
AGE-FRIENDLY HOUSING DESIGN: PRINCIPLES AND CONSIDERATIONS FOR SOCIAL HOUSING DEVELOPMENT

Rashmi Jaymin SANCHANIYA¹, Disha ROY², Antra KUNDZIŅA¹

¹Riga Technical University, Riga, Latvia

²University of Waterloo, Waterloo, Ontario, Canada

Corresponding author's e-mail: Rashmi.Sanchaniya@rtu.lv

Received 10.06.2025; accepted 08.08.2025

Abstract. This study examines the principles and considerations for age-friendly housing design in social housing development. Through a comprehensive literature review and content analysis of design guidelines from various countries and organisations, the research identifies core principles of age-friendly housing design, including accessibility, safety, comfort, and social integration. The study also explores specific design considerations for interior and exterior spaces, as well as the integration of technology to support independent living. Implementation challenges, such as cost considerations and retrofitting existing properties, are discussed alongside case studies of successful age-friendly social housing projects. The findings highlight the importance of adopting a holistic approach to age-friendly housing design that addresses the diverse needs of older adults while promoting sustainability and community integration. The study concludes with recommendations for implementing age-friendly design principles in the Latvian context and suggests areas for future research. The research contributes to the growing body of knowledge on age-friendly environments and provides practical insights for policymakers, urban planners, and housing developers involved in creating inclusive and supportive living spaces for aging populations.

Keywords: *Age-friendly housing, accessibility, design principles, independent living, Latvia, retrofitting, safety, social housing.*

INTRODUCTION

The global demographic landscape is undergoing a significant transformation, with populations aging at an unprecedented rate. This shift is particularly pronounced in developed countries, including Latvia, where the proportion of older adults is rapidly increasing. According to recent demographic projections, Latvia's population is expected to decline from just under 1.9 million to around 1 million by the end of the century, with a significant increase in the percentage of older adults (LSM.lv, 2023). This demographic transition presents unique challenges and opportunities for housing development, particularly in the social housing sector.

As the population ages, the demand for housing that can accommodate the specific needs of older adults grows. Traditional housing stock often fails to meet the requirements of an aging population, leading to issues such as decreased mobility, social isolation, and reduced quality of life. The concept of age-friendly

housing has emerged as a response to these challenges, emphasising the creation of living environments that support the health, safety, and well-being of older adults (Luciano et al., 2020; WHO, 2020).

Age-friendly design in social housing is not merely a matter of physical accessibility; it encompasses a holistic approach to creating environments that enable older adults to maintain autonomy, independence, and a high quality of life (Hoof & Boerenfijn, 2018; Forsyth et al., 2019; Luciano et al., 2020; Demirkan, 2007). This approach is particularly crucial in the context of social housing, where resources may be limited, and the need for affordable, accessible housing is often most acute.

The importance of age-friendly design in social housing is underscored by several factors. First, it supports the concept of aging in place, allowing older adults to remain in their familiar surroundings as they age. This approach not only enhances the quality of life for individuals but also reduces the strain on healthcare and social services systems (Van Hoof et al., 2019). Second, well-designed age-friendly housing promotes social interaction and community engagement, combating the isolation that often affects older adults. This social aspect is crucial for maintaining mental health and overall well-being (WHO, 2020).

From an economic perspective, creating housing that adapts to the changing needs of residents over time can reduce the need for costly relocations or modifications in the future. This long-term perspective is particularly relevant for social housing providers operating with limited budgets (Luciano et al., 2020). Additionally, age-friendly design incorporates features that enhance safety and support independent living, reducing the risk of accidents and the need for institutional care (Van Hoof et al., 2019). Many age-friendly design principles also align with sustainable building practices, contributing to the creation of environmentally responsible and energy-efficient housing (Chau & Jamei, 2021).

In Latvia, where the social housing sector faces significant challenges in terms of quality and accessibility (Rasnaca & Rezgale-Straidoma, 2019), the adoption of age-friendly design principles presents an opportunity to address these issues while preparing for the needs of an aging population. By integrating age-friendly features into social housing development and renovation projects, Latvia can create more inclusive, sustainable, and supportive living environments for its older citizens.

The present study aims to explore the core principles of age-friendly housing design, examine specific design considerations, and analyse implementation challenges in the context of social housing development. By drawing on international best practices and adapting them to the Latvian context, the research seeks to provide valuable insights for policymakers, urban planners, and housing developers involved in creating age-friendly social housing solutions.

1. RESEARCH METHODOLOGY

The study employs a comprehensive literature review and content analysis of design guidelines to investigate age-friendly housing design principles and considerations for social housing development. The research methodology was designed to capture a broad spectrum of perspectives and best practices from

various countries and organisations, ensuring a thorough understanding of the subject matter.

The literature review process involved a systematic search of academic databases, including Scopus, Web of Science, and Google Scholar, using keywords such as “age-friendly housing”, “social housing design”, “elderly housing”, and “universal design”. This search was supplemented by a review of policy documents, industry reports, and publications from relevant international organisations, such as the World Health Organization (WHO) and the United Nations (UN). Additionally, official design guidelines for age-friendly housing were collected from various countries, with a focus on European nations and other developed countries with aging populations. This diverse range of sources allowed for a comprehensive exploration of both theoretical frameworks and practical applications in age-friendly housing design.

To analyse the collected data, a content analysis approach was adopted. A coding framework was developed based on initial readings of key documents and refined through an iterative process. This framework included categories such as accessibility features, safety measures, social interaction spaces, and technology integration. The literature and guidelines were systematically reviewed and coded using this framework, allowing for the identification of recurring themes, best practices, and innovative approaches in age-friendly housing design. The findings were then synthesised to identify key principles and considerations, with particular attention paid to their applicability in the context of social housing development. This methodological approach enabled a rigorous examination of age-friendly design principles while accounting for the specific challenges and opportunities in the social housing sector.

2. RESULT AND DISCUSSION

The comprehensive analysis of age-friendly housing design principles and considerations for social housing development in Latvia reveals several key findings that align with both global trends and Latvia’s specific context.

2.1. The Current State of Social Housing in Latvia

Latvia’s social housing sector faces significant challenges, particularly in meeting the needs of its aging population. The country is experiencing a rapid demographic shift, with projections indicating a decline in population from 1.9 million to around 1 million by the end of the century, coupled with a significant increase in the proportion of older adults (LSM.lv, 2023). This demographic transition underscores the urgent need for age-friendly housing solutions.

The social housing stock in Latvia is characterised by large Soviet-era housing estates, which represent a significant part of the housing infrastructure. These estates, constructed from the 1950s to the 1980s, were initially built to provide affordable housing under socialist policies but now face challenges related to aging infrastructure and the need for modernisation (Treija & Bratuškis, 2019; Krišjāne et al., 2019). The privatisation process in the 1990s led to a high rate of

homeownership but left the social housing sector with limited stock, particularly in terms of quality and accessibility.

2.2. Core Design Principles for Age-Friendly Housing

The analysis identified four fundamental principles essential for age-friendly housing design: accessibility, safety, comfort, and social integration. These principles closely align with the factors considered in the Adaptive Reuse Potential (ARP) Model, demonstrating the model's potential applicability in assessing and planning age-friendly housing adaptations.

Accessibility emerged as a cornerstone principle, emphasising the need for barrier-free environments that facilitate easy movement and use of spaces for older adults with varying levels of mobility. This principle aligns with the ARP Model's consideration of physical obsolescence, which evaluates a building's structural integrity and potential for adaptation (Langston et al., 2008).

Safety features were consistently highlighted as crucial components of age-friendly housing design. This principle corresponds to the "Physical Obsolescence" factor in the ARP Model, which considers the wear and tear of buildings and their maintenance needs (Lacson, 2023). In age-friendly housing, safety considerations encompass a wide range of design elements, including adequate lighting to prevent falls, non-slip flooring materials, and strategically placed grab bars in bathrooms and other key areas.

Comfort emerged as a multifaceted principle, encompassing both physical and psychological aspects of well-being. This principle relates to the "Functional Obsolescence" aspect of the ARP Model, which assesses the flexibility of a building's spatial layout (Lacson, 2023). In age-friendly housing design, comfort considerations include aspects such as thermal comfort through efficient heating and cooling systems, acoustic comfort to minimise noise disturbances, and visual comfort through appropriate lighting design.

Social integration was identified as a critical principle in age-friendly housing design, addressing the often-overlooked social and emotional needs of older adults. This principle corresponds to the "Social Obsolescence" factor in the ARP Model, which evaluates the relationship between building function and marketplace needs (Lacson, 2023).

2.3. Specific Design Considerations

The study identified several specific design considerations for both interior and exterior spaces in age-friendly social housing. Interior spaces require careful attention to detail to support the daily activities and changing needs of older adults. Wide doorways and corridors are essential to accommodate wheelchairs and walking aids, ensuring ease of movement throughout the living space. Non-slip flooring materials are crucial for preventing falls, which are a significant risk factor for older adults. Adequate energy efficient (Sanchaniya et al., 2023) lighting is necessary to compensate for age-related vision changes, with adjustable and task-specific lighting options enhancing both safety and comfort.

Exterior spaces play a vital role in promoting physical activity, social interaction, and connection with nature. The design of these spaces should prioritize

accessibility through features such as ramps and level entrances. Well-lit pathways and common areas enhance safety and encourage the use of outdoor spaces during evening hours.

The integration of technology in age-friendly housing design emerged as an increasingly important consideration. Smart home systems for climate control and lighting can enhance comfort and energy efficiency while also supporting residents with mobility or cognitive impairments. Emergency call systems integrated into the housing design provide an added layer of safety and peace of mind for residents and their families.

2.4. Implementation Challenges

The research revealed several significant challenges in implementing age-friendly design in social housing in Latvia. Cost considerations emerged as a primary concern, particularly in the context of retrofitting existing properties or incorporating advanced features in new developments. This challenge relates to the “Economic Obsolescence” factor in the ARP Model, which considers the value and location of buildings (Lacson, 2023).

Regulatory compliance presents another significant challenge, as navigating building codes and regulations while implementing age-friendly design can be complex. This aligns with the “Legal Obsolescence” factor in the ARP Model, which assesses compliance with building design standards (Lacson, 2023).

Balancing the diverse needs of different demographic groups within social housing emerged as a complex challenge. This challenge corresponds to the “Political Obsolescence” factor in the ARP Model, which considers community or public interest in buildings (Lacson, 2023).

2.5. Adaptive Reuse Potential

The concept of adaptive reuse shows a significant potential for addressing Latvia’s age-friendly social housing needs using abandoned land (Sanchaniya and Geipele, 2023). The ARP Model provides a framework for evaluating the potential of existing buildings for conversion into age-friendly housing. This approach aligns with sustainable development principles and could be particularly beneficial in Latvia, where there is a significant stock of Soviet-era buildings that could be repurposed.

The findings underscore the importance of adopting a holistic approach to age-friendly housing design in social housing development. By integrating core design principles, addressing specific considerations for interior and exterior spaces, and learning from successful case studies, social housing providers can create environments that support the well-being and independence of older adults. However, the implementation challenges identified highlight the need for innovative funding models, flexible regulatory frameworks, and collaborative approaches to overcome barriers to age-friendly design in social housing.

CONCLUSION

The study has examined the principles and considerations for age-friendly housing design in social housing development, revealing the complexity and importance of creating living environments that support the well-being of older adults in Latvia. The findings highlight four core design principles – accessibility, safety, comfort, and social integration – which should form the foundation of any age-friendly housing project. These principles closely align with the factors considered in the Adaptive Reuse Potential (ARP) Model, demonstrating the model's potential applicability in assessing and planning age-friendly housing adaptations in Latvia.

The specific design considerations identified for both interior and exterior spaces, along with the integration of technology, provide practical guidance for implementing age-friendly features in social housing. These considerations go beyond mere physical adaptations, emphasising the importance of creating environments that promote independence, social interaction, and overall quality of life for older residents.

However, the study also reveals significant challenges in implementing age-friendly design in social housing in Latvia, particularly in terms of cost, regulatory compliance, and balancing diverse needs. These challenges underscore the need for innovative approaches to funding, policymaking, and stakeholder engagement in the development of age-friendly social housing.

The potential for adaptive reuse of existing buildings, particularly the Soviet-era housing stock, presents a promising avenue for addressing Latvia's age-friendly housing needs. This approach not only aligns with sustainable development principles but also offers a solution to the limited social housing stock in Latvia.

In the context of Latvia's aging population and the challenges faced by its social housing sector, the findings of this study have significant implications. By adopting the principles and considerations outlined in this research, Latvian policymakers, urban planners, and housing developers can work towards creating more inclusive, sustainable, and supportive living environments for older citizens.

Future research should focus on developing cost-effective strategies for implementing age-friendly design in social housing, particularly in the context of retrofitting existing properties in Latvia. Additionally, studies exploring the long-term impacts of age-friendly housing on residents' health, well-being, and social integration would provide valuable insights for future policy and design decisions in the Latvian context.

In conclusion, the study contributes to the growing body of knowledge on age-friendly environments by providing a comprehensive overview of design principles and considerations specifically tailored to social housing development in Latvia. By adopting these principles and addressing the identified challenges, social housing providers can create living spaces that not only meet the immediate needs of older adults but also promote active, healthy, and socially connected aging. As Latvia's population continues to age, the importance of age-friendly housing design will only increase, making it a crucial consideration in urban planning and social policy for years to come.

REFERENCES

- Chau, H.-W., & Jamei, E. (2021). Age-friendly built environment. *Encyclopedia*, 1(3), 781–791. <https://doi.org/10.3390/encyclopedia1030060>
- Demirkan, H. (2007). Housing for the aging population. *European Review of Aging and Physical Activity*, 4, 33–38. <https://doi.org/10.1007/s11556-007-0016-z>
- Forsyth, A., Molinsky, J., & Kan, H. Y. (2019). Improving housing and neighbourhoods for the vulnerable: older people, small households, urban design, and planning. *Urban Design International*, 24, 171–186. <https://doi.org/10.1057/s41289-019-00081-x>
- Hoof, J. V., & Boerenfijn, P. (2018). Re-inventing existing real estate of social housing for older people: Building a new De Benring in Voorst, The Netherlands. *Buildings*, 8(7), Article 89. <https://doi.org/10.3390/buildings8070089>
- Krišjāne, Z., Bērziņš, M., Sechi, G., & Krūmiņš, J. (2019). Residential change and socio-demographic challenges for large housing estates in Riga, Latvia. In D. B. Hess & T. Tammaru (Eds.), *Housing Estates in the Baltic Countries* (pp. 225–245). Springer. https://doi.org/10.1007/978-3-030-23392-1_11
- Lacson, D. X. (2023). Adaptive reuse and the ARP model: Background and method analysis. *MUHON: A Journal of Architecture, Landscape Architecture, and the Designed Environment*, 10, 33–44. University of the Philippines College of Architecture. <https://tuklas.up.edu.ph/Record/IPP-00000660290?sid=36383518>
- Langston, C., Wong, F. K., Hui, E. C., & Shen, L. Y. (2008). Strategic assessment of building adaptive reuse opportunities in Hong Kong. *Building and Environment*, 43(10), 1709–1718. <https://doi.org/10.1016/j.buildenv.2007.10.017>
- LSM.lv. (2023, March 30). Latvia's population could fall to 1 million by century's end. Retrieved from <https://eng.lsm.lv/article/society/society/30.03.2023-latvias-population-could-fall-to-1-million-by-centurys-end.a502489/>
- Luciano, A., Pascale, F., Polverino, F., & Pooley, A. (2020). Measuring age-friendly housing: A framework. *Sustainability*, 12(3), Article 848. <https://doi.org/10.3390/su12030848>
- Rasnaca, L., & Rezgale-Straidoma, E. (2019). Housing vulnerability for seniors in Latvia. *Economics*, 2, 225–231 <https://doi.org/10.22616/rrd.25.2019.073>
- Sanchaniya, R., & Geipele, I. (2023). Identifying existing properties for reuse into social housing. *Engineering for Rural Development*, 22, 100–107. <https://doi.org/10.22616/ERDev.2023.22.TF018>
- Sanchaniya, R. J., Asif, S. A. S., & Geipele, I. (2023). Role of real estate management firms toward sustainability in India. *Civil and Environmental Engineering*, 19(2), 511–519. <https://doi.org/10.2478/cee-2023-0046>
- Treija, S., & Bratuškins, U. (2019). Socialist ideals and physical reality: Large housing estates in Riga, Latvia. In D. B. Hess & T. Tammaru (Eds.), *Housing Estates in the Baltic Countries* (pp. 161–179). Springer. https://doi.org/10.1007/978-3-030-23392-1_8
- Van Hoof, J., Marston, H. R., Brittain, K. R., & Barrie, H. R. (2019). Creating age-friendly communities: Housing and technology. *Healthcare*, 7(4), Article 130. <https://doi.org/10.3390/healthcare7040130>
- WHO. (2020). Age-friendly housing. In *Age-friendly environments in Europe: A handbook of domains for policy action*. <https://iris.who.int/bitstream/handle/10665/334251/9789289052887-eng.pdf>