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THE DEVELOPMENT OF AN ELDERLY-FRIENDLY CITY MODEL FOR BANGKOK, THAILAND

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Abstract

This research aims to develop an elderly-friendly city model for Bangkok, Thailand, focusing on addressing the challenges of an aging society by holistically enhancing the quality of life for the elderly. The study is guided by four main objectives: (1) to examine the current state of elderly quality of life and city development conducive to aging populations, (2) to identify city development factors influencing elderly quality of life, (3) to design and develop an elderly-friendly city model, and (4) to validate the developed model through expert evaluation.

A mixed-methods approach was employed. Quantitative data was collected from 400 elderly participants across six pilot districts in Bangkok, while qualitative data was obtained through in-depth interviews and the Delphi technique.

Findings indicate that the overall quality of life among the elderly is at a "high" level (mean = 4.21), with environmental and psychological dimensions scoring the highest. However, limitations remain in areas such as income, sleep, and social engagement. According to the WHO criteria for elderly-friendly cities, five districts were rated "very good," while Suan Luang District was rated "good." Key weaknesses identified include housing and economic participation.

Positive factors contributing to elderly quality of life include social acceptance, access to information, and community support. Conversely, negative factors include inadequate housing and limited social participation.

The proposed model integrates the eight domains of the WHO elderly-friendly framework with the principles of Active Ageing and Universal Design. It emphasizes five strategic directions: (1) enhancing elderly-friendly public transportation systems, (2) promoting safe and accessible housing, (3) expanding opportunities for social and economic participation, (4) developing inclusive communication systems for all age groups, and (5) fostering local partnerships to ensure sustainable implementation. This model can serve as a prototype for other cities aiming to adapt effectively to an ageing society with quality of life at its core.

1. Introduction

Thailand is rapidly transitioning into a fully aged society. In 2022, the country had over 12.5 million people aged 60 and above, accounting for 18.94% of the total population (Department of Older Persons, 2023). This marks a significant demographic shift with long-term implications.

According to the United Nations, ageing societies can be categorized into three stages: (1) Aging Society, (2) Aged Society, and (3) Super-Aged Society. Thailand officially entered the aging society stage in 2005 and is projected to become an aged society in the near future (Department of Older Persons, 2021).

Although the Thai government has continuously undertaken policy-level preparations—such as the announcement of the National Plan for Older People, the enactment of the Older People Act B.E. 2546 (2003), and the designation of ageing society development as a national agenda—practical implementation remains fragmented. There is a lack of effective integration among relevant agencies and stakeholders, raising a critical question: can Thailand truly enhance the quality of life for its elderly population in a way that promotes active ageing and enables older people to play a meaningful role in driving society forward?

Bangkok, as the capital and the center of urban development, has the highest number of elderly people in the country, with over 1.1 million individuals aged 60 and above (Department of Provincial Administration, 2022). The city faces significant challenges in adapting its urban infrastructure to accommodate rapid demographic changes, particularly within an urban context

marked by disparities in access to services and environments conducive to elderly well-being. These issues have become even more critical in the aftermath of the COVID-19 crisis, which underscored the importance of welfare systems and support services for vulnerable population groups.

The concept of an Age-Friendly City is a critical approach to transforming urban environments to better respond to the physical and social needs of older people. This framework, as proposed by the World Health Organization (WHO), encompasses eight key dimensions: outdoor spaces and buildings, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community support and health services. These domains align closely with the principles of Active Ageing and underscore the necessity of urban planning guided by Universal Design.

At the local policy level, Bangkok has adopted strategic directions that emphasize the development of a City for All under its 20-Year Bangkok Development Plan (2013–2032) and the Third Action Plan for Older People (2023–2037). These initiatives aim to promote a high quality of life for the elderly, encouraging self-reliance and active societal participation. This policy direction is consistent with global trends toward sustainable urban development and reflects a systematic approach to addressing the challenges of an ageing society.

Accordingly, this study aims to examine the current situation and quality of life of older people in Bangkok, analyze the factors related to the development of an elderly-friendly city, and design an city model appropriate to Bangkok's specific context. The ultimate goal is to develop a prototype framework that can serve as a foundation for improving the quality of life of the elderly not only in Bangkok but also in other urban areas facing similar demographic challenges.

2. Literature Review

2.1 Conceptual Framework of Quality of Life Among the Elderly

The United Nations (2019) defines "older people" or "elderly" as individuals aged 60 years and above. It further categorizes ageing societies into three levels: (1) an ageing society, in which individuals aged 60 and over constitute more than 10% of the total population or those aged 65 and over account for more than 7%; (2) an aged society, where individuals aged 60 and over represent more than 20% of the population or those aged 65 and over exceed 14%; and (3) a super-aged society, where more than 20% of the population is aged 65 and above. Thailand has been classified as an ageing society since 2005 and is projected to become a super-aged society within the next two decades (Department of Older Persons, 2023). This demographic transition necessitates long-term policy and environmental adaptations to accommodate this population group, particularly in the areas of health promotion, access to services, and social participation.

Quality of Life (QoL) refers to a state of well-being in which individuals live with dignity, autonomy, and a sense of purpose. The World Health Organization (2002) outlines several dimensions of QoL: physical health, psychological well-being, social relationships, environmental context, and the capacity for independent living. Schalock and Verdugo (2002) proposed a QoL framework applicable to vulnerable populations, including older adults, encompassing eight dimensions: emotional well-being, interpersonal relationships, material well-being, personal development, physical well-being, self-determination, social inclusion, and civil rights.

Research in the Thai context has highlighted the multifaceted nature of QoL among older adults. For example, Chen and Levy-Storms (2015) found that QoL is influenced by social, economic, and urban structural factors. A review of existing literature indicates that individual-level factors, particularly socio-economic ones, significantly affect various dimensions of QoL. These include income, age, employment status, caregiving support, chronic health conditions, and

engagement in community activities. Phua (2019) found that older adults with low income are more likely to experience chronic stress and reduced social interaction, negatively impacting both physical and mental health. Positive factors contributing to QoL include employment, financial savings, participation in social activities, and regular physical exercise. In contrast, risk factors include indebtedness, social isolation, and chronic illness (Chan et al., 2018).

2.2 The Concept of an Age-Friendly City

The concept of an Age-Friendly City was introduced by the World Health Organization (WHO, 2007) as a strategic framework aimed at enhancing the quality of life for older adults living in urban environments. It promotes urban development that supports safety, dignity, and social inclusion for the elderly, while encouraging cities to adapt their physical infrastructure and public services in response to demographic ageing over the long term.

The WHO outlines eight key domains that constitute an age-friendly city.

1. Outdoor Spaces and Buildings: This dimension emphasizes the physical design of the built environment rather than merely the availability of amenities. Key factors include the width and accessibility of entrances, doors, and walkways for wheelchairs or walking aids; organized lobby and rest areas; adequate nighttime lighting; non-slip or even surfaces; accessible public seating and green spaces; and the presence of ramps, handrails, and public restrooms designed to universal standards. The availability of signage, dedicated service points, and parking for older adults and people with disabilities further contributes to a safe and navigable environment.

2. Transportation: Critical factors include the availability and accessibility of public transportation services, age-friendly boarding and disembarking points, designated seating, and cleanliness of vehicles. Other elements include clear signage displaying fares and schedules, supplementary transport options when primary services are insufficient, driver training to accommodate the needs of older passengers, and proper maintenance of sidewalks, roads, overpasses, and street lighting, especially in high-risk areas. Together, these contribute to safe, convenient mobility for older adults.

3. Housing: This dimension assesses the safety and suitability of existing housing, access to affordable rental units with maintenance and cleaning services, and annual risk assessments of homes and neighborhoods by local authorities. It also includes home modification services, such as the installation of grab bars, ramps, and non-slip flooring, as well as the development of dedicated senior housing projects. External housing environments are also considered, including drainage, waste disposal, pest control, and the design of accessible walkways and public spaces.

4. Social Participation: Key factors include the availability of community activities and events that are accessible to older adults in terms of timing and location, whether at recreational centers, libraries, or public parks. Clear and comprehensive information dissemination is essential, as is the design of diverse and engaging programs tailored to various subgroups within the older population. Special initiatives targeting socially isolated or vulnerable older individuals can also foster mental well-being and reduce loneliness.

5. Respect and Social Inclusion: This dimension evaluates societal attitudes and policies toward older adults, including the design of inclusive services and products for both welfare and commercial purposes. It encompasses respectful service delivery, intergenerational community planning, recognition of older adults as valued contributors, regular consultation with the elderly in decision-making, positive media representation, and the integration of ageing-related knowledge in educational curricula. Efforts to ensure low-income older adults can access public services are also essential.

6. Civic Participation and Employment: Key factors include opportunities for older adults to engage in volunteerism and flexible employment, access to post-retirement training with fair compensation, involvement in government initiatives, and public campaigns promoting the employment of older adults. It also includes age- and ability-inclusive work environments and support for income-generating activities, such as community enterprises and skill-based entrepreneurship.

7. Communication and Information: This dimension emphasizes accessible communication formats, such as large print and telephone hotlines, as well as the regular and reliable dissemination of information. It includes the establishment of coordination networks involving staff and volunteers, systematic emergency alerts, user-friendly printed and digital media, free public internet or computer access, accessible electronic devices (e.g., large-button ATMs, digital queue systems), and digital literacy training to support confident use of online platforms and social media.

8. Community Support and Health Services: Key factors involve the provision of continuous, multidisciplinary care (e.g., post-hospital home visits), one-stop service centers for older adults, health and environmental literacy campaigns, routine health screenings, support for community-based health innovations and research, and environmental health monitoring (e.g., waste management, $PM_{2.5}$ mitigation, and mosquito control). Collectively, these initiatives contribute to sustainable health and well-being for older adults.

This conceptual framework aligns closely with the principles of Active Aging, which emphasize the optimization of health, participation, and security to enable meaningful living among older adults. It also integrates the principles of Universal Design, which advocate for environments, both physical and digital, that accommodate individuals across all ages and abilities (Imrie, 2012).

The application of this framework at the local level requires careful consideration of urban contexts, including economic conditions, infrastructure, and cultural norms. Evidence from the WHO's Global Network of Age-Friendly Cities demonstrates that successful implementation often involves multi-sectoral policy integration and strong community engagement in designing responsive services and infrastructure for older adults (Plouffe & Kalache, 2010).

2.3 Related Research

The study by Sirven and Debrand (2008) found that older adults who have access to nearby public spaces and healthcare services tend to exhibit better mental well-being. Similarly, Plouffe and Kalache (2010) confirmed that urban environments designed to support walkability, communication, and social engagement can reduce dependency and promote longer, healthier lives.

These findings have contributed to the development of a proposed model for an Age-Friendly City that integrates the WHO framework, the principles of Active Ageing, and the concept of Universal Design. This integrative model aims to provide a practical foundation for implementation at the local level.

The overarching goal is to enable older adults to live safely, access resources equitably, and remain socially engaged—particularly in complex urban settings such as Bangkok. Therefore, the application of this framework must be context-sensitive and account for the specific economic, social, and cultural characteristics of each locality.

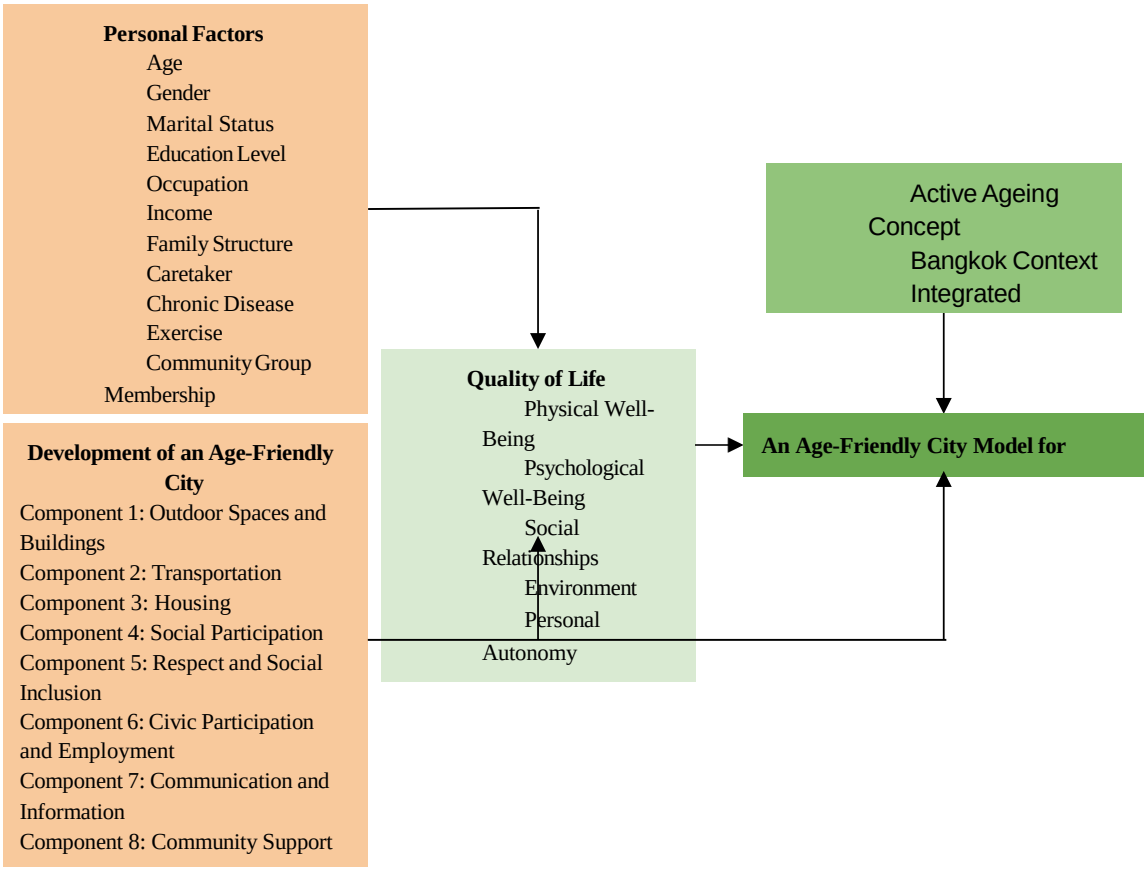

Figure 1: Conceptual Framework

3. Methodology

This study aims to develop a model of an elderly-friendly city for the Bangkok Metropolitan Area using a mixed-methods research design, integrating both quantitative and qualitative approaches. The research process was divided into four main phases, as follows.

3.1 Quantitative Phase

The quantitative phase of this study focused on examining the relationship between individual factors, urban age-friendliness, and the quality of life among older adults in Bangkok. The sample consisted of 400 individuals aged 60 years and above. The sample size was determined using Yamane's (1973) formula at a 95% confidence level, based on the total elderly population of 1,191,450 in the Bangkok Metropolitan Area (Department of Provincial Administration, 2022).

A multi-stage sampling technique was employed to ensure representativeness. Bangkok was first divided into six geographic zones. From each zone, the district with the highest number of older adults was selected: Chom Thong, Din Daeng, Bang Khae, Prawet, Suan Luang, and Bang Khen. Proportional stratified sampling was then used to select participants within these districts.

Data was collected using a structured questionnaire designed to capture a comprehensive range of relevant variables. The instrument consisted of four main sections. The first section gathered general demographic information and personal factors such as age, gender, income, education level, health status, and living arrangement. The second section measured quality of life across five dimensions—physical health, psychological well-being, social relationships, environmental dimensions, and independence—based on the framework proposed by the World

Health Organization (WHO). The third section evaluated perceptions of elderly-friendliness in the participants' communities, following the WHO's eight-domain framework: outdoor spaces and buildings, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community and health services. The final section comprised open-ended questions that invited participants to offer suggestions for improving the urban environment to better accommodate the needs of older adults.

All closed-ended items were rated on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Descriptive statistics—including frequencies, means, and standard deviations—were used to summarize the characteristics of the sample and their responses. Pearson's correlation coefficient was used to assess relationships between variables. In addition, multiple regression analysis using the Enter method was conducted to examine the influence of individual and environmental factors on the overall quality of life of older adults.

3.2 Qualitative Phase

The qualitative component of this study was conducted through in-depth interviews and focus group discussions with a total of 16 key informants. These included six district directors from the selected study areas, representatives from relevant governmental agencies such as the Department of Older Persons and the Department of City Planning, community leaders, and managers of senior welfare centers. Participants were selected using purposive sampling in combination with the Snowball Technique, allowing for the identification and recruitment of individuals directly involved in policymaking and on-the-ground implementation related to urban planning and services for older adults.

Data was analyzed using content analysis to extract recurring themes, patterns, and insights relevant to the development of an elderly-friendly city model. To enhance the trustworthiness and validity of the findings, triangulation was employed across data sources, types of information, and research methods. This multi-faceted verification process ensured that the results were not only consistent but also grounded in the lived realities of stakeholders across different administrative and community levels.

In addition, two expert consultation seminars, connoisseurship meetings, were organized to present, review, and validate the proposed model for an age-friendly city. These sessions brought together subject matter experts, policymakers, and practitioners to critically examine the model's components, feasibility, and applicability within Bangkok's context.

3.3 Instrument Validation

The questionnaire used in the quantitative phase underwent content validity assessment by a panel of subject-matter experts to ensure its appropriateness and alignment with the study objectives. The instrument was developed based on the World Health Organization's (2007) framework for Age-Friendly Cities, ensuring relevance to the core domains identified as essential for promoting the well-being of older adults in urban contexts.

For the qualitative component, the accuracy and credibility of the data were verified through expert review and triangulation with multiple data sources, including transcripts from in-depth interviews and supporting academic literature. This process ensured that the qualitative findings were both contextually grounded and methodologically sound.

3.4 Summary of Data Analysis by Research Objectives

Objective	**Sample/Tool**	**Data Analysis**

1. Study Quality of Life	400 older people questionnaire	Descriptive statistics
2. Study the Influencing Factors	400 older people questionnaire	Independent Samples t-test, One-Way ANOVA, and Tukey HSD
3. Develop a City Model	Interview 16 key informants	Content Analysis
4. Evaluate the Model	Delphi with experts	Content Analysis

4.1 Current Status of Quality of Life and Development of an Elderly-Friendly City in Bangkok

4.1.1 Development of an Elderly-Friendly City in Bangkok

As Thailand's capital and socio-economic hub, Bangkok is rapidly transitioning into an aged society. According to the Department of Provincial Administration (2022), the number of residents aged 60 and over has already exceeded one million, underscoring the urgent need to upgrade urban infrastructure and public services to meet the specific needs of older adults. The World Health Organization's Age-Friendly City framework (WHO, 2007) has thus been adopted as a key evaluative and developmental model. This framework encompasses eight dimensions essential for ensuring safe, accessible, and socially inclusive urban living, namely: outdoor spaces and buildings; transportation; housing; social participation; respect and social inclusion; civic participation and employment; communication and information; and community support and health services.

This study assessed the current situation in Bangkok across these eight dimensions. Firstly, the domain of outdoor spaces and buildings received full marks in all districts, indicating well-designed sidewalks, crosswalks, wayfinding signage, and public lighting conducive to elder mobility. However, despite robust infrastructure, local authorities are advised to focus on ongoing maintenance and consistent upgrades to ramps and handrails suitable for wheelchair users.

Secondly, transportation performance was strongest in Bang Khen and Bang Khae, particularly in accessible boarding areas and clear signage. In contrast, Suan Luang scored poorly, with limited access to public transport in narrow lanes and alleys. Improvements are needed in installing sheltered pick-up points and community-linked shuttle routes to facilitate elder mobility in underserved areas.

Housing revealed significant shortcomings in Suan Luang and Din Daeng, both scoring relatively low. Immediate measures are required, including the implementation of senior housing projects equipped with emergency call systems and daytime activity areas, and assistance for modifying existing homes with grab bars, ramps, and anti-slip flooring. Encouraging landlords and property developers to retrofit rental units for elder accessibility would expand housing opportunities for vulnerable groups.

Social participation scored moderately to highly across districts, 5–7 out of 10, suggesting that public events and spaces are available. Yet, offerings lack customization to match diverse elderly subgroups. Specialized initiatives, such as creative activity clubs, light exercise workshops in public parks, and online reservation or navigation systems, could enhance participation and reduce social isolation.

In terms of respect and social inclusion, most districts scored between 6 and 9, indicating broadly positive societal attitudes toward older adults. Nonetheless, Suan Luang remained the lowest-scoring district. Local advocacy campaigns showcasing elder contributions, community-level recognition events, and training civil and private sector staff in respectful, elder-sensitive etiquette could foster broader positive perception.

Civic participation and employment scored lowest in several districts, particularly Suan Luang and Prawet, reflecting limited access to volunteer roles or age-appropriate employment opportunities. Establishing a "Senior Talent Hub," relaxing wage caps and hiring quotas, and offering tax incentives to private employers would promote Active and Productive Aging and alleviate financial strain on aging populations.

Communication and information scored between 4 and 8. Bang Khen performed relatively well, while Suan Luang and Din Daeng lagged. Developing user-friendly digital platforms and websites with large-font options, along with local broadcast systems, printed materials with large typography, and digital literacy initiatives, would help bridge the digital divide. These efforts would expand access to welfare information, health services, and public announcements for older residents.

Finally, community support and health services averaged 6 out of 10 across all districts, indicating moderate accessibility. The current system lacks long-term rehabilitation services, proactive continuing care, and outreach home visit networks. Expanding proactive health screening programs, supporting family caregivers, and promoting holistic physical and mental health interventions would contribute significantly toward the goal of Healthy Aging and enable older adults to live with quality and completeness over the long term.

The overall assessment of Bangkok's elderly-friendliness was rated between "good" and "very good." Suan Luang District emerged as the only locality scoring below others in the domains of housing and employment. Key areas identified for integrated development include: maintenance of physical infrastructure; expansion of public transportation services in underserved zones; promotion of safe and accessible housing; development of socially engaging activities tailored to older adults; creation of a targeted senior employment market; enhancement of multi-modal communication channels; and continuous improvement of community-based health services. These efforts collectively aim to transform Bangkok into a sustainable age-friendly metropolis that supports both the well-being and active participation of its ageing population in the long term.

Table 1 Summary of Elderly-Friendly City Assessment Results for Bangkok

Age-Friendly City Checklist	**Bang Khen District**	**Chom Thong District**	**Suan Luang District**	**Bang Khae District**	**Din Daeng District**	**Prawet District**
Component 1: Outdoor Spaces and Buildings	12	12	12	12	12	12
Component 2: Transportation	11	9	6	10	8	9

Component 3: Housing	8	8	3	8	4	6
Component 4: Social Participation	7	7	5	7	6	6
Component 5: Respect and Social Inclusion	9	9	6	9	8	9
Component 6: Civic Participation	5	5	1	5	5	4
Component 7: Communication and Information	8	7	4	8	4	7
Component 8: Community Support and Health Services	6	6	6	6	6	6
Total	**66**	**63**	**43**	**65**	**53**	**59**
Evaluation Results	**Very Good**	**Very Good**	**Good**	**Very Good**	**Very Good**	**Very Good**

4.1.2 Quality of Life of Older Adults in Bangkok

This study collected data from a sample of 400 older adults residing in Bangkok. The findings revealed a gender distribution skewed toward females, who accounted for 68.3% of the sample, while males constituted 31.8%. The respondents were distributed across six districts: Bang Khae (21.8%), Bang Khen (19.2%), Chom Thong (17.0%), Prawet (15.8%), Din Daeng (14.2%), and Suan Luang (12.0%).

The average age of participants was 65.8 years. The majority (63.3%) were in the 60–65 age group, followed by those aged 66–70 years (19.8%). Only 6.8% were 81 years or older. In terms of marital status, 70.5% were married, 14.5% were divorced or separated, 7.8% were single, and 7.2% were widowed.

Regarding educational attainment, most respondents had completed lower secondary education (54.8%), with only 4% reporting no formal education. From an economic perspective, 44.8% of the older adults were employed in wage labor, 29.8% reported having no occupation, and 12.7% were small-scale vendors.

Notably, 89.8% of participants reported a monthly income of no more than 5,000 Thai Baht, highlighting a significant level of economic vulnerability and limited financial resources among the older adult population in Bangkok.

The assessment of quality of life was divided into five main dimensions. Overall, older adults reported a high level of quality of life (Mean = 3.79, SD = 0.99). The most prominent dimension was the environmental dimension (Mean = 3.96, SD = 0.95), reflecting satisfaction with housing safety, access to public health services, and opportunities for leisure. Psychological well-being (Mean = 3.81, SD = 0.93) and independence (Mean = 3.86, SD = 0.96) were also rated highly, indicating mental stability and the ability to care for oneself independently.

The social relationships dimension (Mean = 3.77, SD = 1.07) suggested that most older adults maintained supportive networks from family, friends, and the community, although the standard deviation indicated some variability within this domain. In contrast, the physical health dimension had a moderate mean score (Mean = 3.54, SD = 1.08), as older adults were able to manage daily activities and mobility independently but still experienced chronic pain and sleep problems that required attention.

Table 2 Quality of Life Levels among Older Adults in Bangkok

Quality of Life Levels among Older Adults	**Mean**	**Standard Deviation**	**Interpretation**
1. Physical Health	3.54	1.08	Moderate
2. Psychological Well-being	3.81	0.93	High
3. Social Relationships	3.77	1.07	High
4. Environment	3.96	0.95	High
5. Independence	3.86	0.96	High
Total	4.21	0.87	High

4.2 City Development Factors Affecting the Quality of Life of Older Adults in Bangkok

Personal Factors Influencing the Quality of Life of Older Adults

This study examined the relationship between personal factors and the quality of life among older adults in Bangkok. Data was collected from a sample of 400 respondents and analyzed using Independent Samples t-test and One-Way ANOVA, along with post hoc comparisons using the Tukey HSD method. The analysis revealed that several personal factors had a statistically significant effect on quality of life. These included residential district ($F = 21.747$, Sig. = .000), age group ($F = 7.327$, Sig. = .000), income level ($F = 7.277$, Sig. = .000), health status ($F = 8.836$, Sig. = .000), frequency of physical exercise ($F = 5.575$, Sig. = .000), and debt burden ($F = 2.936$, Sig. = .033).

It was found that Bangkhen District had the highest average quality of life score (Mean = 4.1771), while Chom Thong District scored the lowest (Mean = 3.6635). In terms of age, the group aged 66–70 years had the highest average quality of life (Mean = 3.9565), while those aged 81 and above had the lowest (Mean = 3.5867). Respondents without chronic illness or with chronic obstructive pulmonary disease (COPD) reported better quality of life than those with other chronic conditions such as diabetes and kidney disease. Additionally, participants who exercised daily or at least once a week had higher scores compared to those who did not exercise. Interestingly, those with insufficient income but without debt had the highest average quality of life (Mean = 3.8954).

On the other hand, certain personal factors showed no statistically significant relationship with quality of life. These included gender, marital status, level of education, occupation, family structure, type of housing, living arrangement, and savings behavior. The average scores across these groups were relatively similar. These findings highlight that economic status, health condition, and self-care behaviors exert greater influence on the quality of life of older adults than general demographic factors.

Table 3 Relationship Between Personal Factors and Quality of Life Among Older Adults (n = 400)

Personal Factors	**Test**	**Highest Mean**	**Lowest Mean**	**Statistic (t/F)**	**Sig.**
Gender	t-test	Female (3.8611)	Male (3.8580)	-0.073	.942
Residential District	ANOVA	Bang Kaen (4.1771)	Chom Thong (3.6635)	21.747	.000*
Age Group	ANOVA	66-70 years (3.9565)	≥81 years (3.5867)	7.327	.000*
Marital Status	ANOVA	Divorced/Separated (3.9497)	Widowed (3.8276)	1.228	.299
Education Level	ANOVA	Not Specified (3.9175)	Upper Secondary/Vocational Certificate (3.8121)	0.470	.799
Occupation	ANOVA	Unemployed (3.9029)	Hired Labor (3.8217)	1.084	.356
Income	ANOVA	Not Specified (3.9121)	0-5,000 Baht (3.6569)	7.277	.000*
Family Type	t-test	Extended Family	Nuclear Family	-0.195	.845

		(3.8619)	(3.8539)		
Type of Housing	ANOVA	Rental House (4.0494)	Own House (3.8453)	2.240	.108
Primary Caregiver	ANOVA	Spouse (3.8686)	Relatives (3.7956)	0.387	.763
Health Status	ANOVA	No Chronic Disease (4.0644)	Diabetes (3.7093)	8.836	.000*
Frequency of Exercise	ANOVA	Once a week (3.9350)	Does Not Exercise (3.7369)	5.575	.000*
Debt Burden	ANOVA	Insufficient Income, but Debt-free (3.8954)	Surplus Income for Savings (3.6890)	2.936	.033
Savings	ANOVA	Moderate Savings (3.9960)	Minimal Savings (3.7977)	1.294	.272

Results of Multiple Regression Analysis of Elderly-Friendly City Development Factors

To identify the city development components that influence the quality of life among older adults, a multiple regression model was employed using eight subcomponents derived from the WHO Age-Friendly Cities framework. These components included: (1) outdoor spaces and buildings, (2) public transportation, (3) housing, (4) social participation, (5) respect and social inclusion, (6) civic participation and employment, (7) communication and information, and (8) community support and health services.

The results indicated that the model significantly predicted quality of life, explaining 51.6% of the variance (Adjusted $R^2 = 0.503$, $F = 38.83$, $p < 0.001$). Among these, three variables were found to have a statistically significant positive effect on quality of life: access to information and communication ($\beta = +0.576$, $p < 0.001$), community support and health services ($\beta = +0.290$, $p < 0.001$), and respect and social inclusion ($\beta = +0.254$, $p < 0.001$). Conversely, two variables were found to have statistically significant negative effects: housing ($\beta = –0.336$, $p < 0.001$) and social participation ($\beta = –0.093$, $p = 0.029$).

These negative associations suggest that inadequacies in housing—such as poor structural design, accessibility barriers, or unaffordable living costs—as well as insufficient or unsupported opportunities for social participation, may reduce the overall quality of life for older adults.

Other variables, including outdoor spaces and buildings, transportation systems, and civic participation and employment, did not show statistically significant relationships with quality of life in this model (see Table 2).

Table 2. Multiple Regression Coefficients

	β	t	p
Constant	—	3.384	0.001
Access to Information and Communication	+0.576	9.344	<0.001
Community Support and Health Services	+0.290	6.422	<0.001
Social Respect and Inclusion	+0.254	5.824	<0.001
Housing	–0.336	–5.700	<0.001
Social Participation	–0.093	–2.198	0.029
Outdoor Spaces and Buildings	+0.065	0.945	0.346
Transportation	–0.044	–0.641	0.522
Civic Participation and Employment	–0.029	–0.474	0.636

Dependent: Quality of Life
N=300 (Outliers in the dataset were identified using Cook's Distance statistics within the statistical software, resulting in a final dataset of 300 cases (N = 300) included in the regression analysis.)

4.3 Findings on the Design and Development of an Elderly-Friendly City Model for Bangkok

To apply the analysis of urban factors related to the quality of life of older adults in designing an elderly-friendly city, the researchers conducted 10 in-depth interviews with 10 key stakeholders. These included district directors from six districts (Chom Thong, Din Daeng, Bang Khae, Prawet, Suan Luang, Bang Khen), directors of two elderly social welfare centers, representatives from the Department of Older Persons, and representatives from the Urban Planning Division.

The design approach was holistic, considering physical, social, economic, and healthcare dimensions, alongside multi-stakeholder participation. The development of the age-friendly city model was based on the World Health Organization's Age-friendly Cities and Communities Framework, which consists of eight main domains ranging from the physical environment to communication and health services. This framework supports a systematic integration of measures to comprehensively address the needs of older adults.

Additionally, the concept of active ageing emphasizes maintaining the physical, mental, social, and economic vitality of older adults by providing access to health promotion services,

safety, and continuous opportunities for participation. At the same time, universal design principles contribute to creating environments that accommodate people of all ages and abilities, such as ramps, safety-standard restrooms, easy-to-read signage, and smooth, safe public spaces.

Moreover, Bangkok's diverse context—including urban commercial districts and semi-rural communities—indicates the necessity for place-based adaptations, designing solutions that align with the unique conditions of each community. Infrastructure and service development thus require integrated cooperation among central government agencies, local authorities, private sector, and civil society to share resources and reduce project redundancies.

When these three concepts—age-friendly cities, active ageing, and universal design—are harmonized, cities can effectively accommodate an ageing society by fostering safety, convenience, social acceptance, and opportunities for older adults to realize their potential sustainably and tangibly, both in Bangkok and other cities in the future.

Table 3. Approaches to Designing and Developing an Elderly-Friendly City Model for Bangkok

District Group	Total Score	Key Characteristics	Main Approach
Top-tier	65–66	Rated "Very Good" in all components (Transportation System – Physical Environment – Welfare)	Maintain high standards, build on innovations (such as Smart Parks and Smart Info Centers), and continuously connect government, private sector, and academic partners within the district working groups
Mid-tier	53–63	Rated as "Very Good" overall, but lacking specific points: clear bus stop signage and suitable housing	Targeted improvements include adding priority pickup services, driver training programs, senior employment markets, and housing renovations in collaboration with civil society
Needs-Improvement	43	Some dimensions received relatively low scores, such as housing (3 out of 8) and employment (1 out of 5).	Develop a holistic improvement approach, including initiatives such as urgent home renovation projects,

			community shuttle services for remote alleys, district-level senior quality-of-life centers, and digital literacy training programs to enhance comprehensive communication and access.

4.4 Results of the Assessment of Elderly-Friendly City Models for Bangkok

The design of an elderly-friendly city model for Bangkok requires alignment with the frameworks of age-friendly cities, active ageing, and universal design, coupled with an integrated multi-sectoral mechanism. Development measures should be tailored to the "readiness level of each district", ensuring that interventions are both targeted and sustainable. Key domains for improvement include public transportation systems, housing, volunteerism and employment opportunities, communication, and healthcare services. These initiatives aim to empower older adults to live safely, participate actively, and enjoy a high quality of life as the city transitions into a fully aged society.

To ensure the appropriateness and refinement of the proposed city model, the research implemented a two-round Delphi method. This process engaged 10 experts—including district office directors from six districts, directors of two senior welfare centers, representatives from the Department of Older Persons, the Bangkok Urban Planning Office, and the Department of Public Works and Town & Country Planning—alongside 24 community representatives (comprising 18 older persons and 6 community leaders). The participants provided in-depth feedback to validate and enhance the main and three sub-models developed.

Refined City Development Model for Elderly-Friendly Cities for Bangkok

To translate the concept of an elderly-friendly city into tangible and sustainable outcomes, a Delphi consultation process was conducted. Based on expert consensus, the model was refined across five key components to better align with the needs of older adults in Bangkok.

First, the enhancement of public transportation emerged as a central priority. An elderly-friendly transit system must move beyond the basic provision of ramps and seating shelters. It should incorporate electronic signage equipped with both audio announcements and large-font visual displays at bus stops, enabling older adults to access real-time scheduling information more effectively. Increasing the number of low-floor buses along high-demand routes would facilitate safer boarding and alighting. Within the vehicles themselves, the installation of designated priority seating and supportive handrails is essential for safety and comfort. Moreover, driver and station staff training programs should be implemented to strengthen their ability to assist older passengers. In areas underserved by conventional public transport, the development of a dedicated Senior Taxi Service would further enhance mobility, safety, and confidence among elderly commuters.

Second, appropriate housing design is critical for supporting the elderly population. This should integrate universal design principles with the "ageing in place" approach to enable older adults to remain safely in familiar environments. Senior housing projects and elderly-focused

communities must be equipped with fundamental facilities, such as emergency call systems, community-based nursing teams, and day care centers that offer short-term care support. Simultaneously, existing housing should be upgraded through funding mechanisms such as low-interest renovation loans or volunteer-based technical services. These interventions can facilitate the installation of features like grab bars, slip-resistant flooring, and wheelchair-accessible thresholds. Additionally, policy incentives should be introduced to encourage private landlords and real estate developers to retrofit residential properties, thereby expanding access to safe and age-appropriate housing for vulnerable elderly groups.

Third, expanding opportunities for social participation and employment is essential for promoting active aging and alleviating the burden on the welfare system. Policymakers should support the employment of older adults in part-time, freelance, and advisory roles by removing barriers such as wage ceilings or restrictive hiring quotas. The establishment of a "Senior Talent Hub" would serve as a platform to match skilled older individuals with employers seeking experienced personnel. Complementary to this, training programs that focus on upskilling and reskilling, particularly in areas such as digital literacy, online commerce, and artisanal skills, would enhance employability and self-reliance. Furthermore, promoting volunteerism through initiatives such as tutoring, caregiving, or community service roles can provide meaningful engagement, strengthen social cohesion, and improve overall quality of life for older residents.

Fourth, enhancing inclusive communication is essential for reducing information gaps among older adults. Effective communication strategies should include the design of printed materials with large fonts and clear visual aids to ensure readability. In parallel, digital platforms such as mobile applications and websites must adopt user-friendly interfaces with simplified navigation, providing essential information on welfare entitlements, vaccination schedules, and available health services. Additionally, traditional media channels, including community loudspeakers and local radio-television networks, remain critical for reaching older populations, particularly those less familiar with digital tools. The integration of media literacy curricula into elderly education programs can help older adults critically assess information sources, protect against misinformation, and reduce exposure to cybersecurity risks. To ensure equitable access to information at the district level, the establishment of "Senior Info Hubs" is recommended as centralized nodes for the collection and dissemination of relevant content.

Fifth, strengthening stakeholder collaboration emerged as a core recommendation from the Delphi process. The development of an age-friendly city requires integrated cooperation among government agencies, private sector entities, civil society organizations, and local communities. This can be operationalized through inter-agency memoranda of understanding (MOUs) involving key institutions such as the Ministry of Social Development and Human Security, the Ministry of Interior, the Bangkok Metropolitan Administration, and private partners. At the district level, working groups composed of elderly representatives and community leaders should be established to conduct quarterly monitoring and evaluation meetings. Furthermore, biannual forums for "Best Practice Sharing" among districts can foster innovation and encourage the replication of successful initiatives. This collaborative, cross-sectoral approach not only enhances the efficiency of resource utilization and reduces redundancy, but also drives forward sustainable, equitable improvements in the quality of life for Bangkok's ageing population.

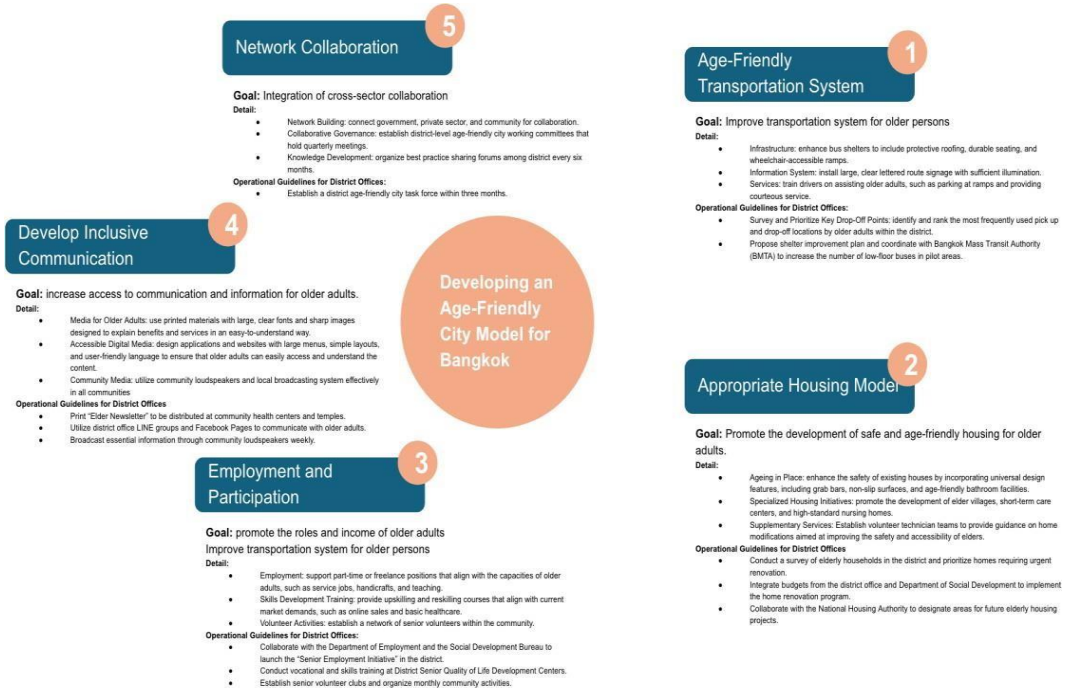

Figure 2 Elderly-Friendly City Model for Bangkok

5. Discussion

The assessment of the eight domains of an elderly-friendly city revealed that outdoor spaces and buildings were among the most developed components. Districts such as Bang Khen, Chom Thong, and Bang Khae achieved full scores in this dimension, indicating a strong alignment with the principles of Universal Design as emphasized by the World Health Organization (WHO, 2007), which advocates for physical infrastructure that supports the mobility and accessibility needs of older people.

However, the housing dimension scored relatively low in some districts, notably Suan Luang and Din Daeng. This suggests a gap in the implementation of senior housing models and affordable home modification strategies, which are crucial for ensuring safe, accessible, and ageing-in-place housing solutions for the elderly (Gómez et al., 2021; Pousada García et al., 2015).

In terms of social participation, the evaluation results mostly fell within moderate to high levels. This trend reflects the broader framework of active ageing, which underscores the role of social engagement and support networks in enhancing the quality of life among older populations (WHO, 2002). Nonetheless, the dimension of civic participation and employment recorded the lowest scores in Suan Luang and Prawet districts. This finding contradicts research by Ivan et al. (2020), which emphasizes that opportunities for older adults to engage in volunteer work or part-time employment are vital not only for reducing societal dependency but also for empowering older individuals and reinforcing their sense of purpose.

The community support and health services dimension received a moderate score (6/10), indicating the availability of accessible primary healthcare services. However, there remains a notable gap in rehabilitation and long-term care provisions aligned with the healthy ageing approach, which emphasizes that health services should comprehensively address prevention, care, and palliative needs (WHO, 2007). Additionally, challenges were identified in the communication

and information dimension, particularly in reaching all segments of the older population. This aligns with concerns raised by Kleinman (1980) and Preechakhun (2020), who argue that proactive communication across various media platforms is crucial in addressing information exclusion among older adults.

The study further found that economic, health, and self-care behavior factors were significantly associated with the quality of life among older adults in Bangkok. Notably, residential district, income level, health status, frequency of physical activity, and debt burden emerged as key determinants. These findings support the World Health Organization's (1997) concept of quality of life, which highlights the importance of health, economic security, and environmental conditions in shaping elderly well-being (Tangchitchoengul, 2021; Nuannuan, 2019). They also correspond with Maslow's Hierarchy of Needs (Maslow, 1943), which posits that basic needs, particularly financial and health security, must be satisfied before individuals can achieve higher levels of life quality (McLeod, 2020).

Conversely, the study found no statistically significant differences in quality of life based on basic demographic variables such as gender, marital status, educational attainment, occupation, family structure, or living arrangement. This is consistent with the life course perspective, which suggests that life experiences and the accumulation of socioeconomic resources over time have a more substantial impact on later-life quality than static demographic traits (Elder, Johnson, & Crosnoe, 2003). Moreover, previous studies have observed similar patterns in urban contexts with comprehensive welfare and healthcare systems, where demographic factors like gender or education level are less likely to produce disparities in elderly quality of life (Tangchitchoengul, 2021).

Taken together, the results indicate that policies aimed at improving the quality of life for older adults should prioritize structural and behavioral interventions over demographic profiling. Specifically, there is a need to develop mechanisms that support accessible and safe housing for the elderly, including the promotion of senior housing and affordable home modifications. Communication platforms should be designed to bridge the digital divide and provide inclusive, user-friendly access to essential information. Health services must be expanded across all levels of care to address both immediate and long-term needs under the healthy ageing framework. At the same time, collaboration with private and community sectors should be encouraged to create meaningful employment and volunteer opportunities for older persons, aligned with the principles of active and productive ageing. Lastly, the establishment of district-level outreach teams focused on home visits and care for vulnerable older adults would contribute to a more responsive and localized model of elderly care. These strategies reflect a place-based, integrative approach necessary for advancing the well-being of older populations in a rapidly ageing urban society.

6. Conclusion & Recommendations

6.1 Conclusion

This study developed an elderly-friendly city model for Bangkok based on the frameworks of the World Health Organization's Age-Friendly Cities, active ageing, and universal design. The findings, drawn from a sample of 400 older adults and supported by statistical analysis, indicate that overall quality of life among older people in Bangkok is high (Mean = 4.21). The highest-scoring dimensions were external physical environment and psychological well-being, whereas housing and employment-related participation emerged as notable areas of weakness.

Positive determinants of quality of life included access to information and communication, community support, and societal recognition and inclusion. Conversely, inadequacies in housing, particularly in terms of adaptability, and social participation activities that were not aligned with the capabilities of older adults were found to negatively affect their quality of life.

Subsequently, five key dimensions for developing an elderly-friendly city—public transportation, housing, civic engagement and employment, inclusive communication, and multi-sectoral collaboration—were validated through both Delphi and Connoisseurship methods. These elements were confirmed to be consistent with the specific urban context of Bangkok and the needs of its ageing population.

6.2 Recommendations

To promote a tangible and sustainable development of an elderly-friendly city for Bangkok, the following five key policies and implementation recommendations are proposed.

1. Develop an elderly-friendly public transportation system

Improving accessibility and safety in public transport for older adults requires an increase in the proportion of low-floor buses. These buses should be equipped with priority seating and interior handrails to facilitate ease of movement. Electronic signage at major bus stops should display real-time arrival information with both audio announcements and large, readable fonts. Additionally, "senior shuttle" services should be introduced in areas inaccessible by mainstream public transport, particularly deep alley communities. Training programs for drivers and transit staff should be established to enhance their capacity in assisting older adults effectively.

2. Promote safe and accessible housing

Housing plays a critical role in supporting older adults' well-being. The government should promote the development of senior housing and elderly villages equipped with emergency call systems, community nursing teams, and day-care activity spaces for short-term care. Simultaneously, a low-interest fund should be established to support home modification for older adults, including the installation of grab bars, ramps, non-slip flooring, and threshold modifications. Incentive schemes should also encourage landlords and private developers to align housing units with universal design principles.

3. Expand opportunities for social participation and employment

To support active and productive ageing, district-level "Senior Talent Hubs" should be established to connect older adults with public and private sector employers seeking part-time, freelance, or volunteer workers. Legal barriers such as wage caps and age-related hiring restrictions should be revised, and tax incentives offered to employers hiring older adults. Upskilling and reskilling programs in digital technology and vocational skills should be provided to enhance employability after retirement.

4. Ensure inclusive communication and information access

Older adults require clear and accessible information regarding social benefits, healthcare services, and community activities. Digital platforms and websites should be designed with elderly-friendly interfaces, including large fonts, simple menu navigation, and voice-assisted features. These platforms should be complemented by traditional communication channels such as printed bulletins, community notice boards, local radio broadcasts, and public address systems. Establishing district-level "Senior Info Hubs" and offering media literacy courses at elderly learning centers will further help reduce misinformation risks and bridge the digital divide.

5. Strengthen multi-stakeholder collaboration at the local level

The development of an elderly-friendly city requires cross-sectoral collaboration. Memoranda of Understanding (MOUs) should be signed between Bangkok Metropolitan Administration, the Department of Older Persons, private sector organizations, and community groups to formalize partnerships. District-level working groups should be formed with representatives from older adult communities and local leaders to conduct quarterly evaluations and facilitate best practice exchanges. Furthermore, "Vulnerable Senior Care Teams" should be established at the district level to conduct proactive home visits, monitor risks, and coordinate timely interventions.

If implemented alongside a robust monitoring and evaluation system, these measures will enable Bangkok to progress toward becoming a truly elderly-friendly city and serve as a scalable model for other cities across Thailand transitioning into an ageing society.

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