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PART II

ARTICLES

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AGING IN PLACE AND ELDERLY MOBILITY HABITS: EVIDENCE FROM ITALIAN NATIONAL SURVEYS

Abstract. The aim of the paper is to provide an empirical framework of the ageing process in Italy, with a focus on aging in place and mobility behaviour of the elderly, as emerging from two national surveys: the "Aspects of Daily Life" survey by ISTAT and the ISFORT mobility survey.
Results show that the Italian cities and towns are sufficiently age-friendly, with some improvement opportunities to be implemented. Loneliness and isolation represent a warning sign, hindering the aging in place. Finally, the study confirms that the Italian older adults use public transport only a few times, in favour of private cars.
Key words: ageing, mobility habits, aging in place, Italy.

1. INTRODUCTION

The change in the population structure with a marked increase in the number of elderly people is a consolidated trend in many Western countries. As emerges from a United Nations report (2019), in 2019 Italy was the second country in the

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world, after Japan, in terms of dependency ratio: since 1992, when the over 65s exceeded the 0−14 years old for the first time, the proportion of elderly people in the country has increased.

The Italian National Statistical Institute (ISTAT) highlighted that 22.8% of Italians are over 65 and the average age of the population is 45.4. These values will grow over the next thirty years: forecasts estimate that people aged 65 or more will represent 32.2% of the population, and that the average age will be 50.2. In contrast, the population of people aged 0−14 is expected to maintain the same weight as today (13.5%) or even to decrease to 10.2%.

These forecasts of a sharp increase in the elderly population in Italy are closely linked to the so-called "baby boom era": the today adults (born in the 1960s) will become the elderly of tomorrow.

The rising life expectancy has also led to an increase in the number of the so-called "great elderly" (i.e., aged 85 and over), who in 2019 were about 2.2 million (3.6% of the population and 15.6% of people aged 65 and over) (ISTAT, 2019, p. 122).

From these figures it is clear why population ageing − with its effects on health expenditure, labour market and retirement expenditure − is one of the hot topics in the public debate, requiring public policies to be implemented to cope with the inevitable changes in intergenerational relations (ISTAT, 2019, pp. 35−37).

The aim of this paper is, therefore, to provide an empirical framework of the ageing process in Italy, with a specific focus on the so-called aging in place and on the elderly mobility behaviour, as emerging from two national surveys. Specifically, the paper tries to give an answer to the following research questions: (i) are the Italian cities/towns age-friendly (as defined by World Health Organization (WHO, 2007)?, (ii) Which mobility habits are specific for Italian older people?, and (iii) Can Italian elderly age in place?

These three questions are interrelated. Indeed, elderly-friendly cities (in terms of accessibility to services, social inclusion, and participation), as well as the possibility to easily move guarantee a certain degree of independence to the older people, determining, therefore, the possibility to age in place.

The paper is organised as follows: the next paragraph presents the most recent literature on aging in place, accessibility to services, older adults' mobility, and how these concepts are linked with the elderly wellbeing and health. The third paragraph is dedicated to the description of the method and the main data source used − the ISTAT "Aspects of Daily Life" survey − by illustrating some socio-demographic characteristics of the older adults interviewed. The fourth paragraph discusses the main results of the analysis on aging in place and older adults' mobility habits, combining information from two national surveys (ISTAT and ISFORT). Finally, some concluding remarks are proposed.

2. LITERATURE REVIEW

The concept of aging in place refers to the possibility for older adults to choose to continue living in their own homes and neighbourhood despite aging (Mestheneos, 2011). This is only possible if the provision of services and support to older people is adequate, so that they can get old in a familiar environment, ensuring a certain degree of independence (Gilleard *et al.*, 2007; Davies and James, 2011; Gonyea and Burnes, 2013).

Previous studies have demonstrated that older people prefer to stay at home as they age (Means, 2007; Mariotti *et al.*, 2018). Indeed, as discussed by Gilleard *et al.* (2007), as people aged their residential mobility declined and they felt more attachment and belonging to their community. Moreover, analysing the case study of Milan (Italy), Mariotti *et al.* (2018) found that most of the older adults interviewed were satisfied with their living environment and preferred to age in place, to enjoy an independent living.

Housing as well as neighbourhood features, such as transportation, recreational opportunities, and amenities that facilitate physical activity, social interaction, and cultural engagement are crucial aspects in people's ability to age in place (Wahl and Weisman, 2003; Buffel *et al.*, 2019; Gardner, 2011; Wiles *et al.*, 2012).

The World Health Organization's (WHO, 2007) "Global Age-Friendly Cities" project identified six dimensions enabling the elderly to 'age in place': (i) social participation, (ii) social inclusion, (iii) (accessing) community support and health services, (iv) (making use of) outdoor spaces and buildings, (v) (allocating) housing, and (vi) accessing local public transport (LPT).

Previous studies have examined several of these dimensions. Pinto and Sufineyestani (2018) have identified the main requirements of an age-friendly neighbourhood, among which there are services availability (e.g., supermarkets, banks, post offices, etc.), the distance from transport stations and the infrastructures of the built environment, such as cycle paths, parking, and green areas.

There is a growing strand of literature exploring the linkages among aging in place and older adults' quality of life, wellbeing, and health (Giraldez-Garcia *et al.*, 2013; Vanleerberghe *et al.*, 2017; Zhang and Zhang, 2017; Gardener and Lemes de Oliveira, 2020). For example, Gardener and Lemes de Oliveira (2020) performed a meta-analysis to investigate how the perception of urban environment features acted as health and well-being determinant in an ageing population. They found that poor health and reduced activity were associated with negatively perceived environments. Similarly, Giraldez-Garcia *et al.* (2013) found that older adults who were satisfied with community services had higher self-rated health and functional independence. Moreover, Banister and Bowling (2004) highlighted the importance of living in a safe neighbourhood with good community facilities and services (including transport) for older people's life satisfaction.

Social participation and perceived social inclusion (Wong *et al.*, 2017), as well as friendship, neighbourhood cohesion and solidarity (Strobl *et al.*, 2016; Cramm and Nieboer, 2014) were positively associated with health and wellbeing. Specifically, Gao *et al.* (2017) highlighted the crucial role of the neighbourhood's physical (aesthetic quality and walking environment) and social features (social cohesion and interaction) on the wellbeing of older adults in Shanghai (China). Similarly, Ma *et al.* (2018) showed that a walkable and cohesive neighbourhood increased transport accessibility and community integration, thus positively influence wellbeing.

To be independently usable by the elderly, services and facilities must be accessible (Shergold and Parkhurst, 2012; Lättman *et al.*, 2018). Metz (2000) defined accessibility as the ease of reaching destinations for different purposes; while Hansen (1959) defined accessibility as the number of potential opportunities for interaction, highlighting the importance of reaching desired destinations.

Moreover, accessibility has recently been used as a social indicator (Arellana *et al.*, 2021; Foth *et al.*, 2013), since poor accessibility to opportunities may cause social exclusion by limiting socioeconomic participation, and therefore negatively affecting health and quality of life (Al-Rashid *et al.*, 2021).

Several studies focused on measuring accessibility to services by the elderly (Gargiulo *et al.*, 2018; Vendemmia and Lanza, 2022). Specifically, Manfredini and Di Rosa (2018) proposed a method for mapping and measuring pedestrian accessibility of elderly to Milan subway stations, by means of isochrones to specific urban functions. Conversely, Papa *et al.* (2018) developed a GIS-based method to analyse public transport accessibility of older adults in Naples (Italy).

Looking at the literature on elderly's mobility, Webber *et al.* (2010) underlined the complexity of this topic, which takes place on several space levels and is influenced by both psychological factors (Mifsud *et al.*, 2019) and physical environment (Siu, 2019). Mobility captures the ability of movement between different places (Morris *et al.*, 1979) when desired and not just when needed (Stjernborg *et al.*, 2015), thus playing a key role in avoiding loneliness and isolation and contributing to older adults' well-being (Pantelaki *et al.*, 2021). Some studies (Arentze *et al.*, 2008; Newbold *et al.*, 2005) revealed that older adults were "more mobile" than in previous decades: the travel activities, leisure trips, car trips and licensing rate have grown. However, the number of mobility options (cars, motorbikes, bicycles, LPT, etc.) is limited for this age cohort, given their actual ability to make use of all the available options (Burlando and Cusano, 2018). In general, a good transport system is a prerequisite for easing accessibility to goods, services (Hounsell *et al.*, 2016; Mariotti *et al.*, 2021) and welfare-spaces (Johnson *et al.*, 2017), as well as for fostering social and community participation (Brown *et al.*, 2018; Green *et al.*, 2014).

Numerous studies in the literature have investigated the relationship between LPT use and health or wellbeing (McPhee *et al.*, 2019; Akhavan and Vecchio, 2018; Metz, 2000; Banister and Bowling, 2004; Mollenkopf *et al.*, 2005; Nordbakke and Schwanen, 2014). Kim *et al.* (2020) found that Japanese older peo-

ple who used public transport reported high quality of life. Eibich *et al.* (2016) showed that access to LPT was related to better outcomes on all measures of health and wellbeing. Aceves-González *et al.* (2015) focused on the role of bus services on older adults' health and wellbeing. They found that some bus services attributes (e.g., features of bus design, crowded buses, pedestrian infrastructure, etc.) represented a difficulty to older passengers who needed or wanted to use them, thus influencing their mobility choices.

Moreover, the use of LPT often requires additional physical activity to reach the bus/train station (Coronini-Cronberg *et al.*, 2012; Rissel *et al.*, 2012), implying numerous benefits to health (Webb *et al.*, 2012; Laverty *et al.*, 2018; Webb *et al.*, 2016).

Looking at the linkage between older people mobility and the built environment, Cheng *et al.* (2021) found that proper neighbourhood setting facilitates walking levels, thus making accessibility to recreational areas easier, and increasing social ties with the community (Enssle and Kabisch, 2020). Moreover, poor physical activity was associated with low availability of bus shelters, bus frequency, and bus routes (Mahmood *et al.*, 2012; Adams *et al.*, 2012), as well as inadequate night-time lighting (Bjornsdottir *et al.*, 2012; Giehl *et al.*, 2012; Mahmood *et al.*, 2012; Strobl *et al.*, 2016).

Looking at the case of Italy, some studies are worth to be mentioned. Crotti *et al.* (2021), using data from the "Aspects of Daily Life" 2017 survey, examined the association between older adults' health and their mobility. The authors found that a frequent use of LPT or car positively influenced psychological and self-perceived health, while the use of LPT at least once a week increased the older adults' physical health.

Mariotti *et al.* (2018) showed that older adults living in Milan moved at least twice a day outside and preferred walking (35.4%), using LPT (30.8%), driving a private car (22.8%) or cycling (11%).

Finally, Mariotti *et al.* (2021) analysed the older people motivations not to take trips and activities because of the perceived inadequacy of LPT in the cities of Milan and Genoa. Results showed that the perceived quality of LPT service significantly influence the probability of giving up making trips and carrying out activities.

3. DATA AND METHOD

The survey "Aspects of Daily Life" by ISTAT was analysed to investigate the six dimensions enabling elderly to age in place (WHO, 2007), through descriptive statistics. The average values presented in the next section are disentangled by age cohorts (65−74 years old and over 75) and geographical dimension (Italian NUTS2 regions). Despite the simplicity of the methodology used, the analysis depicts a clear picture of the aging process in Italy, uncovering some specific patterns.

The survey is part of the "Multiscopo Household Surveys" integrated system launched by ISTAT in 1993, and it is included in the National Statistical Programme. The survey target population is made of households and their members, living in Italy. It is conducted every year with the aim of producing a wide range of information on individuals and households: work, family life, housing, lifestyle, mobility, health, leisure, and political and social participation.

The 2018 survey (ISTAT, 2020) collected information on a sample of 44,672 citizens nationwide, who answered 691 questions. Among them, 5,295 (11.8%) were older adults aged between 65 and 74, while 5,331 (11.9%) were aged over 75.

The analyses proposed in this paper focus on these two age cohorts (10,626 respondents), to discuss the Italian elderly's possibility to age in place and their mobility habits.

Figure 1 shows the geographical distribution at the regional level (NUTS2) of the interviewed older adults: 8.5% lived in Lombardy, 7.7% in Piedmont, 6.9% in Campania, 6.1% in Tuscany, etc.

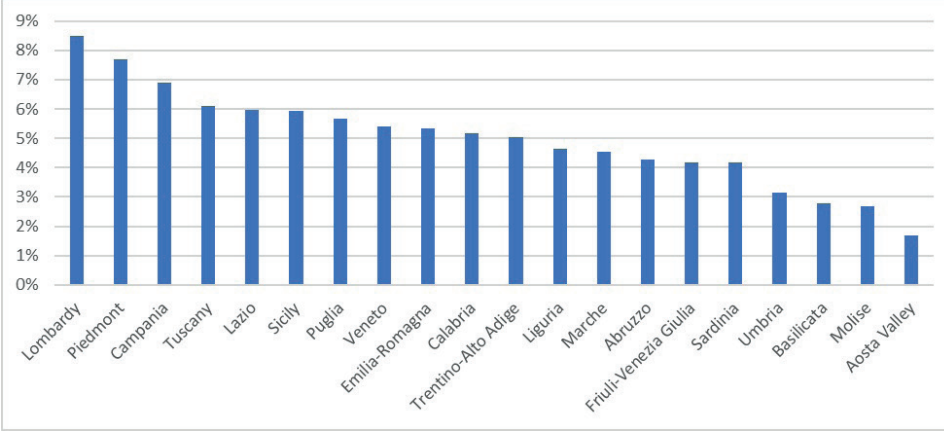

Fig. 1. Geographical distribution of the elderly respondents

Source: own work based on ISTAT data (2020).

Looking at the socio-demographic characteristics, most of the sample is made up of women: they constituted 53% in the 65−74 age cohort, while they constituted 58.3% in the over 75 group.

19% of the elderly aged 65−74 and 37% of the over 75 lived alone. 70% of the older adults aged 65−74 years old were married, while 15.4% were widowed. These percentages are respectively 46.8% and 42.8% for those aged over 75. Women's life expectancy is higher than men's, so the share of men living with a partner is significantly higher than that of women, who generally outlive their partners (ISTAT, 2019, p. 151).

Considering the educational level, those aged over 75 presented a lower level of education: 64% completed only primary education or had no qualification at all, and 16.8% completed middle school. Instead, 33.7% of the elderly aged 65−74 completed primary education or had no qualification at all, against 30.3% having middle school education.

As indicated by ISTAT (2019, p. 151), the progressive postponement of retirement has led to an increase in the active age years. From 2008 to 2018, the employment rate of the population aged 65−69 gradually increased from 7.6% to 12.3%, both for men and women. Among those who stated that they had worked in the past (75.8% in the 65−74 age cohort, and 78% in the over 75 cohort), 30.5% of the 65−74 year olds were blue collar workers, while 28.7% were white collar workers or managers. Among those aged over 75, 34.8% were blue collar, while 17.8% were white collar or manager.

Finally, looking at the older adults' main source of income, 77.5% of the elderly aged 65−74 (91% of those aged over 75) received a pension, while 10.6% (4.5% of those aged over 75) were supported by their families.

4. RESULTS AND DISCUSSION

As discussed above, the first dimensions enabling the elderly to age in place (WHO, 2007) are social participation and social inclusion. A proxy that can be used to measure social participation is the older adults' attendance to some cultural and leisure activities, such as theatre, cinema, etc.

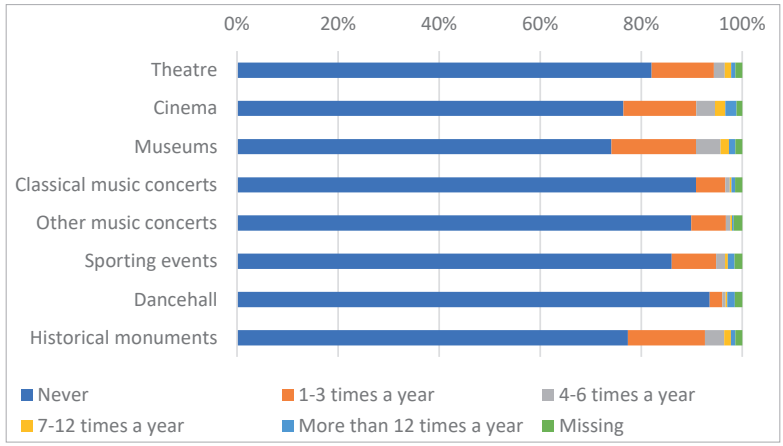

Fig. 2. Participation to cultural and leisure activities, aged 65−74

Source: own work based on ISTAT data (2020).

As depicted in Fig. 2 and 3, most Italian older adults never went to theatre, cinema, museums, etc. At least once a year 25% of the elderly aged 65−74 visited museums, 22% went to cinema, and 21% visited historical monuments. These percentages drastically fell in the over 75 cohort: 10% visited museums, 8% went to cinema or theatre, and 8% visited historical monuments.

As underlined by some previous studies (Koponen *et al.*, 2017, 2023), attending cultural events positively influences older adults' quality of life, increases their wellbeing, and decreases their feeling of loneliness.

Given this evidence, it would be a question of whether Italian older adults do not go to the cinema, theatre, etc. because there is not enough supply of easily accessible cultural and leisure activities, or because they are not interested in them. Moreover, we would expect differences between urban and rural contexts (with higher supply in cities and bigger towns), but the dataset does not provide this specification.

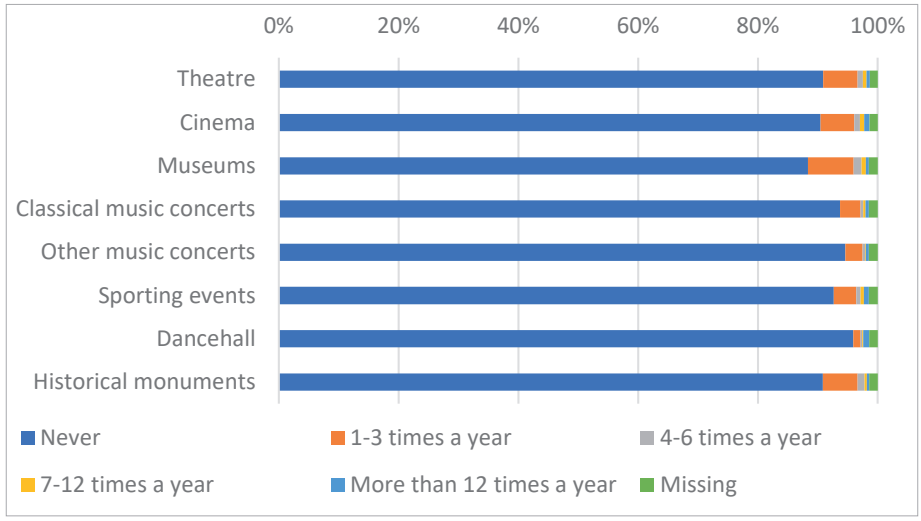

Fig. 3. Participation to cultural and leisure activities, aged 75 and more
Source: own work based on ISTAT data (2020).

Concerning the social inclusion dimension, it emerges that a consistent number of Italian older adults are isolated and lonely. Indeed, the data showed that 29.6% of the elderly aged 65−74 had no friends, 37.8% had no trusted neighbours, and 57.7% had no other relatives they could rely on (excluding parents, sons, siblings, and grandchildren). For those aged over 75, the percentages increased, suggesting a condition of greater loneliness: 44% had no friends, 39.8% had no trusted neighbours, and 62.1% had no other relatives they could rely on. Among those who had friends, 14.2% of the elderly aged 65−74 (13.3% of those aged over 75) saw them every day, while 43.8% (31.4% of people over 75) saw them at least once a week.

These results highlight a critical issue in comparison with previous studies. Indeed, as underlined by Chen and Schulz (2016), the prevalence of social isolation (defined as the absence of contact with people who provide social support) among people over 60s is between 7% and 24%, a condition that is even more severe among the older old people (aged 75–85).

The provision of services and support to older people is an essential component of the aging in place. Since the characteristics of the neighbourhoods in which people live are related to their well-being and quality of life, as discussed in the second section, it is interesting to investigate the accessibility to essential services by older adults, such as drugstores, first aid, etc. Fig. 4 and 5 present a summary of the answers, distinguishing between the two age groups (people aged 65–74 and people over 75).

The first interesting remark concerns the difficulty in reaching the post office: thinking about the withdrawal of pensions, the access to this service is very important for the Italian elderly population. 76% of seniors aged 65–74 stated that they had no difficulties in reaching a post office. This percentage decreased to 65.5% for those aged over 75. Respectively, only 4% and 8% said that the access was very difficult. These latter percentages, however, were quite diversified throughout the country. Indeed, the regions where the elderly have the greatest difficulty in accessing post offices are in the south: in Sicily (10% for the 65–74 age cohort and 11% for those aged over 75), Calabria (10% and 14%, respectively), Campania (8% and 12%, respectively), Basilicata (3% and 13%, respectively), and Sardinia (3% and 13%, respectively).

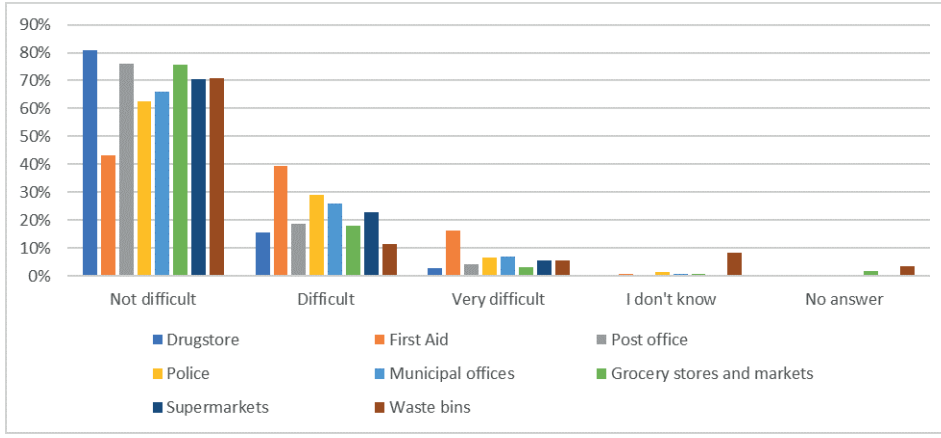

Fig. 4. Difficulties in accessing services, aged 65–74

Source: own work based on ISTAT data (2020).

The same applies to the drugstore accessibility: in the 65–74 age group, 80.7% said they had no difficulties in accessing it, while the percentage dropped to 72.5%

for those aged over 75. The elderly who said they had great difficulty were respectively 2.8% and 6.4% at the national level. Even in this case there were differences among regions; drugstores have low accessibility in Calabria (very difficult: 9% of older adults aged 65−74 and 16% of those aged over 75), Basilicata (3% and 12%, respectively), and Molise (3% and 11%, respectively).

39.4% of the elderly aged 65−74 complained about some difficulties in reaching general practitioners, and 16.2% stated that they had great difficulties in accessing this service. These percentages increased respectively to 40% and 23% for the over 75. Looking at the territorial dimension, the regions with the highest difficulties in accessing this health service were Campania (31% of older adults aged 65−74 and 36% of those aged over 75), Calabria (30% and 36%, respectively), Sicily (27% and 34%, respectively), Sardinia (19% and 35%, respectively), and Aosta Valley (29% and 40%, respectively).

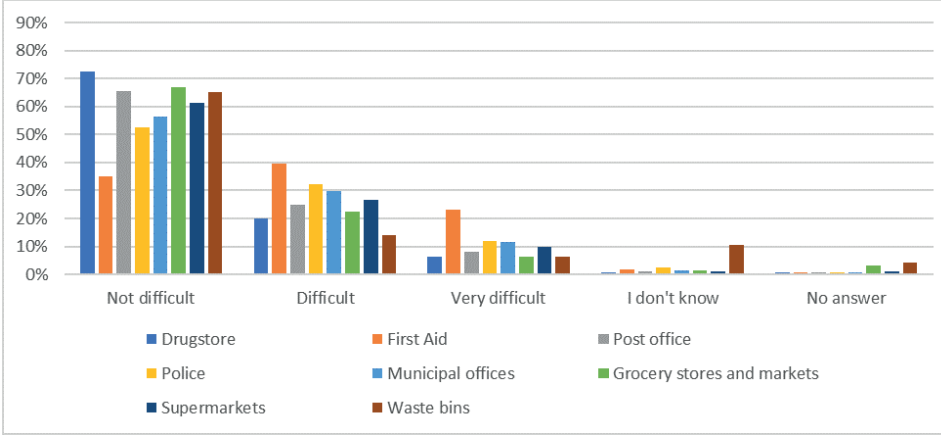

Fig. 5. Difficulties in accessing services, aged 75 and more

Source: own work based on ISTAT data (2020).

62.6% of the elderly aged 65−74 stated that they had no difficulty in accessing police stations, while for those over 75 this percentage was 52.7%. Calabria, where 13% of the elderly aged 65−74 and 19% of those over 75 answered "very difficult", Sicily (13% and 15%, respectively), and Sardinia (8% and 18%, respectively) were the regions that deviated the most from the national average values (6.5% and 12%, respectively).

66% of the elderly aged 65−74 stated that they had no difficulty in reaching municipal offices, while for those over 75 the percentage was 56.3%. Respectively, 7% and 11.6% of the elderly complained that it was very difficult to reach these offices; the percentages increased in some regions: Sicily (18% and 15%, respectively), Lazio (11% and 20%, respectively), and Umbria (8% and 19%, respectively).

Instead, looking at the ease of access to grocery stores and markets, considering the elderly aged 65−74, 75.8% declared to have no difficulty at all; this percentage decreased to 67% for those over 75. The regions where there were more difficulties in the access were Calabria (4% of the older adults aged 65−74 and 12% of those over 75), Umbria (2% and 11%, respectively), and Friuli-Venezia Giulia (9% and 7%, respectively), against national averages of 3.3% and 6%, respectively.

The percentages concerning supermarket accessibility were slightly lower: 70.6% of the older adults aged 65−74 declared to have no difficulties at all, while the percentage for those over 75 was 61.5%. Respectively, only 5.6% and 9.7% of the elderly declared that it was very difficult to reach supermarkets. In some regions these percentages were higher: Calabria (12% of older adults aged 65−74 and 17% of those over 75), Sicily (9% and 14 %, respectively), and Sardinia (5% and 16%, respectively).

Finally, 71% of older adults aged 65−74 stated that they had no difficulties in reaching waste bins, against 56% of those over 75. The worst situation was in Sicily, where 18% and 15%, respectively, complained that it was very difficult to access the waste bins, against a national average of 5.6% and 6.4%, respectively.

As underlined in the literature review section, satisfaction with neighbourhood and amenities is related to a low level of loneliness (van den Berg et al., 2016). Moreover, service accessibility, social support, aesthetics, and walkable neighbourhood are among the strongest predictors of elderly quality of life (Tiraphat *et al.*, 2017). This evidence is also confirmed by Mariotti *et al.* (2021): living in a neighbourhood with commercial and social activities, well-maintained sidewalks, good quality of public spaces, and where the perception of security is good, enables older adults to remain independent for as long as possible.

Another interesting section of the ISTAT survey regards the neighbourhood, and specifically the presence (rated on a Likert scale from 1-not at all, to 4-very much) of some features, such as traffic, noise, crime risk, etc., which influence area liveability.

Figure 6 shows the results, considering both age cohorts (65−74 year olds and those over 75) together, since the differences in the answers between the two classes were minimal. Bad conditions of the road surface emerged to be one of the most common problems of elderly's neighbourhoods (52% answered "Very high" or "Quite enough"), followed by traffic (39%), air pollution (34%), parking difficulties (34%), and insufficient road lighting (31%). This data shows a worrying situation since, as found by Zhang and Zhang (2017) for the Chinese case, the neighbourhood perceptions are positively correlated with life satisfaction.

Moreover, many of these problematic issues directly influence the older adults' mobility, potentially compromising their independence (e.g., bad conditions of the road surface increase the risk falling while walking or cycling), and, therefore,

the possibility to age in place. Indeed, an age-friendly and safe neighbourhood supports walking (Curl and Mason, 2019). As underlined by Vine *et al.* (2012), the urban space sharing among pedestrians and cyclists, as well as the quality of pathways, prevent older people from fully living in the outdoor environment. Moreover, a walkable environment positively influences elderly physical activity levels (Marquet *et al.*, 2017).

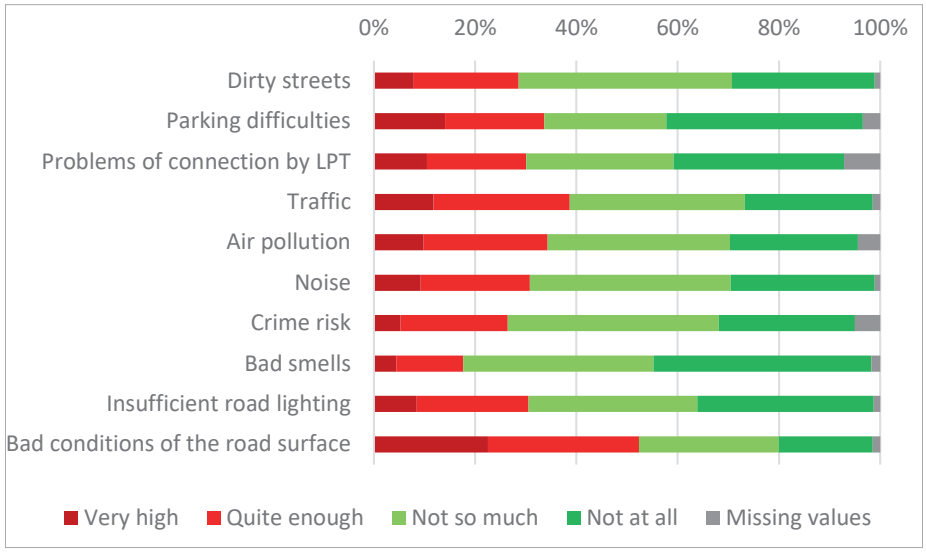

Fig. 6. Neighbourhood characteristics

Source: own work based on ISTAT data (2020).

Another dimension enabling the elderly to age in place (WHO, 2007) concerns the housing conditions. Looking at this issue, the ISTAT survey does not provide particularly detailed information. Indeed, the main evidence regards the housing property and structure.

The analysis shows that for both age groups, the Italian older adults live in their own houses (more than 80%), which are relatively large: more than 50% of the respondents live in houses with three or more rooms, and 42% enjoy a private garden. Oversized houses potentially represent a problem for aging in place, since they required heavy housework; however, they also allow older adults to easily host a caregiver/helper if needed.

Access to LPT represent the last key dimension of aging in place, which need to be discussed together with general elderly mobility habits.

In the ISTAT (2020) survey, there is a set of questions about mobility habits with both public and private means of transport. Figure 7 summarises this information, distinguishing between the two age cohorts.

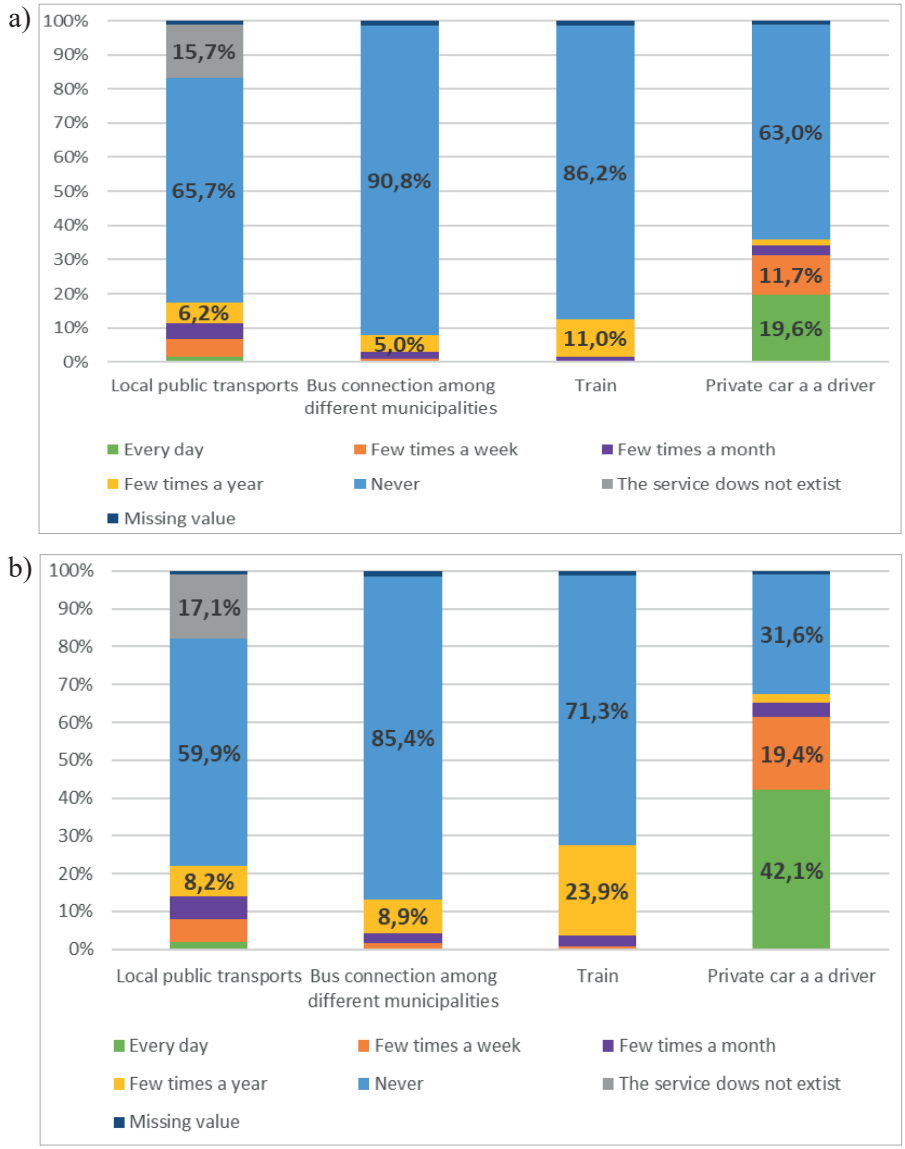

Fig. 7. Transport use frequency a) aged 65–74, b) aged 75 and more

Source: own work based on ISTAT data (2020).

Looking at the private means of transport, 42.1% of the elderly aged 65–74 used car as a driver every day, 19.4% used it a few times a week, while 31.6% never used it. In the over 75 cohort there was a decrease in the percentage of elderly people who used car as a driver every day (19.6%), 11.7% used it a few times a week, while 63% never used it.

Instead, the majority (59.9%) of elderly people aged 65−74 declared that they never used local public transport, while 17.1% stated that there was no such service in their municipalities. The percentages were similar for the over 75 cohort: 65.7% declared that they never used LPT, while 15.7% indicated the absence of the service.

Another peculiar means of transport were buses connecting different municipalities, which were rarely used by the elderly: 85.4% of the respondents aged 65−74 declared that they never used them, and only 8.9% used them a few times a year. This situation was accentuated in the over 75 cohort: 90.8% stated that they never used these means of transport, and only 5% used them a few times a year.

Finally, 71.3% of the elderly aged 65−74 stated that they never used the train, while 23.9% used it a few times a year. 86.2% of those over 75 declared they never used the train, while 11% used it a few times a year.

It is, therefore, clear that the Italian elderly prefer to use private means of transport (cars) wherever they travel. With age, however, mobility generally decreases. As underlined by Schwanen and Páez (2010), while reduced mobility could be related to preferences, low mobility levels could be an undesired effect of aging, becoming an issue if it reduces elderly's participation in social, economic, leisure, and cultural activities, with the consequent decrease in the quality of life (Metz, 2000; Banister and Bowling, 2004).

The picture described above is also confirmed by the ISFORT (Istituto Superiore di Formazione e Ricerca per i Trasporti, 2019) national survey, which is included in the annual report Audimob (Osservatorio su stili e comportamenti di mobilità degli Italiani).

Looking at the overall Italian population, in 2018, about six in ten trips were made by car, five of which as drivers. Moreover, considering the overall trips made by Italians, the elderly (aged over 65) used bicycles (24.1%), cars (16.5%), LPT (14.5%), motorbikes (10.9%), and 20.6% went by foot.

The ISFORT (2015) report represents a complementary source of information on the Italian elderly mobility. This survey systematically collects all the trips made by elderly people aged between 60 and 80, recording their main characteristics: length and travel time, origin and destination, motivation, and means of transport used. As analysed by Trapanese (2019) and Burlando and Cusano (2018), some results of this survey are reported below, distinguishing two classes: 60−69 years old and 70−80 years old.

First, the elderly mobility rate was lower than the population average: in 2015, three in four older adults aged 60−69 left home on a "typical" weekday. This percentage dropped to 63.8% for those aged 70−80 (16.5% lower than the population average). Looking at the time trend of these shares, the 60−69 age group followed the population trend, with a minimum in 2012 (68.3% versus 75.1% for the total population). Instead, considering the 70−80 age group, the number of older adults leaving home on an 'average' day has increased over time: from 55.4% in 2001 to over 60%

in the following years. However, it should be noted that between 2001 and 2015 the elderly population increased from 5.4 million in 2001 to 6.1 million in 2015.

The average number of trips per day is less than three, in line with the population average.

Looking at the motivation behind trips, 90% of older adults aged 60−69 reported trips for leisure and family management. Since 2012, however, the number of trips for family activities has increased (61.2%) and there has been a decrease in trips for leisure activities (from 41.4% in 2001 to 27.9% in 2012). Moreover, work-related trips have increased (from 10.4% in 2001 to 16.4% in 2015).

In the 70−80 age group, family activities increased slightly (from 54.2% in 2001 to 57.7% in 2015), at the expense of leisure activities.

The ISFORT survey highlights that the elderly mobility is predominantly short-range, especially among the over 70: 68.1% of trips are less than 5 km (42% is less than 2 km), and only 7.3% of trips are longer than 20 km. Instead, 53.3% of older adults aged 60−69 travel within 5 km, and about 25% travel more than 10 km.

The mobility characteristics of Italian elderly are like those in other countries. Indeed, several studies (i.e., see Schwanen and Páez, 2010; Páez *et al.*, 2007; Mercado and Páez, 2009) found that, on average, older adults often did not leave the house on a given day, made fewer trips on days they went out, and travelled over shorter distances than do younger cohorts.

Regarding the choice of the means of transport, the 60−69 age group has increased the private car use (from 49.8% in 2007 to 57.7% in 2015) at the expense of cycling/ walking (from 34.9% in 2007 to 26% in 2015). Similarly, the percentage of older adults aged 70−80, who cycle or walk has decreased (from 43% in 2007 to 34.6% in 2015), while the percentage of those driving private car has increased (from 37.7% in 2007 to 48% in 2015). Moreover, the percentage of those using public transport has decreased by about two percentage points for both classes.

Finally, 31.7% of the 60−69 age group would like to reduce car usage and 34.2% would like to increase the use of public transports. Instead, older people are less inclined to a modal shift: only 19.3% would like to reduce the car usage, and 10% would like to increase trips with public transports.

From the picture described above, it emerges that car use is a consolidated lifestyle for the Italian elderly. As underlined by Unsworth *et al.* (2022), older adult car users can more easily remain active and present in community activities. Instead, Aceves-González *et al.* (2015) underlined that scarce LPT services did not allow the elderly to fully participate in life opportunities. Therefore, transport policies providing alternative (to car) transport options are advocated for older adults who do not drive anymore.

It is likely that seniors will use public transport whether it is accessible and safe (Burlando and Cusano, 2018). To make LPT use more appealing, the factors discouraging older adults from using it should be identified and removed. However,

the mobility needs of the elderly have strong geographical and age connotation, thus both the geographical context and the specific needs of the age segment should be considered in the urban mobility planning (Burlando and Cusano, 2018).

In the ISTAT (2020) survey, those using public transports at least a few times a year were asked to give an opinion on some service characteristics, including frequency, timing, possibility to seat, etc. Fig. 9, 10, and 11 summarise this information, considering both age cohorts (65–74 year olds and those over 75) together, since differences between the two classes are minimal.

To avoid overestimation of some judgements, it is necessary to specify that relatively few people answered these questions on public transports:

– LPT use: 1,170 elderly in the 65–74 age cohort, and 934 in the over 75 cohort.

– buses connecting different municipalities use: 699 older adults aged 65–74, and 417 aged over 75.

– trains use: 1,452 elderly in the 65–74 age cohort, and 667 in the over 75 cohort.

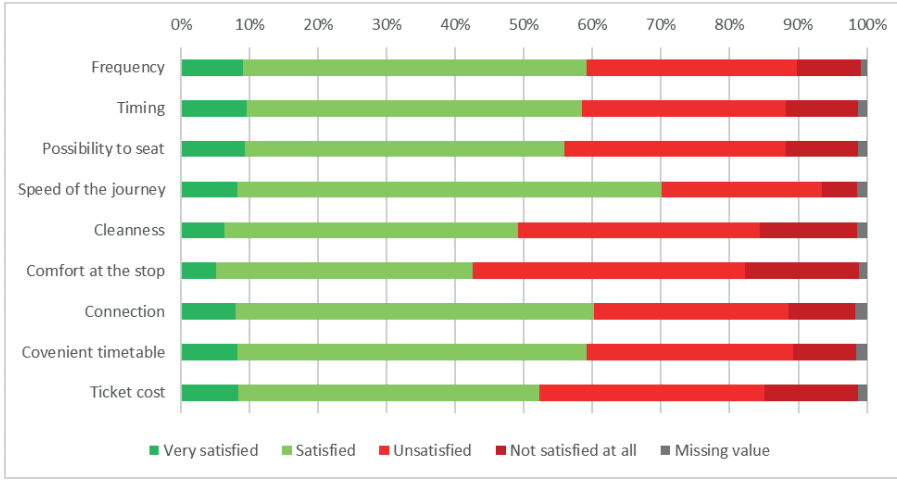

Fig. 8. Satisfaction with LPT characteristics

Source: own work based on ISTAT data (2020).

Figure 8 shows that most of the elderly (more than 50%) who use LPT have an overall positive opinion: for example, about 70% were satisfied or very satisfied with the speed of the journey, and 60% were happy with the connection, frequency of the journeys, and timetable convenience.

The characteristics that reveal most unsatisfaction are the comfort at the stop (56.3% were unsatisfied or not satisfied at all), and the cleanliness (49.4% were unsatisfied).

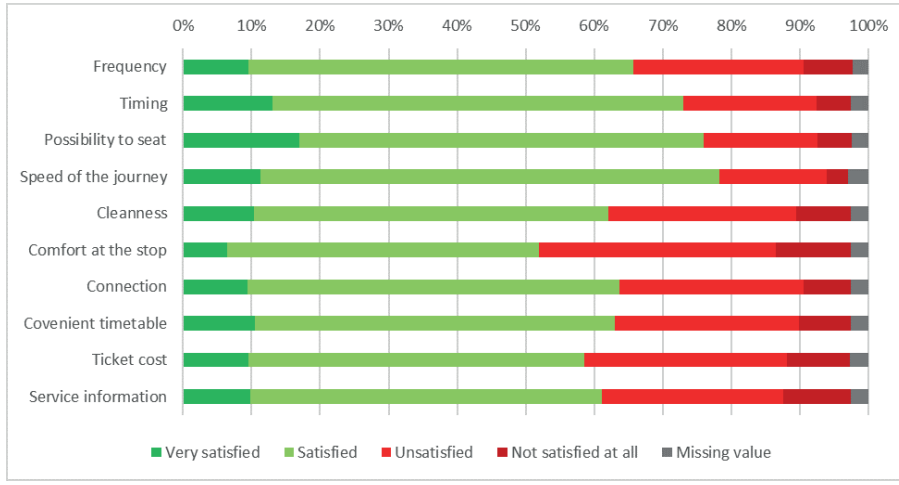

Fig. 9. Satisfaction with buses (connecting different municipalities) characteristics
Source: own work based on ISTAT data (2020).

Instead, Figure 9 shows the elderly satisfaction with buses connecting different municipalities. Also in this case, the opinion is overall positive: older adults are especially satisfied with the speed of the journey (78.2% are satisfied or very satisfied), the possibility to sit (76%), the timing (73%), and the frequency (65.7%). Conversely, the comfort at the stop is the least appreciated feature (45.5% are unsatisfied or not satisfied at all).

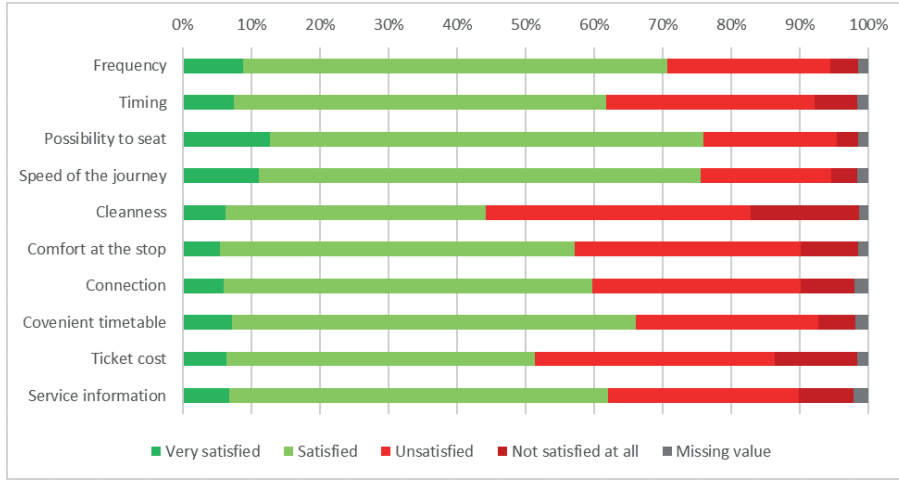

Fig. 10. Satisfaction with train characteristics
Source: own work based on ISTAT data (2020).

Finally, as illustrated in Fig. 10, the opinions on trains are overall positive: the possibility to sit (76% were satisfied or very satisfied), the speed of the journey (75.5%), and the frequency (70.7%) were particularly appreciated. Conversely, 54.5% of older adults were unsatisfied or not satisfied at all with the cleanness (54.5%), the ticket cost (47%), the comfort at the stop (43.3%), and the connection to other municipalities (38.2%).

As suggested by Metz (2003), there could be many elements that make the experience of riding a bus/tram almost 'hostile' to older people, such as the average time allowed for boarding and validating the ticket, or the comfort of seats and benches. Mariotti *et al.* (2021), analysing the case of Milan and Genoa, found that the perceived quality of LPT service affects the probability of giving up making trips: the higher the satisfaction, the lower the probability of giving up. They considered six features of LPT service: comfort inside the vehicles, information at the stop and inside the vehicle, waiting time, LPT ticket cost, security at the stop and inside the vehicle, and punctuality. Their results confirmed the key role of the perception about high quality LPT service in diminishing the probability of older adults giving up their usual activities, and consequently improving their quality of life. Therefore, from the picture described above, it emerges that public transports are relatively rarely used by the Italian older adults, especially by those over 75, but those using them have an overall positive opinion.

5. CONCLUSION

This paper provides a synthetic description of the population ageing process in Italy, focusing on the various dimensions influencing the possibility to age in place.

As far as the first research question is concerned, Italian cities/towns are sufficiently age-friendly, with some improvement opportunities: accessibility to services is generally quite good, except for access to the emergency room, while the neighbourhoods' most common problems are the bad conditions of the road surface and traffic. As age increases, the difficulty of access likewise rises for all the services, advocating a special attention by the policy makers to cope with the needs of this fragile population group.

More effort could be done in considering the older adults' point of view in guiding both mobility planning and urban planning (Guida *et al.*, 2022). Specifically, the transport system should facilitate the accessibility to the destinations such as services, amenities, and other activities (Hounsell *et al.*, 2016).

We can argue that the outdoor environment could represent a stress factor (Phillips *et al.*, 2013) for many Italian older adults. Therefore, policies should promote age-friendly neighbourhoods, by improving planning and designing for pe-

destrians. Examples could be paying attention to the road surface, road lightning, benches position, etc., and removing possible barriers (Akhavan *et al.*, 2022).

Loneliness and isolation, as well as the relatively modest participation to cultural and leisure activities, represent a critical issue for a consistent number of older people. To cope with this problem, contemporary information and communication technologies (ICT) could be used and have the potential to prevent or reduce the social isolation of elderly people via various mechanisms (Chen and Schulz, 2016).

Regarding the mobility habits of the elderly, the paper outlines some characteristics by analysing data from two national surveys, which showed that Italian older adults use public transport only a few times, in favour of private cars (as Italians in general). When public transports are used, those over 65 have a positive opinion, except for the comfort at the stop, requiring, therefore, the provision of additional shelters and seats.

To improve health in later life, policy makers should consider measures to enhance transport aspects for elderly, such as prolonged driving capability, car availability and accessibility of destinations through well-served public transport systems (Nordbakke and Schwanen, 2015). Specifically, LPT should be promoted, given the environmental sustainability perspective. However, alternatives to car should be appropriately designed for elderly's needs (Mifsud *et al.*, 2017). Older adults are open to innovative mobility options, if properly informed, with limited costs for the public administrations thanks to ICT (Burlando and Cusano, 2018). Moreover, since the supply and demand for LPT are highly heterogeneous across the country, specific regional interventions should be promoted (Crotti *et al.*, 2021).

There are some limitations to the current work, both concerning the methodology and the data. First, descriptive statistics allow us to give a picture of the current state of the art, without the possibility of discussing causal relations among the variables considered. Econometric analysis could therefore represent further research in exploring the causal linkages among mobility, access to services and actual possibility to age in place.

Regarding the ISTAT dataset, the main limitation is the geographical level at which the data are provided. Considering the Italian regions (NUTS2) does not bring out the possible inequalities existing within the territory (e.g., mountainous, and peripheral areas could be very different in terms of accessibility to services, LPT provision, etc., from big cities such as Rome and Milan). The use of other datasets could be helpful to explore this dimension.

As underlined by ISTAT (2019, p. 159), although the proportion of elderly people will increase significantly over the next thirty years as the so-called "baby-boomers" will overcome 65 years old, they are likely to become "elderly" later and later, since they benefit from healthier habits and lifestyle. Moreover, this generation is characterised by a higher level (compared to previous generations)

of human and social capital, as well as a higher level of education. Since today's young population will be tomorrow's elderly population, over a period of thirty years, we will see a profound transformation in the characteristics of those over 65. For example, in ten years' time, at least half of women aged 65−74 will have a medium-high educational qualification, in twenty years' time they will be six in ten, and in thirty years' time they will be seven in ten (ISTAT, 2019, p. 160). Therefore, policy makers, both at the national and local levels, are required to actively support the demographic transformation, by making age-friendly the Italian cities and towns.

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