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Housing Conditions, Neighbourhood Area and Life Satisfaction in Older Age

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ABSTRACT

This study contributes to the literature on environmental influences on individual life satisfaction in older age, by offering novel empirical evidence from Italy, a country marked by rapid population ageing, a difficult homeownership regime and pronounced territorial inequalities. We jointly investigate various aspects of the living environment, both the *indoor* characteristics of the housing—its stability, adequacy and affordability—and the *outdoor* features of the immediate neighbourhood environment—its liveability and accessibility. We offer evidence that housing adequacy, friendliness of the neighbourhood environment and accessibility to public services are the most relevant aspects for older Italians' life satisfaction. Nevertheless, various aspects of the living environment proved to be important, highlighting the importance of adopting a multidimensional and integrated approach. In addition, despite well-known North–South differences in Italy, we did not find substantial variations across Italian macro-areas in this link. Conversely, the city type of residence does appear to matter, underscoring the need to conduct territorial analyses at a finer spatial scale that surpasses the traditional North–South divide. By placing our analysis within the literature on environmental effects on ageing, this study provides empirical evidence that can inform policy about interventions to enhance housing and neighbourhood conditions for elderly individuals, promoting friendly communities and well-designed urban spaces to support active ageing.

1 | Introduction

The acceleration of the demographic ageing process across high-income countries in recent years has heightened interest in the determinants of well-being among older adults. While increased longevity has generally been accompanied by improvements in quality of life in later years, the potential vulnerabilities of this population group underscore the need for increased attention to their specific life circumstances. Existing research has mostly highlighted economic stability, good health, family and social relationships as fundamental determinants of well-being (e.g., Clark 2018; Frey and Stutzer 2002). At the same time, other scholars emphasise that the environments where individuals live also play a role (e.g., Buffel et al. 2012; Evans et al. 2003; Herbers and Mulder 2017; Shields et al. 2009; Swope and Hernández 2019), though this

dimension has received comparatively less systematic attention in empirical studies (Clark 2018; Iwarsson et al. 2004).

Environmental gerontology has argued that the living environment interacts with people's lives, possibly functioning as either a resource or a source of strain for a fulfilling life (Lawton and Nahemow 1973), particularly at older ages, when individual capabilities may be limited or compromised. In this perspective, housing and neighbourhood conditions are central components of the broader ecology of ageing. Housing is considered a human right (United Nations 2009), providing protection from the elements and material security that is crucial for individual well-being. Yet housing also represents the first *milieu* in which socialisation occurs and where people develop personal experience and kinship ties, thus providing a sense of identity, continuity and security (Balestra and Sultan 2013),

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enhancing psychological and emotional wellness (Evans et al. 2003) and overall quality of life (Fernández-Portero et al. 2017). These mechanisms have been proven especially relevant for older adults, who may have resided in the same house for many years and aspire to ageing in place (Barry et al. 2018; Costa-Font et al. 2009; Gaymu 2003).

A person's environment is not only *within* the domestic walls, and neighbourhood conditions have been increasingly recognised to correlate with individuals' well-being, for instance in terms of life satisfaction (e.g., Shields et al. 2009; Teixeira Vaz et al. 2019), quality of life (e.g., Gonyea et al. 2018) and even self-rated health (e.g., Hogan et al. 2016). The quality and safety of the neighbourhood environment, the availability of essential services, opportunities for social interaction and the accessibility of amenities constitute important dimensions that may influence subjective well-being (Day 2008). As individuals grow older, they tend to spend more time in their residences and immediate neighbourhoods, making them the centre of their lives, so these living environments assume vital significance, closely intertwined with the individuals' quality of life.

This paper contributes to the ongoing debate on the housing and neighbourhood effects on the well-being of the older population, namely those aged 65 and over, by extending research to the Italian context. Despite a growing attention to these issues in several European countries (e.g., Herbers and Mulder 2017), research remains relatively scarce in Italy, although this country offers specific features that deserve closer examination, combining a rapid demographic ageing (Capacci and Rinesi 2017), a *difficult home-ownership regime* (Mulder and Billari 2010) and pronounced territorial inequalities. We investigate how characteristics of both housing and neighbourhood environments shape the life satisfaction of older Italians, assessing potential heterogeneity in this link across different residential contexts. By placing our analysis within the literature on environmental effects on ageing, this study aims to provide empirical evidence that can inform policy about interventions to enhance housing and neighbourhood conditions for elderly individuals, promoting positive living environments.

Our analysis relies on seven cross-sectional waves of the 'Aspects of Daily Life' (ADL) surveys carried out by the Italian Institute of Statistics (ISTAT) from 2013 to 2019. We consider various housing characteristics and neighbourhood features, the latter operationalised in terms of perceived *liveability* and *accessibility*. In this study, we rely on self-reported assessments for both housing and neighbourhood characteristics. While subjective measures do not necessarily align with objective indicators (e.g., Weden et al. 2008), they can offer additional meanings to understand variations in individual satisfaction (e.g., Ettema and Schekkerman 2016). To measure individual well-being, a multidimensional construct that generally refers to individuals' overall quality of life encompassing both objective circumstances and subjective evaluations (OECD 2013; Diener 2000), we refer to life satisfaction, as common in empirical research (OECD 2017). As a cognitive component of well-being (Diener et al. 1999; Ferring et al. 2004), life satisfaction captures psychological and emotional consequences of life events (Veenhoven 1991), useful to assess how individuals evaluate their circumstances in later life. Being correlated with a commitment to continuous learning and personal growth, life satisfaction may help in evaluating individuals' ability to adapt

to life changes and challenges of ageing (Tian and Wang 2021), representing an important factor in understanding the ageing process.

The remainder of the paper is structured as follows. The next section reviews theoretical and empirical literature on housing, neighbourhood and their link with well-being, and presents an overview of the Italian context. This background leads to our research questions. We then describe our analytical strategy, including data, variables and the method applied. The result section follows, with descriptive findings and the models' results. A discussion concludes the paper.

2 | Background

2.1 | Housing as a Multidimensional Determinant of Well-Being

Beyond its fundamental function as a shelter providing rest and protection, housing is increasingly recognised as a multidimensional determinant of well-being. Conceptual frameworks have been developed to illustrate the interconnected physical, economic and psychosocial mechanisms (e.g., Gibson et al. 2011; Evans et al. 2003; Swope and Hernández 2019) through which housing influences individuals' lives across the life course (Eibich et al. 2016). Building on this foundation, housing emerges as a key factor shaping several dimensions of subjective well-being, particularly in later life, when the home increasingly becomes the primary setting for daily experiences and identity. Within this discourse, three major housing domains have been most consistently linked to well-being: stability, adequacy and affordability.

Housing stability—often approximated by homeownership—typically refers to security of tenure and continuity of residence, which provides individuals with a sense of predictability and control, independence and self-esteem (Rohe and Stegman 1994; Rohe and Van Zandt 2002). Stable tenure fosters long-term settlement and, in turn, attachment to place, as well as the development of social ties and community belonging (Barry et al. 2018; Evans et al. 2003; Gaymu 2003). These psychosocial forms of attachment become especially significant in older age, when preferences for ageing in place are strong (Costa-Font et al. 2009), and they contribute to the positive association between housing stability, psychological well-being and life satisfaction (Will and Renz 2023). Crucially, the benefits of homeownership in later life are also of an economic nature: although mortgage debt may entail financial strain earlier in life (Will and Renz 2023), mortgages are typically repaid at older ages (Liberati and Vacca 2016), transforming housing property into an asset that provides material security and further reinforces well-being in later life.

The second domain recognised as linking housing to individual well-being, housing adequacy, concerns the extent to which a dwelling meets basic standards of quality, safety and functionality. Inadequate housing conditions—such as overcrowding, lack of essential amenities or insufficient accessibility—can undermine the sense of security and control, thereby compromising individual well-being (e.g., Evans et al. 2003; Swope and Hernández 2019). These issues arise as especially relevant in later life, when time spent at home increases and

environmental constraints may become challenging due to physical limitations (Evans et al. 2002). Importantly, adequacy is subjective and context-dependent (e.g., Zhu and Shelton 1996): individuals' perceptions of disparities in housing quality relative to peers or to the social *milieu* can generate feelings of inadequacy and stigma, with adverse psychological effects (Evans et al. 2002). Indeed, evidence indicates that the perceived appropriateness of the dwelling in relation to one's daily needs often matters more for well-being than objective characteristics themselves (Fernández-Portero et al. 2017; Oswald et al. 2007, 2011).

The third pathway through which housing becomes salient for individuals' well-being relates to housing affordability, defined as the extent to which housing costs are financially sustainable given household income and expenditure constraints. In case of housing-related costs, the financial strain can generate anxiety and a sense of precariousness (Acolin and Reina 2022), thereby undermining psychological well-being. At the same time, individuals facing affordability pressure may be forced to choose between housing costs and other essential needs, including healthcare—a trade-off that can become particularly significant in older age (e.g., Ayala et al. 2022). Through both these psychological and material channels, housing affordability constitutes a critical determinant of well-being.

Whether these three domains can be analytically distinguished, they are also interconnected. Owning a house eliminates rental payments and may enhance financial security, but ownership also entails maintenance costs that can be onerous. At the same time, owners typically have greater autonomy and motivation to maintain and tailor their dwelling, leading to higher levels of satisfaction and better overall housing quality (Rohe and Van Zandt 2002; Zumbro 2014). Thus, tenure can mediate the relationship between material conditions and subjective well-being through multiple, overlapping mechanisms. Despite extensive research on these aspects separately, often due to data limitations, the cumulative and interactive effects of housing stability, adequacy and affordability on well-being remain insufficiently understood. The present study adopts an integrated analytical perspective, considering the simultaneous influence of these aspects on individuals' life satisfaction in older age.

2.2 | The Meaning of Neighbourhood Environment for Well-Being in Later Life

A person's environment extends beyond the domestic sphere, and several authors have emphasised the importance of *context* (Swope and Hernández 2019) or area-level characteristics (Gibson et al. 2011) as an additional dimension relevant to individual well-being. Although the relationship between housing conditions and individuals' well-being has received specific attention and is relatively well-established, the *neighbourhood pathway* (Macintyre and Ellaway 2003) has been investigated less frequently (Oswald et al. 2011). This gap is particularly notable given that the neighbourhood context may become especially relevant for well-being in older age, when people tend to live primarily in their close environment due to possible impairments in physical abilities and functioning (Day 2008).

Previous research has mainly 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., Diez Roux and Mair 2010; Ellaway et al. 2012), but other elements regulate the interaction between people (and their satisfaction) and the living surroundings (Balestra and Sultan 2013). For older individuals—namely after retirement or when frailty and reduced physical mobility become relevant—the immediate neighbourhood has been shown to represent the primary source of interaction with others, where playing activities and performing the daily routine, thus contributing to their feeling of autonomy, connection and security (Tomaszewski 2013), and finally their satisfaction with life. The availability of daily life services within a secure neighbourhood is crucial for fostering a sense of self-engagement and identity (Hernández et al. 2007), mitigating security concerns and feelings of social isolation that can arise in this phase of life. In addition to adequate housing, features of connectedness and overall liveability of the local area contribute to the development of place attachment, particularly salient for the quality of life of older adults (e.g., Lowe et al. 2015; Clark et al. 2017; Gonyea et al. 2018).

Empirical studies (see, for instance, Larson et al. 2016; Lowe et al. 2015; Song et al. 2023; Teixeira Vaz et al. 2019) have consistently indicated that residents benefit physically, psychologically and socially from access to recreational, cultural and leisure opportunities, as well as from public parks and green spaces. If the former are mostly present in urbanised and densely populated places, the latter are more likely to be found in rural areas and smaller centres (Buffel et al. 2012; Viganó et al. 2019). Regardless of the urban–rural scale, the accessibility of health and transportation services, the state of the neighbourhood pavements and the availability of food suppliers in the local area—namely, aspects facilitating the elderly mobility and independence (Flores et al. 2019)—have been identified as especially influential on various well-being measures (see, e.g., Pirani et al. 2023; Hogan et al. 2016; Tomaszewski 2013; Zapata-Lamana et al. 2022). Residing in improved or friendly areas can influence lifestyle behaviours (e.g., Heinrich et al. 2007), important, especially in old age, to maintain good health and quality of life. In contrast, living in areas with deteriorated buildings, heavy traffic, industrial zones (Rauh et al. 2008; Zumbro 2014), social problems such as high unemployment and crime, or poor waste management (Tomaszewski 2013) have been shown to reduce feelings of security, increase chronic stress and depressive conditions and ultimately undermine psychological and personal well-being.

If the living environment can therefore represent a crucial aspect of individual well-being, with specific relevance in older age, it is worth noticing that housing conditions and the close neighbourhood environment are interrelated, and individual socio-economic disadvantage often underpins the association between poor housing or neighbourhood quality and reduced well-being (Poortinga et al. 2008). Limited access to affordable housing restricts families' choices, frequently relegating lower-income groups to unsafe dwellings. Such dwellings are commonly located in neighbourhoods characterised by higher poverty rates and fewer health-promoting resources, cultural amenities and recreational and safe spaces. Homeowners have also been found to report higher satisfaction with their

neighbours than renters (Diaz-Serrano 2009), partly because ownership fosters a stronger sense of attachment to place. Moreover, by ensuring residential continuity, homeownership has been associated with the development of supportive social networks and stronger connections to the community (Balestra and Sultan 2013), factors linked to social integration and overall well-being.

In summary, housing and neighbourhood characteristics are both expected to influence life satisfaction, with potential interrelations that may intensify disadvantages. Adopting a holistic and integrated perspective (Oswald et al. 2011), we consider both housing characteristics and neighbourhood conditions to understand their specific contributions to life satisfaction and to identify the factors that most strongly shape older adults' well-being.

2.3 | The Italian Case

We focus on Italy, an especially relevant, yet comparatively understudied, case for empirical research on how living environment characteristics shape well-being in later life. Several features make the Italian context analytically valuable.

First, Italy ranks among the countries with the highest proportions of older adults worldwide, making population ageing particularly salient for social and public policy. Environmental gerontology emphasises the importance of the setting in which older people live for their well-being (Lawton and Nahemow 1973; Oswald et al. 2011), yet relatively little is known about the residential context of older Italians and how this relates to their well-being.

Second, the Italian housing system is distinctive in the European landscape. This country is often described as a paradigmatic homeownership society (Herbers and Mulder 2017). Around 75% of Italian households are homeowners, compared with an European Union (EU) average of about 65% (Bank of Italy 2019). Importantly, homeownership is even more prevalent among older cohorts—rising to 80% among those aged 65 and over (Mudrazija and Butrica 2017), compared with around 70% in the EU (Angelini et al. 2014). This pattern reflects both deep-rooted generational disparities and decades of public policies that have systematically promoted homeownership as the preferred form of tenure, while progressively dismantling the public housing sector (Esposito 2024). As a result, intergenerational transfers and inheritance have become the primary pathways into homeownership (Mulder and Billari 2010). In this context, homeownership represents not only an economic asset but also a vehicle of intergenerational cohesion and family continuity, reproducing socio-economic inequalities between generations.

Conversely, in the Italian context, the rental market remains residual, largely privatised and weakly regulated. Public intervention in housing is minimal (Acolin and Reina 2022), and tenant protections are limited, contributing to high eviction rates (Esposito 2024). As a result, rents are predominantly determined by market dynamics, leading to sharp increases, especially in metropolitan areas. These structural features of the Italian housing market may be hypothesised to have a far-reaching impact on well-being. Prior research suggests that the association between homeownership and well-being tends to be

stronger where renting is socially or economically discouraged, and where limited public housing provision amplifies financial stress among disadvantaged groups (Acolin and Reina 2022). In addition, in Southern Europe, marked by chronic underinvestment in urban planning, improvements in dwelling and neighbourhood quality have been shown to substantially enhance the well-being of older adults (Fernández-Carro et al. 2015).

Third, Italy is characterised by pronounced territorial inequalities, making it an interesting case study for investigating how spatial context shapes well-being. The long-standing North–South divide across demographic, economic and social dimensions (e.g., Felice 2018; D'Adamo et al. 2025) may also extend to the relationship between living environment and subjective well-being. Prior research indicates that the negative association between disadvantaged environments and health can be particularly strong in wealthier northern regions, underscoring the role of relative deprivation (Carrieri and Bilger 2011). Beyond the North–South gradient, urban–rural differences, also variation in city size (Buonomo et al. 2024), and core-periphery structures (Bertolini and Pagliacci 2017) might represent layers of spatial heterogeneity. For instance, Viganó et al. (2019) found that Italian rural areas, defined as towns under 5000 inhabitants, are associated with higher psychological well-being, although patterns vary across well-being dimensions. Social cohesion, sense of community and dense interpersonal networks, typically weaker in large urban centres, are key mechanisms linking small town environments to greater life satisfaction (Prezza and Costantini 1998). At the same time, larger cities, despite challenges such as congestion, pollution or mobility barriers, generally offer cultural and social opportunities that may foster well-being (for a review, see Buffel et al. 2012).

In sum, with its unique combination of an ageing population, a strongly homeownership-oriented housing system, and pronounced territorial inequalities, Italy represents an interesting framework for investigating how housing and living environment conditions shape life satisfaction among older adults.

2.4 | Research Questions Explored

Drawing on previous literature and recognising the specificities of the Italian context, we formulate four research questions alongside specific expectations.

RQ#1: Are tenure status, housing quality and housing affordability associated with older adults' life satisfaction, and which of these factors are most influential? We expect that all these dimensions contribute to shaping the life satisfaction of older Italian people. However, considering that older adults spend a large amount of time at home, we anticipate dwelling quality to be particularly important. Moreover, considering the Italian housing market, we expect an important role to be played by homeownership.

RQ#2: Do neighbourhood conditions play a specific role in the older adults' life satisfaction once housing characteristics are taken into account, and if so, which aspects are the most influential? We expect that neighbourhood features, although partially overlapping with housing conditions, represent additional and independent sources of satisfaction with one's own life. In

particular, the availability of local services, essential in supporting older adults' independence and their daily routines, is likely to emerge as a key determinant.

Given the persistent North–South divide in Italy across economic, demographic and social dimensions (e.g., Felice 2018; D'Adamo et al. 2025), as well as notable differences in territorial governance and urban structure across cities of different sizes (Prezza and Costantini 1998; Viganó et al. 2019), we also explore whether the area of residence plays a role in the relationship between the living environment and life satisfaction. This spatial dimension is addressed by two further research questions.

RQ#3: Does the relationship between living environment and life satisfaction vary across macro-areas of residence?

RQ#4: Does the relationship between living environment and life satisfaction vary across the city types of residence?

Previous research has rarely examined territorial heterogeneity in the living environment–life satisfaction nexus, and existing theoretical and empirical considerations do not point unequivocally towards a single expected pattern. For instance, stronger associations might emerge in Northern Italian areas, given their higher economic development and investment in infrastructure, as well as in Southern regions, where lower pollution levels or stronger community bonds may play a compensatory role (Bertolini and Pagliacci 2017). Similarly, small towns may foster higher satisfaction due to greater perceived safety and area liveability, whereas metropolitan areas may offer superior service availability (e.g., Buffel et al. 2012; Viganó et al. 2019). Because these mechanisms may operate in competing directions, for RQ#3 and RQ#4 we maintain a complete exploratory approach.

3 | Analytical Strategy

3.1 | Data and Sample

To investigate the relationship between housing and neighbourhood characteristics and life satisfaction, we considered seven ISTAT rounds of the ADL survey from 2013 to 2019, a cross-sectional nationally representative survey including information on a wide range of topics related to the daily life of Italians and their families—namely living conditions, economic status, social and political engagement, health and lifestyles, 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 situations 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 individuals aged 65 and over at the time of the survey, excluding around 500 foreign individuals present only in the last 2 rounds. Although data collected in 2020 were available, this year has been excluded from the analysis. In fact, during the pandemic, millions of people experienced limited daily mobility, confined to their homes and restricted in their local areas. It is thus conceivable that in 2020 a peculiar link emerged between living environment characteristics and life satisfaction, with each aspect possibly becoming an increasing source of dissatisfaction, potentially spurring our analysis.

Our final analytical sample included 58,921 individuals aged 65 or older, ranging from a minimum of about 7900 people interviewed in 2014 to a maximum of around 9300 in 2017.

3.2 | Variables

Our dependent variable was life satisfaction, assessed using the question: 'Currently, how satisfied are you with your life overall?'. Respondents were asked to answer on a scale from 0 to 10, where 0 indicated *not at all satisfied* and 10 *very satisfied*. The average satisfaction score in our analytical sample was 6.8, with a standard deviation of 1.82, showing a slightly increasing trend over time (average score ranges from 6.6 in 2013 to 6.9 in 2019). The median score was 7, and responses appeared heavily concentrated towards mid-high satisfaction levels (Figure 1): < 20% of older Italians rated their satisfaction with life as 5 or lower; one out of four respondents indicated a score equal to 7, and another equal to 8; finally, a non-negligible 13% attributed the highest scores—9 or 10.

To measure the various facets of housing, we relied on four variables. First, we considered the housing tenure status, differentiating between *owner*, *tenant* and *other* (a residual category including usufruct or similar arrangements). We also introduced into the analysis the subjective evaluation of the housing conditions, distinguishing between *low quality* and *high quality* (the questionnaire required a dichotomic answer), and computed an indicator of dwelling size relative to the number of persons living in the house (categorised into < 2 *rooms per person*, 2–3 *rooms per person*—considering that 2.5 is the average within our sample—and 3 or more *rooms per person*). As for the ability to afford housing costs, we used the

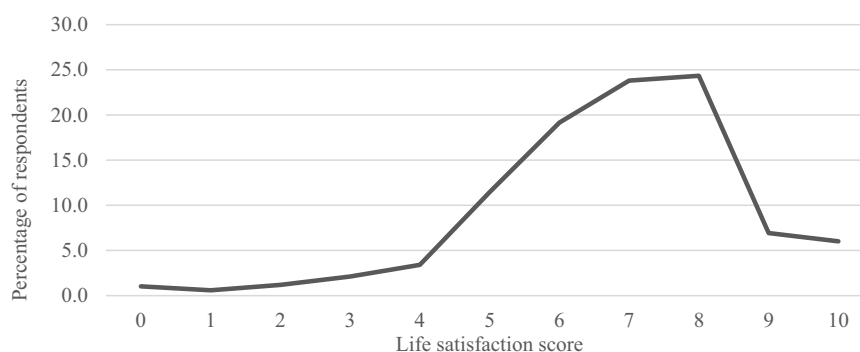


FIGURE 1 | Distribution of the life satisfaction score in the analytical sample. *Source:* Authors' elaboration on ADL data. Years 2013–2019.

self-reported evaluation of whether the expenses for the house were too high (again collected through a dichotomic answer, yes or no, re-labelled as *high* and *low*). This variable might include mortgage and rental costs besides housing maintenance and management ones; however, it is plausible that mortgage costs are limited in our sample of older individuals (Liberati and Vacca 2016).

Regarding the quality of the neighbourhood environment, drawing on previous literature (e.g., Weden et al. 2008; Lowe et al. 2015), we focused on two main domains: *liveability* and *accessibility*, approximated using several specifically constructed composite indicators. The wording of the questionnaire items and their corresponding response categories are detailed in Table A1 in the Appendix.

The liveability domain encompasses the aspects of the living environment that contribute to making it a desirable place to live. To capture this, we built three normalised indicators (between 0 and 10), each detecting a distinct and well-defined dimension: the first indicator, intended to measure the *security* of the area, included the perception of criminality in the surrounding area; the second indicator, termed *friendliness*, combined four items related to parking ease, air quality, and levels of noise and traffic level; the third indicator of area liveability, *maintenance*, was based on three items assessing cleanliness and waste management, adequacy of street lighting adequacy and the conditions of pavement.

The accessibility of the daily services domain reflects the ease with which residents can reach essential services and food suppliers. To assess this, we built two normalised indicators (between 0 and 10): the first, *services access*, captured self-reported ease of access to public services, like post and municipality offices, police stations, pharmacies and emergency medical services; the second indicator, *goods availability*, focused on the accessibility of food supply and was based on items assessing ease of access to (local) markets and supermarkets.

Recognising that individual characteristics may confound the association between life satisfaction and living environment features, we accounted for a broad range of potential confounders in our analysis. We included respondents' sex (*male*; *female*) and age class (65–74; 75+), their living arrangement (living *alone*; *with partner*; *with partner/children*; *with others*), education (*primary or lower*; *lower secondary*; *upper secondary or tertiary*) and perception of the household economic resources (dichotomised into *scarce/insufficient* and *good/very good*). Because individual health conditions may be especially critical in determining life satisfaction at older ages, we accounted for respondents' self-rated health (dichotomised into *bad*—aggregating the categories very bad and bad of the original variable—and *good/rather good*—originally very good, good, neither good nor bad). To account for spatial heterogeneity, we considered the macro-area of residence (*North–West*; *North–East*; *Centre*; *South*; *Isles*), a classic division of the Italian context, corresponding to the five NUTS-1 regions, and the city type of residence. This variable allows for a deeper understanding of territorial differences at a finer geographical scale (e.g. Buonomo et al. 2024), and juxtapose cities with < 10,000 inhabitants (also called *small towns* hereafter); cities equal to or with more than 10,000 inhabitants (*medium/large cities*); *metropolitan area*, corresponding to densely populated areas

including the twelve larger Italian metropolitan cities¹ and the smaller cities gravitating around them. Finally, the survey year, spanning from 2013 to 2019, was included in the analysis as a continuous variable.

3.3 | Model Specification

To estimate the association between housing characteristics, neighbourhood features and life satisfaction, and answer our research questions, we run several linear regression models. Although life satisfaction is formally collected as an ordinal discrete variable, consistent with standard practice (e.g., Ferrer-i-Carbonell and Frijters 2004), it can be assumed to reflect an underlying continuous latent construct, and given the number of categories (11 in our case), the distance between them can be considered approximately equidistant, making the use of the linear model a good approximation. In our first model specification (M1), in addition to socio-demographic confounders, we considered only the role of housing conditions—namely, tenure status, housing quality, dwelling size and housing costs—on life satisfaction. Then, we added the neighbourhood indicators of liveability and accessibility (M2). Finally, the last two research questions were investigated by adding in M2 interaction terms between housing and neighbourhood conditions and, alternatively, macro-area of residence (M3) or city type (M4). All model estimations considered the clustering of individuals into families and regions on an annual basis.

To interpret the models' results, we computed the average marginal effects (AME), which express the effect on the life satisfaction score for a unitary increase in a continuous covariate or as a categorical covariate changes from one category to another, averaged across the values of the other variables in the model. Recognising that various housing and neighbourhood characteristics can occur simultaneously, to gain a comprehensive view, we further synthesised the models' results by estimating expected life satisfaction scores for two illustrative profiles: a *disadvantaged* profile—an individual experiencing all unfavourable living conditions—and an *advantaged* profile—an individual in favourable circumstances. For housing characteristics, measured using categorical indicators, the disadvantaged profile is defined as a tenant living in a low-quality dwelling, with fewer than 2 rooms per person, and facing high housing costs. Neighbourhood characteristics, measured through continuous indicators, are operationalised using the quartiles of their distributions: for all these indicators, the disadvantaged profile corresponds to values set at the lower quartile, while the advantaged profile is defined by values positioned in the upper quartile.² For both profiles, the expected life satisfaction score is estimated by fixing all other control variables at their mean value or at the relevant reference category.

4 | Results

4.1 | Descriptives

Table 1 offers an overview of the distribution of living environment characteristics in our analytical sample, overall and by the two territorial dimensions considered. The sample

TABLE 1 | Distribution of the housing and neighbourhood characteristics, by macro-area and city type of residence.

	Macro-area					City type			Italy
	North– West	North– East	Centre	South	Isles	< 10,000 inhab.	≥ 10,000 inhab.	Metropol. area	
<i>Housing characteristics (percentages)</i>									
Tenure status									
Owner	82.9	84.7	86.7	83.1	88.1	87.1	84.4	80.6	84.5
Tenant	11.4	8.5	7.6	10.3	6.8	5.5	10.0	14.3	9.3
Other	5.8	6.9	5.7	6.6	5.1	7.4	5.7	5.1	6.2
Housing conditions									
Low quality	2.7	3.1	3.5	5.4	4.8	3.9	3.7	4.1	3.9
Good quality	97.3	96.9	96.5	94.7	95.2	96.1	96.3	95.9	96.1
Dwelling size (rooms per person)									
< 2	28.6	22.6	29.3	35.9	31.8	25.5	29.4	37.4	29.8
≥ 2 and < 3	37.8	38.4	36.0	33.9	35.3	36.4	37.3	33.8	36.2
≥ 3	33.7	39.1	34.7	30.2	33.0	38.1	33.2	28.8	34.0
Housing costs									
High	56.3	55.6	67.5	66.5	66.3	62.0	62.1	62.2	62.1
Low	43.7	44.4	32.5	33.5	33.7	38.0	37.9	37.8	37.9
<i>Neighbourhood characteristics (average scores)</i>									
Security	6.0	6.5	5.8	6.5	6.9	7.3	6.1	5.1	6.3
Friendliness	6.0	6.6	6.2	6.2	6.1	7.5	5.9	4.8	6.2
Maintenance	6.1	6.8	5.5	5.6	5.6	6.6	5.8	5.1	5.9
Services access	7.8	8.0	7.6	7.1	7.3	7.6	7.5	7.6	7.6
Goods availability	8.1	8.4	8.3	8.0	8.2	7.7	8.4	8.5	8.2

Note: Column percentages for housing characteristics, and average values for neighbourhood characteristics. Source: Authors' elaboration on ADL data. Years 2013–2019.

distribution of the control variables is reported in Table A2 in the Appendix.

Considering the housing characteristics across the five Italian macro-areas, homeownership is largely widespread from North to South (on average 84.5%), with percentages especially high in the Centre and Isles (86.7% and 88.1%, respectively) and slightly lower in the North–Western macro-area (82.9%). Southern Italy and the Isles also exhibit above-average shares of individuals reporting poor housing conditions (5.4% and 4.8%, respectively, compared to the national average of 3.9%), smaller dwelling (35.9% and 31.8%, vs. a national average of 29.8), and high housing-related costs (around 66%, more than 4 point relative to the Italian average). A high presence of larger dwellings is instead found in the North–East (39.1%). When considering neighbourhood characteristics, the picture is less clear, and differences do not strictly follow a North-to-South gradient. In this case, North–East registers the highest average score for all the indicators except the security one (especially as for maintenance and service access, respectively with scores of 6.8 and 8.0, compared to a national average of 5.9 and 7.6), whereas the Centre displays low scores in terms of security and maintenance (5.8 and 5.5, while the Italian average equal respectively 6.3 and 5.9). In contrast, the South and the Isles report relatively high scores for especially for the domain of security (6.5 and 6.9, vs. a national average of 6.3), but the poorest outcomes are observed for access to services and maintenance.

The picture seems even more varied when considering the distribution of the different characteristics by city type. In this case, we find that the percentage of homeowners is especially high in small towns than in metropolitan areas (87.1% vs. 80.6%, respectively), where rented houses are more widespread (with a difference of 8.8 percentage points between the two city types). Unsurprisingly, metropolitan areas also exhibit a higher presence of smaller dwellings, about 12 percentage points more than in small towns (37.4% vs. 25.5%), with medium/large cities in between (29.4%). No substantial differences are found in housing conditions and costs. Differences by city type also appear as for the neighbourhood indicators: the surrounding environment is generally evaluated more secure, friendly and better maintained in small centres (respectively 7.3, 7.5, and 6.6) than in metropolitan areas (5.1, 4.8, 5.1), where, conversely, goods availability seems highly valued (average score of 8.5 relative to 7.7 in small towns). No differences are found in access to services.

4.2 | Housing Characteristics and Life Satisfaction

RQ#1 investigates the association between housing tenure, housing quality, housing affordability and life satisfaction. To answer this question, we draw on the M1 specification. Figure 2

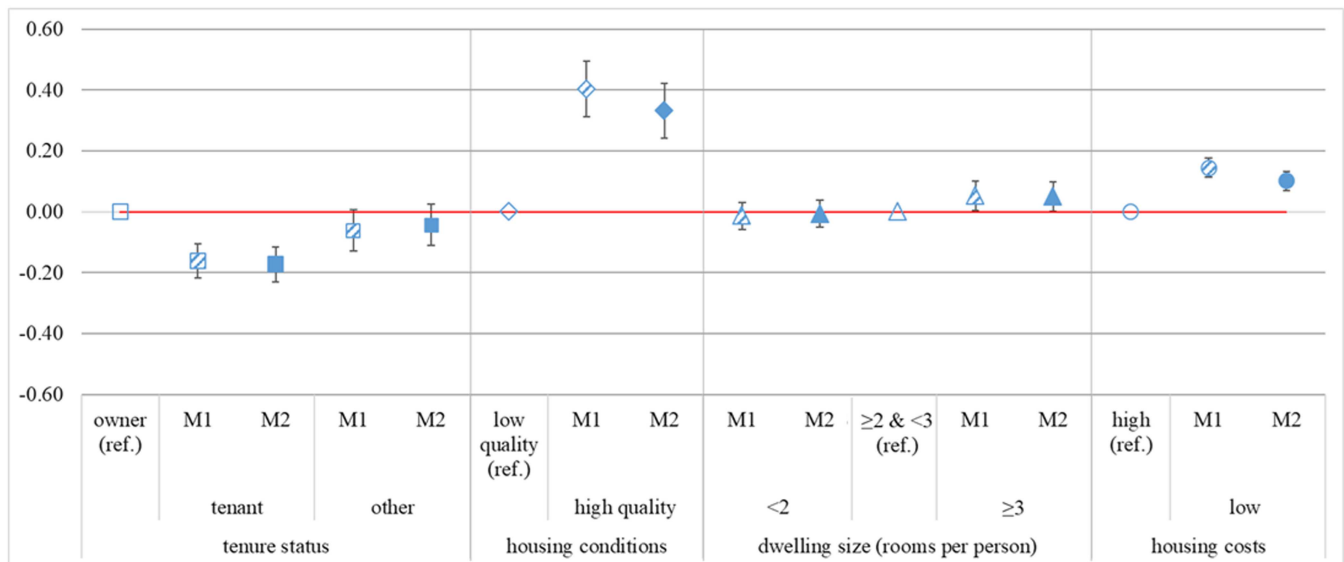


FIGURE 2 | Average marginal effects (AME) with 95% confidence intervals from linear regression models (M1 and M2) for the life satisfaction score. AME represent the effect on the life satisfaction score for a unitary increase in a continuous covariate or as a categorical covariate changes from one category to another, averaged across the values of the other variables in the model. Results are based on models M1 and M2, which both control for: respondents' sex, age class, living arrangement, education, perceived economic resources, perceived health, macro-area of residence, city type and survey year. Model M2 also includes the five neighbourhood indicators. *Source:* Authors' elaboration on ADL data. Years 2013–2019.

presents the AME estimated for these variables, and full model results are reported in Table A3 of the Appendix.

Those who live in a rented house—the tenants—have on average 0.16 lower score of life satisfaction than owners, other things being equal, while individuals in different conditions (e.g., usufruct or similar, a situation which refers to around 6% of the sample, see Table A2 in the Appendix) are not differently satisfied. The life satisfaction score increases by 0.40 points for those who declare high housing quality, and a significant association is also found for the perception of low housing-related costs (AME = 0.15 points). Living in smaller dwellings does not appear statistically significantly associated with life satisfaction (AME = −0.01 points), whereas a certain positive effect is finally found for those who have the availability of 3 or more rooms per person (AME = 0.05 points).

Considering these effects jointly—acknowledging that previous literature suggests these conditions often co-occur (e.g., poor housing quality is more prevalent in rented dwellings, which may also entail higher costs)—the expected life satisfaction score for a person experiencing all of these unfavourable housing characteristics is approximately 6.2, compared with a predicted score of about 7.0 for an individual with entirely favourable characteristics. The resulting difference of around 0.8 points in life satisfaction for the *advantaged* and *disadvantaged* profiles represents a non-negligible margin for potential improvement.

It is worthwhile to remember that the model specification accounts for individual demographic and socio-economic characteristics (see Table A3 in the Appendix), and thus all the above-described associations hold other things being equal. Our results are consistent with previous literature: life satisfaction is lower for women and decreases with age, but it increases with education. Additionally, living arrangements play a role, and living with a partner is also associated with an increase in the

life satisfaction score. Older people in the macro-area of the South have a reduced score of life satisfaction than those living in the North, while living in small towns appears to increase the score. Finally, models' estimates confirm that health and economic-related aspects are among the most important determinants of individual life satisfaction, aligning our results with previous literature.

4.3 | Neighbourhood Environment and Life Satisfaction

As stated in RQ#2, our interest was also in assessing the role of neighbourhood environment aspects on life satisfaction, verifying whether they exert an independent effect, in addition to housing tenure, quality and affordability. We address this through M2, which adds the neighbourhood indicators to M1.

The comparison between M1 and M2 shows that even when accounting for the liveability and accessibility of the neighbourhood area, the effects of housing indicators change only in a limited and not significant way (see Figure 2 and Table A3 in the Appendix again). This reveals a marginal overlapping effect, with neighbourhood conditions having an effect only partially mediated by housing conditions, in line with the idea that area liveability and accessibility represent specific, independent sources of satisfaction with one's life.

As for these specific effects, we found that both the liveability and accessibility domains are positively and significantly related to older people's life satisfaction (see Figure 3 and Table A3 in the Appendix). The most notable neighbourhood features associated with older adults' life satisfaction are *services access* and area *friendliness*. A one-point increase in the evaluation of service accessibility is associated with a 0.04-point rise in the life satisfaction score. The perception of living in a friendly environment is similarly related to life satisfaction (AME = 0.03

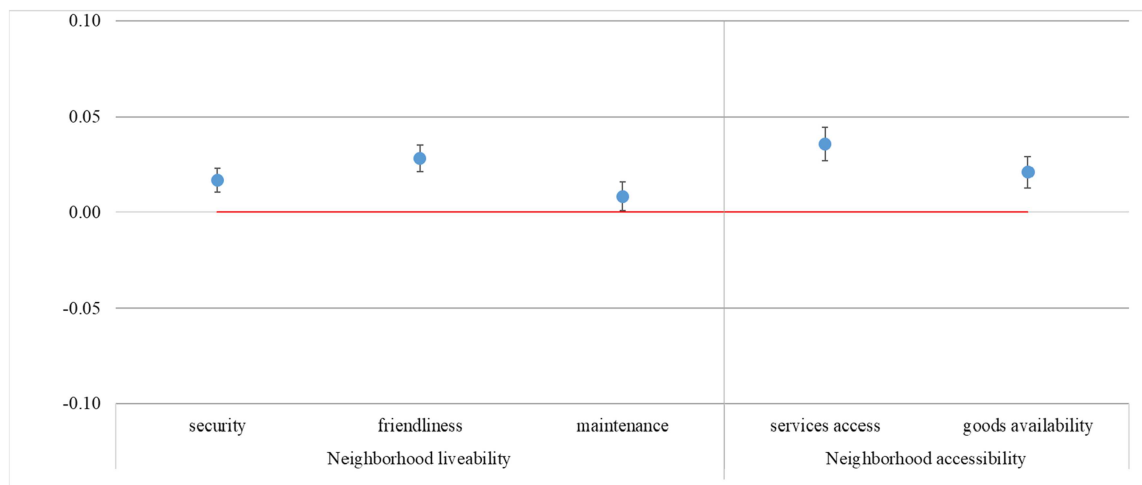


FIGURE 3 | Average marginal effects (AME) with 95% confidence intervals, from linear regression models (M2) for the life satisfaction score. AME represent the effect on the life satisfaction score for a unitary increase in a continuous covariate or as a categorical covariate changes from one category to another, averaged across the values of the other variables in the model. Results are based on model M2, which also includes the housing, and controls for respondent's sex, age class, living arrangement, education, perceived economic resources, perceived health, macro-area of residence, city type and survey year. *Source:* Authors' elaboration on ADL data. Years 2013–2019.

points), confirming previous literature findings. The other domain of accessibility, the ease of access to markets and supermarkets (*goods availability*), also increases the estimated life satisfaction score, albeit with a somewhat lower—but still significant—magnitude (AME = 0.02 points). Area *security* (perception of low risks of criminality) follows, contributing to enhance life satisfaction (AME = 0.02 points). Finally, it appears that for our sample of older Italians, area *maintenance* plays a less relevant role (AME = 0.01 points), but it is nonetheless significant in determining the life satisfaction of individuals.

Again, to examine the overall effect of differences in the housing and neighbourhood characteristics on life satisfaction, we compared the expected values of two different profiles. By contrasting the expected value of life satisfaction of a *disadvantaged* profile, namely that of an individual reporting all the bad housing conditions and living in an area characterised by indicators at the lower quartile, we expect a score in life satisfaction equal to 5.54; conversely, for individuals having all desirable housing conditions and living in neighbourhoods characterised by indicators at the upper quartile—the *advantaged* profile—the expected life satisfaction score raises to 7.42. We acknowledge that these two profiles may refer to extreme situations, but nonetheless enable us to highlight the potential magnitude in terms of life satisfaction linked to housing and living environment conditions. This nearly two-point gap powerfully illustrates the extent to which living conditions can meaningfully shape the individual life satisfaction.

4.4 | Does the Relationship Between the Living Environment and Life Satisfaction Differ Across Macro-Areas or City Types of Residence?

To explore spatial heterogeneity and answer RQ#3 and RQ#4, we estimated two additional model specifications, which incorporate the interaction terms between the living

environment indicators and either the macro-area of residence (M3) or city type (M4) to M2. Results, again in terms of AME, are displayed in Figure 4.

When considering the five macro-areas of residence, in terms of both housing conditions and neighbourhood characteristics, the effects across macro-areas mimic the overall effect, without substantial variations (Figure 4a,b). We only depict a lack of significance in the effect of tenure status (being a tenant) and housing costs for Isles, whereas having smaller dwellings significantly increases life satisfaction in the North–East. As for the housing quality, contrary to the general pattern, the link with life satisfaction is not significant in the macro-areas of North–West and Isles (although with large confidence intervals), but the magnitude of the effect is especially relevant for the Centre.

Similarly, when considering neighbourhood features, although minor differences are present in the magnitude of the effects by macro-area, their confidence intervals overlap, demonstrating a substantial homogeneity. We only find that in a few cases the AME by macro-area are not significant, namely those referring to security in the Centre, friendliness in the Isles, and maintenance in the South. For the Centre of Italy, the maintenance indicator is negatively linked to life satisfaction.

When we examine heterogeneity by city type (Figure 4c,d), some differences emerge instead. It is especially in both small towns and metropolitan areas that tenants are less satisfied, while housing tenure other than property or rent, which is overall not significant, becomes significantly linked to lower life satisfaction for those living in metropolitan areas. There, living in smaller houses is also associated with lower life satisfaction scores, while the effect is not statistically significant for small towns, and positive in medium/large cities. Conversely, for both housing quality and housing costs, we do not depict differentiated effects on life satisfaction depending on the city type, and all the aggregates substantially reflect the overall Italian effect. For those who live in metropolitan areas, aspects linked to area friendliness are especially linked to life satisfaction; here, the

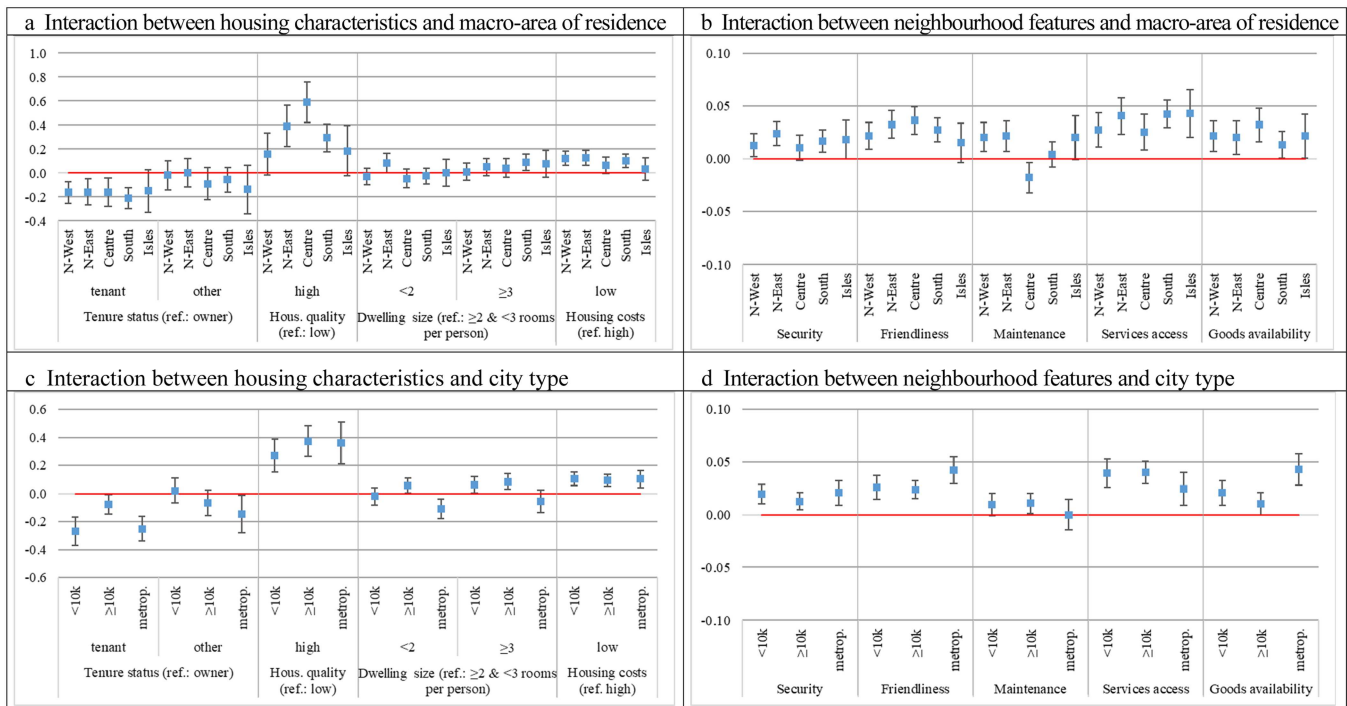


FIGURE 4 | Average marginal effects (AME) with 95% confidence intervals from linear regression models (M3 in (a) and (b), and M4 in (c) and (d)) for the life satisfaction score. AME represent the effect on the life satisfaction score for a unitary increase in a continuous covariate or as a categorical covariate changes from one category to another, averaged across the values of the other variables in the model. Results are based on models M3 and M4, which both include housing characteristics and neighbourhood indicators, and control for respondent's sex, age class, living arrangement, education, perceived economic resources, perceived health, macro-area of residence, city type and survey year. Model M3 includes interaction terms between all indicators of housing conditions/neighbourhood characteristics and the macro-area of residence; M4 includes interaction terms between all indicators of housing conditions/neighbourhood characteristics and the city type. *Source:* Authors' elaboration on ADL data. Years 2013–2019.

effect is substantially higher in magnitude than in other city types, especially relative to medium/large cities. The maintenance indicator appears to lose its association with life satisfaction in both small towns and metropolitan areas, while maintaining its significance for those living in medium/large cities. Considering neighbourhood liveability indicators, the link between area security and life satisfaction does not significantly change depending on where individuals live.

5 | Conclusions

Older individuals spend most of their time in their homes or immediate surroundings, where they accomplish daily routines and develop familial and social relationships. The characteristics of the living environment can therefore act as either a resource or a risk for individuals (Lawton and Nahemow 1973; Oswald et al. 2011), shaping attitudes towards life and well-being. This connection became even more evident during the COVID-19 pandemic (Ayala et al. 2022), which has forced billions of people into their homes for extended periods. 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.

This study contributes to the literature about the link between housing, close neighbourhood environment and individual life satisfaction by offering novel empirical evidence from Italy, a

country marked by pronounced territorial inequalities, rapid population ageing and a housing sector characterised by structural rigidities and limited welfare measures targeting housing needs. We examined multiple dimensions of the living environment, jointly considering housing characteristics (RQ#1) and neighbourhood context (RQ#2), and explored whether these associations vary by macro-area or city type of residence (RQ#3 and RQ#4, respectively). This integrated approach responds to calls for examining housing within the broader context of the living environment (e.g., Iwarsson et al. 2004; Oswald et al. 2011), thereby shedding light on the diverse elements that shape older people's daily lives.

Our findings align with—and extend to the Italian case—previous international research demonstrating the importance of housing characteristics for well-being (e.g., Fernández-Portero et al. 2017; Herbers and Mulder 2017; Zumbro 2014). Even after controlling for individual health and socio-economic characteristics, which remain crucial predictors of life satisfaction, our results underscore the independent roles of both housing and neighbourhood characteristics in shaping older Italians' life satisfaction. When considered simultaneously, each dimension maintains a statistically significant effect, indicating that they represent distinct, although connected, aspects of the living environment. Notably, the combined influence of housing and neighbourhood conditions can amount to approximately two points of difference in the life satisfaction score. Such a gap is far from negligible, and it reflects a substantive

variation in subjective well-being, underscoring the power of living environment characteristics in shaping individuals' well-being. These findings emphasise the importance of adopting a multidimensional and integrated approach to assessing the link between living environment and life satisfaction.

Nevertheless, while several aspects contribute to well-being, certain elements appear to be particularly salient for older adults. Considering housing characteristics, the quality of housing conditions is demonstrated to be an important predictor of life satisfaction, in line with our expectations, although roughly approximated by a dichotomic indicator, which limits the ability to capture intermediate situations. As for the neighbourhood environment, accessibility to public services and area friendliness emerge as relevant components, confirming our expectations and previous literature (Pirani et al. 2023). These findings are consistent with the needs of older individuals, who may face mobility limitations and for whom living in adequate, accessible environments is crucial to supporting autonomy and daily functioning, ultimately contributing to their life satisfaction.

We found that also affordability and security of tenure, two aspects linked to economic stability and residential continuity, are positively related to life satisfaction, although we cannot disentangle specific material or psychological paths. By contrast, dwelling size does not appear to be a relevant factor, at least for our sample of older Italians. This may reflect the reduced space requirements typical in later life, as well as the lower risk of overcrowding. This interpretation aligns with our data: older adults commonly live in dwellings that are relatively large compared with their current household size. Housing is generally acquired earlier in the life course, when individuals are younger, and household composition is larger (e.g., presence of a partner and children).

Among other neighbourhood characteristics, perceived area security and the ease of access to everyday goods (markets and supermarkets) also positively influence life satisfaction, supporting the idea that feeling safe in one's surroundings and being able to meet daily needs without difficulty foster a sense of comfort and independence (e.g., Tomaszewski 2013), key elements of a liveable and friendly area. Area maintenance, although statistically significant, plays a comparatively minor role, possibly because of the reduced mobility range typical of this age group. A possible explanation is linked to the dual valence of the maintenance indicator. Maintenance works carried out by public authorities can have negative repercussions on the lives of older adults in the short term, such as temporary disruptions to electricity or water supply, or increased traffic. Clearly, in the medium and longer term, maintenance is perceived as a positive aspect.

We also examined the possible moderating effect of the territorial context, in terms of macro-area and city type of residence, in the relationship between living environments and life satisfaction. Despite well-known North–South differences in Italy across demographic, economic and social domains, we found no substantial variations across Italian macro-areas. Conversely, the city type of residence, namely the spatial dimension closer to individuals, does appear to matter. Specifically, non-traditional tenure arrangements (neither owning nor renting) are especially beneficial in small towns, while a smaller

dwelling size is more detrimental for life satisfaction in metropolitan areas, highlighting the particular strain of limited space in dense urban settings. Access to everyday goods also shows a context-dependent effect, being especially relevant in both small towns and metropolitan areas. These settings seem to pose challenges in this regard, although for different reasons: in metropolitan areas, dispersed amenities, traffic and long travel times can hinder access, especially for those with mobility issues; in small towns, the decline of local retail options and centralised services can similarly restrict access, affecting older residents with limited mobility or resources (Buffel et al. 2012; Viganó et al. 2019). Access to public services, however, enhances life satisfaction among older adults regardless of the city type of residence, underscoring its universal role in supporting daily autonomy and perceived quality of life among older adults. The absence of macro-area differences, alongside the presence of effects by city type, emphasises the importance of conducting territorial analyses at a finer spatial scale. The city context more directly affects service distribution, mobility patterns, territorial management (for instance, in terms of security and maintenance) and overall spaces' liveability. As such, it represents the territorial dimension more closely connected to individuals' everyday experiences, transcending the traditional North–South divide.

This study has several limitations that should be acknowledged, which also point to avenues for future research. First, although our findings highlight the relevance of a city-type effect and suggest that fine-grained territorial details are crucial to fully understanding how place shapes satisfaction in later life, our analysis is constrained by the spatial resolution available in the data. Incorporating more disaggregated territorial indicators would enable a deeper understanding of which specific spatial features matter most. Second, while the choice to rely on self-reported measures 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 and Schekkerman 2016) and may add significance in assessing living environment characteristics (Weden et al. 2008), we recognise that complementary and highly detailed objective indicators would help in disentangling specific aspects on which housing and urban policies could act. Third, although 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 and 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. Finally, the cross-sectional nature of the data restricts our ability to infer causal relationships, and longitudinal data would be needed to examine how changes in housing and neighbourhood characteristics shape life satisfaction over the life-course. Nevertheless, older individuals are less likely to relocate or change their place of residence frequently, which may partially mitigate the bias arising from the use of cross-sectional instead of longitudinal data.

Despite these limits, our study advances understanding of life satisfaction in later life in a context where the current demographic trends pose population ageing and its consequences at the forefront of the public debate. Given the increased vulnerability of older adults, the understanding of the connection

between individual life satisfaction and the living environment is crucial, possibly stimulating active interventions and policies to support a fulfilled ageing. Appropriate and tailored high-quality housing and neighbourhood environments might contribute to diminishing existing health inequalities (Ayala et al. 2022), which calls for the policy level to act. And, as shown, interventions should also adopt a comprehensive perspective, addressing both residential conditions and neighbourhood liveability and accessibility.

Our findings offer insights for city planning interventions and housing policy. Creating friendly and supportive living environments can foster active ageing and enhance life satisfaction. When housing resources are better aligned with individuals' needs and embedded in an enjoyable and socially cohesive environment (Prezza and Costantini 1998; Pirani et al. 2023), older adults may derive greater satisfaction from daily life, strengthen a sense of community and family and social relationships, maintain independence and remain actively engaged. Adequate living spaces can also benefit their relatives and 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), living places 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 neighbourhood conditions as pivotal resources for individuals' and communities' well-being. A multi-sectoral perspective (Swope and Hernández 2019) is essential to enhance collaboration between housing developers, urban planners, health practitioners and social services. 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.

Author Contributions

Elena Pirani: conceptualization, supervision, formal analysis, writing – original draft, writing – review and editing. **Maria Veronica Dorgali:** data curation, formal analysis, writing – original draft. **Valentina Tocchioni:** methodology, writing – original draft, writing – review and editing. **Alessandra Petrucci:** project administration. All the authors read and approved the final manuscript.

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Disclosure

The authors confirm that this manuscript is original, has not been published before, and is not currently being considered for publication elsewhere.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹The 12 metropolitan cities identified by Istat (2020) are Turin, Milan, Venice, Genoa, Bologna, Florence, Rome, Naples, Bari, Palermo, Catania and Cagliari.

²The values for the lower and upper quartiles for the five neighbourhood indicators are: security (3.5; 10); friendliness (4.2; 8); maintenance (4.5; 7.5); services access (6; 10); goods availability (5; 10).

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Appendix

TABLE A1 | Neighbourhood features: liveability and accessibility domains and their indicators.

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

Source: Authors' elaborations on ADL questionnaires, 2013–2019.

TABLE A2 | Distribution of the socio-demographic characteristics of the sample (percentage frequencies), and average life satisfaction score and its standard deviation by socio-demographic characteristics.

	Perc. Freq.	Life satisfaction	
		Average score	Std dev.
Sex			
Male	45.0	6.96	1.74
Female	55.0	6.65	1.88
Age class			
65–74	50.9	6.97	1.69
75+	49.1	6.60	1.94
Living arrangement			
Alone	26.4	6.60	1.88
With partner	43.4	7.05	1.72
With partner/children	19.3	6.68	1.81
With others	10.9	6.40	1.94
Education			
Primary or lower	53.8	6.60	1.92
Lower secondary	21.9	6.92	1.72
Upper secondary or tertiary	24.3	7.08	1.63
Economic resources			
Scarce/insufficient	38.1	6.27	1.97
Good/very good	61.9	7.10	1.65

(Continues)

TABLE A2 | (Continued)

	Perc. Freq.	Life satisfaction	
		Average score	Std dev.
Perceived health			
Bad	17.0	5.53	2.20
Good/rather good	83.0	7.04	1.62
Macro-area of residence			
North–West	22.9	6.97	1.77
North–East	20.6	7.10	1.83
Centre	19.4	6.73	1.82
South	27.7	6.50	1.79
Isles	9.3	6.61	1.89
City type			
< 10,000 inhabitants	35.0	6.91	1.85
≥ 10,000 inhabitants	43.6	6.60	1.80
Metropolitan area	21.5	6.78	1.80

Source: Authors' elaboration on ADL data, 2013–2019.

TABLE A3 | Average marginal effects (AME) from linear regression models (M1 and M2) for the life satisfaction score.

	Model M1		Model M2	
	AME	p-value	AME	p-value
<i>Housing characteristics</i>				
Tenure status (ref.: owner)				
Tenant	−0.16	0.000	−0.17	0.000
Other	−0.06	0.078	−0.04	0.208
Housing conditions (ref.: low quality)				
High quality	0.40	0.000	0.33	0.000
Dwelling-size (rooms per person) (ref.: ≥ 2 and < 3)				
< 2	−0.01	0.566	−0.01	0.758
≥ 3	0.05	0.029	0.05	0.042
Housing costs (ref.: high)				
Low	0.15	0.000	0.10	0.000
<i>Neighbourhood indicators</i>				
Security			0.02	0.000
Friendliness			0.03	0.000
Maintenance			0.01	0.029
Services access			0.04	0.000
Goods availability			0.02	0.000
<i>Socio-demographic characteristics</i>				
Sex (ref.: female)				
Male	0.14	0.000	0.13	0.000
Age class (ref.: 65–74)				
75+	−0.14	0.000	−0.12	0.000
Living arrangement (ref.: with partner)				
Alone	−0.27	0.000	−0.25	0.000
With partner/ children	−0.29	0.000	−0.31	0.000
With others	−0.40	0.000	−0.42	0.000
Education (ref.: primary or lower)				
Lower secondary	0.06	0.002	0.05	0.005
Upper secondary or tertiary	0.12	0.000	0.12	0.000
Economic resources (ref.: scarce/insufficient)				
Good/very good	0.53	0.000	0.49	0.000
Perceived health (ref.: bad)				
Good/rather good	1.27	0.000	1.24	0.000
Macro-area of residence (ref.: North–West)				
North–East	0.05	0.058	0.02	0.372
Centre	−0.14	0.000	−0.15	0.000
South	−0.31	0.000	−0.29	0.000
Isles	−0.12	0.000	−0.13	0.000
City type (ref.: ≥ 10000 inhabitants)				
< 10000 inhabitants	0.11	0.000	0.05	0.013

(Continues)

TABLE A3 | (Continued)

	Model M1		Model M2	
	AME	p-value	AME	p-value
Metropolitan area	−0.18	0.000	−0.14	0.000
Survey year (continuous)	0.03	0.000	0.03	0.000

Source: Authors' elaboration on ADL data, 2013–2019.