# An age-friendly living: Senior co-housing communities and ageing in place

A master thesis on ageing in place in senior co-housing communities in Amsterdam

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## A master thesis on ageing in place in senior co-housing communities in Amsterdam

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# Abstract

The challenges of population ageing and the need for age-friendly living environments in the Netherlands to enable ageing in place (AIP) is increasing. This study focuses on senior co-housing communities as potential solutions to support AIP. The objective of this study was to fill the gap in empirical research on senior co-housing communities and gain a comprehensive understanding of AIP by examining multiple geographical contexts. The purpose was to explore how senior co-housing communities and their surrounding neighbourhoods in Amsterdam enable residents to age in place. A case study approach was used to investigate two senior co-housing communities in Amsterdam. Semi-structured interviews and walking interviews were conducted with residents from both senior co-housing communities to explore how they age in place in the co-housing community and in the surrounding neighbourhood.

This study found that the practical facilities within the home environment, such as shared spaces and modifications like elevators or specialised handles providing support, offer valuable advantages for AIP. Furthermore, the role of the neighbourhood in enabling ageing in place is minimal. Residents primarily rely on themselves to access services and amenities in the surrounding area of the co-housing community. Finally, the collective support among residents in the co-housing community plays a significant role in reducing loneliness and providing practical help. Further research could explore the limited engagement of co-housing communities with the neighbourhood and investigate the role of neighbours in supporting ageing in place. Policymakers should prioritise planning for long-term support from the neighbourhood enabling successful AIP for people living in senior co-housing communities in metropolitan cities. This entails adjusting the built environment, public transport, and public spaces to overcome accessibility challenges. Since the ageing population will only continue to increase in the future, it is important to pay attention to this.

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# 1. Introduction

## 1.1. Context

The Netherlands is experiencing a rapid increase in the number of elderly people due to population ageing (PBL, 2022). To illustrate, the number of people of eighty years and older is expected to increase from 0.8 million in 2021 to 1.5 – 2.6 million in 2050 referring to the term 'double ageing' (CBS, 2021). The Netherlands is also facing developments of 'urban ageing' which means that the number of older adults in cities and urban areas is increasing (van Hoof et al., 2021). This is mainly caused by urbanisation and an increasing life expectancy (PBL, 2022). The number of people of 65 years and older in the four biggest cities  −  Amsterdam, Rotterdam, Utrecht and The Hague  −  is expected to increase from 14 % in 2022 to 19 % in 2035 (PBL, 2022). Simultaneously, elderly care centres in the Netherlands are unable to cope with the increasing demand of elderly moving  to a care institution due to staff shortages,  leading to extremely long waiting lists (Klundert & Schrader, 2022). Additionally, since many residential care homes in the Netherlands have been closed, only people with severe care needs qualify to receive long-term facility based care services (Rusinovic et al., 2019). Besides, between 2019 and 2020 the number of elderly people aged 75 and older living at home experiencing feelings of loneliness and social isolation in the Netherlands has increased extremely (Knapen et al., 2021). In 2018 the Dutch government created the program 'Langer Thuis' which focuses on the large and growing number of elderly people who live independently at home (Rijksoverheid, 2021). The main goal of this program is to encourage elderly people to 'age in place' by providing them with support and care. However, one of the consequences is that more elderly people in the Netherlands remain in their own house and occupy a house that is often too big for them. This can lead to a stagnation of the flow on the housing market as less suitable homes are available to young families (NOS, 2020).

The rapid process of population ageing in the Netherlands also has a far reaching impact on the requirements for the living environment in urban areas, resulting in an emerging challenge to create 'age-friendly' cities (Schilder et al., 2021; Buffel & Phillipson, 2016). According to the World Health Organization (WHO), an age-friendly city can be defined as: […] "An environment that ensures that older people age safely, continue to develop personally and contribute to their communities while retaining autonomy and health." (WHO, 2020, p. 27). Senior co-housing is often coined as an age-friendly solution to overcome the problems described above as it provides the possibility for elderly to age in place in a meaningful way. Senior co-housing provides elderly people with an alternative living option with both mutual support from fellow co-housing inhabitants and private living spaces (Rusinovic et al., 2019). Nowadays, many different forms of co-housing communities for older adults have been developed. In the Netherlands, a 'woongroep' [residential group] for elderly is a form of senior co-housing which will be explored in this study. The concept of ageing in place (AIP) in this study refers to what Bigonesse and Chaudhury (2019, p. 235) define as: […] " staying in supportive housing or community as an alternative to moving to a long-term care facility."

Research has shown that, within the community itself, senior co-housing projects contribute to a decline in loneliness, fosters social interaction, support and a sense of 'community' between its residents (Choi, 2007; Glass, 2019; Rusinovic et al., 2019). However, besides these intra-mural aspects, there is limited knowledge about the daily lives of senior co-housing residents when considering both the home and neighbourhood environment simultaneously (Bigonesse, 2017). As the number of older adults in the Netherlands will increase in the foreseeing future, requirements for the living

environment will change and creating age-friendly cities where elderly can age in place will become more important (CBS, 2021; PBL, 2022; Schilder et al., 2021). By examining the lives of people living in senior co-housing communities across various geographical scales, insights into meaningful ways to age in place can be developed.

## 1.2. Problem description

A lot of research has been done regarding the social aspects of senior co-housing settlements and the positive impacts on the well-being of its residents (Choi, 2004; Glass, 2019; Rusinovic et al., 2019). However, as stated by Bigonesse and Chaudhury (2021), there is a lack of knowledge about the interrelation between the home environment and the surrounding neighbourhood of co-housing communities. Previous studies have often investigated ageing in place either focusing on the home or neighbourhood environment, rather than considering the interplay between multiple geographical contexts. Additionally, Bigonesse (2017) argues that the process of ageing in place should be explored as a continuum of various geographical scales instead of several distinctive spaces analysed independently. A study by Carlsson et al., (2022) analysed multiple geographical scales simultaneously to examine the importance of space in the care landscape for elderly people living in care centres. This study used a similar approach but aimed to investigate whether the home and neighbourhood environment enable elderly in senior co-housing communities to age in place.

## 1.3. Objective

There is a lack of empirical research about senior co-housing communities. The objective of this study is to develop a better understanding of ageing in place in senior co-housing communities in Amsterdam. With 22 registered locations, this city has the highest number of senior co-housing communities in the Netherlands. By 2050, the population number of Amsterdam is expected to grow by 21 percent compared to 2022, with the number of residents aged 65 and older increasing from 105,000 in 2018 to 180, 000 in 2050 (Gemeente Amsterdam, 2023; Gemeente Amsterdam, 2021) Considering this future development, it is valuable to explore the experience of residents living in senior co-housing communities in Amsterdam. New insight into the role of the home environment and the neighbourhood of the co-housing community in AIP are being added to the scientific debate by addressing the following research question:

*" How do senior co-housing communities and their surrounding neighbourhoods in Amsterdam enable its residents to age in place? "*

In order to answer this question, the following sub-questions were addressed:

  I.    What contribution does living in a senior co-housing community make to the individual factors of its residents?
  II.   How do senior co-housing communities contribute to the accessibility of the built environment?
  III.  How do senior co-housing communities contribute to the proximity to services and amenities?
  IV.   How do senior co-housing communities contribute to meaningful social connections?

# 2. Theoretical framework

This chapter describes several concepts that are used to explore how people in senior co-housing communities live and how they age in place. Section 2.1. discusses some definitions and perspectives of AIP to illustrate the diversity of important social and physical factors influencing this process. The importance of space for ageing people and how this relates to co-housing are highlighted in section 2.2. Finally, the concept of age-friendly cities is addressed to describe how aspects and services of cities can create accessible and inclusive urban environments which are incorporated in the operationalization.

## 2.1. Ageing in place

Since the ageing population in Western countries increased, AIP simultaneously became a more urgent concept. AIP policies were not only focused on developing cost-saving strategies for health care, they also aimed at responding to the preference of elderly to stay at their home while they age and retain their feelings of independence and autonomy (Bigonesse & Chaudhury, 2021; Lewis & Buffel, 2020). In literature, ageing in place knows several definitions. To illustrate, Alley et al., (2007) define ageing in place as a process of growing old in one's own home through the implementation of environmental modifications to compensate for limitations and disabilities. Likewise, AIP is also described as: […] "the ability to stay in one's current unit dwelling regardless of increasing need for support, such as health implications, widowhood, or loss of income." (Greenfield, 2012, p. 1). However, a critical note from Scharlag and Diaz Moore (2016) regarding the conceptualizations above, addresses the assumption that 'place' relates to the current home or residential unit and staying within the same physical location will certainly have a positive impact. Though, it can also be beneficial for elderly people to relocate to a smaller dwelling closer to friends, family or specific services and amenities in order to age in place (Golant, 2003).

Furthermore, there are limitations to defining concepts such as 'home' and 'community' since these phenomena are complex and experienced differently by each individual (Bigonesse & Chaudhury, 2019; Felix et al., 2015) Therefore, Bigonesse and Chaudhury (2019) discuss two categories within the definition of AIP. First of all, the process of ageing in place can refer to a person staying in one's private residential setting or dwelling. In this case, the concept can be defined as: (1) Staying in a private dwelling unit supported by implemented home adjustment, assistive technology and support services, or (2) Remaining in the same community or neighbourhood, but in a different and often smaller unit. Secondly, instead of moving to a long-term care facility, older adults can decide to stay in a supportive form of housing or community (Bigonesse & Chaudhury, 2019, p. 235). In this description, 'place' refers to living in a congregate facility or community for as long as possible. Since co-housing is a form of collaborative living, this research will apply the definition that considers the process of AIP as moving to a supportive form of housing or community.

Besides the definition of ageing in place, the concept knows several principles to help understand the processes involved. First of all, the AIP process should foster wellbeing (Bigonesse & Chaudhury, 2021). This means that ageing in place should only be stimulated if it has a positive impact on the quality of life: "AIP is desirable and possible when an individual has found a place to age where he or she can thrive and pursue his or her journey on the path of human development " (Bigonesse & Chaudhury, 2021, p. 65). In literature it is often assumed that AIP is the best way to grow older. However, in some cases elderly people move to a gentrifying or unsafe neighbourhood and are 'stuck in place' rather

than ageing in place (Aurand et al., 2014; Smith et al., 2018). This can affect people's physical and mental wellbeing. Furthermore, AIP is not a 'one-size-fits-all' concept, meaning that ageing in the best possible way differs between individuals, cultures, locations, contexts and changes over time (Sixsmith & Sixsmith, 2008; Wiles et al., 2012). For example, ageing in place mainly refers to living in a home that fosters independence and autonomy, a crucial aspect in Western cultures, whereas in other cultures, dependence among elderly is considered a normalised approach to ageing in place (Sixsmith & Sixsmith, 2008). Finally, many studies provide a simplistic description of the process and lack the incorporation of the experiences of elderly (Bigonnesse, 2017; Bigonnesse & Chaudhury, 2019). According to Sharlag and Diaz Moore (2016) 'ageing' is not homogenous and 'place' is not a static location. Therefore, the person-environment relationship should be seen as a dynamic process with several aspects involved.

This dynamic process has been visualised in a conceptual framework, developed by Bigonesse and Chaudhury (2021), explaining the variety of aspects involved in AIP in the neighbourhood and home environment (Figure 1). In this model, AIP is directly linked with four components: (1) place attachment, (2) independence, (3) mobility, and (4) social participation. The components are influenced by four factors: individual characteristics, accessibility of the built environment, proximity of services and amenities and meaningful social connections (Bigonesse & Chaudhury, 2021, p.63). The four factors can stimulate or disrupt each of the place integration processes and therefore ageing in place. The aim of this study is to investigate how these factors enable people living in senior co-housing communities to age in place.
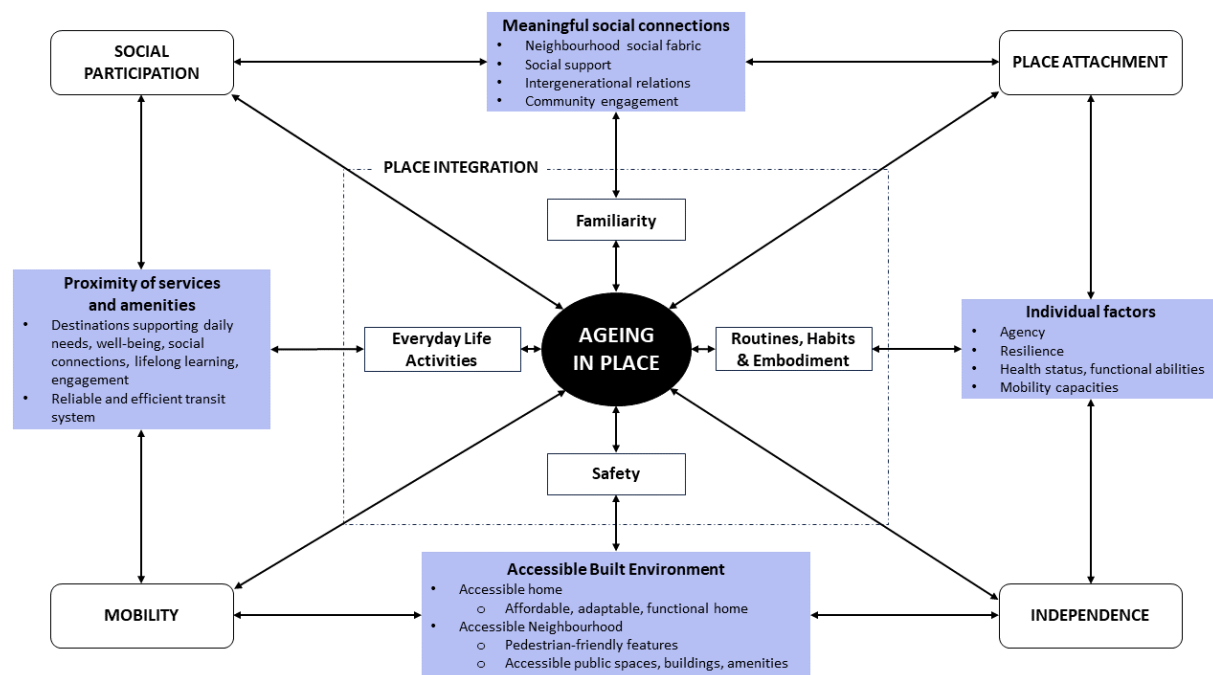


*Figure 1: Conceptual framework of AIP in the home and neighbourhood environment, with the highlighted factors as focus of this study (Bigonesse & Chaudhury, 2021)*

## 2.2. Senior co-housing and the relation with ageing and space

Generally, most elderly people are strongly attached to their home and neighbourhood they have lived in for many years (van Dijk et al., 2015). The feeling of familiarity facilitates a continuity of self and encourages personal autonomy and individuality. Senior co-housing projects were developed in the 1970s in northern European countries as an alternative type of housing to combat loneliness among elderly (Choi, 2004). These co-housing schemes emphasised the importance of establishing active and mutually beneficial relationships between co-inhabitants. A study by Glass (2020) found that co-housing communities for elderly stimulate social interaction and enable elderly people to age better together. Based on senior co-housing research, Glass and van der Plaats (2013) stated that ageing together can develop a sense of community which enables elderly to build resilience while coping with the ageing process. Living in close proximity to each other stimulates this coping process, also known as 'communal coping' (Lyons et al., 1998). This includes three components: (1) the belief that dealing with ageing together can be better than dealing with it alone; (2) sharing resources and information about ageing; and (3) collective action to deal with the stressor of ageing. Senior co-housing is seen as a viable alternative housing option that allows older adults to reside together for an extended period of time.

Since older adults are often strongly attached to their home and community, space is also an important element in the ageing process (Glass, 2005). Personal mobility, independence and quality of life of most older adults is significantly affected by physical factors in the home and neighbourhood environment (Phillipson, 2007; Schilder et al., 2021). Co-housing is a collaborative housing concept where people live together in a single residential dwelling, typically featuring four to twenty private apartments and various shared spaces, such as a shared kitchen and a laundry room (Griffith et al., 2022; Rusinovic et al., 2019; ZorgSaamWonen.nl, 2020). It offers the ability for elderly to adapt their direct home environment to their needs. Common spaces and the implementation of indoor shared services can stimulate elderly to stay active and increase their mobility.

## 2.3. Age-friendly cities

The concept of AIP involves the physical and social integration of older adults in their home and neighbourhood environments. The World Health Organization (WHO) has emphasised the significance of these socio-physical aspects in promoting age-friendly cities (WHO, 2007). An age-friendly city can be described as: "an environment that promotes health and support for people experiencing capacity loss. Such environments ensure that older people age safely, continue to develop personally and contribute to their communities while retaining autonomy and health." (WHO, 2020, p. 27).

In 2007, the WHO developed a model with eight domains that contribute to an age-friendly city and community: (1) outdoor spaces and buildings, (2) transportation, (3) housing, (4) civic participation and employment, (5) respect and social inclusion, (6) social participation, (7) communication and information, and (8) community support and health services (van Hoof et al., 2020) (Appendix I)**.** The eight domains cover elements of urban structures, environments, services and policies that are important factors in the process of active ageing. The main message of the model is that older adults will be able to stay independent and healthy for as long as possible if a number of domains provide support in every aspect of daily life. Nevertheless, Chao (2018) argues that, as every domain of the

WHO model interacts with some form of space, urban planning tools should be implemented to meet space requirements from all domains instead of a number of them. This study includes the domain of community support and health services, outdoor spaces and buildings, transportation, housing and social participation to explore the ageing in place processes within these themes. The characteristics of these domains that make a space age-friendly are incorporated in the operationalization below.

## 2.4. Operationalization

This section briefly discusses the concepts and variables used to examine how senior co-housing communities, along with their surrounding neighbourhood, enable ageing in place for its residents. This research focuses on the four factors of the AIP model (Figure 1). In this approach, the elements of an age-friendly city, as defined by the WHO, are integrated to create a more holistic perspective on a liveable environment for older adults.

Each factor consists of several elements that provide help with the analysis of ageing in place. First of all, agency refers to: " The sense of having the capacity for meaningful and successful actions."(Hitlin & Elder, 2006, p. 40). This individual factor is crucial for elderly when it comes to making choices and therefore has an impact on the process of ageing in place (Bigonesse & Chaudhury, 2021). Furthermore, resilience is an important skill for elderly to make ongoing adjustments in order to find a balance between ageing in place and the ability to rebound when challenges occur (Bigonesse & Chaudhury, 2021). In this study resilience is defined as: "Flourishing despite 'adversity', which can correspond to increased changes of personal loss, exacerbated inequalities, physical disabilities, and general physical health challenges." (Stephen et al., 2015, p. 717). Finally, health status, functional abilities and mobility capacities determine people's sense of autonomy and control over decision making process when performing specific activities in daily life (Arifin & Hogervorst, 2015; Portegijs et al., 2015). These factors influence the feelings of independence which contributes to the ability to age in place.

The factor accessibility of the built environment refers to an accessible home and neighbourhood. Both aspects consist of characteristics in the built environment that contribute to the age-friendliness of a place. For example, an accessible home should allow elderly to make adjustments to changing needs in order to optimise their performance of daily activities. It should encourage them to stay active and feel safe while performing these activities (Bevan & Croucher, 2011; Bigonesse & Chaudhury, 2021). It also involves a functional home where, as stated by Bigonesse (2017), people are able to receive guests which enables them to maintain meaningful social connections with friends and family. An accessible neighbourhood is important for older adults to stay mobile and independent and it supports social participation (Bigonesse & Chaudbury, 2021). An accessible neighbourhood includes pedestrian friendly features, accessible public spaces, buildings and amenities that allows them to visit services supporting daily needs and spaces of social interaction. An age-friendly city should not only implement inclusive design concepts, but […] "it should aim at creating an active environment that can interact with older users and stimulate their willingness to do physical activities in order to sustain both physical and mental health." (Chao et al., 2004, p. 41). It is important to explore the accessibility of a neighbourhood as the accommodation of various mobility capacities impacts the possibilities of elderly people to stay socially and physically active and therefore age in place in a meaningful way (Bigonesse, 2017).

Exploring the experiences of elderly people regarding the proximity of services and amenities in their neighbourhood is valuable since it directly influences the possibility to perform their daily activities, such as doing groceries (Michael et al., 2006; Tang & Pickard, 2008). Furthermore, the availability and accessibility of transit systems provide access to destinations supporting daily needs which fosters well-being and social connections (Chaudhury et al., 2017). This is important for older adults to stay mobile and maintain their social network through social participation.

Finally, meaningful social connections contribute to the reduction of social isolation and foster people's attachment to a place and sense of community (Bigonesse et al., 2017; Lester et al., 2012; Mihaylov & Perkins, 2014). According to García, Guiliani and Weisenfeld (2000 ) and Evans (2009), a sense of community mainly involves feelings of belonging, trust and reciprocal help. Meaningful social connections include social interactions at the neighbourhood level with shopkeepers, acquaintances or neighbours, mostly influenced by the physical design and planning of public spaces. Meaningful social connections also implies contact with friends, family and neighbours, often important when dealing with age-related changes (Bigonesse & Chaudbury, 2021). Exploring the experience of older adults of their social connections at home and in the neighbourhood helps to illustrate what kind of support they give and perceive and how they participate in the community determining the ability to age in place (Annear et al., 2014). A more detailed operationalisation of the AIP model that has been used to analyse the collected data can be found in Appendix II

# 3. Methodology

This chapter provides an overview of the research methods and data collection employed to investigate and gain insights into the daily lives of older adults living in senior co-housing communities. The primary focus is to address the following research question and sub-questions:

*" How do senior co-housing communities and their surrounding neighbourhoods in Amsterdam enable its residents to age in place? "*

    **I.**    What contribution does living in a senior co-housing community make to the individual factors of its residents?

    **II.**    How do senior co-housing communities contribute to the accessibility of the built environment?

    **III.**    How do senior co-housing communities contribute to the proximity to services and amenities?

    **IV.**    How do senior co-housing communities contribute to meaningful social connections?

## 3.1. Methods

This study applied a qualitative case study design in which two senior co-housing communities in Amsterdam and the neighbourhoods they are located in are explored. The two cases are introduced in chapter 4. The experience and opinion of residents living in senior co-housing communities were analysed through a scientific lens, resulting in a comprehensive understanding of the ability to age in place. The intensive analysis of two cases provided contextual and in-depth knowledge about the specific process and factors involved (Bryman, 2012). It helped to understand how the conversion factors of the AIP model – meaningful social connections, individual factors, accessible built

environment, and proximity of services and amenities – influence the ageing in place process for residents living in senior co-housing communities and how it relates to the surrounding neighbourhood. As a result, new insights and empirical knowledge were generated that contribute to a better understanding of what meaningful ageing for elderly in senior co-housing communities looks like.

Qualitative in-depth interviews were conducted with residents living in senior co-housing communities to collect their experiences, feelings and opinions about everyday life in their home and neighbourhood. This research method provided the opportunity to obtain elaborate and detailed answers about the residents' engagement with their surroundings from their own perspectives (Bryman, 2012). Moreover, this study utilised semi-structured interviews that, according to Bryman, (2012), involve a certain structure while allowing room for discussing topics of personal interest to the interviewees. An interview guide was used to ensure coverage of the most relevant topics, while being flexible in responding and asking follow-up questions.

Part of the semi-structured in-depth interviews were conducted in the homes of the residents, while the other part took place during walking interviews through the neighbourhood. According to Kusenbach (2003, p. 462), sit-down interviews may disconnect participants from their daily experiences and practices of place. Therefore, conducting walking interviews provide the opportunity to get a better understanding of everyday life experiences (Kusenbach, 2003). In addition to stimulating narratives about place experiences, walking interviews offer a more informal interview approach compared to sit-down interviews (Lee & Ingold, 2006). This informal setting was created to help participants feeling more comfortable, making it easier for them to share their experiences and feelings.

## 3.2. Data collection and analysis

This section entails a description of how the data will be collected, including the selection criteria of participants and an overview of interview questions. Thereafter, the processing and analysis of data will be explained.

### 3.2.1. Selection criteria

The first step of this study involved the selection of a case. Purposive sampling was applied, meaning that a case is strategically selected due to its relevance to the research question (Bryman, 2012). Key characteristics considered in the sampling process included a dwelling with 4 – 20 apartments to meet the criteria for a co-housing community (ZorgSaamWonen.nl, 2022). Two senior co-housing communities were investigated, allowing for the examination of differences between communities and the influence of the context on AIP. Both selected communities are located in Amsterdam. Considering that Amsterdam has the highest number of registered senior co-housing communities on the website of the National Association of Senior Co-housing (LVGO), the chances of finding a willing participant group were higher. Additionally, this choice was also made based on practical considerations, as the researcher also lives in Amsterdam. This proximity allowed for frequent visits and more time to be spent with the participants, facilitating deeper engagement and understanding.

Additionally, another criterion was that the community should have a minimum of two shared spaces, such as a living room or a kitchen. These shared spaces are important characteristics of co-housing communities, promoting certain activity and interaction among its residents and consequently

influencing the process of ageing place (Bamford, 2005; Rusinovic et al., 2019). Furthermore, the selected communities were required to have residents who are loosely connected, meaning that the community was formed through a selection process rather than being established by a pre-existing group of friends or relatives. The objective of this research is to examine the ageing in place process among residents of senior co-housing communities. It is acknowledged that relatives and friends might already have established certain connections, which could foster a sense of familiarity and impact personal autonomy (Glass, 2020). Consequently, the process of ageing in place might differ in co-housing communities formed through a selection process.

The unit of analysis in this study are residents living in a senior co-housing community in an urban area. The participants were selected using purposive sampling and snowball sampling. Snowball sampling, as a form of purposive sampling, involves participants recommending other individuals who have relevant experiences and characteristics that are in line with the purpose of the research (Bryman, 2012). Selection criteria for participants included a minimum residence time of six months to explore the process of ageing in place effectively. It was important to have a sufficient time frame to be able to compare certain experiences and opinions from the initial period to the present. Additionally, participants aged between 50 and 95 were included. In the Netherlands the minimum age to live in a senior co-housing community is fifty (Aedes, 2022). Furthermore, there is no fixed age maximum for senior co-housing communities and individuals aged 95 can still be active, with or without assistance from others. Socio-cultural background was not a basis for participant selection, as the study did not focus on one specific cultural background or differences between them. Similarly, there was no distinction made based on physical abilities, as it is important to include the ageing in place process and the aspects of a meaningful life for disabled individuals in senior co-housing communities as well. Finally, five residents from each community were interviewed. Since the co-housing communities were required to have a minimum of five and a maximum of fifteen residents, a minimum of five respondents was chosen to meet this number per co-housing community and at the same time select a diverse range of respondents. This choice was also based on the available time, as the plan was to conduct both a semi-structured interview and a walking interview with each respondent which is a time-consuming process to conduct and analyse.

### 3.2.2. Selected cases and participants

In order to find two cases that met the selection criteria, the website of LVGO was used to explore all the existing senior co-housing communities. This website only displays the senior co-housing communities that are registered with this association. The website lists 22 senior co-housing communities registered in Amsterdam, along with practical information about the number of apartments, room sizes, and the type of amenities available. Some of the communities also have a brief description of what living in their community is like. Based on this information, and taking into account the selection criteria, an email was sent to five co-housing communities explaining the research and requesting a meeting to get acquainted. Four residential groups responded, one of which indicated that they did not want to participate in the research. The other one did not respond after a brief email exchange and the remaining two were ultimately selected for the study.

Both selected communities comply with the selection criteria as they consist of 5 to 15 residents and have at least two shared spaces. Furthermore, both communities apply a selection procedure, meaning that the residents are loosely tied. Five residents were selected in each community using a combination of purposive sampling and snowball sampling. Purposive sampling was used by communicating the selection criteria with the co-housing communities, allowing residents that met the required

characteristics for the sample, such as a minimum residence time of six months, to be selected. In community 2, snowball sampling was employed, as one of the residents approached a fellow resident who was ultimately the fifth respondent selected for the research. An overview with information about the selected participants can be found in Table 1.

| Senior co-housing community 1 | | | Senior co-housing community 2 | | |
|---|---|---|---|---|---|
| Participant | Age | Time of residence (y) | Participant | Age | Time of residence (y) |
| 1 | 80 | 22 | 6 | 73 | 2 |
| 2 | 77 | 8 | 7 | 80 | 18 |
| 3 | 85 | 19 | 8 | 83 | 19 |
| 4 | 58 | 4 months | 9 | 63 | 5 |
| 5 | 76 | 8 | 10 | 63 | 3 |

*Table 1: Participant information from each selected senior co-housing community*

### 3.2.3. Data gathering

During the data gathering process, a triangulation approach was used, combining document analysis, semi-structured interviews and walking interviews. This multi-faceted approach allowed for a comprehensive understanding of living in a senior co-housing community using various sources of data. This section discusses the implementation of each method and specific choices that have been made.

**Document analysis**

During the data collection process, various websites were used. Firstly, the website of LVGO was used to gather background information and specifications of the senior co-housing communities. This was mainly done at the beginning of the research to gain a comprehensive understanding of the co-housing community and to start the interviews with the respondents with some background knowledge. Additionally, during the writing phase, this website was frequently visited to cross-check whether certain information provided by the respondents aligned with the data available on the website. Secondly, the website of the municipality of Amsterdam was also used to collect data when writing the results. This website was used to gather additional information about the surrounding neighbourhoods of the co-housing communities. To illustrate, specific information about urban parks in Amsterdam East and the city centre was searched using this source. Finally, Google Maps was used to gain insight into the public transportation options from the immediate vicinity of the co-housing communities to the rest of the city. Based on this information, a map from the location and transportation modes of both co-housing communities was made in ArcGis.

**Semi-structured interviews**

In this research, a total of ten semi-structured interviews were conducted, with five in each community. An interview guide was used to organise the semi-structured interview, while also allowing flexibility for the interviewer to ask follow-up questions. The interview guide consisted of specific issues and covering the key aspects of the research objective. The role of the collective and changes over time were discussed within each aspect. Since the objective is focused on exploring how people in senior co-housing communities live and how they age in place, the interview guide aimed to include the following essential aspects which align with the theoretical framework:

I.   Personal motivation for moving to a senior co-housing community, to obtain a general understanding of the personal motivations for choosing to live in a senior co-housing community.
II.  Feelings of resilience and autonomy to explore the role  of the co-housing community in enabling individual factors.
III. The use of the home and neighbourhood environment to explore the contribution of senior co-housing communities to age in place in these spaces.
IV.  Social interactions in and outside the co-housing community to explore how these connections enable ageing in place.
V.   Role of the collective to explore the impact of living in a group
VI.  Difference over time to investigate changes during the duration of residence

In addition to the interview guide, an item list was used during the semi-structured interviews to verify and ensure that all relevant themes were addressed. The item list consists of main themes and corresponding subtopics (Appendix III) making it suitable for semi-structured interviews where the structure is only partly fixed (Bryman, 2012). The semi-structured interviews lasted between 25 and 60 minutes followed by a walking interview. After every semi-structured interview and walking interview, a brief evaluation was noted in an interview journal (Appendix III). The interview journal includes details such as the date and time, weather conditions, and a brief evaluation of the conversation.

**Walking interviews**

In order to prepare the walking interviews, an article and a toolkit written by Emmel and Clark (2009, 2010) has been used. Based on the experiences and recommendations in the article and toolkit, several choices were made in the execution of the walking interviews. First of all, as described in the toolkit, it is important for the respondents to know in advance what is expected from them (Emmel & Clark, 2010). Therefore, in this research, during the introduction phase, it was clearly explained to the respondents that the walking interviews were part of the study and that it was up to them to take the researcher outside for a walk. According to Emmel & Clark (2009) it was effective to let the respondents in their research plan a route beforehand to put them in control and make them the 'local expert'. However, for some respondents this resulted in feeling pressure as they thought the researchers expected them to take them to interesting places. Therefore, this research has employed a different approach. The respondents were not required to pre-plan a route, but right after the semi-structured interview they were asked to take a short walk in the neighbourhood. A few respondents experienced initial discomfort about where to go, and others were enthusiastic about showing their neighbourhood. Each respondent eventually chose a unique route resulting in unique and diverse experiences for each walk. Along the walk, questions were asked about the places that were visited

during the interview. The questions were not pre-determined and depended on the places visited and the narratives shared by the respondents. However, most of the questions were related to:

- Why they walked this route
- The value of places to the respondents
- Whether they like or dislike specific places and why
- If they use certain services
- If they visit these places alone or together with people
- If they meet people at specific places and who those people are

Another aspect used during the interviews was setting a time frame for the walking interview (Emmel & Clark, 2010). The respondents were informed that the interview could last around half an hour, but it was okay if it ended up being slightly shorter or longer. This approach aimed to prevent the respondents from feeling pressured to extend the route or rush during the interview, allowing them to engage fully without time constraints. The duration of the walking interviews range between 20 and 45 minutes. During the walking interview, the respondents were limited to a geographical boundary as they were only allowed to stay within the same neighbourhood. Since the goal of this study is to examine senior co-housing communities and how they relate to their surroundings, exploring multiple neighbourhoods would fall outside the scope of this research. During the walking interviews, the conversations were recorded using an audio recorder.

## 3.2.4. Data analysis

The semi-structured interviews conducted in this study contribute to the collection of new empirical data, developing a comprehensive understanding of how elderly people in senior co-housing communities live. Furthermore, the theories regarding AIP processes discussed earlier, were also used to give meaning to these results. Consequently, abductive reasoning was applied, meaning that the theoretical understanding of the context and the people under investigation is grounded in the language and perspectives that shaped their worldview (Bryman, 2012). Following the description and comprehension of this worldview, the theoretical framework on ageing in place and age-friendly cities was used to analyse and describe a social scientific meaning to these perspectives.

Before assigning any scientific meaning to the perspectives of the respondents, the transcripts of the interviews were analysed. To be able to interpret the interview data, the transcripts first had to be organised. A helpful tool that is used in this process is ATLAS.ti which is a qualitative data analysis software facilitating data organisation and management using codes (Brito et al., 2017). The codes were formed in ATLAS.ti using a thematic analysis approach. Thematic analysis is a widely used strategy for analysing and organising qualitative data in themes to better detect certain patterns and narratives (Braun & Clarke, 2006; Skovdal & Cornish, 2015). This strategy also allows for an open approach to new theoretical outcomes and prevents reasoning from preconceived assumptions (Blair, 2015).

Drawing from existing literature, this research applied several steps in the thematic analysis process. The first step taken was to get acquainted with the data (Braun & Clarke, 2006; Skovdal & Cornish, 2015). The transcripts were read through twice. During the second time 'active reading' was applied, meaning that certain patterns were identified. These topics were written down in a mind map and formed the basis of the main themes depicting a significant aspect of the data in connection to the research question, embodying a recognizable pattern or meaning within the dataset (Braun & Clarke, 2006). The themes include both common topics related to the factors in the AIP model – individual

factors, accessible built environment, proximity of services and amenities, and meaningful social connections – and aspects that fell outside the theoretical framework (Appendix IV)

The next step was to generate the codes in ATLAS.ti which formed the coding framework (Figure 2). The four factors of the AIP model formed the initial codes. Since these four codes were found to be too broad, several sub-codes were added to facilitate a better understanding and exploration of the variations within the themes (Skovdal & Cornish, 2015). Later, the subcodes regarding the collective and difference over time were added to the four codes to explore what it means to live in a group and to examine how the possibility of ageing in place changes over time. Finally, the last three codes were added since they played a significant role for multiple respondents and fell outside the theoretical framework. During the thematic analysis of the transcripts, several aspects were taken into account. First of all, the surrounding text was also included in the code selection to ensure the preservation of the context (Braun, V., & Clarke, 2006). Furthermore, since multiple quotations were relevant to various themes, some quotations were linked to multiple codes more frequently than others.

**1. Code: Individual factors**
Sub codes:
• Daily functioning
• Physical and social challenges
• Role of the collective
• Difference over time

**2. Code: Built environment**
Sub codes:
Accessible home environment
• Facilities
• Communal space
• Role of the collective
• Difference over time

Accessible neighbourhood environment
• Green space
• Public transport
• Role of the collective
• Difference over time

**3. Code: Proximity of services and amenities**
Sub codes:
• Daily needs
• Social-cultural services
• Green space
• Public transport
• Role of the collective
• Difference over time

**4. Code: Meaningful social connections**
Sub codes:
• Fellow residents
• Neighbours
• Friends and family

**5. Code: Personal motivation**

**6. Code: Admission procedure**

**7. Code: Composition changes**

*Figure 2: Coding framework used in ATLAS.ti*

# 3.3. Validity and trustworthiness

To assess the quality of research, it is important to address and discuss the concepts of validity and trustworthiness. The internal validity of this case study is high due to several reasons. Firstly, this case study involves an in-depth examination of two specific cases, which made it possible to explore and understand the phenomenon of senior co-housing communities in detail. This deep involvement enables a strong connection between the collected data and scientific theories regarding ageing in place. Furthermore, this case study research applied triangulation to increase the internal validity. To prevent relying solely on one perspective or source of data, this research employed multiple sources, such as semi-structured interviews, walking interviews and the analysis of websites. Finally, the case study design enabled a close involvement in the data collection and analysis process. As a result, this

led to a deep familiarity with the cases and the life within it and an accurate interpretation of the data (Bryman, 2012). Another strategy that was applied to increase the internal validity is respondent validation. This involved providing the participants with the transcripts of the conducted research and ask feedback on these accounts (Bryman, 2012). By doing so, the conformity between the participant's perspectives and experiences and the researcher's findings could be verified. Finally, this verification was further carried out by presenting the research results to the two co-housing communities. As a result, the participants had the opportunity to respond to the research findings. This contributed to the internal validity as the results were verified through this process. However, it was decided not to modify the results based on the participant's feedback. A brief description of their perspective on the findings can be found in Chapter 5.

By investigating multiple cases, as highlighted by McCallum et al., (2019), this research increases its external validity and offers valuable insights into the lives of individuals in senior co-housing communities within various contexts. This approach not only confirms similar findings but also uncovers unexpected issues, contributing to theoretical generalisation and transferability of knowledge. The use of a theoretically informed research question and concepts further enhanced the transferability of the research findings. Finally, the trustworthiness of this research was optimised by maintaining consistency throughout the entire decision-making process. All methodological choices regarding participant selection, conducting interviews, and data analysis were documented in detail.

## 3.4. Ethical issues and data management

Throughout the research process, specific ethical issues were carefully addressed. A data management plan was implemented to ensure a good storage, organisation, and protection of qualitative data. First of all, throughout the research process the well-being and safety of the participants was ensured. Measures were implemented to any potential harm that could occur from inadequate management of interview records or the violation of trust (Bryman, 2012). For each interview, several protocols, including those of the Royal Netherlands Academy of Arts and Sciences, have been followed to protect the identities and records of the participants. Personal information was securely stored and not shared with third parties. Moreover, all recordings were permanently deleted after completing the analysis of the data to protect the confidentiality and privacy of the participants.

In order to address the ethical concern of informed consent, this study ensured that participants had a clear understanding of their involvement. A study information sheet and an informed consent form were provided to the participants (Appendix V). The study information sheet contains details about the nature of the research and the potential implications of participation. Subsequently, the participants were required to sign an informed consent form, which summarised the information presented in the study information sheet and included a section where the participants could sign to agree with the terms of the research. This approach guaranteed that the participants were adequately informed and it served as documented proof, which could be beneficial in case of any concerns or misunderstandings. It was expected that the required signature would trigger feelings of fear, resulting in some individuals refusing to sign. However, this was not the case since each participant signed the form. This could potentially be because the form also stated the participant's right to withdraw from the study at any point which may have reassured them.

Finally, another ethical principle was implemented in this study to ensure participant privacy. This ethical concern is related to the informed consent section. By signing the informed consent form and being aware of the implications of participating in the research, the participants implicitly

acknowledged the submission of their privacy rights during that specific research phase. In order to maintain anonymity and confidentiality throughout the research process, participant names were not mentioned in the transcripts and replaced with 'Participant [number]' to protect their identity. Only the age and gender of participants were mentioned in the transcripts and report. Additionally, the address of the senior co-housing communities were not mentioned in the research. Only a general map displaying the location of both co-housing communities was used. Finally, any place specific details like street names were anonymized.

# 4. Ageing in place in senior co-housing communities

Having discussed the methodology of the research, this chapter discusses the findings of the data generated from the semi-structured interviews and the walking interviews. The transcripts of the semi-structured interviews and walking interview can be found in Error! Reference source not found.**.** Section 4.1 will provide a case description of each senior co-housing community that has been explored. Including some background information of the participants. In line with the sub-questions, section 4.2 – 4.5 discuss the role of individual factors, the built environment, the proximity of services and amenities and meaningful social connections on how residents of senior co-housing communities age in place. Each heading emerged from the analysis of the results and the key findings are presented in a table after every sub-question.
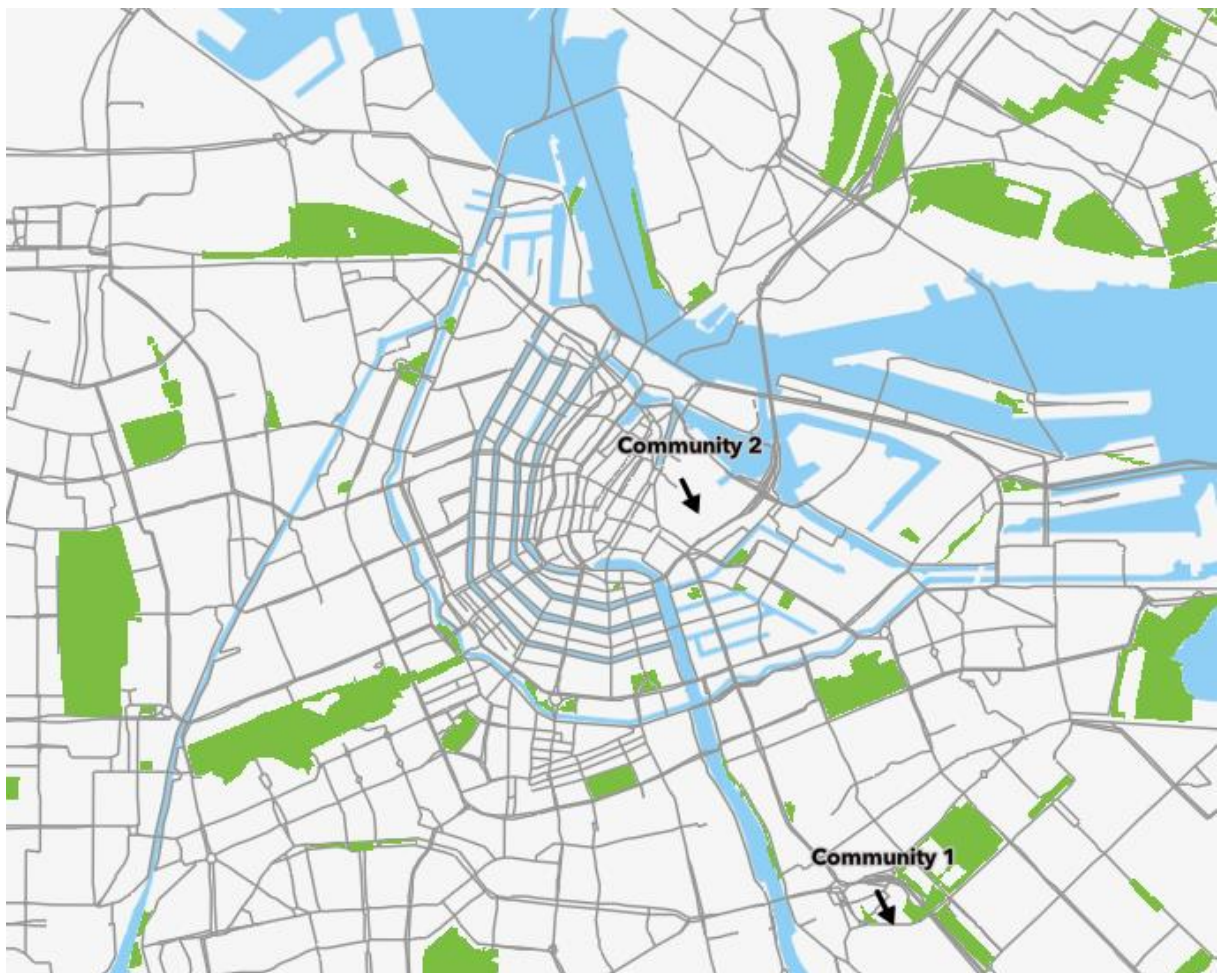
## 4.1. Case description



*Figure 3: Geographical location of senior co-housing community 1 and 2 in Amsterdam (ArcGis, 2023)*

**Senior co-housing community 1**

The first co-housing community that was selected is located in Amsterdam east in the neighbourhood Frankendael (Figure 3). This co-housing community was founded in 1991, the building is property of the housing association Ymere, and all apartments are social renting houses (LVGO, 2021a). The unit dwelling consists of ten apartments ranging from 52m$^2$ to 78 m$^2$. Figure 4, 5 and 6 present some of the communal spaces in the co-housing community. The rent of the apartments is based on the set maximum for social rental housing. Moreover, the minimum age to join this co-housing community is 50 years and the maximum age is 70. It is a mixed co-housing community currently occupied by ten residents of which two men and five women.

Co-housing community 1 has an organisational structure with a board consisting of three residents who hold specific roles, such as a chairperson and a secretary. The admission procedure to live in the co-housing community involves contacting potential residents, organising introductory meetings, and having the co-housing community vote on their admission. New residents are placed on a waiting list and are invited to social group activities to get acquainted with the community and the residents. If conflicts arise and residents disengage, they no longer have to be actively involved in the community, but they can continue to live in their apartment. When residents move or pass away, the co-housing community regains control over the apartment and can select a new resident from the waiting list.

**Senior co-housing community 2**

The second co-housing community is located in the city centre of Amsterdam, within the Nieuwmarkt neighbourhood. The community was founded in 1987 and the building itself was newly completed that same year to serve as a co-housing community (LVGO, 2023b) The dwelling unit is property of the housing association Stadgenoot. It consists of thirteen apartments ranging from 45m$^2$ to 60m$^2$. Figure 7, 8 and 9 provide a depiction of some communal spaces in the co-housing community. The rent of the apartments is 650 euros on average (LVGO, 2023b). The age range for applications is between 50 and 67 years. It is a mixed senior co-housing community currently occupied by four men and nine women.

Similar to co-housing community 1, the organisational structure of co-housing community 2 also includes a board with a chairperson, secretary, and treasurer. The responsibilities of these positions are similar to those in co-housing community 1. However, the admission procedure for new residents involves more steps. The process starts with the admission committee, consisting of two members, who contact and preselect potential residents. Interested people contact the committee and receive information about the community. An introduction meeting is then arranged with the committee, where extensive information about the co-housing community is provided and the house is shown. Those who are still interested are placed on a reserve list. Then the committee conducts home visits to these people to get acquainted with them and afterwards discuss whether to add the person on the waiting list. If approved, the person is invited for dinner to meet the rest of the residents. The co-housing community then collectively evaluates the person and decides whether to add them to the waiting list. Being a candidate on the waiting list requires a commitment to attend activities in the co-housing community.

# Communal spaces senior co-housing community 1



*Figure 4: Living room*



*Figure 5: Dining table in communal living room*

*Figure 6: Kitchen*

# Communal spaces senior co-housing community 2



*Figure 7: Living room and communal terrace*



*Figure 8: Kitchen*

*Figure 9: Laundry room*



*Figure 10: Guest room*

## 4.2. Individual factors

Section 4.2.1. briefly addresses the motivation of the respondents to live in a co-housing community. The subsequent sections explore the role of the individual factors to age in place in a senior co-housing community.

### 4.2.1. Personal motivation

Participants expressed to live in a senior co-housing community because they needed a house, due to contract expiration, while others wanted to be closer to family or preferred living in Amsterdam. However, several other participants preferred living with others rather than being alone. For example, one of the participants, who had lost his partner, specifically desired the companionship and found the perfect balance between social interaction and privacy in the co-housing community. Finally, multiple participants from both co-housing communities stated that obtaining an apartment in a senior co-housing community is easy as it does not require subscribing to a housing association system.

> " In the beginning, it was just about living close to my daughter and because it was a nice neighbourhood. And later on, of course, I was also willing to commit to the community, because you cannot take the apartment and do nothing for the others. " (Participant 5, 76 years old, community 1)
>
> " It is very easy to get housing here because it is ballotage. There are four people on the waiting list now, and it can go fast because if people die then you're up quickly. But with Woningnet [shared service owned by several housing associations] that can take about four or five years." (Participant 6, 73 years old, community 2)

### 4.2.2. Daily functioning

Most participants reported being able to carry out their daily activities and were positive about their overall functioning. However, some respondents faced physical difficulties and it appeared that social expectations from the group influenced their daily lives as well.

**Practising daily activities**

Most participants from both co-housing communities execute outdoor activities on a daily basis, such as buying groceries and engaging in physical exercise. While some respondents occasionally go outside with fellow residents, the preference for individual activities is commonly expressed. For some participants physical disabilities are the main reason for not going outside with others, while other respondents simply prefer being on their own. Employment status also plays a role in daily routines and interactions in the co-housing community. Residents who are still employed experience fewer contact moments with residents due to limited interactions within the building and have less leisure time to spend outdoors.

> *" The other day we had drinks with the co-housing community and I told someone I was going to Oudekerk aan de Amstel by bike and she said: "Oh, I'll come along then!" And she didn't ask: Would you like me to come along? Then I said: "No, sorry I prefer to go by myself."* (Participant 6, 73 years old, community 2)
>
> *" We did go out together more often than we do now. There are a few who cycle together regularly , but I don't cycle anymore, so I can't join them. But I've been used to doing things alone all my life."* (Participant 8, 83 years old, community 2)

**Physical decline**

Most respondents were positive about their daily functioning and mainly perform activities outside independently. However, a few individuals face physical decline affecting their life within the group. One of the participants has back issues, limiting the ability to sit for extended periods and have dinner with the whole group. Others with heart problems or leg injuries faced difficulties when helping in the communal garden. In co-housing community 1, a resident received assistance from another resident when using the walker for the first time. While residents in both co-housing communities assist each other with health issues and daily activities, long-term care is arranged individually, either through friends, family, or care institutions. In co-housing community 2, a participant mentioned that if the need for care increases, they might explore the option of organising care collectively for practical and financial reasons.

> *" I don't really like to have drinks with each other because several small groups are formed and if you have bad hearing, it's not very convenient. Those groups form very quickly and I find it difficult to get between them."* (Participant 2, 78 years old, community 1)

**Social expectation from the co-housing community**

A common aspect related to the daily functioning of the residents are the expectations within the group. During the interviews, participants expressed a balance between attending group activities to be socially involved in the co-housing community and valuing their personal time for privacy and focus on their private lives. A participant from co-housing community 2 stated something similar, but also expressed concerns about some residents who prioritise their individual plans over the principles of a co-housing community.

> *" I am quite individualistic, but I do see the necessity and importance of the activities. But if I have something that is more important, I will also honestly say to the others: sorry it won't work tonight. But that has happened very rarely, you know."* (Participant 5, 76 years old, community 1)
>
> *" I can go my own way here, yes for sure! Some residents completely go their own way. And that's not quite how it's supposed to be either. The ballotage process, for example, has become very strict, you don't just get in here. If you say; " I need that apartment and I think the elevator is useful", we say: "Well, that's not enough."* (Participant 6, 73 years old, community 2)

### 4.2.3. Changes in the co-housing community

According to the respondents, living in a co-housing community also brings about certain changes that can be challenging for the group, which may not be applicable or relevant in a regular housing situation. For example, the loss or relocation of residents within the co-housing community had an impact on the daily routines of some residents. However, the co-housing community did not play an active role in addressing these personal losses. Instead, individuals continued their activities individually, indicating a tendency to handle such changes on an individual basis rather than relying on the group.

> *" The group I lived with in the beginning broke up pretty quickly because of health and so on and that was difficult. Also people who left because they became demented and that is a pity of course."* (Participant 2, 77 years old, community 1)
>
> *" In the past, I used to go cycling with another resident, but well, he moved to a nursing home a few years ago and no one else here cycles. So, I don't mind cycling alone."* (Participant 1, 85 years old, community 1)

Furthermore, the interviews highlighted the impact of both the arrival of new residents, often younger, and the departure of existing residents. The former entails composition changes that require adjustment from residents and affect the dynamics and connections in the group. This will be explained in more detail in Section 4.5.1. The departure of residents due to disengagement created some difficulties in both co-housing communities. Several respondents in co-housing community 1 faced difficulties in encountering former co-housing community members who still reside in the building. However, others mentioned that it eventually became a relief and led to an improvement within the group.

> *" And then that resident left and that's quite a big relief for the group. I was also fed up at one point. I do understand that this was someone with some problems and personal baggage, but you can't let one person terrorise the whole group."* (Participant 7, 80 years old, community 2)

In summary, these results depict that different individual factors play a role in ageing in place within senior co-housing communities. These factors are discussed in Table 2.

| Key findings Individual Factors | Explanation |
|---|---|
| Independent living | Senior co-housing communities foster residents' independence as they lead individual lives but also offer mutual assistance when needed, leading to decreased reliance on external support. |
| Resilient to changes | Senior co-housing communities bring about certain challenges, yet they also empower its residents to adapt and develop resilience in response to these changes. |

*Table 2: Key findings role of individual factors in ageing in place within senior co-housing communities*

## 4.3. Built environment

This section examines the role of the built environment in ageing in place among elderly in senior co-housing communities. Both the home and neighbourhood environment are analysed to provide a more comprehensive understanding about the use of these spaces and how they enable elderly to age in place. Section 4.3.1. discusses the facilities in the home environment and section 4.3.2. explores the neighbourhood built environment including the accessibility and proximity of green space, mobility in the neighbourhood and the use of public transport.

### 4.3.1. Home environment

The home environment includes the private space in the apartment, and the communal spaces in the house and in the immediate environment outside the building. Both buildings have been adapted to accommodate physical deterioration of its residents and ensure optimal accessibility. The apartments have special handles in the bathroom and toilet to provide support, while most of them also have even floors facilitating freedom of movement. Additionally, both buildings have an elevator for those with mobility issues.

> *"In my old house, I didn't have a walker yet and that would have been a problem now because I would have had to lift that thing up the stairs to enter the house, and here I have an elevator."*
> (Participant 3, 85 years old, community 1)

Additionally, the functionality of the facilities emerged as a critical aspect within the home environment of the co-housing communities. For example, the shared kitchen and living room in both co-housing communities are primarily utilised by the group for planned group activities. Residents can book these spaces for birthdays or special occasions, but spontaneous use is highly uncommon. The shared garden in both co-housing communities, as well as the shared terrace in co-housing community 2, are primarily utilised for individual purposes rather than group activities (Figure 11, and 12). However, in both co-housing communities the shared garden is a welcoming place where residents feel at ease sitting alone, while also being a spontaneous gathering space in summer. Furthermore, a participant from co-housing community 2 expressed that there is a collective sense of responsibility towards the building among the residents, surpassing what he experienced in his previous home. This communal care for the building is evident through the establishment of committees, such as the household committee and the garden committee or by dividing informal tasks.

> *" There is also a housekeeping committee and I am part of the garden committee. I'm not really good at it, but they can simply tell me what needs to be done. I also manage the photos and the information board in the hallway. "* (Participant 6, 73 years old, community 2)

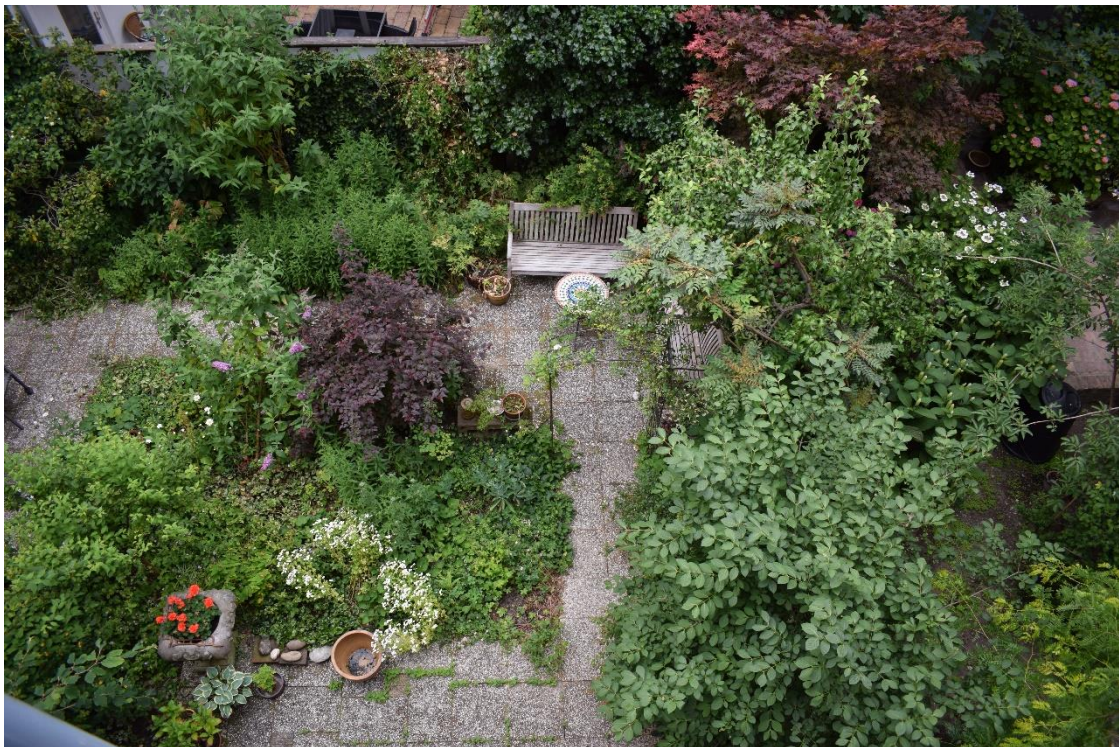*Figure 11: Communal garden co-housing community 1*



*Figure 12: Communal garden co-housing community 2*

## 4.3.2. Neighbourhood built environment

**Accessibility and proximity of green space**

The accessibility and proximity of green spaces in the neighbourhood have a significant impact on enabling residents to age in place. The accessibility of green spaces refers to the reasons why the respondents may or may not prefer to visit the location itself. The proximity of green space emphasises the distance they need or want to travel to reach such area. Urban parks, green trails, and community gardens in the neighbourhood are highly valued and frequently visited by participants from both co-housing communities. These spaces provide opportunities for recreation, staying active, and relaxation. However, the collective use of these spaces is less significant, as individual visits are preferred by most respondents. While the access to green spaces was not a determining factor in choosing the co-housing community, residents from both co-housing communities expressed their appreciation for having access to such spaces. Retired participants, in particular, emphasised the importance of accessible green areas, whereas those still working had limited opportunities to visit them. Most respondents of both co-housing communities particularly appreciate the well-maintained conditions of public green and urban parks and enjoy walking and sitting in the park giving them a comfortable feeling.

> *" I think this is a wonderful place and I enjoy it a lot. It's a quiet place, and if you go to the park, especially in the summer, it's great! Children play with each other and the park is very well maintained with beautiful walking routes."* (Participant 2, 77 years old, community 1)
>
> *" In summer I often go to this park. All the dogs that live in the neighbourhood are walked here and that's really pleasant to watch. There is also a fantastic beautiful tree and other kinds of greenery and I like to sit on a bench watching the dogs. Initially, there were also benches on the other side, but they were removed. The municipality has done that."* (Participant 8, 83 years old, community 2)

However, it appeared that the co-housing community itself does not play a significant role in visiting these spaces since most respondents preferred to go for a walk or recreate individually. Notably, the two oldest participants in co-housing community 1 were the only ones frequently going for walks in the park together. Furthermore, during one of the walking interviews, a participant from the same co-housing community expressed disappointment as he never walks in the park with other residents. However, he was unable to provide a clear explanation for this lack of collective activity. As discussed in section 4.2.2. concerning individual factors, it seems that the majority of residents tend to prioritise their own preferences, resulting in individual visits to green spaces.

Furthermore, the proximity of green space also emerged as an important theme during the interviews, as most respondents emphasised the importance of having sufficient greenery in the vicinity. Based on the interviews, there are differences in the proximity of green spaces to recreate between the co-housing communities. However, the collective effort of the co-housing community appeared to have minimal influence in improving this aspect, since each participant individually seeks a way to go to nearby green areas or to search for it further away.

The majority of participants in co-housing community 1 expressed satisfaction with the green amenities in the neighbourhood. There are several options in the vicinity for recreational activities in green spaces. For example, multiple respondents mentioned that there is a large park they regularly

walk to which is 400 metres from the community and spacious enough to recreate. Some respondents also go for a walk or take their bicycles to recreate along the Amstel river which is located 850 metres from the community. On the contrary, most participants in co-housing community 2 expressed a more critical view regarding the proximity of green spaces in the neighbourhood. Only a few participants mentioned being satisfied with the nearest park, which is located 900 metres away from the co-housing community. They always visit this park by foot. However, multiple respondents mentioned that the nearest green spaces fall short for meeting their desire to engage in recreational activities in natural surroundings. Therefore, they travel longer distances to seek out larger natural areas. They often do this by bike, metro or tram.

> *"I find it too built-up here in the city centre. But I regularly take care of someone's dog, and that dog is also a nice reason to go to Gaasperplas. It's a 1.5-hour walk, around the lake, and then I really feel like I've been outdoors." (Participant 7, 80 years, community 2)*

Finally, based on these findings, the proximity of a shared garden can be of value in senior co-housing communities. Residents do not have to travel long distances as the garden is adjacent to the house, providing space for outdoor seating in a green environment. Especially when elderly face declining mobility. However, it is important to note that such a shared garden may not offer sufficient or the same recreational opportunities to people as an urban park or natural area outside the city.

## Mobility in the neighbourhood

The mobility of the respondents in the neighbourhood was a frequently discussed aspect regarding the neighbourhood's accessibility. In this section, the mobility of the respondents refers to how residents move around in the neighbourhood on foot, by bicycle, or by car. Residents in both co-housing communities occasionally provide support with accessibility challenges, such as assisting each other during outdoor walks or by car-pooling. However, the collective assistance is minimal since most respondents are less inclined to rely on the co-housing community when they need assistance. They prefer to go outdoors individually and generally find ways to overcome mobility obstacles themselves. The role of public transport in the neighbourhood will be discussed later.

### *Walking and cycling*

According to most participants, both communities have well-maintained streets and surrounding green spaces which creates pleasant walking routes and a positive walking experience. However, one significant drawback of co-housing community 1 is its lower elevation compared to the rest of Frankendael. For instance, in order to walk to one of the adjacent neighbourhoods residents have to climb stairs. While younger residents may not find this to be an obstacle, one of the oldest participants shared that it is challenging for her to take this walking route. Additionally, she emphasised the support she receives from her neighbour participant 1.

> *" I am still young and I have no disabilities so I don't pay attention to the walkability of the neighbourhood. "* (Participant 4, 58 years old, community 1)

> *" Usually, I go for walks outside together with [name resident], and she helps me carry the walker up the stairs because otherwise, I wouldn't be able to climb them! Otherwise, you would have to take a long detour to get back. So walking is a bit difficult, but I only realised that recently because I didn't have any problems with it before…"* (Participant 3, 85 years old, community 1)

Furthermore, the quiet surroundings of co-housing community 1 make it easy for the respondents to navigate in the neighbourhood by bike. Located on the outskirts of the city, residents can enjoy convenient cycling options without excessive congestion. Finally, the majority of participants from co-housing community 2 enjoy walking in the neighbourhood, but only in the direct vicinity of the house since it is relatively quiet compared to the busy places just around the corner. Several respondents stated that these places are not convenient to walk or bike due to large groups of tourists creating crowded spaces. Most respondents described that they are afraid to fall when biking through these areas.

> *" I have my own photo lab in the city centre, it's literally swarming with tourists there. So, I prefer to go there in the morning by bike because in the afternoon, all those tourists and day-trippers show up."* (Participant 6, 73 years old, community 2)

### Car use

Lastly, car use was the least prevalent form of transportation among the participants in both co-housing communities. The respondents individually do not see a necessity for using a car or purchasing a car for collective use. In both co-housing communities, many respondents have chosen not to own a car for practical reasons such as high costs of parking and maintenance, as well as the availability of alternative transportation options. However, it occasionally happens in both co-housing communities that residents have the opportunity to ride along with another resident for specific needs or activities.

> *" I have once been to Ikea with one of the residents because she has a car, so I could ride along with her. Because I don't have a car. You pay a fortune for everything, so I eventually got rid of it."* (Participant 5, 76 years old, community 1)
>
> *" It's nice to be in the city centre, but if I had a car, I would think: Where would I park it? So, it does have its limitations, but it depends on your own life circumstances whether it affects your life. But I have to say, I don't have a car myself, and the neighbour, who has passed away now, had one and I could borrow it occasionally."* (Participant 9, 63 years old, community 2)

### Use of public transport

The majority of the participants from both co-housing communities highly value the various public transportation options in the neighbourhood. It allows them to conveniently travel to various locations both within and outside the city to recreate in other places and easily visit friends and family. However, the role of the collective in using public transportation appeared to be minimal. Only two participants from co-housing community 1 regularly take the bus together and occasionally provide assistance with transfers. Besides them, each respondent individually uses public transportation and does not rely on the group for assistance when needed.

To illustrate, there is a train station located approximately 450 metres from community 1 that also features a metro station, along with several bus and tram lines. And there is a nearby bus stop at 350 meter from the house. Located 240 metres from community 2, there is a metro station and at 400 metres there is a bus stop. Finally, 1500 metres from community 2 there is a train station with a metro station, tram, and bus connections.

The majority of the respondents living in co-housing community 1 rely on buses and trams to navigate within the city, with occasional train use to commute to other cities. On the other hand, the metro is the least utilised mode of transportation. In co-housing community 2, most residents regularly use the metro and tram. Occasionally, a few individuals take the train, and hardly anyone mentioned using the bus. However, one of the participants mentioned he rarely uses public transport. In both co-housing communities, collective use of public transport rarely happens.

> *" The public transportation is good! There are three buses that come here, and the metro is nearby, with the tram right next to it. I often go with [name of resident] to visit one of her acquaintances in Amsterdam Noord, and we take the bus together.* (Participant 1, 80 years old, community 1)
>
> *" The metro is nearby, so I can easily hop on there. In summer, I will go on some longer bike rides again, and then I'll take the metro with my bike to Amsterdam North to be outside the city."* (Participant 6, 73 years old, community 2)
>
> *" I actually hardly ever use public transportation. When it comes to buses and trams, I rarely use them. But I do use the metro. And it's very convenient that the metro is so close because it's only a three to four-minute walk."* (Participant 9, 63 years old, community 2)

Furthermore, getting on and off of various types of public transportation emerged as an important theme during the interviews as well. For instance, multiple participants from both co-housing communities shared that they regularly take their bicycle in the train or metro to travel to locations outside the city for recreational purposes. However, as some participants age, it may become more challenging to get on and off different modes of transportation.

> *" I can't complain, but things are starting to get harder for me physically. For example, getting my bike on the train is quite difficult, especially because I am less steady on my feet. When I get on the platform with my bike the first thing I do is look for a man who can help me lift my bike inside."* (Participant 7, 80 years old, community 2

Additionally, one participant from co-housing community 1, who relies on a walker whenever she goes outdoors, shared the difficulty she faces when getting off the bus. According to her, the gap between the bus and the platform is often too wide to lift her walker across. Luckily, after this she received help from one of the residents when taking the bus. Finally, several participants from both co-housing communities expressed their preference to avoid using the metro. They described feeling anxious in the dark underground spaces and experiencing confusion when navigating the large station halls to find the right direction.

> *" Getting off the bus with my walker is a problem, it's terrible. Getting in is okay, but getting out is very difficult. And that's where the lash in my leg started. Because when I got off the bus, you could hear it snap, it hurt so much! "* (Participant 3, 85 years old, community 1)
>
> " At first she was afraid to use the walker on the bus, so I accompanied her to help. Well, after that she easily got on the bus!" (Participant 1, 85 years old, community 1)

In summary, these results show that several aspects of the built environment play different roles in enabling people living in a senior co-housing community to age in place. The most important aspects are summarised in Table 3.

| Key finding Built Environment | Explanation |
|---|---|
| **Practical facilities** | Adaptations in the home environment of both co-housing communities facilitate optimal accessibility when residents face mobility issues which are not typically found in regular houses. This enables freedom of movement and provides the opportunity to age in place. |
| **Proximity of communal garden** | Visiting green spaces in the neighbourhood is considered important for recreation. Considering the decline in mobility among older adults, the access to a communal garden in close proximity is valuable. It functions as a place for recreation, social interaction, and it is also collectively maintained, facilitating ageing in place. |
| **Mobility** | Most residents have an individual orientation and generally prefer going outside on their own. However, in case of accessibility challenges, residents can rely on carpooling or seek assistance from fellow residents. |

*Table 3: Key findings role of the built environment in ageing in place within senior co-housing communities*

## 4.4. Proximity of services and amenities

This section examines the significance of neighbourhood amenities for ageing in place in senior co-housing communities. It explores whether the local amenities meet the needs of the respondents or if they have to seek certain services further away, as well as the role of collective engagement in this context.

### 4.4.1. Supermarkets and shops

The proximity of shops and supermarkets in Frankendael and the city centre of Amsterdam were frequently mentioned during the interviews. The co-housing communities expressed varying levels of satisfaction regarding the proximity of these amenities. This is mainly due to a declining personal mobility among the respondents and changes in the neighbourhood leading to difficulties to reach the same amenities over time. The role of the collective in this context is providing occasional grocery assistance or, as discussed earlier, the ability to carpool together.

Some of the respondents in co-housing community 1 are satisfied with the supermarkets and shops in Frankendael, while others wish for more amenities nearby, preferably within walking distance. Several participants, around eighty years old, experience a decline in their mobility. One mentioned finding it increasingly challenging to walk to the supermarket, while another worried about reaching it when she is no longer able to cycle anymore.

> *" The shops are nearby and there are restaurants along the water. And, I have a pub there where I often watch football. In the street further down, there are also many terraces, which I find fantastic."* (Participant 2, 77 years old, community 1)

> *" We don't have many amenities here. We're happy with that supermarket and there's a Lidl over there. Other than that, we don't have anything nearby. But luckily I have my bike, but if I stop cycling, it becomes difficult."* (Participant 1, 80 years old, community 1)

Co-housing community 2 in the Nieuwmarkt is surrounded with more shops and supermarkets. Some respondents are satisfied with the number of supermarkets and they can also largely fulfil their daily needs at the local market. However, most respondents have noticed changes in the city centre, with more tourist-oriented establishments and relocated craft shops. This impacts the proximity of alternatives for residents in co-housing community 2 who may find it less convenient to travel further, while younger residents mentioned they can explore other neighbourhoods more easily by bike or by taking public transport.

> *" Well, the amenities have deteriorated a lot. For example, recently I needed something for the shower. There used to be a hardware store in the Red Light District, but it's gone. So, I walked to another neighbourhood to get it."* (Participant 8, 83 years old, community 2)

> *" The nearest store that had what I needed was in Koog aan de Zaan, so I tried to see if I could order it online. Well, I couldn't figure it out…"* (Participant 7, 80 years old, community 2)

### 4.4.4. Social-cultural services

In both co-housing communities, participants appreciate the proximity of services supporting social-cultural activities, such as museums, cinemas, libraries, and cafes. Co-housing community 2 benefits from a great number of socio-cultural activities in the vicinity of the Nieuwmarkt. However, in both co-housing communities, the collective aspect plays a minimal role in visiting these places. In co-housing community 2, some residents of a similar age group actively seek each other out and engage in activities such as going to the movies. But overall, when respondents visit social-cultural activities, they typically do so alone or with friends and family. Some participants expressed their desire to avoid feeling obligated to participate in certain activities with others. Others stated that they do not feel the need to attend social or cultural events with fellow residents because they prefer to go their own way and remain flexible in doing so. Additionally, various respondents aged seventy or older from both co-housing communities mentioned that they have been accustomed to doing things independently for a long period of time.

> *" Well, there's a biking club nearby that I could join, but I'm not interested because then you have to. I don't want to be obligated, and if that's the case, I'll do it on my own."* (Participant 1, 80 years old,  community 1)
>
> *" I don't really have someone to go to the museum with right now, but I've always been accustomed to doing things alone. And when you go alone, you can leave whenever you want and never have to wait for someone. So, I quite enjoy it this way. It can be nice to go with someone else too, but I don't really need it."* (Participant 8, 83 years old, community 2)

In co-housing community 2, there is some level of collective involvement with the community centre in the neighbourhood. Every year, the co-housing community opens its door to the neighbourhood to give people a glimpse of the house and way of living. To organise this open day several residents hold meetings with people from the community centre. However, not all residents of the co-housing community participate in this. To conclude, the findings illustrate that the co-housing community plays a minimal role in ensuring the proximity of services and amenities. The main finding is summarised in Table 4.

| Key finding Proximity Services & Amenities | Explanation |
|---|---|
| **Challenges over time** | While co-housing communities in cities can offer affordable living in urban areas with various services and amenities, there seems to be limited focus on ensuring their accessibility for ageing residents, particularly in light of the challenges posed by neighbourhood changes. |

*Table 4: Key findings role of proximity of services and amenities in ageing in place within senior co-housing communities*

## 4.5. Meaningful social connections

This section explores the role of the social environment within the co-housing community and the neighbourhood in supporting ageing in place, as well as the role of the collective in this context. Three themes emerged as outstanding: 1) the connection between the residents of the co-housing communities, 2) connection with the neighbourhood and 3) the role of friends and family.

### 4.5.1. Connection between residents

**Relationship between residents**

Respondents from both co-housing communities emphasised the role of the collective in creating feelings of familiarity and comfort. They also highlighted the strong relationships with other residents in the co-housing community making it easier to ask for help since it creates a sense of reciprocity towards each other. Additionally, according to several respondents, the living environment in the co-housing community is less anonymous compared to their previous homes. As a result, they feel safe because they know who lives around them.

> *" You see, if I had still been living in my old house, my neighbours wouldn't have helped me with the groceries. You say hello to each other, but that's about it. You don't visit each other. It's just different here."* (Participant 1, 80 years old, community 1)
>
> *" I believe I would feel more lonely now if I didn't live in a co-housing community. The neighbours in my former residence kept changing, so you never knew who was living next to you or above you. The residents in the co-housing community are more selectively chosen."* (Participant 3, 85 years old, community 1)

Both co-housing communities organise regular communal activities for the co-inhabitants, such as coffee gatherings, dinners, community meetings and social events. They all take place in the shared living room and participation is not mandatory. According to most residents, the sense of safety is also fostered by these group activities since they create social interactions which would be less common in a regular living situation. Although the communal activities are not mandatory, there is an expectation within the group for residents to show a certain willingness to participate. Some residents from both communities stated that they try to seek a balance that allows them to live in a co-housing community without compromising their autonomy.

> *" At the beginning, I did have to adjust to this environment, but the process here is much faster than in a "normal" situation. You eat together once a week, have a meeting once a week, you can also attend the social gathering, and there's a monthly movie night. So, the contacts are much more frequent, and you get to know people quite quickly."* (Participant 9, 63 years old, community 2)
>
> *" I enjoy the activities, and I do see their importance. However, I have a more individualistic mindset, and it is important for me to maintain my own personal space."* (Participant 5, 76 years old, community 1)

**Composition changes**

Composition changes within both co-housing communities play a significant role in the group dynamics and relationships among residents. Especially opinions about the arrival of new, often younger residents are divided in co-housing community 1. Some participants expressed difficulties, while others emphasise the importance of rejuvenation, where new residents can relive the older ones by taking over certain responsibilities in the house. The majority of co-housing community 2 is positive about this development, highlighting the benefits of renewal and increased energy within the group.

> *" I think I was too old to adapt to the changes in the living group when I moved in. And now that younger people have joined, the disadvantage, in my opinion, is that some of them are still working, which is understandable, but they don't fully integrate into the group."* (Participant 2, 77 years old, community 1 )
>
> *" You just need a good mix, in terms of light support. And that mixture is just very pleasant, and the youngest resident is 58 and still has a job, goes to work, and talks about completely different things. I quite like that! "* (Participant 6, 73 years old, community 2)

## 4.5.2. Connection with the neighbourhood

The connection between the residents and the neighbours was an interesting theme that emerged from the data. In both co-housing communities, there is little to no contact with the people in the neighbourhood. The limited interactions with neighbours outside the co-housing community primarily result from the influence of the group on the residents.

First of all, it is important to note that there was some confusion regarding the definition of 'neighbours' during the interviews. Participants were asked to describe their relationship with the neighbours, referring to those outside the co-housing community. However, respondents answered by describing their relationship with fellow residents. This provides an indication of the role of the collective on how residents perceive and relate to their immediate neighbourhood environment. To clarify, most participants explained that the collective living arrangement demands time and energy to maintain connections with fellow residents. This leads, on the one hand, to a strong bond with fellow residents and, on the other hand, to a lack of investment in connecting with the neighbourhood. Two participants living in co-housing community 2 said the following:

> *" I already have my own neighbours, so I don't really feel the need for further contact with neighbours outside the community. In the past, you would go door-to-door to introduce yourself to the neighbours when you moved, but I didn't do that here. Maybe because I joined a group it wasn't necessary."* (Participant 8, 83 years old, community 2)
>
> *" I never really made an effort to get to know the neighbours because, of course, you already know all your neighbours in this house. So it's not really necessary, and I don't feel the need to introduce myself to people with whom I have no further connection. Now, if we were living right next to each other in the same building or hallway, then I would do it."* (Participant 10, 63 years old, community 2)

Finally, the open day in co-housing community 2 helps to improve the connection with the neighbourhood to some extent. It provides the opportunity to introduce the neighbourhood to this type of living arrangement and the residents of the community. Co-housing community 1 does not

> " Look, the daughter of a neighbor here is also part of a co-housing community, and she involves the neighborhood, but we don't do that. I wouldn't mind if people came, but I don't know if they would want to come." (Participant 1, 80 years old, community 1)

organise an open day for the neighbourhood. Only one respondent expressed some interest:

### 4.5.3. Friends and family

During the interviews, contact between the participants and their friends and family appeared to play a significant role in their daily lives. However, it appeared that the role of the collective in this context is minimal. The interactions between the residents and their family and friends mainly serve as a means of support and to engage in enjoyable activities together. In co-housing community 2, the advantage of having guest rooms in the building was mentioned frequently. Several respondents appreciate the possibility of letting family or friends stay for the night. While residents from both co-housing communities occasionally invite their families, this often occurs without the presence or involvement of the rest of the group. However, one of the participants from co-housing community 2 mentioned that living in the community somewhat influenced the contact between her and a friend.

> " We had a brunch for Easter, and the family was also invited, but they didn't come. So, it was just us residents. But one person ended up going to their grandchildren, and they had the children visit them. You see, you keep encountering different people, and they do things differently." (Participant 1, 80 years old, community 1)
>
> " I suddenly remember a friend in Assen who told me that I was reaching out to her less and engaging less with the outside world. And it was true. Especially during that period when I was the chairperson, I had enough people I needed to stay in touch with. So, I already had plenty of contacts and activity around me. Now, I'm becoming more diligent in maintaining my own connections and reaching out a bit more." (Participant 7, 80 years, community 2)

Finally, during the interviews, it became evident that contact with friends and family for several respondents in both co-housing communities has diminished over time. This can be attributed to their children having less time available or the passing of friends and family. It appeared that when residents experience this loss or absence of contact, the collective does not play a significant role in filling this void. Instead of increasing their involvement with the group, most respondents prefer to spend time alone.

To summarise, the findings illustrate that the social connections within the co-housing community play a different role in enabling ageing in place than the ones outside the community. The key findings are summarised in Table 5.

| Key findings Meaningful Social Connections | Explanation |
|---|---|
| **Balancing expectations and autonomy** | The relationship between residents creates feelings of familiarity and a sense of belonging. At the same time, it is important for the residents to meet certain expectations of mutual assistance and involvement in the co-housing community without compromising their autonomy. |
| **Limited engagement with the neighbourhood** | Both co-housing communities offer numerous opportunities for activities and frequent interactions among residents, which require a significant time commitment, leading to less desire to engage with the neighbourhood and interact with its residents. |

*Table 5: Key findings role of meaningful social connections in ageing in place within senior co-housing community*

# 5. Participant feedback

The findings were presented to the respondents during a final meeting with each co-housing community. All respondents recognized their own behaviour or way of living in the concluding remarks. Respondents from co-housing community 2 added that the social interaction with people from the neighbourhood increased after they had visited the open day. They also explained that the limited activities outside the community with fellow residents is caused by their own social networks that they have brought when moving in the co-housing community. Therefore, spending time with friends and family is preferred over spending time with residents. Finally, one respondent noted that he was surprised about the focus on the neighbourhood in the interview. He explained being less concerned with the neighbourhood since he has been living there for a long time.

# 6. Discussion

The purpose of this chapter is to interpret the significant findings in light of existing literature and address what this study adds to the scientific debate. Subsequently, the limitations of this research and the impact on the validity will be addressed.

First of all, the co-housing communities appeared to play a role in several individual factors of its residents. The relationship among residents contributes to a sense of familiarity, and safety, while they also try to find a balance between social expectations from the group and preserving their autonomy. This aligns with the importance of maintaining independence and autonomy for older adults as they age (Bigonesse & Chaudbury, 2021; Lewis & Buffel, 2020). Senior co-housing communities foster feelings of empowerment and mutual support, leading to decreased reliance on external assistance and mitigating feelings of loneliness. This contributes to scientific literature regarding communal

coping (Lyons et al., 1998). For example, several participants expressed that ageing together is preferable to facing it alone, indicating the importance of communal coping. However, the role of the community in addressing these challenges related to ageing appears to be minimal, as most residents approach physical or social challenges individually. This also contrasts with the expectation that residents would continue living in the co-housing community until the end of their lives, as suggested by existing literature. The findings revealed that the co-housing community allows for ageing in place as residents help each other with minor things, until care needs increase and people are responsible for making their own arrangements or transitioning to a care facility.

Another finding is that the home environment appeared to play a significant role in ageing in place. Shared spaces in senior co-housing communities not only keep people active and mobile, as Rusinovic et al. (2019) suggest, but they also provide an alternative when older adults are no longer able to access specific places in the neighbourhood due to mobility issues. This corresponds with Philipson (2007) and Schilder et al. (2021), who investigated that certain physical factors in the home environment influence the personal mobility and independence of elderly. This study revealed that the proximity of a shared garden is a valuable space within a senior co-housing community for recreational activities close to home, particularly when individuals are unable to travel long distances, and to spend time together. This research also found that the role of the collective in maintaining these shared spaces, such as a garden or a living room, is a valuable characteristic of senior co-housing communities. The collective maintenance relieves residents who are unable to do it themselves while allowing them to continue using the shared spaces.

The results of this study also show that the neighbourhood enables individual mobility among residents in senior co-housing communities, but with the ageing process in mind, there are some shortcomings. Both neighbourhoods are easily accessible due to the availability of diverse mobility options such as walking and biking routes and public transportation. The presence of pedestrian-friendly features and accessible public spaces enables easy access to services and amenities, supporting ageing in place which aligns with the findings of Bigonesse and Chaudbury (2021) and Chao et al., (2004). Nevertheless, the neighbourhoods' built environment is not adapted to sustain accessibility for elderly as their mobility declines. This study found that the collective plays a minor yet significant role in addressing these accessibility challenges through carpooling and providing assistance when needed.

Furthermore, existing literature addresses that meaningful social connections combat loneliness and contribute to place attachment and a sense of community enabling the ability to age in place (Bigonesse et al., 2017; Lester et al., 2012; Mihaylov & Perkins, 2014). This study also found a strong sense of community within both senior co-housing communities, characterised by feelings of belonging, emotional support, and reciprocal help (Evans, 2009; García et al., 2000). These findings conform with existing literature, emphasising the importance of social connections among elderly to explore their ability to age in place (Annear et al., 2014). Both senior co-housing communities demonstrated high levels of social participation in the co-housing community, characterised by mutual support enabling residents to successfully age in place. Besides existing literature, stating that senior cohousing promotes social interaction and a sense of community between its residents, this study also revealed that residents prioritise their independence and prefer to engage in activities individually outside the community. This finding does not entirely correspond with the expected sense of community described by Evans (2009) and Garcia et al., (2000). This sense of community was expected to be more evident outside the co-housing community as well. Implying that they would participate in more activities in the neighbourhood collectively, rather than merely offering occasional help to one another.

Finally, this research has also shown that the engagement between the senior co-housing communities and the neighbourhood is limited, which is important for maintaining meaningful relationships (Bigonesse et al., 2017). The frequent group activities and interactions within the community reduce the need for social contact in the neighbourhood. These weak ties, referring to social interactions with individuals from different social networks, characterised by infrequent contact and low emotional intensity, play a crucial role in combating loneliness among elderly (Lam, Broccatelli & Baxter, 2023; Pan & Hee Chee, 2019). While strong ties provide emotional intimacy, developing weak ties with a more diverse social network facilitates additional social support, engagement, and access to diverse resources (Pan & Hee Chee, 2019; Perry et al., 2018). Additionally, according to de Jong Gierveld and van Tilburg (2010), social loneliness among elderly may arise from a lack of broader social networks formed by weak ties. Therefore, the findings of this study highlight that living in a senior co-housing community fosters strong ties with fellow residents, but may limit the development of weak ties with a more diverse and broad social network. This may not be a problem on its own, but if the social networks of the residents in the community collapse, it can lead to social isolation which makes it difficult for an elderly person to establish new connections and age in place in a meaningful way.

## Limitations

First of all, it is important to critically reflect on any limitations of the theoretical framework and the operationalization of the associated concepts. The use of the AIP model in the context of senior co-housing communities caused some limitations. The model primarily focuses on neighbourhood engagement when examining social participation, whereas in the co-housing communities, this is more centred around interactions within the house. To enhance the validity of the results, additional literature regarding the strong and weak ties was incorporated to be able to interpret the findings in light of existing literature. Moreover, the AIP model consists of multiple concepts that visualise the multitude of relationships and processes resulting in some overlap in the operationalization of certain concepts and findings. To provide a comprehensive analysis, several topics regarding the proximity of services and amenities have been relocated to the chapter focusing on the accessibility of the built environment.

Secondly, the qualitative research approach limits the analytic generalizability of the findings because of the small sample size of the two cases ((Flyvbjerg, 2006); Yin, 2009). Nevertheless, the aim of this case study is to generalise the findings to scientific theory rather than to a wider population. Furthermore, a frequently discussed concern in qualitative research is the subjectivity of the researcher (Bryman, 2012). In this study, my personal perspective and judgement may have influenced the thematic analysis, and therefore the findings. After reviewing the interview transcripts, I created a mind map in which certain subjects were subjectively organised into themes. Additionally, I played an active role in identifying patterns and themes (Braun & Clarke, 2006). Although an existing model was used for the analysis, not every decision regarding the inclusion of specific topics can be fully justified, leading to a decrease in the validity of the findings. This subjectivity may also have influenced certain interpretations of results. My preferences decided what to emphasise, while other researchers may have focused on other aspects and responses shared during the interviews which challenges the replicability of these findings. Therefore, a detailed explanation of the steps taken during the coding process is provided to ensure transparency and increase the replicability of this research. On the other hand, my positionality also allowed me to connect with the respondents enabling an effective way of interviewing as people felt comfortable sharing their stories. Especially since the significance of being

physically present at the research location lies in uncovering more place-specific narratives and facilitating the exploration of their development (Hein et al., 2008). This has been of great importance in collecting and comprehending the experiences of elderly people and ageing in place.

Thirdly, there were some practical limitations encountered during this research. First of all, due to the extended illness of one participant, another person had to be selected. However, the four months residence time of the newly selected respondent did not comply with the minimum requirement of six months, as established in selection criteria. This decision may have an influence on the reliability of the findings, as the respondent's answer to some questions were based on a brief experience or, in some cases, no answer could be provided because the respondents had not yet experienced it. Moreover, participant observation was initially part of the research methodology. However, the limited participation from residents in both communities posed challenges in observing the whole group as some residents did not want to be observed.

Furthermore, this research experienced several limitations regarding the participation in the walking interviews. Since the interviews were scheduled in March, the fluctuating weather conditions in the Netherlands posed a challenge for some respondents, especially considering their age. Two participants from community 1 did not want to go outside due to snowy conditions or a storm on the scheduled day of the interview. Moreover, one of the respondents had a leg injury and felt uncomfortable going outside with a walker. Two other participants were still employed and could only schedule an interview in the evening, which left insufficient time for conducting the walking interviews afterwards. The decision was made to exclusively conduct semi-structured interviews with the respective participants. Rescheduling the walking interviews would be a time-consuming process, especially considering the time available. The alternative option of using photographs to explore their experience was not chosen to avoid imposing pre-selected locations and limiting their input and perspectives. These decisions may have had an impact on the reliability of the research, since the interview findings may not be completely comprehensive as there was no opportunity to uncover additional experiences related to places during the walking interviews. However, to increase the validity of the semi-structured interviews with these respondents, some extra time was allocated to ask more follow-up questions about place-specific anecdotes.

The last limitation encountered during the research is related to the quality of the equipment. A mobile phone audio recorder was used during the walking interviews, but strong winds made certain parts of the conversation barely audible. As a result, certain sentences or words could have been perceived and interpreted differently, which may have affected the validity of the findings. Therefore, the audio recordings were carefully reviewed, and the transcripts were also checked by the participants.

# 7. Conclusion

With a focus on population ageing and age-friendly living environments, this study aimed to assess the role of senior co-housing communities in ageing in place through the following research question: *" How do senior co-housing communities and their surrounding neighbourhoods in Amsterdam enable its residents to age in place? "* This study has found three outstanding aspects regarding ageing in place in a senior co-housing community: the practical facilities of the home environment, the role of the neighbourhood, and collective support.

First of all, the home environment of senior co-housing communities brings various practical benefits compared to a normal living situation. Mobility issues can be addressed through the presence of elevators and practical modifications within the apartments. Additionally, shared spaces like the communal garden are valuable for residents who may no longer be mobile enough to visit such places in the neighbourhood. This is a significant difference compared to individual homes, since not all individuals have the ability to implement such adaptations and amenities into their own homes.

Secondly, this study found that the built environment of the neighbourhoods plays a minimal role in sustaining ageing in place for people living in a senior co-housing community. While these senior co-housing communities provide the opportunity for lower-costs living in an urban area with nearby amenities, the existing environment and facilities are not specifically designed to address mobility challenges among elderly over time. The findings suggest that residents primarily depend on themselves to access and use amenities in the neighbourhood, indicating that people living in senior co-housing communities are not inherently more mobile than other older adults.

However, the final finding of this study was that the collective aspect does offer the ability for residents to seek help from each other when facing accessibility challenges, which may be less common in a regular housing situation. Social connections within the co-housing community play a significant role in reducing loneliness and maintaining resident's autonomy. Nevertheless, while these strong bonds with fellow residents provide emotional and practical support, the residents have less interaction with the surrounding neighbourhood. The absence of these weak ties could lead to social loneliness if the social contacts of the residents decrease over time.

Overall, there were no significant obstacles during the research process. A good relationship was maintained with both co-housing communities enabling effective communication. Therefore, future studies should keep the communities informed about the progress of the study to create a pleasant feeling and bond of trust among the respondents. However, further research could usefully explore the limited involvement of senior co-housing communities with the neighbourhood. Subsequent studies could include in-depth interviews with the residents in the surrounding neighbourhoods to investigate their perceptions of the senior co-housing communities and how they interact with the elderly. This alternative approach could shed light on the potential role of the neighbours in enabling ageing in place and the value they could add to the social connections between the senior co-housing community and the neighbourhood.

As the findings indicate that residents primarily rely on themselves to access and use amenities available in the neighbourhood, a key policy priority should be to plan for the long-term support from the neighbourhood. Planning practitioners could explore the needs and challenges of elderly in existing and future senior co-housing communities in Dutch cities to overcome accessibility challenges and create environments that support mobility as people age.

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# 9. Appendices

## Appendix I: Age-friendly city model
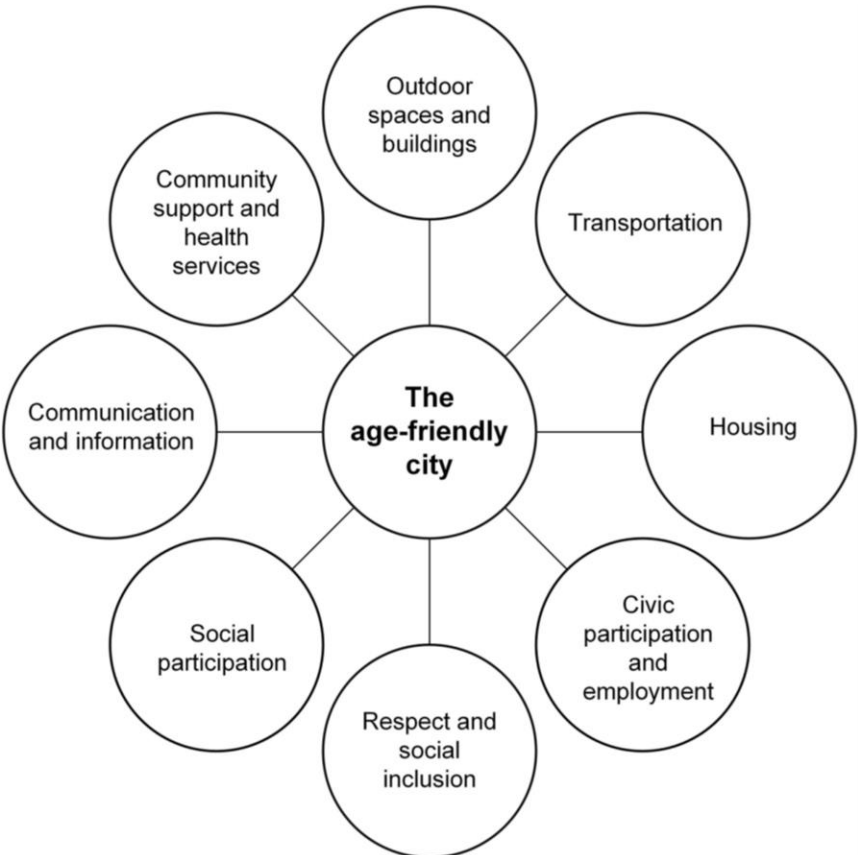


*Age-friendly city model including eight domains covering the social and physical environment  (WHO, 2007)*

# Appendix II

Operationalisation tables

| Concept | Variable | Explanation |
|---|---|---|
| **Individual factors** | | |
| Agency | Make choices to stay:<br>• Socially active [7]<br>• Physically active [7] | • Create and maintain social connections with people other than family [7]<br>• Performing physical activities in- and outdoor [7, 9] |
| Resilience | • Ability to make adjustments when faced with challenges [1] | Dealing with challenges such as: increased changes of personal loss, disabilities, and general physical health challenges [8] |
| | Process of achieving resilience [4]<br>• Personal perceptions and responses to stressful life events | Feelings of belonging to a social group, have hope, find meaning and purpose to life, attempt strategies novel strategies at problem solving [4] |
| Health Status, Functional Abilities | The ability to [5] :<br>• Provide self-care<br>• Perform activities of daily live | Feeling independent and not limited by physical disabilities [5] |
| Mobility Capacities | Sense of autonomy [6] | Sense of having control over where, when and how to go outdoors [6] |

*Operationalisation individual factors in the AIP model*

| Concept | Variable | Explanation |
|---|---|---|
| **Accessible built environment** | | |
| Accessible home | • Affordable, adaptable, functional [1] | • Possibility to age in place with a fixed income [7]<br>• Possibility to implement home modification to meet changing needs [1, 10]<br>• Possibility to welcome quests [1] |
| Accessible neighbourhood | • Pedestrian-friendly [1] | • Walkable neighbourhood<br>  - Street connectivity [7],<br>  - Sidewalk conditions [7, 12] |
| | • Accessible public spaces, buildings and amenities [1] | • Attractiveness<br>  - Clean, well-maintained environment [12]<br><br>• Feeling safe [13, 15]<br>• Facility provisioning [13,15, 16]<br>  - Accessible seatings, places to rest<br>  - Adequate toilet facilities<br><br>• Accessibility of public transit system [13, 15]<br>  - Accessible for people with disabilities<br>  - Easy boarding<br>  - Shelter from weather conditions at transport stops |

*Operationalisation accessible built environment in the AIP model*

| Concept | Variable | Explanation |
|---|---|---|
| **Proximity of services and amenities** | | |
| Destinations supporting daily needs, well-being, social connections, life long learning, and engagement | • Accessibility of services and amenities within walking distance (0-500 m) [14, 17] | • Daily needs: grocery stores, pharmacies, banks, post offices, public transit systems [1]<br>• Health and well-being: health clinics, hospitals, green spaces, water features, amenities for fitness and physical activities [1]<br>• Social connections: cafés, libraries, restaurants, senior and community centres [1] |
| Reliable and efficient transit system | • Coverage of travel destinations [12]<br>• Location and distance of transportation stops [15]<br>• Accurate time tables [12] | • Connections between transport modes [12]<br>• Distance between transportation stop and places frequently used by elderly people [15]<br>• Clearly visible display, frequency of delay |

*Operationalisation proximity of services and amenities in the AIP model*

| Concept | Variable | Explanation |
|---|---|---|
| **Meaningful social connections** | | |
| Neighbourhood social fabric | Place-based social interactions [1, 7] | Informal social interactions (with neighbours, shopkeepers, acquaintances) in the neighbourhood (semi-public spaces, sidewalks, line-ups at stores) [19, 20] |
| Social support | External support [7] | Support from friends and family [7] |
| | Neighbouring [20, 21] | Providing and receiving help from neighbours [7, 20, 22] |
| | Neighbours as friends [21] | Spending time together socially with neighbours in and outside the community (having diner/breakfast, physical activities, leisure activities ) [21] |
| Intergenerational relations | • Contact with children [7]<br>• Contact with students [23] | • Visits from children, grandchildren, and grandchildren from neighbours [7]<br>• Presence/proximity of playgrounds and schoolyards [7]<br>• Help from students in household or administration [23]<br>• Building relations with students [23] |
| Community engagement | • Social participation in the community [7]<br>• Social participation outside the community [7] | • Doing chores, administration, membership of committee [7]<br>• Volunteering in local organization [7] |

*Operationalisation meaningful social connections in the AIP model*

[1] Bigonesse & Chaudhury (2021)

[2] Hitlin & Elder (2006)

[3] Jacelon (1997)

[4] Fine (1991)

[5] Arifin & Hogervorst (2015)

[6] Portegijs et al., (2014, p. 4)

[7] Bigonesse et al., (2017)

[8] Stephens et al., (2015)

[9] Lee (2008)

[10] Bevan & Croucher (2011)

[11] Lynot et al., (2009)

[12] WHO (2007)

[13] Chao et al., (2004)

[14] Wang & Lee (2010)

[15] van Hoof et al., (2021)

[16] Chaudhury et al., (2012)

[17] Law et al., (2005)

[18] Michael et al., (2006)

[19] Gardner (2011)

[20] Mihaylov & Perkins (2013)

[21] Lester et al., (2012)

[22] Greenfield (2015)

[23] Gurung et al., (2022)

# Appendix III

## Item list

**Meaningful social connections**

Experience social contact within community
- Living with others
- Contact with fellow residents
- Group activities
- Shared spaces (use, management, maintenance)
- Organization within the group
- Changes over time
- Differences between living alone and living in a group

Experience social contact outside community

- Contact with people outside community (friends, family, neighbours)
- Changes over time
- Differences between living alone and living in a group


**Accessibility built environment**

Experience home environment
- Experience living in apartment (amenities, services)
- Changes over time
- Differences between living alone and living in a group

Experience neighbourhood environment
- Living in neighbourhood
- Public spaces
- Public transportation in the vicinity
- Changes over time
- Differences between living alone and living in a group

**Proximity to services and amenities**

- Opinion services and amenities vicinity
- Visits
- Way of transporting
- Changes over time
- Differences between living alone and living in a group

# Interview journal

**07-03-2023**

The first interview with participant 1 was at 10.30 and the interview had a duration of 45 minutes. After the interview, however, we did not go outside as it was snowing a lot at that time. Participant 1 was also one of the oldest residents in the residential group and did not like going outside at that time. In the afternoon, I conducted an interview with participant 2 around 12.30pm. The interview lasted shorter than the interview with participant 1 (approximately 25 minutes). However, we went for a walk in the neighbourhood and the park for more than 40 minutes during the walking interview.

**08-03-2023**

The interview with participant 3 took place at 10.30am This was also one of the oldest residents. The semi-structured interview went well and lasted for approximately 40 minutes. However, the participant did indicate that she preferred not to go outside. A few days ago, she had suffered a whiplash in her calf and suffers from a nerve condition in her foot. She also indicated that she found it inconvenient to take the rollator out of the shed for the walk. Later in the afternoon at 15.00, the interview with participant 4 took place. The interview lasted about 35 minutes. The weather was cloudy but dry. After the interview in the house, we went for a 25-minute walk outside with the dog for the 'walking interview'.

**13-03-2023**

In the afternoon at 3pm, the interview with the 5th participant took place. There was a heavy storm that day. I went outside to test whether the audio recorder was working, but the wind was too strong. The participant also said she didn't want to go outside in this strong wind because she was afraid to fall. Therefore, we only did the semi-structured interview indoors. This conversation lasted about 45 minutes.

**23-03-2023**

On this day at 11am, the interview with participant 6 of community 2 took place. First, we chatted indoors for about 1.5 hours and conducted the semi-structured interview. It was very sunny and there was occasional strong wind. We went for a 20-minute walk outside after the interview, we didn't have a lot of time because I had to move on quickly to the next resident, participant 7. Around 13.00 I was at the apartment of participant 7. Here, too, we first chatted briefly and got acquainted. After an interview of about 40 minutes, we went for a walk around the block. This walk lasted about 20 minutes. After the 'walking interview', I stopped the recording and we had another cup of tea together.

**27-03-2023**

At 11.00, I arrived at the apartment of participant 8. It was very volatile weather this day, occasional rain and hail and sometimes sunshine and clouds again. First, we did the semi-structured interview, and it lasted about 45 minutes. It was very sunny outside, during the 'walking interview' we took a long walk for about 40 minutes. During the 'walking interview', we sat on a bench in the park for about 20 minutes. After a while I stopped the recorder and went to her house to drink a cup of tea on the shared terrace at her place. We chatted for an hour and then I left.

**28-03-2023**

At 8pm in the evening, I arrived at the apartment of the 8th participant from the second community. Since this person is still working, we could only conduct an interview in the evening. Around this time,

it was already dark. This made it difficult to conduct a 'walking interview' and it would also get very late then. The participant did not prefer doing it in the weekends either so we only did an interview in the respondent's home. The interview lasted about 1.5 hours. The last ten minutes of the interview, the participant's partner came home and joined the conversation.

**04-03-2023**

At 20.00 in the evening, I arrived at the apartment of the 10th participant and also the partner of the previous respondent. Also this participant was still working and could only make an appointment from 8pm or later. As it was already dark outside then, this also made it hard to do a walking interview afterwards. Moreover, it would also get quite late. So we only did an interview in the house. The interview took place in the shared living room so that the respondent's partner did not have to leave the house. The interview lasted about 45 minutes.

# Appendix IV

## Mind map

**New**

- Need for a living
  - Contribution to group
  - Perceptions
  - Relatively easy to get in 50+ co-housing community
  - Informed by friends and family
- Admission
  - Acquaintance period
  - Resign form co-housing
  - Pre-selection
  - Min and max age for
  - Expectations of attendance
  - Procedure
- Composition changes
  - Working vs. not working
  - Generation differences
  - New residents
  - Changing rules
  - Changing dynamics
  - Different needs

**Proximity of services and amenities**

- Public transport
  - Car sharing
  - No car
  - variety in public transport use
    - age related
  - Visiting (grand) children and friends
- Amenities
  - Mobility
  - Precedence care center
  - Cafe
  - Bike or public transport
  - Markets
  - Changing shops
  - Walking distance
  - Community center
  - Supermarket
  - Clubs/excursions

**Accessible built environment**

- Use of common spaces
  - Individual living room and kitchen
  - Use for activities only
  - Maintenance
  - Individual or communal use
  - Hire spaces
  - Lodge
  - Invite friends and family
- Park
  - Well-maintained
  - Walking distance
  - Taking public transport to other natural area
  - Walking the dog
  - Individual visits

**Meaningful social connections**

- Social contact with neighbours
  - Open day co-housing community
  - No need for more contact
  - Walking the dog
  - Age dependent?
  - Changing neighbours
  - Minimal interactions
- Difference between co-housing and individual living
  - Personal vs. anonymous
  - pre-selected residents
  - More social contact
  - Reliability
  - Reciprocity
- Relationship with residents
  - More than neighbours
  - Group norm
  - Member of a group
  - Intimate
  - Community feeling
  - Helping, sharing, taking care
  - No obligations
  - Expectations
- (Grand)children and friends
  - Part of daily life
  - Changing contact
  - Visits and visiting
- Contact moments with residents
  - Joint activities
  - Spontaneous interactions
  - Age related
  - Function in community
  - Working vs. not working
  - Own front door
  - Own living space
  - No feeling of living together
- Doing activities together
  - Committees or voluntary tasks
  - Walking/cycling together, visiting each other
  - Interactions outside the activities
  - Cooking
  - Having drinks
  - Movie night
  - Meetings

**Individual factors**

- Physical activities
  - Different use of (public) transport
  - Go for a walk
  - Using public transport
  - Bicycle tour
- Physical abilities
  - Physical decline
  - Injuries
  - Daily activities
  - Mobility
- Social activities
  - Join excursions and associations
  - Volunteer work
  - Community center
  - Visiting amenities
  - Visiting friends and family

# Appendix V

## Study information sheet

**Informatie formulier** *(see English below)*

Hartelijk dank voor uw bereidwilligheid om deel te nemen aan dit onderzoek. In dit Informatieblad wordt uitgelegd wat het onderzoek inhoudt en wat uw deelname aan het onderzoek betekent. Mijn naam is Jet van der Tol en ik studeer aan de Wageningen Universiteit en ben ik bezig met mijn Master Scriptie. Het doel van het onderzoek is om een beter beeld te krijgen van het leven in een woongroep voor ouderen. Graag zou ik willen weten hoe u, als bewoner, het leven in deze woongroep en omliggende buurt ervaart. Om uw mening en ervaringen te horen, zou ik u graag willen interviewen. Het interview zal ongeveer een uur duren en, mits u hiermee akkoord gaat, worden opgenomen. Het interview zal slechts voor onderzoeksdoeleinden worden gebruikt en het zal niet worden gebruikt op een manier die identificatie van uw individuele antwoorden mogelijk maakt. Bovendien zal uw naam en andere persoonlijke gegevens worden geanonimiseerd om uw privacy te waarborgen.

Nogmaals bedankt voor uw deelname aan dit onderzoek. Als u vragen heeft over het onderzoek kunt u contact met mij opnemen.

Vriendelijke groet,

Jet van der Tol

Telefoon: 06-25030869
E-mail: jet.vandertol@wur.nl


*Information sheet*

*Thank you for your willingness to participate in this research. This Information Sheet explains what the research entails and what your participation means.*

*My name is Jet van der Tol, and I am a student at Wageningen University, currently working on my Master's thesis. The purpose of this research is to gain a better understanding of life in an elderly residential community. I am interested in learning about your experiences as a resident in this community and the surrounding neighbourhood. To hear your opinions and experiences, I would like to conduct an interview with you. The interview is expected to take approximately one hour and, with your consent, will be recorded. The interview will only be used for research purposes, and it will not be used in a way that allows for identification of your individual responses. Additionally, your name and other personal information will be anonymized to ensure your privacy.*

*Thank you for your participating in this research. If you have any questions about the study, please feel free to contact me.*

*Best regards,*

Jet van der Tol
Phone: 06-25030869
Email: *jet.vandertol@wur.nl*

(Based on the interview consent form in Bryman, 2012, p. 141)

# Consent form

<u>Betreft</u>: onderzoek naar woongroepen voor ouderen in Amsterdam *(See English below)*

**Geïnterviewde**

Ik verklaar hierbij te zijn ingelicht over de aard, methode en doel van het onderzoek en het is mij duidelijk waar ik aan meewerk. Ik heb vragen over het onderzoek kunnen stellen en die zijn naar tevredenheid beantwoord.

Ik begrijp dat:
- Ik mijn medewerking aan dit onderzoek kan stoppen op ieder moment en zonder opgave van reden
- Gegevens anoniem worden verwerkt, zonder herleidbaar te zijn tot de persoon
- De geluidsopname vernietigd wordt na uitwerking van het interview

Ik verklaar dat:
- Ik geheel vrijwillig bereid ben mee te doen aan dit onderzoek
- De uitkomsten van dit interview verwerkt mogen worden in een verslag of wetenschappelijke publicatie
- Ik toestemming geef om het interview op te nemen door middel van een audio-recorder

Handtekening:

Naam:
Datum:

**Onderzoeker**

Ik heb mondeling toelichting verstrekt over de aard, methode en doel van het onderzoek en naar vermogen uitleg gegeven over waar de geïnterviewde mee instemt.

Handtekening:

Naam:
Datum:

*<u>Subject:</u> Research on elderly residential communities in Amsterdam*

**Interviewee**

*I hereby declare that I have been informed about the nature, method, and purpose of the research, and I understand the nature of my participation. I have had the opportunity to ask questions about the research, and they have been satisfactorily answered.*

*I understand that:*

*• I can withdraw my participation from this research at any time and without providing a reason.*

*• Data will be processed anonymously, without being traceable back to me as an individual.*

*• The audio recording will be destroyed after the interview has been transcribed.*

*I declare that:*

*• I am willingly participating in this research.*

*• The findings of this interview may be included in a report or scientific publication.*

*• I give consent for the interview to be recorded using a voice recorder.*

*Signature:*

*Name:*

*Date:*

**Researcher**

*I have provided oral explanations about the nature, method, and purpose of the research and have given explanations to the best of my ability regarding the interviewee's consent.*

*Signature:*

*Name:*

*Date:*