Housing Conditions, Neighbourhood Area and Life Satisfaction in Old Age

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Abstract

In this study, we contribute to the growing, albeit still limited, body of research on the importance of the living environment for individual well-being, focusing on the population aged 65 and over in Italy. We explore life satisfaction, a cognitive component of an individual's well-being that may help evaluate individuals' ability to adapt to life changes and challenges of ageing. We investigate various aspects of the living environment, both the *indoor* characteristics of the housing – its quality and adequacy – and the *outdoor* features of the immediate neighbourhood environment – its liveability and accessibility.

   The study provides robust evidence that adequate housing conditions might positively influence the life satisfaction of Italian older adults. Besides, we found that aspects relative to the living environment – namely area friendliness, its maintenance and (absence of) pollution, and the ease of access to shops and services are valuable for a satisfying life. Importantly, whether an inevitable overlap between these characteristics may exist, both housing and neighbourhood living conditions, in their various facets, exert a separate, specific, and substantial role in life satisfaction. Our results might inform city planning interventions about the advantages of creating friendly communities and well-designed urban spaces to support active ageing.

Keywords: living environment, composite indicators, Italy, older adults, well-being.

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INTRODUCTION

A person *being well* is someone experiencing positive emotions, like contentment and happiness, feeling satisfied with life and fulfilled (e.g., Diener et al., 1999; 2009). While no unique, definitive definition of (subjective) well-being exists, these positive feelings correlate with a positive outlook towards life, fostering meaningful connections with friends, family, and community, and instilling individuals with a resilient attitude to face life's challenges and setbacks.

Most of the literature on individual and societal factors possibly related to individuals' well-being has focused on factors like economic stability, good health, family life, and positive social relationships (e.g., Clark, 2018; Frey & Stutzer, 2002). In this plethora of studies, we locate a critical determinant that, notwithstanding an increasing acknowledgement by a part of the literature in recent years (e.g., Evans et al., 2003; Taylor, 2018; Swope & Hernandez, 2019), remains frequently overlooked in the empirical literature and public discussions (Iwarson et al., 2004; Clark, 2018): the living environment. According to the *environmental press theory* of Lawton and Nahemow (1973), the living environment interacts with people's lives, possibly working as a resource or pressure, and this interaction may be especially relevant at a later age, when individual capabilities may be limited or compromised.

As the first *milieu* where socialisation takes place and where people develop personal experience and kinship ties, the *home* is the core of family life, a spatial centre fostering a sense of familiarity and attachment (Balestra & Sultan, 2013), which provides security and a sense of belonging. This holds especially true for older adults who may have lived in the same house for several years, developing a sense of connection and continuity (Barry et al., 2018; Gaymu, 2003). As individuals grow older, they tend to spend more time in their residences, making it the centre of their lives, so housing assumes vital significance, closely intertwined with the individuals' quality of life. Besides, with age, when individuals tend to experience a decline in physical abilities and functioning, immediate neighbourhood conditions are expected to affect their well-being increasingly (Day, 2008). In an ageing society, a complete understanding of the critical dimensions linked to housing and the neighbourhood of individuals that can affect their well-being is thus imperative.

In this study, we contribute to the growing, albeit still limited, body of research on the importance of living environment issues for individual well-being – measured through life satisfaction – focusing on the population aged 65 and over in Italy. As a cognitive component of individual well-being (Diener et al., 1999; Ferring et al., 2004), life satisfaction captures people's overall level of contentment across all aspects of their lives. Being correlated to commitment to continuous learning and personal growth, it may help in evaluating individuals' ability to adapt to life changes and challenges of ageing (Tian & Wang, 2021), thus representing an important factor in understanding the ageing process.

Using eight cross-sectional waves of the ISTAT surveys on "Aspects of Daily Life" (ADL) from 2013 to 2020, we address different aspects of the living environment, considering both the housing characteristics and the neighbourhood area. The former is evaluated by accounting for various housing features, including the tenure status. As for the latter, which represents a novelty in the Italian panorama of this field of research, we measure two dimensions related to the living area of individuals: *liveability* and *accessibility* of the neighbourhood. We rely on self-reported measures for both housing and neighbourhood characteristics, which are not just an indefinite and vague substitute for objective conditions (e.g. Weden et al., 2008) but entail an additional meaning that can be crucial to understanding variations in individual satisfaction. Individual assessments have also been shown to account for more variability in well-being (e.g., Ettema & Shekkerman, 2016).

While in recent years there has been an increase in empirical studies on housing and neighbourhood features in many European countries, Italy lacks a similar trend, despite the potential relevance of this domain. Italy has a unique position in the ageing process of Europe (e.g., Capacci & Rinesi, 2017). Furthermore, this country is an archetype of a high-income country with a high share of owner-occupied housing, especially among older adults. Within them, the percentage of homeowners reaches 90% (Vignoli et al., 2016), as the house represents a crucial asset in terms of residential stability, financial safety, and emotional significance. Given the cultural significance of the house and the preference of older individuals to age in place (Costa-Font et al., 2009), it is crucial to evaluate factors linked to living environment conditions that may impact life satisfaction and quality of life.

Research in this field can inform the creation of interventions to enhance housing and neighbourhood conditions for elderly individuals, promoting a positive living environment. Due to the increased vulnerability of older adults, the link between the living environment and individual well-being may be especially important for them.

The paper is structured as follows. In the next section, previous theoretical and empirical literature on the link between housing and neighbourhood characteristics and well-being is resumed, with an overview of the Italian housing-related context. Then, we present our analytical strategy by describing data, variables, and the method applied. The result section follows, with some descriptive findings and models' results. A discussion concludes the paper.

BACKGROUND

Housing issues and individuals' well-being

Housing is a key factor for individuals' well-being from birth to death, and although some differences may appear during individuals' life course (e.g., Eibich et al., 2016) and its meaning change depending on the phase of life (e.g., Vignoli et al., 2013), it can be considered a primary human need. Beyond the easy-to-grasp beneficial effect of a house as a refuge for sleeping and resting in shelter from weather conditions, the characteristics of the housing – its quality or adequacy – are also assumed to have a role in this relationship (e.g., Evans et al., 2003; Taylor, 2018; Swope & Hernandez, 2019). When living conditions fall below-accepted standards of safety or sanitation, in case of overcrowding or space constraints, or when essential amenities are lacking, the potentially beneficial role of having a house diminishes. In those situations, housing is no longer effective in protecting individuals and families from detrimental exposures and in giving them the sense of privacy, security, and control that the house is expected to provide, thus reducing psychological and emotional wellness (Evans et al., 2003) and the overall quality of life (Fernandez-Portero et al., 2017), whether not the health status (e.g., Ayala et al., 2022).

Housing adequacy is desirable for all ages, and housing characteristics play a crucial role in preserving well-being and independence in everyday living (Oswald et al., 2007). Nevertheless, the effect can be even more valuable in later life, when the time spent at home becomes prevalent. European older adults generally spend over 80% of their daily time at home, around 20 hours, five to six hours more than younger people (Eurostat, 2004). The psychological well-being of older people can thus be particularly benefited when housing conditions are perceived as tailored to their daily needs (Fernandez-Portero et al., 2017), and housing characteristics play a crucial role in mitigating decreases in functional capacity (Gaymu, 2003; Oswald et al., 2007). Evans and colleagues (2002) have also shown a correlation between housing quality and the sense of place attachment in elderly individuals. Indeed, older people should not be considered a homogeneous and indistinguishable group. For instance, Oswald and colleagues (2011) found

that, at least in Germany, dwelling size positively correlates with life satisfaction for the youngest old (65-79). Still, the association turned negative when the oldest old (i.e., those aged 80 and over) were considered, probably due to the difficulties in maintaining larger homes in case of physical limitations.

In addition, whether various criteria and objective conditions for defining housing adequacy have been provided in the literature (see, e.g., UN-Habitat, 2006 for a review), some authors have highlighted the subjective and context-dependent nature of this concept (e.g., Zhu & Shelton, 1996). Significant disparities in housing quality among peers or within the social environment can lead to even more deleterious consequences for psychological functioning, by exacerbating social stigma and a sense of inadequacy (Evans et al., 2002).

Due to its various meanings, homeownership is also a crucial factor to consider in the link between housing and well-being. Acquiring an apartment or a house is generally considered a milestone step in an individual's life across countries and contexts, and a way to affirm one's own social status and personal success (Diaz-Serrano, 2009), offering a sense of freedom and independence, and in turn enhancing self-esteem (Rohe & Stegman, 1994; Rohe et al., 2002), psychological well-being and overall life satisfaction (Will & Renz, 2023). This link has been found especially relevant among the most disadvantaged people (Rohe & Stegman, 1994). It may act particularly in those societies where homeownership is prevalent while the rental sector is viewed as less favourable and primarily occupied by individuals who face socio-economic disadvantages (Herbers & Mulder, 2017). Besides, ownership may foster a sense of security (Iwarson et al., 2004), community belonging, and the opportunity to establish roots in a particular location, thus enhancing a sense of continuity and control (Evans et al., 2003; Rohe & Stegman, 1994), which transforms a house into a home and strengthens individuals' well-being and satisfaction. Furthermore, given the preference of older individuals to age in their own homes (Costa-Font et al., 2009), homeownership, besides serving as a financial safety net, may better fulfil older adults's needs for emotional attachment and stability compared to renting. Nevertheless, it has been found that the presence of a mortgage negatively affects the owners' emotional well-being (Will & Renz, 2023), thus possibly counteracting the positive effect of the property.

Homeowners and renters are different from other points of view, too. Previous research has proved that owners have more incentives to care for the property and are able to customise the house according to their preferences. In contrast, renters are generally less motivated to maintain and improve their dwellings (Zumbro, 2014), finding fewer benefits from these tasks

(Rohe et al., 2002). As a result, owner-occupied dwellings tend to be of higher quality, thus enhancing satisfaction also through this way.

Besides rent or mortgage payments, a house entails various costs for utilities and periodical or extraordinary maintenance, and high housing-related expenses and difficulties in affording them have been found to give rise to sentiments of anxiety and precariousness (Acolin & Reina, 2022). Being housing a fundamental good, individuals may be forced to choose between housing costs – for instance, rent or mortgage payment – and other (less incumbent) needs, including healthcare ones (e.g., Ayala et al., 2022). This economic and financial strain may fuel a sense of inadequacy to face household and family members' necessities, leading to diminished well-being.

The meaning of neighbourhood environment for well-being

Undoubtedly, a person's environment is not only *within* the domestic walls. Whether the relationship between housing conditions and individuals' well-being has received specific attention and is relatively well-established, especially in certain contexts, the *neighbourhood pathway* (Macintyre & Ellaway, 2003), or the neighbourhood environment where people live, is seldom investigated (Oswald et al., 2011).

Most previous research has focused on the living area in terms of physical environmental attributes (namely, air quality or pollution), considering their consequences in terms of illness and death (e.g., Ellaway et al., 2012; Diez Roux et al., 2010) but several elements can be assumed to regulate the interaction between people (and their satisfaction) and the living surroundings. As well as in their houses, individuals develop relationships, play activities and perform their daily routine also in their nearby environment. In this sense, it can be viewed as a source of identity (Balestra & Sultan, 2013), and it has also been found to correlate to family events during the life course (e.g., Buyukkececi, 2022). The availability of daily life services within a secure neighbourhood (Lowe et al., 2015) is crucial for fostering a sense of self-engagement and identity (Hernández et al., 2007), mitigating security concerns and feelings of social isolation. For older individuals – namely after retirement or when frailty and physically reduced mobility become relevant – the immediate neighbourhood becomes the primary source of interaction with others, thus important for their feeling of autonomy, connection and security (Tomaszewski, 2013). Together with adequate housing, also features of connectedness and liveability of the local area – like the presence of community support and services, good maintenance or safe outdoor spaces (e.g., Clark et al., 2017; Flores et al., 2019) – enable the development of a sense of attachment, that is particularly salient for older adults' quality of life (Gonyea et al., 2018).

Among the environmental characteristics that previous literature recognised as positive for a satisfying and fulfilling life (e.g., Lowe et al., 2015; Song et al., 2023; Teixeira Vaz et al., 2019), we locate elements such as the availability of shops and food markets, access to public transportation, health and recreational services, cultural venues and leisure opportunities. Previous studies (see, for instance, Larson et al., 2016 for a review) have also indicated that residents derive a range of physical, psychological, and social advantages from access to public parks and green spaces. When focusing on older adults, previous research (see, e.g., Hogan et al., 2016; Pirani et al., 2023; Tomaszewski, 2013; Zapata-Lamana, 2022) has identified as especially influential the accessibility of vital public services, like health and transportation services, the state of the neighbourhood pavements which enhance walkability, the presence of parks and green spaces, and the availability of food suppliers in the local area. All the aspects facilitating the elderly mobility and independence may benefit their well-being (Flores et al., 2019).

Contrarily, living in areas with deteriorated buildings, proximity to busy transportation routes or industrial areas (Rauh et al., 2008; Zumbro, 2014), social challenges like high unemployment and crime rates, inadequate waste disposal or littered streets (Tomaszewski, 2013), has been found to significantly reduce one's sense of security, boost chronic stress and depressive conditions and in turn reduce psychological and personal well-being. Due to their physical limitations and reduced mobility, older individuals are particularly harmed by worries about neighbourhood safety (Gonyea et al., 2018). Also, residing in deteriorated or unfriendly areas can influence lifestyle behaviours (e.g., Heinrich et al., 2007), which may be necessary, especially in old age, to maintain good health and quality of life.

Before concluding this brief review, it is not worthless to notice that housing conditions and the close neighbourhood environment are inevitably interconnected, and individual socioeconomic disadvantage may drive the association between poor housing or neighbourhood quality and well-being (Poortinga et al., 2008). The limited availability of affordable housing restricts families' options, forcing lower-income groups into unsafe housing. These homes are often situated in overcrowded neighbourhoods with higher poverty rates and fewer health-enhancing resources, amenities, and green or safe spaces. Homeownership, too, may interact with the neighbourhood environment. Homeowners usually report higher satisfaction levels not only with their homes compared to renters but also with their neighbours (Diaz-Serrano, 2009) due to the sense of place attachment they develop. The assurance of ongoing residency provided by ownership is believed to enhance supportive social networks and help them become more connected to the living community (Balestra & Sultan, 2013), which is vital for a fulfilling and satisfying life.

All housing and living environment elements are interconnected and can overlap, reinforce or weaken each other. Still, each represents a small piece that can contribute to determining the final outcome of lesser or greater well-being. When considering the link between living environment and individual well-being, it is therefore important to maintain a comprehensive view (Oswald et al., 2011).

House-related issues in Italy

Among the four homeownership regimes described by Mulder and Billari (2010), Italy can be included in the *difficult* one, characterised by a high share of homeownership in the country and low access to mortgages. Mortgages are complicated to be granted and require that the applicant has a stable income. Indeed, whereas young people are usually excluded from mortgage grants because of their limited-time contracts, older people are for their retirement condition (Liberati & Vacca, 2016). In this scenario, inheriting assets and intergenerational transfers remain the most relevant avenue for families to acquire a house. The rental market in Italy was regulated by strict norms and laws until the beginning of the 1990s, favouring and protecting renters' rights over tenants' rights. Then, deregulation introduced some flexibility (Rondinelli & Veronese, 2011), which contributed, together with other factors, to growing housing insecurity; despite this, the share of private rented accommodations has remained low (Kenna, 2018). Given these two opposite dynamics – the difficulty for young people to access mortgages and the inheritance of houses among family members – the Italian ownership rate tends to increase with age (Figure 1) without relevant variations over time.

Figure 1 – Ownership rate by age class. Years 2013-2022.
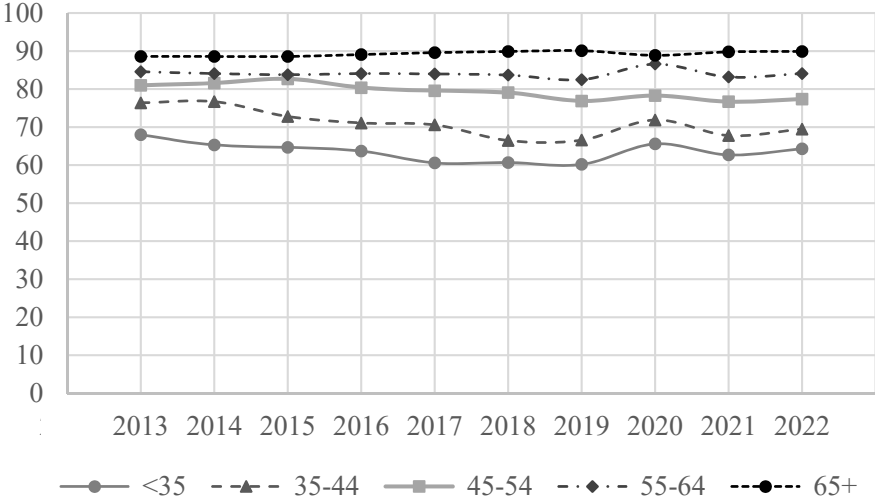
Source: Datawarehouse Istat (I.Stat), data stemmed from the European Union Survey on Income and Living Conditions (EU-SILC).

Around nine out of ten Italians aged 65 and over own their home, and the proportion reduces to around eight out of ten for adults aged 45 to 54, and to six out of ten for the younger age group (35 or less). It is also interesting to note that, for older individuals, the homeownership rate was not affected by the economic recessions, whereas the possibility of access to property was reduced for younger people.

Although a very high percentage of people in Italy are homeowners, even with respect to the European average (around 70%, Eurostat data), many struggle with housing expenditures (costs) or experience a high-cost burden. In 2020, around one-third of Italian families declared they faced high housing expenses (Table 1), without relevant differences across age, although people aged 65 and over seem less concerned by housing costs (30.5%, the lowest percentage). Differentiating by housing tenure, among Italian families having a mortgage, 36.7% considered its costs excessively high, but the percentage of people declaring expensive costs increases to about 50% among those living in a rented house.

Table 1 – Percentage of people declaring housing, mortgage, and rent costs too expensive by age class. Years 2013 and 2020.

	2013			2020		
	Too expensive costs for			Too expensive costs for		
	housing	mortgage	rent	housing	mortgage	rent
34 and younger	56.4	63.0	65.0	34.2	29.1	48.0
35-44	53.1	61.4	63.9	33.1	34.8	52.8
45-54	54.3	66.4	62.9	33.8	36.4	55.1
55-64	51.0	69.0	63.5	31.7	41.5	46.2
65 and older	55.3	71.7	59.4	30.5	53.1	42.3
Total	54.1	64.5	63.0	32.3	36.7	49.6

Source: Datawarehouse Istat (I.Stat), data stemmed from the European Union Survey on Income and Living Conditions (EU-SILC).

A great variability among age classes appears, especially for mortgage costs, and in this case older people seem especially concerned (in this age class over 53% of those who have a mortgage complain about high costs compared to 30% among younger individuals). The conjonctural economic situation probably matters in this context. Compared to 2013, these figures show an improvement in the affordability of housing expenses (see also Figures A1a-A1c in the Appendix for the complete time series). In that year, when the adverse effects of the Great Recession of 2007-2008 were still at play in Italy, more than half of Italians declared housing costs too expensive, and two out of three were excessive mortgage and rental costs.

Given these premises, by focusing on Italian people aged 65 and older, we explore the association of various living environment characteristics with life satisfaction. Especially while the housing characteristics have been primarily considered in the previous literature, we also explore the role of the nearby neighbourhood environment where individuals live by constructing *ad hoc* indicators.

ANALYTICAL STRATEGY

Data and sample

To investigate the relationship between housing and neighbourhood characteristics and life satisfaction, we considered eight ISTAT waves of the ADL survey from 2013 to 2020[1], a cross-sectional nationally representative survey that includes information on a wide range of topics related to the daily life of Italians and their families – e.g., living conditions, economic status, social and political engagement, health and lifestyles, and expectations and evaluation about public services. The collected data mainly refer to a self-reported perspective, thus offering a unique point of view on the daily habits and living situation of the Italian population. Each annual survey is conducted on approximately 24-25 thousand households for about 45-50 thousand individuals of all ages. Due to our aim, we selected only individuals aged 65 and over at the time of the survey. Our final analytical sample included 68,217 individuals aged 65 or older, ranging from about 7,800 in 2014 to a maximum of 9,350 in 2017. Our analytical sample sees a slightly higher prevalence of women (55%) and is almost equally divided between the youngest (aged 65-to-74) and the oldest old (aged 75 or over) (see Table A1 in the Appendix).

Outcome variable

Our dependent variable was the life satisfaction of people aged 65 and over, which we assessed using the following question: "Currently, how satisfied are you with your life overall?". Respondents were asked to answer on a scale of 0 to 10, where 0 indicated "not at all satisfied" and 10 indicated "very satisfied". Responses were heavily skewed toward high satisfaction levels: less than 20% rated it as 5 or lower; one out of four old persons indicated a score equal to 7, and another equal to 8; finally, a non-negligible 13% attributed the highest scores – 9 or 10. For analytical purposes, we dichotomised the variable to distinguish between those who reported high levels of satisfaction – from 8 to 10, *highly satisfied individuals*, about 38% of

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[1] The survey carried out in 2021 has been excluded due to the lack of information about household size. The year 2020 has been included to increase the sample size after the verification that the inclusion of the data from the year of the COVID-19 pandemic does not affect the results (not included but available upon request).

the sample – and those who did not – satisfaction scores from 0 to 7, *not (entirely) satisfied individuals*, the remaining 62%. In our sample, Italian older adults highly satisfied with their life are almost two out of three, with somewhat higher percentages for the youngest old, and with a slightly increasing trend over the period considered (see Figure 2).

Variables to describe the living environment

Based on the theoretical background previously described, in our analysis we considered both the immediate living environment of individuals, namely housing conditions, and the nearby neighbourhood environment, namely the conditions of their living area.

To approximate the various facets of housing potentially relevant for individual life satisfaction, we relied on four variables based on the previous literature and the available information in the survey. First, we considered the housing tenure status, differentiating between *owner*, *tenant*, and *other* (a residual category including usufruct or similar). As for the housing characteristics, we first introduced into the analysis the subjective evaluation of the housing conditions, differentiating between *good* and *bad,* as the questionnaire required a dichotomic answer; second, we computed an indicator representing the number of rooms per person (categorised into <1 room per person, 1-2 rooms per person, >2 rooms per person). As for the ability to afford housing costs, we used the self-reported evaluation if the expenses for the house were too high (again collected through a dichotomic answer, yes or no, re-labelled as *high* and *low*). Besides housing maintenance and management costs, housing costs might include mortgage and rental ones. However, it is plausible that mortgage costs are limited in the selected sample, which focuses on old individuals (Liberati & Vacca, 2016).

For the neighbourhood environment, based on previous literature (e.g., Ross & Mirowsky, 2009; Weden et al., 2008), we referred to two major domains representing the quality of the living environment, labelled as *liveability* and *accessibility*, and thanks to the richness of the data source used, we were able to approximate it through various composite indicators expressly computed.

As for the liveability domain, namely those aspects of the living environment that make it a good place to live, by considering various items,[2] we built three normalised (between 0 and 10) indicators, each of them detecting a distinct and well-defined dimension. The first indicator was intended to measure the *security* of the area and included the perception of criminality in the surrounding area. The second indicator included four items about parking ease, air quality, and

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[2] Table A2 of the Appendix reports the questionnaire phrasing for different items considered and their answer categories.

noise and traffic level in the surrounding area, and was called area *friendliness*. Finally, the third dimension of area liveability was *maintenance*, and it was formed by three items about the presence/absence of cleanliness and waste management, street lighting adequacy, and good pavement conditions.

As for the accessibility of the daily services domain, related to the ability to reach services and food suppliers easily, we again built two normalised (within the range of 0-10) indicators[3]. The first one considered the self-reported ease of access to public services, like post and municipality offices, police stations, pharmacies, and emergency medical services (*service access*). The second indicator referred to the accessibility of goods supply and included the items linked to ease of access to (local) markets and supermarkets (*goods availability*).

Model estimation and controlling variables

The association between life satisfaction, housing, and neighbourhood features was estimated using a logistic regression model[4], taking into account a large set of potential confounders in this relationship. We included some socio-demographic characteristics, such as respondent's sex (male; female), age (divided into two classes: 65-74; ≥75) and education (primary; lower secondary; upper secondary or tertiary), as well as their family arrangement (alone; in couple with children; in a couple without children; single parent; other family types). Moreover, as a control variable, we added the respondent's perception of the household economic resources (dichotomised into *not good* vs. *good*), acknowledging that the financial situation can be strongly related to the ability to cope with housing-related expenses. Because our study focuses on older people, their health conditions may be critical in determining life satisfaction, and thus, in the model specification we accounted for respondents' self-reported health (again, dichotomising the answer categories into *not good* vs. *good*).

Finally, to account for territorial differences linked to the demographic development of the country (Buonomo et al., 2024) and elderly life course trajectories (Malmberg et al., 2024), as well as possibly connected to liveability and accessibility issues, we took into consideration the region of residence (North-West; North-East; Centre; South; Islands) and the type of residential area (<10.000 inhabitants; ≥10.000 inhabitants; metropolitan area). The survey year, spanning from 2013 to 2020, was also included in the analysis (as a continuous variable).

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[3] Again, see Table A2.
[4] Since the original dependent variable takes values from 0 to 10, we also estimated through a linear regression model. Results were virtually the same, and considering the asymmetrical distribution of the responses, we preferred to opt for the dichotomization and the logistic model to present our final results.

The distribution of the socio-demographic characteristics in our analytical sample by level of life satisfaction is illustrated in Table A1 of the Appendix. The model estimation considered the clustering of individuals into families and regions on an annual basis.

RESULTS

Descriptives

Overall, 38% of the old Italian people in our sample declare that they are highly satisfied with their lives, although there are some differences over time and by age (Figure 2). Over the period considered, the share of people aged 65-74 who are highly satisfied with their lives is consistently higher than that of people aged 75+, consistent with the previous literature. Moreover, the percentage of highly satisfied individuals tends to increase over time regardless of age class, suggesting that the conditions of older adults have progressively improved in the last decade, with up to 45% of people aged 65-74 and 40% of people aged 75+.

Figure 2 – Percentage of respondents declaring to be highly satisfied with life (scores from 8 to 10), by age class. Years 2013-2020.
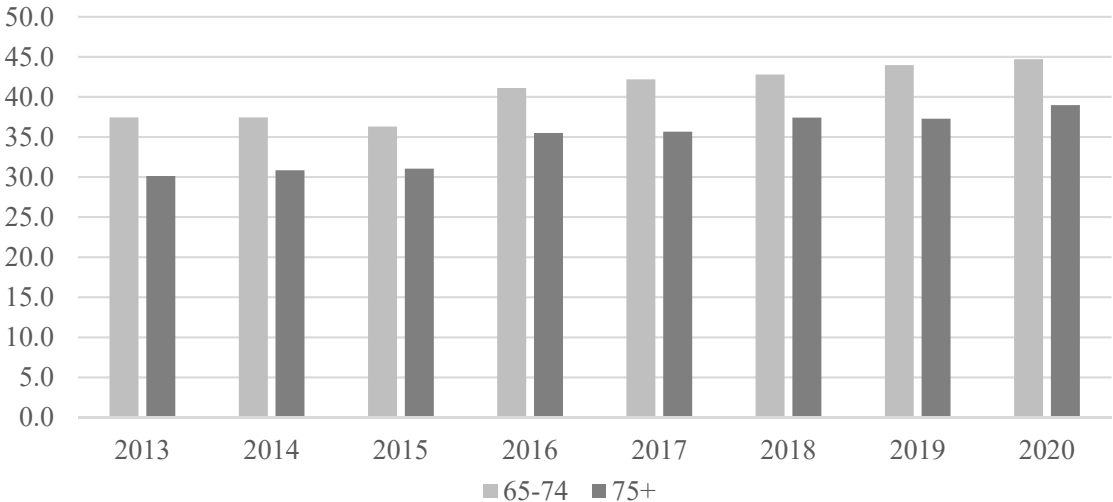
Source: Authors' elaboration on ADL data. Years 2013-2020.

Table 2 shows the distribution of the indicators of housing and neighbourhood conditions in our analytical sample, overall and by residential area and city type (mean values over the period 2013-2020). Some interesting differences emerge across the territorial classifications adopted. Whereas around 84% of our respondents are homeowners on average, the percentage is especially high in Italian central regions and Isles, and in small municipalities. Accordingly, rental houses are more widespread in metropolitan areas and in the North-West. About 40% of the sample declare to

have high housing expenses, and the percentage does not seem to vary by city type, but somewhat higher values are found in the Northern regions. Larger houses are found primarily in the North-Eastern regions and small municipalities. At the same time, unsurprisingly, metropolitan areas have a higher percentage of small houses (less than one room per person, around 13% relative to an average of 8.6%). Finally, perceived housing conditions are bad only in very few cases, around 4% on average, and no specific differences by region of residence or city type are observed.

Table 2 – Indicators of housing characteristics and neighbourhood environmental conditions. Average over the survey years 2013-2020.

| Indicators	Region of residence					Type of residential area			Italy
	North-West	North-East	Centre	South	Island	<10,000 inhab.	>10,000 inhab.	Metropol. area	
Tenure status									
property	82.8	84.2	86.6	82.9	87.9	87.0	84.1	80.6	**84.3**
rent	11.5	8.9	7.7	10.3	6.9	5.5	10.2	14.3	**9.5**
other	5.8	7.0	5.7	6.8	5.2	7.5	5.7	5.1	**6.2**
Perceived housing expenses									
low	44.8	45.9	34.0	35.0	35.7	39.8	39.3	38.7	**39.4**
high	55.2	54.1	66.0	65.0	64.3	60.2	60.7	61.3	**60.6**
Dwelling size (room/person)									
<=1	8.0	5.8	7.9	11.8	8.0	6.3	8.0	13.4	**8.6**
1-2	44.9	37.4	41.4	45.2	46.0	40.1	43.3	46.5	**42.9**
>2	47.1	56.8	50.7	43.0	46.1	53.6	48.7	40.1	**48.6**
Housing in bad conditions									
good	97.2	96.9	96.4	94.7	95.1	96.1	96.3	95.8	**96.1**
bad	2.8	3.1	3.6	5.3	4.9	3.9	3.7	4.2	**3.9**
Security of the area	6.1	6.6	5.9	6.5	7.0	7.4	6.2	5.2	**6.4**
Area friendliness	6.0	6.6	6.2	6.2	6.1	7.5	5.9	4.9	**6.2**
Maintenance	6.2	6.9	5.5	5.7	5.6	6.7	5.9	5.1	**6.0**
Services access	7.9	8.0	7.6	7.2	7.4	7.6	7.6	7.7	**7.6**
Goods availability	8.1	8.4	8.3	8.0	8.2	7.8	8.4	8.5	**8.2**

Source: Authors' elaboration on ADL data. Years 2013-2020.

As for the neighbourhood indicators, minor differences are recorded by region of residence, possibly due to the heterogeneity within this territorial aggregation. More interestingly, some differences appear by city type: the neighbourhood environment is generally considered more secure, friendly and better maintained in small urban/rural centres than in metropolitan areas (average values equal respectively to 7.4, 7.5, 6.7 versus 5.2, 4.9, 5.1). Finally, where no differences are recorded for service access, goods availability seems better in metropolitan areas than in small city centres.

Housing conditions and life satisfaction

Figure 3 reports the results obtained through a logistic regression model on the probability of reporting high life satisfaction *versus* reporting to be not (entirely) satisfied, according to the housing characteristics reported by the respondents. Results are reported in terms of Average Marginal Effects (AME), and complete model results are reported in Table A3 of the Appendix.

Figure 3 – Logistic regression model results for the probability of being highly satisfied with life *vs* being not (entirely) satisfied by housing characteristics. AME, with 95% confidence intervals.
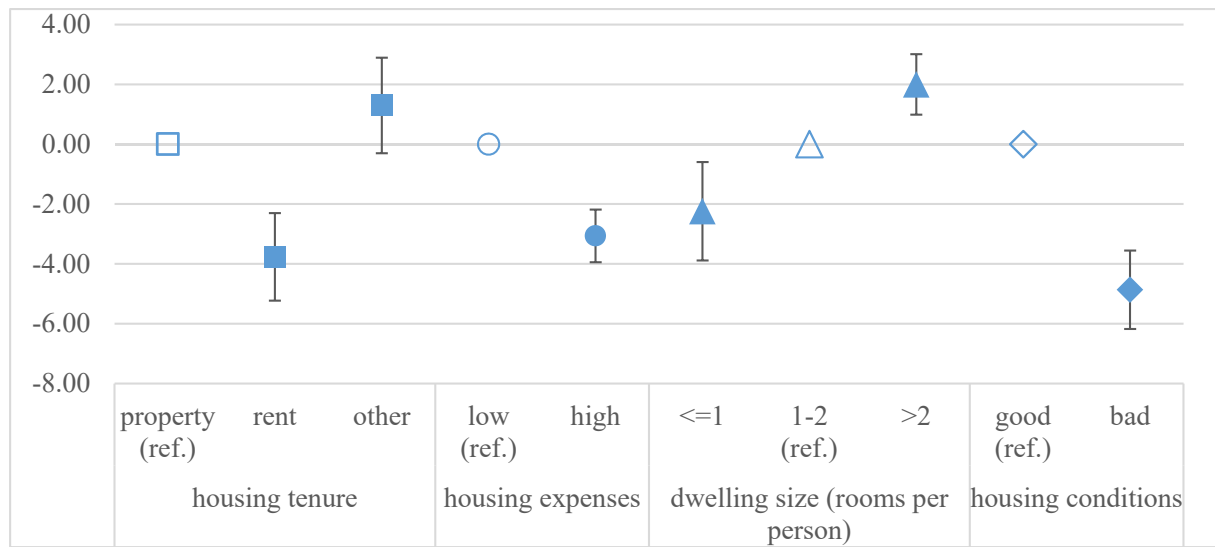
Source: Authors' elaboration on ADL data. Years 2013-2020.

For those who live in a rented house, the probability of being highly satisfied with their life is 3.8 percentage points (p.p. hereafter) lower than for homeowners, other things being equal. The situation is indeed reversed for individuals in different conditions (e.g., usufruct or similar), who are somewhat more satisfied on average, but it has to be said that this situation refers to around 6% of the sample (see Table A1). Similarly, the probability of reporting high life satisfaction decreases for those who declare high housing-related expenses and bad housing conditions (-3.1 and -4.8 p.p., respectively). In addition, relative to a housing dimension of 1-2 rooms per person, a smaller dwelling leads to lower life satisfaction, whereas the availability of 2 or more rooms per person significantly increases it (AME equals 2.0 p.p.).

As discussed before, all these conditions are probably intertwined because, for instance, bad housing conditions might be related to high maintenance costs. We also estimated separated models, adding each housing variable one at a time, and their effects were somewhat higher, to 1 percentage point, proving a certain overlap between factors.

Neighbourhood environment and life satisfaction

Figure 4 shows the estimated Average Marginal Effects of the neighbourhood environment indicators on life satisfaction. We found that both the liveability and accessibility domains are positively related to older people's life satisfaction. Although the values of the AMEs for the neighbourhood environment indicators are smaller than those estimated for the housing conditions – and this is due to the measurement level of these indicators, which are continuous and not categorical as the previous ones, and thus not fully comparable – these effects are not negligible. The most notable neighbourhood features associated with older adults' life satisfaction are the area's *friendliness* (in our specification, in terms of the absence of traffic, air and noise pollution) and access to services (for which we consider post and municipality offices and health services). As for the former, an increase of one point in the perception of living in a friendly environment is associated with a rise of 0.8 p.p. in the probability of being highly satisfied with life. Similarly, the effect of service accessibility is equal to 0.9 p.p. Then, the second domain of accessibility, the ease of access to markets and supermarkets (*goods availability*), increases the likelihood of life satisfaction (AME around 0.5 p.p.). Living in a neighbourhood considered safe and with low risks of criminality contributes to enhanced life satisfaction, too (AME around 0.4 p.p. for the *security* indicator). Finally, area *maintenance* also plays a role, although with a lower magnitude (AME=0.3 p.p.).

Figure 4 – Logistic regression model results for the probability of being highly satisfied with life *vs* being not (entirely) satisfied by neighbourhood conditions. AME, with 95% confidence intervals.
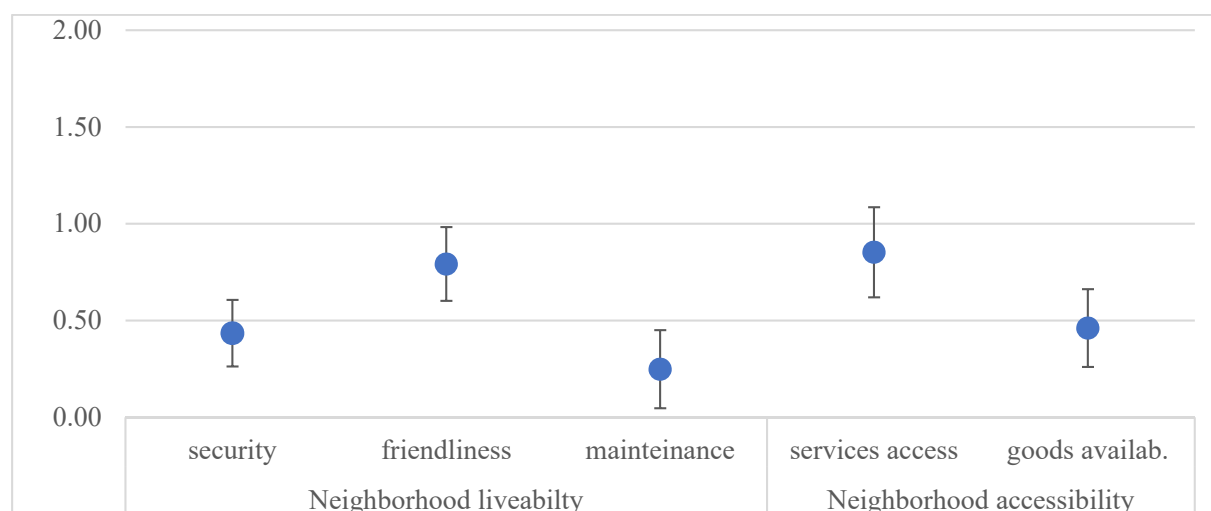
Source: Authors' elaboration on ADL data. Years 2013-2020.

Socio-demographic correlates

The socio-demographic control variables confirm expectations and previous findings (Table A3 in the Appendix). Men have a higher probability than women to declare a high life satisfaction level (AME=2.0 p.p.). Satisfaction decreases with age (AME of people aged 75 and over relative to 65-74 equal to -1.7) but increases with education (AME of high education equal to 3.0). Living with a partner is the family arrangement linked to the highest probability of being satisfied with life in old age, whereas living with children only is especially detrimental to individual satisfaction (AME=-12.3). High magnitudes in absolute terms are found, as expected, for not good self-rated health (AME=19.0) and not good economic conditions (AME=-10.4). According to the literature on life satisfaction, health and economic-related aspects are among the most important determinants of individual well-being, and our results align with this. However, it is essential to note that once an individual's health and economic conditions are taken into account, all other aspects related to housing and neighbourhood living conditions remain significant, proving their autonomous and independent role in life satisfaction.

Looking at the area where people live, older people in Southern Italian regions tend to assess their satisfaction with life as lower than those living in Northern regions (AME=-10.8 p.p.), and the same, although with a lower magnitude, also those living in central regions and Islands (AME around -5 p.p.). Finally, those living in small or medium-sized urban centres (<10,000 or >10,000 inhabitants, respectively) have a higher likelihood of being satisfied with life than those older adults living in metropolitan areas (AME equal respectively to 6 and 3.8 p.p.).

Interaction effects

It is plausible that individual characteristics differently shape the association between life satisfaction and the living environment. We thus tested several interaction effects (results not presented but available upon request). Whether no gender differences were found for any of the indicators considered, ease of access to services is slightly more relevant for the youngest old (65-74). In addition, the access to services, and to a small extent also goods availability, is more relevant for older adults living alone or only with their partner (effect not significant for the other family arrangements), probably due to their major needs to accomplish these tasks without help. When considering the interaction between neighbourhood indicators and health status, it appears that aspects such as security, area maintenance and access to markets and supermarkets are not significantly linked to life satisfaction for unhealthy people. A possible explanation

relies on the fact that those in bad health are also less prone to live their neighbourhood environment or can take advantage of higher help from others. No differences by education or economic resources were found for the neighbourhood indicators. However, bad housing conditions, high housing-related costs, and overcrowding are more relevant to those in poorer economic situations.

Finally, as expected, the area's friendliness (which, according to our specifications, is mainly linked to environmental pollution) is strongly and positively related to life satisfaction for those who live in metropolitan areas, followed by the accessibility domain indicators.

CONCLUSIONS

This work aimed to fill the gap, still present in the Italian context, on the role of housing and close neighbourhood environment characteristics on individual well-being, focusing on aged people. Individuals spend the largest part of their time in their house or in their immediate living area, especially in old age; there, they accomplish daily routines and develop familial and social relationships. In this sense, the characteristics of the living environment may act as a resource or a risk for individuals (Lawton & Nahemow, 1973; Oswald et al., 2011), shaping attitudes toward life and well-being. The relevance of this connection has become even more evident in the last few years, with the COVID-19 pandemic (Ayala et al., 2022) that has forced billions of people into their homes. In those days, people of all ages spent much more time in their homes or immediate surroundings than before, experiencing the importance of housing and neighbourhood characteristics for their daily lives, as older people usually do.

To perform our empirical analysis, we relied on Italian representative data covering a period spanning from 2013 to 2020. We referred to the cross-sectional surveys "Aspects of Daily Life", whose questions cover a variety of aspects related to the daily life of Italian families. Whereas for the housing characteristics we considered some existing measures, to catch the multi-faced features of the neighbourhood environment we expressly built five composite indicators related to the domains of *liveability* and *accessibility* of the living area.

Our results provide robust evidence of the link between satisfaction with life and the living environment for old Italian people. First, we confirmed previous international literature on housing characteristics (e.g., Fernandez-Portero et al., 2017; Herbers & Mulder, 2017; Zumbro, 2014) also for the Italian context. Housing adequacy is a significant correlate of life satisfaction, other things being equal, with individuals reporting bad housing conditions having a strongly reduced level of well-being. Housing tenure, too, is an important predictor: although we are not able to test the underlying mechanisms, old Italians in a rented house are less satisfied with life

than owners. Finally, as expected, high levels of housing-related expenses or too small dwellings (less than one room per person, in our case) are negatively related to satisfaction with life. It is important to note that whether a certain overlap and interaction between these characteristics is imaginable (e.g., rental houses could be in worse conditions than owned ones; or difficulties in affording housing expenses might be associated with the tenure status or the housing conditions), each aspect preserves its relevance also when all are accounted for.

Second, we contribute with the Italian case to the growing, albeit still limited, body of research on the link between the neighbourhood environment and life satisfaction. By proposing an operationalisation of various indicators depicting the living area (e.g., Shields et al., 2009; Tomazesky et al., 2013; Weden et al., 2008), we shed light on the possible facets of neighbourhood liveability and accessibility linked to life satisfaction in old life. Specifically, we showed that, net of housing characteristics, the lack of traffic, air, and noise pollution – what we called area friendliness – is considered the most crucial aspect of area liveability for older people. Whether the perceived security of the area and the presence of adequate street lighting, good pavement conditions and area cleanliness (its maintenance) are positively related to satisfaction with life, the absence of acoustic and environmental pollution plays a potent role. As for the accessibility domain, it seems that the ease of access to public services (like post and municipality offices, but also police stations, pharmacies and health services) is most notably linked to a satisfying life. However, the ease of access to local markets and supermarkets also matters, especially for older people living alone.

Overall, although individual health and socioeconomic characteristics remain fundamental in explaining differences in life satisfaction, we show that both housing and neighbourhood living conditions, in their various facets, exert a separate, specific, and substantial role in the life satisfaction of old Italians.

This study has some limitations to acknowledge, however. First, although our choice to rely on self-reported measures – essentially due to data constraints – as for both the housing and neighbourhood characteristics aligns with the notion that individual perceptions are likely to predict better variations in well-being (e.g., Ettema & Shekkerman, 2016) and may hold added significance in assessing living environment characteristics (Weden et al., 2008), we recognise that objective information could help in disentangling specific aspects for which housing and urban policies could act on. In addition, particular indicators at a more disaggregated and precise territorial level could add further insights. Second, whether the life satisfaction evaluation has been increasingly used in gerontological research (e.g., Ferring et al., 2004) and proved to be suitable to capture differences in the ageing process (e.g., Tian & Wang, 2021),

we acknowledge that other well-being and health outcomes would be needed to shed more light on the potential effects of living environment features on the life of older adults.

Despite these limits, we deem that our study adds a novel understanding, especially for a country where the current demographic trends pose population ageing and its consequences at the centre of the debate. Given the increased vulnerability of older adults, the connection between individual well-being and the living environment is particularly crucial for society, stimulating active interventions and policies to support a fulfilled ageing. Appropriate and tailored housing and high-quality living environments might contribute to diminishing existing health inequalities (Ayala et al., 2022), which calls for the policy level to act. We have shown a multi-faced link between living environment and individual well-being, and interventions should also adopt a comprehensive perspective.

Providing adequate dwellings should be a priority especially and above all for the most vulnerable and disadvantaged individuals. New or renovated houses, houses with sufficient space, sanitary, and safe conditions positively and directly benefit physical and mental well-being. Attributing greater value to the housing resources and a better alignment with the house's characteristics can provide older adults with greater residential satisfaction, a higher level of personal autonomy and, consequently, a higher level of life satisfaction or quality of life.

Well-maintained buildings also mirror a more pleasant and liveable neighbourhood environment, increasing the significance and benefits of the residential space. Living well in a proper house and being embedded in an enjoyable environment foster a sense of community, allowing individuals to maintain family and social relationships and engage in cultural, recreational or institutional activities. As individuals age, accessing essential services, amenities, and social opportunities within their local community becomes increasingly important (e.g., Pirani et al., 2023), promoting independence and active engagement. Our results inform city planning interventions about the positive advantages of creating friendly communities and urban spaces to support active ageing. Proper spaces where to reside and live for older people can benefit concerned individuals and their relatives, above all, those who act as caregivers. Especially in a country like Italy, where the incidence of informal elderly care and a solid filial responsibility norm are among the highest in the European context (Spasova et al., 2018), communities designed to account for the needs of older people might also minimise the requirement of expensive formal, long-term care facilities.

Overall, our research emphasises the significance of housing and living area conditions as pivotal resources for individuals' and communities' well-being, which should be recognised from a multi-sectorial perspective (Swope & Hernandez, 2019) to enhance interventions

between different fields, for instance, housing developers, urban planners and health practitioners. A similar perspective has been recently advanced by the Italian National Recovery Plan ("*Piano Nazionale di Ripresa e Resilienza*", PNRR), which is part of the Next Generation EU programme, aiming, among other things, to strengthen local and community prevention and health services, and promote more efficient and customised home (care) services, also through the development of smart technologies and smart houses assisting people in living healthily and facilitating the age-in-place practice.

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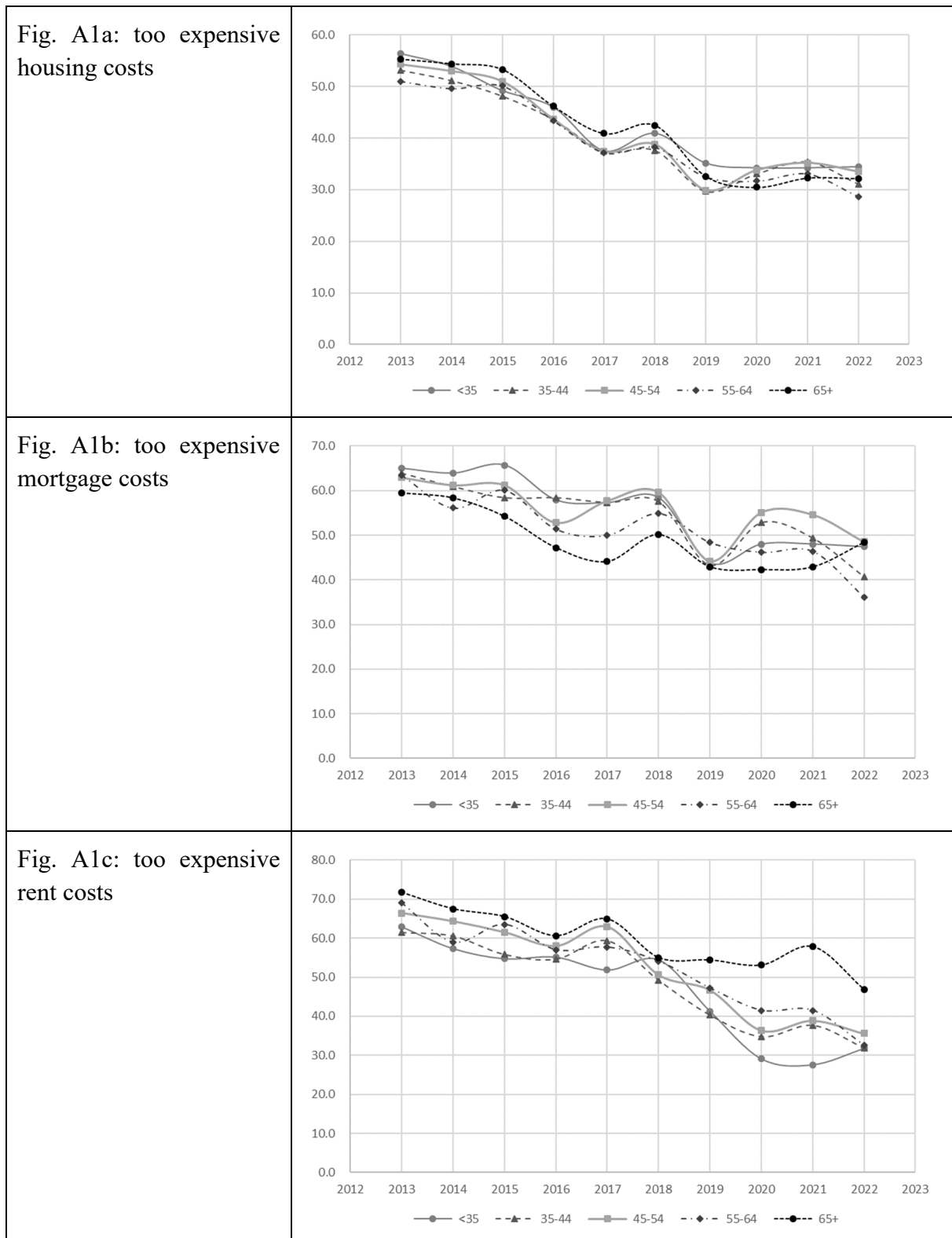
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APPENDIX

Figure A1 – Percentage of people declaring too expensive housing costs (1a), mortgage costs (1b), and rent costs (1c), by age class and year. Years 2013-2022.

Fig. A1a: too expensive housing costs	
Fig. A1b: too expensive mortgage costs	
Fig. A1c: too expensive rent costs	

Source: Datawarehouse Istat (I.Stat), data stemmed from the European Union Survey on Income and Living Conditions (EU-SILC).

Table A1 − Distribution of the housing and socio-demographic characteristics of the sample, by life satisfaction, column percentages.

	Life Satisfaction		Total
	Low	High	
Housing characteristics			
Tenure status			
property	82.7	87.0	84.3
rent	10.9	7.1	9.4
other	6.4	5.9	6.2
Perceived housing expenses			
low	35.9	45.0	39.3
high	64.1	55.0	60.7
Dwelling size (room per person)			
<=1	9.8	6.5	8.5
1-2	43.2	42.3	42.8
>2	47.1	51.3	48.7
Housing conditions			
bad	95.2	97.7	96.1
good	4.8	2.3	3.9
Socio-demographic characteristics			
Sex			
Men	42.6	49.1	45.1
women	57.4	50.9	54.9
Age class			
65-74	48.7	55.2	51.2
75+	51.3	44.8	48.9
Living conditions			
living solo	28.4	23.3	26.5
with partner	38.9	50.4	43.3
with children	6.6	4.1	5.6
with partner and children	13.8	13.5	13.7
with others	12.3	8.7	11.0
Education			
High	22.7	29.3	25.2
medium	21.8	23.5	22.4
Low	55.6	47.2	52.4
Economic resources			
good	56.7	74.3	63.4
not good	43.3	25.7	36.6
Perceived health			
good	78.3	92.3	83.6
not good	21.7	7.7	16.4
Region of residence			
North-West	21.0	25.9	22.9
North-East	17.4	25.9	20.6
Centre	20.0	18.3	19.4
South	31.5	21.5	27.7
Island	10.0	8.4	9.4
Type of residential area			
Metropolitan area	23.4	18.4	21.5
<10000 inhabitants	32.8	38.8	35.0
>10000 inhabitants	43.9	42.9	43.5

Source: Authors' elaborations on ADL data, 2013-2020.

Table A2 – Liveability and Accessibility domains and their indicators

Domain	a. Domain definition and questionnaire measurement	b. Items	c. Dimensions
Liveability: Characteristics of the living environment that make it a good place to live	Measured through the question "The area where the family lives presents…" For each item (see column b.), the respondents had to choose between: a lot; enough; little; not at all The response scale has been finally reversed to interpret the indicators in favourable terms – or liveability –.	Risk of criminality Parking difficulties; Traffic; Air pollution; Noise Dirt/garbage in the streets; Inadequate lighting in the streets; Bad street pavement	Security Friendliness Maintenance
Accessibility: Characteristics of the neighbourhood enhancing people's ability to access various public and health services	Measured through the question "In general, does reaching the following services create problems or difficulties for the family?" For each item (see column b.), the respondents had to choose between: 1= No difficulty, 2=some difficulties, 3=a lot of difficulties. To interpret the indicators in favourable terms – or accessibility – the response scale has been finally reversed.	Post offices, municipality offices, police stations, pharmacies, emergency room Food suppliers, markets; Supermarkets	Services access Goods availability

Source: Authors' elaborations on ADL questionnaires, 2013-2020.

Table A3 – Logistic regression model results on the probability of being highly satisfied vs being not (entirely) satisfied by control variables. AME.

	AME (p.p)	P>z
Year	0.72	0.000
Sex (ref. = female)		
Male	2.03	0.000
Age class (ref. = 65-74)		
75+	-1.66	0.000
Living condition (ref. = with partner)		
living solo	-7.81	0.000
with children	-12.31	0.000
with partner & children	-5.17	0.000
with others	-8.61	0.000
Perceived health (ref. = not good)		
good	18.99	0.000
Education (ref. = low)		
High	3.01	0.000
Medium	0.68	0.204
Economic resources (ref. = good)		
Not good	-10.42	0.000
Region of residence (ref. = North-West)		
North-East	1.41	0.212
Centre	-5.40	0.000
South	-10.83	0.000
Island	-5.38	0.000
Type of residential area (ref. = Metropolitan area)		
<10,000 inhabitants	6.13	0.000
>10,000 inhabitants	3.84	0.000
Tenure status (ref.=property)		
rent	-3.77	0.000
other	1.29	0.112
Perceived housing expenses (ref.=low)		
high	-3.06	0.000
Dwelling size (room per person) (ref.=1-2)		
<=1	-2.24	0.008
>2	2.00	0.000
Housing conditions (ref.=good)		
bad	-4.87	0.000
Neighbourhood indicators		
Security of the area	0.43	0.000
Area friendliness	0.79	0.000
Maintenance	0.25	0.014
Services access	0.85	0.000
Goods availability	0.46	0.000

Source: Authors' elaborations on ADL data, 2013-2020.