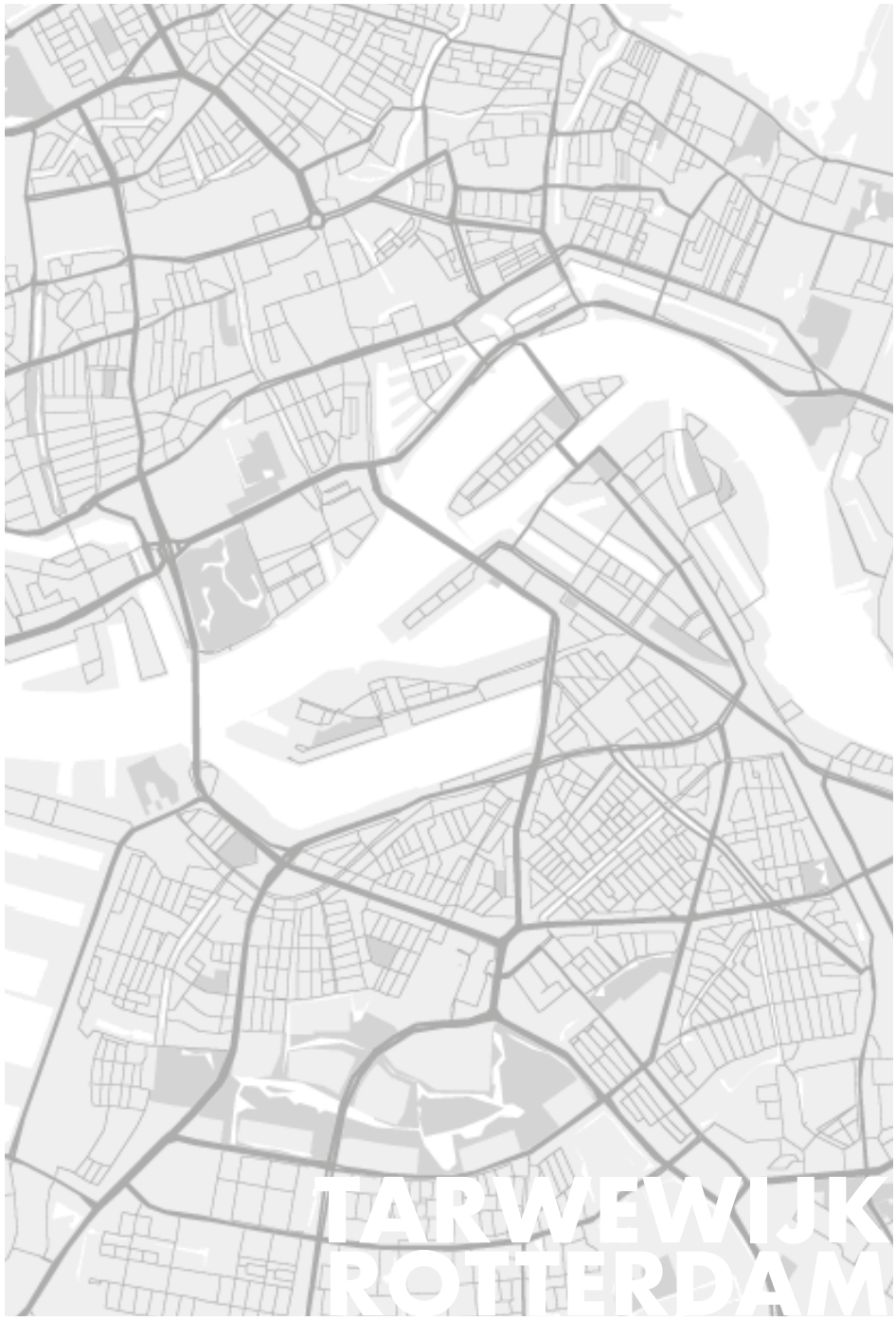
HEALTHY AGING IN THE TARWEWIJK

ARCHITECTURAL RESEARCH ON AN AGE-FRIENDLY DESIGN FOR ELDERLY



ARCHITECTURE GRADUATION STUDIO

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AGING INDEPENDENTLY IN TARWEWIJK

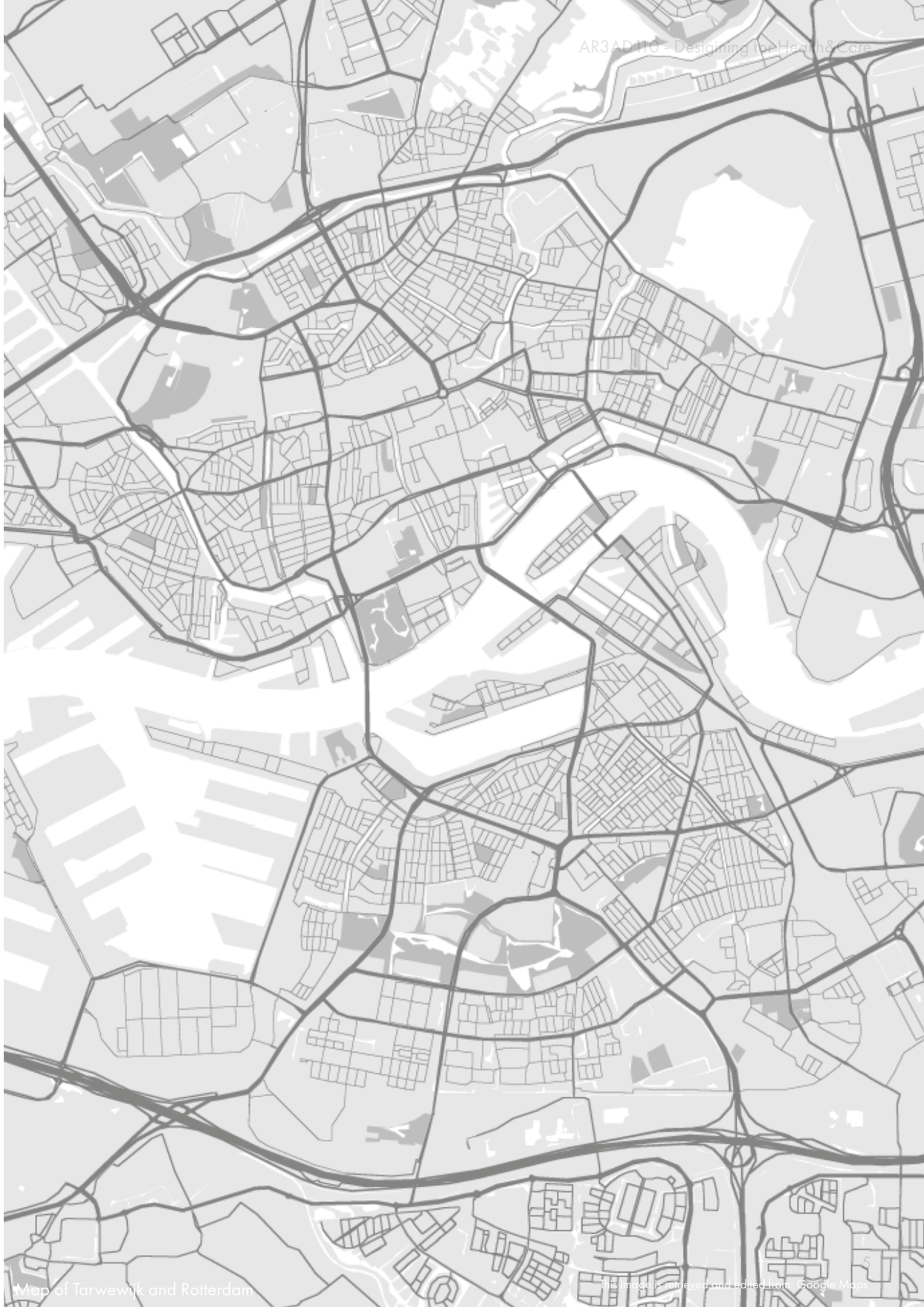
Growing old healthy in your own neighbourhood

People in the Netherlands are living longer. The ageing population is steadily increasing, and many societal problems are linked to this [1]. In every election debate, ageing and old age are hot topics. The challenges of an ageing population are wide-ranging and affect all layers of society. Elderly people are often forced to stay at home longer, while nursing and care facilities are under immense pressure [2] [3]. The number of retirees continues to rise, and the burden must be shouldered by the working generation, which is unable to keep up with the growth of the elderly population[4]. The government is also cutting back significantly on elderly care, leading older people to feel like a burden on society[5] [6]. Moreover, the elderly population has increased more than tenfold in the past century, and people are living even longer[7]. Projections show that life expectancy in 2040 will be 85.8 years, compared to 81.5 years in 2015[8].

However, in Tarwewijk, located in the Charlois district of Rotterdam, life expectancy is significantly lower compared to the national average. Men in Tarwewijk live, on average, no longer than 74 years[9]. In an article in NRC, several reasons are given for this, such as the link between lower socio-economic status and earlier death[10]. Another factor is the level of education. "Those with lower education levels tend to smoke more (which reduces life expectancy by 1.5 years), are unemployed or work in physically demanding jobs, lead less healthy lifestyles, live in poorer housing and neighbourhoods, and feel less in control of their lives." [11] The article concludes by stating that 5.5 years of the seven-year life expectancy difference is due to personal factors, while 1.5 years is attributed to the neighbourhood (such as a lack of green spaces). A seemingly obvious solution, such as moving to increase life expectancy, has little effect[12].

Besides the lower life expectancy, the district struggles with other issues. Residents no longer feel safe in their neighbourhood, and the-

[1] Centraal Bureau voor de Statistiek (n.d.)
[2] Van De Klundert (2023)
[3] Stols (2024)
[4] Centraal Bureau voor de Statistiek (n.d.)
[5] Wageman (2024)
[6] Post (2013)
[7] Ministerie van Volksgezondheid, Welzijn en Sport (n.d.)
[8] Ministerie van Volksgezondheid, Welzijn en Sport (2018)
[9] Luijt (2019)
[10] Luijt (2019)
[11] Luijt (2019)
[12] Luijt (2019)



Map of Tarwewijk and Rotterdam

This image is retrieved and edited from Google Maps

re is reduced social cohesion. This is primarily due to the high turnover of residents, with one in three moving to a different neighbourhood each year[13] [14].

Relatively few elderly people live in Tarwewijk, with only 8% of residents over the age of 65[15]. The majority of the population consists of young people and families with children. There is no clear explanation for this demographic, but it is possible that life expectancy plays a role. Additionally, the housing supply is not well-suited for the elderly, with most homes consisting of multi-storey buildings and only 8% being single-family homes[16].

However, older residents have expressed a desire to remain in their neighbourhood as they age. People over 65 feels strongly connected to their area. When they move to a different neighbourhood, they lose their social network[17]. While the exact reason for the lower number of elderly residents in Tarwewijk is unknown, it is important that people can age in their own community.

There are few suitable homes for the elderly in Tarwewijk, as mentioned earlier, and there is no nursing home in the area. However, some residents do use support provided by the Social Support Act, in Dutch 'Wet Maatschappelijke Ondersteuning' (WMO), which aims to ensure that people can live at home for as long as possible with the necessary care[18]. The number of people using WMO is an indicator of the need for care in Tarwewijk. In the district, 56 per 1,000 residents use this scheme, which is lower than in Rotterdam overall, where 83 per 1,000 residents make use of it[19] [20].

A letter published in the newspaper addresses the current national healthcare system. The writer responds to two members of the Dutch Parliament, who during the 2023 elections, argued for the return of nursing homes. They stated that they didn't want old-fashioned nursing homes but rather small-scale facilities[21]. The letter's author, a former director of a care home, argues that small-scale care homes are too expensive and do not offer a solution to the broader issue.

The writer goes on to say that the current healthcare system does not adequately serve a large group of elderly people who need light care. These elderly people fall through the cracks, as they are not represented. Nursing homes are needed where care can also be provided to people requiring light care. Nowadays, much of the care for the elderly is provided by family members acting as informal caregivers to allow the elderly to remain at home. However, the pressure on informal caregivers is immense[22]. There is a need for an intermediate step between nursing homes and independent living[23].

As (future) architects, we are world-changers. We can think of solutions to societal problems, and architecture can play a part in addressing the issues surrounding elderly care. Architects should not only create beautiful buildings for wealthy people but should also design good buildings for all layers of society. Oscar Niemeyer once said: "The architect's role is to fight for a better world, where he can produce an architecture that serves everyone and not just a group of privileged people." [24]

In this research, I aim to focus on the elderly in Tarwewijk. I want to specifically investigate how people can grow old in their own neighbourhood. Ultimately, more elderly people should remain in Tarwewijk, without needing to move to another neighbourhood late in life, with all the associated disadvantages.

[13] Schram and Lankhaar (2023)
[14] Veldacademie (2020)
[15] Gemeente Rotterdam (2024)
[16] Gemeente Rotterdam (2024)
[17] Van Dijk (2017)
[18] Ministerie van Algemene Zaken (2024)
[19] AlleCijfers.nl (2024)
[20] Centraal Bureau voor de Statistiek (2024)
[21] Van Den Bergh (2023)
[22] Ministerie van Volksgezondheid, Welzijn en Sport (2023)
[23] Van Den Bergh (2023)
[24] Basulto (2017)

Aerial photo of Tarwewijk and Rotterdam

This image is retrieved from: Google Earth

02

CREATING AN AGE-FRIENDLY ENVIRONMENT

Framework for aging independently in the neighbourhood

The focus of this research is ageing within one's own neighbourhood. I aim to explore how people can continue living in their own area, specifically in Tarwewijk. As mentioned earlier, there are few elderly residents in Tarwewijk, and life expectancy is quite low. Additionally, there is a lack of housing suitable for the elderly, with most homes being multi-family units without lifts. While it can't be stated with certainty, these factors indicate how age-friendly the neighbourhood is.

The WHO has created a framework to make cities more accessible, inclusive, and supportive for older adults[25]. This framework serves as a foundation for this study, focusing specifically on urban environments. The core of the framework is that cities should be supportive and inclusive for people of all ages, including older adults. The framework is developed and described in the book "Global Age-Friendly Cities: A Guide"[26].

The WHO framework has eight domains: "Community and Health Care," "Transportation," "Housing," "Social Participation," "Outdoor Spaces and Buildings," "Respect and Social Inclusion," "Civic Participation and Employment," and "Communication and Information." The domains most relevant to this study are described below, while the remaining domains, though important, are less directly connected to this research.

Community and Health Care
Access to healthcare and wellness services is essential. The proximity of these services can enable older adults to remain in their homes for longer.

Transportation
Accessibility to essential services is crucial for older adults, who often rely on public transportation. It is also important that these services are within walking distance. Accessibility features, such as curb cuts and ramps, should be considered to prevent barriers for older adults.

Housing
This domain is perhaps one of the most critical for this research. Older adults should be able to age comfortably in their own homes, which must meet specific requirements. As the WHO states, "Appropriate housing design and its proximity to community and social services allow older residents to live comfortably and safely, while housing affordability gives them peace of mind" (World Health Organization, n.d.-a).

The Tarwewijk's housing stock mainly consists of multi-family homes with traditional Dutch "Haagse portieken" (porch entrances), which often pose accessibility challenges for older adults.

Outdoor Spaces and Buildings
This domain overlaps with "Housing," but it also includes public spaces. Considerations here include lighting, safety, and accessibility of outdoor areas.

Outdoor Spaces and Buildings
This domain overlaps with "Housing" but also includes public spaces. Features such as lighting, safety, and accessibility are essential in outdoor spaces. For older adults, it is important that outdoor areas are accessible, with features like curbs and benches playing a significant role within this domain.

Another study focusing on alternative age-friendly initiatives critiques the current perspective on age-friendly cities, stating that it is too limited and requires a more innovative approach[27]. This research specifically addresses the design of age-friendly cities.

[25]World Health Organization (n.d.-b)
[26]World Health Organization (2007)
[27]Handler (2018)

It highlights that as people live longer and healthier lives, the strain on healthcare systems increases. Cities must better accommodate the needs of the elderly to enable them to stay in their homes for longer. With an ageing population, the pressure will only grow. Technology and design can play a key role in helping older people remain in their neighbourhoods.
In the Netherlands, a housing concept called Knarrenhof has been developed, allowing older people to stay in their homes for longer[28]. It was created to meet the growing demand from the elderly for independent living. In a Knarrenhof, elderly residents provide social support to each other.

Hypothesis
By designing age-friendly cities, districts, and neighbourhoods, older people can remain in their homes for longer and age more healthily in their own areas. Currently, many elderly people move because their needs are not met. Through thoughtful design and architectural solutions, urban spaces can be adapted to better support older residents, allowing them to remain in familiar surroundings as they age. This approach requires a renewed perspective on the design of urban spaces for aging populations.
The Knarrenhof concept, which facilitates independent living with social support networks, serves as an inspiring example of this approach. The objective of this research is not to develop a care or nursing home, but rather to provide solutions for older adults with low-care needs, those who require some support but do not need the full-time care provided by a nursing home.

[28]Nijkamp and Bosker (2020)

An example of a Knarrenhof

This image is retrieved from: https://www.actiefonline.nl/nieuws/algemeen/60069/drachten-wil-een-knarrenhof

03 RESEARCH QUESTION

Research question and subquestions

The main research question is:

"How can the living environment in, for instance, Tarwewijk be improved to enable elderly people to live independently at home for longer?"
To answer this question, the main research question is divided into three sub-questions:

1. What is the current housing situation for elderly people in Tarwewijk?
2. What are the needs of the elderly regarding their living environment?
3. Which elements from existing age-friendly reference projects can be applied to the living environment in Tarwewijk?

Definitions

- The term "living environment" has been chosen intentionally. Although this is a graduation research project in the field of architecture, it should not overlook the broader context. The term "living environment" emphasizes architecture but also leaves room to explore the surrounding context and neighborhood. Within the living environment, the built environment is primarily examined. However, because the living environment is closely intertwined with the built environment, the living environment will also be explored.

  The living environment and the built environment are divided into different scales: neighborhood, sub-neighborhood, residential building, and interior. When referring to the living environment in this research, it is intended in the broadest sense of the term. When referring to the built environment, it refers solely to the physical surroundings.
- Elderly: Elderly are defined as individuals aged 65 and above. Although different ages are sometimes associated with the term "older adult," this study specifically refers to people aged 65 and older.
- Living independently at home: Residing in a self-contained home, not in a care or nursing home. Support, such as home care or informal care, may still be provided.
- Low care needs: Care intensity is categorised using care packages or profiles, ranging from 1 to 9. The first three levels represent low care needs, where individuals can continue to live at home.

Scope
This research focuses on the housing of elderly individuals (65+). The target group includes both healthy seniors and those with a (light) care need who still live at home. The type of housing is not restricted; thus, it does not focus on a single type of housing arrangement, such as courtyards. This research aims to investigate which form of communal living can be best applied in an urban environment in the Netherlands, such as the Tarwewijk. The ultimate goal of this research is to explore which communal living arrangement can be implemented, considering the parameters of the surrounding environment.

This research question focuses on a societal issue related to architecture and urban planning. The aim of this research is to explore how architecture and urban design can help address the housing challenges for the elderly.
The first sub-question, "What is the current housing situation for elderly people in Tarwewijk?" provides insight into the present circumstances of elderly residents. It focuses primarily on their physical living environment, which includes both the housing/building and the urban aspects at the neighbourhood level. A building and its context cannot be considered in isolation. By answering this question, a comprehensive picture is formed, highlighting both positive aspects and existing challenges.

The second sub-question, "What are the needs of the elderly regarding their living environment?" overlaps with the first question in identifying problem areas. In addition, it examines further needs that the elderly may have to enable them to remain at home for longer.

The third sub-question, "Which elements from existing age-friendly reference projects can be applied to the living environment in Tarwewijk?" investigates projects that can serve as references for this research. By analysing and comparing various projects, a clear understanding of existing interventions will emerge.

Output
The research findings are translated into design guidelines. These guidelines will be applied in the design to create a residential building for older adults. The guidelines are organized by priority and subdivided into different scales: neighborhood, sub-neighborhood, residential building, and interior.

04 METHODS

Description of the methods to answer the research questions

The first sub-question, “What is the current living situation of older adults in Tarwewijk?” provides a description of the present conditions. This includes a significant amount of quantitative research, using statistics to create an overview of the current situation, with results that can be displayed through mapping. Part of this description may also be conveyed through photo documentation. This sub-question also addresses which older adults (in terms of physical condition) and how many currently live in Tarwewijk. Additionally, older adults will be interviewed to describe their current living situations. However, an initial attempt to contact older residents in Tarwewijk was unsuccessful, as residents are hesitant to establish contact. An alternative approach may involve interviewing residents in another senior housing complex, though the downside is that these individuals do not live in Tarwewijk. Another option could be to approach people on the street, although the main drawback here is the inability to conduct in-depth interviews.

The second sub-question, “What are the needs of older adults regarding their living environment?” can partly be addressed through a literature review, as there is likely existing research on this topic. Relevant literature will be searched primarily on Google Scholar, using keywords such as “elderly housing,” “independent living for seniors/elderly,” “age-friendly living environment,” “housing needs for elderly,” and “age-friendly neighborhoods.” These results will provide general insights, but fieldwork is essential for specific information. Interviews will be conducted with older residents in Tarwewijk, including residents of senior apartments. Subsequently, the results from the interviews can be compared with the findings from the literature.

The third sub-question, “Which elements from existing age-friendly reference projects can be applied to the living environment in Tarwewijk?” will be addressed through case studies of existing reference projects. These projects will be analyzed for their underlying principles and qualities. Possible case studies include Knarrenhof in Zwolle and De Groene Mient in The Hague. Three case studies will be selected, focusing on communities where people aged 65+ live together. These case studies may have rural, village, or urban contexts. The various projects will be compared to one another, with a critical approach taken to avoid blindly replicating existing projects. It is also crucial to consider the context when analyzing reference projects, as village-based projects have different characteristics compared to the urban nature of Tarwewijk.

RESEARCH SCHEME

WHY?

The aging population in the Netherlands causes societal issues, such as pressure on healthcare facilities and the working generation. Additionally, life expectancy is expected to rise in the future. However, in Tarwewijk, Rotterdam, life expectancy is lower due to socioeconomic factors. Few elderly people remain in the neighborhood, and the housing is often unsuitable for them. Nationally, there is a call for small-scale care homes, but there is a greater need for an intermediate solution for elderly people who require light care.

WHAT?

The goal is to design living environments that allow elderly people to stay in their own neighborhoods. There is a need for an intermediate solution for seniors who wish to remain at home and require little to no care.

WHAT?

RESEARCH QUESTION

“How can the living environment in Tarwewijk be improved to enable elderly people to live independently at home for longer?”

HOW?

What is the current housing situation for elderly people in Tarwewijk?	What are the needs of the elderly regarding their living environment?	Which elements from existing age-friendly reference projects can be applied to the living environment in Tarwewijk?
Quantitative research Statistics Mapping Photo report Qualitative research Interviews	Literature research Qualitative research Interviews	Case studies Comparative cases

05 LITERATURE

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