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# **Ageing in place and the built environment. Implications for the quality of life and the risks of isolation of frail older people**

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## Abstract

In this paper we address the relationships between ageing in place and the built environment. More specifically we review and assess how the built environment affects the quality of life and the risks of isolation of frail older people ageing at home. The paper is articulated in 4 parts. In the first we highlight our conceptual background. In the second we review the evolution of the debate on the built environment in relation to disability and older age, stressing the shift from a negative approach (removing ‘architectural barriers’) to a more holistic and ‘pro-positive’ one (‘universal access’). In the third section we perfect our analytical framework and explore in detail how the built environment – at its three main spatial scales: the home, the building and the urban context – can condition the life of older people. In the fourth we operationalise the analysis of the three spatial scales in relation to specific activities of daily living and the degree of physical and cognitive limitation of frail older people. We conclude highlighting some policy issues and suggestions.

## Key-words

Ageing in place, frail older people, built environment, age-friendly homes and cities, welfare: housing and public services

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## Introduction

In the discussions triggered by the ageing of the population in the last thirty years, the impact of the built environment on both the quality of life and the risks of social isolation of frail older people ageing at home has only marginally been addressed. It is only recently that the relevant connection between ageing and architectural and urban design have been stressed, reviving a theme that had been developed only in connection with disability and the removal of architectural barriers, and taking on board the broader debate on ‘universal’ design.

The percentage of older people in Europe is currently the highest in the world and growing. It is estimated by Eurostat (2017) that in 2080 the share of people aged 80 and over will be more than double that of 2017 (i.e. 12.7% compared to 5.5%). At the same time, the European population is becoming increasingly urban; 75% of EU people currently live in cities, compared to 50.5% in 1950, and it is estimated that this percentage will reach 78% by 2030 (Falasca, 2018a). In 2013, 76% of the Italian population lived in municipalities with medium to high levels of urbanisation (Istat, 2017b) This means that cities will increasingly host older people, while they have not been designed for such users and they actually pose significant problems in terms of accessibility, usability and safety. On the other hand, it must also be acknowledged that 24% of the Italian population still lives in municipalities with low levels of urbanisation, often in remote and mountainous areas, which pose similar but also different problems for ageing in place.

In this paper<sup>1</sup> we examine the factors that can condition ageing in place, focusing on *the relationships between ageing and the built environment context*. More specifically, we address *how the built environment affects the quality of life of frail older people ageing at home and how it can hold back or increase the risks of isolation*. The paper is articulated in 4 parts. In the first we highlight the conceptual background of our work, putting forward some figures and defining a number of concepts and relations, while outlining the focus of our analysis. In the second we review the evolution of the scientific debate on the role of the built environment in relation to disability and older age, stressing the shift from a limited negative approach (removing ‘architectural barriers’) to a more holistic and ‘pro-positive’ one (‘universal access’). In the third we perfect our analytical framework and explore in detail how the built environment – at its three main spatial scales: the home, the building and the urban context – can condition the life of older people, in the light of the concept of *universal accessibility*. In the fourth we operationalise the analysis of the three spatial scales with specific attention to the different types of activities older people need to carry out, in relation to their level of physical and cognitive frailty. In a concluding section we then provide a synthesis of the discussion and highlight some policy issues and suggestions.

## 1. Ageing in place and the built environment: some facts and concepts

The key question addressed in this paper is how the built environment<sup>2</sup> – at its three main spatial scales, the home, the building, and the neighbourhood – affects the ‘ageing in place’ of lone and frail older people, with specific attention to the impacts on their quality of life and the risks of physical and social isolation. Before we begin, however, we need to present some figures for Italy and to define our conceptual framework.

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<sup>2</sup> In the course of the paper we will use the terms *spatial context*, *physical context* and *built environment* somewhat interchangeably. They all refer to the *place* where (older) people live, viewed eminently in its material/physical dimension, rather than the social or economic dimensions, although these dimensions are all strongly interrelated.

## 1.1 A few figures

Recent data released by Istat (2017a; see also Ranci, 2019) report that in Italy, in 2015, 2.5 million people  $\geq 75$  years of age lived *alone*, i.e. 40% of all people  $\geq 75$ . Projections estimate at 3.6 million this number by 2045, i.e. 6% of the Italian population. This means that in Italy, as in most of the Western world, ageing is becoming a lonely affair. The large majority of lone older people in Italy live *at home*. Differently from other European countries, however, a significant portion – 71% – own their home, although 20% live in social housing.

In what concerns *self-sufficiency*, the survey reveals that 61% of older people declare full functional autonomy (i.e. in all ADL-Activities of Daily Living). However, as many as 13% (317,000 people) present severe functional limitations and another 9% is affected by dementia or Alzheimer, i.e. have severe cognitive limitations. Limitations especially concerns *mobility*. In fact, only 33% declare full mobility, both at home and outside, whereas 56% declare difficulties only outside the home, and 10% are confined in bed or in a chair. These figures suggest that more than half the number of older people living alone at home need some form of help to carry out at least some of the activities of daily life.

In Italy, *help* to older people living alone is still provided mainly by family members and only marginally by public services. The survey by Istat reveals that as much as 86% of older people living alone receive some form of help from family members, but 14% do not receive any family help. As to public services, only 8% of all older people receive some domiciliary help from public providers, although this form of help is generally for only few times a week and seldom ensures continued daily assistance. In fact, 8% of lone older people ageing at home hires private help, in the form of paid caregivers ('badanti' in Italian). This solution, however, is expensive and leaves out the poorest strata among older people.

The lack of self-sufficiency, in its different forms and degrees, and the type – or lack – of help have a direct bearing on the *solitude* of older people ageing at home, both objective and 'perceived'. The data by Istat reveal that as much as 13% of older people declare they *never* meet anybody, 34% declare they see people less frequently than desired, and only 53% are satisfied of their relational life. Among the reasons provided for the limited interaction with others, physical or cognitive impairment accounts for 25% of the cases, geographical distance for 18%, whereas architectural barriers or absence of accessible public transportation for 3%.

The above figures highlight that ageing in place is increasingly a lonely affair and that both the individual level of frailty and the support system – i.e. the form and extent of help – affect significantly the quality of life and the level of isolation of lone older people ageing at home. They do not sufficiently address, however, the role of the built environment, which is the dimension this paper seeks to analyse.

But before we proceed, we need to better define our conceptual framework and provide some background to the concepts of frailty, quality of life, and isolation.

## 1.2 Working concepts

**Frailty.** In this paper, the concept of *frailty* refers eminently to a *physiological, individual* condition. As stressed by Arlotti, Luppi and Ranci (2020), frailty is a strictly individual sub-dimension of vulnerability, which encompasses also external/contextual factors such as social, economic and institutional conditions. Frailty refers to both physical and cognitive limitations (Arlotti, Luppi and Ranci 2020). Already in the 1950s methods were developed to assess individual levels of physical and cognitive limitations, with regard to ADL (Activities of Daily Living) and IADL (Instrumental Activities of Daily living), as well as cognitive capabilities (Muir, 2017). Frailty has a direct bearing on the capacity of people to live alone, to be self-sufficient and

to be mobile. Hence, it directly affect the quality of life and also the relational sphere of older people.

**Quality of life.** As stressed by Arlotti, Luppi and Ranci (2020) *quality of life* is a complex concept, which cannot be linked solely to the health dimension. Moreover, in addition to objective aspects, whether related to the individual or to the context, there is also an important subjective dimension, related to the ‘perception’ of one’s quality of life. The quality of life of frail older people depends thus on a range of factors: psycho-social wellbeing, financial status, cultural norms, social relations, and/or the institutional environment, which all contribute to define older people’s level of independence and their capacity to control their own life (Bowling et al., 2002). As such quality of life proves difficult to measure. Moreover, the subjective perception of one’s quality of life changes with age, and there is also a ‘cognitive adaptation’ mechanisms (Shilling, 2005), whereby the perceived quality of life tends to align with the changing psycho-physiological conditions, despite the worsening of the latter. Some authors consider the subjective satisfaction of needs a key parameter for measuring the quality of life (McKenna et al., 1999). Hyde et al. (2003) propose to measure the quality of life in old age on the basis of four domains of need: control, autonomy, self-realization, and pleasure (see Arlotti, Luppi and Ranci 2020). In general, there is widespread agreement that health, functional abilities and mobility are among the most conditioning factors in relation to the perceived quality of life of older people.

**Social isolation in old age.** As stressed by Arlotti, Luppi and Ranci (2020), social isolation can be assessed in both quantitative/structural and qualitative/functional terms. The first could be considered an objective dimension and is generally measured in terms of number and frequency of social relations/contacts; the latter is more subjective and depends also on the quality of, and satisfaction derived from, such relations/contacts. In fact, from the subjective point of view, social isolation is often equated to *loneliness*, which is the ‘perceived’ absence or loss of meaningful relations and/or emotional attachments. But while the sense of loneliness is always subjective, the notion of social isolation encompasses also objective factors (Arlotti, Luppi and Ranci 2020), namely the absence of structural and functional social relations and support. Inevitably, the risk of social isolation increases with age, as older people’s health conditions worsen, limiting their mobility (Korporaal et al., 2008), and their relational systems evolve (family and friends die). A positive correlation has, in fact, been found between ageing and loneliness (Yang, Victor, 2011), although the subjective perception of loneliness is also affected by social norms and expectations (Dykstra, 2009).

In conclusion, the quality of life and the degree of social isolation of older people living at home depend on both individual and contextual factors. Among *individual factors* we have retained the notion of *frailty* – identified in terms of objective physical and cognitive impairment – as a major determinant, although it can be further influenced – for the good or for the bad – by other individual conditions such as education, income, or family structure. In what concerns *contextual factors*, we consider especially important the local ‘care regime’ (see Costa, Melchiorre, Arlotti 2020), and the *built environment*, which is the focus of this paper.

### 1.3 The built environment

Based on the above definitions of frailty, quality of life, and isolation (see Arlotti, Luppi, Ranci 2020), we develop our argument on the role of the built environment starting from the following premises:

- a) The ageing process involves growing levels and diversified forms of frailty, that cover the whole spectrum of people’s possible psycho-physical disabilities (i.e. disabilities that are not necessarily characteristic of older people): from mobility issues, to sensorial issues, to cognitive issues. In other words, a frail older person can be situated in any position within the disability universe and can potentially express all types of disability, with different degrees of intensity.

- b) Physical and cognitive frailties condition not only the functions and activities of daily life, but also the social relations of older people. They can, thus, significantly affect their quality of life, as well as trigger and enhance processes of material and social isolation.
- c) The features of the spatial context – the *built environment* in particular – are determinant in *amplifying or counteracting frailty itself* (e.g. in what concerns accidents and injuries at home or outside), *isolation* (e.g. in what concerns the possibility of going out and moving around), and, ultimately, both the objective condition and the subjective perception of *wellbeing* (e.g. in relation to feeling comfortable and safe at home or outside).

Starting from these premises, we can now address in greater detail how the spatial context can influence the quality of life and the risks of isolation of older people ageing at home, at three main scales of analysis: the *home*, the *building*, the *urban context*.

**The home environment.** The first scale of analysis concerns the home, i.e. the *inside* of the accommodation context. Older people, especially frail ones, spend the majority of their time ‘at home’. A key need of older people is thus remaining able to carry out domestic activities and maintaining a good relationship – which is both sentimental and based on habit and routines – with their living environment (Iwarsson et al., 2007a). Many scholars have stressed the tight link between the home environment and the quality of life of older people ageing at home, highlighting how issues of accessibility to, and usability of, home spaces and facilities are strongly correlated with the quality of life and the risks of isolation, both in objective and subjective terms (Lawton & Nahemow, 1973; Evans et al., 2002; Oswald et al., 2007; Herbes & Mulder, 2017).

**The building.** The second spatial scale is closely related to the first, but concerns the *building* where the home is located. Sometimes the two scales coincide (e.g. in the case of single-dwelling buildings), but in most cases people’s homes are located in multi-dwelling – often multi-storey – buildings. At this scale of analysis we focus especially on how the physical features of the building can condition the relationships between the inside – the home – and the outside. The comfort of the home environment and the full usability of its inside spaces and facilities may warrant a good quality of life but are not sufficient to prevent isolation, which bears on the possibility to go *outside*. Access to the outside world is a key dimension of the daily life of older people, not only to perform necessary functions such as shopping or seeing a doctor, but also to carry out social functions in the spheres of human relations and leisure. The existence of architectural barriers such as stairs and, viceversa, the presence of devices such as handrails, ramps and elevators in the building can make a huge difference in the possibility for frail older people to go out and, consequently, in their quality of life and level of social relations.

**The neighbourhood and urban context.** The third scale refers to the neighbourhood or, more in general, the immediate urban context. The physical characteristics of the neighbourhood where older people live can significantly condition their quality of life and their degree of isolation. The features and safety of streets, the form and accessibility of public spaces, the availability of shops, services and accessible public transportation, as well as the availability of amenities (social and cultural facilities and events) all affect to a great extent the wellbeing, the social relations and the sense of community and belonging of residents. This is even truer for frail older people ageing at home, as they depend to a greater extent on the possibility to access services and amenities and to nurture neighbourly relations in a safe environment (Zajezyk, 2018).

## 2. From architectural ‘barriers’ to universal ‘accessibility’. A brief retrospective

In line with the current debate (Wallerstein, 1992; Church, Marston, 2003; Lauria, 2014) we will here use the term *universal accessibility* for analytical purposes, rather than as a normative concept. According to Lauria (2014:126), universal accessibility is ‘the attitude of an environment to guarantee that every person, independently of age, gender, cultural background, physical,



sensorial or cognitive capabilities, can live an independent life'. Accessibility becomes thus a multi-scalar and a multi-functional concept simultaneously, as it involves not only the different scales of the physical environment where one lives, but also the possibility of autonomously carrying out all the different activities of daily living. This means that 'the improvement of the degree of accessibility to a place, a good, or a service should be achieved not only through a process of *elimination* of existing obstacles (in the broader meaning), a need already largely contemplated by norms and regulations, but also through a process of *addition*, aimed at enriching the environment with the devices and services it lacks. In other words, when addressing accessibility, *present* barriers and *absent* devices and services represent two faces of the same coin' (Lauria, 2014: 127). The current notion of universal accessibility is thus the result of a significant evolution in the scientific debate, which moved from a negative approach to a positive one, in both the social and the physical domains: from 'handicapped' people to 'universal users', from 'barriers' to 'accessibility' (see Figure 1).

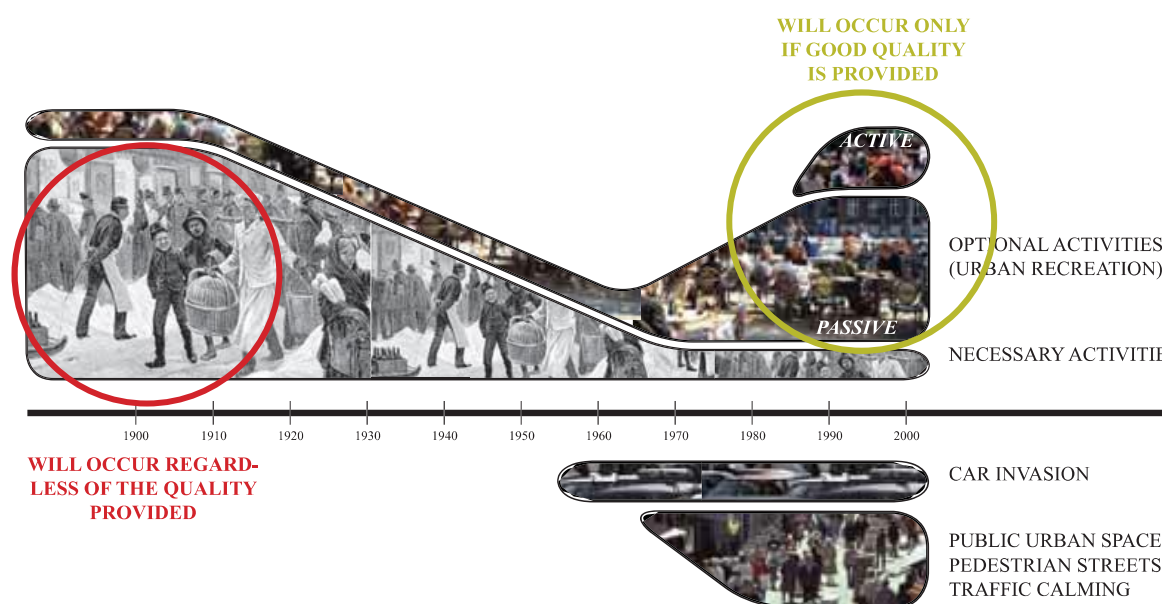


Figure 1. In this chart J. Gehl shows how use of the public space has changed in the course of the last century, highlighting the progressive deterioration of both the quality of and the accessibility to the urban space.

Source: Reproduced from Gehl (2004)

The first discussions on how the built environment could affect the activities of daily life started in the 1950s and 1960s, with reference to people with disabilities. It is in these years that the term 'architectural barriers' was introduced. A pioneering experience was carried out in Finland, where a new town free of architectural barriers – Tapiola, near Helsinki – was planned in the 1950s, with advice from the Danish Association of Disabled People. All housing units, buildings and external spaces were planned so as to be accessible to people on wheelchairs (Morelli, 1984). The same approach – still conceiving disability as people confined to a wheelchair – was developed in the USA, where in 1961 the American National Standards Institute published the *Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped* (Adler, Pierman, 1981) and in Canada, where in 1965 the *Building Standards for the Handicapped* – the first legislation for the elimination of architectural barriers and the introduction of accessibility standards – were approved. In Italy, the term 'architectural barrier' was introduced for the first

time in 1967, in a document of the Ministry of Public Works, also exclusively addressing the mobility issues of people in a wheelchair.<sup>3</sup>

Since those first discussions, experiments and attempts at regulation, the debate has progressively broadened, addressing the issues of the accessibility to, and usability of, the spatial context at its different scales in relation to other categories of users – such as older people – and overcoming the exclusively medical approach to disability. Starting in the 1970s, the medical notion of disability – i.e. based on exclusively physical handicaps – was enlarged to take into account also the social factors that create and reproduce segregation. In 1974 the Union of the Physically Impaired Against Segregation was founded in the UK, which in 1976 published the *Fundamental principles of disability* in which the conditioning role of the spatial context on disability was stressed (UPIAS, 1976; Mura, 2007). In that decade, the strategy of domiciliary assistance was also introduced in many countries, as an alternative to institutionalised care (Bernabei et al., 1995).<sup>4</sup> Finally, standards began to be established throughout Europe concerning the construction of public spaces (pedestrian lanes, ramps, etc.), buildings (ramps, elevators, control and signaling devices), and individual dwellings (minimum width of corridors, doors, toilets).<sup>5</sup> In Italy, the PEBA-Plans for the Elimination of Architectural Barriers introduced later in the 1990s are an example of this normative shift (Lauria, 2014; AeA, 2017)

Nevertheless, throughout the 1970s the approach remained prevalently oriented to the ‘elimination’ of the ‘barriers’ that prevented the mobility of people with ‘special’ conditions and needs. As stressed by Della Zanna (2010), the norms and standards introduced in the domain of architectural and urban design still featured a ‘negative’ approach, rather than a ‘positive’ – or rather ‘pro-positive’ – one, i.e. one oriented to satisfy the needs of ‘all’ kind of users. Older people were only marginally considered and only in relation to the design of specialised LTC facilities (Giunco, 2014). ‘Ageing in place’ was not yet perceived as a relevant strategy.

A key shift occurred in the 1980s and 1990s, when the ‘Social Model of Disability’ began to be developed (Oliver, 1981; Oliver, 2004). This holistic approach explicitly postulated the need to shift the attention from the functional limits of people with disabilities to the issues created by the built and social environment. In other words, it reversed the perspective and focussed on the physical and cultural barriers that reproduced and enhanced disabilities. Within this approach the ‘disabling’ features of the home environment and how they could condition older people’s choices began to be addressed. In 1981 the results of an inquiry carried out in a number of retirement homes in the USA revealed that in 47% of cases the choice to move into a dedicated residential facility was caused by problems related to the previous home and urban environment and that in 29% of the cases it had to do with issues of safety and solitude (Della Rocca, 1981).

Soon thereafter, the philosophy of ‘universal design’ was introduced. Ronald Mace, an American architect affected by poliomyelitis argued that the production of goods and the built environment had to take into account *all* possible categories of users, starting from the very design phase, rather than having to be ‘adapted’ or produced ‘ad hoc’ for ‘special’ users. In 1989 he founded the Center for Accessible Housing at the North Carolina State University, which soon became a leading research and training centre for what has come to be defined as ‘universal design’. In 1997 the Center for Universal Design of the North Carolina State University published a handbook with 7 ‘principles’ of universal design (Center for Universal Design, 1997; Mace, 1998). The same shift was observed also in Europe. In 1993 the 15 states of the European Community founded in Dublin the European Institute for Design and Disability (EIDD) and in the course of the 1990s the approach moved from ‘design for special needs’ and ‘barrier-free architectural design’ to ‘inclusive design’, ‘universal design’ and ‘design for all’ (Steffan, 2006) (see Figure 2).

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<sup>3</sup> Circolare Ministero LL.PP. no. 465 of 29 January 1967

<sup>4</sup> In Italy the Region of Friuli Venezia Giulia was the first to introduce this form of public care in 1972 (Regional Law 7 January 1972).

<sup>5</sup> In Italy such standards were first introduced in 1978 with the DPR no. 384/1978.



These developments have brought the discipline of architectural and urban design to its most recent approach, i.e. that of ‘universal accessibility’, which is strongly linked to the concept of quality of life. Wallerstein defines the path towards universal accessibility as ‘a social action process by which individuals, communities, and organizations gain mastery over their lives in the context of changing their social and political environment to improve equity and quality of life’ (Wallerstein, 1992:198).

With the new Millennium and the emergence of the ageing issue, older people have become a relevant target of the universal design approach, also in relations to the growing discussion on ‘active ageing’ and the diffusion of the ‘ageing in place’ policy strategy (Davey et al., 2004; Wiles, 2005). The relationships between ageing in place and the physical context – the housing and urban environments – have thus become a relevant focus of public policies (Buffel, Phillipson, 2016) and the theme of ‘age-friendly’ cities (AFCs) and communities has gained attention (WHO, 2007a; WHO 2007b; OECD, 2015). As stressed by Handler (2015), in fact, contemporary cities are eminently structured as a set of spaces and facilities imagined, designed and built for young people, whereas older people have never been considered a relevant user component.

The questions at the heart of the AFCs debate are also linked to the codification by the World Health Organisation of the bio-psycho-social approach to disability, and in particular its *International Classification of Functioning* (WHO, 2001). The key outcome of this debate is that all spatial contexts have to be conceived, designed and – if necessary – remodelled, so that *any* person in the course of his/her lifetime can access, use and enjoy them. In fact, *everybody* in the course of his/her life time can experience a condition of frailty, disability, or insecurity – temporarily or permanently – and can be unable to autonomously and safely carry out some activities of daily living. This change of paradigm within the health circles has further influenced architectural and urban design towards a more inclusive universal approach, especially in what concerns older people. In 2007 the WHO has published the *Global Age-friendly Cities: A Guide*, which represents a key scientific and technical contribution for the ageing in place strategy (WHO, 2007). The Guide addresses issues – the accessibility to, the usability of, and the safety in, the housing and urban environments – that are intimately related to the quality of life and the risks of isolation and marginalisation of older people.

In the most recent debate, thus, the discussion on active ageing and ageing in place bypasses the notion of mere architectural barriers. The approach is now to ‘make the home private space and the public spaces/services as porous and intersectable as possible’ (Mugnano, 2018:19). And the physical context – at its different scales – becomes a key variable in the design of public policies for older people (Zajczyk, 2018).



Figure 2. The seven principles of Universal design. Source: NC State University, Center of Universal Design (1997). Available at: [https://projects.ncsu.edu/ncsu/design/cud/about\\_ud/udprinciples.htm](https://projects.ncsu.edu/ncsu/design/cud/about_ud/udprinciples.htm)

### **3. Living older age at home. Built environment, quality of life and social isolation: an analytical framework**

Once we have set the background of the debate on the built environment and its relation with ageing in place, we can address in greater detail *how* the the physical context can condition quality of life and isolation. In this section we will briefly review the scientific debate concerning the three main scales of the spatial context – the home, the building and the neighbourhood – stressing, at each scale, the main aspects affecting the quality of life and the risk of social isolation of frail older people.

#### **3.1 Older people, *home* environment, and quality of life**

In the literature, the *home* is considered from a double perspective (Evans, 2002; Elsinga et al., 2015; Handler, 2015; Mugnano, 2018). On the one hand the home should be a place where older people, even when frail, should be able to carry out the basic functions of daily life. It should, hence, be free of barriers and equipped with support devices that make this possible. On the other hand, the home should also be a place that conveys a sense of confort and safety, based on familiarity and/or memory. Ageing at home, thus, does not involve just a functional dimension, but also an emotional one (Mugnano, 2018), as it contributes to reproduce a sense of belonging, while preserving the social relational capital built over the years around the home. There is thus a double positive relation between the quality of housing and the quality of life (Evans et al., 2002). An active management of the home environment ensure control and autonomy (Arlotti, Luppi, Ranci 2020) and represents a major source of wellbeing for older people, especially frail and lone ones (Rubinstein et al., 1992; Oswald, 2011).

With regard to the relationship between the home environment and the quality of life, three main aspects are addressed in the literature.

A first aspect concerns the interaction between the *physical dimension of the domestic environment and the individual abilities of older people to carry out daily functions*. Many studies underline how low levels of housing quality also correspond to low performance in the activities of daily life (Iwarsson, 2007a) and, vice versa, how even small modifications in the material conditions of the home can dramatically improve the degree of autonomy and the quality of daily life of older people (Lawton, 1973; Herbers, Mulder, 2017). The characteristics of the home environment are thus crucial for ageing in place, but even more crucial is the degree of *adaptability* of dwellings to the evolving needs of its residents (Herbers, Mulder, 2017). According to a study carried out in the first years of the new millennium, only 1% of the EU housing stock was deemed suitable for older people, i.e. was free of architectural barriers (CECHODAS, 2008). A more recent analysis on Share data for the year 2015 (Luppi 2020) shows that the housing condition of people  $\geq 75$  years of age living alone is quite differentiated among EU countries and the presence of medium to high level architectural barriers is greater in Eastern and Southern Europe (respectively 38% and 30% of cases) than in Continental and Nordic countries (respectively 25% and 15%).

These results are not surprising, since Continental and Nordic countries were historically the first to address accessibility in relation to the housing environment. They did so from a double perspective: on the one hand, the restructuring of the existing housing stock and, on the other hand, the building of new housing, both according to the principle of low-cost *adaptability* to the changing needs of dwellers. The notion of progressive adaptability fits very well that of universal design, i.e. designing a home context that can answer the evolving needs of people. A reference case to this regard is the *Lifetime Homes Design Guide* published in the UK in 2010 (Goodman, 2010), which contains guidelines for the design of housing units that are adaptable over the course of a person's lifetime (see Figure 3). The Greater London Authority now requires that all new housing, whether built by building societies or private investors comply with the standards of



lifetime homes. Also Sweden is moving in this direction with a financial scheme for the adaptation of housing to the individual limitations of people (Herbers, Mulder, 2017).

A second aspect addressed in the literature is the *influence of personal economic conditions and house ownership on the wellbeing of older people*. The possibility to carry out house modifications – adaptation – to meet evolving needs and/or to change housing arrangements is highly contingent upon personal economic conditions. Likewise, housing tenure status – i.e. whether older people are home owners or tenants – considerably condition their options and ultimately their wellbeing. A recent research carried out in a number of European countries (Herbers, Mulder, 2017) shows that renting is generally associated with lower levels of quality of life, both in functional terms (because of the limited possibility to adapt the physical environment to the new needs) and from a psychological point of view (because of a sense of precariousness). The research also highlights that the percentage of older people that are renting their accommodation is higher in continental countries such as Austria, Germany, The Netherlands and Switzerland, whereas it is lower in Eastern and Southern European countries such as Italy, Spain, Czech Republic, Poland, Estonia, Hungary and Slovenia. But it also shows that the negative effects of being a tenant are lower in countries where there is a tight regulation of the rental market, such as in Sweden. A further negative process associated with renting, especially in the case of low income rentals, is *gentrification*. Older people are more prone to eviction when their neighbourhoods are subject to gentrification (Burns et al., 2012).

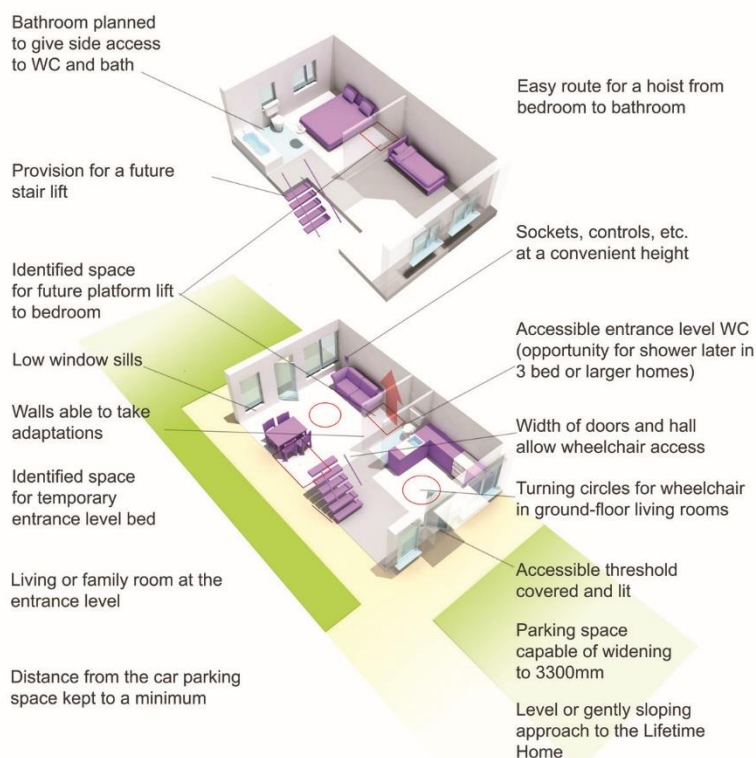


Figure 3. Lifetime Homes Diagram

Source: Reproduced from Goodman (2010).

The third and last aspect to consider in what concerns the adaptation of the housing context is the *lack of information* experienced by older people about legislation and regulation, especially funding opportunities. This limited access to information further aggravates the difficulties connected with the generally high costs of upgrading and adapting the physical housing context in the case of low income older people (Haak et al., 2015).

### 3.2 Older people, quality of *buildings*, quality of life and isolation

In the previous section we addressed issues related to the immediate living environment of older people, i.e. aspects concerning the use and enjoyment of the home *inside* spaces, which mostly affect their quality of life. In this section we shift to the scale of the *building*. As stressed earlier, this scale can coincide with the home in the case of single dwelling buildings, but in Europe, a large share of housing is actually made of multi-dwelling – often multi-storey – buildings. This scale of analysis involves three analytical dimensions, all directly affecting both the quality of life and the risks of isolation of older people: a) the *physical features* of the building and, more specifically, those concerning *access to the outside*; b) the *relational and social dimension* the building can provide, in case of multi-dwelling buildings; c) the *policy potential*, related to the possibility to organise collective services, when several older people live in the same building.

In what concerns the *physical features*, the possibility to easily exit the building directly affects the capacity of older people to be independent, to relate to the outside world and to nurture social relations. The role of physical barriers was partly discussed in the previous section. Here what matters are the barriers between the older person's home and the outside world, such as stairs, heavy doors or gates, narrow or unaided passages, etc. The presence of handrails, ramps – elevators in the case of multi-storey buildings – and power devices/controls (e.g. for opening a gate, etc.) is of paramount importance for allowing older people to easily exit their home, extend their autonomy in carrying out daily errands, and nurturing their social life. In what concerns multi-storey buildings, in Italy as much of 56% of apartments owned by people over 65 years of age are located in buildings without an elevator, and many of these do not even have room for installing one (Auser, AeA, SPI, 2015). Moreover, 55% of flats owned by older people is more than 50 years old and therefore structurally little suited to be adapted to emerging needs (AeA, 2018b). In what concerns the *social/relational aspect*, the presence of several households in the same building, as is often the case in European cities (e.g. multistorey condominiums, but also terraced or row houses) adds an important dimension to this scale of analysis. In fact, the absence of barriers to exit the home matters also in what concerns relations of proximity – i.e. relations with people 'next door' or living in the same building. The quality of life and, viceversa, the isolation of an older person living alone depend very much on the system of relations that can be developed with neighbouring families and on the possibility to cultivate this relational capital by being able to exit the home (Falasca, 2018b).

But it is on the third dimension, the *policy potential*, that the more interesting developments and experimentations are occurring. In fact, multi-dwelling buildings open up the possibility to exploit economies of scale and economies of agglomeration in the organisation of services for older people, provided there is a sizable presence of such subjects in the building, a strategy that is being explored in many countries. These experimentations all go in the direction of bypassing the traditional notion of 'individual' living and services and exploring innovative forms of 'cooperative' living and service arrangements, that can enhance ageing in place and reduce the cost of assistance (Kesselring et al., 2015). For example, a number of Northern Italian municipalities have experimented with the provision of condominium-based domiciliary care services to frail older people living alone, whereby the building has become a 'community of shared services' (Mugnano, 2018). Another example is the construction of new condominiums, capable of responding to the residents' needs over the full life course. In the USA, Canada and some Nordic countries new buildings are being built, featuring a quota of apartments endowed with services and equipment specifically oriented to the needs of older people (Falasca, 2018a). In Barcelona, the municipal programme *Viviendas dotacionales* introduced in 2003 has supported the construction of apartment buildings made of small flats – 50 square meters – especially designed for older people and equipped with dedicated devices and appliances. The buildings are also endowed with common spaces for socialisation and collective services (generally on the



ground floor and open to the neighbourhood) and are located in proximity to basic services (Falasca, 2018a) (see Figure 4).

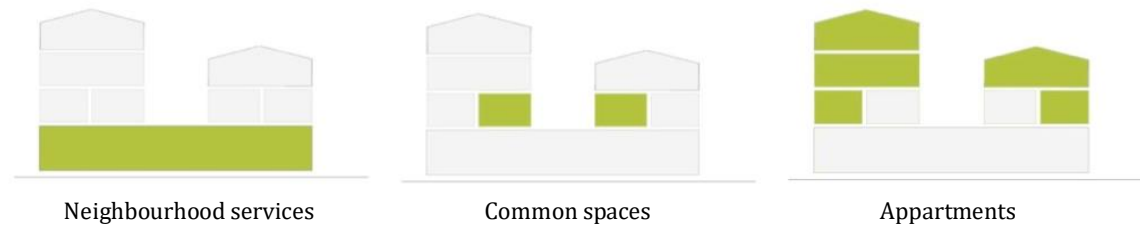


Figure 4. The 'Viviendas dotacionales' in Barcellona: functional layout.  
Source: Reproduced from Agostini, Masci (2015).

In France the real estate developer Nexitil has built a number of so-called 'Senior Residences', i.e. condominiums designed to suit older people's needs and providing integrated services (Falasca, 2018a). In Italy similar experimental housing is being implemented by a number of foundations, such as 'Borgo Sostenibile' in Figino, near Milan (NNA, 2018). Finally, the variegated and widespread initiatives of co-housing – whether generational, inter-generational or intercultural – that are being experimented in existing buildings must be mentioned, such as the 'Condominio Solidale' in Turin, 'Casa alla Vela' in Trento, 'Casa del Moro' in Lucca, 'Abitare Solidale' in Florence, all based on practices of proximity solidarity (NNA, 2018).

### 3.3 The urban context and its impact on the quality of life and social isolation of older people

The third scale of analysis involves the *urban environment*, i.e. the world *outside* the home and the building, which is the context in which older people should be able to carry out a number of activities (shopping, accessing services, transportation, leisure) and also entertain a number of social relations. The characteristics of, and the changes affecting, this third scale directly bear on the wellbeing of older people and the risks of isolation, both in physical and in social terms. In fact, it is becoming increasingly evident that older people are among those most at risk of social exclusion and spatial segregation for a number of reasons, both subjective and contextual (Buffel et al., 2012; Buffel, Phillipson, 2016; Buffel et al., 2018).

There are two sub-scales involved: the neighbourhood and the urban context at large. In what concerns the *neighbourhood*, this is the most immediate context where basic activities of daily life are generally carried out (shopping, walking, hanging out in public spaces, attending events) and social relations are developed and cultivated over time. The physical, social and economic characteristics of neighbourhoods, thus, directly affect the quality of these activities – including the sense of safety – and the possibility of developing/reproducing relations thereby preventing social isolation. But, there are also 'neighbourhoods effects' (Wilson, 1990) related to the *transformation* of neighbourhoods over time (gentrification, decline), which can change to a great extent the habitual context of older people and affect their wellbeing (Scharf, Gierveld, 2008).

The neighbourhoods characteristics and transformations mainly affect: a) the physical environment; b) the functional system (services, transports); c) the social composition. In what concerns the built environment, the absence of architectural barriers, the presence of protected crossings, good public lighting, adequate public spaces, etc. obviously enhances the capability of older people to get around their neighbourhood and extend their autonomy in carrying out daily errands and socialisation. Any change in the characteristics of this environment can determine a loss of their spatial references and undermine this autonomy. The same occurs with basic services

and amenities. The existence of shops, pharmacies and health services, as well as public transportation lines in the vicinity of the home encourages older people to go out. And, likewise, the possible changes in this supply (decrease in numbers and/or frequency, closure and/or transfer) directly affect their well being and their inclination to go out. Also the social composition of the neighbourhood is important, as it bears on the sense of belonging and safety of frail older people. Changes in the social composition of the neighbourhood – especially in the case of increased pauperisation, but also in the case of upward gentrification – can undermine the sense of belonging, community and/or the sense of security, thereby favouring self-segregation (Scharf et al., 2003) and social isolation (Burns et al., 2012). These risks of (self) segregation and social exclusion have been highlighted in several countries: Spain (Blanco, Subirats, 2008), Czech Republic (Galcanova, Sykova, 2015) and Canada (Burns et al., 2012).

In what concerns the *urban scale* at large, we already stressed how the ageing of the population is having a significant influence on the urban planning debate. The discussion on the elimination of architectural barriers – of which the Italian PEBA are an example – is being superseded by the universal design approach, as represented, for example, by the ‘Age-friendly’ cities and communities mentioned earlier or the ‘Ageing city’ planning philosophy of the HelpAge Network.<sup>6</sup> From this point of view, three conditions are stressed for the purpose of ensuring a better quality of urban life for older people (Gehl, 2010; Handler, 2015): a) universal *accessibility* to places, services, and amenities throughout the city, in order to contrast the discrimination, marginalisation and segregation of frail older people; b) the design and implementation of *inclusive urban public spaces*, that favour the access and participation of older people; c) *safety* (see Figures 5, 6, 7).

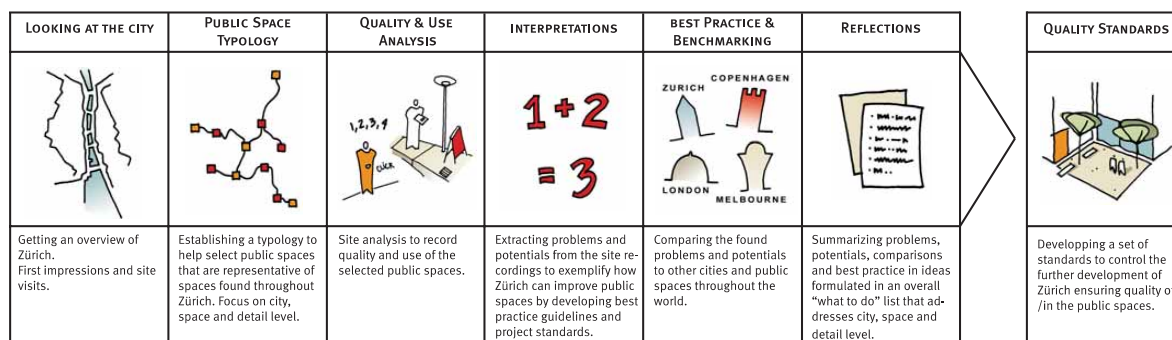


Figure 5. Gehl's methodology for assessing the accessibility and quality of public spaces in cities. Source: Reproduced from Gehl (2004)

A survey carried out for Eurobarometer in 2011 among older people in 27 EU member states confirms the relevance of the above prescriptions. Among changes considered necessary to make the city better liveable, 42% of interviewed older people indicated ‘the expansion and improvement of services and facilities for staying physically active’; 40% indicated ‘the expansion of public transportation’; 25% indicated ‘the improvement of public spaces’. Another important finding concerns the use of digital technologies: 85% of the interviewed older people stressed that the lack of capabilities in this domain cuts them off information and participation to public life (Eurobarometer, 2012).

These same conditions – accessibility to places, presence of services/amenities, and safety – are stressed also by the WHO, which recommends that urban agendas promote ‘active ageing by optimizing for health, participation and security in order to enhance quality of life as people age’

<sup>6</sup> The HelpAge global network is a worldwide alliance standing up for the rights of older people. Across 80 countries, it is made of more than 130 organisations.

(WHO, 2007:6). In general, there is wide agreement that urban design should especially ensure that public places are made ‘recognisable’, so as to enhance the orientation of older people and their use of such spaces; that neighbourhoods remain/are made multi-functional (i.e. ensuring a good mix of residence, retail, other services); that public places are safe and hospitable; and that public services and transportation are easily accessible. Among urban services, *amenities* are considered quite relevant, as museums, theatres, exhibitions and other cultural or artistic venues and events represent key opportunities and spaces for the enrichment and socialisation of older people (Buffel et al., 2012; Mugnano, 2018). The availability of, and accessibility to, such a supply must, thus, be considered an important determinant of both a high quality of life and a low level of social isolation.



Footways in multiple levels and stairs to basement shops create high risks for tripping. Poor quality paving from unfortunate materials and lack of maintenance create a difficult and an unbecoming patchwork of walking surfaces.

**Complicated footway layout**

Pedestrians are frequently exposed to a walking environment that requires both attention and a high degree of mobility due to varying footway levels and frequent stairs to basement shops. Individual adaptations of the footway have thus resulted in detriments of the pedestrian conditions. Additionally general low standards of maintenance and poor quality materials make walking a tiresome experience and enhance an unfortunate visual impression.



Random placing of urban elements minimise walking space forcing people into unsafe situations. Shop displays create obstacles and force people to navigate in a cluttered pedestrian landscape.

**Narrow and cluttered footways**

The footways are generally narrow owing to the original dense urban structures. The pedestrian landscape is additionally affected by an irregular building structure making footways disappear from time to time given that any free space is reserved for vehicular traffic. Bulky and inappropriate placed street furniture and shop display in combination with narrow footways and the high number of pedestrians often result in footway congestion during daytime.



Even in the narrow streets space for parking is prioritised over space for pedestrians. Bad parking habits frequently interfere with the footway. High kerbs and bollards obstruct cars from parking on footways but also create inconvenience for pedestrians.

**Intrusive parking**

Extensive on-street parking is a dominating feature with negative effect on the pedestrian environment. Both on-street parking and uncontrolled parking on footways, large scale the pedestrian realm leaving little space left. Bollards are a generously applied street feature, to make pedestrians aware of street traffic but also along with high kerbs, to keep cars off the footway. Altogether they create a complex pedestrian landscape. Continuous tourist buses parking along footways may be barriers and lack of overview for pedestrians and detract the streetscape.



Bollards at minor street intersections and driveways indicate the high priority given to the vehicular traffic - that pedestrians have to yield. Unfortunately high kerbs generate a disrupted walking rhythm and unfortunate difficulties.

**Frequent interruptions**

Footways along the key streets are in many cases unnecessarily interrupted by minor sidestreets, or driveways to buildings in both sides obstructing the walking flow. Thus people have to walk up and down kerbs - sometimes quite high - and look out for traffic while passing.

**Figure 6. Unfriendly cities: architectural barriers preventing universal accessibility to public spaces in Istanbul.**  
Source: Reproduced from Gehl (2013).





Figure 7. Unfriendly cities: architectural barriers preventing universal accessibility to public spaces in Reggio Calabria

Source: Authors (2019)

Before concluding this section, it is important to point out that the debate so far reviewed overwhelmingly concerns the ‘urban’ context and medium to large cities. But older people also live in small municipalities and in sparsely populated rural areas. In 2013, about a quarter of the total Italian population (24.3%) lived in municipalities with low levels of urbanisation (Istat, 2017b), generally located in remote and mountainous area (especially the Apennines spine). Many of these municipalities are affected by strong processes of depopulation and record increasingly high shares of older people. A study of inland ‘peripheral’ and ‘ultra-peripheral’ municipalities in Italy shows that between 1971 and 2011 the former have lost 8.1% of their population and the latter 5.3% (NUVAP, 2014). In these places, not only architectural barriers exist and are difficult or impossible to remove (buildings are ancient with no possibility of remodelling or adding elevators; streets are narrow and paved in stones, often with important gradients and stairs), but the supply and quality of services for older people – both basic public services and private services and amenities – is very low, due to the small numbers and the physical distance from major urban centres.

#### 4. Obstacles and requisites for inclusive ageing in place

As stressed throughout the previous sections, ageing involves a process of progressive disability – loss of functional autonomy – over the course of a person’s lifetime (see Figure 8).

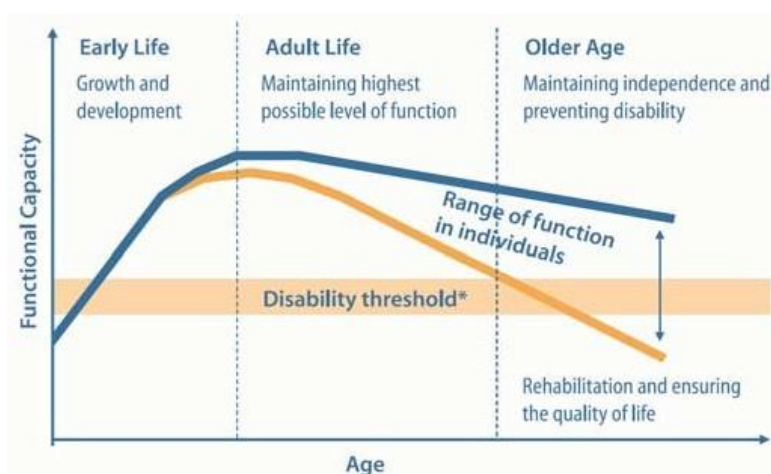


Figure 8. Functional capacities over the lifetime course

Source: Kalache, Kickbusch (1997).

The features and timing of this progressive frailty are highly diversified among people and depend mostly on subjective factors (health, but also social and economic conditions), but they are also affected by contextual factors (the physical environment at its different scales and the care regime in place), which can significantly condition the possibility to protract self-sufficiency and hence enhance the quality of life of older people and reduce the risks of social isolation (see also Kalache, Kickbusch, 1997; WHO, 2007b; Regione Toscana, 2017).

The strategy of ageing in place is, thus, inescapably linked with housing and urban policies. And the universal accessibility approach, i.e. designing and building housing units, buildings, and cities that are accessible to anybody, over the entire course of people's lifetime, becomes the prerequisite for prolonging the autonomy of older people, while generating less demand for institutionalised services (Beard, Petitot, 2010).

In this final section of the paper we examine with a finer lens how the subjective conditions of the older person, i.e. his or her type and level of frailty, interact with the built environment in carrying out the main activities of daily life. The aim of this exercise is to move to a more intervention-oriented analytical level, by identifying the constraints and requisites associated with each function at each different spatial scales and for different levels of frailty.

We have worked in two steps. First we have identified and charted the *spaces* where the main *activities of daily living* are carried out (see Table 1). In what concerns the spaces, we have initially considered only the three territorial scales identified earlier – the home, the building, and the urban context. In what concerns the activities, we have adopted the main categories developed over time by the WHO – *ADL-Activities of Daily Living* and *IADL-Instrumental Activities of Daily Living* (Ministero della Salute, 2010) – and we have added *Socialisation activities*, as also described by the WHO in the *Guide for an Age-friendly city* (2007). Some of the ADL and IADL activities are unaffected by the physical context and have thus been highlighted in grey in the table.

ACTIVITIES		Inside	Inside → Outside	
		HOME	BUILDING	URBAN CONTEXT
ADL	Bathing	X		
	Dressing	X		
	Toileting	X		
	Trasfering	X		
	Continence			
	Feeding	X		
IADL	Ability to use telephone	X		
	Shopping	X	X	X
	Food preparation	X		
	Housekeeping	X		
	Laundry	X	(X)	
	Mode of transportation	X	X	X
	Responsibility for own medications			
	Ability to handle finances			
SOCIALISATION ACTIVITIES	Go to church, café, association or social centre	X	X	X
	Participate to recreational activities	X	X	X
	Participate to cultural events	X	X	X
	Participate to sport events	X	X	X
	Visit friends and relatives	X	X	X
	Walk to public spaces (squares, parks, etc.)	X	X	X

Table 1. The relationships between activities and the built environment.

Source: Authors' compilation

In a second step we have further articulated our matrix, specifying in greater detail both the *spaces* and the *activities* of daily living and introducing two more parameters: a) the (potential) *degree of*



*disability* of older people, on the subjective side; b) the possible support *devices and appliances* that can contribute to improve the autonomy of older people, on the contextual side.

In what concerns spaces, we have worked on the *basic spatial unit* where activities are carried out, such as the bathroom, the kitchen, the hall, the sidewalk, the park (Fange, Iwarsson, 2005; Iwarsson, 2005); whereas in what concerns activities, we have identified a number of *basic functions* deemed necessary to carry out a given activity. As to the *level of frailty*, we have identified three main levels, in line with the IADL scale: low (L), when the older person is almost fully autonomous and self-sufficient; medium (M), when the older person is partially self-sufficient, but needs some form of aid, whether human and/or a tool or device; high (H), when the older person is not self-sufficient and is significantly or totally dependent on external aid.

In what concerns the possible *support devices*, we have identified the situations where built/mechanical devices (construction standard, special furniture, dedicated equipment or tool, electronic appliances or systems) are available/suitable to make the function feasible at different levels of disability. The introduction of these new parameters (see Tables 2a, 2b and 2c) helps charting the relations among the different variables – subjective and contextual – and identifying the constraints and requirements associated with different configurations.

The chart seeks to overcome the standard approach merely oriented to the removal of architectural barriers and to highlights the relationships between the physical context and the functions of daily living, at different stages of disability, mobilising also the possible solutions in terms of adaptation and integration of support devices, in a perspective of ageing in place that can contribute to extend as much as possible the older person's autonomy and limit as much as possible the risks of isolation.

**The home.** As stressed earlier, the home is the first and most important context to for ageing in place, by ensuring that as many functions as possible can be carried out autonomously. Table 2 highlights which basic spatial units are involved in individual daily functions and suggests which adaptations/devices are needed to warrant autonomy. Particularly relevant here are equipment and instrumental devices allowing the control of the environment (heating, air conditioning, illumination); safety systems (anti-intrusion alarms, anti-smoke/gas alarms, emergency calling, video intercoms); and/or special appliances/fixtures (variable-asset beds or chairs; walk-in showers with built-in seat; etc.) (see Table 2a).

**The building.** At this spatial scale, the most important aspect is the connectivity with the outside, i.e. how easy it is for older people to exit the home. The presence of stairs is the main obstacle and, hence, the existence of handrails, ramps and elevators (in the case of multi-storey building) is of paramount importance. In many old buildings, however, there is no room for introducing an elevator and this can severely limit the mobility of older people when their disability increases. Another aspect is the accessibility to condominium services, such as laundry rooms, garbage storage/disposal facilities, etc (see Table 2b).

**The urban context.** This scale of the physical environment is available only to older people with low or medium levels of frailty. Here we have identified four main overlapping systems: a) the pedestrian mobility system (availability and quality of sidewalks, protected crossings, public lighting, ramps, etc.); b) the public transportation system (availability, cost, frequency, adaptation to frail users); c) the system of services (availability and distance of shops, pharmacies, medical services, cafés and restaurants, etc.); d) the system of public spaces and amenities (availability, distance, safety and accessibility of squares, parks, sport and entertainment facilities) (see Table 2c).



IADL	DEGREE OF FRAILTY	INSIDE HOME				BUILDING				OUTSIDE URBAN CONTEXT				MECHANICAL & AUTOMATED DEVICES				NOTES		
		Kitchen	Bathroom	Bedroom	Dining/living room	Other	Entrance	Elevator	Condominium services	Other	Pedestrian mobility	Public transport	Public spaces	Services	Furniture	Appliances	Automation		Networks/systems	Other
ABILITY TO USE THE TELEPHONE	Can fully use the telephone																	X		
	Can answer but not dial numbers																	X		
SHOPPING	Cannot use the telephone																	X		Voice recognition
	Can fully carry out shopping functions																	X		Voice recognition
	Needs to be accompanied																	X		telephone or e-shopping
	Cannot go shopping																	X		
FOOD PREPARATION	Can cook and serve adequate meals																			
	Can warm up prepared food or cook inadequate meals																			
HOUSE KEEPING	Needs meals prepared by other people																			
	Can clean the house with occasional help for heavy tasks																			
	Needs help for house keeping																			
LAUNDRY	Cannot carry out any housekeeping																			
	Can carry out all laundry operations																			
	Can carry out some laundry tasks																			
	Needs full laundry services																			Condominium services
MODES OF TRANSPORTATION	Can move around on public transportation or drive																			
	Can use public transportation if accompanied or be driven																			
	Cannot move																			

DEGREE OF FRAILTY: L= Low; M= Medium; H= High

Table 2b. Matrix of the relations between activities, degree of frailty, and the built environment  
Source: Authors' compilation



## Concluding remarks

### Ageing in place and the built environment

The aim of this paper was to highlight the strong conditioning role the built environment can have on the quality of life and the risks of isolation of frail and lone older people ageing at home.

In our conceptual framework we have stressed how *ageing* can be acknowledged as a process of *progressive physical frailty*, characterised by the insurgence of multiple forms and degrees of disability (physical, sensorial, cognitive), which affect older people's functionality and mobility. As such the condition of a frail older person is not dissimilar from that of any other people affected by one form of disability or another. We have also underscored how in addition to *individual* factors (health, in primis, but also education, income, family structure), *contextual* factors (especially the care regime and the built environment) also play a very relevant role in enabling or preventing the 'ageing in place' of frail older people (see the review by Arlotti, Luppi, Ranci 2020; Costa, Melchiorre, Arlotti 2020). More specifically, we have stressed how the characteristics of the built environment – at its different spatial scales – are a major determinant of the *quality of life* and of the *risks of isolation* of frail older people ageing at home, especially lone ones, since they can significantly hamper their functionality and mobility.

In our conceptual framework, the role of *perception* needs to be stressed. In their review of individual factors, Arlotti, Luppi, Ranci (2020) call attention on the role played by *subjective perceptions*, in addition to objective features. In particular, they stress how the 'perceived' quality of life of older people in relation to their living environment encompasses habit, familiarity, and routines, and hinges on their perceived self-sufficiency and control of such routines, even when limitations of functionality and mobility arise, in a process of progressive psychological 'adaptation' (Shilling, 2005) to one's limitations. This is a rather important aspect in the ageing at home of frail older people, as it points to the necessity of 'adapting' as much as possible the built environment to the worsening functionality and mobility of ageing people, in order to prolong their objective and perceived self-sufficiency.

In our review of the evolution of the debate on architectural barriers and universal accessibility, we have then highlighted how the awareness of the impact the built environment on 'accessibility' had already emerged in the 1950s and 1960s, but was confined to the world of physical disabilities ('handicapped' people) and framed in terms of 'architectural barriers' to be removed. We have emphasised how this discussion has evolved from the negative conception of 'barriers' (to be removed) and the exclusive focus on people with disabilities, to the more encompassing and proactive approach of 'universal design', i.e. ensuring access – from the very design phase – to goods, services and the built environment, to 'all', i.e. to all kinds of people over the whole course of their life time. Among the outcomes of this debate we have stressed the notion of 'adaptability' of the built environment, to be embedded already in the design phase. Since the 1990s, thus, the discussion on 'universal design' has become entrenched with the debate on active ageing and ageing in place.

In the central section of this paper we have then worked out our analytical framework to explore *how* the built environment can condition the quality of life and the social isolation of frail older people ageing at home. We have identified three main scales of analysis – the *home*, the *building* and the *urban context* – and reviewed the related debate, highlighting the strong influence each context can have on the quality of life and social isolation. We have stressed how the home environment mostly affects the quality of life, defined in terms of control and self-sufficiency (see Arlotti, Luppi, Ranci 2020) in carrying out the activities of daily life, whereas the building and urban context affect both the quality of life and the degree of social isolation, defined in terms of both subjective loneliness and the objective network of social contacts. Being able to control and autonomously perform a number of daily functions at home, i.e. in one's own habitual environment for as long as possible is a pre-requisite to ensure a good quality of life – both in objective and perceived terms. Being able to exit the home/building and autonomously access the



urban context and carry out both functions of daily living and socialisation activities is also a pre-requisite for a good quality of life – defined as access to and enjoyability of places, but also as self-realisation and pleasure (see Arlotti, Luppi, Ranci 2020) – as well as for preventing loneliness and social isolation.

In the final section we have eventually proposed an operational methodology (matrix) for assessing the relations between, level of frailty, activities and spaces (in the home, in the building and in the urban context), identifying also possible solutions (devices and arrangements).

## **Policy aspects**

The above review of the literature and proposed conceptual/analytical framework not only identify the main scales and dimensions of the built environment to be assessed when addressing the quality of life and the risks of isolation of frail older people ageing in place, but also highlight possible policy issues and recommendations.

A first issue concerns the *adaptability* of the built environment to the progressive functional limitations of older age (but also, as stressed earlier, to the functional limitation of anybody with a physical, sensorial or cognitive disability). The debate on universal access emphasises the need to tackle the adaptability of homes, buildings and the urban context from the very beginning, i.e. already in the design phase. This can certainly be done for new building and neighbourhoods. But there is the issue of the *existing* built environment, which was put in place in earlier times, when homes, buildings and cities were eminently conceived for able-bodied people and privileged – in the twentieth century – automobile mobility. Financial incentives to users, landlords, and/or municipalities should be intensified to support the adaptation of the existing built environment to users with functional and mobility limitations.

However, not all existing built environment can be adapted. This is especially true in historic centres and towns. In these cases, the identification of '*minimum urban structures*', i.e. basic urban systems covering selected housing areas, service nodes, and transportation lines, that are then rendered universally accessible, could be a starting point.

Moreover, although the majority of the European population now lives in urban areas – and large cities at that – there is still a significant proportion of people that live in sparsely populated and/or rural areas. In Italy, these areas, especially in peripheral and mountainous territories, are tendentially depopulating and hence present a much higher percentage of older people than urban areas. In these municipalities, the territorial/urban morphology (steep gradients, ancient buildings), the limited public resources, the scarcity of both private and public services, and – in most cases – the dispersion of users make policies in support of ageing in place rather difficult compared to the more densely populated and central municipalities.

A second issue concerns the *fragmentation/separation* of policies and approaches addressing ageing in place. An effort should be made at *integrating policies and disciplinary perspectives*, i.e. housing policies and legislation on residential construction, urban planning, transportation planning, policies concerning the development and adoption of dedicated new technology, and social policies. These different policies/perspectives often do not talk to each other. In Italy, for example, plans for the removal of architectural barriers (*PEBA-Piani per l'Eliminazione delle Barriere Architettoniche*) are still conceived as self-standing plans, whereas no specific requirements are included in standard urban master plans. The same occurs with transportation policies that often envisage special measures for people with disabilities, independently of current PEBA, Master plans or social policy programmes. Moreover, very seldom either policies for adapting the built environment or social policies address the potential offered by new technologies, i.e. high-tech devices that can help improve the self-sufficiency of frail older people ageing at home. Finally, policies dealing with the built environment do not 'talk' to social policies, i.e. plans concerning services for older people.

A sub-issue of the above separation among policy domains and approaches is the quasi exclusive focus of current policies for ageing in place on the functional self-sufficiency aspect, hence on the

removal of architectural barriers (if ever) and the delivery of basic and dedicated services at home. These approaches ignore a key need of lone older people, i.e. socialisation. As we have stressed in our review of the impact of the built environment on the quality of life and the risks of isolation of lone frail older people ageing at home, the socialisation dimension is critical: especially when the family is absent or geographically remote, the opportunity to meet and interact with other people becomes of paramount importance. *Policies contrasting material isolation should hence be complemented with policies supporting active socialisation.* The organisation and attendance of social events, visits to public cultural facilities (museums, concerts, social centres) and other social programmes could significantly reduce the sense of loneliness of frail older people living alone.

A fundamental strategy to overcome the fragmentation of policy approaches to ageing in place involves not only an active coordination among different policy and planning domains/tools, but also a *cultural* leap. The distance between norms, architectural and urban design, planning and policy making, public and private services should be bridged by the new consciousness that ageing is a universal process of progressive limitation of people's self-sufficiency and mobility. Hence a structural and inevitable condition that should be at the core of any design, planning or policy action. In other words, universal access, age-friendly cities, or ageing in place policies should not be considered as a constraint or an option to be addressed just because some norms prescribes it, but as an *opportunity* for creative housing, urban, transportation and social policy design. Some examples provided in the course of our survey point precisely in this direction, which is coherent with the objectives of the Agenda 2030 for more inclusive cities, i.e. cities that creatively promote both material accessibility and social cohesion, intergenerational solidarity and community, also through better information and participation (Savio et al., 2017).

This is not just a challenge for innovative (policy) design and social initiative, but also an imperative for reducing the financial and social costs involved in an ageing population (Beard, Petitot, 2010).

## **Bibliographical references**

Adler, S.C., Pierman, B.C. (1981) *Building Accessibility for the disabled: a review of research needs*, Washington, US Department of Commerce- National Bureau of standards.

AeA (2017) *Città per l'invecchiamento attivo*, in *Abitare e Anziani Informa*, n. 1 (special issue). Available at: <http://www.abitareanziani.it/aea-informa-12017/>

AeA (2018a) *Tecnologie assistive, smart city e innovazioni sociali per l'invecchiamento attivo*, in *Abitare e Anziani Informa*, n. 1 (special issue). Available at: <http://www.abitareanziani.it/aea-informa-12018/>

AeA (2018b) *Il diritto di invecchiare a casa propria. Problemi e prospettive della domiciliarità*, in *Abitare e Anziani Informa*, n. 2 (special issue). Available at: <http://www.abitareanziani.it/aea-informa-2-2018/>

Agostini, G., Masci, S., (2015) *Mixed generation housing*, Tesi di Laurea, Politecnico di Milano.

Arlotti, M., Luppi, M., Ranci, C. (2020) *Frailty, quality of life and social isolation in older adult at home. A conceptual framework*, in DASStU Working Paper Series.

Beard, JR., Petitot, C. (2010) Ageing and urbanization: can cities be designed to foster active ageing? in *Public Health Reviews*, vol. 32, pp. 427-450.

Bernabei, R., Carbonin, P., Fellin, R. (eds.) (1995) *L'assistenza continuativa all'anziano nei paesi occidentali*, Roma, Consiglio Nazionale delle Ricerche.

- Blanco, I., Subirats, J. (2008) Social exclusion, area effects and metropolitan governance: A comparative analysis of five large Spanish cities, in *Urban Research and Practice*, n. 1, pp. 130-148.
- Buffel, T., Phillipson, C. (2016) Can global cities be age-friendly cities? Urban development and ageing populations, in *Cities*, n. 55, pp. 94-100.
- Bowling, A. et al. (2002) A multidimensional model of the quality of life in older age, in *Aging & mental health*, 6(4), pp. 355-371.
- Buffel, T., Handler, F., Phillipson, C. (eds.) (2018) *Age-Friendly Cities and Communities. A global perspective*, Bristol, Policy Press.
- Buffel, T., Phillipson, C., Sharf, T. (2012) Ageing in urban environments: developing Age-friendly cities, in *Critical Social policy*, 32(4), pp. 597-617.
- Burns, V.F., Lavoie, J.F.P., Damaris, R. (2012) Revisiting the Role of Neighbourhood Change in Social Exclusion and Inclusion of Older People, in *Journal of Aging Research*, vol. 2012, pp. 1-12, doi:10.1155/2012/148287.
- CECHODAS-Osservatorio Europeo del Social Housing (2008) *Anziani e casa nell'Unione Europea*, Special issue, April. Available at: <https://www.yumpu.com/it/document/read/31263890/osservatorio-europeo-del-social-housing-federcasa>
- Center for Universal Design (1997) *The principles of universal design*, Raleigh, North Carolina State University.
- Church, R., Marston, J. (2003) Measuring accessibility for people with a disability, in *Geographical Analysis*, 35(1), pp. 83-96.
- Costa, G., Melchiorre, G., Arlotti, M. (2020) *Ageing in place and care arrangements. Implications for the quality of life and the risks of isolation of frail older people*, in DAStU Working Paper Series.
- 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.
- Della Rocca, G. (1981) Alcune considerazioni sulle case protette e di riposo. I risultati di una inchiesta americana, in *Medicina geriatrica*, n. 8.
- Della Zanna, G. (2000) Progettare nella logica dell'utenza ampliata, in Arengi, A. (ed.), *Edifici storici, turismo, utenza ampliata. La gestione dell'accessibilità nelle città d'arte*, Como, Edizioni New Press, pp. 9-13.
- Dykstra, P. (2009) Older adult loneliness: myths and realities, in *European Journal of Ageing*, n. 6, pp. 91-100.
- Elsinga, M., Hoekstra, J. S. C. M. (2005) Homeownership and housing satisfaction, in *Journal of Housing and the Built Environment*, 20(4), pp. 401-424.
- Eurobarometer (2012) *Special Eurobarometer 378 – Active Ageing*, EC – DG Employment, Social Affairs and Inclusion. Available at: [http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs\\_378\\_en.pdf](http://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_378_en.pdf)
- Eurostat (2017) *Population Pyramids, EU-28, 2017 and 2080*, Eurostat. Available at: [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population\\_pyramids,\\_EU-28,\\_2017\\_and\\_2080\\_\(%25\\_of\\_total\\_population\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_pyramids,_EU-28,_2017_and_2080_(%25_of_total_population).png)

Evans, G. W., Kantrowitz, E., Eshelman, P. (2002) Housing quality and psychological well-being among the elderly population, in *The Journals of Gerontology, Psychological Sciences and Social Sciences*, 57(4), pp. 381-383.

Falasca, C. (ed.) (2018a) *Il diritto di invecchiare a casa propria. Problemi e prospettive della domiciliarità*, Roma, Edizioni LiberEtà.

Falasca, C. (2018b) *Le condizioni abitative: anziani prigionieri a casa loro*, in *Abitare e Anziani Informa*, n. 2, pp. 18-21.

Fange, A., Iwarsson, S. (2005) Changes in ADL dependence and aspects of usability following housing adaptation—a longitudinal perspective, in *American Journal of Occupational Therapy*, 59(3), pp. 296-304.

Galcanova, L., Sykorova, D. (2015) Socio-spatial aspects of ageing in an urban context: An example from three Czech Republic cities, in *Ageing & Society*, n. 35, pp. 1200–1220.

Gehl, J. (2004) *Zurich public spaces 2004*, Stadt, Zurich, pp. 10. Available at: <https://www.burri.world/en/studies/zurich-public-spaces-2004>

Gehl, J. (2010) *Cities for people*, Washington DC, Island Press.

Gehl, J. (2013) *Istanbul. An accessible city - a city for people*, EMBARQ Turkey. Available at: [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKewiH3MXi3M3kAhWxPOwKHUSjDJ8QFjAAegQIAxAC&url=https%3A%2F%2Fwriroscities.org%2Fsites%2Fdefault%2Ffiles%2Fistanbul-Public-Spaces-Public-Life-EMBARQ-Turkey-Gehl-Architects-Oct-2013.pdf&usq=AOvVaw0rI6rt99tH6CDX3\\_ba4mgF](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKewiH3MXi3M3kAhWxPOwKHUSjDJ8QFjAAegQIAxAC&url=https%3A%2F%2Fwriroscities.org%2Fsites%2Fdefault%2Ffiles%2Fistanbul-Public-Spaces-Public-Life-EMBARQ-Turkey-Gehl-Architects-Oct-2013.pdf&usq=AOvVaw0rI6rt99tH6CDX3_ba4mgF)

Giunco, F. (ed.) (2014) *Abitare leggero. Verso una nuova generazione di servizi per gli anziani*, in *Quaderni dell'Osservatorio*, n. 17, Fondazione CARIPLO. Available at: [www.fondazionecariplo.it/osservatorio](http://www.fondazionecariplo.it/osservatorio)

Goodman, C. (2010) *Lifetime homes design guide*, London, HS BRE Press.

Haak, M., Slaug, B., Oswald, F., Schmidt, S.M., Rimland, J.M., Tomsone, S., Ladö, T., Svensson, T., Iwarsson, S. (2015) Cross-national user priorities for housing provision and accessibility - Findings from the European innovAge Project, in *International Journal of Environmental Research and Public*, 12(3), pp. 2670–2686.

Handler, S. (2015) *An alternative age-friendly handbook*, Manchester, University of Manchester Library.

Herbers D.J., Mulder C.H. (2017) Housing and subjective well-being of older adults in Europe, in *Housing and the Built Environment*, n. 32, pp. 533–558.

Hyde, M. et al. (2003) A measure of quality of life in early old age: the theory, development and properties of a needs satisfaction model (CASP-19) in *Ageing & mental health*, 7(3), pp.186-194.

ISTAT (2017a) *Indagine sulle Condizioni di salute e ricorso ai servizi sanitari in Italia e nell'Unione europea. Indagine EHIS 2015*. Available at: <https://www.istat.it/it/archivio/204655>

ISTAT (2017b) *Forme, livelli e dinamiche dell'urbanizzazione in Italia*. Available at: <https://www.istat.it/it/archivio/199520>

Iwarsson, S. (2005) A long-term perspective on person–environment fit and ADL dependence among older Swedish adults, in *The Gerontologist*, n. 45, pp. 327–336.

Iwarsson, S., Horstmann, V., Slaug, B. (2007) Housing matters in very old age – yet differently due to ADL dependence level differences, in *Scandinavian Journal of Occupational Therapy*, 14(1), pp. 3-15.

Iwarsson, S., Wahl, H., Nygren, C., Oswald, F., Sixsmith, A., Sixsmith, J., Szeman, Z., Tomsone, S. (2007a) Importance of the home environment for healthy aging: Conceptual and methodological background of the European ENABLE-AGE project, in *The Gerontologist*, 47(1), pp. 78-84.

Kalache, A., Kickbusch, K. (1997) *A global strategy for healthy ageing*, in *World Health*, 50(4), pp. 4-5

Kesslerling, A., Smith, S., Dobner, S., Schrammel, M. (2015) *Social Innovation for Active and Healthy Ageing. A case study collection*, Brussels, King Baudouin Foundation.

Korporaal, M., M. Van Groenou, T. G., Van Tilburg, T. (2008) Effects of Own and Spousal Disability on Loneliness Among Older Adults, in *Journal of Aging and Health*, 20(3), pp. 306-325.

Lauria, A. (2014) L'accessibilità come "sapere abilitante" per lo sviluppo umano: il Piano per l'Accessibilità, in *Techne*, n. 7, pp. 125-131.

Lawton, M. P., Nahemow, L. (1973) *Ecology and the aging process*, in Eisdorfer, C., Lawton, M.P. (eds) *The psychology of adult development and aging*, Washington DC, American Psychological Association, pp. 619-674.

Lui, CW., Everingham, JA., Warburton, J., Cuthill, M., Bartlett, H. (2009) What makes a community age-friendly: a review of international literature, in *Australasian Journal on Ageing*, 28(3), pp. 116-121.

Luppi, M. (2020), *Qualità della vita e isolamento sociale degli anziani fragili a livello europeo*, in DAStU Working Paper Series.

Mace, R. (1998) Universal design in housing. Assistive Technology, in *The Official Journal of RESNA*, 10 (1), pp. 21-28.

McKenna, S.P. et al. (1999) The QoL-AGHDA: an instrument for the assessment of quality of life in adults with growth hormone deficiency, in *Quality of Life Research*, 8(4), pp. 373-383.

Ministero della Salute (2010) Criteri di appropriatezza clinica, tecnologica e strutturale nell'assistenza all'anziano, in *Quaderni del Ministero della Salute*, n. 6.

Monzeglio, E. (1986) La casa per l'anziano: elemento indispensabile per prevenire il bisogno assistenziale, in *Prospettive Assistenziali*, n. 74.

Morelli, D. (1984) *Barriere nello spazio architettonico. Normativa e progetto*, EdiPuglia, Bari.

Mugnano, S. (2018) *Ageing city*, in Zajczyk F., (ed) *Alimentazione e qualità della vita nell'ageing society*, Milano, F. Angeli Editore, pp. 18-30.

Muir, T. (2017) *Measuring social protection for long-term care*, OECD Health Working Papers, (93).

Mura, A. (2007) Dalle barriere architettoniche all'accessibilità: cultura e formazione intorno ai termini della disabilità, in *L'integrazione Scolastica e Sociale*, n. 6, pp. 366-374.

NNA-Network Non Autosufficienza (2018) *L'assistenza agli anziani non autosufficienti in Italia. VI Rapporto, 2017-18*, Rimini, Maggioli Editore.

NUVAP-Nucleo di valutazione e analisi per la programmazione (2014) *Strategia nazionale per le aree interne: definizione, obiettivi, strumenti e governance*, in *Materiali UVAL Documenti*, n. 31. Available at: [http://old2018.agenziacoesione.gov.it/it/servizi/pubblicazioni/pubblicazioni\\_dps/materiali\\_uval/Documenti/index.html](http://old2018.agenziacoesione.gov.it/it/servizi/pubblicazioni/pubblicazioni_dps/materiali_uval/Documenti/index.html)

OECD (2015) *Ageing in Cities*, Paris, OECD Publishing.

Oliver, M. (1981) A new model of the social work role in relation to disability, in Campling, J. (ed), *The handicapped Person: A New Perspective for Social Worker*, London, RADAR, pp. 19-32.



Oliver, M. (2004) The social model in action: if I had a hammer?, in Barnes, C., Mercer, G. (eds.), *Implementing the Social Model of Disability: Theory and Research*, Leeds, The Disability Press, pp. 18-32.

OMS (2008), *Città a misura di anziano: una guida*, in *Quaderni di sanità pubblica*, n. 149.

Oswald F., Jopp D., Rott C., Whal H.V. (2011) Is aging in place a resource for or risk to life satisfaction?, in *The Gerontologist*, 51(2), pp. 238–250.

Oswald, F., Wahl, H., Schilling, O., Nygren, C., Fange, A., Sixsmith, A., Sixsmith, J., Szeman, Z., Tomson, S., Iwarsson, S. (2007) *Relationships between housing and healthy ageing in very old age*, in *The Gerontologist*, 47(1), pp. 96-107.

Ranci (2019) *La solitudine dei numeri ultimi*, Report IN-AGE, <http://www.lps.polimi.it/wp-content/uploads/2019/11/report-in-age-def1.pdf>

Regione Toscana-Direzione diritti di cittadinanza e coesione sociale (2017) *La fragilità dell'anziano: linea guida*, Regione Toscana, Firenze. Available at: <http://www.regione.toscana.it/-/la-fragilita-dell-anziano>

Rubinstein, R. L., Kilbride, J., Nagy, S. (1992) *Elders living alone: Frailty and the perception of choice*, Hawthorne, NY, Aldine de Gruyter.

Sakkas, N., Pérez, J. (2006) Elaborating metrics of accessibility for the accessibility of buildings, in *Computers, Environment and Urban Systems*, 40(5), pp. 661-685.

Scharf, T., de Jong Gierveld, J. (2008) Loneliness in urban neighbourhoods: an Anglo-Dutch comparison, in *European Journal of Ageing*, n. 5, pp. 103–115.

Scharf, T., Phillipson, C., Smith, A. (2003) Older people's perceptions of the neighbourhood: evidence from socially deprived urban areas, in *Sociological Research Online*, 8(4), pp. 1-12.

Schilling, O. (2005) Cohort- and age-related decline in elder's life satisfaction: is there really a paradox?, in *European Journal of Ageing*, n. 2, pp. 254–263

Steffan, I.T., (2006), *Barriere architettoniche e design for all*, in *Professione Ergonomia*, n. 6, pp. 18-24.

Trioschi, D. (2007) *Una casa su misura. Domande e risposte per migliorare l'accessibilità domestica*, Bologna, Regione Emilia Romagna-Centro Regionale Ausili.

U.P.I.A.S. (1976) *Fundamental Principles of Disability*, London, Union of the Physically Impaired Against Segregation.

Vescovo, F. (2000) Universal design: un nuovo modo di pensare il sistema ambientale per l'uomo, in *Paesaggio Urbano*, n. 1, pp. 33-40.

Wallerstein, N. (1992) Powerlessness, empowerment, and health: implications for health promotion programs, in *American Journal of Health Promotion*, 10(3), pp. 197–205.

WHO-World Health Organisation (2007a) *Global age-friendly cities: a guide*, Geneva, World Health Organization.

WHO-World Health Organisation (2007b) *Checklist of Essential Features of Age-friendly Cities*, Geneva, World Health Organization.

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

Wilson, W.J. (1990) *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*, Chicago, University of Chicago Press.

Yang, K., Victor, C. (2011) Age and loneliness in 25 European nations, in *Ageing and Society*, 31(8), pp 1368-138.

Zajczyk, F. (2018) *Alimentazione e qualità della vita nell'ageing society*, Milano, F. Angeli Editore.