoor activities.

Age-Appropriate Public Transportation: Elderly-friendly urban planning focuses on public transportation that caters to the specific needs of seniors. This involves incorporating features like low-floor buses, clear signage, and seating arrangements designed to accommodate the elderly, making public transit more accessible and user-friendly for this demographic.

Safety Measures: Safety is paramount in designing urban spaces for the elderly. Implementing measures such as well-lit areas, secure handrails, and non-slip surfaces contribute to the overall safety of the environment, minimizing the risk of accidents and enhancing the sense of security for elderly residents.

Community Spaces: Creating inclusive community spaces is crucial for elderly-friendly urban design. These spaces should cater to the elderly's interests,

providing areas for socializing, recreation, and cultural activities. Fostering a sense of community through well-designed public spaces contributes to the overall well-being of seniors.

Accessible Amenities: An age-friendly urban environment ensures that essential amenities such as parks, healthcare facilities, and shopping areas are easily accessible. Reducing barriers to access for the elderly enhances their ability to engage with and benefit from crucial services within the community.

Age-Friendly Housing: Encouraging the development of age-friendly housing options is a key aspect of urban planning for the elderly. Features like grab bars, wider doorways, and step-free entrances contribute to creating living spaces that address seniors' specific needs and allow them to age comfortably.

Clear Signage and Wayfinding: Clear signage and wayfinding elements are essential in elderly-friendly urban design. Well-designed signage helps elderly individuals navigate urban spaces quickly and independently, promoting a sense of autonomy and reducing potential confusion.

Green Spaces and Rest Areas: Integrating green spaces and rest areas with comfortable seating options is vital for an elderly-friendly urban landscape. Providing opportunities for seniors to enjoy nature, rest, and engage in physical activities at a relaxed pace contributes to their overall well-being.

Participatory Planning: Engaging the elderly community in participatory planning ensures that their perspectives and needs are considered. This inclusive approach fosters a sense of ownership and community involvement, making the urban planning process more representative and responsive to seniors' diverse requirements.

Age-Friendly Business Practices: Encouraging local businesses to adopt age-friendly practices is integral to creating an elderly-friendly urban environment. This may involve providing seating areas, clear product labeling, and accessible entry points, making businesses more welcoming and accommodating for elderly patrons.

Access to Technology: Promoting digital inclusion by ensuring that urban spaces are equipped with accessible technology is essential for an elderly-friendly design. This facilitates connectivity, allowing seniors to stay informed, engaged, and connected to essential services in an increasingly digital age.

(2) Balancing Accessibility, Aesthetics, and Functionality

Achieving a harmonious balance between accessibility, aesthetics, and functionality is paramount in the principles of elderly-friendly urban design. Prioritizing accessibility involves integrating features like ramps, elevators, and well-maintained sidewalks to facilitate ease of movement for seniors. Aesthetics play a crucial role in creating visually pleasing and culturally inclusive environments, contributing to the overall well-being of the elderly population. Thoughtful landscaping, public art, and cultural elements enhance the visual appeal and foster a sense of identity and connection. Simultaneously, functionality is a key consideration, ensuring that urban spaces are not only accessible and visually pleasing but also practical in meeting the daily needs of the elderly. Considering seniors' comfort and convenience, public spaces should have seating areas, rest spots, and clear signage. Striking this delicate balance in design principles results in urban environments that not only accommodate the accessibility requirements of the elderly but also offer aesthetically pleasing and functional spaces that enhance their overall quality of life.

(3) Cross-Cultural Design Comparisons

Cross-cultural design comparisons in the principles of elderly-friendly urban design reveal the importance of considering diverse cultural contexts to create inclusive environments for aging populations. While the fundamental goal of enhancing accessibility and well-being for the elderly remains consistent, cultural nuances influence the specific design approaches. For instance, in some cultures, multi-generational living is more prevalent, impacting the need for communal spaces and accessibility within residential areas. Cultural attitudes towards public spaces and community engagement also shape the emphasis on designing parks, plazas, and gathering areas. In certain societies, there may be a more substantial reliance on traditional modes of transportation or distinct preferences for architectural styles that blend with cultural aesthetics.

Moreover, cultural perspectives on aging, including the roles and expectations placed on older individuals, influence the design of public spaces and services catering to the elderly. Cultural variations in family structures and support systems impact the design of healthcare facilities and senior care services. Language

and communication preferences further underscore the need for clear signage and information dissemination tailored to the linguistic diversity within elderly populations.

In essence, cross-cultural design comparisons highlight the importance of adapting elderly-friendly urban design principles to the unique sociocultural contexts of different communities. A holistic approach considering cultural diversity ensures that urban environments support aging populations' needs, preferences, and lifestyles across a spectrum of global cultures. Cezarotto et al. (2022) focus on accessibility, equity, diversity, inclusion, and representation in game design. This framework aims to ensure that all players can engage with and enjoy games and that the design is representative and inclusive.

2.1.1.9 Outdoor Spaces

Designing outdoor areas with features like accessible pathways, seating, and shade to encourage outdoor activities and social interaction. In designing outdoor spaces to be elderly-friendly, it is essential to consider a range of factors that enhance accessibility, safety, comfort, and overall well-being for older individuals. Here are specific details and features that can be incorporated:

Smooth and Non-Slip Surfaces: Utilizing non-slip materials for pathways and flooring helps prevent slips and falls, providing secure footing for seniors, particularly during wet or icy conditions.

Clear Signage and Wayfinding: Well-placed, easy-to-read signs with clear directional information help seniors navigate outdoor spaces confidently, reducing confusion and improving overall accessibility.

Accessible Seating and Rest Areas: Providing ample seating with backrests and armrests allows seniors to take breaks and rest outdoors. These seating areas should be strategically placed along pathways and in shaded areas.

Well-Maintained Paths and Trails: Regular maintenance and repair of pathways ensure a smooth, even surface free from cracks, bumps, or obstructions that could pose tripping hazards.

Appropriate Lighting: Adequate and evenly distributed lighting is crucial for ensuring the safe use of outdoor spaces, particularly during evening hours. Illuminating walkways, seating areas, and entrances help seniors feel secure and navigate comfortably.

Shade and Shelter: Providing shaded areas, such as pergolas, pavilions, or natural canopies, allows seniors to seek refuge from the sun or rain, making the outdoor space more comfortable and conducive to extended stays.

Access to Amenities: Ensuring easy access to facilities like restrooms, drinking fountains, and trash receptacles is essential for the convenience and comfort of older individuals spending time outdoors.

Raised Garden Beds and Planters: Elevated gardening areas allow seniors to engage in horticultural activities without excessive bending or kneeling, promoting physical activity and a sense of accomplishment.

Visual and Auditory Contrasts: Using contrasting colors and patterns in surfaces and clear delineations between pathways and edges helps individuals with visual impairments navigate outdoor spaces more effectively.

Community Engagement Spaces: Designating areas for group activities, such as exercise classes, social gatherings, or events tailored for seniors, encourages social interaction and fosters a sense of community.

Exercise Stations and Fitness Equipment: Including low-impact exercise equipment or stations encourages physical activity, helping seniors maintain mobility, strength, and balance.

Accessibility for Mobility Devices: Designing pathways, ramps, and entrances to accommodate wheelchairs, walkers, and mobility scooters ensures that individuals with varying degrees of mobility can comfortably use the space.

2.1.2 Stakeholder Perspectives

Yang (2014) states that in the field of urban development, studies usually refer to stakeholders as communities (Lawson & Kearns, 2010; Mahjabeen et al., 2008; Taylor, 2007), public (Innes & Booher, 2004; Oakely, 2007; Shan & Yai, 2011), and civics (Cuthill, 2004; Docherty et al., 2001; McLoughlin, 1969). In 1969, Arnstein proposed his 'ladder of participation: An eight-rung ladder of methods of engagement with the public, rising from 'non-participation' or public 'manipulation' right up to 'total engagement' or 'citizen control' where the public holds the majority or all of the managerial power within the project (Arnstein, 1969). Thereafter, several studies in urban development analyzed the eight ladders and selected and tailored their methods to an appropriate engagement level (Larson et al., 2010; Mahjabeen et al., 2008).

Local Businesses, another key stakeholder group, bring economic considerations to the forefront. Their perspectives revolve around the impact of urban development on commercial districts, customer accessibility, and opportunities for business growth. Stakeholder input from local businesses is crucial in formulating strategies that foster economic vitality and long-term sustainability.

City Planners and Officials, who play a central role in shaping urban development goals, provide perspectives that focus on the city's overarching vision, regulatory frameworks, and project alignment with comprehensive planning strategies. Their insights guide the direction of urban projects in line with broader urban development objectives.

Environmental Advocates contribute perspectives that prioritize sustainability and green initiatives—their focus centers on environmental conservation, energy efficiency, and integrating green spaces within urban areas. Stakeholder input from this group influences decisions that contribute to environmentally responsible urban development.

Transportation Authority plays a key role in shaping perspectives on efficient mobility within the city. Their considerations encompass public transit, road infrastructure, and sustainable transportation solutions, contributing to the development of urban mobility that is both efficient and accessible (Cervero & Murakami, 2010).

Nonprofit Organizations advocating social equity and inclusion offer perspectives emphasizing the importance of addressing social issues, providing affordable housing, and creating public spaces catering to diverse needs. Their perspectives contribute to a more socially conscious and inclusive urban development agenda.

Developers and Investors, focusing on economic viability, provide perspectives around financial feasibility, return on investment, and project alignment with market demands. Their considerations influence the economic aspects of urban development, ensuring projects are financially sustainable.

Academia and Researchers contribute perspectives on innovation, data-driven decision-making, and evidence-based urban development. Their insights help incorporate the latest research findings into planning processes, fostering a culture of continuous improvement and knowledge integration.

Cultural and Heritage Advocates concentrate on preserving historical landmarks, cultural identity, and architectural heritage within urban areas. Their perspectives contribute to maintaining a city's unique character and preserving elements of cultural significance.

Public Interest Groups represent the collective voice of citizens, advocating for public goods such as education, healthcare, and community services. Their perspectives contribute to a more equitable distribution of resources and services, ensuring that urban development projects address the broader public interest.

Residents of Marginalized Communities bring perspectives highlighting the need for social justice, inclusivity, and targeted interventions to address disparities within urban development projects. Their input is crucial for ensuring that urban development initiatives consider the needs and concerns of all population segments (Marcuse, 1997). Incorporating a range of stakeholder perspectives ensures a holistic, inclusive, and community-driven approach to urban development. This collaborative decision-making process enhances the legitimacy of projects and contributes to creating urban spaces that genuinely serve the diverse needs of the entire community.

2.1.2.1 Stakeholder Theory in Urban Planning

Stakeholder theory in urban planning emphasizes the importance of considering and involving diverse stakeholders in decision-making processes to ensure sustainable and inclusive development. This theory recognizes that urban planning outcomes should address the interests, concerns, and perspectives of various individuals and groups affected by the planning decisions. Key stakeholders in urban planning may include residents, businesses, government agencies, non-profit organizations, and academic institutions.

Stakeholder theory posits that successful urban planning requires understanding and balancing the often conflicting interests of different stakeholders. Engaging stakeholders throughout planning helps create more responsive, equitable, and socially beneficial urban environments (Freeman, 2015).

Effective communication and stakeholder collaboration are integral to stakeholder theory in urban planning. By incorporating the input of diverse stakeholders, planners can develop solutions that consider a broad range of perspectives, leading to more sustainable and socially responsible urban outcomes.

In urban development, stakeholder theory aligns with principles of participatory planning, community engagement, and inclusive decision-making. This approach recognizes that a collaborative and transparent planning process is essential for achieving positive urban development outcomes (Reed, 2008).

Stakeholder theory in urban planning is a framework that recognizes and emphasizes the importance of involving various individuals, groups, and organizations with a stake or interest in the outcomes of urban development projects. In this context, stakeholders include residents, businesses, community organizations, governmental bodies, and other entities directly or indirectly affected by urban planning decisions. The theory posits that successful urban planning should consider these stakeholders' diverse needs, perspectives, and interests to achieve more inclusive, sustainable, and community-driven outcomes.

Stakeholder theory in urban planning is a conceptual framework that emphasizes recognizing and engaging with diverse individuals, groups, and organizations that hold a stake or interest in the outcomes of urban development projects. This theory departs from traditional top-down planning approaches and advocates for a more inclusive and participatory process. In the context of urban planning, stakeholders can encompass residents, local businesses, community organizations, government entities, advocacy groups, and other entities whose lives or activities are directly impacted by the decisions made in the planning process.

The central tenet of stakeholder theory is that involving a wide range of stakeholders in the decision-making process leads to more informed, transparent, and equitable urban development. The theory acknowledges that cities are complex systems with interconnected social, economic, and environmental dimensions. By considering the interests and perspectives of various stakeholders, urban planners can create solutions that better align with the community's diverse needs.

Stakeholder theory recognizes that urban planning decisions significantly affect city residents' well-being and quality of life. It encourages identifying key stakeholders, understanding their concerns, and actively involving them in planning. This can be achieved through public consultations, workshops, focus groups, and other participatory methods that seek input and feedback from those whom the urban development initiatives will directly impact.

Stakeholder theory guides urban planners through the complexities of decision-making by considering a project's social, economic, and environmental dimensions. By fostering collaboration and inclusivity, the theory aims to enhance the legitimacy of planning decisions, improve project effectiveness, and ultimately create more sustainable, resilient, and people-centric urban environments. Stakeholder theory aligns with contemporary urban planning principles that prioritize community engagement and social justice and create cities that serve their inhabitants' diverse needs.

2.1.2.2 Importance of Diverse Perspectives

Ozdemir et al. (2023) state that in the current business environment, collaborations with a range of stakeholders allow organizations to access information and knowledge, reduce costs and risks, and increase their opportunities to develop new products and services quickly (Ozdemir et al., 2017; Rindfleisch & Moorman, 2003; Thomas, 2013; Xu et al., 2013). Furthermore, from an operational perspective, inter-organizational collaborations reduce the time and effort needed to gather the new and critical resources necessary for innovation (Molina-Morales & Martínez-Fernández, 2010). As a result, stakeholders can use inter-organizational resources efficiently and better compete in dynamic business contexts (Ozdemir et al., 2019).

Incorporating diverse perspectives is a central tenet of stakeholder theory in urban planning. Recognizing and valuing the input of various stakeholders brings a multitude of benefits. Diverse perspectives ensure that urban development projects consider a broad range of needs and concerns, fostering inclusivity and social equity. Engaging stakeholders from different backgrounds enhances the legitimacy of planning decisions, as the outcomes are more representative of the community's collective aspirations. Additionally, diverse perspectives contribute to identifying potential challenges and opportunities that might not be apparent from a singular viewpoint, leading to more comprehensive and effective urban planning solutions.

The significance of diverse perspectives in urban planning, as advocated by stakeholder theory, underscores the notion that inclusive decision-making processes lead to more comprehensive, sustainable, and socially responsive urban development. The importance of diverse perspectives can be examined across several dimensions:

Comprehensive Problem Identification: Diverse stakeholders bring diverse experiences, backgrounds, and knowledge. This diversity allows for a more thorough identification of urban challenges and opportunities. By considering various perspectives, planners can gain insights into multifaceted issues that might not be apparent from a singular viewpoint.

Social Equity and Inclusivity: Involving stakeholders from diverse demographic groups promotes social equity and inclusivity. Recognizing and addressing the needs of underrepresented or marginalized communities ensures that urban development projects benefit the entire population, fostering a sense of fairness and social justice.

Legitimacy and Public Trust: Inclusive decision-making processes enhance the legitimacy of urban planning initiatives. When diverse stakeholders can voice their opinions and contribute to the decision-making process, it fosters a sense of ownership and trust among the community. This, in turn, increases the likelihood of successful implementation and acceptance of urban projects.

Innovation and Creativity: Diverse perspectives fuel innovation and creativity in urban planning. Collaborative processes that involve stakeholders from different sectors and backgrounds can lead to novel ideas and solutions. Creativity thrives when individuals bring unique viewpoints and experiences, enriching the planning process with broader possibilities.

Anticipating Unintended Consequences: Inclusive decision-making allows for a more thorough consideration of potential unintended consequences. Stakeholders can provide valuable insights into the secondary impacts of urban development projects, helping planners anticipate and mitigate adverse effects before they arise.

Strengthening Social Fabric: Engaging diverse stakeholders strengthens the social fabric of communities. By involving residents, businesses, and organizations from various backgrounds, planners contribute to community cohesion. This collaborative approach promotes social connections and shared responsibility for the city's well-being.

Responsive Urban Design: Diverse perspectives contribute to responsive urban design that addresses the unique needs of different demographic groups. For

example, considering the perspectives of elderly residents can lead to the creation of age-friendly public spaces and infrastructure, enhancing the overall livability of the urban environment for seniors.

2.1.2.3 Stakeholder Involvement and Engagement

Stakeholder involvement and engagement in urban planning represent pivotal aspects of the decision-making process, emphasizing inclusivity, collaboration, and responsiveness to community needs. The initial step involves identifying diverse stakeholders, encompassing residents, businesses, governmental bodies, and advocacy groups. This inclusivity extends to public consultations, workshops, and collaborative visioning sessions, providing forums for stakeholders to express opinions and contribute to the decision-making process transparently. Impact assessments are conducted to understand the potential effects of urban developments, considering social, economic, and environmental dimensions. Stakeholder involvement prioritizes accessibility and inclusiveness, ensuring engagement across diverse demographic groups through online platforms and digital tools. The process is adaptive and iterative, with planners incorporating feedback continuously to evolve plans responsively. Capacity-building initiatives empower stakeholders with the knowledge to participate actively, while feedback loops and conflict resolution mechanisms contribute to transparent and collaborative urban planning. Ultimately, stakeholder involvement ensures that urban development decisions align with the community's collective aspirations, fostering the creation of resilient and well-balanced cities.

2.1.2.4 Role of Different Stakeholders

The role of different stakeholders in urban development is integral to the planning, implementation, and success of projects. Various entities with distinct interests and perspectives contribute to shaping the urban landscape. Here is an exploration of the roles of different stakeholders:

(1) Residents: Residents are primary stakeholders whose well-being is directly affected by urban development. Their role involves providing input on community needs, participating in public consultations, and actively engaging in decision-making processes. Residents contribute to the social fabric of neighborhoods and are vital advocates for community interests.

(2) Local Businesses: Local businesses play a crucial role in urban development by contributing to economic vitality. They provide employment opportunities, contribute to the local economy, and influence the commercial character of the area. Stakeholder engagement with businesses ensures urban planning aligns with economic sustainability and the business community's needs.

(3) City Planners and Officials: City planners and officials are responsible for defining the vision and goals of urban development. They lead in formulating policies, zoning regulations, and long-term plans. Engaging with city planners ensures that projects align with the overall urban development strategy and adhere to regulatory frameworks.

(4) Environmental Advocates: Environmental advocates are stakeholders who champion sustainability and the protection of natural resources. Their role involves advocating for green initiatives, promoting eco-friendly practices, and influencing urban planning decisions prioritizing environmental conservation and resilience.

(5) Transportation Authorities: Transportation authorities contribute to developing efficient and sustainable mobility solutions. Their role involves planning and implementing transportation infrastructure, promoting public transit, and ensuring connectivity. Stakeholder engagement with transportation authorities is crucial for addressing mobility needs and minimizing environmental impacts.

(6) Nonprofit Organizations: Organizations often represent social causes and advocate for community well-being. Their role includes addressing social issues, championing inclusivity, and contributing to the overall welfare of the population. Stakeholder engagement with nonprofits ensures that urban development projects consider social equity and community welfare.

(7) Developers and Investors: Developers and investors play a pivotal role in implementing urban projects. Their work involves financing, designing, and constructing developments. Stakeholder engagement with developers ensures that projects are financially viable, meet market demands, and align with community expectations.

(8) Academia and Researchers: Academia and researchers contribute to urban development by providing expertise, conducting studies, and offering insights into innovative solutions. Their role involves generating knowledge that informs

evidence-based decision-making. Stakeholder engagement with academia enriches the planning process with research-driven perspectives.

(9) Cultural and Heritage Advocates: Cultural and heritage advocates focus on preserving and promoting cultural identity and historical assets within urban areas. Their role involves safeguarding landmarks, traditions, and architectural heritage. Stakeholder engagement with cultural advocates ensures that urban development respects and celebrates a city's unique cultural heritage.

(10) Public Interest Groups: Public interest groups represent the collective voice of citizens and advocate for broader public goods. Their role includes addressing education, healthcare, and social services issues. Stakeholder engagement with public interest groups ensures that urban development projects consider the broader well-being of the community.

(11) Residents of Marginalized Communities: Residents of marginalized communities often face specific challenges that require targeted urban planning solutions. Their role involves advocating for social justice and inclusivity and addressing disparities. Stakeholder engagement with these communities ensures that urban development projects prioritize equity and inclusion.

2.1.2.5 Engagement Models in Planning

Urban planning relies on engagement models to involve stakeholders, residents, and community members in decision-making processes, fostering inclusivity and transparency. One traditional model is public hearings, where stakeholders express their opinions on proposed projects, providing valuable input for decision-makers. Community workshops and charrettes offer a more collaborative approach, bringing residents, planners, and designers together in intensive sessions to brainstorm ideas and design solutions, encouraging creativity and direct interaction.

Online platforms and surveys have become increasingly popular, leveraging digital tools to engage a wider audience. These platforms, including surveys, discussion forums, and interactive maps, allow residents to provide feedback conveniently, ensuring broader participation and inclusiveness in planning. Participatory GIS integrates technology with public engagement, enabling community members to map their preferences and concerns directly onto a digital map, providing spatial data that informs planning decisions.

Community advisory committees establish ongoing collaboration, forming groups of diverse stakeholders who meet regularly to discuss and recommend solutions for planning issues. This model serves as a liaison between the community and planners, ensuring sustained input. Deliberative democracy forums create structured environments for in-depth discussions, providing participants with information and facilitating collective decision-making on complex urban issues.

Tactical urbanism and pilot projects bring planning ideas to life through small-scale, temporary interventions. Based on community input, these initiatives allow residents to experience proposed changes and provide valuable real-world feedback, building support for more significant initiatives. Social media engagement leverages platforms like Facebook, Twitter, and Instagram to share information, conduct polls, and foster discussions. This approach facilitates real-time interaction, reaching a broad audience, particularly the younger demographic, and creating awareness about planning initiatives.

Equity-centered engagement focuses on involving traditionally marginalized or underrepresented communities. This model employs intentional outreach, culturally sensitive approaches, and accessible methods to ensure that the engagement process addresses historical disparities. By prioritizing inclusivity, equity-centered engagement models strive to amplify the voices of communities that have historically been marginalized in urban planning processes. In summary, the selection of engagement models is context-dependent, with planners often combining multiple approaches to create effective, inclusive, and community-driven urban development projects.

2.1.2.6 Impact of Stakeholder Participation on Project Success

The impact of stakeholder participation on project success in urban planning is significant and multifaceted. Meaningful engagement with stakeholders, including residents, businesses, and community organizations, can significantly influence the outcome and sustainability of urban development projects. Here are key ways in which participation contributes to project success:

(1) Informed Decision-Making

Stakeholder participation ensures decision-makers comprehensively understand community needs, preferences, and concerns. By incorporating diverse

perspectives, planners can make more informed decisions that align with the priorities of the people directly affected by the project.

(2) Increased Legitimacy and Acceptance

Projects with robust stakeholder participation often enjoy higher levels of legitimacy and acceptance within the community. When residents and stakeholders are actively involved in the planning process, they are more likely to support and embrace the outcomes, leading to smoother implementation and reduced opposition.

(3) Identification of Relevant Issues

Participation helps identify relevant issues and challenges that might not be apparent through traditional planning approaches. Through diverse experiences, stakeholders can bring attention to specific concerns, ensuring that urban development projects address the community's most pressing needs.

(4) Community Ownership and Empowerment

Engaging stakeholders fosters a sense of community ownership and empowerment. When residents actively participate in decision-making, they feel a greater connection to the project and a sense of responsibility for its success. This empowerment can lead to sustained community involvement even after project completion.

(5) Improved Project Design and Functionality

Stakeholder input contributes to the design and functionality of urban projects. For example, involving residents in the design of public spaces ensures that these areas are tailored to community preferences and needs. This results in projects that better serve the intended purpose and are more responsive to the local context.

(6) Conflict Resolution and Mitigation

Early and continuous engagement with stakeholders allows for the identification and resolution of potential conflicts. By addressing concerns proactively, planners can mitigate opposition and navigate challenges before they escalate, contributing to the project's overall success and efficiency.

(7) Enhanced Innovation and Creativity

Stakeholder participation promotes innovation and creativity in urban planning. By involving diverse voices, planners can tap into a wealth of ideas and

solutions. Collaborative approaches, such as design charrettes, can lead to innovative urban designs that resonate with the community.

(8) Long-Term Sustainability

Projects that consider stakeholder input are more likely to be sustainable in the long term. Residents' active involvement ensures that projects align with the community's values and are designed to meet evolving needs, enhancing their durability and relevance over time.

(9) Social and Economic Benefits

Meaningful stakeholder participation contributes to social and economic benefits. By addressing the needs of diverse communities, projects can stimulate economic growth, enhance social well-being, and contribute to a more equitable distribution of resources and opportunities.

2.1.2.7 Stakeholder and Elderly-Friendly Design in Public Spaces

In the context of stakeholder theory, considering the needs of the elderly population is crucial for creating urban spaces that are inclusive and age-friendly. Elderly individuals represent a significant stakeholder group whose input should be integrated into the planning process. Design considerations for an elderly-friendly urban environment include accessible infrastructure, pedestrian-friendly pathways, and public spaces that accommodate diverse mobility needs. Ensuring proximity to healthcare facilities, community centers, and green spaces becomes essential. Stakeholder engagement with older residents allows urban planners to understand their unique requirements, preferences, and challenges, leading to the creation of age-sensitive designs that enhance the overall quality of life for the elderly population. Incorporating elderly-friendly design considerations aligns with the principles of stakeholder theory, recognizing the importance of diverse perspectives for the holistic development of urban spaces.

Within the framework of stakeholder theory in urban planning, incorporating elderly-friendly design considerations is essential for creating cities that cater to the needs of aging populations. The elderly are a significant stakeholder group whose perspectives and requirements should be integrated into urban planning. The following details are key considerations in ensuring elderly-friendly urban design:

Accessible Infrastructure: Elderly-friendly urban design prioritizes accessible infrastructure, including sidewalks, ramps, and pedestrian crossings. Designing streets and public spaces with accessibility features such as tactile paving and curb cuts ensures that older individuals with diverse mobility needs can navigate the urban environment safely and comfortably.

Pedestrian-Friendly Pathways: Creating pedestrian-friendly pathways with benches, resting areas, and clear signage enhances the walking experience for the elderly. Incorporating well-maintained sidewalks, proper lighting, and comfortable seating encourages seniors to engage in outdoor activities and promotes social interactions.

Proximity to Essential Services: Urban planning should consider the proximity of housing to essential services such as healthcare facilities, pharmacies, and community centers. Ensuring that these services are easily accessible by foot or through reliable public transportation is crucial for the convenience and well-being of older residents.

Age-Friendly Public Spaces: Designing public spaces with the elderly in mind involves creating age-friendly parks, plazas, and recreational areas. These spaces should accommodate various levels of physical ability, offering amenities like seating, shade, and facilities for social activities. Engaging elderly stakeholders in the design process helps tailor these spaces to their preferences.

Healthcare Accessibility: Stakeholder theory encourages a focus on healthcare accessibility for the elderly. Planning should involve considering the location of medical facilities, the availability of home healthcare services, and the overall healthcare infrastructure to support the aging population.

Inclusive Housing Design: Elderly-friendly urban planning includes the development of inclusive housing designs. This involves considerations for adaptable homes, age-appropriate amenities, and integrating features that enhance safety and accessibility, such as grab bars and non-slip surfaces.

Community Engagement: Engaging elderly stakeholders in planning fosters a deeper understanding of their unique needs and preferences. Community engagement initiatives, such as workshops and consultations, provide a platform for

seniors to voice their concerns, contributing to more tailored and responsive urban design solutions.

Cultural and Recreational Opportunities: Elderly-friendly design extends to cultural and recreational opportunities. Creating spaces for cultural activities, community events, and age-specific recreational programs promotes social engagement and a sense of belonging among the elderly.

Digital Inclusion: In the digital age, elderly-friendly design should also address digital inclusion. Ensuring that information about city services, events, and programs is available through accessible and user-friendly platforms contributes to the overall communication accessibility for older adults.

2.1.3 Elderly Utilization Patterns of Public Spaces

2.1.3.1 Gerontological Research on Public Space Utilization

Gerontological research on public space utilization underscores the pivotal role of public spaces in shaping the well-being of older adults. A central theme in this research is the recognition of public spaces as key facilitators of social interaction and community engagement for seniors (Buffel et al., 2014). Engaging in social activities in public Spaces enhances well-being and addresses issues of social isolation and loneliness commonly experienced by older individuals. The design and planning of public spaces play a critical role in fostering these connections among the aging population.

Accessibility and inclusivity emerge as essential considerations in gerontological research on public spaces. It is crucial to ensure that public spaces are accessible to individuals with diverse abilities and mobility levels (Wahl et al., 2012). This includes wheelchair accessibility, clear pathways, and amenities like public seating. Creating environments that accommodate age-related changes enhances the utilization of public spaces by a broader demographic of older individuals.

Safety and security perceptions significantly impact older adults' utilization of public spaces. Well-lit and well-maintained spaces contribute to a sense of safety, encouraging seniors to participate in outdoor activities and community events (Curl et al., 2018). Addressing concerns related to personal safety is essential for maximizing the utilization of public spaces by the aging population.

The design of public spaces also influences cognitive and emotional well-being. Access to aesthetically pleasing environments, green spaces, and cultural amenities positively impacts mood and cognitive function (Gonzalez & Kirkevold, 2014). Incorporating these elements into public space design contributes to the overall well-being of older individuals.

Lastly, gerontological research highlights the role of public spaces in fostering community engagement and participation among older adults. Events, markets, and activities held in public spaces allow seniors to contribute to community life, fostering a sense of belonging (Wiles et al., 2012). Designing public spaces with a community-centric approach encourages older individuals to participate actively in public life, promoting a sense of purpose and social connectedness.

2.1.3.2 Aging Theories and Space Usage

Aging theories play a significant role in understanding how older individuals interact with and utilize urban spaces. These theories, such as the socioemotional selectivity and continuity theories, highlight older adults' evolving priorities and preferences as they age. In the context of space usage, these theories inform urban designers about the specific needs and challenges older individuals face.

For instance, socioemotional selectivity theory suggests that as people age, they become more selective in their social interactions, prioritizing emotionally meaningful relationships. In terms of space usage, this may influence the design of public spaces to provide opportunities for socialization, such as benches for conversation or community centers for group activities.

Continuity theory emphasizes the importance of maintaining consistency in one's habits and activities throughout aging. In urban design, this theory suggests that providing familiar and easily navigable spaces supports older adults in maintaining a sense of continuity in their daily routines.

By incorporating insights from aging theories into space planning, urban designers can create environments that align with older individuals' changing needs and preferences, fostering age-friendly cities that promote independence, social engagement, and a high quality of life.

Designing homes and neighborhoods to support aging in place, allowing individuals to remain in their homes comfortably and safely as they age. "Aging in

Place" is a fundamental concept within elderly-friendly design that emphasizes enabling older individuals to continue living in their own homes or communities comfortably and safely as they age. When applied to public spaces, this principle extends beyond the home environment to include communal areas. Here are some specific details about how "Aging in Place" is integrated into an elderly-friendly design for public spaces:

Accessible Infrastructure: Public spaces designed with Aging in Place in mind prioritize features like ramp access, curb cuts, and smooth, non-slip pathways to facilitate ease of movement for older individuals using mobility aids like wheelchairs, walkers, or canes.

Seating and Rest Areas: Adequate seating is strategically placed throughout the public space to offer opportunities for rest. These seating areas are designed with comfortable, supportive benches or chairs that allow older individuals to take breaks during their visit.

Accessible Amenities: Restrooms, water fountains, and public phones are thoughtfully located and designed to be easily accessible for individuals with mobility or other impairments.

Wayfinding and Signage: Clear and concise signage with large, legible fonts and well-contrasted colors is essential for helping older adults navigate public spaces independently. This includes directional signs, maps, and labels for different areas within space.

Lighting and Visibility: Adequate and well-designed lighting is crucial for safety and visibility, especially for older individuals with reduced vision. Lighting should be evenly distributed, glare minimized, and pathways well-lit to enhance visibility day and night.

Public Transportation Accessibility: Public spaces integrated with Aging Place considerations should be located near or provide easy access to public transportation options. This ensures that older individuals can easily reach and enjoy space without facing transportation barriers.

Cultural and Recreational Programming: Public spaces should offer a diverse range of cultural and recreational activities that cater to the interests and needs

of older adults. This may include exercise classes, cultural events, educational workshops, and social gatherings.

Health and Wellness Features: Spaces may include facilities for health-related activities, such as exercise stations, walking paths, or spaces for group fitness classes. These amenities promote physical well-being and active aging.

Social Interaction Opportunities: Design elements that encourage social interaction, such as seating clusters, communal gathering spaces, and activities tailored to older individuals, help foster a sense of community and connection.

2.1.3.3 Gerontological Theories and Urban Environmental Interactions

Gerontological theories, which explore the aging process and its implications for individuals and societies, intersect with urban environmental interactions to shape the experiences of older adults within city landscapes. Theories such as the "Aging in Place" model emphasize the importance of creating age-friendly urban environments that support older adults' independence and well-being. These theories highlight the significance of accessibility, walkability, and social connectivity in urban design to facilitate active aging. Understanding the socio-psychological aspects of aging, gerontological theories inform the development of urban spaces that consider the diverse needs of older populations, promoting a sense of belonging, health, and community engagement within the dynamic fabric of the city. Integrating these theories into urban planning frameworks creates environments that foster positive aging experiences and enhance the overall quality of life for older individuals in urban settings.

The interaction between aging and urban environments is a dynamic and multifaceted phenomenon encompassing various physical, social, and economic dimensions. This interaction influences the well-being, quality of life, and overall experiences of older adults living in cities. Here are key facets of the interaction between aging and urban environments:

Physical Accessibility: The interaction between aging and urban environments is profoundly reflected in cities' physical accessibility for older adults. Urban infrastructure design, including sidewalks, public transportation, and buildings, is pivotal in accommodating seniors' diverse physical abilities. Cities prioritizing age-

friendly public spaces, such as well-designed parks and recreational areas, contribute to older adults' overall mobility and engagement within the urban landscape.

Housing and Neighborhoods: The dynamics of aging and urban environments are intricately linked to housing and neighborhoods. Urban areas that prioritize adaptable and age-friendly housing options create environments conducive to aging in place for older adults. Considerations for accessibility, safety, and proximity to essential services play a crucial role. Mixed-use development in neighborhoods, combining residential and commercial spaces, enhances convenience and contributes to the overall livability of seniors.

Social Inclusion and Community Engagement: In the context of aging and urban environments, the social fabric of cities is significantly influenced by the design of public spaces and community centers. Thoughtful urban planning fosters social inclusion by creating accessible and inviting spaces that become hubs for social activities, events, and connections among older adults. Events and cultural activities tailored to the interests and needs of seniors further contribute to their active participation in the community.

Healthcare and Support Services: The interaction between aging and urban environments manifests in the accessibility of healthcare and support services. Strategic urban planning ensures that healthcare facilities are conveniently located and easily reachable for older adults. Additionally, considerations for home healthcare services support aging in place, allowing seniors to receive necessary medical assistance within the comfort of their urban residences.

Safety and Security: The safety and security of older adults navigating urban environments are crucial aspects influenced by the interaction between aging and city planning. Urban safety measures, including well-lit streets, visible signage, and security features, contribute significantly to seniors' well-being and sense of security. Planning for a secure urban environment is integral to creating age-friendly cities.

Transportation: The interaction between aging and urban environments is notably observed in transportation. The accessibility of public transportation, coupled with age-friendly options such as low-floor buses and paratransit services, directly impacts the mobility of older adults. Urban planning plays a key role in creating transportation systems that cater to the diverse needs of an aging population.

Civic Engagement and Employment: Civic engagement and employment opportunities are vital to aging and urban environments. Urban planning that facilitates civic engagement through accessible public spaces and events contributes to the active participation of older adults in community life. Additionally, age-inclusive employment opportunities, supported by considerations such as accessible workplaces and flexible schedules, enhance the economic well-being of older adults.

Communication and Information Accessibility: The intersection of aging and urban environments extends to communication and information accessibility. In an era of increasing digital communication, urban planning needs to address digital inclusion. Ensuring that information about city services, events, and programs is available through accessible platforms contributes to overall communication accessibility for older adults, keeping them informed and engaged within the urban context.

2.1.3.4 Healthcare and Assisted Living Facilities

Designing healthcare facilities with features that cater to the needs of older patients, such as comfortable waiting areas, clear signage, and easy access to medical services. In elderly-friendly design, healthcare and assisted living facilities are crucial in providing specialized care and support for older individuals. These facilities have various features and considerations to ensure residents' and patients' well-being, safety, and comfort. Here are some key aspects of the elderly-friendly design for healthcare and assisted living facilities:

Accessibility and Mobility: Entrances, hallways, and rooms are designed with wide pathways, ramps, and elevators to accommodate wheelchairs and mobility aids. Handrails and grab bars are strategically placed to assist with movement.

Safety Measures: Fall prevention is a significant concern in healthcare settings. Non-slip flooring, well-maintained surfaces, and proper lighting are implemented to reduce the risk of accidents. Additionally, emergency response systems are in place for immediate assistance.

Comfortable Furnishings: Furniture is chosen for comfort and ease of use. Adjustable beds, supportive chairs, and other furnishings cater to the specific needs of elderly residents.

Clear Signage and Wayfinding: Clear, legible signage with high-contrast text and pictograms helps residents and visitors navigate the facility easily. Signage indicating locations of rooms, services, and exits is strategically placed.

Sensory Considerations: Adequate lighting and contrasting colors enhance visibility, while appropriate acoustic design helps reduce noise levels and improve communication for those with hearing impairments.

Adaptive Technology: Smart technologies may be integrated to assist residents with daily tasks, such as voice-activated controls for lights, temperature, and communication.

Calm and Relaxation Areas: Designated spaces for relaxation and quiet reflection are included, often with comfortable seating, natural elements like plants, and calming colors to create a soothing environment.

Therapeutic and Wellness Spaces: Facilities may offer physical therapy rooms, sensory gardens, and spaces for group activities and exercise programs to support residents' physical and mental well-being.

Private Outdoor Spaces: Access to outdoor areas with comfortable seating, shade, and well-maintained pathways allows residents to enjoy nature and fresh air safely and securely.

Well-Designed Restrooms: Restrooms are equipped with raised toilets, grab bars, and non-slip flooring to ensure safety and ease of use.

Community and Social Areas: Common areas are designed to encourage social interaction and engagement among residents. These spaces may include lounges, dining areas, and communal activity rooms.

Security and Surveillance: Security measures, such as controlled access points and surveillance systems, are implemented to ensure the safety and well-being of residents and staff.

Inclusive Amenities: Amenities like libraries, recreation areas, and communal kitchens promote community and enable residents to engage in various activities.

2.1.3.5 Socio-Spatial Dynamics in Urban Design

Socio-spatial dynamics in urban design refer to the intricate interplay between social factors and the physical layout of urban spaces. This perspective

recognizes that the built environment profoundly influences social behaviors, interactions, and community dynamics. In urban planning, socio-spatial dynamics involve understanding how spatial configurations, land use patterns, and architectural designs impact social relationships, inclusivity, and the overall well-being of residents. This approach emphasizes creating environments that promote social equity, community cohesion, and a sense of place. By considering socio-spatial dynamics, urban designers can contribute to developing inclusive and vibrant urban spaces that cater to the population's diverse needs, fostering a sense of belonging and social interaction within the urban fabric.

2.1.3.6 Socio-Spatial Theory Relevance

The relevance of socio-spatial theory lies in its capacity to provide a comprehensive framework for understanding the intricate relationship between social dynamics and spatial configurations within urban design. This theory emphasizes that the physical layout of urban spaces is not merely a backdrop but a dynamic force shaping social behaviors, interactions, and community dynamics. By examining how individuals and communities engage with their surroundings, socio-spatial theory offers insights into creating inclusive and accessible urban environments. Understanding how different socio-economic, cultural, and demographic factors intersect with spatial design helps planners and designers make informed decisions to enhance social equity, community well-being, and urban livability. Applying socio-spatial theory in urban design facilitates a holistic approach that considers both the tangible and intangible aspects of the built environment, contributing to creating resilient, socially vibrant, and sustainable cities.

2.1.3.7 Social Interaction and Spatial Configurations

The relationship between social interaction and spatial configurations is a critical aspect of socio-spatial dynamics in urban design. This dimension delves into how urban spaces' physical layout and organization influence the frequency and nature of social encounters among residents. Social interaction is profoundly shaped by spatial elements such as the arrangement of public spaces, pathways, gathering points, and the accessibility of amenities. A well-designed urban environment encourages spontaneous and planned social engagements, fostering a sense of community and shared experiences. Conversely, poorly planned spatial configurations can lead to social

isolation or hinder opportunities for meaningful interactions. Considering social interaction in spatial design allows urban planners to create environments that facilitate community engagement, strengthen social ties, and contribute to the overall well-being of residents, promoting a more socially connected and cohesive urban fabric.

2.1.3.8 Designing Social Engagement

Designing social engagement in urban environments involves creating spaces that foster meaningful interactions, community connectivity, and a sense of belonging. This aspect of socio-spatial dynamics in urban design recognizes that public spaces' physical layout and features significantly influence social behaviors. Seating arrangements, communal areas, and mixed-use zoning can be strategically incorporated to encourage people to gather, communicate, and collaborate. Planners may integrate cultural and recreational amenities, organize events, and provide accessible infrastructure to enhance social engagement. By prioritizing inclusivity and considering diverse needs, urban designers contribute to developing environments that accommodate daily activities and serve as platforms for social interaction, ultimately cultivating a vibrant and socially connected urban community.

2.1.3.9 Universal Design Principles

Applying universal design concepts that benefit people of all ages and abilities, not just the elderly, to create inclusive environments. Universal Design Principles in elderly-friendly design for public spaces aim to create environments that are accessible and usable by people of all ages and abilities, including older individuals. These principles are focused on inclusiveness and ensuring that public spaces are welcoming and functional for everyone. Here are some key Universal Design Principles in the context of elderly-friendly design:

Equitable Use: Ensuring that people with diverse abilities can use public spaces. For example, seating options for various heights and types should accommodate different physical needs.

Flexibility in Use: Design spaces to accommodate various preferences and abilities. This could involve providing traditional seating and benches with backrests to accommodate individuals with different mobility levels.

Simple and Intuitive Use: Making the design of public spaces straightforward and easy to understand, minimizing the need for instructions or special

training. This might include clear signage, intuitive layouts, and easily identifiable pathways.

Perceptible Information: Ensuring that information is presented in a way that can be easily perceived by all individuals, regardless of their sensory abilities. This could involve using clear visual cues, tactile elements, and audible information.

Tolerance for Error means designing public spaces with features that minimize hazards and the adverse consequences of accidents or mistakes. For example, using slip-resistant flooring reduces the risk of slips and falls.

Low Physical Effort: Designing spaces to minimize the physical effort required to access and use them. This may involve providing well-designed, easy-to-use seating, ramps, and other amenities.

Size and Space for Approach and Use: Ensuring that public spaces have sufficient room for individuals to approach and use them comfortably. For example, providing broad, unobstructed pathways to accommodate mobility aids like wheelchairs or walkers.

A Community Approach involves considering the diverse needs and preferences of the community, including older individuals, and involving them in the design process to ensure that public spaces meet their requirements.

Integration with Technology: Incorporating technology that can assist with accessibility, such as automated doors, wayfinding apps, and assistive devices that cater to a wide range of needs.

Sustainability and Durability: Designing public spaces with materials and features that are sustainable, durable, and easy to maintain, ensuring that they remain accessible and functional over time.

2.1.3.10 Community Engagement

Involving the elderly community in the design process to understand their specific needs and preferences, ensuring that the spaces genuinely cater to their requirements. Community engagement in elderly-friendly design for public spaces involves involving older individuals and the broader community in planning, developing, and assessing public spaces to ensure they meet seniors' needs and preferences. This process recognizes that the elderly possess valuable insights and

experiences that can contribute to creating inclusive and functional spaces. Here are some key aspects of community engagement in elderly-friendly design:

Needs Assessment Surveys and Workshops: Organizing surveys and workshops that directly engage older residents to gather information about their specific requirements, preferences, and challenges related to public spaces. This could cover seating arrangements, accessibility features, lighting, and recreational amenities.

Focus Groups and Advisory Committees: Forming focus groups or advisory committees comprised of older individuals, community leaders, and designers to discuss and provide input on the design of public spaces. These forums offer a platform for open dialogue and the exchange of ideas.

Site Walks and Observations: Conduct site visits with older residents to evaluate existing public spaces and identify areas for improvement. This hands-on approach allows direct feedback on the current conditions and potential enhancements.

Interactive Design Charrettes: Hosting design charrettes or workshops that encourage active participation from the community in the conceptualization and planning of public spaces. This collaborative process enables residents to contribute design ideas and envision the desired space features.

Informational Meetings and Public Forums: Organizing meetings or forums where designers, planners, and community members discuss proposed designs, gather feedback, and address concerns. These events promote transparency and create opportunities for constructive dialogue.

Pilot Projects and Temporary Installations: Implementing small-scale, temporary interventions in public spaces based on community input. These pilot projects serve as tangible examples of potential improvements and allow for real-time feedback from residents.

Digital Engagement Platforms: Utilizing online platforms, surveys, and social media to reach a wider audience and gather input from older individuals with mobility constraints or who prefer digital communication.

Feedback Loops and Iterative Design: Establishing mechanisms for ongoing feedback and communication throughout the design and implementation process. This ensures that the evolving needs of the community are considered and addressed.

Cultural Sensitivity and Inclusivity: This includes acknowledging older residents' diverse backgrounds and experiences and ensuring the design process is culturally sensitive and inclusive of all voices.

2.1.4 Quality of Life and Public Spaces

The connection between public spaces and urban environments' overall quality of life is profound. Well-designed public spaces, fostering social interaction and community engagement, contribute significantly to residents' sense of belonging and cohesion. Accessibility measures, including ramps and designated seating, enhance inclusivity, positively impacting the satisfaction of diverse individuals. Green spaces within urban areas directly influence mental well-being, providing residents with opportunities for relaxation and recreation. Prioritizing safety, cultural and recreational amenities, economic viability, and environmental sustainability in public spaces collectively contribute to an enriched urban experience, promoting a higher quality of life. Thoughtful urban planning that considers these factors ensures that public spaces become integral to residents' well-being, satisfaction, and overall sense of community.

The connection between public spaces and the quality of life in urban environments is fundamental, shaping the well-being and satisfaction of residents. Public spaces serve as dynamic hubs where social interactions flourish, fostering a sense of community and belonging. The accessibility and inclusivity of these spaces, marked by features like ramps and designated seating, contribute to a more equitable experience for diverse individuals, positively influencing overall satisfaction. Green spaces within urban landscapes enhance mental well-being, providing serene environments for relaxation and recreation. Furthermore, public spaces prioritizing safety, cultural and recreational amenities, economic vitality, and environmental sustainability contribute to an enriched urban experience. This holistic approach to urban planning ensures that public spaces become integral components in enhancing residents' quality of life, creating environments that promote a vibrant community, physical and mental well-being, and a deep connection to the urban fabric.

The urban quality of life results from man's interaction with the urban environment (Das, 2008). The satisfaction level with the urban environment is one of the indicators of quality of life (Nasution, 2018). One of the urban environment's elements is public open space. Thus, the satisfaction level of public open space

influences satisfaction with the urban environment and affects people's quality of life. Public open space, both as a physical structure and a place for many kinds of activities, significantly benefits the quality of life, especially in fulfilling people's needs for health, recreation, and a high-quality urban environment. Trees and gardens as public open space features may give relaxation and restoration effects just by being seen (Ulrich, 1984) and decreasing stress (Nasution, 2018). As a place for many activities, public open space provides some advantages for quality of life, such as psychological and physical health, recreation benefits, and the fulfillment of the need for a pleasant urban environment (Maller et al., 2009; Kaplan & Kaplan, 2009).

2.1.4.1 Elderly Needs and Preferences for Public Space

Meeting the needs of the elderly in public spaces is a multifaceted endeavor that requires careful consideration of various factors. First and foremost, accessibility is paramount. By universal design principles, wheelchair-accessible paths, ramps, and elevators facilitate easy navigation for individuals with varying physical abilities (World Health Organization, 2007). Clear signage with easy-to-read fonts and symbols enhances wayfinding, contributing to a more navigable environment for seniors. Safety measures such as well-lit pathways, handrails, and non-slip surfaces mitigate hazards, creating a secure space for elderly individuals to move freely (Centers for Disease Control and Prevention, 2021).

Seating and rest areas play a crucial role in accommodating the potential fatigue of older individuals. Strategically placed benches and shaded rest spots provide opportunities for relaxation and encourage social interactions among seniors. Incorporating green spaces and relaxation areas further contributes to a serene environment, allowing older individuals to enjoy nature, engage in leisure activities, and socialize. Accessible facilities, including restrooms and recreational areas, ensure that older individuals can comfortably utilize public amenities. Furthermore, accessible public transport options enhance the mobility of seniors within the urban landscape (Chaudhury et al., 2014).

An age-friendly approach extends beyond physical considerations to encompass programming and community engagement. Designing public spaces with age-friendly events and activities in mind fosters social engagement among older individuals. Outdoor fitness classes, cultural events, and recreational programs cater to

the interests and abilities of seniors, promoting a vibrant and inclusive community atmosphere (World Health Organization, 2007). Involving older community members in the planning process ensures their unique needs and preferences are considered. Collecting feedback and insights from seniors fosters a sense of community ownership and inclusivity, reinforcing the idea that public spaces are designed with their well-being in mind (Chaudhury et al., 2014).

Safety from environmental elements is another crucial aspect of creating elderly-friendly public spaces. Designing spaces that offer protection from extreme weather conditions, such as shaded areas, shelters, and well-ventilated spaces, ensures the comfort and safety of older individuals during various seasons (Centers for Disease Control and Prevention, 2021). Lastly, acknowledging the increasing role of technology in the lives of older adults is essential. Integrating technological features, such as smart benches with charging stations or informational kiosks, enhances the experience of older individuals in public spaces, aligning with this demographic's evolving needs and preferences (World Health Organization, 2007).

2.1.4.1.1 Accessibility in Public Spaces

Ensuring accessibility in public spaces stands as a cornerstone in urban planning, profoundly influencing the inclusivity and functionality of the built environment. The concept of accessibility spans beyond mere physical structures, encompassing overall design considerations and policies that impact individuals with diverse abilities. A fundamental aspect is physical accessibility, requiring features like ramps, elevators, and curb cuts to accommodate those with mobility challenges, ensuring safe and independent navigation.

Universal design principles play a pivotal role, emphasizing the creation of environments accessible to people of all ages and abilities without necessitating special accommodations. This involves designing features that are intuitive, flexible, and adaptable. Inclusive signage and wayfinding systems are paramount, employing clear, well-designed signs with Braille, high contrast, and universally understood symbols to aid navigation for everyone.

Public spaces should integrate features to cater to individuals with sensory impairments. This includes providing audio and visual information through auditory signals at crosswalks, visual displays with information in transportation hubs, and other

accessible communication methods. Adequate lighting is critical, enhancing visibility for those with visual impairments and contributing to an overall sense of security.

Creating accessible public transportation is imperative for inclusive public spaces. This involves designing transportation systems with features like low-floor buses, accessible train stations, and audible announcements. Accessibility also extends to social inclusivity, emphasizing the design of spaces that encourage social interaction and engagement for all, with inclusive seating options and communal gathering spaces.

Ensuring compliance with accessibility standards and regulations is crucial. Urban planners must stay informed about local and national guidelines to ensure that public spaces meet legal requirements and provide equal access to all individuals. Additionally, engaging with diverse communities, including advocacy groups and individuals with disabilities, is vital to understanding specific needs and preferences. Continuous evaluation and improvement are ongoing commitments involving regular assessments, user feedback, and adjustments to enhance accessibility over time. In essence, accessibility in public spaces reflects a commitment to creating welcoming, usable, and enjoyable environments for everyone, irrespective of their physical abilities or limitations. Incorporating universal design principles and considering the community's diverse needs contribute to creating truly inclusive and accessible public spaces.

Concept of Accessibility in Urban Design

Accessibility in urban design embodies a commitment to creating inclusive and welcoming environments for everyone, regardless of physical abilities. It extends beyond mere compliance with regulations, emphasizing a holistic approach to design that considers the community's diverse needs. In the context of public spaces, accessibility in urban design encompasses a range of considerations to foster a usable and enjoyable environment for everyone.

Inclusive Physical Infrastructure: At the core of the concept is the development of physical infrastructure that accommodates individuals with diverse mobility challenges. This involves incorporating features such as ramps, elevators, and tactile paving to ensure that public spaces are navigable by individuals with wheelchairs or those who may face difficulties walking.

Universal Design Principles: Universal design principles are fundamental to the concept. This approach advocates for creating spaces that are inherently accessible to people of all ages and abilities. Universal design emphasizes flexibility, adaptability, and intuitive features that cater to a broad spectrum of users without needing specialized accommodations.

Multi-Sensory Considerations: Accessibility in urban design also considers multi-sensory aspects to accommodate individuals with sensory impairments. This involves incorporating audio and visual elements, such as audible signals at crosswalks and well-designed signage with Braille, to enhance navigation and communication for those with visual or hearing challenges.

Inclusive Transportation Systems: Public transportation is a crucial component of urban accessibility. The concept involves designing inclusive transportation systems, with features like low-floor buses, accessible train stations, and announcements that cater to the needs of individuals with disabilities, ensuring seamless and equitable mobility.

Socially Inclusive Spaces: Beyond physical considerations, accessibility in urban design emphasizes the creation of socially inclusive public spaces. This involves designing areas that encouraging social interaction, communal engagement, and a sense of belonging for everyone. Inclusive seating options, communal gathering spaces, and culturally sensitive designs contribute to a socially vibrant environment.

Compliance with Standards: While focusing on creativity and inclusiveness, urban design must align with and surpass accessibility standards and regulations. Compliance ensures that public spaces meet legal requirements, providing a foundation for equitable access and inclusivity.

Engagement with Diverse Communities: An integral part of the concept is the engagement with diverse communities. By actively involving residents, advocacy groups, and individuals with disabilities in the design process, urban planners gain valuable insights into specific needs and preferences, fostering a collaborative approach to accessibility.

Defining Accessibility for the Elderly

Physical Accessibility: Physical accessibility for the elderly is centered on designing spaces that address the mobility challenges commonly associated with aging.

Features like ramps, handrails, elevators, and curb cuts facilitate ease of movement, ensuring that older individuals can navigate public spaces comfortably, especially when using mobility aids such as walkers or wheelchairs. The goal is to create an environment that supports independent movement while minimizing obstacles and providing level surfaces.

Age-Friendly Infrastructure: Age-friendly infrastructure acknowledges the specific needs of older adults in urban planning. This encompasses well-maintained sidewalks, well-lit pathways, and marked crossings to enhance safety. The infrastructure design considers the reduced physical stamina of elderly individuals, offering features conducive to slower walking speeds and seating at regular intervals to provide a more comfortable and leisurely pace.

Sensory Considerations: Sensory considerations in defining accessibility for the elderly involve creating spaces that cater to age-related changes in vision and hearing. Clear signage with larger fonts, high-contrast colors, and adequate lighting enhance visibility. Additionally, incorporating auditory signals at crosswalks and public spaces assists individuals with hearing impairments, ensuring they can navigate and engage with their surroundings effectively.

Cognitive Accessibility: Cognitive accessibility focuses on designing cognitively supportive environments for older adults. This includes transparent wayfinding systems, simple and intuitive designs, and minimizing complex or confusing elements. By ensuring that public spaces are easily navigable and free from cognitive stressors, cognitive accessibility contributes to a positive and stress-free experience for elderly individuals.

Inclusive Public Transportation: Accessibility for the elderly extends to public transportation systems, emphasizing the importance of designing inclusive transportation options that accommodate the needs of older individuals. Features such as low-floor buses, audible announcements, and designated seating for seniors ensure they can engage in community activities and travel independently, promoting mobility and social connectivity.

Social Inclusivity: Social inclusivity involves creating spaces encouraging social interaction and community engagement for the elderly. Designing parks, plazas, and community centers with age-appropriate amenities, seating arrangements, and

spaces for organized social activities fosters a sense of community and belonging. The goal is to create environments that promote social interaction and a sense of community for older individuals, enhancing their overall well-being.

Affordable and Accessible Housing: Accessibility for the elderly extends to housing options, emphasizing the design of affordable and adaptable housing with features such as grab bars, non-slip surfaces, and accessible entrances. This ensures that older individuals can age in place comfortably, maintaining their independence within a living environment that supports their unique needs.

Health and Wellness Facilities: Recognizing the healthcare needs of older adults, accessibility includes providing health and wellness facilities in proximity. The design of healthcare centers, clinics, and recreational areas considers the unique health requirements of the aging population, ensuring that older individuals have convenient access to the resources they need to maintain their well-being. In summary, defining accessibility for the elderly involves a comprehensive approach that considers physical, sensory, and cognitive dimensions, aiming to create environments that promote independence, dignity, and high quality of life for older individuals.

Multidimensional Aspects of Accessibility

Multidimensional aspects of accessibility in urban design encompass a holistic consideration of various factors that influence individuals' ability to access and navigate the built environment. This perspective recognizes that accessibility extends beyond physical mobility and includes social, economic, and sensory dimensions. Social accessibility involves creating environments that are inclusive and accommodate diverse social groups. Economic accessibility considers affordability and the availability of essential services. Sensory accessibility addresses the needs of individuals with different sensory abilities, ensuring that urban spaces are navigable and welcoming. By embracing this multidimensional approach, urban designers can contribute to developing genuinely inclusive and equitable environments, promoting accessibility in their broadest sense and enhancing all residents' overall quality of life.

Physical Accessibility: Physical accessibility forms the foundation of creating inclusive environments with features like ramps, elevators, and tactile paving to ease movement for individuals with mobility challenges. This ensures that public spaces are navigable by all, promoting inclusivity and independence.

Sensory Considerations: Sensory considerations address the needs of those with visual or hearing impairments. This dimension involves designing spaces with clear signage, high-contrast colors, and adequate lighting for improved visibility. Additionally, incorporating auditory signals and accessible information ensures engagement for individuals with sensory challenges.

Cognitive Accessibility: Cognitive accessibility focuses on creating supportive environments for individuals with cognitive impairments or neurodiverse conditions. This involves transparent way-finding systems, simple designs, and minimizing potential stressors to create a user-friendly and comfortable experience for everyone.

Technological Accessibility: In the digital age, technological accessibility is crucial. This dimension ensures that websites, applications, and electronic information are accessible to individuals with disabilities. Features such as screen readers, voice recognition, and adaptable interfaces contribute to technological inclusivity.

Social Inclusivity: Social inclusivity emphasizes creating environments fostering community engagement and interaction. This involves designing public spaces, events, and inclusive and welcoming activities for people of all backgrounds and abilities, promoting a sense of belonging and community cohesion.

Economic Accessibility: Economic accessibility considers financial barriers individuals may face. This dimension involves designing affordable housing and transportation options and ensuring essential services are financially accessible to diverse socioeconomic groups.

Cultural and Linguistic Accessibility: Cultural and linguistic accessibility recognizes diversity, aiming to create environments catering to different cultural backgrounds and languages. This includes providing multilingual signage, culturally sensitive services, and celebrating diversity in public spaces.

Policy and regulatory accessibility ensure that legal frameworks support inclusive design. This involves creating and enforcing policies that prioritize accessibility, setting standards for infrastructure, and promoting inclusivity in urban planning and development.

Environmental Sustainability: Environmental sustainability focuses on creating eco-friendly spaces. This includes designing urban environments prioritizing green infrastructure, energy efficiency, and environmentally conscious practices for a sustainable and accessible future.

Universal Design Principles: Universal design principles are an overarching aspect that threads through various dimensions. This involves designing environments, products, and services that are inherently inclusive and adaptable, catering to a broad spectrum of users without needing specialized accommodation. This comprehensive approach ensures that urban planners and designers create environments that enhance the quality of life for everyone, recognizing diverse needs and challenges.

Impact of Accessible Design on Elderly Mobility

Accessible design plays a pivotal role in enhancing the mobility and overall well-being of the elderly population. By addressing the unique challenges associated with aging, accessible design elements positively impact elderly mobility in various ways:

Improved Physical Accessibility: Accessible design features such as ramps, elevators, and widened pathways improve physical accessibility for the elderly. These elements reduce obstacles and facilitate ease of movement, especially for those using mobility aids like walkers or wheelchairs, promoting independent navigation in public spaces.

Enhanced Safety in Public Spaces: Accessible design emphasizes creating safer public spaces for the elderly. Well-maintained sidewalks, clear signage, and adequately marked crossings contribute to a safer environment, reducing the risk of falls or accidents. This is particularly crucial for elderly individuals with balance or vision issues.

Inclusive Transportation Options: Accessible design in transportation systems, including low-floor buses, designated seating, and audible announcements, ensures that elderly individuals can easily and comfortably utilize public transportation. This enhances their ability to engage in community activities, access healthcare, and maintain social connections.

Age-Friendly Infrastructure: Age-friendly infrastructure, a key aspect of accessible design, considers the specific needs of older adults. Well-lit pathways, benches for resting, and convenient seating intervals acknowledge the elderly's reduced physical stamina, allowing them to move more comfortably while navigating public spaces.

Support for Sensory Impairments: Accessible design addresses sensory considerations, benefiting elderly individuals with visual or hearing impairments. Clear signage with larger fonts, high-contrast colors, and auditory signals at crosswalks improve visibility and orientation, enhancing the mobility experience for those with sensory challenges.

Cognitive Support in Navigation: Accessible design contributes to cognitive support in navigation for the elderly. Transparent wayfinding systems, simple and intuitive designs, and minimized complexity in public spaces reduce cognitive stressors. This ensures elderly individuals can confidently navigate their surroundings, promoting a positive and stress-free experience.

Age-Appropriate Housing: Accessible design extends to housing options, offering age-appropriate features such as grab bars, non-slip surfaces, and accessible entrances. This ensures that the living environment supports the mobility and independence of the elderly, allowing them to age in place comfortably.

Enhanced Social Inclusion: Accessible design fosters social inclusion by creating spaces that encourage community interaction. Parks, plazas, and community centers with age-appropriate amenities and seating arrangements provide opportunities for the elderly to engage in social activities, promoting a sense of belonging and overall well-being.

Psychological Benefits: The impact of accessible design on elderly mobility goes beyond physical considerations. By creating inclusive and accommodating environments, accessible design positively influences the psychological well-being of the elderly. Feeling confident and secure in their ability to navigate public spaces contributes to a more active and engaged lifestyle.

2.1.4.1.2 Accessible Design and Elderly Independence

Accessible design is instrumental in fostering and sustaining the independence of the elderly population, contributing to various aspects of their daily

lives. In living spaces, barrier-free design minimizes physical impediments, allowing seniors to move freely and independently. Features like widened doorways, ramps, and strategically placed grab bars in bathrooms provide the necessary support for activities of daily living, enabling older individuals to age in place confidently.

Public spaces designed with accessibility create safe and navigable environments for the elderly. Well-maintained sidewalks, clear signage, and accessible pedestrian crossings enhance the overall safety of outdoor areas, empowering seniors to engage with their communities without the concern of obstacles or accidents. Accessible transportation options, such as low-floor buses and designated seating, further support elderly independence by facilitating easy access to public transit, enabling seniors to travel independently and participate in various activities.

Age-friendly infrastructure, an integral element of accessible design, considers the specific needs of older adults. With features like benches for resting, well-lit pathways, and strategically placed seating intervals, public spaces accommodate the reduced physical stamina of the elderly, allowing them to navigate comfortably and at their own pace. Sensory considerations, including large-font signage, high-contrast colors, and auditory signals, improve visibility and orientation for seniors with visual or hearing impairments, reinforcing their confidence in interacting with their surroundings.

Accessible design extends to housing, ensuring that living spaces are conducive to aging in place. Non-slip surfaces, accessible entrances, and well-designed interiors cater to the changing needs of the elderly, supporting their independence within the familiar environment of their own homes. The social dimension of accessible design fosters community engagement, with parks, plazas, and community centers featuring age-appropriate amenities and seating arrangements that provide opportunities for social activities, reinforcing a sense of belonging and connection.

Psychologically, accessible design positively impacts the overall well-being of seniors. Environments prioritizing inclusiveness and accommodation contribute to a positive mindset, reinforcing confidence in maintaining an active and independent lifestyle. In essence, the accessible design emerges as a foundational element for promoting elderly independence, creating environments that empower

older individuals to lead fulfilling lives, make independent choices, and remain active members of their communities, as they age.

2.1.4.1.3 Strategies Making Urban Spaces More Inclusive

Strategies to make urban spaces more inclusive include promoting women's right to the city and full symbolic citizenship (Letizia et al., 2023), remodeling public open spaces based on a resilient and adaptive model that meets the diverse needs of citizens (Carmela et al., 2022), experimenting with democratic innovation and civic engagement in urban contexts, particularly involving vulnerable people (Maj et al., 2022), balancing inclusive and exclusive practices in urban gardening initiatives to create shared values and inclusive public spaces (Maria et al., 2022), and adopting strategies that both disperse and include marginalized citizens in urban planning and regulation (Miguel et al., 2021). These strategies aim to broaden the inclusion of citizens in public choices, create more sustainable and inclusive green areas, and foster active citizenship and urban inclusion.

Creating truly inclusive urban spaces requires a thoughtful and comprehensive approach considering the population's diverse needs. By implementing strategies that address various aspects of inclusivity, cities can foster environments that cater to everyone, regardless of age, ability, socio-economic status, or cultural background.

Universal Design: Implement universal design principles to ensure that public spaces are accessible and usable by individuals of all ages and abilities. This includes designing infrastructure, pathways, and amenities that accommodate diverse mobility needs, such as ramps, elevators, and tactile paving.

Participatory Planning: Engage the community in the urban planning process to ensure that the voices of diverse populations are heard. Conduct community workshops, focus groups, and surveys to gather insights into specific needs and preferences, fostering a sense of ownership and inclusion.

Multi-modal Transportation: Develop and enhance multi-modal transportation systems that cater to various mobility preferences. This includes creating pedestrian-friendly pathways, promoting cycling infrastructure, and improving public transit accessibility to accommodate diverse transportation needs.

Inclusive Play Spaces: Design public spaces with inclusive play spaces, especially parks and recreational areas. Ensure that playgrounds are accessible to children with different abilities, providing features such as adaptive swings, sensory elements, and universally designed play equipment.

Cultural Competence Training: Provide cultural competence training for urban planners, architects, and city officials. Understanding diverse cultural norms and preferences is crucial for designing inclusive spaces that respect and celebrate the richness of different cultural backgrounds.

Affordable Housing Initiatives: Implement affordable housing initiatives to address the housing needs of diverse socio-economic groups. Develop housing options that consider income disparities, ensuring that urban development does not lead to the displacement of marginalized communities.

Age-Friendly Infrastructure: Design age-friendly infrastructure that accommodates the needs of the elderly population. This includes features like benches for resting, well-lit pathways, and clear signage. Consider the importance of creating environments that promote active aging and social engagement.

Accessible Information and Communication: Ensure that information about public spaces is communicated in accessible formats. Provide signage with clear visuals, use braille for tactile information, and employ technology for real-time updates and announcements to cater to individuals with diverse communication needs.

Inclusive Public Events: Organize public events celebrating cultural diversity, inclusivity, and community cohesion. Festivals, markets, and cultural gatherings can be platforms to showcase and appreciate the diversity within the community, fostering a sense of unity.

Green Spaces and Mental Well-being: Prioritize creating and preserving green spaces within urban environments. Access to nature positively impacts mental well-being, and inclusive green spaces provide opportunities for relaxation and recreation for people of all backgrounds.

Technology for Accessibility: Leverage technology to enhance accessibility. Implement smart city initiatives that use technology to provide real-time information, navigation assistance, and communication tools for diverse populations, including those with disabilities.

2.1.4.2 Elderly Well-being and Social Inclusion

Incorporating elements that promote physical activity, mental well-being, and social engagement, such as exercise facilities, community centers, and green spaces. Health and wellness considerations in elderly-friendly design for public spaces are critical for supporting older individuals' physical, mental, and social well-being. These design features aim to create environments that promote an active and healthy lifestyle, prevent health issues, and provide relaxation and social engagement opportunities. Here are some specific elements that contribute to health and wellness in elderly-friendly public spaces:

Exercise and Fitness Areas: Incorporating exercise equipment, walking paths, and designated spaces for physical activity encourages seniors to exercise regularly, which is vital for maintaining mobility, strength, and overall health.

Seating and Rest Areas: Providing comfortable seating and rest areas allows older adults to take breaks during their activities, reducing fatigue and promoting a sense of comfort and relaxation.

Accessible Amenities: Ensuring that amenities like restrooms, drinking fountains, and facilities for personal care are easily accessible and designed with features that cater to the needs of older individuals, such as grab bars and non-slip surfaces.

Therapeutic and Sensory Gardens: Designing green spaces with fragrant plants, tactile surfaces, and calming features can provide therapeutic benefits for mental well-being, reducing stress and promoting relaxation.

Shade and Shelter: Offering shaded areas and shelters protects older individuals from extreme weather conditions, allowing them to comfortably enjoy outdoor spaces without overheating or exposure to the elements.

Programming and Activities: Organizing activities, classes, and events specifically tailored for older adults encourages social interaction, mental stimulation, and a sense of belonging within the community.

Integration of Nature: Incorporating natural elements like plants, trees, and water features not only enhances the space's aesthetic appeal but also contributes to a calming and restorative environment, supporting mental health.

Wayfinding and Signage: Clear, easy-to-read signage and wayfinding elements help seniors navigate public spaces confidently, reducing potential stress and anxiety associated with getting lost.

Accessibility for Mobility Aids: Ensuring that pathways, entrances, and facilities are designed to accommodate wheelchairs, walkers, and other mobility aids allows older individuals with physical limitations to move around comfortably and independently.

Safety and Security: Implementing measures like proper lighting, surveillance, and emergency call systems enhances safety and security, reducing potential risks and concerns for older individuals.

2.1.4.2.1 Urban Environmental Influences on Well-being

Urban environments profoundly influence individuals' well-being, shaping physical health, mental health, and overall quality of life. Access to green spaces, such as parks and gardens, has been associated with improved mental health and reduced stress, providing opportunities for relaxation and physical activity (Bowler et al., 2010). However, challenges like air and noise pollution in urban areas can harm respiratory and cardiovascular health, highlighting the need for strategies to mitigate these negative impacts (Stansfeld & Matheson, 2003; World Health Organization, 2018).

Urban design and walkability are pivotal in promoting physical activity, reducing traffic-related stress, and enhancing community connectivity. Well-designed, pedestrian-friendly environments with accessible sidewalks contribute to a more active and healthier population (Sallis et al., 2016). Additionally, social connectivity and community design are crucial factors influencing well-being. Urban planning that fosters social interactions, community engagement, and inclusivity contributes to enhanced well-being by reducing feelings of isolation (Dye, 2008).

Access to healthcare and essential services is another determinant of well-being in urban settings. Proximity to healthcare facilities and educational institutions ensures that residents can access necessary resources, contributing to improved health outcomes (Carpiano, 2009). Similarly, diverse employment opportunities in urban areas positively influence economic well-being, job satisfaction, and overall life satisfaction (Oswald & Wu, 2010).

Safety and security in well-lit urban environments contribute to residents' feelings of comfort and well-being. Enhanced safety measures and reduced crime rates positively impact mental well-being (Gatersleben & Griffin, 2017). Moreover, cultural and recreational opportunities, such as access to events and entertainment options, enhance the overall quality of life in urban settings (Holt et al., 2019).

2.1.4.2.2 Environmental Factors and Well-being

The interplay between environmental factors and well-being is a critical aspect that significantly influences individuals' physical, mental, and emotional states. Various environmental elements contribute to overall well-being, encompassing both natural and built environments:

Natural Green Spaces: Access to natural green spaces, such as parks and gardens, positively impacts well-being. Exposure to nature is associated with reduced stress, improved mood, and enhanced cognitive function. Green spaces offer relaxation, physical activity, and connection with the natural world, contributing to holistic well-being.

Air Quality: Air quality in the environment is crucial to well-being. Poor air quality, characterized by pollutants and allergens, can negatively affect respiratory health and contribute to various health issues. Clean and fresh air, on the other hand, promotes respiratory well-being and overall physical health, influencing a person's sense of comfort and vitality.

Natural Light Exposure: Exposure to natural light is linked to circadian rhythm regulation and mental well-being. Access to natural sunlight has been associated with improved mood, better sleep quality, and increased productivity. Well-lit environments positively influence individuals' energy levels, contributing to a more positive and balanced well-being.

Noise Levels: Environmental noise levels can impact mental health and overall well-being. Excessive noise, such as traffic or construction sounds, is linked to stress, sleep disturbances, and heightened anxiety. Quiet and peaceful environments, in contrast, support mental clarity, relaxation, and a more positive emotional state.

Physical Activity Opportunities: Environments that offer physical activity opportunities contribute to physical and mental well-being. Accessible walking paths, recreational spaces, and bike-friendly infrastructure encourage regular exercise,

promoting cardiovascular health and reducing the risk of chronic conditions. Physical activity is closely linked to improved mood and cognitive function.

Social Connectivity: The built environment design can influence social interactions and community connectivity, impacting individuals' emotional well-being. Spaces that encourage social engagement, such as community centers and gathering places, foster a sense of belonging and support mental health by reducing feelings of isolation.

Architectural Design and Aesthetics: Aesthetically pleasing and well-designed architectural spaces contribute to a positive psychological impact on individuals. Thoughtful design elements, including color schemes, spatial layouts, and visual aesthetics, influence emotional responses and create environments that promote comfort and a sense of tranquility.

Access to Amenities and Services: Proximity to essential amenities and services, such as healthcare facilities, educational institutions, and recreational spaces, is vital for overall well-being. Environments that offer easy access to these resources contribute to a higher quality of life by supporting residents' diverse needs and promoting a sense of security.

2.1.4.2.3 Urban Design, Health, and Happiness

The relationship between urban design, health, and happiness underscores the profound impact of the built environment on individuals' overall well-being. Urban planning and design choices are pivotal in shaping residents' physical, mental, and emotional health, contributing to their sense of happiness. Several key aspects highlight the interconnectedness of urban design with health and happiness:

Walkable and Bike-Friendly Spaces: Urban designs prioritizing walkable neighborhoods and bike-friendly infrastructure contribute to physical health by encouraging active lifestyles. Pedestrian-friendly streets and cycling paths promote exercise, reduce sedentary behaviors, and support cardiovascular health, fostering a sense of well-being and happiness.

Access to Green Spaces: Incorporating green spaces within urban environments enhances mental and emotional well-being. Parks, gardens, and green areas provide residents with spaces for relaxation, stress reduction, and connection with

nature. Access to green spaces has been associated with improved mood, lower levels of anxiety, and increased overall life satisfaction.

Mixed-Use Planning: Mixed-use urban planning, which combines residential, commercial, and recreational spaces, contributes to community vitality and social interactions. Proximity to essential services and amenities reduces the need for extensive commuting, saving time and enhancing convenience. This mixed-use approach fosters community and supports mental well-being by reducing stress associated with long commutes.

Accessible Public Transportation: Well-designed public transportation systems improve physical and mental health. Accessible and efficient public transit options reduce reliance on private vehicles, promote sustainable mobility, and decrease air pollution. Commuting with public transportation can reduce stress levels and enhance overall happiness.

Safety and Security: Urban designs prioritizing safety and security contribute to residents' peace of mind and positively impact mental health. Well-lit streets, clear signage, and secure public spaces create environments where individuals feel safe, reducing anxiety and fostering a sense of happiness within the community.

Inclusive Public Spaces: Inclusive public spaces that cater to diverse needs and abilities contribute to a sense of belonging and community well-being. Plazas, gathering areas, and community centers that accommodate people of all ages and backgrounds foster social connectivity, support mental health, and contribute to overall happiness.

Cultural and Recreational Amenities: Urban designs incorporating cultural and recreational amenities enhance residents' cultural vibrancy and quality of life. The availability of theaters, museums, and recreational facilities provides opportunities for leisure and creative expression, contributing to residents' happiness and overall life satisfaction.

Aesthetic and Sustainable Design: Aesthetic and sustainable urban design contributes to residents' happiness by creating visually pleasing and environmentally conscious environments. Thoughtful architectural elements, green building practices, and aesthetically pleasing public spaces enhance the overall ambiance, positively influencing residents' emotional well-being.

Urban design goes beyond physical infrastructure; it profoundly influences residents' health and happiness. Urban planners can create environments that support a higher quality of life and contribute to the community's overall happiness by prioritizing elements that promote active living, mental well-being, social connectivity, safety, and cultural enrichment.

2.1.4.2.4 Aging, Public Spaces, and Well-being

The intersection of aging, public spaces, and quality of life is a crucial consideration in urban planning, recognizing the evolving needs of older adults. Urban designs that prioritize the well-being of seniors contribute significantly to their overall quality of life:

Age-Friendly Infrastructure: Public spaces designed with age-friendly infrastructure, including accessible pathways, seating areas, and amenities, support the mobility and independence of older adults. This age-sensitive design ensures that public spaces are navigable and comfortable for seniors, enhancing their overall quality of life.

Social Interaction and Inclusion: Public spaces serve as vital hubs for social interaction, and their design should foster inclusiveness for older adults. Well-planned parks, community centers, and gathering places with age-appropriate seating and facilities encourage seniors to engage in social activities, reducing feelings of isolation and enhancing their sense of community and belonging.

Safety and Accessibility: Prioritizing safety and accessibility in public spaces is paramount for the aging population. Features such as well-maintained sidewalks, ramps, clear signage, and adequate lighting contribute to a safe and accessible environment. These measures enhance physical safety and give older adults the confidence to navigate public spaces independently.

Green Spaces and Mental Well-being: Access to green spaces within urban areas positively impacts the mental well-being of older adults. Parks and gardens offer spaces for relaxation, exercise, and connection with nature, contributing to reduced stress levels, improved mood, and an enhanced overall sense of well-being for seniors.

Age-Appropriate Amenities: Public spaces designed with age-appropriate amenities, such as benches, rest areas, and facilities catering to the needs of older adults, support their comfort and convenience. Providing spaces for rest and facilities

accommodating diverse abilities ensures that public spaces are welcoming and accessible for seniors, enhancing their overall experience.

Access to Healthcare and Services: Proximity to healthcare facilities, community services, and essential amenities is crucial for the aging population. Well-planned public spaces that offer convenient access to these resources contribute to older adults' health and quality of life, allowing them to meet their diverse needs without significant challenges.

Community Engagement and Volunteer Opportunities: Designing public spaces that facilitate community engagement and volunteer opportunities for older adults enhances their sense of purpose and social connection. Spaces that host community events, workshops, and activities tailored to seniors' interests contribute to a fulfilling and active lifestyle, positively impacting their quality of life.

Universal Design Principles: Incorporating universal design principles in public spaces ensures inclusivity for individuals of all ages. Features such as curb cuts, tactile paving, and adaptable seating contribute to the accessibility and comfort of public spaces for older adults, aligning with the principles of universal design that benefit everyone.

2.1.4.2.5 Public Spaces with Environmental and Health Impacts

Public spaces in urban environments are vital in mitigating environmental and health impacts, contributing to cities' overall well-being and sustainability. Green public spaces, such as parks, community gardens, and urban forests, provide essential environmental benefits by promoting biodiversity, reducing urban heat islands, and improving air quality. These spaces serve as vital lungs for cities, enhancing urban ecosystems' overall environmental health and resilience. Additionally, public spaces support urban residents' physical and mental health by offering exercise, recreation, and relaxation opportunities. Walkable areas, pedestrian-friendly zones, and well-designed urban landscapes encourage physical activity, contributing to healthier lifestyles and reducing the prevalence of sedentary behaviors. Accessible and well-maintained public spaces also address mental health concerns by providing individuals with a refuge from urban stressors, fostering a sense of tranquility, and promoting social connections. The interconnected role of public spaces in mitigating environmental impacts and

promoting individual and community health underscores their significance in creating sustainable and livable urban environments.

Public spaces in urban environments have both environmental and health impacts. These spaces can provide resources such as job opportunities and cultural diversity but also stressors like crowding and noise pollution, which can affect the well-being of individuals (Müller et al., 2022). Additionally, urban environments expose residents to adverse factors like air pollution and lack of green space, which may contribute to cardiovascular disease and related risk factors (Zhang et al., 2023). Studies have shown that public open spaces play a significant role in people's daily lives and can positively affect physiological and psychological health (Han et al., 2022). Urban green spaces have been found to facilitate social interactions and physical activity and have restorative effects, benefiting mental health (Camară, 2021). However, the distribution and quality of these spaces can vary, leading to exclusion phenomena and disparities in health outcomes (Brambilla et al., 2022). Overall, understanding and improving the environmental and health impacts of public spaces in urban environments is crucial for promoting well-being and creating health-supportive environments.

The key factors that influence the environmental and health impacts of public spaces in urban environments include the built physical environment, personal characteristics, and socio-demographic status (Lak et al., 2023). The built environment, such as the design and quality of public open spaces, can affect physical and mental health outcomes (Zhang et al., 2023). Personal characteristics, including physical, mental, and social dimensions, also play a role in determining the health of individuals in public spaces (Müller et al., 2022). Socio-demographic factors such as gender, marital status, education, occupation, and frequency of being present in public spaces can influence health outcomes (Han et al., 2022). Additionally, location and context, environmental components, and climate stimuli are important factors that impact behavior and health in public open spaces (Faedda et al., 2022). These factors contribute to the overall environmental and health impacts of public spaces in urban environments.

2.1.4.2.6 Economic Implications of Public Spaces

Public spaces in urban environments play a crucial role in influencing the economic dynamics of a city, with various economic implications stemming from their

design, accessibility, and functionality. Well-designed public spaces contribute to the economic vitality of urban areas by attracting businesses, cafes, and markets. Lively public spaces create vibrant urban centers that draw in residents and visitors alike, fostering a sense of community and encouraging commerce. Pedestrian-friendly zones and well-planned public spaces can stimulate local economies by increasing foot traffic and supporting small businesses. The presence of attractive public spaces can also enhance property values and attract real estate investments, contributing to the overall economic development of an area. Furthermore, public spaces serve as venues for cultural events and festivals, attracting tourism and generating revenue for local businesses. The economic implications of public spaces highlight their role in enhancing residents' quality of life and contributing to urban areas' economic sustainability and growth.

Public spaces play a crucial role in supporting and promoting the informal economy, providing flexible workplaces and innovative forms of work. They also facilitate the integration of immigrants into the local economy and foster social capital, leading to better jobs and supportive relationships (Seprini, 2023). The economic value of urbanized public outdoor spaces has been studied, with terms such as public realm and green space being used to describe these spaces. However, the concept of public outdoor space as a public good is complex, as it is often maintained with public funding but may not always be freely accessible (Ozola et al., 2022). Informal economic spaces can be found in public spaces such as low-cost apartment buildings, where food stalls and grocery stores operate. Understanding the correlation between public space and the informal economy is important for planning and developing such spaces (Prayitno et al., 2021). Urban public spaces can potentially strengthen social cohesion, economic development, and the quality of collective life. Proper management of public spaces can enhance citizens' knowledge, skills, and social interactions, leading to economic development, improved health and education, and revitalizing local identities (Zhang, 2022).

2.2 Related Studies

2.2.1 Research Conducted in China

Chen (2023) found that including weatherproof amenities, diverse paving materials, and ample green spaces significantly enhances the usability and attractiveness of outdoor areas for older people. Furthermore, the research highlights the importance of incorporating community fitness equipment and designing activity areas that are accessible and inviting to the elderly population. For spaces dedicated to activities like chess, popular among older community members, the study suggests the need for weatherproof facilities that offer open, hard-surfaced areas conducive to such gatherings. By identifying key elements that promote active and social lifestyles among elderly residents, this study provides practical guidelines for urban planners, architects, and community developers aiming to create inclusive, supportive, and engaging environments for the aging population.

Zhang et al. (2023) explore the optimization of outdoor space elements in urban residential areas in Shenzhen, China, aiming to promote health among the elderly population. Through regression analysis of this data against various spatial element indices, the study identified key factors influencing outdoor health behaviors among the elderly. These factors include the scale and accessibility of outdoor spaces, the size of challenging ground areas, the quality of grey spaces, green visibility, the availability of fitness facilities, and the diversity of site functions. This research advances the understanding of the elderly's spatial needs for engaging in activities such as rest, leisure, communication, and exercise. The findings led to the development of a configuration model for outdoor spaces in residential areas aimed at health promotion. The model proposes a flexible and multilevel configuration list that categorizes seven specific types under three priorities, offering a scientific and effective strategy for optimizing outdoor environments for the elderly. The study overcomes traditional behavioral observation and recording limitations by utilizing the Mangold INTERACT system for data extraction and quantification. This approach sets the stage for future quantitative research on the relationship between the environment and behavior, particularly concerning the elderly population's health and well-being in urban settings.

Fan (2023) addresses the critical issue of designing public spaces in China to meet the needs of an aging population. By focusing on humanized design principles,

the author suggests that public spaces can become more accessible, comfortable, and enjoyable for the elderly, enhancing their quality of life and encouraging active social participation. The research proposes specific design strategies aimed at creating age-friendly public spaces. These include considerations for easy navigation, safety, rest areas, and engaging environments that stimulate both physical and mental activity. The goal is to improve urban public space construction to accommodate the aging population's needs better, fostering a more equitable social environment.

Bu and Wang (2023) focus on addressing the challenges and shortcomings in the design of living spaces within institutional elderly care models, particularly in the context of China's aging population. It highlights the critical issues faced by elderly care institutions, such as poorly designed spatial layouts, lack of functional spaces, and inadequately convenient facilities, all of which negatively impact the daily lives and well-being of older adults. The authors undertake a comprehensive approach combining literature review and field research to tackle these issues. This approach allows for a thorough analysis incorporating older adults' physiological and psychological needs and the pros and cons of existing living spaces in elderly care institutions. By doing so, the study aims to bridge the gap between the current state of care environments and the ideal conditions needed for promoting healthy aging. The paper proposes several key points and strategies grounded in spatial design principles and technical methods for creating age-friendly living environments. These strategies are intended to guide the design of more suitable living spaces catering to the comprehensive needs of older adults in institutional care settings. The recommendations aim to enhance the quality of life for the elderly by ensuring that living spaces are physically accommodating and supportive of their mental and emotional health. Ultimately, this research is valuable for designers, architects, and policymakers planning and developing elderly care facilities. It underscores the importance of adopting age-friendly design principles to foster environments that promote healthy aging and improve the overall care experience for older adults in institutional settings.

Zhang et al. (2023) explore the principles to enhance the quality of public spaces, specifically to promote age-friendly close social interactions among the elderly in urban environments. Key Points are: Population aging is a global challenge, and public spaces in urban areas play a crucial role in facilitating social interactions among

the elderly, incredibly close social interactions. While previous studies have focused on the health of the elderly and urban space design, they have often overlooked the importance of close social behaviors among the elderly. The research conducted a case study in Beijing, focusing on blind dating activities as a form of close social interaction among the elderly. Methods included field surveys and the application of Space Syntax and related tools. The survey involved 102 older men and 84 women aged between 55 and 75 from July 1 to September 30, 2022. The study found that close social interactions positively influence the physical and psychological well-being of the elderly. Close social interactions allow single elderly individuals to meet potential partners, make new friends, and establish new social networks. Proposed Principles for Age-Friendly Urban Areas: Three principles were proposed to improve public space qualities to support age-friendly close social interactions among the elderly: Ensuring the safety of public spaces: 1) Incorporating greenery in the social environment. Moreover, 2) Providing suitable spaces designed for close social interactions. This research highlights the importance of considering the needs of the elderly for close social interactions in urban planning and design. The proposed principles aim to promote the regeneration of social life among the elderly, contributing to their overall well-being and fostering a pursuit of happiness in their later years.

Zhang et al. (2022) investigate the role of urban public spaces in facilitating health-improving social interactions among elderly women within the context of a globally aging population and increasing urbanization. Utilizing a case study approach in Beijing, which included field investigations and both qualitative and quantitative analyses among 240 women aged 55 to 75, the research found that social interactions in public spaces significantly enhance elderly women's physical and psychological well-being, highlighting the crucial role such spaces play in their social participation and overall well-being. The study underscores the necessity of designing urban public spaces that cater to the social interaction needs of elderly women, proposing principles for creating more age-friendly environments that prioritize the interplay between social interaction and well-being.

Ma et al. (2021) investigate the thermal perceptions of elderly visitors in an urban park in Xi'an, China, to inform the design of comfortable open spaces. The research uses meteorological measurements, questionnaire surveys, and activity records

to examine the influence of temperature, clothing insulation, and activity intensity on the elderly's thermal sensation, comfort, and acceptability. The study identifies globe temperature (Tg) and air temperature (Ta) as key meteorological factors affecting thermal sensation while noting the impact of outdoor microclimate, space functionality, and facilities on elderly attendance and activity preferences. The findings reveal a neutral Physiological Equivalent Temperature (NPET) of 13.2 °C, with a comfortable range (NPETR) of 3.1–23.2 °C and a preferred PET of 14.4 °C, suggesting that elderly park users have a lower predicted percentage of dissatisfaction in comfortable outdoor environments compared to indoor spaces. Notably, elderly individuals with respiratory diseases exhibited a higher NPET than those with cardiovascular diseases and diabetes. The study concludes with recommendations for optimizing the design of open spaces tailored to the elderly's physical, physiological, and psychological needs, aiming to enhance their well-being through improved thermal comfort in urban parks.

2.2.2 Research Conducted Overseas

Agost-Felip et al. (2021) introduce a novel approach to evaluating the age-friendliness of urban public spaces, particularly in deprived regions, to support the social inclusion of the elderly. Recognizing the growing challenge of population aging, the study aims to create a model that assesses the vulnerability of public spaces by focusing on the needs of the elderly, using a comprehensive set of indicators derived from a thorough analysis of scientific literature, policy documents, and technical standards concerning accessibility and social factors impacting the elderly in urban settings. The model's validation involved an interjudge agreement technique with a panel of experts across technical and social disciplines. Applied to a vulnerable area in Castellón, East Spain, the model uses expert consensus to weigh indicators, estimating vulnerability across defined dimensions and calculating a global integrated vulnerability index. This work contributes to urban planning by offering a tool to guide decisions towards creating more age-friendly and inclusive urban environments.

Khoddam et al. (2020) examine the adequacy of Gorgan, Iran, in meeting the World Health Organization's age-friendly city criteria from the perspective of its elderly population. Conducted through a cross-sectional study involving 160 elderly participants, the research assessed Gorgan's urban and outdoor buildings, transportation systems, information and communication services, and social support and health

services against WHO standards. The findings revealed that all four indicators scored significantly lower than the WHO recommendations, with the greatest and least discrepancies in "Information and Communication" and "Buildings and Outdoor Space," respectively. The study underscores the necessity for urban planners, managers, and healthcare providers to incorporate the elderly's perspectives in enhancing city infrastructures and services to foster age-friendly urban environments.

Lak et al. (2020) explore the unique needs and preferences of the elderly regarding public open spaces (POSs) in Iranian urban neighborhoods to enhance active aging. Through a mixed-method approach comprising 64 semi-structured interviews and a survey with 420 elderly respondents, the research identifies critical factors affecting older adults' use and enjoyment of POSs. Utilizing Grounded Theory and Partial least squares-Structural Equation Modelling (PLS-SEM) for data analysis, the study highlights the significance of non-physical dimensions such as the social and cultural environment, and a sense of belonging, alongside physical attributes like access to amenities, urban landscape, environmental cleanliness, crime and fall security, and positive elder representation. The findings underscore the importance of incorporating these elements into urban planning and design to create elder-friendly outdoor environments that support the elderly's physical and social needs, offering valuable insights for urban planners, designers, and policymakers.

Rohinikumar (2017) addresses the critical role of urban public spaces in supporting the well-being and quality of life of the elderly against rising life expectancy and an increasingly elderly population. Focusing on the context of New Delhi, where approximately 8% of the population is elderly, this research aims to develop design guidelines that make urban public spaces more elderly-friendly, incorporating an inclusive approach that acknowledges older people's social and physical needs. Through field studies in three urban spaces, the research identifies key indicators— accessibility, comfort, control, and sociability—as essential for evaluating the elderly-friendliness of public spaces. It utilizes surveys, participatory observations, and interviews to gather data, comparing these findings with existing literature to formulate recommendations for designing urban public spaces that cater to the elderly's needs. The dissertation concludes with design considerations to create inclusive environments

for the elderly, enhancing their participation in their communities' social, economic, and cultural life.

Srinaga et al. (2017) explore the integration challenges of Fatahillah Square, a significant historical urban square in Jakarta, regarding its accessibility and comfort for children, the elderly, and individuals with disabilities. Highlighting visual, spatial, and physical comfort issues for visitors, the research aims to propose a design solution that adopts an inclusive, user-centered approach while incorporating theoretical studies on design considerations for children and the elderly. The methodology encompasses building inclusive design parameters through context-led research that assesses Fatahillah Square's quality across three essential components of urban space: hardware (physical infrastructure), software (activities and uses), and orgware (management and organization), followed by the proposition of an inclusive design concept for the square. This work underscores the importance of creating inclusive urban public spaces that cater to the diverse needs of all users, particularly in historically and culturally significant contexts.

Nasution and Zahrah (2018) find that people perceive 'function' as the most significant factor for POS and 'health' as the most important aspect of QOL. Thus, there is a strong correlation between the quality of POS and physical QOL.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Design

This study utilized a quantitative research design. Quantitative research is a scientific study that determines quantitative norms about certain aspects. It is a research methodology and process that derives meaning by expressing problems and phenomena quantitatively and then analyzing, testing, and interpreting them.

Quantitative Analysis: The study employs quantitative techniques alongside qualitative methods, primarily through surveys. These surveys were distributed to a larger sample of elderly residents in various urban micro-districts of Fuzhou. The purpose of these surveys is to:

- Collect data on the frequency and patterns of public space usage among the elderly.

- Gauge the preferences and perceptions of the elderly regarding current public space features.

- Quantify the satisfaction levels and potential demands for improvements in public spaces.

The quantitative data provided statistical evidence to support the findings from qualitative analyses and help identify trends and general attitudes among the elderly.

Data Triangulation: To ensure the reliability and validity of the research findings, this study employed data triangulation, combining insights from both qualitative and quantitative methods. This integrative approach allows for a more comprehensive understanding of the research problem. The triangulation helped corroborate findings across different methods and stakeholder perspectives, enhancing the overall robustness of the study.

Through this postivism approach, the research aims to provide a well-rounded analysis of the current state of elderly-friendly public spaces in Fuzhou, understand the diverse needs and perspectives of the elderly and other stakeholders, and propose practical strategies for optimization. The mechanism of quantitative data

facilitates detailed and holistic understanding, guiding informed recommendations for urban planning and policy interventions.

The scope of this study is meticulously outlined to focus on optimizing elderly-friendly public spaces within specific urban micro-districts of Fuzhou. This study aims to achieve clarity and depth by delimiting the research parameters, addressing several critical areas essential for a nuanced understanding of enhancing public spaces for the elderly population. The precise boundaries and focal points of this research are delineated as follows:

Geographical Focus: The study is geographically concentrated on selected urban micro-districts within Fuzhou, identified based on a combination of demographic composition, urban density, and the prevalence of public spaces. This targeted approach allows for an in-depth examination of the unique urban dynamics and cultural contexts specific to Fuzhou, facilitating a localized understanding of public space optimization in a manner sensitive to regional particularities.

Target Population: The primary research focuses on the elderly population within these micro-districts, explicitly targeting individuals aged 65 and above. The study further narrows this focus to include subsets of the elderly population characterized by varying mobility and health statuses, aiming to explore a broad spectrum of needs and preferences related to public space utilization. Secondary stakeholders, including urban planners, local authorities, community organizations, and local business entities, were also engaged to gather comprehensive public space development and utilization perspectives.

Time Frame: The research was conducted over three months, starting in January 2024, allowing for seasonal variations in public space usage and stakeholder availability for data collection. This defined time frame ensures the research findings are relevant and reflect current conditions and trends.

Public Space Types: This study examined parks, squares, pedestrian walkways, and community centers within the selected micro-districts. These spaces are chosen for their relevance to the elderly population's daily routines and their potential for enhancements to increase elderly friendliness and accessibility.

Methodological Boundaries: Employing a mixed-methods approach, the study integrates qualitative methods (interviews and focus groups) and quantitative

methods (surveys). The research is bound by the inherent limitations of these methods, including the depth and detail attainable through qualitative insights versus the breadth of data achievable via quantitative surveys. Geographical and logistical constraints in data collection were also considered.

Thematic Limitations: While aiming for a comprehensive exploration, the study focuses on urban planning principles, elderly accessibility and mobility, stakeholder involvement in public space management, and quality of life improvements. Broader socio-economic factors and detailed architectural design elements may be acknowledged but not extensively covered within this scope.

Practical Implications: The research is designed to generate actionable insights and inform practical recommendations for Fuzhou urban planners, policymakers, and community leaders. Its scope encompasses the analysis of implementable strategies within the city's existing urban governance and development frameworks.

By precisely defining its scope, the study seeks to contribute targeted and significant insights into optimizing public spaces for the elderly within the urban micro-districts of Fuzhou. This delineation ensures a focused and impactful exploration intended to inform urban planning and elderly care practices within the rapidly urbanizing context of this Chinese metropolis.

Theoretical Framework: The theoretical framework for this study on optimizing elderly-friendly public spaces in urban micro-districts of Fuzhou is constructed upon a foundation of interdisciplinary theories and concepts that span urban planning, gerontology, environmental psychology, and participatory design. This framework serves as a lens through which the research questions are explored, guiding the analysis of data and the development of recommendations. Integrating these theoretical perspectives ensures a holistic understanding of the complex interplay between elderly individuals and their urban environments.

Urban Planning and Sustainable Design: Central to this study is the concept of sustainable urban planning, which emphasizes the creation of spaces that cater to all citizens' needs, promoting inclusiveness and accessibility. As outlined by the World Health Organization, theories related to age-friendly cities provide a foundational principle, suggesting that urban environments should enable people of all

ages to actively participate in community activities and treat everyone with respect, regardless of age. Additionally, concepts from New Urbanism, which advocates walkable neighborhoods, diverse public spaces, and community-oriented urban design, are applied to understand how micro-districts can be optimized for the elderly.

Gerontology and Environmental Gerontology: Gerontology, the study of aging and the challenges faced by the elderly offers insights into the physical, cognitive, and social changes associated with aging. Environmental gerontology focuses on the relationship between elderly individuals and their environments, emphasizing the importance of designing spaces that support aging in place and enhance seniors' quality of life. This perspective helps identify specific design features and amenities that public spaces should incorporate to address the needs of the elderly population.

Environmental Psychology examines the psychological impact of physical environments on human behavior and well-being. Concepts such as place attachment, environmental stressors, and restorative environments are integral to understanding how elderly individuals interact with public spaces. The theory of restorative environments, which posits that specific environments can help reduce stress and improve cognitive function, is particularly relevant for designing public spaces that promote the well-being of the elderly.

Participatory Design: Participatory design emphasizes involving end-users in the design process to ensure that the outcomes meet their needs and preferences. This approach is crucial for creating elderly-friendly public spaces, as it advocates for the active involvement of elderly residents in planning and design decisions. By incorporating their input, urban spaces can be more effectively tailored to support their physical and social needs, fostering a sense of ownership and satisfaction among the elderly community.

Through this theoretical framework, the study aims to explore the optimization of public spaces in Fuzhou's urban micro-districts from a multidimensional perspective. By grounding the research in these theories, it becomes possible to systematically address the needs and preferences of the elderly population, ensuring that urban public spaces are designed to be inclusive, accessible, and conducive to their well-being and active participation in the community. This

framework guides the research methodology and informs the interpretation of findings and the formulation of evidence-based recommendations for urban planning and policy interventions.

3.2 Samples and Sample Size

3.2.1 Population

The population of this research is elderly people in Fuzhou City, Fujian Province, the People's Republic of China. The primary target population includes the elderly residents of Fuzhou City, and the secondary populations include government officials and general citizens for broader perspectives. According to the World Population Review, Fuzhou City, Fujian Province, the People's Republic of China had approximately 3,998,754 people in 2024. Lina and Wu (2023) estimate that elderly people in Fuzhou City, Fujian Province, recorded as about 16.76% (60 and above) or about 11.72% (aged 65 and above). The population of this study based on those aged 60 and above is therefore equal to 639,800 people, that is, (3,998,754*16)/100 = 639,800)

3.2.2 Samples

For this research, a statistical confidence level of 95% has been chosen, which inherently allows for a 5% margin of error. This level is considered suitable for capturing the detailed perceptions and evaluations anticipated in the study, where a moderate to small effect size is expected. Determining the appropriate sample size for this study considers these factors, including the desired confidence level, the anticipated effect size, and the predicted response variability.

The method for calculating the sample size in this study is based on the formula of Yamane (1967), that is, $n = \frac{N}{(1+N)(e^2)}$ Where n represents the sample size, N is the total population, and e is the sampling error at the critical level of 0.05. According to the World Population Review, Fuzhou City, Fujian Province, the People's Republic of China, is estimated at 3,998,754 persons. Therefore, the total sample size is about 400 units, as shown below.

$$n = \frac{N}{(1 + N)(e^2)}$$

$$n = 3{,}998{,}754/(1 + 3{,}998{,}754)(.05^2)$$

$$n = 400$$

3.2.3 Sampling Methods

For this study, the samples were meticulously chosen, ensuring a thorough understanding of their characteristics by the researcher. The convenience sampling technique was employed to determine the sample size, which is particularly effective in capturing a diverse representation from different districts, age groups, and socio-economic backgrounds among the elderly population. This method was selected for its convenience and efficiency in data collection. The choice of this method was driven by its practicality and effectiveness in gathering data.

3.3 Data Collection

Data collection is crucial for acquiring the necessary information to meet the research objectives. This phase employs various methods to collect primary and secondary data relevant to the study's focus on elderly care and public spaces in Fuzhou City.

Selection of Data Sources involves gathering primary data directly from key stakeholders such as the elderly population, caregivers, government officials, and citizens through surveys and questionnaires. Secondly, data collection includes analyzing existing resources like government reports, previous research, and statistical data concerning elderly care in Fuzhou.

Survey and Questionnaire Distribution was conducted online and offline to ensure comprehensive participation across different demographics, with special attention to the elderly. Distribution covered various districts within Fuzhou City to guarantee a representative population sample.

Observational Studies are planned to assess the accessibility and quality of public spaces and elderly care facilities firsthand, providing valuable insights into the current conditions and potential areas for improvement.

Ethical Considerations are paramount. All participants were given informed consent to ensure they were fully aware of the study's purpose and rights.

Confidentiality measures were strictly adhered to, protecting participants' identities and personal information.

Data Recording and Management involved systematic coding and database entry for quantitative data from surveys and questionnaires. In contrast, qualitative data from interviews and focus groups were transcribed and organized thematically.

A Timeline for Data Collection was established to coordinate the process efficiently, considering participants' availability and ensuring a thorough approach to gathering data.

Pilot Testing of survey instruments and interview protocols is essential to identify and rectify any potential issues before the primary data collection phase.

Adjustments for Accessibility are significant given the study's focus on the elderly. These include measures to aid questionnaire completion and enhance the readability of survey materials.

This study aims to collect rich and reliable data by adopting a comprehensive, systematic approach that respects the needs and characteristics of the elderly population in Fuzhou and combining qualitative and quantitative research methods within ethical guidelines. This facilitated a deep understanding of elderly-friendly public space optimization in Fuzhou City, contributing valuable insights to urban planning and elderly care.

3.4 Research Instrument

Research instruments refer to the different ways (Chinese and English language) in which the researcher collects information from the respondents. Researchers can use different measurement instruments for their studies depending on the nature of the research.

A meticulously designed questionnaire forms the core data collection tool in this study. This self-administered questionnaire was distributed to 400 respondents and strategically divided into six key sections to capture a comprehensive range of demographic data. It would be structured to align with the research objectives and

provide insights into the specific behaviors, perceptions, and needs of the target population regarding elderly care services.

The researcher designed a questionnaire consisting of structured questions. The questionnaire must be designed to be valid, reliable, and not spurious so that the data collected can validate the research. This research relies on questionnaires, which are composed of 6 parts. Part one is the Urban Micro-District Characteristics. Part two is based on Elderly Utilization Patterns of Public Spaces. Part three is Stakeholder Involvement. Part four focuses on the characteristics of public spaces. Part 5 is Elderly Needs and Preferences for Public Spaces. Part 6 is Well-being and Social Inclusion.

Initially, this questionnaire was prepared in English. However, the Mainland China survey was conducted in both Chinese and English so that more respondents who only knew Chinese could better understand the substance of the questions. English can also be used to ensure the rigor and accuracy of the survey results.

The questionnaire has a paragraph dedicated to the nature and purpose of this study, which is to encourage more responses. Respondents were informed that their contributions were significant and valuable. In addition, the program is confidential and anonymous. The questionnaire takes only five minutes to complete and reveals no personal information, allowing for more responses. The details of the questionnaires are shown in Appendix 1.

The questionnaire's design is underscored by a commitment to language and cultural sensitivity, ensuring it is appropriately translated and resonates with the local context. An option for optional responses is included, allowing participants to abstain from answering questions they might find uncomfortable. Furthermore, brief explanations or examples are provided where necessary to enhance clarity.

A paramount aspect of the questionnaire design is consent and privacy. It begins with a clear statement outlining the voluntary nature of participation, the confidentiality of the responses, and the overarching purpose of the study. This demographic section of the questionnaire is not merely a collection of data points but a gateway to gaining profound insights into the diverse backgrounds and experiences of the elderly population in Fuzhou City, thereby enriching the overall analysis of the study.

3.5 Reliability and Validity

In research methodology, focusing on the crucial aspects of validity and reliability in measuring research instruments is fundamental as it underpins the trustworthiness and accuracy of research findings. The meticulous design, testing, and evaluation of research instruments regarding validity and reliability are indispensable for ensuring that the findings are robust and replicable and can confidently inform conclusions and policymaking. This attention to detail significantly enhances the study's integrity and credibility, making it a crucial step in the research process.

3.5.1 Validity of the Questionnaires

Validity concerns the extent to which a research instrument accurately measures what it is intended to measure, ensuring the accuracy and credibility of research outcomes. Types of validity include:

- **Content Validity**: Assesses whether the instrument comprehensively covers the topic of interest, established through expert opinions, to ensure all aspects of the concept are measured.

- **Construct Validity**: Examines if the instrument genuinely measures its intended theoretical construction, verified through statistical analyses like factor analysis.

- **Criterion Validity**: Checks the instrument's effectiveness in predicting outcomes or correlating with other relevant measures.

- **Face Validity**: Involves a superficial review to see if the instrument appears to measure what it is supposed to, though it is not a technical measure of validity.

Generally speaking, several steps are typically undertaken for testing validity:

- **Expert Review**: Subject matter experts review the instrument for content validity, ensuring that items are relevant, clear, and culturally appropriate for the target demographic. This is particularly important when considering elderly care and service quality in the socio-cultural context of Fuzhou City.

- **Item Objective Congruence (IOC) Analysis**: This method quantifies how well each item aligns with the research objectives. It benefits multidimensional items that capture various aspects of elderly care and service quality.

- **Pilot Testing**: This involves conducting a preliminary study to test the instrument and adjusting based on the findings.

- **Statistical Testing**: Utilizes statistical methods to evaluate construct validity and internal consistency.

- **Consistent Administration**: Ensures the instrument is administered under similar conditions to maintain reliability.

In this study, the content validity of the questionnaires was tested by IOC (Item-objective Congruence), which is one method for quantitatively measuring content experts' judgments of items to evaluate the fit between test items and the table of specifications.

+1 The question is consistent with the content of the measurement objective.

0 Not sure that the question is consistent with the content of the measurement objective.

-1 The question is not consistent with the content of the measurement objective.

The results of all expert evaluations are used to calculate the IOC index according to the formulas of Rovinelli and Hambleton (1977) as follows:

IOC = $\Sigma R/N$

ΣR = total rating score from all experts for each question

N = number of experts

If the calculated IOC index is greater than or equal to 0.5, it is considered that the questions are measured per the research objectives. Therefore, the questions are chosen. If any question has a value that does not reach the 0.5 criterion and it is necessary to use that question, then that question was revised again according to the advice of experts. The results of IOC can be seen in Appendix 2.

3.5.2 Reliability of the Questionnaires

Reliability relates to the consistency and stability of measurement over time. A reliable instrument yields consistent results under consistent conditions. Types of reliability include:

- **Test-retest reliability:** This method checks consistency in results by administering the same test to the same group at different times.

- **Internal Consistency**: This assesses whether the instrument's items measure the same underlying dimension, often tested using Cronbach's alpha.

- **Inter-rater Reliability**: Measures the consistency in ratings from different observers relevant to qualitative research.

In this study, the reliability test was conducted with 30 participants to assess the consistency and stability of the questionnaires used. Cronbach's alpha coefficient was calculated to evaluate the internal consistency of the scales. Hair et al. (2010) state that Cronbach's alpha value above 0.70 indicates acceptable reliability. The pretest was done using the questionnaires developed to perform reliability tests. The reliability test used Cronbach's alpha to assess the scale's stability and the measurement variables' accuracy. The results of the Reliability test are shown in Appendix 3.

3.6 Data Analysis

The data analysis phase is pivotal in interpreting the collected data to derive insightful conclusions. This section details the methodologies and techniques for analyzing data from diverse sources.

Statistical Analysis involves the application of statistical software tools like SPSS, Stata, or R to process survey data. This includes employing descriptive statistics to summarize the data through means, medians, modes, ranges, and standard deviations. Inferential statistics were used to test hypotheses, employing methods such as t-tests, ANOVA, and regression analysis where relevant. Correlation analysis was conducted to explore relationships between variables, such as age and satisfaction with elderly care services, and to identify response patterns across different demographic groups. Cross-tabulation compares responses across categories, like districts or age groups, highlighting significant differences or similarities.

Ethical Considerations in Data Analysis emphasize the importance of maintaining objectivity, avoiding researcher bias, and ensuring the confidentiality of participant information in reporting results.

Reporting involved strategically using tables, charts, and graphs to present quantitative data effectively. Direct quotes and narratives are incorporated for

qualitative insights. A discussion section interpreted the findings within the broader context of existing literature and the study's specific objectives.

Ultimately, the data analysis for this research is designed to be comprehensive, combining both quantitative and qualitative approaches to gain a deep understanding of elderly care management and service quality in Fuzhou City. By integrating various data types, this analysis aims to provide nuanced insights that can significantly influence policy and practice in elderly care services, ensuring that public spaces are optimized to meet the needs of the elderly population effectively.

3.6.1 Descriptive Statistics

Descriptive statistics comprehensively summarize all the independent and dependent variables listed in the conceptual framework. These statistics were presented in terms of absolute frequency, percent frequency, the arithmetic mean, the standard deviation, the minimum value, and the maximum value. This detailed overview offers valuable insights into the central tendencies and variability within the data, aiding in the characterization of the study sample and laying the groundwork for further analytical exploration.

For Demographic Factors, the absolute frequency and the percent frequency are presented. Concerning Corporate Social Responsibility Perception, Workplace Spirituality, Positive Emotions, and Peripheral Performance, this study introduces the absolute frequency, the percent frequency, the arithmetic mean, and the standard deviation, including the minimum value and the maximum value.

For the arithmetic mean, the results obtained from the Corporate Social Responsibility Perception, the Workplace Spiritual, the Positive Emotions, and the Peripheral Performance are not precisely equal to the discrete number (1, 2, 3, 4, and 5) as classified in the questionnaires. It is calculated in terms of a continuous number with a decimal that has to be interpreted as related to the objective of the questionnaires. This study's criteria for interpreting these means are as follows (Best, 1970).

The arithmetic mean is 1, but less than 1.5 is strongly disagree.

The arithmetic mean is 1.5, but less than 2.5, which is the disagree level.

The arithmetic mean is 2.5, but less than 3.5 is at the neutral level.

The arithmetic mean is 3.5, but less than 4.5, at the agree level.

3.6.2 Inferential Statistics

In inferential statistics, numerous statistics are applied according to the hypothesis.

Hypothesis 1: Differences in Urban Micro-District Characteristics Generate Differences in Quality of Life

-The Independent Samples t-test is used to measure gender.

-One-way ANOVA is applied for other micro-characteristics.

Hypothesis 2: Differences in Elderly Utilization Patterns of Public Spaces Generate Differences in Quality of Life

-One-way ANOVA is applied.

Hypothesis 3: Stakeholder Involvement Influence on Quality of Life.

- Multiple Regression Analysis is used.

Hypothesis 4: Public Spaces Characteristics Influence on Quality of Life.

- Multiple Regression Analysis is used.

CHAPTER IV

ANALYSIS RESULTS

4.1 Descriptive Statistics

The descriptive statistics presented in this chapter consist of the absolute frequency, the percent frequency, the arithmetic mean, and the standard deviation. The absolute frequency and the percent frequency are applied to the Demographic Factors of urban Micro-Districts, Elderly Utilization Behaviour in Public Space, and Stakeholder Involvement. The arithmetic mean and the standard deviation are used for Public Space Characteristics and Quality of Life, including Elderly Needs and Preferences for Public Spaces, elderly Well-being, and Social Inclusion.

4.1.1 Demographic Factors of Urban Micro-District

Table 4.1 The Frequency and Percent Frequency Classified by Demographic Factors

Demographic Factor	Classification	Frequency	% Frequency
1. Gender	Male	192	48.00
	Female	208	52.00
2. Marital Status	Single	104	26.00
	Married	235	58.75
	Divorced	61	15.25
3. Age	60 but less than 65 years old	58	14.50
	65 but less than 70 years old	161	40.25
	70 but less than 75 years old	110	27.50
	75 years old and more	71	17.75
4. Education Background	Junior High School	62	15.50
	High School	86	21.50
	Diploma / Certificate	107	26.75
	Bachelor's Degree	95	23.75
	Master's Degree and Ph.d	50	12.50
5. Residential District	Gulou District	118	29.50
	Cangshan District	135	33.75
	Taijiang District	147	36.75
6. Duration of Residence	Less than 1 year	64	16.00
	1 but less than 5 years	90	22.50
	5 but less than 10 years	129	32.25
	10 years and more	117	29.25
7. Living Arrangement	Alone	75	18.75
	With Partner	63	15.75

Table 4.1 The Frequency and Percent Frequency Classified by Demographic Factors (continued)

Demographic Factor	Classification	Frequency	% Frequency
	With Friends	78	19.50
	With Family	93	22.25
	Others	91	22.75
8. Type of Housing	Shared Residence	79	19.75
	Apartment/Condominium	84	21.00
	Senior Living Facility or Retirement Community	51	12.75
	Single-family Home	99	24.75
	Others	87	21.75
9. Mobility limitation	No	239	59.75
	Yes	161	40.25
	Total	400	100.00

It is evident from Table 4.1 that approximately 52.00% of the respondents in the study are female, while about 48.00% are male. Most respondents in this study are married, recording about 58.75%, followed by single status and divorced, registering around 26.00% and 15.25%, respectively. The age group 65 but less than 70 years old occupies the highest proportion, about 40.25%, followed by the age group 70 but less than 75 years old, 75 years old and more, and 60 but less than 65 years old, registering about 27.50%, 17.75%, and 14.50%, respectively. Concerning educational background, most respondents get a Diploma/Certificate (26.75%), followed by a Bachelor's Degree (23.75%), while very few enjoy a Master's Degree and ph.d (12.50%). Regarding residential districts, most respondents, around 36.75%, are from Taijiang District, while the rest, around 33.75% and 29.50%, are from Cangshan District and Gulou District, respectively. In terms of duration of residence, most occupy 5 but less than 10 years, registering approximately 33.25%, followed by 10 years and more, 1 but less than 5 years, and less than 1 year, recording about 29.25%, 22.50%, and 16.00%, respectively. Concerning living arrangements, most live with a family, accounting for about 22.25%, while the lowest proportion is living with a partner occupying around 15.75%. Regarding the type of housing, single-family homes account for the highest proportion, about 24.75%, while the lowest ratio belongs to senior living facilities or retirement communities. Most respondents, 59.75%, have not encountered movement difficulties, while 40.25% have some movement difficulties.

4.1.2 Elderly Utilization Behaviour on Public Space

Table 4.1 The Frequency and Percent Frequency Classified by Elderly Utilization Behaviour on Public Space

Elderly Utilization Behaviour	Classification	Frequency	% Frequency
10. What Activities You Engage in Public Spaces	Attending Events	44	11.00
	Relaxing	84	21.00
	Walking	87	21.75
	Exercises	97	24.25
	Others	88	22.00
11. How You Usually Visit Public Spaces	On Foot	69	17.25
	Car	83	20.75
	Public Transportation	163	40.75
	Others	85	21.25
12. How Often You Visit Public Spaces	Everyday	70	17.50
	A few Days a Week	80	20.00
	Once a Week	95	23.75
	Once a Month	82	20.50
	Seldomly	73	18.25
13. How Long You Spend in Public Spaces	Less than 1 Hour	64	16.00
	1 But Less Than 3 Hours	98	24.50
	3 But Less Than 5 Hours	113	28.25
	5 Hours and More	125	31.25
14. Who Companies You Visit Public Spaces	Alone	84	21.00
	With Family	92	23.00
	With Friends	75	18.75
	With Caretaker	68	17.00
	Others	81	20.25
	Total	400	100.00

The results in Table 4.2 indicate that most of the respondents, 24.25%, come to public spaces for exercise, followed by other activities (22.00%), walking (21.75%), and relaxing (21.00%), while only 11.00% demand attending events. Approximately 40.75% of the cases come from public transportation, 21.25% from other channels, and 20.75% from cars, while only 17.25% depend on their legs. They mostly enjoy coming once a week, registering around 23.75%, followed by once a month (20.50%), a few days a week (20.00%), and seldom (18.25%), while coming every day occupy only 17.50%. Most of them, approximately 31.25%, spend 5 hours and more, followed by 3 but less than 5 hours, 1 but less than 3 hours, and less than 1 hour, the shares of which are about 28.25%, 24.50%, and 16.00%, respectively. About

23.00% come with family, 21.00% come alone, 18.75% come with friends, and 17.00% come with caretakers.

4.1.3 Stakeholder Involvement in Public Space

Table 4.2 The Frequency and Percent Frequency Classified by Stakeholder Involvement in Public Space

Stakeholder Involvement	Classification	Frequency	% Frequency
15. Sufficient challenges and opportunities are involved in the process of planning and designing public space	Yes	198	49.50
	No	125	31.25
	No Idea	77	19.25
16. Involving in comprehensive problem identification issues	Yes	130	32.50
	No	157	39.25
	Not Sure	113	28.75
17. Providing or addressing the needs of underrepresented or marginalized communities, particularly the issues of Social Equity and Inclusivity	Yes	135	33.75
	No	164	41.00
	Not Sure	101	25.25
18. Voice opinions and contribute to the decision-making process to make public spaces more elderly-friendly.	Yes	189	47.25
	No	141	35.25
	Not Sure	70	17.50
19 Participating in Public Consultations, Workshop, Collaborative Visioning sessions and actively engaging in decision-making processes	Yes	130	32.50
	No	193	48.25
	Not Sure	77	19.25
20. Collaborating with other stakeholders, particularly Local Businesses, Nonprofit Organizations, and others, to improve public space design.	Yes	125	31.25
	No	183	45.75
	Not Sure	92	23.00
21. Participating in any community organization projects focused on enhancing public spaces for the elderly.	Yes	143	35.75
	No	142	35.50
	Not Sure	115	28.75
Total		400	100.00

The results obtained from Table 4.3 reveal that most of the respondents, approximately 49.50%, think that they have sufficient challenges and opportunities involved in the process of planning and designing public spaces, about 32.50% have experience in comprehensive problem identification issues, and around 33.75% used to provide or address the needs of underrepresented or marginalized communities particularly the issues of Social Equity and Inclusivity. Approximately 47.25% have experience voicing opinions and contributing to the decision-making process aimed at making public spaces more elderly-friendly, and 32.50% used to participate in Public Consultations, workshops, Collaborative Visioning sessions, and actively engage in

decision-making processes. Moreover, 31.25% gained experience in collaborating with other stakeholders, particularly Local Businesses, Nonprofit Organizations, and others, in improving the design of public space, and 35.75% used to participate in any community organization projects focused on enhancing public spaces for the elderly.

4.1.4 Public Spaces Characteristics

Table 4.3 The Mean and Standard Deviation of Public Spaces Characteristics

Classification	Mean	Standard Deviation	Mean Rank	Meaning
22. Accessibility	3.7646	.76567	2	High Level
23. Safety Measures	3.7992	.76231	1	High Level
24. Types of Amenities	3.6938	.76828	3	High Level
Overall	3.7525	.68043	-	High Level

As shown in Table 4.4, it is indicated that Safety Measures are the most important aspect of Public Spaces Characteristics, with a mean of about 3.7992, followed by Accessibility and Types of Amenities, the means of which are about 3.7646 and 3.6938, respectively. Overall, the mean score of Public Spaces Characteristics is approximately 3.7525, at the high-level defined in Chapter 3. The details of all aspects, namely, Accessibility, Safety Measures, and Types of Amenities, are shown in Table 4.5, Table 4.6, and Table 4.7.

Table 4.4 The Mean and Standard Deviation of Accessibility

Classification	Mean	Standard Deviation	Mean Rank	Meaning
22.1 The public transport facilities to the public spaces	3.46	1.176	6	Moderate Level
22.2 The availability of ramps at entrances/exits in public spaces	3.60	1.163	5	High Level
22.3 The handrails provided along walkways and stairs in public spaces	4.08	.961	1	High Level
22.4 The seating arrangements in public spaces for your needs	3.97	1.025	2	High Level
22.5 The various entrances to access public spaces	3.64	1.171	4	High Level
22.6 The adequacy of public spaces	3.85	1.118	3	High Level
Overall	3.7646	.76567		High Level

Table 4.5 shows that the handrails provided along walkways and stairs in public spaces are considered the most important aspect, followed by the seating arrangements for your needs and the adequacy of public spaces. In contrast, public transport facilities for public spaces are ranked last.

Table 4.5 The Mean and Standard Deviation of Safety Measures

Classification	Mean	Standard Deviation	Mean Rank	Meaning
23.1 Lighting Capacity during evening and night hours	3.44	1.206	6	Moderate Level
23.2 Pedestrian Paths marked and free from obstacles	3.59	1.198	5	High Level
23.3 A visible presence of emergency call buttons or assistance services	4.10	.981	1	High Level
23.4 Parking facilities and safe pedestrian crossings	3.77	1.122	4	High Level
23.5 Signage in public spaces is clear and easy to understand	3.92	1.037	3	High Level
23.6 There are enough shelters or covered areas for protection against the weather	3.98	1.005	2	High Level
Overall	3.7992	.76231	-	High Level

Table 4.6 shows that the most important aspect is the presence of emergency call buttons or assistance services, followed by the availability of enough shelters or covered areas for protection against the weather and clear and easy-to-understand signage in public spaces. Lighting capacity during evening and night hours is ranked last.

Table 4.6 The Mean and Standard Deviation of Types of Amenities

Classification	Mean	Standard Deviation	Mean Rank	Meaning
24.1 The restrooms in public spaces are adequately equipped and clean	3.61	1.107	5	High Level
24.2 The recreational facilities (e.g., exercise equipment, walking paths) tailored for the elderly	3.80	1.093	2	High Level

Table 4.7 The Mean and Standard Deviation of Types of Amenities (continued)

Classification	Mean	Standard Deviation	Mean Rank	Meaning
24.3 The accessibility features (e.g., ramps and handrails) in our public spaces.	3.88	1.018	1	High Level
24.4 There are enough quiet areas in public spaces for relaxation	3.49	1.155	6	Moderate Level
24.5 There are enough clean and green areas	3.73	1.102	3	High Level
24.6 There are enough trash bins along the walkways	3.65	1.072	4	High Level
Overall	3.6938	.76828		High Level

Concerning Table 4.7, accessibility features (e.g., ramps, handrails) in our public spaces are ranked as the most important aspect, followed by recreational facilities (e.g., exercise equipment, walking paths) tailored for the elderly, and enough clean and green areas. The least important aspect is that public spaces have enough quiet areas for relaxation.

4.1.5 Quality of Life

Table 4.7 The Mean and Standard Deviation of Quality of Life

Classification	Mean	Standard Deviation	Mean Rank	Meaning
1. Elderly Needs and Preferences for Public Spaces	3.8149	.62155	1	High Level
2. Elderly Well-being and Social Inclusion	3.7627	.70610	2	High Level
Overall	3.7888	.63396	-	High Level

As far as Quality of Life is concerned, Table 4.8 indicates that Elderly Needs and Preferences for Public Spaces are more important than Elderly Well-being and Social Inclusion. Overall, its mean is about 3.7888, which is evaluated as high.

4.1.5.1 Elderly Needs and Preferences for Public Spaces

Table 4.8 The Mean and Standard Deviation of Elderly Needs and Preferences for Public Spaces

Classification	Mean	Standard Deviation	Mean Rank	Meaning
25. Universal Design	3.8780	.69030	2	High Level
26. Participatory Planning	3.7200	.80225	6	High Level
27. Multi-modal Transportation	3.8190	.72730	5	High Level
28. Inclusive Play Spaces	3.6500	.89896	7	High Level
29. Age-friendly Infrastructure	3.9405	.72420	1	High Level
30. Accessible Information and Communication	3.8275	.83420	4	High Level
31. Inclusive Public Events	3.8770	.70392	3	High Level
Overall	3.8160	.62190		High Level

The results obtained from the Elderly Needs and Preferences for Public Spaces, shown in Table 4.9, suggest that Age-friendly Infrastructure is the most important aspect, followed by Universal Design and Inclusive Public Events. At the same time, Inclusive Play Spaces are thought to be the least important aspect.

Table 4.9 The Mean and Standard Deviation of Universal Design

Classification	Mean	Standard Deviation	Mean Rank	Meaning
25.1 Infrastructure	4.07	.930	1	High Level
25.2 Pathways	3.79	1.062	4	High Level
25.3 Ramps	3.92	.990	3	High Level
25.4 Elevators	3.97	.945	2	High Level
25.5 Tactile Paving	3.64	1.050	5	High Level
Overall	3.8780	.69030	-	High Level

Regarding Universal Design, Table 4.10 reveals that Infrastructure is the most important aspect, followed by Elevators, Ramps, Pathways, and Tactile Paving.

Table 4.10 The Mean and Standard Deviation of Participatory Planning

Classification	Mean	Standard Deviation	Mean Rank	Meaning
26.1 Establish a partnership with local stakeholders and create an action plan. Conduct community workshops	3.83	1.031	2	High Level
26.2 Understand the issue by creating a diagnostic portrait of the use of public space	3.80	.984	3	High Level
26.3 Identify design scenarios that will meet needs and resolve issues	3.56	1.125	4	High Level
26.4 Decide with the various stakeholders, validate and improve upon the developed solutions.	3.89	.933	1	High Level
26.5 Implement the design solutions and advocate for citizen visions and inaugurate.	3.52	1.090	5	High Level
Overall	3.7200	.80225	-	High Level

Regarding participatory planning, the results obtained from Table 4.11 indicate that the most important aspects are deciding with the various stakeholders, validating, and improving upon the developed solutions. This is followed by establishing a partnership with local stakeholders and developing an action plan. Conduct community workshops and understand the issue by creating a diagnostic portrait of the use of public space. At the same time, implementing the design solutions, advocating for citizen visions, and inaugurating are considered the least important aspects.

Table 4.11 The Mean and Standard Deviation of Multi-modal Transportation

Classification	Mean	Standard Deviation	Mean Rank	Meaning
27.1 Pedestrian-friendly Pathways	3.75	.975	3	High Level
27.2 Cycling Infrastructure	4.20	1.016	1	High Level
27.3 Public Transit Accessibility	3.67	1.061	4	High Level
27.4 Sufficient Car Park	3.46	1.180	5	Moderate Level
27.5 Network Transportation	4.02	1.040	2	High Level
Overall	3.8190	.72730	-	High Level

Concerning Multimodal Transportation, Table 4.12 reveals that cycling Infrastructure is the most important aspect, followed by Network Transportation, Pedestrian-friendly Pathways, Public Transit Accessibility, and Sufficient Car Parking.

Table 4.12 The Mean and Standard Deviation of Inclusive Play Spaces

Classification	Mean	Standard Deviation	Mean Rank	Meaning
28.1 Playgrounds for Children	4.02	1.011	1	High Level
28.2 Adaptive Swings	3.72	1.173	2	High Level
28.3 Sensory Elements	3.43	1.130	5	Moderate Level
28.4 Modern Playgrounds Designed	3.46	1.180	4	Moderate Level
28.5 Universally Designed Play Equipment	3.62	1.144	3	High Level
Overall	3.6500	.89896	-	High Level

As far as Inclusive Play Spaces are concerned, Table 4.13 reveals that Playgrounds for Children are the most important aspect, followed by Adaptive Swings, Universally Designed Play Equipment, Modern Playgrounds, and Sensory Elements.

Table 4.13 The Mean and Standard Deviation of Age-friendly Infrastructure

Classification	Mean	Standard Deviation	Mean Rank	Meaning
29.1 Workability and Pedestrian Safety	4.10	.942	1	High Level
29.2 Accessible Public Transportation	3.77	1.099	4	High Level
29.3 Well-designed Parks and Green Spaces	4.02	1.040	3	High Level
29.4 Benches for Resting	4.06	1.002	2	High Level
29.5 Clear Signage	3.75	1.136	5	High Level
Overall	3.9405	.72420		High Level

The results obtained from Table 4.14 suggest that Workability and Pedestrian Safety are the most important aspects, followed by Benches for Resting, Well-designed Parks and Green Spaces, Accessible Public Transportation, and Clear Signage.

Table 4.14 The Mean and Standard Deviation of Accessible Information and Communication

Classification	Mean	Standard Deviation	Mean Rank	Meaning
30.1 Provide Signage with Clear Visuals	3.92	1.102	2	High Level
30.2 Use Braille for Tactile Information	3.97	1.018	1	High Level
30.3 Employ Technology for Real-time Updates	3.65	1.155	5	High Level
30.4 Announcements to Cater to Individuals	3.85	1.105	3	High Level
30.5 Provide Information with Various Channels and Languages	3.75	1.047	4	High Level
Overall	3.8275	.83420	-	High Level

Concerning Accessible Information and Communication, Table 4.15 reveals that Using Braille for Tactile Information is the most important aspect, followed by Providing Signage with Clear Visuals, making Announcements to Cater to Individuals, Providing Information through Various Channels and Languages, and Employing Technology for Real-time Updates.

Table 4.15 The Mean and Standard Deviation of Inclusive Public Events

Classification	Mean	Standard Deviation	Mean Rank	Meaning
31.1 Festivals	4.09	.949	1	High Level
31.2 Markets	3.77	1.072	4	High Level
31.3 Cultural Gatherings	3.92	.998	3	High Level
31.4 Cultural Competence Training	3.97	.968	2	High Level
31.5 Affordable Housing Initiatives	3.65	1.059	5	High Level
Overall	3.8770	.70392		High Level

Table 4.16 shows that Festivals are the most important inclusive public events, followed by cultural competence training, cultural gatherings, Markets, and Affordable Housing Initiatives.

4.1.5.2 Elderly Well-being and Social Inclusion

Table 4.16 The Mean and Standard Deviation of Elderly Well-being and Social Inclusion

Classification	Mean	Standard Deviation	Mean Rank	Meaning
32. Environmental and Health Indicator	3.6765	.80016	2	High Level
33. Economic Indicator	3.8490	.80075	1	High Level
Overall	3.7627	.70610		High Level

In terms of Elderly Well-being and Social Inclusion, which are evaluated at a high level, the results obtained from Table 4.17 suggest that the economic indicator is more important than the Environmental and Health Indicators.

Table 4.17 The Mean and Standard Deviation of Environmental and Health Indicators

Classification	Mean	Standard Deviation	Mean Rank	Meaning
32.1 Providing Recreation, Leisure, and Exercise Opportunities	3.77	1.054	2	High Level
32.2 Providing Green Public Spaces, such as Parks, Community Gardens, and Urban Forests	3.82	.997	1	High Level
32.3 Providing Walkable Areas	3.46	1.137	5	Moderate Level
32.4 Providing Pedestrian-friendly Zones	3.70	1.097	3	High Level
32.5 Providing Well-designed Urban Landscapes	3.63	1.066	4	High Level
Overall	3.6765	.80016	-	High Level

Concerning the Environmental and Health Indicators, Table 4.18 reveals that Providing Green Public Spaces, such as Parks, Community Gardens, and urban forests, is the most important aspect, followed by Providing Recreation, Leisure, and Exercise Opportunities, Pedestrian-Friendly Zones, Well-Designed urban landscapes, and Walkable Areas.

Table 4.18 The Mean and Standard Deviation of Economic Indicators

Classification	Mean	Standard Deviation	Mean Rank	Meaning
33.1 Attracting businesses, cafes, and markets	4.17	1.050	1	High Level
33.2 Increasing foot traffic and supporting small businesses.	3.85	1.113	3	High Level
33.3 Enhancing property values and attracting real estate investments	3.99	1.051	2	High Level
33.4 Attracting tourism and generating revenue for local businesses	3.73	1.134	4	High Level
33.5 Facilitating the integration of immigrants into the local economy and fostering social capital	3.50	1.139	5	High Level
Overall	3.8490	.80075	-	High Level

In terms of economic indicators, Table 4.19 reveals that attracting businesses, cafes, and markets is the most important aspect, followed by enhancing property values and attracting real estate investments, increasing foot traffic and supporting small businesses, attracting tourism and generating revenue for local businesses, and facilitating the integration of immigrants into the local economy and fostering social capital.

4.2 Inferential Statistics

According to hypothesis testing, numerous inferential statistics are applied, including the Independent Samples t-test, One-Way ANOVA, and multiple linear regression analysis.

4.2.1 Differences in Demographic Factors of Urban Micro-Districts Generate Differences in Quality of Life

4.2.1.1 Differences in Gender Generate Differences in Quality of Life

$H_0: \mu_1 = \mu_2$
$H_a: \mu_1 \neq \mu_2$

Table 4.19 The Independent Samples T-test of Gender

Items	Gender	N	Mean	S.D.	t-value	p-value
Elderly Needs and Preferences	Male	192	3.9125	.62322	3.029	.003**
	Female	208	3.7243	.61860		
Elderly Well-being and Social Inclusion	Male	192	3.8156	.69272	1.290	.198
	Female	208	3.7245	.71763		
Quality of Life	Male	192	3.8641	.62848	2.199	.028**
	Female	208	3.7244	.63985		

The results obtained from the Independent Samples t-test shown in Table 4.20 indicate that the p-value of Quality of Life classified by Gender is about .028, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Gender generate differences in Quality of Life.

4.2.1.2 Differences in Marital Status Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.20 The One-way ANOVA of Marital Status

Factors	Items	SS	df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	3.591	2	1.796	4.649	.010**
	Within Groups	153.341	397	.386		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	5.879	2	2.939	6.040	.003**
	Within Groups	193.208	397	.487		
	Total	199.087	399			
Quality of Life	Between Groups	4.660	2	2.330	5.873	.003**
	Within Groups	157.477	397	.397		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.21 indicate that the p-value of quality of life classified by marital status is approximately

.003, which is much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Marital Status generate differences in Quality of Life.

Table 4.21 Multiple Comparisons of Marital Status

Dependent Variable: Quality of Life (LSD)						
Marital Status (I)	Marital Status (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Single	Married	-.21925*	.07418	.003	-.3651	-.0734
	Divorce	-.00001	.10157	1.000	-.1997	.1997
	Single	.21925*	.07418	.003	.0734	.3651
	Divorce	.21924*	.09050	.016	.0413	.3972
	Single	.00001	.10157	1.000	-.1997	.1997
	Married	-.21924*	.09050	.016	-.3972	-.0413
*. The mean difference is significant at the 0.05 level.						

Table 4.22 shows the mean differences between Marital Statuses based on the LSD (Least Significant Difference) method. The results indicate that there is a significant difference in Quality of Life between the groups "Married" and "Single" and "Married" and "Divorced." However, there are no significant differences in Quality of Life between "Single" and "Devoiced."

4.2.1.3 Differences in Age Generate Differences in Quality of Life

H_0: $\mu_i = \mu_j$

H_a: $\mu_i \neq \mu_j$ at last one Pair where i $\neq$ j.

Table 4.22 The One-way ANOVA of Age

Factors	Items	SS	df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	.800	3	.267	.676	.567
	Within Groups	156.132	396	.394		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	2.012	3	.671	1.348	.259
	Within Groups	197.075	396	.498		
	Total	199.087	399			

Table 4.23 The One-way ANOVA of Age (continued)

Factors	Items	SS	df	MS	F=value	p-value
Quality of Life	Between Groups	1.291	3	.430	1.059	.366
	Within Groups	160.846	396	.406		
	Total	162.136	399			

The results obtained from the One-way ANOVA shown in Table 4.23 indicate that the p-value of Quality of Life classified by Age is approximately .366, much higher than the critical value of 0.05. Therefore, the null hypothesis Ho cannot be rejected, meaning that differences in Age generate no differences in Quality of Life.

4.2.1.4 Differences in Educational Level Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where i $\neq$ j.

Table 4.23 The One-way ANOVA of Educational Level

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	1.221	4	.305	.774	.542
	Within Groups	155.711	395	.394		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	3.887	4	.972	1.966	.099
	Within Groups	195.200	395	.494		
	Total	199.087	399			
Quality of Life	Between Groups	2.036	4	.509	1.256	.287
	Within Groups	160.100	395	.405		
	Total	162.136	399			

The results obtained from the One-way ANOVA shown in Table 4.24 indicate that the p-value of Quality of Life classified by Educational Level is approximately .287, much higher than the critical value of 0.05. Therefore, the null hypothesis Ho cannot be rejected, meaning that differences in Age generate no differences in Quality of Life.

4.2.1.5 Differences in Residential Districts Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.24 The One-way ANOVA of Residential District

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	1.221	4	.305	3.143	.044*
	Within Groups	155.711	395	.394		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	3.887	4	.972	2.583	.077
	Within Groups	195.200	395	.494		
	Total	199.087	399			
Quality of Life	Between Groups	2.036	4	.509	2.960	.053
	Within Groups	160.100	395	.405		
	Total	162.136	399			

The results obtained from the One-way ANOVA shown in Table 4.25 indicate that the p-value of Quality of Life classified by Residential District is approximately .053, slightly higher than the critical value of 0.05. Therefore, the null hypothesis Ho cannot be rejected, meaning that differences in Residential Districts generate no differences in Quality of Life.

4.2.1.6 Differences in Duration of Residence Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.25 The One-way ANOVA of the Duration of Residence

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	7.295	3	2.432	6.435	.000**
	Within Groups	149.637	396	.378		

Table 4.26 The One-way ANOVA of the Duration of Residence (continued)

Factors	Items	SS	Df	MS	F=value	p-value
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	7.727	3	2.576	5.330	.001**
	Within Groups	191.360	396	.483		
	Total	199.087	399			
Quality of Life	Between Groups	7.483	3	2.494	6.387	.000**
	Within Groups	154.654	396	.391		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.26 indicate that the p-value of quality of life classified by duration of residence is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Duration of Residence generate differences in Quality of Life.

Table 4.26 Multiple Comparisons of Duration of Residence

					95% Confidence Interval	
Dependent Variable: Quality of Life (LSD)						
Duration of Residence (I)	**Duration of Residence (J)**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**Lower Bound**	**Upper Bound**
Less than 1 year	1 but less than 5 years	.10821	.10218	.290	-.0927	.3091
	5 but less than 10 years	-.14104	.09555	.141	-.3289	.0468
	10 years and more	.19309*	.09716	.048	.0021	.3841
1 but less than 5 years	Less than 1 year	-.10821	.10218	.290	-.3091	.0927
	5 but less than 10 years	-.24926*	.08583	.004	-.4180	-.0805
	10 years and more	.08487	.08762	.333	-.0874	.2571
5 but less than 10 years	Less than 1 year	.14104	.09555	.141	-.0468	.3289
	1 but less than 5 years	.24926*	.08583	.004	.0805	.4180
	10 years and more	.33413*	.07978	.000	.1773	.4910
10 years and more	Less than 1 year	-.19309*	.09716	.048	-.3841	-.0021
	1 but less than 5 years	-.08487	.08762	.333	-.2571	.0874

Table 4.27 Multiple Comparisons of Duration of Residence (continued)

Duration of Residence (I)	Duration of Residence (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
	5 but less than 10 years	-.33413*	.07978	.000	-.4910	-.1773

Table 4.27 shows the mean differences between the Duration of Residence based on the LSD (Least Significant Difference) method. The results indicate that there is a significant difference in Quality of Life between the groups " Less than 1 year " and "10 years and more" and "1 but less than 5 years " and "5 but less than 10 years". However, there are no significant differences in Quality of Life between "5 but less than 10 years " and " Less than 1 year "and "10 years and more" and "Less than 1 year".

4.2.1.7 Differences in Living Arrangement Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.27 The One-way ANOVA of the Living Arrangement

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	24.233	4	6.058	18.033	.000**
	Within Groups	132.699	395	.336		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	19.215	4	4.804	10.549	.000**
	Within Groups	179.872	395	.455		
	Total	199.087	399			
Quality of Life	Between Groups	21.619	4	5.405	15.193	.000**
	Within Groups	140.518	395	.356		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.28 indicate that the p-value of quality of life classified by living arrangements is about .000, which is much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Living Arrangements generate differences in Quality of Life.

Table 4.28 Multiple Comparisons of Living Arrangement

Living Arrangement (I)	Living Arrangement (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Alone	With Family	-.03156	.10193	.757	-.2320	.1688
	With Friends	.32212*	.09646	.001	.1325	.5118
	Retirement Community	-.25456*	.09257	.006	-.4365	-.0726
	Others	-.32699*	.09302	.000	-.5099	-.1441
With Family	Alone	.03156	.10193	.757	-.1688	.2320
	With Friends	.35369*	.10103	.001	.1551	.5523
	Retirement Community	-.22300*	.09732	.022	-.4143	-.0317
	Others	-.29542*	.09775	.003	-.4876	-.1032
With Friends	Alone	-.32212*	.09646	.001	-.5118	-.1325
	With Family	-.35369*	.10103	.001	-.5523	-.1551
	Retirement Community	-.57669*	.09157	.000	-.7567	-.3967
	Others	-.64911*	.09203	.000	-.8300	-.4682
Retirement Community	Alone	.25456*	.09257	.006	.0726	.4365
	With Family	.22300*	.09732	.022	.0317	.4143
	With Friends	.57669*	.09157	.000	.3967	.7567
	Others	-.07242	.08795	.411	-.2453	.1005
Others	Alone	.32699*	.09302	.000	.1441	.5099
	With Family	.29542*	.09775	.003	.1032	.4876
	With Friends	.64911*	.09203	.000	.4682	.8300
	Retirement Community	.07242	.08795	.411	-.1005	.2453

*. The mean difference is significant at the 0.05 level.

Table 4.29 shows the mean differences between Living Arrangements using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the " Alone " and "With Family." However, the two groups significantly differ in quality of life.

4.2.1.8 Differences in Type of Housing Generate Differences in Quality of Life

$$H_0: \mu_i = \mu_j$$

$$H_a: \mu_i \neq \mu_j \text{ at last one Pair where } i \neq j.$$

Table 4.29 The One-way ANOVA of the Type of Housing

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	24.007	4	6.002	17.834	.000**
	Within Groups	132.926	395	.337		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	30.444	4	7.611	17.827	.000**
	Within Groups	168.643	395	.427		
	Total	199.087	399			
Quality of Life	Between Groups	26.880	4	6.720	19.625	.000**
	Within Groups	135.256	395	.342		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.30 indicate that the p-value of quality of life classified by type of housing is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Type of Housing generate differences in Quality of Life.

Table 4.30 Multiple Comparisons of Type of Housing

Type of Housing (I)	Type of Housing (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Dependent Variable: Quality of Life (LSD)						
Shared Residence	Apartment/Condominium	-.28304*	.09171	.002	-.4633	-.1027
	Senior Living Facility	.23667*	.10511	.025	.0300	.4433
	Single-family Home	-.30918*	.08828	.001	-.4827	-.1356
	Others	-.58134*	.09094	.000	-.7601	-.4025
Apartment/ Condominium	Shared Residence	.28304*	.09171	.002	.1027	.4633
	Senior Living Facility	.51971*	.10388	.000	.3155	.7239
	Single-family Home	-.02614	.08681	.764	-.1968	.1445
	Others	-.29830*	.08951	.001	-.4743	-.1223
Senior Living Facility	Shared Residence	-.23667*	.10511	.025	-.4433	-.0300
	Apartment/Condominium	-.51971*	.10388	.000	-.7239	-.3155
	Single-family Home	-.54585*	.10086	.000	-.7441	-.3476
	Others	-.81801*	.10320	.000	-1.0209	-.6151
Single-family Home	Shared Residence	.30918*	.08828	.001	.1356	.4827
	Apartment/Condominium	.02614	.08681	.764	-.1445	.1968
	Senior Living Facility	.54585*	.10086	.000	.3476	.7441
	Others	-.27216*	.08599	.002	-.4412	-.1031

Table 4.31 Multiple Comparisons of Type of Housing (continued)

Type of Housing (I)	Type of Housing (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Others	Shared Residence	.58134*	.09094	.000	.4025	.7601
	Apartment/Condominium	.29830*	.08951	.001	.1223	.4743
	Senior Living Facility	.81801*	.10320	.000	.6151	1.0209
	Single-family Home	.27216*	.08599	.002	.1031	.4412
*. The mean difference is significant at the 0.05 level.						

Table 4.31 shows the mean differences between Types of Housing based on the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the "Apartment/Condominium" and "Single-family Home." However, the two groups significantly differ in quality of life.

4.2.1.9 Differences in Mobility Limitation Generate Differences in Quality of Life

$$H_0: \mu_1 = \mu_2$$
$$H_a: \mu_1 \neq \mu_2$$

Table 4.31 The Independent Samples t-test of the Mobility Limitation

Items	Mobility Limitation	N	Mean	S.D.	t-value	p-value
Elderly Needs and Preferences	No	239	3.7811	.66121	-1.304	.193
	Yes	161	3.8644	.57124		
Elderly Well-being and Social Inclusion	No	239	3.7904	.69569	.763	.446
	Yes	161	3.7354	.72288		
Quality of Life	No	239	3.7857	.65621	-.218	.828
	Yes	161	3.7999	.61049		

The results obtained from the Independent Samples t-test shown in Table 4.20 indicate that the p-value of Quality of Life classified by Mobility Limitation is about .828, much higher than the critical value of 0.05. Therefore, the null hypothesis

Ho cannot be rejected, meaning that differences in Mobility Limitation generate no differences in Quality of Life.

4.2.2 Differences in Elderly Utilization Pattern on Public Spaces Generate Differences in Quality of Life

4.2.2.1 Differences in Activities Engagement Generate Differences in Quality of Life

H_0: $\mu_i = \mu_j$

H_a: $\mu_i \neq \mu_j$ at last one Pair where i $\neq$ j.

Table 4.32 The One-way ANOVA of What Activities You Engage in Public Spaces (Activities Engagement)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	43.233	4	10.808	37.549	.000**
	Within Groups	113.699	395	.288		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	60.417	4	15.104	43.025	.000**
	Within Groups	138.669	395	.351		
	Total	199.087	399			
Quality of Life	Between Groups	50.372	4	12.593	44.507	.000**
	Within Groups	111.764	395	.283		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.33 indicate that the p-value of quality of life classified by activities engagement is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in activity engagement generate differences in Quality of Life.

Table 4.33 Multiple Comparisons of Activities Engagement

Dependent Variable: Quality of Life (LSD)					
Activities Engagement (I)	Activities Engagement	Mean Difference	Std. Error	Sig.	95% Confidence Interval

	(J)	(I-J)			Lower Bound	Upper Bound
Attending Events	Relaxing	-.63019*	.09899	.000	-.8248	-.4356
	Walking	-.56213*	.09840	.000	-.7556	-.3687
	Exercise	-1.04536*	.09668	.000	-1.2354	-.8553
	Others	-1.13295*	.09821	.000	-1.3260	-.9399
Relaxing	Attending Events	.63019*	.09899	.000	.4356	.8248
	Walking	.06806	.08137	.403	-.0919	.2280
	Exercise	-.41517*	.07928	.000	-.5710	-.2593
	Others	-.50276*	.08114	.000	-.6623	-.3432
Walking	Attending Events	.56213*	.09840	.000	.3687	.7556
	Relaxing	-.06806	.08137	.403	-.2280	.0919
	Exercise	-.48323*	.07854	.000	-.6376	-.3288
	Others	-.57082*	.08042	.000	-.7289	-.4127
Exercise	Attending Events	1.04536*	.09668	.000	.8553	1.2354
	Relaxing	.41517*	.07928	.000	.2593	.5710
	Walking	.48323*	.07854	.000	.3288	.6376
	Others	-.08759	.07831	.264	-.2415	.0664
Others	Attending Events	1.13295*	.09821	.000	.9399	1.3260
	Relaxing	.50276*	.08114	.000	.3432	.6623
	Walking	.57082*	.08042	.000	.4127	.7289
	Exercise	.08759	.07831	.264	-.0664	.2415
*. The mean difference is significant at the 0.05 level.						

Table 4.34 shows the mean differences between Activities Engagement using the LSD (Least Significant Difference) method. The results indicate that there is no significant difference in Quality of Life between the group "Walking" and "Relaxing" and the group "Exercise" and "Others". However, the two groups significantly differ in quality of life.

4.2.2.2 Differences in How Usually Visits Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.34 The One-way ANOVA of How You Usually Visit Public Spaces (How You Usually Visit)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	2.178	3	.726	1.858	.136
	Within Groups	154.754	396	.391		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	9.859	3	3.286	6.877	.000**
	Within Groups	189.228	396	.478		
	Total	199.087	399			
Quality of Life	Between Groups	4.926	3	1.642	4.136	.007**
	Within Groups	157.210	396	.397		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.35 indicate that the p-value of quality of life classified by how often you visit is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in how Often you Visit generate differences in Quality of Life.

Table 4.35 Multiple Comparisons of How Usually Visit

Dependent Variable: Quality of Life (LSD)						
Entrance Method (I)	Entrance Method (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
On Foot	Car	-.03638	.10265	.723	-.2382	.1654
	Public Transportation	-.23202*	.09049	.011	-.4099	-.0541
	Others	-.27091*	.10210	.008	-.4716	-.0702
Car	On Foot	.03638	.10265	.723	-.1654	.2382
	Public Transportation	-.19565*	.08496	.022	-.3627	-.0286
	Others	-.23453*	.09723	.016	-.4257	-.0434
	On Foot	.23202*	.09049	.011	.0541	.4099

| Public | Car | .19565[*] | .08496 | .022 | .0286 | .3627 |
| Transportation | Others | -.03889 | .08430 | .645 | -.2046 | .1268 |

Table 4.36 Multiple Comparisons of How Usually Visit (continued)

		Dependent Variable: Quality of Life (LSD)				
Entrance Method (I)	**Entrance Method (J)**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
Others	On Foot	.27091[*]	.10210	.008	.0702	.4716
	Car	.23453[*]	.09723	.016	.0434	.4257
	Public Transportation	.03889	.08430	.645	-.1268	.2046

Table 4.36 shows the mean differences between How Usually Visit based on the LSD (Least Significant Difference) method. The results indicate that there is no significant difference in Quality of Life between the group " On Foot" and "Car" and the group "Public Transportation" and "Others'. However, the two groups significantly differ in quality of life.

4.2.2.3 Differences in How Often Visits Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.36 The One-way ANOVA of How Often You Visit Public Spaces (How Often You Visit)

Factors	**Items**	**SS**	**Df**	**MS**	**F=value**	**p-value**
Elderly Needs and Preferences	Between Groups	21.995	4	5.499	16.096	.000**
	Within Groups	134.937	395	.342		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	36.774	4	9.193	22.373	.000**
	Within Groups	162.313	395	.411		
	Total	199.087	399			
Quality of Life	Between Groups	27.841	4	6.960	20.472	.000**

Within Groups	134.295	395	.340	
Total	162.136	399		

The results obtained from the one-way ANOVA shown in Table 4.37 indicate that the p-value of quality of life classified by how often to visit is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in "How Often to Visit" generate differences in Quality of Life.

Table 4.37 Multiple Comparisons of How Often Visit

Dependent Variable: Quality of Life (LSD)						
Frequency Visit (I)	Frequency Visit (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Everyday	A few days a week	.26848*	.09543	.005	.0809	.4561
	Once a week	.19492*	.09185	.034	.0144	.3755
	Once a month	-.27111*	.09488	.004	-.4577	-.0846
	Seldomly	-.41958*	.09754	.000	-.6113	-.2278
A few days a week	Everyday	-.26848*	.09543	.005	-.4561	-.0809
	Once a week	-.07356	.08848	.406	-.2475	.1004
	Once a month	-.53960*	.09163	.000	-.7197	-.3595
	Seldomly	-.68806*	.09438	.000	-.8736	-.5025
Once a week	Everyday	-.19492*	.09185	.034	-.3755	-.0144
	A few days a week	.07356	.08848	.406	-.1004	.2475
	Once a month	-.46604*	.08789	.000	-.6388	-.2932
	Seldomly	-.61450*	.09075	.000	-.7929	-.4361
Once a month	Everyday	.27111*	.09488	.004	.0846	.4577
	A few days a week	.53960*	.09163	.000	.3595	.7197
	Once a week	.46604*	.08789	.000	.2932	.6388
	Seldomly	-.14846	.09383	.114	-.3329	.0360
Seldomly	Everyday	.41958*	.09754	.000	.2278	.6113
	A few days a week	.68806*	.09438	.000	.5025	.8736
	Once a week	.61450*	.09075	.000	.4361	.7929
	Once a month	.14846	.09383	.114	-.0360	.3329
*. The mean difference is significant at the 0.05 level.						

Table 4.38 shows the mean differences between How Often Visit based on the LSD (Least Significant Difference) method. The results indicate that there is no significant difference in the quality of life between the groups " Few days a

week" and "Once a week Car" and the groups "Once a month" and "seldom. However, the two groups significantly differ in quality of life.

4.2.2.4 Differences in Time Spent Generate Differences in Quality of Life

H_0: $\mu_i = \mu_j$

H_a: $\mu_i \neq \mu_j$ at last one Pair where i $\neq$ j.

Table 4.38 The One-way ANOVA of How Long You Spend in Public Spaces (Time Spent)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	5.160	3	1.720	4.488	.004**
	Within Groups	151.772	396	.383		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	10.637	3	3.546	7.450	.000**
	Within Groups	188.450	396	.476		
	Total	199.087	399			
Quality of Life	Between Groups	7.477	3	2.492	6.381	.000**
	Within Groups	154.660	396	.391		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.39 indicate that the p-value of quality of life classified by time spent is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Time Spent generate differences in Quality of Life.

Table 4.39 Multiple Comparisons of Time Spent

Dependent Variable: Quality of Life (LSD)					
Time Spent (I)	Time Spent (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval

		Lower Bound	Upper Bound
Less than 1 hour	1 but less than 3 hours	.09241	.10044	.358	-.1050	.2899
	3 but less than 5 hours	-.14153	.09777	.149	-.3337	.0507
	5 hours and more	-.25535*	.09606	.008	-.4442	-.0665

Table 4.40 Multiple Comparisons of Time Spent (continued)

Dependent Variable: Quality of Life (LSD)

Time Spent (I)	Time Spent (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 but less than 3 hours	Less than 1 hour	-.09241	.10044	.358	-.2899	.1050
	3 but less than 5 hours	-.23395*	.08626	.007	-.4035	-.0644
	5 hours and more	-.34776*	.08432	.000	-.5135	-.1820
3 but less than 5 hours	Less than 1 hour	.14153	.09777	.149	-.0507	.3337
	1 but less than 3 hours	.23395*	.08626	.007	.0644	.4035
	5 hours and more	-.11382	.08112	.161	-.2733	.0457
5 hours and more	Less than 1 hour	.25535*	.09606	.008	.0665	.4442
	1 but less than 3 hours	.34776*	.08432	.000	.1820	.5135
	3 but less than 5 hours	.11382	.08112	.161	-.0457	.2733

Table 4.40 shows the mean differences between Time Spent using the LSD (Least Significant Difference) method. The results indicate that there is a statistically significant difference in Quality of Life between the group "Less than 1 hour " and "5 hours and more" and the group "3 but less than 5 hours" and "1 but less than 3 hours'. However, there are no significant differences in Quality of Life between the group "1 but less than 3 hours' and "Less than 1 hour " and the group "5 hours and more" and the group "3 but less than 5 hours".

4.2.2.5 Differences in Visiting Partner Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.40The One-way ANOVA of Who Companies You Visit Public Spaces (Visiting Partner)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	11.020	4	2.755	7.458	.000**
	Within Groups	145.913	395	.369		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	25.309	4	6.327	14.382	.000**
	Within Groups	173.778	395	.440		
	Total	199.087	399			
Quality of Life	Between Groups	17.238	4	4.309	11.748	.000**
	Within Groups	144.899	395	.367		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.41 indicate that the p-value of quality of life classified by visiting partners is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Visiting Partner generate differences in Quality of Life.

Table 4.41 Multiple Comparisons of Visiting Partner

Dependent Variable: Quality of Life (LSD)						
Visiting Partner (I)	Visiting Partner (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Alone	With Friends	.03952	.09140	.666	-.1402	.2192
	With Family	-.08649	.09622	.369	-.2757	.1027
	With Caretaker	-.31419*	.09880	.002	-.5084	-.1199
	Others	-.50074*	.09432	.000	-.6862	-.3153
With Friends	Alone	-.03952	.09140	.666	-.2192	.1402
	With Family	-.12602	.09423	.182	-.3113	.0592
	With Caretaker	-.35371*	.09686	.000	-.5441	-.1633
	Others	-.54026*	.09228	.000	-.7217	-.3588
With Family	Alone	.08649	.09622	.369	-.1027	.2757
	With Friends	.12602	.09423	.182	-.0592	.3113

With Caretaker	-.22770*	.10142	.025	-.4271	-.0283
Others	-.41425*	.09706	.000	-.6051	-.2234

Table 4.42 Multiple Comparisons of Visiting Partner (continued)

Dependent Variable: Quality of Life (LSD)

Visiting Partner (I)	Visiting Partner (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
With Caretaker	Alone	.31419*	.09880	.002	.1199	.5084
	With Friends	.35371*	.09686	.000	.1633	.5441
	With Family	.22770*	.10142	.025	.0283	.4271
	Others	-.18655	.09962	.062	-.3824	.0093
Others	Alone	.50074*	.09432	.000	.3153	.6862
	With Friends	.54026*	.09228	.000	.3588	.7217
	With Family	.41425*	.09706	.000	.2234	.6051
	With Caretaker	.18655	.09962	.062	-.0093	.3824
*. The mean difference is significant at the 0.05 level.						

Table 4.42 shows the mean differences between Visiting Partners using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life among these 3 groups: Alone, With Friends, and With Family. However, there are statistically significant differences in quality of life between the caretakers and others in these two groups.

4.2.3 Differences in Stakeholder Involvement Generate Differences in Quality of Life

4.2.3.1 Differences in Sufficient Challenges and Opportunities Generate Differences in Quality of Life

H_0: $\mu_i = \mu_j$

H_a: $\mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4. 43 The One-way ANOVA of Sufficient Challenges and Opportunities Involved in the Process of Planning and Design of Public Space (Sufficient Challenges and Opportunities)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	1.823	2	.911	2.333	.098

	Within Groups	155.110	397	.391		
	Total	156.932	399			

Table 4.43 The One-way ANOVA of Sufficient Challenges and Opportunities Involved in the Process of Planning and Design of Public Space (Sufficient Challenges and Opportunities) (continued)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Well-being and Social Inclusion	Between Groups	10.266	2	5.133	10.792	.000
	Within Groups	188.821	397	.476		
	Total	199.087	399			
Quality of Life	Between Groups	4.975	2	2.487	6.283	.002
	Within Groups	157.161	397	.396		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.43 indicate that the p-value of quality of life classified by sufficient challenges and opportunities is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Sufficient Challenges and Opportunities generate differences in Quality of Life.

Table 4.42 Multiple Comparisons of Sufficient Challenges and Opportunities

		Dependent Variable: Quality of Life (LSD)				
Sufficient Opportunities Provided (I)	Sufficient Opportunities Provided (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	-.17400[*]	.07188	.016	-.3153	-.0327
	No Idea	.13931	.08450	.100	-.0268	.3054
No	Yes	.17400[*]	.07188	.016	.0327	.3153
	No Idea	.31330[*]	.09115	.001	.1341	.4925
No Idea	Yes	-.13931	.08450	.100	-.3054	.0268
	No	-.31330[*]	.09115	.001	-.4925	-.1341
*. The mean difference is significant at the 0.05 level.						

Table 4.44 shows the mean differences between Sufficient Challenges and Opportunities using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the "Yes" and "No Idea." At the same time, other groups have statistically significant differences in Quality of Life.

4.2.3.2 Differences in Comprehensive Problem Identification Involvement Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.43 The One-way ANOVA involving comprehensive problem identification issue (Comprehensive Problem Identification Involvement)

Factors	Items	SS	Df	MS	f-value	p-value
Elderly Needs and Preferences	Between Groups	6.461	2	3.231	8.523	.000
	Within Groups	150.471	397	.379		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	4.781	2	2.391	4.884	.008
	Within Groups	194.306	397	.489		
	Total	199.087	399			
Quality of Life	Between Groups	5.434	2	2.717	6.884	.001
	Within Groups	156.702	397	.395		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.45 indicate that the p-value of quality of life classified by comprehensive problem identification involvement is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Comprehensive Problem Identification Involvement generate differences in Quality of Life.

Table 4.44 Multiple Comparisons of Comprehensive Problem Identification Involvement

Problem Identification Involvement (I)	Problem Identification Involvement (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	-.27151[*]	.07450	.000	-.4180	-.1250
	Not Sure	-.09993	.08080	.217	-.2588	.0589

sDependent Variable: Quality of Life (LSD)

No	Yes	.27151*	.07450	.000	.1250	.4180
	Not Sure	.17159*	.07751	.027	.0192	.3240
Not Sure	Yes	.09993	.08080	.217	-.0589	.2588
	No	-.17159*	.07751	.027	-.3240	-.0192

*. The mean difference is significant at the 0.05 level.

Table 4.46 shows the mean differences between Comprehensive Problem Identification Involvement using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the groups "Yes" and "Not Sure," while there are statistically significant differences in Quality of Life between other groups.

4.2.3.3 Differences in Community Needs Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$ and $H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.45 The One-way ANOVA of Providing or Addressing the Needs of Underrepresented or Marginalized Communities, Particularly the Issues of Social Equity and Inclusivity (Community Needs)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	19.168	2	9.584	27.618	.000
	Within Groups	137.764	397	.347		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	18.323	2	9.161	20.121	.000
	Within Groups	180.764	397	.455		
	Total	199.087	399			
Quality of Life	Between Groups	18.738	2	9.369	25.939	.000
	Within Groups	143.398	397	.361		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.47 indicate that the p-value of quality of life classified by community needs is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Community Needs generate differences in Quality of Life.

Table 4.46 Multiple Comparisons of Community Needs

Dependent Variable: Quality of Life (LSD)						
Community Needs Raised (I)	Community Needs Raised (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	-.00815	.06984	.907	-.1455	.1292
	Not Sure	.49366*	.07907	.000	.3382	.6491
No	Yes	.00815	.06984	.907	-.1292	.1455
	Not Sure	.50181*	.07602	.000	.3524	.6513
Not Sure	Yes	-.49366*	.07907	.000	-.6491	-.3382
	No	-.50181*	.07602	.000	-.6513	-.3524
*. The mean difference is significant at the 0.05 level.						

Table 4.48 shows the mean differences between Community Needs based on the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the groups "Yes" and "No," while there are statistically significant differences in Quality of Life between the other groups.

4.2.3.4 Differences in Voice Opinions Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.47 The One-way ANOVA of Voice Opinions Contributes to the Decision-making Process Aimed at Making Public Spaces More Elderly-Friendly (Voice Opinions)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	20.938	2	10.469	30.562	.000
	Within Groups	135.994	397	.343		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	19.197	2	9.599	21.183	.000
	Within Groups	179.890	397	.453		
	Total	199.087	399			

Quality of Life	Between Groups	20.056	2	10.028	28.020	.000
	Within Groups	142.080	397	.358		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.49 indicate that the p-value of quality of life classified by voice opinions is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Voice Opinions generate differences in Quality of Life.

Table 4.48 Multiple Comparisons of Voice Opinions

Dependent Variable: Quality of Life (LSD)						
Opinion Suggested (I)	Opinion Suggested (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	-.20538[*]	.06657	.002	-.3363	-.0745
	Not Sure	.44919[*]	.08370	.000	.2846	.6137
No	Yes	.20538[*]	.06657	.002	.0745	.3363
	Not Sure	.65457[*]	.08747	.000	.4826	.8265
Not Sure	Yes	-.44919[*]	.08370	.000	-.6137	-.2846
	No	-.65457[*]	.08747	.000	-.8265	-.4826

Table 4.50 shows the mean differences between Voice Opinions using the LSD (Least Significant Difference) method. The results indicate statistically significant differences in Quality of Life among these 3 groups: Yes, No, and Not Sure.

4.2.3.5 Differences in Public Consultations Participation Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.49 The One-way ANOVA of Participating in Public Consultations, Workshops, Collaborative Visioning Sessions, and Actively Engaging in Decision-making Processes (Public Consultations Participation)

Factors	Items	SS	Df	MS	F=value	p-value

Elderly Needs and Preferences	Between Groups	15.413	2	7.706	21.618	.000
	Within Groups	141.520	397	.356		
	Total	156.932	399			

Table 4.51 The One-way ANOVA of Participating in Public Consultations, Workshops, Collaborative Visioning Sessions, and Actively Engaging in Decision-making Processes (Public Consultations Participation) (continued)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Well-being and Social Inclusion	Between Groups	14.921	2	7.461	16.083	.000
	Within Groups	184.166	397	.464		
	Total	199.087	399			
Quality of Life	Between Groups	15.136	2	7.568	20.439	.000
	Within Groups	147.000	397	.370		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.51 indicate that the p-value of quality of life classified by public consultation participation is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Public Consultation Participation generate differences in Quality of Life.

Table 4.50 Multiple Comparisons of Public Consultation Participation

	Dependent Variable: Quality of Life (LSD)					
Public Consultations Participation (I)	Public Consultations Participation (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	.01667	.06904	.809	-.1191	.1524
	Not Sure	.50300[*]	.08750	.000	.3310	.6750
No	Yes	-.01667	.06904	.809	-.1524	.1191
	Not Sure	.48632[*]	.08202	.000	.3251	.6476
Not Sure	Yes	-.50300[*]	.08750	.000	-.6750	-.3310
	No	-.48632[*]	.08202	.000	-.6476	-.3251

Table 4.52 shows the mean differences between Public Consultation Participation using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the "Yes" and "No." At

the same time, there are statistically significant differences in Quality of Life between the other groups.

4.2.3.6 Differences in Collaboration with Other Stakeholders Generate Differences in Quality of Life

H_0: $\mu_i = \mu_j$

H_a: $\mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.51 The One-way ANOVA of Collaborating with Other Stakeholders, Particularly Local Businesses, Nonprofit Organizations, and Others, in Improving the Design of Public Space (Collaboration with Other Stakeholders)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	13.180	2	6.590	18.199	.000
	Within Groups	143.752	397	.362		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	11.327	2	5.663	11.974	.000
	Within Groups	187.760	397	.473		
	Total	199.087	399			
Quality of Life	Between Groups	12.221	2	6.111	16.182	.000
	Within Groups	149.915	397	.378		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.53 indicate that the p-value of quality of life classified by collaboration with other stakeholders is about .000, much lower than the critical value of 0.05. Therefore, the null hypothesis Ho is rejected, meaning that differences in Collaboration with Other Stakeholders generate differences in Quality of Life.

Table 4.52 Multiple Comparisons of Collaboration with Other Stakeholders

Dependent Variable: Quality of Life (LSD)					95% Confidence Interval	
Collaboration with Other Stakeholders (I)	Collaboration with Other Stakeholders (J)	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound

Yes	No	-.10015	.07131	.161	-.2403	.0400
	Not Sure	.34299[*]	.08441	.000	.1770	.5089
No	Yes	.10015	.07131	.161	-.0400	.2403
	Not Sure	.44315[*]	.07854	.000	.2887	.5975
Not Sure	Yes	-.34299[*]	.08441	.000	-.5089	-.1770
	No	-.44315[*]	.07854	.000	-.5975	-.2887

Table 4.54 shows the mean differences between Community Needs based on the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the groups "Yes" and "No," while there are statistically significant differences in Quality of Life between the other groups.

4.2.3.7 Differences in Community Organization Projects Participation Generate Differences in Quality of Life

$H_0: \mu_i = \mu_j$

$H_a: \mu_i \neq \mu_j$ at last one Pair where $i \neq j$.

Table 4.53 The One-way ANOVA of Participating in Any Community Organization Projects Focused on Enhancing Public Spaces for the Elderly (Community Organization Projects Participation)

Factors	Items	SS	Df	MS	F=value	p-value
Elderly Needs and Preferences	Between Groups	12.524	2	6.262	17.215	.000
	Within Groups	144.409	397	.364		
	Total	156.932	399			
Elderly Well-being and Social Inclusion	Between Groups	12.078	2	6.039	12.820	.000
	Within Groups	187.009	397	.471		
	Total	199.087	399			
Quality of Life	Between Groups	11.916	2	5.958	15.745	.000
	Within Groups	150.220	397	.378		
	Total	162.136	399			

The results obtained from the one-way ANOVA shown in Table 4.55 indicate that the p-value of quality of life classified by community organization project participation is about .000, much lower than the critical value of 0.05. Therefore, the

null hypothesis Ho is rejected, meaning that differences in Community Organization project participation generate differences in Quality of Life.

Table 4.54 Multiple Comparisons of Community Organization Projects Participation

Dependent Variable: Quality of Life (LSD)						
Community Organization Projects Participation (I)	Community Organization Projects Participation (J)	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Yes	No	-.19290*	.07288	.008	-.3362	-.0496
	Not Sure	.24014*	.07705	.002	.0887	.3916
N	Yes	.19290*	.07288	.008	.0496	.3362
o	Not Sure	.43305*	.07717	.000	.2813	.5848
Not	Yes	-.24014*	.07705	.002	-.3916	-.0887
Sure	No	-.43305*	.07717	.000	-.5848	-.2813

Table 4.56 shows the mean differences between Community Organization Project Participation using the LSD (Least Significant Difference) method. The results indicate no significant difference in Quality of Life between the "Yes" and "No." At the same time, there are statistically significant differences in Quality of Life between the other groups.

4.2.4 The Influence of Public Spaces Characteristics on Quality of Life

To determine the influence of Public Space Characteristics on Quality of Life, this study uses three multiple linear regression analyses, not only for the overall Quality of Life but also for its components, namely, the Elderly's Needs and Preferences for Public Spaces, the Elderly's Well-being, and Social Inclusion.

4.2.4.1 The Elderly Needs and Preferences for Public Spaces

$H_0: \beta_i = 0$

$H_a: \beta_i \neq 0$ (i=1, 2, 3)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$

Where Y = the Elderly Needs and Preferences for Public Spaces

X_1 = Accessibility

X_2 = Safety Measures

X_3 = Types of Amenities

The results obtained from the study can be seen in Table 4.57 and written in terms of equation (1).

$$Y = .490 + .021X_1 + .479X_2 + .386X_3$$
$$(.000) \quad (.326) \quad (.000) \quad (.000) \qquad \ldots\ldots\ldots\ldots\ldots(1)$$
$$\text{Adjusted } R^2 = 0.924$$

Table 4.55 The Multiple Linear Regression Analysis of Public Spaces Characteristics on the Elderly Needs and Preferences for Public Spaces

Model	Coefficient			t-value	p-value
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.Error	Beta		
Constant	.490	.049		10.075	.000
X_1 = Accessibility	.021	.022	.026	.984	.326
X_2 = Safety Measures	.479	.017	.587	27.375	.000*
X_3= Types of Amenities	.386	.017	.477	23.203	.000*

a. Dependent variable Y; Elderly Needs and Preferences for Public Spaces

It is evident from Table 4.57 and equation (1) that the p-value of Accessibility is about .326, which is much higher than 0.05, meaning that this factor does not influence the Elderly's Needs and Preferences for Public Spaces; therefore, this variable should be deleted. The final result can be shown in Table 4.58 and equation (2) as follows.

$$Y = .493 + .490X_2 + .396X_3$$
$$(.000) \quad (.000) \quad (.000) \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$
$$\text{Adjusted } R^2 = 0.924$$

Table 4.56 The Multiple Linear Regression Analysis of Public Spaces Characteristics on the Elderly Needs and Preferences for Public Spaces

Model	Coefficient			t-value	p-value
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.Error	Beta		
Constant	.493	.049		10.150	.000
X_2 = Safety Measures	.490	.014	.600	36.180	.000
X_3= Types of Amenities	.396	.013	.489	29.460	.000

a. Dependent variable Y; Elderly Needs and Preferences for Public Spaces

The results obtained from Table 4.60 indicate that Safety Measures are more important than Types of Amenities since the former's coefficient is about .490, while that of the latter is only .396. The adjusted R2 of this multiple linear regression is approximately .924, which is very high.

4.2.4.2 The Elderly Well-being and Social Inclusion

H_0: $\beta_i = 0$

H_a: $\beta_i \neq 0$ (i=1, 2, 3)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$

Where Y = the Elderly Well-being and Social Inclusion

X_1 = Accessibility

X_2 = Safety Measures

X_3 = Types of Amenities

The results obtained from the study can be seen in Table 4.59 and written in terms of equation (3).

$$Y = .444 + .298X_1 + .105X_2 + .487X_3$$

$$(.000) \quad (.000) \quad (.002) \quad (.000) \qquad \ldots\ldots\ldots\ldots\ldots(3)$$

Adjusted $R^2 = 0.771$

Table 4.57 The Multiple Linear Regression Analysis of Public Spaces Characteristics on the Elderly Well-being and Social Inclusion

Model	Coefficient			T-value	p-value
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std.Error	Beta		
Constant	.444	.096		4.646	.000
X_1 = Accessibility	.298	.042	.323	7.023	.000
X_2 = Safety Measures	.105	.034	.113	3.056	.002
X_3 = Types of Amenities	.487	.033	.530	14.893	.000

The results obtained from Table 4.59 indicate that Types of Amenities are the most important factor influencing Elderly Well-being and Social Inclusion, with a coefficient of about .487. It is followed by Accessibility and Safety Measures, with

coefficients of about .298 and .105, respectively. The Adjust R2 of this Multiple Linear Regression is approximately .771, which is relatively high.

4.2.4.3 The Quality of Life

$H_0: \beta_i = 0$

$H_a: \beta_i \neq 0$ (i=1, 2, 3)

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$

Where Y = Quality of Life

X$_1$ = Accessibility

X$_2$ = Safety Measures

X$_3$ = Types of Amenities

The results obtained from the study can be seen in Table 4.60 and written in terms of equation (4).

$$Y = .467 + .158X_1 + .293X_2 + .437X_3$$

$$(.000) \quad (.000) \quad (.000) \quad (.000) \quad \ldots\ldots\ldots\ldots\ldots(4)$$

$$\text{Adjusted } R^2 = 0.898$$

Table 4.58 The Multiple Linear Regression Analysis of Public Spaces Characteristics on Quality of Life

| Model | Coefficient | | t-value | p-value |
| | Unstandardized Coefficients | Standardized Coefficients | | |
	B	Std.Error	Beta		
Constant	.467	.057		8.164	.000
X$_1$ = Accessibility	.158	.025	.191	6.242	.000
X$_2$ = Safety Measures	.293	.021	.352	14.214	.000
X$_3$= Types of Amenities	.437	.020	.530	22.324	.000

a. Dependent variable Y; Quality of Life

The results obtained from Table 4.60 indicate that Types of Amenities is the most important factor influencing Quality of Life, with a coefficient of about .437. Safety Measures and Accessibility follow, with coefficients of about .293 and .158, respectively. The Adjust R2 of this Multiple Linear Regression is approximately .898, which is very high.

4.2.5 Hypothesis Testing Results Summary

Table 4.59 Hypothesis Testing Results Summary

Hypothesis	Not Reject H₀	Reject H₀
Hypothesis 1: Demographic Factors of Urban Micro-District		
1.1 Gender		✔
1.2 Marital Status		✔
1.3 Age	✔	
1.4 Educational Background	✔	

Table 4.61 Hypothesis Testing Results Summary (continued)

Hypothesis	Not Reject H₀	Reject H₀
1.5 Residential District	✔	
1.6 Duration of Residence		✔
1.7 Living Arrangement		✔
1.8 Type of Housing		✔
1.9 Mobility Limitation		✔
Hypothesis 2: Elderly Utilization Behaviour on Public Space		
2.1 Activities Engagement		✔
2.2 How Usually Visit		✔
2.3 How Often Visit		✔
2.4 Time Spent		✔
2.5 Visiting Partner		✔
Hypothesis 3: Stakeholder Involvement in Public Space		
3.1 Sufficient Challenges and Opportunities		✔
3.2 Comprehensive Problem Identification Involvement		✔
3.3 Community Needs		✔
3.4 Voice Opinions		✔
3.5 Public Consultation Participation		✔
3.6 Collaborating with Other Stakeholders		✔
3.7 Community Organization Projects Participation		✔
Hypothesis 4: Public Spaces Characteristics		
4.1 Accessibility		✔
4.2 Safety Measures		✔
4.3 Types of Amenities		✔

CHAPTER V
CONCLUSION AND DISCUSSION

5.1 Conclusion

As far as the demographic factors of urban Micro-districts are concerned, the results obtained from the study indicate that most respondents are female and married, with ages ranging from 65 to less than 70 years old. Most of them have a Diploma / Certificate and live in Taijiang District. Most do not have mobility limitation problems and live with family in a single-family home for about 5 but less than 10 years. Concerning Elderly Utilization Behaviour in Public Spaces, most come to Public Spaces once a Week by Public Transportation. They come with family for about 5 hours and more, aiming at exercise.

Regarding Stakeholder Involvement in Public Space, most respondents think they have sufficient challenges and opportunities involving comprehensive problem identification issues and providing or addressing the needs of underrepresented or marginalized communities. They can voice opinions, contribute to decision-making, participate in public consultations, workshops, and collaborative visioning sessions, and actively engage in decision-making processes. They also collaborate with other

stakeholders to participate in community organization projects focused on enhancing public spaces for the elderly.

Regarding Public space characteristics, Safety Measures are the most important aspect, followed by Accessibility and Types of Amenities. Quality of Life, Elderly Needs, and Preferences for Public Spaces are found to be more important than Elderly Well-being and Social Inclusion. For Elderly Needs and Preferences for Public Spaces, Age-friendly Infrastructure is the most important aspect, followed by Universal Design and Inclusive Public Events. At the same time, Inclusive Play Spaces are thought to be the least important aspect. Concerning elder well-being and social inclusion, which is evaluated at a high level, the economic indicator is more important than the environmental and health indicators.

Regarding Inferential Statistics, differences in Demographic Factors of Urban Micro-District except for Age, Educational Level, and Residential District generate differences in Quality of Life as evidenced by the Independent Samples t-test and the One-way ANOVA statistics. Elderly Differences in all aspects of Utilization Behaviour in Public Spaces and Stakeholder Involvement in Public Spaces generate differences in Quality of Life. The Multiple Linear Regression analysis results show significant positive impacts of all public space characteristics (Accessibility, Safety Measures, and Types of Amenities) on Quality of Life.

5.2 Discussion

The Multiple Linear Regression analysis results show significant positive impacts of all public space characteristics (Accessibility, Safety Measures, and Types of Amenities) on Quality of Life. These findings are consistent with the paper of Chen (2023), who found that including weatherproof amenities, a diversity of paving materials, and ample green spaces significantly enhance the usability and attractiveness of outdoor areas for older people. Furthermore, the research highlights the importance of incorporating community fitness equipment and designing activity areas that are accessible and inviting to the elderly population. It is also consistent with Zhang et al. (2023), who identified key factors influencing outdoor health behaviors among the elderly. These factors include the scale and accessibility of outdoor spaces, the size of

challenging ground areas, the quality of grey spaces, green visibility, the availability of fitness facilities, and the diversity of site functions. It is also consistent with Fan (2023), who suggested that public spaces can become more accessible, comfortable, and enjoyable for the elderly, enhancing their quality of life and encouraging active participation in society.

The findings of this study are also consistent with the paper of Zhang et al. (2022), who found that social interactions in public spaces significantly enhance elderly women's physical and psychological well-being, highlighting the crucial role such spaces play in their social participation and overall well-being. The study underscores the necessity of designing urban public spaces that cater to the social interaction needs of elderly women, proposing principles for creating more age-friendly environments that prioritize the interplay between social interaction and well-being. It is also consistent with Ma et al. (2021) examining the influence of temperature, clothing insulation, and activity intensity on the elderly's thermal sensation, comfort, and acceptability. The study identifies globe temperature (Tg) and air temperature (Ta) as key meteorological factors affecting thermal sensation while noting the impact of outdoor microclimate, space functionality, and facilities on elderly attendance and activity preferences. The findings reveal a neutral Physiological Equivalent Temperature (NPET) of 13.2 °C, with a comfortable range (NPETR) of 3.1–23.2 °C and a preferred PET of 14.4 °C, suggesting that elderly park users have a lower predicted percentage of dissatisfaction in comfortable outdoor environments compared to indoor spaces. Notably, elderly individuals with respiratory diseases exhibited a higher NPET than those with cardiovascular diseases and diabetes. The study concludes with recommendations for optimizing the design of open spaces tailored to the elderly's physical, physiological, and psychological needs, aiming to enhance their well-being through improved thermal comfort in urban parks.

It is also consistent with the paper of Khoddam et al. (2020), who conducted a cross-sectional study involving 160 elderly participants; the research assessed Gorgan's urban and outdoor buildings, transportation systems, information and communication services, and social support and health services against WHO standards. The findings revealed that all four indicators scored significantly lower than the WHO recommendations, with the greatest and least discrepancies in "Information

and Communication" and "Buildings and Outdoor Space," respectively. The study underscores the necessity for urban planners, managers, and healthcare providers to incorporate the elderly's perspectives in enhancing city infrastructures and services to foster age-friendly urban environments.

It is also consistent with the paper of Lak et al. (2020), who explore the unique needs and preferences of the elderly regarding public open spaces (POSs) in Iranian urban neighborhoods to enhance active aging. Through a mixed-method approach comprising 64 semi-structured interviews and a survey with 420 elderly respondents, the research identifies critical factors affecting older adults' use and enjoyment of POSs. Utilizing Grounded Theory and Partial least squares-Structural Equation Modelling (PLS-SEM) for data analysis, the study highlights the significance of non-physical dimensions such as the social and cultural environment, and a sense of belonging, alongside physical attributes like access to amenities, urban landscape, environmental cleanliness, crime and fall security, and positive elder representation. The findings underscore the importance of incorporating these elements into urban planning and design to create elder-friendly outdoor environments that support the elderly's physical and social needs, offering valuable insights for urban planners, designers, and policymakers.

It is also consistent with the paper of Rohini Kumar (2017), who addressed the critical role of urban public spaces in supporting the well-being and quality of life of the elderly against a backdrop of rising life expectancy and an increasingly elderly population. Focusing on the context of New Delhi, where approximately 8% of the population is elderly, this research aims to develop design guidelines that make urban public spaces more elderly-friendly, incorporating an inclusive approach that acknowledges older people's social and physical needs. Through field studies in three urban spaces, the research identifies key indicators—accessibility, comfort, control, and sociability—as essential for evaluating the elderly-friendliness of public spaces. It utilizes surveys, participatory observations, and interviews to gather data, comparing these findings with existing literature to formulate recommendations for designing urban public spaces that cater to the elderly's needs. The dissertation concludes with design considerations to create inclusive environments for the elderly, enhancing their participation in their communities' social, economic, and cultural life.

It is also consistent with the paper of Srinaga et al. (2017), who explore the integration challenges of Fatahillah Square, a significant historical urban square in Jakarta, regarding its accessibility and comfort for children, the elderly, and individuals with disabilities. Highlighting visual, spatial, and physical comfort issues for visitors, the research aims to propose a design solution that adopts an inclusive, user-centered approach while incorporating theoretical studies on design considerations for children and the elderly. The methodology encompasses building inclusive design parameters through context-led research that assesses Fatahillah Square's quality across three essential components of urban space: hardware (physical infrastructure), software (activities and uses), and orgware (management and organization), followed by the proposition of an inclusive design concept for the square. This work underscores the importance of creating inclusive urban public spaces that cater to the diverse needs of all users, particularly in historically and culturally significant contexts.

5.3 Implication for Practice

5.3.1 Demographic Factors of Urban Micro-District

From the study, it is evident that differences in Gender, Marital Status, Duration of Residence, Living Arrangement, Type of Housing, and Mobility Limitation generate differences in Quality of Life, while differences in Age, Educational Level, and Residential District generate no differences in Quality of Life. Therefore, in order to improve the Quality of Life, various policies, particularly Accessibility, should be issued concerning factors such as Gender, Marital Status, Duration of Residence, Living Arrangement, Type of Housing, and Mobility Limitations.

Accessible design plays a pivotal role in enhancing the mobility and overall well-being of the elderly population. By addressing the unique challenges associated with aging, accessible design elements positively impact elderly mobility in various ways:

Improved Physical Accessibility: Accessible design features such as ramps, elevators, and widened pathways improve physical accessibility for the elderly. These elements reduce obstacles and facilitate ease of movement, especially for those using mobility aids like walkers or wheelchairs, promoting independent navigation in public spaces.

Enhanced Safety in Public Spaces: Accessible design emphasizes creating safer public spaces for the elderly. Well-maintained sidewalks, clear signage, and adequately marked crossings contribute to a safer environment, reducing the risk of falls or accidents. This is particularly crucial for elderly individuals with balance or vision issues.

Inclusive Transportation Options: Accessible design in transportation systems, including low-floor buses, designated seating, and audible announcements, ensures that elderly individuals can easily and comfortably utilize public transportation. This enhances their ability to engage in community activities, access healthcare, and maintain social connections.

Age-Friendly Infrastructure: Age-friendly infrastructure, a key aspect of accessible design, considers the specific needs of older adults. Well-lit pathways, benches for resting, and convenient seating intervals acknowledge the elderly's reduced physical stamina, allowing them to move more comfortably while navigating public spaces.

Support for Sensory Impairments: Accessible design addresses sensory considerations, benefiting elderly individuals with visual or hearing impairments. Clear signage with larger fonts, high-contrast colors, and auditory signals at crosswalks improve visibility and orientation, enhancing the mobility experience for those with sensory challenges.

Cognitive Support in Navigation: Accessible design contributes to cognitive support in navigation for the elderly. Transparent wayfinding systems, simple and intuitive designs, and minimized complexity in public spaces reduce cognitive stressors. This ensures elderly individuals can confidently navigate their surroundings, promoting a positive and stress-free experience.

Age-Appropriate Housing: Accessible design extends to housing options, offering age-appropriate features such as grab bars, non-slip surfaces, and accessible entrances. This ensures that the living environment supports the mobility and independence of the elderly, allowing them to age in place comfortably.

Enhanced Social Inclusion: Accessible design fosters social inclusion by creating spaces that encourage community interaction. Parks, plazas, and community centers with age-appropriate amenities and seating arrangements provide opportunities

for the elderly to engage in social activities, promoting a sense of belonging and overall well-being.

Psychological Benefits: The impact of accessible design on elderly mobility goes beyond physical considerations. By creating inclusive and accommodating environments, accessible design positively influences the psychological well-being of the elderly. Feeling confident and secure in their ability to navigate public spaces contributes to a more active and engaged lifestyle.

5.3.2 Utilization Behaviour in Public Space

It is evident from the study that differences in all aspects of Utilization Behaviour in Public Space, namely, Activities Engagement, How Usually Visit, How Often Visit, Time Spent, and Visiting Partner, generate differences in Quality of Life. Therefore, in terms of space usage, the design of public spaces to provide opportunities for socialization, such as benches for conversation or community centers for group activities, should be urgently implemented. Moreover, it should emphasize the importance of maintaining consistency in one's habits and activities throughout aging. Providing familiar and easily navigable spaces supports older adults in maintaining a sense of continuity in their daily routines. Environments that align with older individuals' changing needs and preferences, fostering age-friendly cities that promote independence, social engagement, and a high quality of life should also be concentrated.

Accessible Infrastructure: Public spaces designed with Aging in Place in mind prioritize features like ramp access, curb cuts, and smooth, non-slip pathways to facilitate ease of movement for older individuals using mobility aids like wheelchairs, walkers, or canes.

Seating and Rest Areas: Adequate seating is strategically placed throughout the public space to offer opportunities for rest. These seating areas are designed with comfortable, supportive benches or chairs that allow older individuals to take breaks during their visit.

Accessible Amenities: Restrooms, water fountains, and public phones are thoughtfully located and designed to be easily accessible for individuals with mobility or other impairments.

Wayfinding and Signage: Clear and concise signage with large, legible fonts and well-contrasted colors is essential for helping older adults navigate public

spaces independently. This includes directional signs, maps, and labels for different areas within space.

Lighting and Visibility: Adequate and well-designed lighting is crucial for safety and visibility, especially for older individuals with reduced vision. Lighting should be evenly distributed, glare minimized, and pathways well-lit to enhance visibility day and night.

Public Transportation Accessibility: Public spaces integrated with Aging Place considerations should be located near or provide easy access to public transportation options. This ensures that older individuals can easily reach and enjoy space without facing transportation barriers.

Cultural and Recreational Programming: Public spaces should offer a diverse range of cultural and recreational activities that cater to the interests and needs of older adults. This may include exercise classes, cultural events, educational workshops, and social gatherings.

Health and Wellness Features: Spaces may include facilities for health-related activities, such as exercise stations, walking paths, or spaces for group fitness classes. These amenities promote physical well-being and active aging.

Social Interaction Opportunities: Design elements that encourage social interaction, such as seating clusters, communal gathering spaces, and activities tailored to older individuals, help foster a sense of community and connection.

5.3.3 Stakeholder Involvement in Public Space

It can be seen from the study that differences in all aspects of Stakeholder Involvement in Public Space, namely, Sufficient Challenges and Opportunities, Comprehensive Problem Identification Involvement, Community Needs, Voice Opinions, Public Consultations Participation, Collaborating with Other Stakeholders, and Community Organization Project Participation generate differences in Quality of Life. Therefore, considering the needs of the elderly population is crucial for creating urban spaces that are inclusive and age-friendly. Elderly individuals represent a significant stakeholder group whose input should be integrated into the planning process. Design considerations for an elderly-friendly urban environment include accessible infrastructure, pedestrian-friendly pathways, and public spaces that accommodate diverse mobility needs. Ensuring proximity to healthcare facilities,

community centers, and green spaces becomes essential. Stakeholder engagement with older residents allows urban planners to understand their unique requirements, preferences, and challenges, leading to the creation of age-sensitive designs that enhance the overall quality of life for the elderly population. Incorporating elderly-friendly design considerations aligns with the principles of stakeholder theory, recognizing the importance of diverse perspectives for the holistic development of urban spaces. Therefore, the following details are key considerations in ensuring elderly-friendly urban design should be concentrated.

Accessible Infrastructure: Elderly-friendly urban design prioritizes accessible infrastructure, including sidewalks, ramps, and pedestrian crossings. Designing streets and public spaces with accessibility features such as tactile paving and curb cuts ensures that older individuals with diverse mobility needs can navigate the urban environment safely and comfortably.

Pedestrian-Friendly Pathways: Creating pedestrian-friendly pathways with benches, resting areas, and clear signage enhances the walking experience for the elderly. Incorporating well-maintained sidewalks, proper lighting, and comfortable seating encourages seniors to engage in outdoor activities and promotes social interactions.

Proximity to Essential Services: Urban planning should consider the proximity of housing to essential services such as healthcare facilities, pharmacies, and community centers. Ensuring that these services are easily accessible by foot or through reliable public transportation is crucial for the convenience and well-being of older residents.

Age-Friendly Public Spaces: Designing public spaces with the elderly in mind involves creating age-friendly parks, plazas, and recreational areas. These spaces should accommodate various levels of physical ability, offering amenities like seating, shade, and facilities for social activities. Engaging elderly stakeholders in the design process helps tailor these spaces to their preferences.

Healthcare Accessibility: Stakeholder theory encourages a focus on healthcare accessibility for the elderly. Planning should involve considering the location of medical facilities, the availability of home healthcare services, and the overall healthcare infrastructure to support the aging population.

Inclusive Housing Design: Elderly-friendly urban planning includes the development of inclusive housing designs. This involves considerations for adaptable homes, age-appropriate amenities, and integrating features that enhance safety and accessibility, such as grab bars and non-slip surfaces.

Community Engagement: Engaging elderly stakeholders in planning fosters a deeper understanding of their unique needs and preferences. Community engagement initiatives, such as workshops and consultations, provide a platform for seniors to voice their concerns, contributing to more tailored and responsive urban design solutions.

Cultural and Recreational Opportunities: Elderly-friendly design extends to cultural and recreational opportunities. Creating spaces for cultural activities, community events, and age-specific recreational programs promotes social engagement and a sense of belonging among the elderly.

Digital Inclusion: In the digital age, elderly-friendly design should also address digital inclusion. Ensuring that information about city services, events, and programs is available through accessible and user-friendly platforms contributes to the overall communication accessibility for older adults.

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APPENDICES

Appendix 1: Questionnaire (English Version)

THE INFLUENCE OF ELDERLY-FRIENDLY PUBLIC SPACES AND STAKEHOLDER PERSPECTIVE ON THE QUALITY OF LIFE IN URBAN MICRO-DISTRICTS OF FUZHOU CITY, FUJIAN PROVINCE, CHINA

Thank you for participating in this study. Your feedback is crucial in helping us understand how to make public spaces in Fuzhou more elderly-friendly. All responses will be kept confidential and used solely for research purposes.

Part 1: Urban Micro-District Characteristics
1. **Gender:**
   ☐ Male
   ☐ Female
2. **Marital Status:** _____

☐ Single
☐ Married
☐ Divorced

3. Age: _____
☐ 60 but less than 65 years old
☐ 65 but less than 70 years old
☐ 70 but less than 75 years old
☐ 75 years old and more

4. Educational Background
☐ Junior High School
☐ High School
☐ Diploma/Certificate
☐ Bachelor Degree
☐ Master's Degree and higher

5. Residential District:
☐ Gulou District
☐ Cangshan District
☐ Taijiang District

6. Duration of Residence in Current Micro-District:
☐ Less than 1 year
☐ 1 but less than 5 years
☐ 5 but less than 10 years
☐ 10 years and more

7. Living Arrangement:
☐ Alone
☐ With Partner
☐ With Friends
☐ With Family
☐ Others

8. Type of Housing:
☐ Shared Residence
☐ Apartment/Condominium
☐ Senior Living Facility or Retirement Community
☐ Single-family Home
☐ Others

9. Do you have any mobility limitations?
☐ No
☐ Yes

Part 2 Elderly Utilization Behavior on Public Spaces
10. What activities do you primarily engage in in public spaces? (Choose only one)
☐ Attending Events
☐ Relaxing
☐ Walking

☐ Exercise

☐ Other, please specify: _____

11. How do you usually get to these public spaces? (Choose only one)

☐ Walk

☐ Drive

☐ Public Transportation

☐ Assistance Required

☐ Other, please specify: _____

12. How often do you visit public spaces within your community?

☐ Daily

☐ Weekly

☐ Monthly

☐ Rarely

☐ Occasionally

13. On average, how long do you spend in public spaces during each visit?

☐ Less than 1 hour

☐ 1 but less than 3 hours

☐ 3 but less than 5 hours

☐ 5 hours and more

14. Who accompanies you to the public spaces? (Choose only one)

☐ Alone

☐ With Family

☐ With Friends

☐ With Caretaker

☐ Others: _____

Part 3 Stakeholder Involvement

15. Are sufficient challenges and opportunities involved in planning and designing public space?

☐ Yes

☐ No

☐ Not sure

16. Have you ever been involved in Comprehensive Problem Identification Issues?

☐ Yes

☐ No

☐ Not sure

17. Have you been providing or addressing the needs of underrepresented or marginalized communities, particularly the Social Equity and Inclusivity issues?

☐ Yes

☐ No

☐ Not sure

18. Can you voice your opinions and contribute to the decision-making process to make public spaces more elderly-friendly?

     ☐ Yes

     ☐ No

     ☐ Not sure

19. Have you participated in public consultations, workshops, and collaborative visioning sessions and actively engaged in decision-making?

     ☐ Yes

     ☐ No

     ☐ Not sure

20. Have you ever been collaborating with other stakeholders, particularly Local Businesses, Nonprofit Organizations, Academia, Researchers, Developers, and Investors to improve public space design?

     ☐ Yes

     ☐ No

     ☐ Not sure

21. Have you ever participated in community organization projects focused on enhancing public spaces for the elderly?

     ☐ Yes

     ☐ No

     ☐ Not sure

Part 4: Public Spaces Characteristics

Please give the answers to the following questions based on the true feelings formed in the company's work and put "√" on the corresponding options. All answers are not divided into right and wrong. You only need to choose the options that match you (1-5 correspond to Very Low, Low, Average, High, Very High).

Classification	Item	1	2	3	4	5
22. Accessibility	22.1 The public transport facilities to the public spaces					
	22.2 The availability of ramps at entrances/exits in public spaces					
	22.3 The handrails provided along walkways and stairs in public spaces					
	22.4 The seating arrangements in public spaces for your needs					
	22.5 The various entrances to access public spaces					
	22.6 The adequate of public spaces					

23. Safety Measures	23.1 Lighting Capacity during evening and night hours					
	23.2 Pedestrian Paths marked and free from obstacles					
	23.3 A visible presence of emergency call buttons or assistance services					
	23.4 Parking facilities and safe pedestrian crossings					
	23.5 Signage in public spaces is clear and easy to understand					
	23.6 There are enough shelters or covered areas for protection against the weather					
24. Types of Amenities	24.1 The restrooms in public spaces are adequately equipped and clean					
	24.2 The recreational facilities (e.g., exercise equipment, walking paths) tailored for the elderly					
	24.3 The accessibility features (e.g., ramps and handrails) in our public spaces.					
	24.4 There are enough quiet areas in public spaces for relaxation					

	24.5 There are enough clean and green areas					
	24.6 There are enough trash bins along the walkways					

Part 5: Elderly Needs and Preferences for Public Spaces

Classification	Item	1	2	3	4	5
25. Universal Design	25.1 Infrastructure					
	25.2 Pathways					
	25.3 Ramps					
	25.4 Elevators					
	25.5 Tactile Paving					
26. Participatory Planning	26.1 Establish a partnership with local stakeholders and create an action plan. Conduct community workshops					
	26.2 Understand the issue by creating a diagnostic portrait of the use of public space					
	26.3 Identify design scenarios that will meet needs and resolve issues					

Classification	Item	1	2	3	4	5
	26.4 Decide with the various stakeholders, validate and improve upon the developed solutions.					
	26.5 Implement the design solutions and advocate for citizen visions and inaugurate.					
27. Multi-modal Transportation	27.1 Pedestrian-friendly pathways					
	27.2 Cycling Infrastructure					
	27.3 Public Transit Accessibility					
	27.4 Sufficient Car Park					
	27.5 Network transportation					
28. Inclusive Play Spaces	28.1 Playgrounds for Children					
	28.2 Adaptive Swings					
	28.3 Sensory Elements					
	28.4 Modern Playgrounds Designed					
	28.5 Universally Designed Play Equipment					
29. Age-Friendly Infrastructure	29.1 Workability and Pedestrian Safety					
	29.2 Accessible Public Transportation					
	29.3 Well-designed Parks and Green Spaces					
	29.4 Benches for Resting					
	29.5 Clear Signage					
30. Accessible Information and Communication	30.1 Provide Signage with Clear Visuals					
	30.2 Use Braille for Tactile Information					
	30.3 Employ Technology for Real-time Updates					
	30.4 Announcements to Cater to Individuals					
	30.5 Provide Information with Various Channels and Languages					
31. Inclusive Public Events	31.1 Festivals					
	31.2 Markets					
	31.3 Cultural Gatherings					
	31.4 Cultural Competence Training					
	31.5 Affordable Housing Initiatives					

Part 6 Elderly Well-being and Social Inclusion

Classification	Item	1	2	3	4	5
32. Environmental and Health Indicator	32.1 Providing Recreation, Leisure, and Exercise Opportunities					
	32.2 Providing Green public spaces, such as parks, community gardens, and urban forests,					
	32.3 Providing Walkable Areas					
	32.4 Providing Pedestrian-friendly zones					

	32.5 Providing Well-designed Urban Landscapes					
33. Economic Indicator	33.1 Attracting businesses, cafes, and markets					
	33.2 Increasing foot traffic and supporting small businesses.					
	33.3 Enhancing property values and Attracting real estate investments					
	33.4 Attracting tourism and generating revenue for local businesses					
	33.5 Facilitating the integration of immigrants into the local economy and fostering social capital					

Thank you for your valuable input! Your feedback is instrumental in helping us create better and more accessible public spaces for everyone in the community.

If you have further comments or need assistance, please contact Lifan, Willy ZHENG.

Appendix 2: Validity Test

Appendix 2.1: Validity Test of Public Spaces Characteristics

Factor	Item	Expert 1	Export 2	Expert 3	Index
22. Accessibility	22.1 The public transport facilities to the public spaces	+1	+1	+1	1
	22.2 The availability of ramps at entrances/exits in public spaces	+1	+1	+1	1
	22.3 The handrails provided along walkways and stairs in public spaces	+1	+1	+1	1
	22.4 The seating arrangements in public spaces for your needs	+1	+1	+1	1
	22.5 The various entrances to access public spaces	+1	+1	+1	1
	22.6 The adequate of public spaces	+1	+1	+1	1

23. Safety Measures	23.1 Lighting Capacity during evening and night hours	+1	+1	+1	1
	23.2 Pedestrian Paths marked and free from obstacles	+1	+1	+1	1
	23.3 A visible presence of emergency call buttons or assistance services	+1	+1	+1	1
	23.4 Parking facilities and safe pedestrian crossings	+1	+1	+1	1
	23.5 Signage in public spaces is clear and easy to understand	+1	+1	+1	1
	23.6 There are enough shelters or covered areas for protection against the weather	+1	+1	+1	1
24. Types of Amenities	24.1 The restrooms in public spaces are adequately equipped and clean	+1	+1	+1	1

	24.2 The recreational facilities (e.g., exercise equipment, walking paths) tailored for the elderly	+1	+1	+1	1
	24.3 The accessibility features (e.g., ramps and handrails) in our public spaces.	+1	+1	+1	1
	24.4 There are enough quiet areas in public spaces for relaxation	+1	+1	+1	1
	24.5 There are enough clean and green areas	+1	+1	+1	1
	24.6 There are enough trash bins along the walkways	+1	+1	+1	1

Appendix 2.2: Validity Test of Elderly Needs and Preferences for Public Spaces

Factor	Item	Expert 1	Export2	Expert3	Index
25. Universal Design	25.1 Infrastructure	+1	+1	+1	1
	25.2 Pathways	+1	+1	+1	1
	25.3 Ramps	+1	+1	+1	1

	25.4 Elevators	+1	+1	+1	1
	25.5 Tactile Paving	+1	+1	+1	1
26. Participatory Planning	26.1 Establish a partnership with local stakeholders and create an action plan. Conduct community workshops	+1	+1	+1	1
	26.2 Understand the issue by creating a diagnostic portrait of the use of public space	+1	+1	+1	1
	26.3 Identify design scenarios that will meet needs and resolve issues	+1	+1	+1	1
	26.4 Decide with the various stakeholders, validate and improve upon the developed solutions.	+1	+1	+1	1
	26.5 Implement the design solutions and advocate for citizen visions and inaugurate.	+1	+1	+1	1
27. Multi-modal Transportation	27.1 Pedestrian-friendly pathways	+1	+1	+1	1
	27.2 Cycling Infrastructure	+1	+1	+1	1
	27.3 Public Transit Accessibility	+1	+1	+1	1
	27.4 Sufficient Car Park	+1	+1	+1	1
	27.5 Network transportation	+1	+1	+1	1
28. Inclusive Play Spaces	28.1 Playgrounds for Children	+1	+1	+1	1
	28.2 Adaptive Swings	+1	+1	+1	1
	28.3 Sensory Elements	+1	+1	+1	1
	28.4 Modern Playgrounds Designed	+1	+1	+1	1
	28.5 Universally Designed Play Equipment	+1	+1	+1	1
29. Age-Friendly Infrastructure	29.1 Workability and Pedestrian Safety	+1	+1	+1	1
	29.2 Accessible Public Transportation	+1	+1	+1	1
	29.3 Well-designed Parks and Green Spaces	+1	+1	+1	1

	29.4 Benches for Resting	+1	+1	+1	1
	29.5 Clear Signage	+1	+1	+1	1
30. Accessible Information and Communication	30.1 Provide Signage with Clear Visuals	+1	+1	+1	1
	30.2 Use Braille for Tactile Information	+1	+1	+1	1
	30.3 Employ Technology for Real-time Updates	+1	+1	+1	1
	30.4 Announcements to Cater to Individuals	+1	+1	+1	1
	30.5 Provide Information with Various Channels and Languages	+1	+1	+1	1
31. Inclusive Public Events	31.1 Festivals	+1	+1	+1	1
	31.2 Markets	+1	+1	+1	1
	31.3 Cultural Gatherings	+1	+1	+1	1
	31.4 Cultural Competence Training	+1	+1	+1	1
	31.5 Affordable Housing Initiatives	+1	+1	+1	1

Appendix 2.3: Validity Test of Elderly Well-being and Social Inclusion

Factor	Item	Expert1	Expert2	Expert3	Index
32. Environmental and Health Indicator	32.1 Providing Recreation, Leisure, and Exercise Opportunities	+1	+1	+1	1
	32.2 Providing Green public spaces, such as parks, community gardens, and urban forests,	+1	+1	+1	1
	32.3 Providing Walkable Areas	+1	+1	+1	1
	32.4 Providing Pedestrian-friendly zones	+1	+1	+1	1
	32.5 Providing Well-designed Urban Landscapes	+1	+1	+1	1
33. Economic Indicator	33.1 Attracting businesses, cafes, and markets	+1	+1	+1	1

	33.2 Increasing foot traffic and supporting small businesses.	+1	+1	+1	1
	33.3 Enhancing property values and attracting real estate investments	+1	+1	+1	1
	33.4 Attracting tourism and generating revenue for local businesses	+1	+1	+1	1
	33.5 Facilitating the integration of immigrants into the local economy and fostering social capital	+1	+1	+1	1

Appendix 3: Reliability Test

Appendix 3.1: Reliability Test of Public Spaces Characteristics

Classification	Item	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha
22. Accessibility (.783)	22.1 The public transport facilities to the public spaces	14.915	.529	.752
	22.2 The availability of ramps at entrances/exits in public spaces	15.190	.503	.758
	22.3 The handrails provided along walkways and stairs in public spaces	16.877	.418	.776
	22.4 The seating arrangements in public spaces for your needs	15.093	.623	.730
	22.5 The various entrances to access public spaces	14.496	.588	.736
	22.6 The adequate of public spaces	15.179	.537	.749

	23.1 Lighting Capacity during evening and night hours	14.060	.598	.739
23. Safety Measures (.787)	23.2 Pedestrian Paths marked and free from obstacles	14.546	.540	.755
	23.3 A visible presence of emergency call buttons or assistance services	15.536	.572	.748
	23.4 Parking facilities and safe pedestrian crossings	14.378	.621	.734
	23.5 Signage in public spaces is clear and easy to understand	15.174	.578	.746

	23.6 There are enough shelters or covered areas for protection against the weather	17.185	.327	.800
	24.1 The restrooms in public spaces are adequately equipped and clean	16.459	.397	.800
24. Types of Amenities (.796)	24.2 The recreational facilities (e.g., exercise equipment, walking paths) tailored for the elderly	16.300	.425	.793
	24.3 The accessibility features (e.g., ramps and handrails) in our public spaces.	15.032	.656	.741
	24.4 There are enough quiet areas in public spaces for relaxation	14.364	.634	.743
	24.5 There are enough clean and green areas	14.973	.594	.754

	24.6 There are enough trash bins along the walkways	15.022	.611	.750

Appendix 3.2: Reliability Test of Elderly Needs and Preferences for Public Spaces

Classification	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
25. Universal Design (.729)	25.1 Infrastructure	8.184	.538	.665
	25.2 Pathways	7.404	.585	.641
	25.3 Ramps	7.753	.576	.647
	25.4 Elevators	8.771	.401	.714
	25.5 Tactile Paving	8.595	.360	.733

Classification	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
26. Participatory Planning (.834)	26.1 Establish a partnership with local stakeholders and create an action plan. Conduct community workshops	12.809	.300	.887
	26.2 Understand the issue by creating a diagnostic portrait of the use of public space	10.667	.694	.785
	26.3 Identify design scenarios that will meet needs and resolve issues	9.650	.741	.768
	26.4 Decide with the various stakeholders, validate and improve upon the developed solutions.	10.775	.725	.779
	26.5 Implement the design solutions and advocate for citizen visions and inaugurate.	9.725	.762	.762
27. Multi-modal Transportation (.722)	27.1 Pedestrian-friendly pathways	8.538	.655	.610

	27.2 Cycling Infrastructure	9.869	.364	.719
	27.3 Public Transit Accessibility	8.065	.670	.596
	27.4 Sufficient Car Park	8.904	.416	.706
	27.5 Network transportation	9.879	.346	.726
28. Inclusive Play Spaces (.856)	28.1 Playgrounds for Children	16.844	.282	.910
	28.2 Adaptive Swings	12.616	.746	.805
	28.3 Sensory Elements	12.407	.818	.786
	28.4 Modern Playgrounds Designed	11.931	.844	.776

	28.5 Universally Designed Play Equipment	13.187	.687	.821
29. Age-Friendly Infrastructure (.728)	29.1 Workability and Pedestrian Safety	9.542	.461	.693
	29.2 Accessible Public Transportation	8.491	.532	.664
	29.3 Well-designed Parks and Green Spaces	8.458	.590	.641
	29.4 Benches for Resting	9.329	.454	.694
	29.5 Clear Signage	8.988	.416	.713
30. Accessible Information and Communication (.826)	30.1 Provide Signage with Clear Visuals	13.242	.367	.861
	30.2 Use Braille for Tactile Information	11.361	.729	.762
	30.3 Employ Technology for Real-time Updates	10.671	.714	.763
	30.4 Announcements to Cater to Individuals	11.278	.660	.780
	30.5 Provide Information with Various Channels and Languages	11.542	.669	.778

31. Inclusive Public Events (.735)	31.1 Festivals	8.602	.519	.682
	31.2 Markets	7.731	.588	.651
	31.3 Cultural Gatherings	8.024	.596	.651
	31.4 Cultural Competence Training	9.045	.413	.719
	31.5 Affordable Housing Initiatives	8.865	.381	.734

Appendix 3.3: Reliability Test of Elderly Well-being and Social Inclusion

32. Environmental and Health Indicator (.802)	32.1 Providing Recreation, Leisure, and Exercise Opportunities	12.648	.300	.846
	32.2 Providing Green public spaces, such as parks, community gardens, and urban forests,	10.523	.694	.732
	32.3 Providing Walkable Areas	9.878	.677	.734
	32.4 Providing Pedestrian-friendly zones	10.418	.619	.753
	32.5 Providing Well-designed Urban Landscapes	10.287	.670	.737
33. Economic Indicator (.780.)	33.1 Attracting businesses, cafes, and markets	10.857	.588	.728
	33.2 Increasing foot traffic and supporting small businesses.	10.394	.613	.719
	33.3 Enhancing property values and attracting real estate investments	10.758	.604	.723
	33.4 Attracting tourism and generating revenue for local businesses	10.882	.516	.752

	33.5 Facilitating the integration of immigrants into the local economy and fostering social capital	11.228	.459	.771

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