

The evolution of housing typologies for older adults in the Netherlands from 1945-2016: an analysis in the context of policy, societal, and technological developments

Running head/short title: The evolution of housing typologies for older adults

M. Mohammadi, , L.P.G. van Buuren, J.H.W. Hammink, M.M.T. Dominicus, K. Hamers, H.H.

Yegenoglu

Mohammadi, M., Buuren, van L.P.G., Hammink, J.H.W., Dominicus, M.M.T., Hamers, K., Yegenoglu, H.H. (2018). The evolution of housing typologies for older adults in the Netherlands from 1945-2016: an analysis in the context of policy, societal and technological developments. Journal Housing for the Elderly (accepted)

ABSTRACT

This study aims to examine housing typologies for older adults in the light of three qualitatively examined exogenous factors: policy, societal developments, and technology. The developments in inpatient and assisted ambulatory housing facilities for older adults have been mapped from 1945-2016 using quantitative data. Using this data, five transition periods can be distinguished. Within the first transition periods, policy factors were tremendously important, while within the later ones, societal influence empowered by technological change were the primarily driven factors.

This research shows that the classification of inpatient, assisted ambulatory housing and outpatient housing may no longer be applicable in its current form.

KEYWORDS

Housing typologies, older adults, evolution, the Netherlands, exogenous factors.

01. INTRODUCTION

Considering an ageing population, not only in the Netherlands but in most industrialized countries, older adults will need suitable, comfortable housing. The effects of policy, societal, and technological changes can have a profound impact on the demand for and availability of this housing. However, more insight into the effect of these changes on housing for older adults is needed. The goal of this article is to shed a light on the relationships between three exogenous factors and the housing evolution of dwellings for older adults in the Netherlands between 1945 and 2016. The outcome of this study can be used to examine the effects of current policy, societal and technological changes on (future) housing typologies for older adults. In turn, it serves to create new guidelines for the development of new housing typologies (Remali, Salama, Wiedmann, & Ibrahim, 2016). Furthermore, the importance of technological and building changes on housing for older adults is mounting: due to rapid changes in technological possibilities, the landscape of housing and care for older adults is changing.

In the Netherlands, major changes in the quality of housing occurred after the introduction of housing legislation ('de woningwet') in 1901 (De Vreeze, 2001), in which housing for people with lower incomes was regulated and the first social housing initiatives was introduced (Taverne, 1981). Although an important change in housing and housing quality, the landscape of housing for older adults changed even more profoundly after 1945, the starting point of our analysis. Due to the housing shortage after the Second World War, major changes in housing occurred, including the process of rebuilding. From 1960 onwards, specific attention is paid to housing (with care) for older adults in the Netherlands under the strict supervision of the central government (Vreugdenhil, 2012). In the period between 1995 and 2015, changes in policy and technology affected housing for older adults significantly. Before 1945, almost all housing for the target group was either outpatient housing or outpatient with some domestic help as centralized service (Mens & Wagenaar, 2009; Liebrechts & Van Nunen, 2014). However, from 1945 onwards, different housing typologies for older adults have arisen, which is why 1945 is selected as starting point of this article.

Since 1945, an increasing number of older adults have costs adaptations in policy surrounding senior housing in order to keep down costs and mitigate the effects of an ageing labour

force. An (inter)nationally accepted policy with regard to housing for older adults is 'ageing in place', i.e. longer living at home independently (Wiles, 2005; Pynoos, 1990; Hooimeijer, 2007). The focus of this policy is to reduce the number of inpatient facilities and increase the independence and autonomy to achieve a longer period of independent living and increasing quality of life (Wiles, 2005; Davey, De Joux, Nana, & Arcus, 2004). This shift from the government providing and regulating inpatient care for older adults to a focus on ageing in place policy took place after the 1980s (Houben, 1984; Priemus, 1988). These changes have influenced the number of establishments of different housing typologies for older adults in the Netherlands, which is the dependent variable of this paper.

02. THEORETIC FRAMEWORK & METHODOLOGY

The ecological theory of adaptation and ageing is used as a foundation for the conceptual model in this paper (Lawton & Nahemow, 1973). This theory deals with how older adults can keep functioning in a living environment as they age. A balance between living environment and individual competence is paramount in order to increase the independence of older adults (Lawton, 1989). This balance or 'PE fit' (person-environment fit) tries to match the physical, mental, and social competencies of a person to the optimal living environment (Lien, Steggell, & Iwarsson, 2015; Kahana & Kahana, 1983). Exogenous (policy, societal, and technological) factors can play an important role (positive or negative) in the 'fit' between the living environment and the older adult. Architecture could be an answer to changing exogenous factors, which is why it is important to examine the influence of these exogenous factors on housing for older adults.

2.1 CONCEPTUAL FRAMEWORK

The conceptual model in figure 1 shows the relationships between the exogenous factors and their effect on housing for older adults in the Netherlands. Changes over time are modelled as 'transition periods' (TPn), which symbolise crucial changes in the typologies of housing for older adults and are influenced by exogenous factors (EF1, EF2 and EF3, see 2.2) (Priemus, 1995; Tommel, 1995). This conceptual model uses three housing typologies categories: assisted ambulatory housing, inpatient without 24/7 care, and inpatient with 24/7 care (Naafs, 2010), which will be further explained in 2.3.

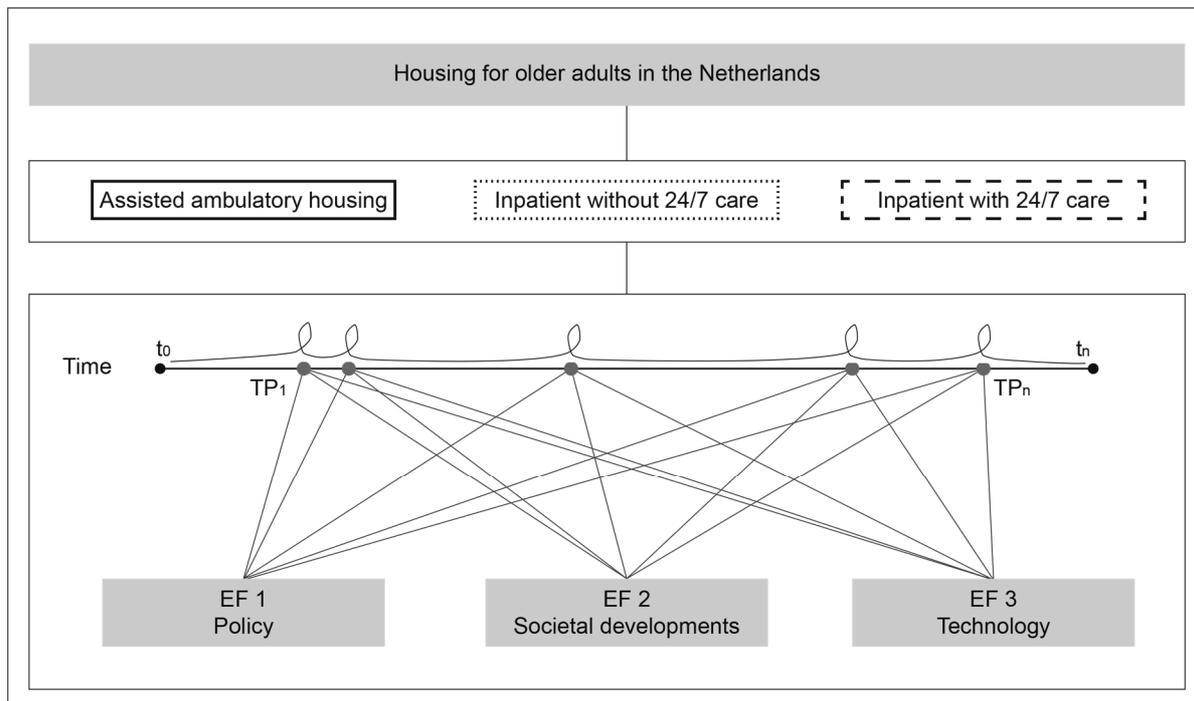


Fig. 1 Conceptual model

2.2 EXOGENOUS FACTORS

Housing for older adults is influenced by several reciprocal exogenous factors (Koffijberg, 2005; Priemus, De Jong, & Wassenberg, 1994; Mohammadi, 2010). This research gives particular attention to macro developments that can influence the number of establishments of specific housing typologies, which in turn can lead to the rise of new typologies or the decline of others. Several authors have discussed the importance of exogenous factors on the housing demand and supply, in this paper three factors are examined: policy, societal, and technological (Priemus, 1995; Van der Schaar, 1987).

EF1: POLICY

In order to examine the political influence on housing, two elements are examined. First, the general political climate and the view of the ruling government on housing for older adults are examined. Secondly, specific policies and regulations regarding housing, care, and housing for older adults are examined. This second element is seen as the translation of politics into laws and regulation, which is why it is used to analyse the historical context of the transition

periods. This article does not take macroeconomic trends into account, but examines the effect of economic trends through policy and societal changes.

EF2: SOCIETAL DEVELOPMENTS

Societal influences are subdivided into three subcategories, which play a role in housing evolution (for older adults) (Remali et al., 2016; Bijl, Boelhouwer, Pommer, & Schyns, 2009). These three subcategories are socio-cultural factors, economic factors, and demographic factors. This exogenous factor is an expression of views on society, care, and housing over time.

EF3: TECHNOLOGY

When examining the effect that implementation and adoption of a certain type of technology has on society, there are several reciprocal aspects at play: the technological development in question, the stakeholders involved in the production chain, consumption processes, and the general societal circumstances (Mohammadi & Hammink, 2016; Bijker & Law, 1992).

When looking at the evolution of housing for older adults, one can distinguish two types of technology that have influenced this process. First, there are technological advancements such as automation, sensor technology, and robotics – which have given rise to possibilities of creating smart environments (Aldrich, 2003). Secondly, not only product innovations have an effect on housing and housing typologies, advancements in building technology and construction are influential factors as well.

2.3 HOUSING TYPOLOGIES

To structure the different forms of housing for older adults, four categories of housing typologies have been used. In the Netherlands, these four types of typologies are frequently used in literature and practice: inpatient facilities with 24/7 care, inpatient facilities without 24/7 care, assisted ambulatory housing, and outpatient housing.

Many older adults still live at home, with or without care, which is called outpatient housing support. This article does not use this category as only limited data regarding this type is available. Furthermore, the article focuses on residential facilities that specifically cater to older adults, as such only inpatient with and without 24/7 care and assisted ambulatory housing living are used. Although no official numbers are available for this group of older adults that still live at home, the text on the exogenous factors sometimes refers to this group as a stimulation of this type of housing through policy can be seen, which in turn has an effect on the number of establishments of the three typologies that are examined (assisted ambulatory housing, inpatient with and without 24/7 care).

Within the inpatient facilities there are two distinct categories that we use to classify different housing typologies of older adults. The first is inpatient facilities in which the inhabitants live in a care institution and where 24/7 care and/or services are provided. These inhabitants are in need of care and support with regards to living independently at home. The two major typologies within this category are small scale Nursing Homes and Nursing Homes (see table 1 for definitions) (Kempen, & Hamers, 2010; Leber, 2005; Mens & Wagenaar, 2009; Stavenuiter & van Dongen, 2008; Verbeek, Zwakhalen, Van Rossum, Ambergen,).

The second are inpatient facilities in which the focus is on providing services for inhabitants and 24/7 care is not provided (Leber, 2005; Mens & Wagenaar, 2009; Naafs, 2010; Van der Burgt, Van Mechelen-Gevers, & Te Lintel Hekkert, 2006), the most common forms of which are residential homes and care homes in the Netherlands (see table 1).

Assisted ambulatory housing includes typologies that can be seen as forms between in- and outpatient housing, it is a form of 'enhanced' independent living. Older adults live in their own home/apartment, but these are often situated in or near a care institution or (collective) service provider. These older adults can use these collective and individual services, provided by the care institution or service provider, rather easily. The most common typologies in this category are Service Flats and residential care centres (WoZoCo in Dutch), see table 1 (Leber, 2005; Mens & Wagenaar, 2010; Stavenuiter & Van Dongen, 2008; Verbeek et al., 2010).

	Housing typologies	Definitions
Inpatient Facilities	Residential Homes	An inpatient facility with older adults needing care, this form has often transformed in what we now see as care homes
	Care Homes	Inpatient facility with residences that contain a living- and bedroom, kitchen and bathroom. It is used for long stay or permanent stay for older adults who are in need of certain services in order to live at home.
Inpatient Facilities with 24/7 care	Nursing Homes	A large(r) scale inpatient facility (90-120 beds) for chronically ill inhabitants that cannot live independently and need 24/7 care.
	Small-Scale Nursing Homes	A form of (small-scale) group living, but with individual bedrooms and communal living rooms/kitchens in which intensive 24/7 care and services are provided.
Assisted Ambulatory Housing	Serviceflat	Residential building with independent apartments for older adults and communal spaces where collective or individual services can be received. Home care can be provided if required.
	Residential Care Centre	A residential care centre has both residential apartments as well as inpatient facilities. Care, living and services are separated in this model. On the basis of contracts, care or service packages can be bought by the residents. The centre can also be a service location (in relation to care) for the surrounding neighbourhood.

Table 1. Definitions of housing typologies

2.4 DATA

In order to examine the current and historical state of Dutch housing typologies for older adults this article was dependent on available data. As such, this overview is of the most common typologies seen in housing for older adults in the past seven decades. Difficulties in examining these typologies were the availability of data and changing definition and nature of typologies over time.

For inpatient and assisted ambulatory housing quantitative data has been gathered with regards to the number of establishment of abovementioned common housing typologies between 1945-2016 (figure 1). Searching for data was done using a list of Dutch definitions and synonyms in both scientific databases as well as national and governmental databases. Different sources have been used, however, most data was gathered using the central bureau of statistics (CBS) and government documents on specific housing typologies. This data on the number of establishments was used to identify transition periods.

To examine the context of the evolution of housing typologies from 1945-2016, this time period has been divided into time blocks of ten years (except for 1945-1950 and 2011-2016). A literature study per time block, using the three exogenous factors, was conducted. The outcomes of this literature study will be discussed chronologically in this paper, this information is used to understand the (causes of) the transition periods.

03. TIME PERIODS

Housing designed for older adults and the development of different types of typologies started after World War II (WWII), in 1945. These time periods of 10 years (except for 1945-1950 and 2010-2016) are used to describe the effects of the identified exogenous factors (EF1, EF2, EF3) on housing for older adults. Note that not every time period necessarily includes a transition period and is focused on all (not one) typologies, this way a general overview of the development of this type of housing can be given.

3.1 TIME PERIOD I: 1945-1950

This time period is characterized by poverty and housing shortage, after WWII the latter is seen as a major threat to society (Blom, Jansen, & Van der Heiden, 2004). This resulted in a housing 'boom' in which a lot of houses were built and existing houses in poor conditions were demolished (Liebregts & Van Nunen, 2014; de Vreeze, 2001). An important exogenous factor (EF2: societal developments) is the sharp demographic increase (from 8.8 million in 1940 to 10 million in 1950) that takes place (Statline, 2016) and the increasing number of older adults. This period was the first in which older adults, but also older adults from lower socio-economic classes, were the focus of housing policy and it led to an Emergency Legislation Provision for Old Age (Noodwet Ouderdomsvoorziening) through which people 65 and over were entitled to a government paid pension. Before this piece of legislation, older adults were dependant on charity from church or society (e.g. family or wealthy benefactors, the latter giving rise to courtyard homes for older adults) or they were consigned to work- or poorhouses. This changed after WWII, older adults were seen as a group that was in need of care, and society had to provide this. As such, this period the influence of EF1 (policy) and EF2 (societal developments) were profound on housing for older adults in the Netherlands and gave rise to housing (typologies) specifically for older adults (De Vreeze, 2001).

3.2 TIME PERIOD II: 1950-1960

During this continuing rebuilding period, the quality of the housing stock became more important, rather than the number of new houses. This is reflected in the adoption of new legislation determining the minimum standard of housing in 1952 (Liebregts & Van Nunen, 2014). Housing and care were strictly regulated by the government (EF1: policy), which resulted in the start of a welfare

state. The adoption of legislation surrounding ageing (Algemene Ouderdomswet 1957), solidifying the policy set in the previous time period, is generally seen as the start of the Dutch welfare state. This government paid pension provided everybody over 65 years of age with a (small) income, which in turn increased the independence and autonomy of this group. This increasing independence, more spendable income (due to pensions and increasing welfare) and the start of the welfare state gave rise to the first Residential Homes in 1957 (Vis, 1994) (see table 1 for definition). In the three years that follow, the number of Residential Homes rises significantly (CBS, 1967). The effect of the rise of the welfare state is the shift in policy focus from living at home to living in inpatient facilities, which in turn had its effect on the number of Residential Homes (Oevering, 2005). In this period the influence of policy (EF1) on societal developments (EF2) on housing for older adults is evident.

3.3 TIME PERIOD III: 1961-1970

During the 1960s, in the Netherlands the effect of policy (EF1) and societal developments (EF2) had a profound effect on the housing for older adults. Societal developments (EF2) such as the economic optimism from the previous periods is still on-going and developments such as more spendable income, higher levels of education, individualisation of society and increasing income equality caused changes in the demand for housing for older adults (Vonk, 2003). Many older adults did not want to burden their offspring; more women work outside the home and the general view on ageing is that older adults have deserved the privilege of retiring comfortably. As such, the large-scale dorms in Residential Homes from the 50s did not cut the bill. Implementation of legislation on the quality of these homes in 1963 (Wet op Bejaardenoorden) regulates the day-to-day operation of these Residential Homes (Hilfman, 1963). In this case societal developments (EF2) influence policy factors (EF1), which in turn influence the specific Residential Care housing typology for older adults. The same process applies to the societal influence (EF2) of secularization, lifting of religious barriers and individualisation, which have an effect on policy (EF1) and the changing nature of these aforementioned Residential Homes. One can see a shift from these Residential Homes to Care Homes and the group of older adults that wants to move to the Care Homes is growing exponentially (see table 1 for definition Care Homes). Government-built Care Homes cannot cope with the overwhelming group of interested older adults, and despite media attention for the poor living condition in commercial Care Homes, these homes are on the rise (Diederich, 1958). Even people

that do not have care needs (yet) have themselves put on waiting lists. During this period, policy is aimed at increasing beds in inpatient facilities, but another effect on policy is the stimulation of the Service Flat typology. These Service Flats conform with the view on ageing that comfort for this target group is important, although these Service Flats were often only available for the wealthier segment of society. The rise of these Service Flats is a direct effect of societal developments (EF2) on housing.

3.4 TIME PERIOD IV: 1971-1980

During the 70s the political climate changes to a 'limits to growth' view, the oil crisis in 1973 heralded a period of more economic pessimism and cutbacks in care and housing. Still, with very long waiting lists for care homes, a shift in policy aims to stimulate care at home, informal care, and longer living at home (EF1: policy factors). As such, specific policy to stimulate 'substitution' is adopted in 1974 (Structuur Nota Gezondheidszorg), policy in which people living in care homes that do not need that level of care yet are replaced with people who do need that care. Meanwhile, individualisation and focus on right to privacy and 'private space' is increasing through developments such as the quick adoption of time-consuming technologies like television (Bax, 1990; Mohammadi & Hammink, 2016). As such, an effect of societal developments (EF2) on technological factors (EF3) can be seen. Substitution and individualisation of society can be seen in policy (Tweede Nota Bejaardenbeleid) in 1975, in which a strong focus on the development of living at home and assisted ambulatory housing can be seen. Service Flats and sheltered housing, but also longer living at home in one's own house, are stimulated by offering more services in the neighbourhood. Informal care is an important new term in policy that is introduced in this period. Although the number of inpatient facilities with only services is going down, the number of assisted ambulatory housing solutions such as Service Flats and residential care centres is increasing in this period under the influence of societal developments (EF2) and technological (EF3) processes. Furthermore, substitution policy (EF1) also gave rise to an increasing number of Nursing Homes (inpatient with 24/7 care), due to the increasing number of people that are 80 years and older, needing more care.

3.5 TIME PERIOD V: 1981 – 1990

The troubled politic and economic climate of the 80s are characterised by budget cuts, decentralisation, and deregulation. The government stimulates economic growth using liberal market

techniques, including liberalisation of the care and housing sectors. Looming terrorist attacks, high unemployment rates, and nuclear threats have caused a 'lost generation'. The same period is the start of the demise of the welfare state in the Netherlands with policy that follows in the footsteps of the 'substitution' policies of the late 70s (Leber, 2005). The societal developments (EF2) influence housing policy for older adults (EF1) leading to a focus on living longer at home and decline of assisted ambulatory housing and inpatient facilities with services. Around 1984, an emancipation of care for older adults takes place: housing and care are separated in terms of policy. A result of this policy is that while care is government regulated, housing is not. No clear policy and regulation is formulated with regards to housing for older adults. The Dutch government focuses on equality, participation in society, and independence of older adults. Getting a spot in an inpatient care facility (with and without 24/7 care) becomes even more difficult with new policies regarding older adults in 1986 (Nota Zorg voor Ouderen). The dissatisfaction with traditional care homes were cause for the remodelling and adaptation of many inpatient care facilities without 24/7 care. In this period, both EF1 and EF2 influence the number and nature of traditional care homes. Many of the care homes (inpatient facilities without 24/7 care) are remodelled into residential care centres (assisted ambulatory housing housing), of which the number increases drastically during this period (Ministerie van Welzijn, Volksgezondheid en Cultuur, 1984; Leber, 2005).

3.6 TIME PERIOD VI: 1991-2000

During the 90s, the previous policy trend of using free market mechanisms to regulate care and housing is continued (EF1: policy). This causes even further dismantling of inpatient facilities without 24/7 care and increasing focus on longer living at home. Even though it seems there is a strong economic growth, the unemployment is still high, as such economic concerns still drive the reform of housing for older adults. A research committee (Commissie Welschen) examines the policy of a separation of housing and care for older adults and concludes in 1995 that a change in policy is highly recommended. This resulted in changes in the financing of housing for older adults: inpatient facilities are funded and regulated using 'care' policies (AWBZ) and assisted ambulatory care is regulated through housing policies and regulation. In 1998, a personal care budget (Persoonsgebonden budget) is introduced, in order to give the older adult the control over the choice of care provider. This is in congruence with the free market approach of this time period, as it allows

'the customer' (the older adult in this case) more freedom of choice both in care and in housing. Another change is the view of society on older adults, as a group that is well-informed, assertive, and participates in society. Several experiments with regards to housing for older adults are started, specifically for older adults from a higher socio-economic class. Therefore, changes in both exogenous policy factors (EF1) and societal developments (EF2) influence the rise of different types of assisted ambulatory housing housing for older adults.

Examples are new types of Service Flats and accessible housing for older adults. Furthermore, variations on inpatient housing with 24/7 care begin to emerge: specifically, small-scale Nursing Homes for people with dementia. The shift is driven by a change from 'providing care' to 'improving quality of life' (EF2 societal developments). This is seen by a decline in the number of Nursing Homes but an increase in the number of small-scale facilities. Another change is the implementation of domotics (home technology) in these typologies, specifically to increase safety and decrease costs (Mohammadi, 2014). Another change in typology is the changing residential care centres (assisted ambulatory housing housing), which become larger than 'just' the centre but are comprised of a 'zone' in which older adults live in the neighbourhood with a service centre close by (Stavenuiter & van Dongen, 2008

3.6 TIME PERIOD VII: 2001 – 2010

The impact of economic crises and the increasing pressure of an ageing society characterize this decade (EF2: societal developments). These influences cause a change in policy (EF1) regarding care and welfare, with a shift towards participation in and of society and the personal responsibility of citizens and civil society (Bijl et al., 2009), as such informal care is increasingly important. Changes in exogenous policy factors (EF1) result in that older adults do not have the right to services and care (at home) by default. This type of policy propagates that citizens should be stimulated to arrange their own care and housing, with the government (local or national) only assisting when this is not an option. Older adults from a lower socio-economic class become a more vulnerable group at risk of exclusion. That being said, the majority of this group of older adults in the Netherlands is comprised of a more assertive, well-educated and wealthier group than before, that prefers to grow old in their own home and (social) environment (Van Dam, Daalhuizen, De Groot, Van Middelkoop, & Peeters, 2013). Home technology provides increasingly more tools to enable this; an example is the growing

number of internet connections in houses of older adults (De Haan, Klumper, & Steyaert, 2004). Also, in inpatient facilities with and inpatient facilities without 24/7 care, there is a change towards a more patient-centered and personalized view on care. More small-scale facilities are seen in inpatient housing with 24/7 care, which are spatial representations of this shift (Van Elp, Van Zaal, & Zuidema, 2012). Traditional assisted ambulatory housing facilities (Service Flats and residential care centres) seem to not meet the new standards of this empowered group of seniors. As such, one can see the effect of technological factors (EF3) and societal developments (EF2) on inpatient housing and policy factors (EF1) on the levelling off of assisted ambulatory housing facilities (Leber, 2005).

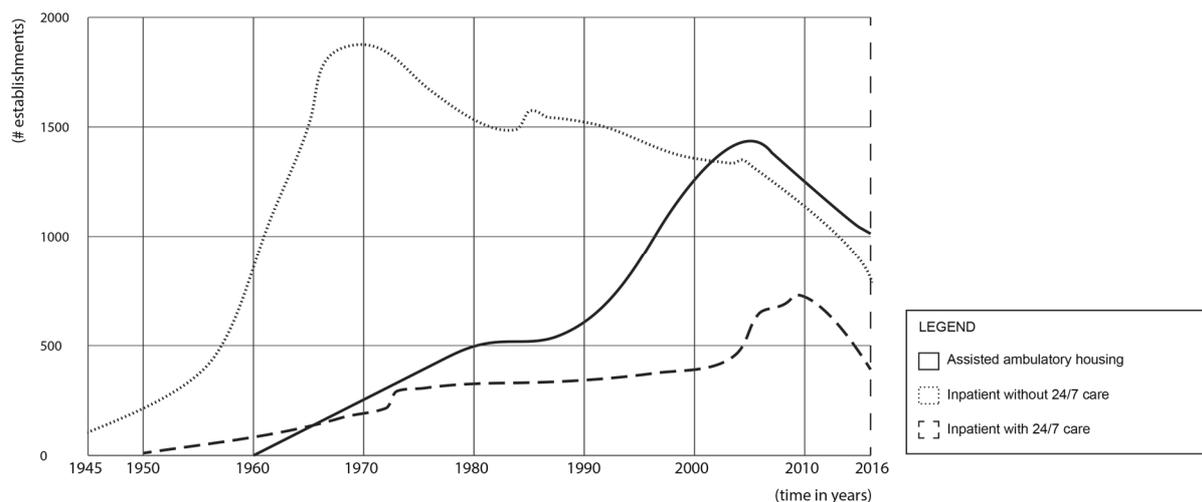
3.8 TIME PERIOD VIII: 2011 – 2016

While the aftermath of the economic crises from the previous time period is still visible with economic growth only slowly recovering, the transition from the welfare state to a 'participatory society' is formalized. In his yearly address, the Dutch king Willem-Alexander emphasises the importance of taking responsibility for your own person and your environment (Rijksoverheid, 2013). This is reflected in policy by further decentralisation of care regulation, individual budget estimations (regulated by municipality) and (more) restricted access to more intensive care, such as inpatient facilities with 24/7 care. As such, the effect of policy factors (EF1) is seen on (both types of inpatient) housing. However, also societal developments (EF2) such as trust in the economy, free-market ideals, individualisation and decentralisation all contribute to the establishment of a 'participatory society' with more individual responsibility (Bijl, Boelhouwer, Pommer, & Andriessen, 2015; VWS, 2015). This policy seems to herald the end of care homes (inpatient facilities without 24/7 care) and a change in the inhabitants of Nursing Homes (inpatient facilities with 24/7 care) towards people with more severe care needs (Duivenvoorden, Van Triest, 2015). An important change in the way society views 'care' is a focus on stimulating independence and controlling one's own life despite disabilities (Huber, 2014). The physical environment should stimulate the inhabitant and promote the feeling of 'being at home'. These societal development changes (EF2) have given rise to new housing typologies for older adults that try to reflect a person's former lifestyle and individual preferences. Furthermore, there is attention for 'inclusive neighbourhoods', i.e. services and care are provided for both the institution as well as the larger area (the neighbourhood) surrounding it (Vermeij & Engbersen, 2017). Another development in the housing for older adults, inspired by primarily societal

developments (EF2) is the increasing number of bottom-up initiatives that try to fill the void left by retreating government (Beltman, 2014), i.e. emerging housing and care cooperations. With an increased focus on living longer at home independently, technology (EF3) such as e-health and domotics can stimulate independence and increase control without limiting freedom, but with increasing comfort and safety (Depla, Zwijsen, Te Boekhorst, Francke, & Hertogh, 2010). Although there is a trend towards living at home, or more accurately, not living in inpatient facilities without 24/7 care, inpatient facilities with 24/7 care and services do increase steadily in this period. While it is harder to obtain a spot in such a facility, the absolute number of older adults is increasing rapidly, and therefore, more facilities to provide this intensive type of care are still needed (Van Elp et al., 2012). Lastly, technological innovations (EF3) are on the rise and provide solutions not only for inpatient care, but also for enabling long living at home independently.

04. RESULTS

The number of facilities of the most common housing typologies as detailed above are shown in graph 1. This graph is based on official government and government-related sources such as the statistical bureau (CBS), social-cultural planning bureau (SCP), and reports based on these numbers. The results show how the rise and decline of the three housing typologies have taken place over time.

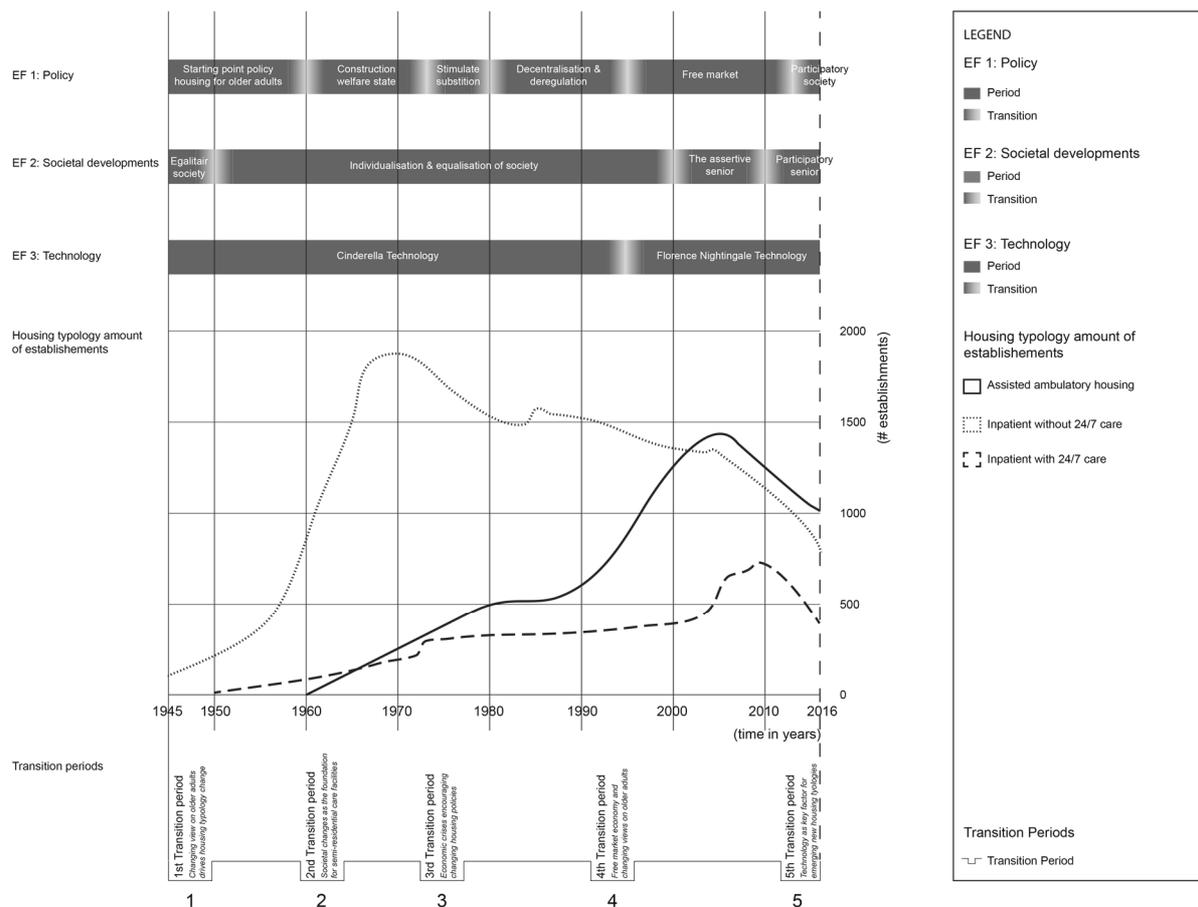


Graph 1. A number of facilities for assisted ambulatory housing, inpatient facilities without 24/7 care and inpatient facilities with 24/7 care over time (1945-2016) in the Netherlands.

05. ANALYSIS – TRANSITION PERIODS IN SENIOR HOUSING IN THE NETHERLANDS

5.1 TRANSITION PERIODS

The transition periods are a way of combing the qualitative data from the time periods with the quantitative data on the number of facilities for assisted ambulatory housing, inpatient facilities with and without 24/7 care. Whenever there are drastic changes in housing typologies (either the conception, sharp rises or decline of specific typologies) these have been discussed in the light of the exogenous factors. The most important typology changes are discussed using ‘transition periods’ of which five can be distinguished (see graph 2). Not every period discusses the changes in all three typologies.



Graph 2. Transition periods in evolution of housing for older adults

These five transition periods are discussed in detail below, linking the exogenous factors to the changes in housing typology volumes. The numbers below correspond to the transition period numbers in graph 2.

1: Changing view on older adults drives housing typology change

During the first transition period the effect of economic (EF2) and policy (EF1) changes can be seen in the attention for housing specifically for older adults. Economic and political optimism, combined with a shortage of housing, were motives to provide living (and care) facilities for older adults in the form of care- and Nursing Homes. Although ultimately policy factors (EF1) were the direct trigger for the sharp increase of care homes and the introduction of Nursing Homes, in turn, societal development changes (EF2) seem to be the chief factor in the conception of this policy. The main change was a shift in perception of older adults as burden for the society who depends on charity from church or society towards a view that older adults in need of care, also in terms of housing. The typologies therefore reflect a fundamental change in how older adults as group were viewed by society (EF2).

2: Societal changes as the foundation for assisted ambulatory housing facilities

Partly due to the big run on inpatient facilities without 24/7 care (in the form of care homes), which started during the first transition period, older adults who could afford living facilities with additional services incited the rise of the number of Service Flats. Meanwhile, waiting lists for care homes for socio-economically less fortunate older adults only grew. In both cases this was inspired by societal developments (EF2) such as wanting to be less dependent on children, increasing trust in the economy, secularisation and individualisation.

3: Economic crises encouraging changing housing policies

The confidence in the economy received a major blow due to the two crises in the 70s. Furthermore, increasing individualisation and secularisation (EF2: societal developments), combined with untenable waiting lists for care- and Nursing Homes, caused a shift in policy (EF1). Longer living at home was encouraged and older adults who were housed in an (inpatient) facility 'unsuitable' to their needs were relocated, which caused a decline in the

establishments of care homes (inpatient without 24/7 care). Meanwhile, the number of Nursing Homes (inpatient with 24/7 care) is increasing. This transition period is likely to have been driven by policy changes (EF1), in turn heavily influenced by societal developments (EF2).

4: Free market economy and changing views on older adults

The political climate in the 90s was mainly liberal (rather than social) and inspired different policies that would allow free market mechanisms to stimulate the economy: a societal trend (EF2) that found its way into corresponding policy (EF1). Cultural changes in how 'care homes' were viewed also occurred and combining this with a more liberal market, combinations of assisted ambulatory housing and inpatient facilities with 24/7 care were made in so-called residential care centres.

5: Technology as key factor for emerging new housing typologies

Through societal exogenous developments (EF2) and subsequent policy changes (EF1), only people who need intensive care can be housed in Nursing Homes (inpatient facilities with 24/7 care). That being said, community-led initiatives influenced by societal developments (EF2) cause a diversification in the different housing typologies for older adults. More types of communal living and living at home are coming into existence, and at a neighbourhood/block level, combinations of inpatient, assisted ambulatory housing and outpatient housing are taking place. Furthermore, the influence of technological factors is becoming more and more pronounced (EF3), as government and technological companies are putting forward technologies (such as domotics, robotics and biosensors) as support for outpatient housing and longer living at home independently. The promise of technological potential (EF3), combined with social developments (EF2), is changing the landscape of housing for older adults in the Netherlands. During the final transition period, which is still going on at the time of writing (2017), a diversification of housing typologies is taking place.

In this transition period the full effect of 'smart' solutions in the realm of so called 'Florence Nightingale technology' (Mohammadi, 2014) on the development of new housing typologies can be seen. Furthermore, the change towards seniors as an emancipated group with an

active role in society and housing has a tremendous influence in the development of these new housing typologies as well. At the same time, the government is retreating from the area of housing typologies. Where the government is retreating from the area of housing for older adults (diminishing influence of EF1), societal developments (EF2), and technological influences (EF3) can be seen as important drivers of new housing typologies for older adults in the Netherlands.

5.2 IMPLICATIONS FOR HOUSING FOR OLDER ADULTS IN THE NETHERLANDS

One can see nowadays that specifically under influence of technological possibilities (EF3), the strict division between inpatient with 24/7 care, inpatient without 24/7 care, assisted ambulatory housing, and longer living at home (with outpatient care) is fading. The difference between assisted ambulatory housing and private residence are hard to determine, due to the increasing possibilities of ambulatory and tele-care. Whereas research up to this point has primarily used the categories of inpatient (with & without 24/7 care), assisted ambulatory housing, and outpatient for housing typologies for older adults, the diversification of new typologies calls for another classification. This article proposes such a classification (figure 2) to contain and define these diversifying housing typologies as well as existing typologies. This classification is based on the developments in the three external factors and predictions based on the analysed transition periods. The formed division between outpatient housing, assisted ambulatory housing, inpatient facilities without care and inpatient facilities with 24/7 care was mainly based on intensity of care received. However, specifically through societal developments (EF2) and technological changes (EF3) the intensity of care does not have to differ between living in an institution and outside one. As such, this classification is proposed, which should be furthered detailed (and possibly expanded) in future research.

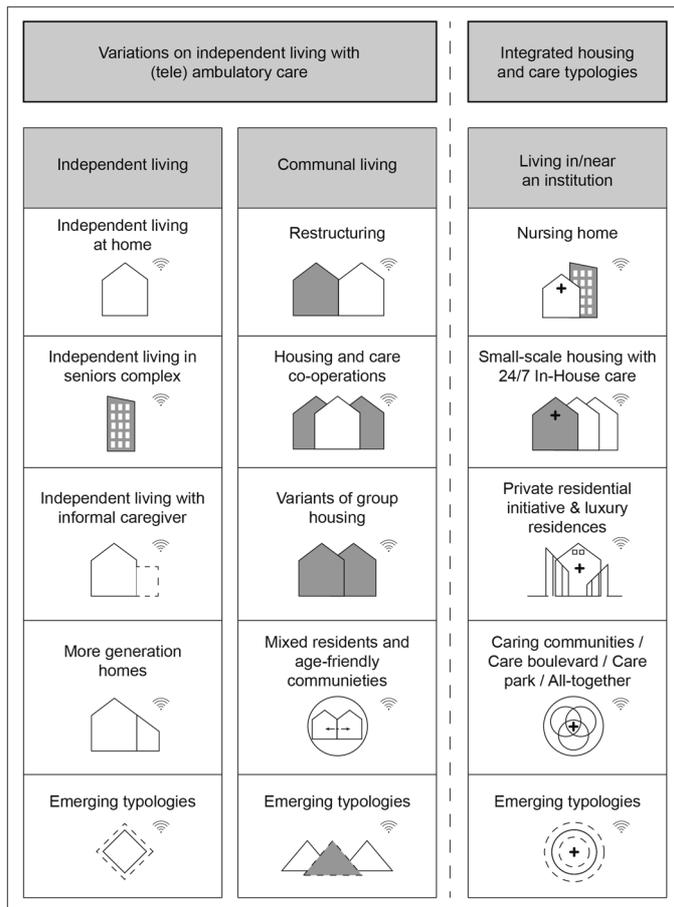


Fig. 2 Classification system Dutch housing typologies

In the classification from figure 2, one can see that a diversification in the non-institutional group is taking place, as many forms of community-based housing are developing. These new forms contain not only older adults living together, but also other target groups such as students or families. Furthermore, personal housing is diverse, within this large group of older adults still living at home, multi-generational living or living with an informal care giver is seen. Figure 2 combines inpatient care with and without 24/7 care and variations on (tele) ambulatory care as the two main categories. In the former category there is some diversification in forms of small-scale Nursing Homes and an increasing number of civil society initiatives. This change can be contributed to changing societal factors, such as more personalized and a participatory approach to care (EF2) as well as increasing technological interventions (EF3).

Concluding, given the changes observed in housing typologies in the Netherlands, one can see that the influence of both societal developments (EF2) and technological (EF3) exogenous factors are the most important in the current diversification. Both of these factors have an effect on policy (EF1), but also a direct effect on housing typologies (see figure 2). An example of the direct effect of technology is the effect of tele-care on housing typologies and an example of the direct effect of societal factors on housing are emerging housing models such as housing and caring communities. Whereas political factors and resulting policy (EF1) was driving in the changing housing typologies of the past (e.g. the introduction of care homes in 70s), nowadays, one can see that societal developments (EF2), empowered by technological factors (EF3), have changed the dynamics of housing typologies for older adults.

06. CONCLUSION AND DISCUSSION

This study mapped different housing typologies from 1945 to 2016, examining the effect of exogenous factors – policy (EF1), societal developments (EF2), and technology (EF3) – on different transition periods throughout history. Five transition periods have been identified over the last 71 years. During these transition points the effect of societal developments (EF2) seems to be especially important. These changes, with the subcategories demographic, cultural, and economic factors, influence housing typologies and housing policy (EF1). With the current diversification of housing typologies, technological changes (EF3) seem to have a profound impact in the development and diversification of housing typologies. Figure 3 shows how the different exogenous factors influence each other and (emerging) housing typologies.

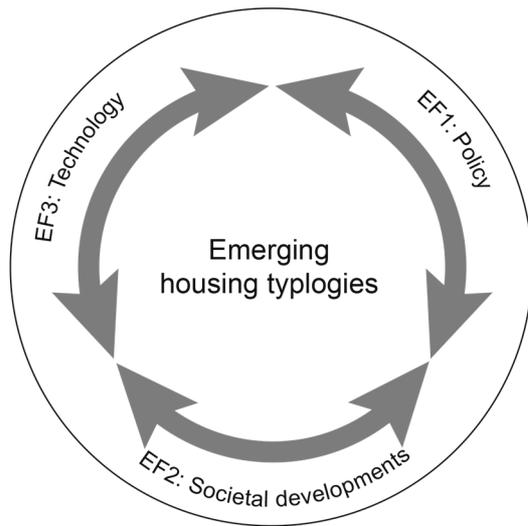


Fig. 3 Effect of exogenous factors on emerging housing typologies

In all categories defined in figure 2, more housing typologies are being developed ('emerging typologies'), the slow retreat of the government in the domain of care over the last decades, and changing societal factors such as the way older adults and care is seen, free-market values that are prevailing and individualisation in all aspects of society. Lastly, technological changes are now already profoundly impacting housing (typologies) for older adults, but these changes are far from done. Developments such as big data, Internet of Things, (bio)sensor technology, domotics, smart homes and/or home automation will continue. Already nowadays, there is no housing for people with dementia that is not equipped with technology (Mohammadi, 2010) and new housing typologies using tele-care are being developed. Technology will prominently change new and emerging typologies and will be integrated into the built environment. It is not unthinkable that the influence of these exogenous factors will continue and that the role of civil society and technology will grow even more. In time, initiatives such as caring communities might replace the former welfare state of the Netherlands. Figure 4 shows the relationship between changing societal views on older adults, the rise and substitution of certain types of typologies and the factors that influence this rise and substitution.

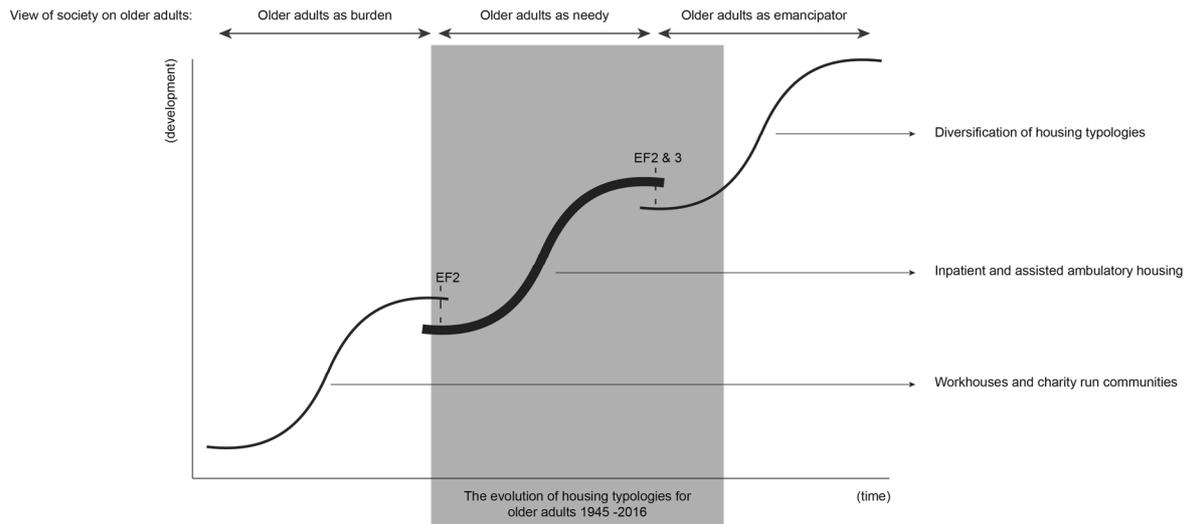


Fig. 4 Housing typologies and changing societal views on older adults

Future research should look into the adoption and use of these typologies, perhaps in a qualitative fashion to examine the effect of exogenous factors on the development of this category. Furthermore, future research should look into the international developments in housing for older adults compared to the Dutch situation. Comparison to international examples and research is difficult, as there is currently little research in this area to be found. That being said, parallels between the Dutch situation and other countries may very well exist.

This research has shown the effect of the context (using three exogenous factors) on housing typology in the Netherlands. Whereas policy factors were tremendously important in building a welfare state and the first variations of housing for older adults, nowadays, societal influence, empowered by technological change, is the primary driver of housing diversification. Policy has become more reactive (under influence of the other exogenous factors) rather than a driving force.

REFERENCES:

Aldrich, F. K. (2003). Smart Homes: Past, Present and Future. In R. Harper (Ed.), *Inside the Smart Home* (pp. 17-39). London: Springer-Verlag.

Bax, E. H. (1990). *Modernization and cleavage in Dutch society: A study of long term economic and social change*. Aldershot: Avebury.

Beltman, H. (2014). Kennisdossier 9: Coöperaties voor en door burgers. Een nieuwe vorm van belangenbehartiging door actieve burgers.

Bijker, W. E., & Law, J. (1992). *Shaping technology/building society: Studies in sociotechnical change*. USA: MIT press.

Bijl, R., Boelhouwer, J., Pommer, E., & Schyns, P. (Eds.). (2009). *De sociale staat van Nederland 2009*. Den Haag: Sociaal en Cultureel Planbureau.

Bijl, R., Boelhouwer, J., Pommer, E., & Andriessen, I. (Eds.). (2015). *De sociale staat van Nederland 2015*. Den Haag: Sociaal en Cultureel Planbureau.

Blom, A., Jansen, B., & Van der Heiden, M. (2004). De typologie van de vroeg-naoorlogse woonwijken. Zeist: Rijksdienst voor de Monumentenzorg.

CBS. (1967). *Jaarcijfers 1967*. Retrieved from http://www.historisch.cbs.nl/detail.php?nav_id=0-1&id=102096923&index=13 Retrieved on 20-12-2018.

Davey, J. A., De Joux, V., Nana, G., & Arcus, M. (2004). *Accommodation options for older people in Aotearoa/New Zealand*. Christchurch: Centre for Housing Research.

De Haan, J., Klumper, O., & Steyaert, J. (Eds.) (2004). *Surfende senioren: Kansen en bedreigingen van ICT voor ouderen*. Den Haag: Sociaal en Cultureel Planbureau.

De Vreeze, N. (2001). Voorgeschiedenis en ontwikkeling van de Woningwet. In N. De Vreeze (red.), *6,5 miljoen woningen: 100 Woningwet en wooncultuur in Nederland* (pp. 19-31). Rotterdam: 010 publishers.

Depla, M., Zwijsen, S., Te Boekhorst, S., Francke, A., & Hertogh, C. (2010). Van fixaties naar domotica? Op weg naar 'goede' vrijheidsbeperking voor mensen met dementie. Amsterdam: VUmc.

Diederich, J. (1958). *Levensomstandigheden van bejaarden in kleinere en middelgrote gemeenten in Nederland*. Amsterdam: Nationale Raad voor Maatschappelijk werk.

Duivenvoorden, A., Van Triest, N. (2015). *Transformatie zorgvastgoed. Tien praktijkvoorbeelden*. Den Haag: Platform31.

Hilfman, M. M. (1963). Aanvaarding wet op bejaardenoorden. *Nederlands Tijdschrift Geneeskunde*, 1963 (107.I.4), 178.

Hooimeijer, P. (2007). Dynamiek in de derde leeftijd, de consequenties voor het woonbeleid. Den Haag: Ministerie van VROM.

Houben, P. (1984). Feiten en visies ouderenhuisvesting. *Maatschappelijke participatie van ouderen en volkshuisvesting 2*. Delft: Delftse Universitaire Pers.

Huber, M. A. S. (2014). *Towards a new, dynamic concept of Health. Its operationalisation and use in public health and healthcare, and in evaluating health effects of food* (Doctoral dissertation).

Maastricht: Universiteit Maastricht.

Kahana, E., & Kahana, B. (1983). Environmental continuity, futurity, and adaptation of the aged. In G. D. Rowles, & R. J. Ohta (Eds.), *Aging and milieu: Environmental perspectives on growing old* (pp. 205-228). New York: Academic Press.

Koffijberg, J. J. (2005). *Getijden van Beleid: omslagpunten in de volkshuisvesting. Over de rol van hiërarchie en netwerken bij grote veranderingen* (Doctoral dissertation). Delft: Technische Universiteit Delft.

Lawton M. P., & Nahemow, L. (1973). Ecology and the aging process. In C. Eisdorfer, & M. P. Lawton (Eds.), *The Psychology of Adult Development and Aging* (pp. 619-674). Washington: American Psychological Association.

Lawton, M. P. (1989). Behavior-relevant Ecological factors. In K. W. Schaie, & C. Schooler (Eds.), *Social structure and aging* (pp.57-78). New Jersey: Lawrence Erlbaum Associates.

Leber, L. (2005). *Inventarisatie wonen en zorg: Literatuurstudie naar woonzorgcombinaties*. Gouda: Habiforum. Retrieved on 1-10-2017 at: <http://repository.tudelft.nl/islandora/object/uuid:5b6e2c85-a6a9-4a11-afe1-729453559af3/datastream/OBJ/view>

Liebregts, M., & Van Nunen, H. (2014). *Essay de toekomst van de woningvoorraad*. Boxtel: Aeneas.

Lien, L. L., Steggell, C. D., & Iwarsson, S. (2015). Adaptive Strategies and Person-Environment Fit among Functionally Limited Older Adults Aging in Place: a Mixed Methods Approach. *International Journal of Environmental Research and Public Health*, 12(9), 11954-11974.

Mens, N., & Wagenaar, C. (2009). *De architectuur van de ouderenhuisvesting. Bouwen voor wonen en zorg*. Rotterdam: NAI.

Mens, N., & Wagenaar, C. (2010). *Health care architecture in the Netherlands*. Rotterdam: NAI.

Ministerie van Welzijn, Volksgezondheid en Cultuur (1984), Nieuwe nota geestelijke volksgezondheid. Leidschendam.

Mohammadi, M. (2014). *DomoticaKompas: Inzichten uit een decennium slimme zorgprojecten in Nederland*. Nederland: Van Litsenburg.

Mohammadi, M. (2010). *Empowering Seniors through Domestic Homes: Integrating Intelligent Technology in Senior Citizens' Homes by merging the Perspectives of Demand and Supply* (Doctoral dissertation). Eindhoven: Technische Universiteit Eindhoven.

Mohammadi, M., & Hammink, J. H. W. (2016). Standards for Smart Living: A Historical Overview. In J. Van Hoof, G. Demiris, & E. J. Wouters (eds), *Handbook of Smart Homes, Health Care and Well-Being*.

Naafs, J. (2010). *Met zorg wonen* (1^e druk). Houten: Bohn Stafleu van Loghum.

Oevering, F. (2005). Ruimtelijk beleid als kader voor de Nota Ruimte. Retrieved on 20-9-2017 from <https://economie.rabobank.com/PageFiles/3852/Nota%20Ruimte%20en%20ruimtelijk%20beleid.pdf>

Priemus, H. (1988). Keerpunt in de volkshuisvesting. ESB Economisch statistische berichten, 874-878.

Priemus, H. (1995). Redefining the welfare state; Impact upon housing and housing policy in The Netherlands. *Journal of Housing and the Built Environment*, 10(2), 141-155.

Priemus, H., De Jong, M., & Wassenberg, F. A. G. (1994). Exogene invloeden volkshuisvesting: grondslagen voor strategische beleidsvorming. *Volkshuisvesting in theorie en praktijk* (35). Delft: Delftse Universitaire Pers.

Pynoos, J. (1990). Public policy and aging-in-place: Identifying the problems and potential solutions. In D. Tilson (Ed.), *Aging-in-place: Supporting the frail elderly in residential environments* (pp. 167–208). Glenview, IL: Scott, Foreman.

Remali, A. M., Salama, A. M., Wiedmann, F., & Ibrahim, H. G. (2016). A chronological exploration of the evolution of housing typologies in Gulf cities. *City, Territory and Architecture*, 3(1), 14.

Rijksoverheid (2013, 17 September). *Troonrede 2013*. Retrieved on 20-9-2017 from <https://www.rijksoverheid.nl/documenten/toespraken/2013/09/17/troonrede-2013>

Statline, CBS. (2016). Bevolking, huishoudens en bevolkingsontwikkeling; vanaf 1899. Centraal Bureau voor de statistiek.

Stavenuiter, M. M. J., & Van Dongen, M. C. (2008). *Gemeenschappelijk wonen: een literatuurstudie*. Utrecht: Verwey-Jonker Instituut.

Taverne, E. (1981). De woningwet en de architectuur (1902-1940). *Groniek*, (75), 22-32.

Tommel, D. K. J., (1995). Accenten in de nieuwe ordening van de volkshuisvesting. In H. Priemus, & I. S. Smid, & J. De Beer, (Eds.), *Veranderingen in de maatschappij: veranderingen in de volkshuisvesting* (pp. 3-8). Delft: Delftse Universitaire Pers.

Van Dam, F. V., Daalhuizen, F., De Groot, C., Van Middelkoop, M., & Peeters, P. (2013). *Vergrijzing en ruimte: gevolgen voor de woningmarkt, vrijetijdsbesteding, mobiliteit en regionale economie*. Den Haag: Planbureau voor de Leefomgeving.

Van der Burgt, M., Van Mechelen-Gevers, E., & Te Lintel Hekkert, M. (2006). *Introductie in de gezondheidszorg*. Houten: Bohn Stafleu van Loghum.

- Van der Schaar, J. (1987). *Groei en bloei van het Nederlandse volkshuisvestingsbeleid: Volkshuisvesting in theorie en praktijk* (Doctoral dissertation). Delft: Technische Universiteit Delft.
- Van Elp, M., Van Zaal, M. P. J., & Zuidema, M. V. (2012). *Bouwen voor de zorg. Perspectief voor de Nederlandse bouw*. Amsterdam: Economisch Instituut voor de bouw (EIB).
- Van Vliet, A. A. M. (2004). *Zelfredzaam wonen: bouwtechnische maatregelen voor de systematische aanpassing van de woning aan veranderende woonbehoeften* (Doctoral dissertation). Eindhoven: Technische Universiteit Eindhoven.
- Verbeek, H., Zwakhalen, S. M. G., Van Rossum, E., Ambergen, T., Kempen, G. I. J. M., & Hamers, J. P. H. (2010). Dementia Care Redesigned: Effects of Small-Scale Living Facilities on Residents, Their Family Caregivers, and Staff. *Journal of the American Medical Directors Association*, 11(9), 662-670.
- Vermeij, L., & Engbersen, R. (Eds.). (2017). *Oud worden in Nederland*. Den Haag: Sociaal en Cultureel Planbureau en Platform 31.
- Vis, G. N. M. (1994). *Oud en arm: hervormde bejaardenzorg in Alkmaar, 1744-1994*. Hilversum: Verloren.
- Vonk, G. J. (2003). De publieke taak in het stelsel van sociale zekerheid. In J. W. Sap, B. P. Vermeulen, & C. M. Zoethout (Eds.), *De publieke taak* (pp. 165-184). Deventer: Kluwer.
- Vreugdenhil, M. (2012). *Nederland participatieland?: De ambitie van de Wet maatschappelijke ondersteuning (Wmo) en de praktijk in buurten, mantelzorgrelaties en kerken woonbehoeften* (Doctoral dissertation). Amsterdam: Vossiuspers UvA
- WWS (2015). *Van zorgzwaartepakket naar zorgprofiel*. Ministerie van Volksgezondheid, Welzijn en Sport. Retrieved on 01-10-2017 from: <https://www.informatielangdurigezorg.nl/volwassenen/zp-zorgprofiel>

Yegenoglu, H. H. (2016). *Woonsporen: de sociale en ruimtelijke biografie van een stedelijk bouwblok in de Amsterdamse Transvaalbuurt* (Doctoral dissertation). Eindhoven: Technische Universiteit Eindhoven.

Wiles, J. (2005). Home as a new site of care provision and consumption. In G. J. Andrews, & D. R. Philips (Eds.), *Ageing and Place: Perspectives, Policy, Practice* (pp. 79-97). London.