# Age-friendly Rural Communities: A Multi-Case Study on Public Space Innovations for Active Aging

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**Abstract**

As China's rural areas experience rapid population aging, traditional public spaces often fail to meet the specific needs of elderly people. This study addresses the necessity of age-friendly design to improve functionality and enhance the quality of life in rural communities. The study aims to provide suggestions for age-friendly rural public space design. The suggestions are based on seceral standaards used in the Chinese context, such as the Project for Public Spaces (PPS) and China's age-friendly Community standards. It also explores whether spatial design can promote elderly social participation, health, and overall well-being. Using a qualitative approach, this analyses three case studiesin rural settings—Nanjing Pension Center, Chongqing Dongqiao Village, and Zhejiang Xikou Village. Data were collected through field observations, interviews, and literature reviews to identify key design elements and their impact on the elderly population. The study highlights the importance to include the following aspects into design of rural public spaces,i.e. accessibility, safety, comfort, social interaction, and digital infrastructure. It reveals that these elements, if carefully be addressed in public space design, are likely to help improve the quality of life for elderly people. Policy support, community-specific design, and active elderly involvement in the design process are considered to be essential tools for success.

**Keywords:** Age-friendly Design, Rural Community Development, Public Space Design, Active Aging

## Introduction

### Research Background

Population aging has become an irreversible global trend in the 21st century. China became an aging society in 2000, and its elderly population has continued to grow steadily (Luo et al., 2021). It is projected that by 2030, over 25% of China's population will be aged 60 or above, reaching more than 300 million elderly individuals (Wang et al., 2017). To mitigate the social impact of aging, China implemented the "Universal Two-Child Policy" in 2016 and the "Universal Three-Child Policy" in 2020, aiming to boost the birth rate and balance the proportion of elderly people in the overall population. However, due to the long-term effects of past family planning policies, China's aging population is expected to peak around 2040, with aging-related challenges persisting for the foreseeable future (Bao et al., 2022).

Amidst these demographic changes, the concept of Active Aging has gained increasing attention. Proposed by the World Health Organization, Active Aging emphasizes health, social participation, and security as essential factors for maintaining well-being in later life (Sixsmith & Gutman, 2013). The quality of public space plays a significant role in promoting Active Aging, as well-designed spaces can encourage social interaction, mobility, and community engagement. Thus, age-friendly public space transformation is crucial for supporting the physical and mental well-being of rural elderly residents.

#### 1. National Emphasis on Rural Development

In recent years, the Chinese government has identified rural revitalization as a national priority (Xie et al., 2024). The Central No. 1 Document highlights the need for strengthening elderly care services and enhancing rural public spaces to foster inclusive and sustainable communities (Stoustrup, 2025).

Compared to previous policy directives, this document places greater emphasis on rural elderly welfare, urging local governments to develop age-friendly infrastructure.

Additionally, the 14th Five-year Plan for the Modernization of Agriculture and Rural Areas underscores the importance of coordinated rural construction and governance innovation (Houkai, 2022). By 2025, China aims to establish a stronger rural infrastructure foundation, and by 2035, the goal is to achieve comprehensive rural revitalization (Tan et al., 2024). As part of this strategy, the transformation of rural public spaces into age-friendly environments is recognized as a key component of sustainable rural development.

**2. The Need for Improvement in Age-friendly Rural Public Spaces**

While urban areas have made progress in age-friendly infrastructure, many rural regions lack adequate planning and resources to support elderly-friendly public spaces (Pei & Zhang, 2025). The transformation of rural public spaces plays a vital role in improving elderly well-being, as these spaces provide opportunities for social interaction, physical activity, and cultural participation (Zhao et al., 2022).

However, rural infrastructure development in China has often followed urban models without considering local demographic and environmental characteristics (Yu et al., 2021). This has led to several design challenges:

1) **Inappropriate Spatial Scale** – leading to underutilization of public spaces.

2) **Lack of Elderly** – centered design – reducing participation in outdoor activities.

3) **Limited Accessibility Features** – restricting mobility and social engagement.

Furthermore, the definition of public space in rural China varies. In this study, as shown in Table 1, public spaces are categorized into:

1) **Open Public Spaces:** Village squares and parks, accessible to all residents (Ding et al., 2023).

2) **Community Spaces:** Common areas within elderly care centers with restricted access (Nguyen & Levasseur, 2023).

3) **Hybrid Spaces:** Semi-public areas where private institutions contribute to public welfare (Shen, 2014).

**Table 1** Comparison of Rural Public Space Types

| Type | Accessibility | Main Functions | Age-friendly Design Features | Examples |
|---|---|---|---|---|
| Open Public Spaces | Fully open to all residents | - Social interaction<br>- Cultural activities<br>- Exercise & leisure | - Barrier-free access (wheelchair-friendly)<br>- Elderly-friendly seating (with backrests and armrests) |  |
| Community Spaces | Partially open, requires registration or is restricted to specific groups | - Elderly rehabilitation<br>- Medical care<br>- Cultural & educational activities | - Safety railings (to prevent falls)<br>- Age-friendly lighting system (reduces nighttime hazards) |  |
| Hybrid Spaces | Open at specific times, some facilities may have usage restrictions | - Community meetings<br>- Religious & cultural events<br>- Elderly daycare & support services | - Multi-functional design (adaptable spaces)<br>- Emergency assistance facilities (help buttons) |  |

Given the diverse nature of public spaces in rural China, there is an urgent need for evidence-based design strategies to create functional, inclusive, and engaging environments for elderly residents.

**Research Objectives and Questions**

The goal of this study is to study three representative rural cases in China: Nanjing Pension Center, Chongqing Dongqiao Village, and Zhejiang Xikou Village.

Through an in-depth analysis of these cases, this research seeks to:

1. Identify key spatial design elements that facilitate Active Aging.
2. Assess how public space transformations impact elderly well-being and social participation.
3. Provide theoretical and practical insights for future rural public space planning in China.

This research will focus on the following questions:

1. How the quality of life of elderly people relates to quality of public space?
2. What are the key spatial implications that can be drawn from the concepts of active aging and age-friendly design?
3. What are the key elements that make success cases of rural public space design in the context of rural China?

Thus how age-friendly design principles should be taken into consideration when designing rural public spaces in order to help improve the quality of life for elderly people in the Chinese context has become an urgent issue to address.

## Active Aging and the Theoretical Foundation of Rural Public Spaces

**The Conceptual Origins of Active Aging**

Active Aging is a concept introduced by the World Health Organization (WHO) in 2002, aiming to enhance the quality of life and social inclusion of the elderly by improving their health, participation, and security (Abdullah & Wolbring, 2013). Unlike traditional aging studies, which focus primarily on health management, Active Aging emphasizes the holistic development of elderly people (Foster & Walker, 2015). It posits that seniors should actively engage in social life, maintain physical and mental health, and have access to sufficient social support.

The core elements of Active Aging include:

- **Health**: Elderly people should maintain physical health and have access to healthcare and preventive services, enabling them to live independently.
- **Participation**: Elderly people should play an active role in social, cultural, and economic activities, engaging in social interactions and exchanges.
- **Security**: Social and psychological support should be provided to ensure that elderly individuals have basic living conditions and emotional well-being.

This concept highlights the importance of creating appropriate environments and policies that enable elderly people to fully engage in social life (Hossen et al., 2023). It extends beyond health management to focus on fostering the integration of elderly people in various aspects of society.

**The Importance of Rural Public Spaces**

Rural public space is not only an important place for residents' daily activities, but also a key place for social interaction, cultural heritage and psychological support (Ren et al., 2024). Especially in rural areas, since many elderly people live in relatively backward conditions, the quality of public space directly affects their daily quality of life.

- **Social Function:** Public space is an important place for daily social activities. The open spaces such as squares, seats, and farmland in the countryside provide a bridge for communication and negotiation for the elderly, and are an important part of the harmonious and united atmosphere of the villagers.
- **Cultural Transmission:** China's culture is profound and extensive. Public space is an important place for rural culture. Using public space to hold celebrations, cultural publicity lectures, etc. can attract the elderly to actively participate in cultural inheritance and enhance national self-confidence.
- **Leisure and Recreation:** Using rural public space to add facilities such as library reading rooms and smart device learning rooms can provide opportunities for leisure and entertainment for the elderly, which helps to improve their quality of life and physical health and reduce the digital divide with young people.

Therefore, a good rural public space design is very necessary. It not only carries the elderly's yearning for a better life and meets the elderly's use needs, but also should consider the psychological needs of the elderly and design more services for the elderly (Sheng & Yeom, 2022).

**The Value of Age-friendly Design in Rural Public Spaces**

Age-friendly design refers to designing suitable spaces and facilities based on the physiological and psychological characteristics of the elderly to improve their quality of life (Liao, 2024). Using active aging to guide age-friendly design allows the design to take more into account the needs of the elderly and allow them to actively participate in social activities, entertainment, and leisure.

- **Alleviating Physiological Decline:** As the physical functions of the elderly deteriorate, more and more elderly people are worried about going out. By designing facilities such as barrier-free passages, armrests, and rest seats, we can reduce the problems of mobility difficulties for the elderly and encourage the elderly to take the initiative to go out. Slow down the body's degeneration (Yu et al., 2021).
- **Reduce Psychological Stress:** A comfortable and pleasant natural environment combined with safe and comfortable public space facilities will help reduce the negative psychological impact of factors such as noise and fear of falling on the elderly. Providing safe and comfortable resting spaces can encourage the elderly to overcome psychological barriers and go out for activities (Liao, 2024).
- **Meet Social Needs:** Through reasonable spatial layout and planning of social functional facilities, the elderly can get out of the house and be willing to share their wonderful old age with the villagers, promote the social activities of the elderly, and encourage the elderly to actively participate in building a beautiful home.

The core of active aging is to start from the needs of the elderly, create an environment that is conducive to their physical and mental health, significantly improve the quality of life of the elderly through the integration of aging-friendly design, and encourage the elderly to actively participate in social activities, allowing the elderly to actively participate in social activities (Del Barrio et al., 2018). The old man is no longer a bystander, but the owner of the countryside.

## Construction of the Age-friendly Model for Rural Public Spaces

This part combines "What Makes a Successful Place?" proposed by Project for Public Space (PPS) and the Chinese elderly-friendly community guidelines to derive a rural public space design model that conforms to the concept of active aging in rural China. The model aims to fully consider the needs of the elderly in the design of rural public spaces, enhance their convenience, comfort and safety, and promote the physical and mental health of the elderly through rural public spaces, so that the elderly can actively face and fight aging.

**PPS: What Makes a Successful Place?**

Figure 1 "What Makes a Successful Place?" by the Project for Public Space sets out criteria for good public spaces (Mohamed et al., 2020).

**Access & Linkages:** A successful public space should be visually and physically harmonious with the surrounding environment. A successful public space should be easy to enter and exit and pass through; and it should be easy to see from far and near (Yung et al., 2016).

**Comfort & Image:** Whether a group of people are comfortable in a public space and whether they can show themselves well is the key to the success of a public space (Francis, 2003). A good public space needs to make the masses comfortable enough in the space so that the masses are willing to rest and have fun in the space.

**Uses & Activities:** One of the basic elements of a public space is to hold events. People go to public spaces often because there are activities to participate in. Frequent events can attract people to visit frequently (Cattell et al., 2008). On the contrary, if there are few activities, the space will appear cold, lonely and empty, which also indicates that the public space is not particularly successful.

**Sociability:** Public spaces should provide sufficient social venues to promote interaction and communication between different groups of people (Ujang et al., 2018). People can build connections, share experiences and enhance their sense of belonging in these venues.

The guidelines provided by PPS offer clear direction for designing successful public spaces. By following these principles, designers can ensure that spaces meet practical needs and foster social and cultural participation. However, the specific needs of elderly rural populations still require further consideration.


**Figure 1** PPS: What Makes a Successful Place?

**Source:** https://www.pps.org/article/grplacefeat?utm-medium=website&utm-source=archdaily.com

**The National Standards for Age-friendly Communities in China**

As part of its efforts to build an aging society, China has established the national standards for age-friendly communities. These standards cover various aspects from community infrastructure to service delivery, aiming to enhance the quality of life and social participation of the elderly (Chu & Zhang, 2022). The standards primarily include the following key areas:

**Barrier-free Design:** This includes features such as barrier-free pathways, accessible restrooms, and handrails to accommodate the mobility needs of elderly individuals.

**Community Service Facilities:** Communities should provide a range of essential services for daily living, such as medical service stations, activity centers for the elderly, and cultural and recreational facilities.

**Social Participation:** Communities should offer rich opportunities and spaces for elderly social activities, including cultural events, physical exercise, and interest groups, fostering interaction with other residents.

**Safety Assurance:** Communities need to be equipped with safety measures such as emergency alarm systems, slip-resistant floors, and emergency lighting to ensure the daily safety of elderly residents.

These standards emphasize the necessity of providing a safe, convenient, and comfortable living environment for elderly people. By integrating China's national standards for age-friendly communities, we can further refine and optimize the age-friendly design of rural public spaces (Liao, 2024).

**Construction of the Age-friendly Design Model**

As shown in Figure2, based on the successful public space standards from PPS and China's national age-friendly community standards, this study creates a model for designing age-friendly rural public spaces. The model includes five main areas: Access & Identification, Comfort & Safety, Uses & Activities, Communication, and Digital Construction.

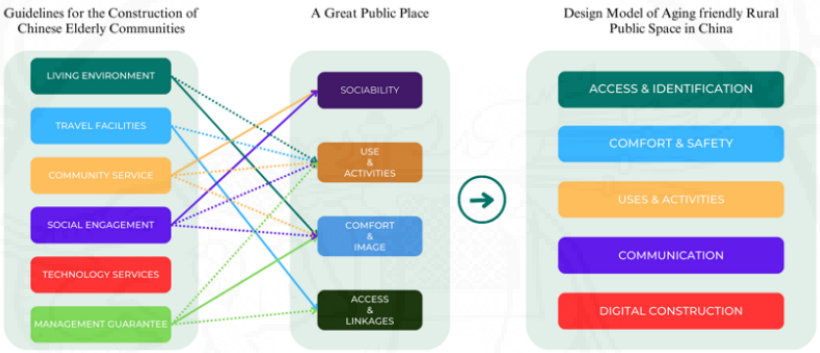


**Figure 2** Theoretical Model Derivation Diagram.

**Source:** Author (2024).

**1. Access & Identification**

**Access:** Rural public spaces should have barrier-free pathways and walkways to ensure elderly people can easily access them. The transport network should connect to the main village roads and public transportation systems, making it easy for elderly people to travel.

**Identification:** The design of public spaces should consider the vision and cognitive needs of elderly people. It's important to have clear space layouts and signs. Using simple signs, color contrasts, and directional markers will help elderly users quickly identify and find the facilities they need.

**2. Comfort & Safety**

**Comfort:** Temperature, humidity, and lighting should be adjusted to meet the needs of elderly people, ensuring a comfortable space. For instance, shading and cooling areas should be available in summer, while heating facilities should be provided in winter.

**Safety:** All public space facilities should be safe for elderly people. This includes slip-resistant floors, handrails, emergency call buttons, and other safety measures. According to China's national standards for age-friendly communities, all public spaces must be safe to reduce the risk of accidents.

**3. Uses & Activities**

**Uses:** Public spaces should offer different areas for various activities, such as leisure zones, cultural spaces, and sports areas, to meet the diverse needs of elderly people. For example, quiet reading corners, spaces for dance or fitness, and areas for cultural events should be included.

**Activities:** Public spaces should encourage social interaction by including benches, plazas, and other places for elderly people to gather. This helps promote neighborhood connections and communication among elderly residents.

**4. Communication**

**Communication:** Digital tools, such as smart broadcast stations and public TV screens, should be available so elderly people can easily access important information, like community events or emergency alerts.

**5. Digital Construction**

**Bridging the Digital Divide:** Rural public spaces should include digital education centers to help elderly people learn basic digital skills. For example, digital learning centers can offer simple courses on using computers and mobile phones, helping reduce the digital skills gap for elderly people.

**Information-based Services:** Smart devices and digital platforms should be used to provide information on online healthcare, lifestyle services, and other needs. These services make it easier for elderly people to get help when needed. Not only do these services improve convenience, but they also help elderly individuals better connect with society.

## Research Methods

This part aims to comprehensively evaluate the aging-friendly degree of rural public spaces through multi-faceted data collection and analysis, and provide data support for model verification through field research, comparative analysis, literature analysis and interview methods.

**Case Selection Criteria**

In this study, rural cases from different regions, with varying levels of economic development and aging degrees, were selected to ensure that the research findings have broad applicability and representativeness.

**1. Six Guarantees for the Elderly:** The selected cases should ideally address all aspects of elderly life. Achieving the "Six Guarantees for the Elderly" is a goal of China's aging policies and represents a comprehensive summary of the life needs of the elderly. These six aspects are: Elderly Support, Elderly Healthcare, Elderly Education, Elderly Contribution, Elderly Enjoyment, and Elderly Security (Du, 2013). The case selection aims to cover these aspects of the "Six Guarantees for the Elderly" as a standard.

**2. Consideration of Regional Differences:** The study selected villages in the east, central and west of China to compare the design characteristics of rural public spaces in different geographical locations. For example, rural areas in the eastern region tend to be economically more developed with better infrastructure, whereas rural areas in the western region may face more development bottlenecks.

**3. Economic Development Level:** Cases were selected from villages with different levels of economic development to analyze the impact of economic factors on the implementation of age-friendly design. In economically underdeveloped areas, there may be resource limitations that hinder the implementation of age-friendly facilities and designs.

**4. Degree of Aging:** The villages were selected based on the proportion of the elderly population and the specific needs of elderly groups. This allows for a comparative analysis of public space designs in rural areas with varying levels of aging within society.

**5. Success Case Justification:** The selected case studies exemplify successful age-friendly rural public space transformation, driven by strong policy backing, active community engagement, and sustainable design strategies.

**Policy Support:** Nanjing Pension Center, a flagship project by Nanjing Construction Development Group, integrates elderly care services with public space planning, enhancing functionality while aligning with urban-rural development policies. Similarly, Dongqiao Village and Xikou Village are government-led initiatives under China's Rural Revitalization Strategy, emphasizing elderly-friendly community planning to promote social well-being and sustainability.

**Community Engagement & Utilization:** Data indicates that, post-renovation, local elderly populations frequently use these spaces for social interaction and recreation. Their active participation highlights the practical effectiveness of these designs in meeting the evolving needs of aging rural communities.

**Sustainable & Scalable Design:** Each case employs cost-effective yet high-impact solutions, such as shaded seating, barrier-free pathways, and multi-functional spaces, ensuring accessibility and usability. These adaptable models serve as replicable blueprints for other rural areas facing similar demographic and infrastructural challenges.

Additionally, since this study aims to explore age-friendly transformation guidelines that are more applicable to Chinese rural areas, and given the difficulty of collecting materials from global cases, the ease of material collection was also considered as a factor in case selection. Based on these criteria, three rural cases were ultimately selected for study, with Table 2 presented to showcase the diversity of the selected cases across various aspects.

**Table 2** Shows the Diversity of 3 Selected Cases

| Case | Six Guarantees for the Elderly | Why It's a Success Case |
|---|---|---|
| Nanjing Pension Center | Elderly Support<br>Elderly Healthcare<br>Elderly Education<br>Elderly Contribution<br>Elderly Enjoyment<br>Elderly Security | Strong government support,<br>integrates public spaces with elderly services,<br>widely used by seniors. |
| Dongqiao Village | Elderly Support<br>Elderly Contribution<br>Elderly Enjoyment | Government-led rural revitalization initiative,<br>promotes intergenerational activities,<br>well-maintained community spaces. |
| Xikou Village | Elderly Support<br>Elderly Education<br>Elderly Contribution<br>Elderly Enjoyment<br>Elderly Security | Demonstrates sustainable,<br>cost-effective public space transformation,<br>strong community engagement. |

**Data Collection Methods**

This study employs a multi-method qualitative approach to examine age-friendly rural public spaces, integrating field observations, comparative case analysis, literature review, and in-depth interviews. Data were analyzed using thematic coding and cross-case comparison, ensuring a systematic understanding of design principles, policy influences, and user experiences.

**1. Field Survey Method**

On-site visits were conducted to document physical infrastructure, spatial usage patterns, and accessibility features. Data were recorded through photographic documentation, with a focus on seating, pathways, shaded areas, and signage clarity. Observations were categorized using a structured framework covering accessibility, safety, social participation, and elderly service integration.

**2. Comparative Analysis Method**

A comparison framework was applied to identify similarities and differences in age-friendly public space design. Pattern-matching and qualitative content analysis were used to extract key themes, emphasizing design effectiveness and policy implementation challenges.

**3. Literature Review Method**

Existing studies on age-friendly planning, rural public spaces, and aging policies were analyzed to contextualize empirical findings. Government reports and policy documents were examined to assess the alignment between national aging strategies and real-world rural transformations.

**4. Interview Method**

A total of 6 elderly residents, 2 government officials, and 3 designers were interviewed to gain insights into public space usage, accessibility barriers, and policy implementation. Interviews were transcribed and analyzed using Nvivo-assisted thematic coding, categorizing responses into design effectiveness, policy constraints, and elderly social participation. Interviewees were coded as R (Elderly residents), O (Government officials), and D (Designer), followed by a number indicating the specific respondent (e.g., R1, R2 for elderly residents).

By integrating these methods, this study ensures a comprehensive and systematic approach to understanding how rural public space design impacts elderly well-being. The combined analysis strengthens the credibility and applicability of the study's findings, contributing to future age-friendly design strategies.

**Ethical Considerations**

This study adhered to ethical research principles, ensuring transparency and participant well-being:

**Informed Consent:** All participants were informed of the study's objectives and provided verbal consent before participation. No personal identifiers were recorded.

**Non-invasive Methods:** The study involved only field observations, interviews, and literature reviews, focusing on public spaces and community practices without collecting sensitive personal data.

**Community Approval:** Research activities were conducted with the cooperation of local community leaders to align with cultural and ethical norms.

**IRB Waiver:** Given the non-invasive nature of the study and the absence of vulnerable populations, formal IRB approval was not required. However, ethical guidelines were strictly followed to ensure research integrity.

## Case Study

**Nanjing Pension Center**

**1. Project Introduction**

As shown in Figure3 Nanjing Pension Center, Located in Lishui, Nanjing, the Nanjing Pension Center is a flagship elderly care facility within a nationally recognized ecological zone. It offers comprehensive facilities and a scenic environment near Xiu Mountain Lake. However, its suburban location poses social challenges, as elderly residents may experience weakened family and community ties due to physical distance.

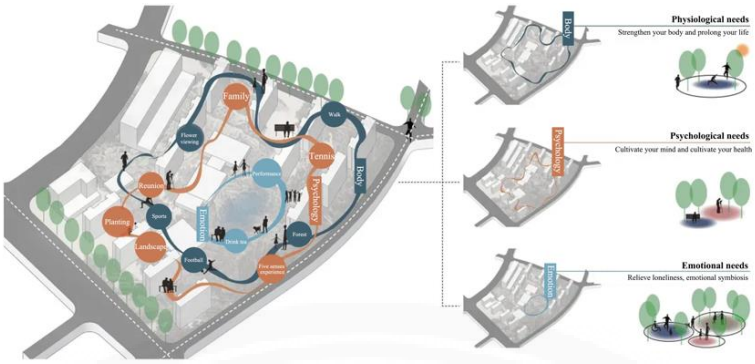


**Figure 3** Nanjing Pension Center Design Concept.

**Source of Concept:** https://mooool.com/nanjing-pension-center-by-laurent.html

**Production:** Author (2025).

**2. Age-friendly Public Space Analysis**

**Accessibility:** The center is designed with barrier-free infrastructure, including wide, flat roads, well-maintained green spaces, and pedestrian-friendly pathways. Ramps replace steps at key access points, and wayfinding signage is installed to assist elderly residents in navigating the area independently. Rest areas with shaded seating are strategically placed along walking paths, ensuring comfort and usability.

**Safety:** Ensuring the security of elderly residents is a core priority. The center employs a 24-hour surveillance system, emergency response protocols, and personal safety devices such as wearable emergency alert buttons. Bathrooms and common areas are equipped with non-slip flooring, grab bars, and pull-cord alarms to prevent accidents and enable swift emergency assistance.

**Social Participation:** Figure4, The center actively fosters community engagement and cultural enrichment. It features a Vibrant Center, including a fitness center, swimming pool, audiovisual room, multifunctional hall, and an elderly library bar. The center offers diverse cultural and recreational programs to enhance social participation. Additionally, the Jinling Yihe Elderly University offers a broad range of educational programs, supporting lifelong learning and intellectual stimulation.

**Figure 4** Nanjing Pension Center Effect Display.

**Source:** https://mooool.com/nanjing-pension-center-by-laurent.html

As shown in Table 3, Interview feedback showed that the social activity design of Nanjing Pension Center not only enriched the daily lives of elderly residents, but also promoted social interaction and enhanced their sense of belonging and happiness.

**Table 3** Nvivo Thematic Analysis Table: Social Participation

| Theme | Example Quote | Interviewee |
|---|---|---|
| Social Participation | "Attending calligraphy and choir classes at the activity center brings back the joys of my younger days." | R2 |
| Social Participation | "I used to stay home most of the time, but now with these activities, I have more chances to meet old friends." | R3 |
| Community Engagement | "The government's support for these cultural programs is great; the elderly are very willing to participate." | O1 |

**Services & Technology:** The center integrates smart elderly care systems to streamline daily activities and medical services. A Medical and Elderly Care Integrated Health Management Office, in partnership with Nanjing Gulou Hospital, provides priority medical access, including fast-track emergency care and routine health assessments. Moreover, an IoT-based smart service platform allows elderly residents to access essential services, schedule appointments, and monitor their health records, improving efficiency and convenience.

As shown in Table 4, Several residents highlighted the benefits of these technological innovations during interviews. The use of smart health monitoring and emergency alert systems was frequently mentioned as a key improvement in elderly care.

**Table 4** Nvivo Thematic Analysis Table: Services & Technology

| Theme | Example Quote | Interviewee |
|---|---|---|
| Health Monitoring | "I use the smart health monitoring device every morning to check my blood pressure. It's very convenient and saves me a trip to the hospital." | R3 |
| Smart Technology | "By combining medical care and elderly care, the elderly can have better security and improve their sense of happiness in life." | D1 |

**3. Key Findings and Implications**

Nanjing Pension Center exemplifies an integrated approach to age-friendly rural public space design. Its barrier-free infrastructure, safety measures, and extensive social participation programs make it a successful model for elderly care communities. However, the suburbanization effect remains a challenge, necessitating further initiatives to strengthen intergenerational social ties. Future developments could focus on enhancing transportation connectivity to urban centers, fostering community partnerships, and expanding outreach programs to mitigate the risk of social isolation among elderly residents.

**Dongqiao Village, Chongqing**

**1. Project Introduction**

Dongqiao Village, located in Wanzhou, Chongqing, is a mountainous rural settlement characterized by an aging population and challenging topography. The village covers 9.54 square kilometers and has a population of 2,348, with a significant proportion of elderly residents. As younger generations migrate for work, many seniors face limited mobility, social isolation, and inadequate public infrastructure. To address these issues, the local government has led an age-friendly transformation initiative, integrating spatial improvements and social programs to enhance the well-being of elderly residents.

**2. Age-friendly Public Space Analysis**

**Accessibility:** The village has restructured its transportation network, reducing steps and adding accessible pathways to facilitate movement. Roads have been resurfaced to accommodate wheelchairs and walking aids, while properly planned street lighting ensures safe travel at night.

As one interviewee noted: "The new ramps make it much easier for me to move around the village without assistance." (R5)

**Safety:** As shown in Figure 5, Public spaces have been redesigned with barrier-free toilets, handrails, and designated pedestrian paths. Additionally, seating areas are strategically placed in village squares and along walkways, using materials that prioritize comfort and durability for elderly users.

**Figure 5** Dongqiao Village.

**Source:** https://mooool.com/nanjing-pension-center-by-laurent.html

Designer said: "In order to ensure safety under the condition of limited funds, We installed more lights and railings to make it safer for the elderly to walk at night." (D2)

**Social Participation:** The transformation process involved active elderly participation. The local government conducted community meetings and home visits to incorporate elderly residents' preferences in spatial planning. An elderly supervision group was formed to oversee public space renovations, ensuring alignment with community needs.

**Services & Cultural Integration:** To maintain rural cultural identity, as shown in the Table 5, the village developed agricultural cultural landscape nodes, celebrating local farming traditions. Public spaces now incorporate gardens and communal gathering areas, enabling seniors to remain connected to traditional lifestyles while fostering intergenerational interaction.

**Table 5** Nvivo Thematic Analysis Table: Services & Cultural Integration in Dongqiao Village

| Theme | Example Quote | Interviewee |
|---|---|---|
| Cultural Connection | "The traditional farming spaces remind me of my younger days. It's comforting to be surrounded by familiar sights." | R5 |
| Community Spaces | "We designed the new public areas to reflect village's cultural heritage while making them senior-friendly." | D2 |

### 3. Key Findings and Implications

The Figure 6 shows the comparison before and after the transformation. Dongqiao Village demonstrates the significant role of community engagement in public space transformation. Unlike government-led models, this case highlights a bottom-up approach, where elderly residents actively shape their living environment. The case underscores the need for adaptive rural policies that balance infrastructure modernization with cultural preservation. Moving forward, integrating smart technologies for remote healthcare and real-time community engagement could further enhance elderly well-being.

Before After

**Figure 6** Dongqiao Village Before and After.

**Source:** https://mooool.com/nanjing-pension-center-by-laurent.html

**Source:** https://mooool.com/dongqiao-village-changling-town-wanzhou-district-chongqing-city-by-donehome.html

**Production:** Author (2025)

**Xikou Village, Zhejiang**

**1. Project Introduction**

Xikou Village, situated in Quzhou, Zhejiang, exemplifies a technology-driven approach to age-friendly rural development. As shown in Figure 7, With strong local government support, the village has integrated digital solutions and smart infrastructure into elderly care services. By leveraging information technology, Xikou Village provides an innovative model for sustainable public space transformation, combining healthcare, education, and social engagement.


**Figure 7** Xikou Village Layout.

**Source:** https://mooool.com/dongqiao-village-changling-town-wanzhou-district-chongqing-city-by-donehome.html

**2. Age-friendly Public Space Analysis**

**Accessibility:** The village square and public parks are designed with wide, wheelchair-accessible pathways, ensuring ease of mobility. Outdoor seating, shaded areas, and exercise stations cater to the diverse needs of elderly residents.

As one interviewee noted: "The wide walkways make it easy for me to move around the village without assistance." (R6)

**Safety:** Advanced safety features, including smart surveillance, emergency call systems, and sensor-equipped restrooms, enhance security and real-time health monitoring.

As one interviewee noted: "Having emergency call stations in the public areas makes me feel much safer." (R6)

**Social Participation:** As shown in Figure 8, Xikou Village has established an Elderly University, offering courses in calligraphy, handicrafts, and digital literacy. It can use as cultural hubs, hosting performances, traditional opera, and interactive workshops. Additionally, The village square hosts regular cultural and fitness events.

**Figure 8** Digital Community Service Platform.

**Source:** https://mooool.com/dongqiao-village-changling-town-wanzhou-district-chongqing-city-by-donehome.html

**Digital Innovation:** As shown in Table 6, the smart community platform provides healthcare, daily necessities, and news updates. The village has also implemented AI-driven health monitoring systems that track residents' physical conditions and notify medical personnel of any abnormalities. To facilitate adoption, the village provides technology training sessions, ensuring seniors can effectively utilize digital tools.

**Table 6** Nvivo Thematic Analysis Table: Digital Innovation in Xikou Village

| Theme | Example Quote | Interviewee |
|---|---|---|
| Smart Technology | "The traditional farming spaces remind me of my younger days. It's comforting to be surrounded by familiar sights." | R6 |
| Smart Technology | "We designed the new public areas to reflect village's cultural heritage while making them senior-friendly." | R6 |
| Digital Literacy | "Initially, many of people didn't know how to use smart devices, but after the village training, they learned quickly." | D3 |

### 3. Key Findings and Implications

Xikou Village showcases the potential of technology-driven age-friendly design in rural settings. By integrating digital services with physical spaces, the village enhances connectivity, accessibility, and elderly empowerment. This case underscores the importance of bridging the digital divide while ensuring that public spaces remain inclusive and engaging for all age groups.

**Summary of Research Findings**

This study constructs a framework for age-friendly rural public space design, integrating the concept of Active Aging with the theory of successful public space development. As is show in Table 7 through an in-depth analysis and comparison of three case studies—Nanjing Pension Center, Dongqiao Village, and Xikou Village—the feasibility and effectiveness of the proposed model are validated. The following key findings emerge:

**Table 7** Cross-case Analysis Comparison

| Elements | Nanjing Pension Center | Dongqiao Village | Xikou Village |
|---|---|---|---|
| Access & Identification | Well-defined navigation, barrier-free pathways, wheelchair accessibility | Improved walkways, reduction of steps, street lighting for safety | Digital signage, driven navigation for elderly residents |
| Comfort & Safety | Emergency response systems, indoor safety features | Community-installed safety rails, street surveillance | Smart safety monitoring, automated alerts |
| Uses & Activities | Cultural & fitness programs, university for the elderly | Social gathering spaces, agricultural cultural activities, | Digital learning hubs, virtual interaction platforms |
| Communication | Community events, elderly-led management | Strong elderly participation in design | Online social networks, remote consultation |
| Digital Construction | Basic digital access, limited smart services | Minimal technology integration | Fully digitized community services, telemedicine |

**1. Integration of Active Aging and Age-friendly Design:**

Findings indicate that embedding Active Aging principles into rural public space design significantly enhances elderly well-being. Across all three cases, public spaces have been designed to promote social participation, physical activity, and cultural engagement, supporting the notion that well-planned environments contribute to an improved quality of life for the elderly.

Nvivo interview analysis highlights how elderly residents benefit from accessible, inclusive spaces. For example, in Dongqiao Village, elderly residents actively participated in the design and management of public spaces, fostering a sense of ownership and belonging. In Nanjing Pension Center, programs ensured regular community engagement, while in Xikou Village, technology-driven initiatives enabled greater participation in digital and cultural activities.

These findings align with previous research demonstrating that environments designed with Active Aging principles support not only physical accessibility but also emotional and social well-being (Levasseur et al., 2017).

**2. Validation of the Age-friendly Model Across Diverse Contexts:**

Despite differences in economic development, geographic conditions, and aging demographics, each case study demonstrates context-specific adaptations of the age-friendly design model:

- Nanjing Pension Center, a government-backed senior living facility, successfully integrates residential care with public space to ensure comprehensive elderly services.
- Dongqiao Village exemplifies a community-driven transformation, emphasizing bottom-up participation where elderly residents actively shape public space planning.
- Xikou Village, leveraging digital technology, highlights how smart infrastructure enhances elderly accessibility, security, and engagement.

These cases confirm that an age-friendly model can be applied across to different rural settings, with local adaptation crucial for long-term effectiveness.

Nvivo interview insights reinforce this conclusion. Elderly residents in Nanjing Pension Center praised the accessibility and safety measures, while those in Dongqiao Village emphasized the importance of cultural and social integration. In Xikou Village, the transition to digital platforms initially posed challenges, but training programs helped bridge the digital literacy gap among elderly residents.

**3. Diversity in Public Space Design Strategies:**

Age-friendly rural public space design extends beyond physical infrastructure improvements; it must also integrate local culture, social interaction, and digital inclusion to create truly inclusive environments for the elderly (Padrón Nápoles et al., 2021). While fundamental elements such as barrier-free design and safety measures are present across all cases, their approaches to social and cultural programming vary.

At Nanjing Pension Center, educational and recreational programs provide elderly residents with predictable engagement opportunities that promote lifelong learning and well-being. Dongqiao Village, in contrast, fosters community-driven participation, encouraging seniors to engage in village planning, traditional activities, and intergenerational projects, reinforcing a sense of belonging. Meanwhile, Xikou Village takes a more technology-driven approach, integrating digital platforms and smart infrastructure to facilitate remote healthcare access, online learning, and virtual community interactions.

These findings highlight the importance of adaptability in age-friendly public space design. While universal accessibility and safety standards form the foundation of all cases, the integration of local cultural and technological elements plays a crucial role in enhancing social participation and overall well-being. A flexible, multi-dimensional approach is essential for developing sustainable, elderly-friendly rural public spaces that effectively address both physical and social needs (Xu & Tian, 2025).

## Conclusion and Outlook

This study examines how age-friendly rural public space design can enhance elderly well-being, social participation, and accessibility, addressing the growing challenges of an aging society in rural China. Through an in-depth analysis of three case studies—Nanjing Pension Center, Dongqiao Village, and Xikou Village—this research develops a comprehensive framework for improving public spaces to support Active Aging.

Findings indicate that a successful age-friendly rural public space must integrate the following five key elements, each playing a crucial role in enhancing elderly quality of life:

**Access & Identification - Improving Mobility and Independence:**

Barrier-free pathways, clear signage, and accessible infrastructure significantly enhance mobility and self-sufficiency among elderly residents (Wang et al., 2024). For instance, Nanjing Pension Center ensures seamless movement through wide pedestrian paths and well-marked navigation systems, allowing seniors to move freely without assistance.

**Comfort & Safety - Ensuring a Secure and Supportive Environment:**

Age-friendly spaces must prioritize physical comfort and security to encourage elderly participation (Liao, 2024). Dongqiao Village enhances safety by installing emergency response systems, well-lit pedestrian areas, and shaded rest zones, which reduce accident risks and increase the confidence of elderly residents in using public spaces.

**Uses & Activities - Enhancing Social and Cultural Engagement:**

Providing diverse recreational and social opportunities strengthens mental and emotional well-being. Nanjing Pension Center offers structured programs such as educational workshops, fitness classes, and cultural events, while Dongqiao Village promotes community-driven activities like intergenerational gatherings, ensuring that seniors remain socially active and engaged.

**Communication – Strengthening Community Interaction and Social Support:**

A well-connected social network fosters a strong sense of belonging among elderly residents (Menec, 2017). Dongqiao Village's participatory planning demonstrates that when seniors are actively involved in shaping their living environment, their sense of community ownership and satisfaction increases. Moreover, Nanjing Pension Center's community events serve as platforms for fostering interaction and mutual support.

**Digital Construction – Leveraging Smart Technology for Better Accessibility:**

Technology integration can significantly improve health monitoring, service accessibility, and social inclusion. Xikou Village has successfully implemented smart community service platforms and AI-driven healthcare systems, enabling seniors to access medical consultations, manage daily necessities, and stay socially connected. However, digital literacy remains a challenge, highlighting the need for training programs to bridge the digital divide.

Each of these elements contributes to a more livable, inclusive, and adaptive rural environment, ensuring that public spaces remain functional and meaningful for aging populations.

**Key Contributions and Practical Implications**

This study provides a strategic framework for designing inclusive and sustainable age-friendly rural public spaces, offering three key contributions:

1. **Theoretical Advancement** – Expands the application of Active Aging principles in rural spatial planning.
2. **Practical Implementation** – Demonstrates how context-specific, participatory, and technology-driven approaches enhance elderly well-being.
3. **Policy Recommendations** – Emphasizes the role of government support, elderly involvement, and digital innovation in age-friendly rural transformation.

**Limitations and Future Research Directions**

While this study offers valuable theoretical and practical insights, several limitations should be acknowledged:

**Limited Case Scope:** The study focuses on three rural cases, primarily in economically developed regions. Future research should explore a wider range of rural contexts, including underdeveloped areas, to enhance the model's applicability across diverse rural environments.

**Lack of Quantitative Validation:** The study primarily relies on qualitative methods such as case studies and interviews. Future research should integrate quantitative data analysis, spatial mapping, and statistical modeling to measure the direct impact of public space transformations on elderly well-being.

**Need for Longitudinal Studies:** While this research assesses the current effectiveness of age-friendly interventions, long-term sustainability remains uncertain. Future studies should conduct longitudinal research to examine how rural public space adaptations evolve over time and respond to shifting demographic needs.

By addressing these areas, future research can further refine age-friendly rural public space models, contributing to the development of more inclusive, resilient, and future-ready rural communities.

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