Local public transport and neighbourhood satisfaction: The effect on older adults' subjective wellbeing

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ABSTRACT

The Covid-19 pandemic has impacted older adults in terms of both physical (high mortality rate) and psychological health. In these challenging times more than ever, exploring which dimensions affect the older people's subjective wellbeing is relevant. As the literature has shown, older people prefer to age in place: the living environment and the presence of local services (including public transport) play a key role. The effects of social environment on older people's mobility, especially during the Covid-19 pandemic period remain a less studied topic. Within this context, the paper aims to explore the role of satisfaction with neighbourhood, local public transport, and socio-demographic characteristics in influencing subjective wellbeing in Italy, during the Covid-19 pandemic. A survey has been addressed to people aged over 65 years old in three Italian cities (Milan, Padua, and Varese). A structural equation model and an ordered logit model have been performed. Results show that older adults who are satisfied with their neighbourhood and are happy with the local public transport characteristics are more likely to have higher subjective wellbeing. Moreover, men, older adults living alone, and those who have suffered from an income reduction, due to the pandemic, show lower levels of subjective wellbeing.

1. Introduction

The ageing population, attributed to decreasing birth rates and advances in medicine and technology is encountered globally. International organizations make several predictions to project the dimensions of the issue in the future. Although the European countries might not face the highest percentage changes of ageing populations over time, compared to the other continents, Europe, in general, has already the oldest population with a median age of 42 years, expected to reach 46 years by 2050 (UN/DESA (United Nations, Department of Economic and Social Affairs, Population Division), 2015). In 2019, Italy was classified among the countries with the highest old-age dependency ratio, with 50 persons aged 65 years or over per 100 persons aged 20 to 64. This measure is expected to almost double (estimated to be 97) by 2050 (UN/DESA (United Nations, Department of Economic and Social Affairs,

Population Division), 2020). Remarkably, the Italian National Institute of Statistics (ISTAT (Istituto Nazionale di Statistica), 2021a) reports that the Covid-19 pandemic has severe consequences on the demographic issues in the country. In 2020, births were equal to 404 thousand while deaths reached the exceptional level of 746 thousand, leading to an outstanding negative balance of 342 thousand individuals. Additionally, ISTAT (Istituto Nazionale di Statistica) (2021b) further highlighted a population decrease of 81% in the Italian municipalities within the next ten years and 87% in rural areas municipalities.

Yet, the topic of ageing encompasses a wide range of angles. The approaches to active and healthy ageing developed by the World Health Organization (WHO) show that optimisation of opportunities for health, participation, and security and enhancing the functional ability of older adults are essential to improve older people's wellbeing (WHO (World Health Organization), 2018). Recently, the United Nations Decade of

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Healthy Ageing 2021–2030, inspired by the 2030 Agenda of Sustainable Development Goals, aims to revise the existing approaches and target crucial sectors, demanding close collaboration between countries, organizations, and stakeholders (WHO (World Health Organization), 2020).

In the context of populations' ageing, subjective wellbeing (SWB) is a relevant issue since individuals enter new phases in their life with fewer responsibilities related to employment and childcare, namely the third age (between 65 and 80 years old) (Laslett & Brenner, 1989), and the fourth age (over 80 years old) (Baltes, Lindenberger, & Staudinger, 1998). Sustaining a relatively high level of wellbeing becomes a relevant factor within the active and healthy ageing concepts (WHO (World Health Organization), 2018). The studies about SWB focus on the level of wellbeing that an individual experiences and refers to their self-assessment about personal life as a whole, which may include feelings or subjective evaluations about satisfaction with life, social engagement, ties and relationships, health, and other vital aspects (Diener & Ryan, 2009). According to this definition, Delbosc (2012) uses the terms wellbeing, life satisfaction and happiness interchangeably. The concept of wellbeing is often confused with the quality of life (QoL) as they represent ideas with definitions and theoretical landscapes that tend to mix and provide similar takeaways (Nordbakke & Schwanen, 2014). Diener, Oishi, and Lucas (2003) argue that SWB is one measure of QoL for individuals and societies. Consequently, SWB is necessary to achieve high QoL of individuals and communities, but it is not sufficient (Diener et al., 2003).

Measuring SWB is essential when using social and environmental indicators to design policies and develop age-friendly environments, and the researchers have used several measures for its estimation. The current study follows the definition of the Personal Wellbeing Index, developed by the International Wellbeing Group (2013) (Cummins, Eckersley, Pallant, Van Vugt, & Misajon, 2003; Jovanović, Cummins, Weinberg, Kaliterna, & Prizmic-Larsen, 2019) and described in the empirical section (see paragraph 3.2.1).

Importantly, in the scientific literature, scholars recognised that wellbeing is associated with the perception of the older people's external environment, including neighbourhood and local public transport (LPT) satisfaction. Ageing is a controversial aspect of the assessment of wellbeing, and some scholars have argued that life satisfaction does not necessarily decrease in later life (Horley & Lavery, 1995). Indeed, several socio-demographic variables are influencing wellbeing perceptions. For example, Pinquart and Sörensen (2000) conducted an extensive meta-analysis of 286 empirical studies and found that gender, economic, age-related discrepancies and social connectivity levels play an essential role in how older people feel in terms of wellbeing. Individuals with higher socioeconomic status (mainly associated with higher income), better social ties and higher competencies that allow them to maintain an independent life and have meaningful activities, expressed greater satisfaction and self-esteem. Moreover, Mao and Han (2018) found that older people living with family and children are more satisfied with life. This result is achieved through the indirect role of instrumental and social support from their beloved and governmental financial aid received in pensions.

Even during the Covid-19 pandemic, older people tried to stay mobile not only to access necessities and services spatially, but, more importantly, because being active is a necessary and persistent part of older people's everyday lives (Liu, Liu, Zhang, An, & Zhao, 2021). The literature on older adults' subjective wellbeing during the Covid-19 pandemic is scant. The social consequences of Covid-19 remain insufficiently explored because studies mainly focused on the macro scale (Bonaccorsi et al., 2020). The studies have underlined that although many older people live alone and engage less often in social gatherings, the pandemic has massively affected those in their cohort (Beauchamp, Vrkljan, Kirkwood, et al., 2021). Bayer and Kuhn (2020) argue that within the pandemic outbreak, patterns of social interaction play a key role in determining fatality rates. Compared to other European countries, the higher mortality rate experienced in Italy can also be explained by the relatively higher intergenerational interactions. Indeed, the share of adults aged 30–49 who co-habit with a parent, in Italy is above 20%, while in other countries (e.g., France, Switzerland and the Netherlands) is relatively lower (<5%) (Akhavan, Mariotti, & Rossi, 2020; Bordone, 2009). In 2019, ISTAT estimated approximately 6810 young adults aged 18–34, single and unmarried, who live with at least one parent. In addition, grandparents represent a precious resource for families, especially with two full-time working parents, managing their school-age children. Moreover, as Mossong, Hens, Jit, et al. (2008) underlined, Italy recorded the highest number of daily contacts (average value: 19.77), while Germans recorded the lowest number (average value: 7.95).

Generally, living alone negatively impacts people's subjective wellbeing (Dush & Amato, 2005). This situation is familiar to older people, whose share of living alone is higher than those younger than 65. Only one paper, at least to our knowledge, explores the role of mobility in improving the quality of older adults' daily living in China (Liu et al., 2021). The analysis demonstrates the mobility generated and maintained older people's physical and mental wellbeing. Finally, the Covid-19 pandemic also has severely negative economic consequences, increasing unemployment rates (Kong & Prinz, 2020; Su, Dai, Ullah, & Andlib, 2022).

Within this framework, the present paper enriches the scant existing literature by analysing the factors influencing the subjective wellbeing of older adults aged 65 years old and over in three Italian cities (Milan, Padua and Varese) during the Covid-19 pandemic in February 2021. The cities have been selected based on their size (inhabitants), local public transport accessibility and the share of older people. The sample was stratified based on the city's population concerning gender and two age cohorts (65–74 years old, and over 75 years old). Data were collected through Computer-Assisted Telephone Interviewing (CATI) method, and 1375 older people in all three cities responded to the questionnaire. Even if Italy faces demographic challenges, the research about older people's subjective wellbeing is scant, and no studies, at least to our knowledge, have been written during the Covid-19 pandemic.

In particular, the following hypotheses are proposed and tested:

Hypothesis 1. The presence of services and satisfaction with neighbourhood infrastructure improve older people's subjective wellbeing.

Hypothesis 2. Specific attributes of local public transport contribute to improving older people's subjective wellbeing.

Hypothesis 3. Living alone and having experienced an income reduction due to the Covid-19 pandemic negatively impacted older adults' wellbeing.

The empirical analysis consists of a Structural Equation Model (SEM) to investigate the first two hypotheses and an ordered logit model to draw the socio-demographic profile of older adults (hypothesis three). In this paper, we contribute to the literature about subjective wellbeing of older people during Covid-19. More specifically, we explore the links of satisfaction with local public transport and neighbourhood analysing data from individuals over 65 years old in Italy. The results will contribute to policy development to cope with problems associated with an ageing population, also during the disruption caused by the Covid-19 pandemic, filling the gap in the literature. The paper is organized as follows. Section 2 overviews the relevant literature concerning the link between wellbeing, neighbourhood satisfaction and local public transport use. Section 3 describes the data and methodology. Section 4 presents and discusses the results. Finally, Section 5 concludes the paper and puts forward the study's limitations and further research directions.

2. Background studies

2.1. Older people's subjective wellbeing and satisfaction with the neighbourhood

According to the WHO 'Global Age-Friendly Cities' project, the following dimensions enable older adults to 'age-in-place' (Cass, Shove, & Urry, 2005; Fitt, Curl, Dionisio, Ahuriri-Driscoll, & Pawson, 2019; Stanley, Hensher, Stanley, & Vella-Broderick, 2011; Stanley, Stanley, Vella-Brodrick, & Currie, 2010): (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 LPT (van Hoven & Meijering, 2019). The scientific literature has investigated several of these dimensions. For the purpose of this paper, we focus on the role of the neighbourhood infrastructure in ageing in place.

Notably, scholars have explicitly discussed the importance of neighbourhood characteristics in determining older adults' health (Day, 2007; Muramatsu, Yin, & Hedeker, 2010; Young, Russell, & Powers, 2004) and wellbeing (Cramm, Møller, & Nieboer, 2012; Lucchesi, Larranaga, Arellana Ochoa, Barbosa Samios, & Bettella Cybis, 2021). The detailed analysis by Pinto and Sufineyestani (2018) reviewed the relevant literature and provided an extensive list of requirements for an age-friendly neighbourhood: from the infrastructures of the built environment (e.g., cycle paths, parking, and green areas) to distance from transport stations to services availability (e.g., supermarkets, banks, post offices, etc.). Similarly, Gardener and Lemes de Oliveira (2020) reviewed the literature about the perceptions of older people regarding the urban environment that facilitate or serve as barrier to health and wellbeing. Five key and overlapping domains emerged: neighbourhood features (82% of the articles), social environment (78%), transport environment (39%), destinations and land use (37%), and connectivity (37%). Interestingly, Cramm and Nieboer (2014) investigated explicitly the role of feelings of security and solidarity in the neighbourhood of older people living in Rotterdam (Netherlands) and concluded that both elements are determinant factors for older people's wellbeing. Lucchesi et al. (2021) also underlined that a built environment that is pleasant to walk and perceived as safe impacts positively elderly's subjective wellbeing.

Mariotti, Brouwer, and Gelormini (2018) analysed data from 129 community-dwelling older people living in 11 neighbourhoods of Milan. They found that most older people confessed being satisfied with their living environment and preferring to age in place. The reasons for this choice can be several (Ahn, Kwon, & Kang, 2020) related to housing, health, presence of local services (including LPT), social interactions, safety and security, family and finances, but above all, the desire to enjoy an independent living. Nieboer and Cramm (2017) have analysed data collected from 945 community-dwelling older adults (aged >70 years old) living in several districts of Rotterdam (Netherlands), and estimated physical (comfort and stimulation) and social (affection and behavioural confirmation) well-being using the Social Production Function Instrument. The study included physical elements (outdoor spaces and buildings, transportation, housing) and social environment (social and civic participation, respect and social approval, communication and information, community support and health services) as critical enablers of these two types of wellbeing.

Similarly, Gao, Weaver, Fu, Jia, and Li (2017) applied the International Personal Wellbeing Index, like in our study, in a multilevel regression model and confirmed the role of physical (aesthetic quality and walking environment) and social characteristics (social cohesion and interaction) of 47 neighbourhoods in Shanghai on wellbeing of adults over 60 years. Zhang and Zhang (2017) explored the perceived neighbourhood environment described by 12 characteristics, among which road traffic and communal facilities, and subjective well-being relationship through the sense of community among 720 Chinese older people (50–90 years old). They found that neighbourhood

perceptions are related positively to life satisfaction (the sense of community partially mediated the relationship), meaning in life, and positive feelings in daily life (the sense of community fully mediated the relationship).

Although the frequency of journeys seems to be decreasing with ageing (Boschmann & Brady, 2013), except walking (Bergland, Thorsen, & Loland, 2010; Lampinen, Heikkinen, Kauppinen, & Heikkinen, 2006), empirical findings for the case of Milan show that older adults prefer to walk to reach the desired destinations (Akhavan, Mariotti, & Pinto, 2022; Akhavan & Vecchio, 2018; Mariotti et al., 2018; Mariotti, Burlando, & Landi, 2021).

Relevant research provides evidence that the build environment can facilitate walking levels (Cheng, Shi, Vos, Cao, & Witlox, 2021; Distefano, Pulvirenti, & Leonardi, 2021), thus making accessibility of green urban space easier and strengthening social ties with the community (Enssle & Kabisch, 2020). A recent study by Curl and Mason (2019) also suggests that changes to the neighbourhood environment will alter the walking frequency and wellbeing among ageing populations in deprived communities. Additionally, walkability levels could unequally influence the fragile groups of older people (i.e., low socioeconomic status, poor physical conditions, and lack of social connectedness), and produce stronger outcomes than the other categories (Wang et al., 2019). Burlando and Cusano (2018) found that the older Italian people in their sample made on average 2.7 trips daily within a distance range between 1 and 5 km. This remark coordinates with the "15 minutes cities" view, which targets disconnecting from high urban mobility levels and keeping welfare space within the neighbourhood's borders. A few European cities/countries have proposed "15 minutes city" plans, especially after Covid-19 pandemic, such as Milan (Comune di Milano, 2020). The perception of the older people for neighbourhood they live in should indicate to policymakers the strong characteristics that the urban place demonstrates and intervene to improve the current fragilities (Burlando, Ivaldi, & Ciacci, 2021).

Although the literature about the relationship of neighbourhood deprivation and wellbeing is not conclusive about the results, researchers from the UK examined this relationship during Covid-19 pandemic analysing longitudinal data from 9600 people (including older people) between 2015 and 2019 with very recent data from the Covid-19 between April and July 2020, on two dimensions of subjective well-being hedonic (i.e. mental health) and evaluative (i.e. life satisfaction) (Bonomi Bezzo, Silva, & van Ham, 2021). Overall, the authors found that both subjective and evaluative wellbeing decreased as a result of the pandemic and lockdown. However, for those living in more deprived neighbourhoods the level of hedonic well-being decreased more than for those living in better areas. Nevertheless, no studies have been carried out about older people's subjective wellbeing and satisfaction with the neighbourhoods during the Covid-19 pandemic, at least to our knowledge.

2.2. Older people's subjective wellbeing and local public transport use

Several studies have underlined the role of mobility in influencing the quality of life and wellbeing in older age (Banister & Bowling, 2004; Metz, 2000; Mollenkopf, Marcellini, Ruoppila, Szeman, & Tacken, 2005; Nordbakke & Schwanen, 2014; Siu, 2019). Indeed, mobility is fundamental to active ageing and it is closely linked to health status and high levels of subjective wellbeing, as it is related to the ability to exercise, remain socially connected, and be autonomous and independent (Gagliardi, Marcellini, Papa, Giuli, & Mollenkopf, 2010; Johnson, Shaw, Berding, Gather, & Rebstock, 2017; Mifsud, Attard, & Ison, 2019; Mollenkopf et al., 2005; Nordbakke & Schwanen, 2014; Pantelaki, Maggi, & Crotti, 2021; Webber, Porter, & Menec, 2010).

The literature has emphasised local public transport's crucial role within the neighbourhood. The access to LPT allows older people not only to access easier to various goods, services, and activities (Ariza-Álvarez, Arranz-López, & Soria-Lara, 2021; Hounsell, Shrestha,

McDonald, & Wong, 2016; Mariotti et al., 2021), but also to maintain their physical and mental health (Crotti, Maggi, Pantelaki, & Rossi, 2021), independence (Fiedler, 2007; Wong, Szeto, Yang, Li, & Wong, 2018), social connections (Brown, Duncan, Horner, Bond, & Wood, 2018) and participation in the society (Green, Jones, & Roberts, 2014). As such, the relationship between transport mobility and wellbeing is achieved through several possible mechanisms which might be culturally, materially, and politically formed (Vella-Brodrick & Stanley, 2013).

A recent literature review about the impact of public transport on physical, mental, and social wellbeing (Rambaldini-Gooding et al., 2020) highlights the sparse empirical evidence. Basically, the existing studies are trying to verify various hypothetical pathways that associate public transport use with older people's wellbeing. However, the literature has mainly studied the quality of Life (QoL) rather than wellbeing concerning transport accessibility (Delbosc, 2012).

Su and Bell (2009) point out that older people have more time to spend and would be more willing to accept a longer trip in exchange for a lower ticket price. Nevertheless, Jackson et al. (2019) argued that the free bus pass policy, as a means to increase bus use by older people in the UK, will influence social interactions and physical activity levels based on the assumption that these factors consist part of the wellbeing measure. Jones, Goodman, Roberts, Steinbach, and Green (2012) assessed the free bus policy in the UK for older people and analysed the implications on wellbeing, concluding that this type of concession made older people feel self-worth and reduced social isolation. However, reserved seats in the bus were conceived as a form of discrimination against the other passengers with opposite results for older adults' wellbeing. Arranz, Burguillo, and Rubio (2022) explored the impact on economic wellbeing and equity of a price transport policy for older people in Madrid, Spain. They found that the subsidy has had a positive effect in terms of economic wellbeing in all the households receiving it.

Other scholars investigated the role of public transport in facilitating activity participation. Banister and Bowling (2004) used survey data from 999 people over 65 years old in Britain, and concluded that the relations of public transport use (local transport) with QoL are mixed. However, they found some indications that those who had participated in more activities increased the rating of the local transportation. Interestingly, nearly 40% of the respondents rated the local public transport as good, and they did not use it to reach social activities. These findings do not give a clear picture of the role of public transport on activity participation and higher wellbeing. However, the study emphasises that older people living in a safe neighbourhood with good community facilities and services (including transportation) are considered very important for older people's life satisfaction.

More recently, Kim, Schmöckerb, Nakamura, Uno, and Iwamoto (2020) analysing data from older Japanese people, found that the "younger" older people (65–74 years old) embrace more public transport as part of their QoL, rather than the older-old (over 75 years old). Primarily, for the younger old who perform either regular short trips or more extended sporadic use of public transport, the QoL was found to be high.

A more detailed analysis about the typology of activity participation (formal, informal and solitary) that the mobility capital (i.e., car, public transport, walking and cycling) facilitates was conducted by Shergold (2019). Based on the elaboration of UK data, the author argued that older people with access to a car are frequently involved in formal activities. On the other hand, older people without car accessibility tend to stay in touch with informal ones.

Ma, Kent, and Mulley (2018) applied a SEM model to associate transport accessibility with wellbeing in Sydney (Australia) on population groups (including older people) through the mediation effect of the urban environment. A walkable and cohesive neighbourhood was found to be an alliance for transport accessibility and community integration resulting in higher wellbeing. Eibich, Krekel, Demuth, and Wagner (2016) underlined that access to LPT is associated with better outcomes on all measures of health and wellbeing. The result is consistent for older adults in Berlin over 60 years old and younger generations, while neighbourhoods show stronger associations for older residents.

Aceves-González, Cook, and May (2015) investigated the role of bus services on the health and wellbeing of older adults aged 60 and over in Mexico. The authors underlined that poor bus service attributes (e.g., drivers' behaviour, features of bus design, crowded buses, pedestrian infrastructure, and other passengers' behaviour) present difficulty to older passengers who need or want to use the bus service. Consequently, this affected health and wellbeing by visiting family and friends and accessing healthcare services.

While older people move to space to satisfy the hierarchy of travel needs (Musselwhite & Haddad, 2010), the pathways to reach wellbeing will be entrenched. As a result, researchers need to explore these relationships deeply based on empirical data.

The Italian older adults' mobility was investigated by a few studies (Akhavan et al., 2022; Crotti et al., 2021; ISFORT- The Istituto Superiore di Formazione e Ricerca per i Trasporti, 2016; Mariotti et al., 2018; Mariotti et al., 2021). The annual report AUDIMOB (Osservatorio su stili e comportamenti di mobilità degli Italiani) by ISFORT[2] (ISFORT- The Istituto Superiore di Formazione e Ricerca per i Trasporti, 2016) analysed older people's mobility in Italy by age classes (60–69 and 70–80 years). The results indicated lower mobility for the older people compared to the total population, increased private car use, and decreased LPT use. Moreover, the report found a higher willingness to change the modal choice (from car to LPT) for people aged 60–69, than for those aged 70–80.

Crotti et al. (2021) investigated the relationship between health (both physical and psychological) and mobility (using a private car or LPT) among older Italian adults. Analysing data by the "Aspects of Daily Life" 2017 survey, they found that taking into account the overall Italian population trips, the share undertaken by the older people was 24.1% for cycling, 20.6% for walking, 16.5% by car, 14.5% by LPT and 10.9% by motorcycle. Moreover, the results of the econometric analysis showed that taking LPT or driving cars more frequently are associated with higher levels of psychological and self-perceived health. At the same time, using LPT at least once a week positively influences older adults' physical conditions.

Mariotti et al. (2018) focused on the city of Milan, describing how older people perceived their neighbourhood in terms of mobility. They found that the survey respondents move at least twice a day outside and, as a modal choice, prefer walking (35.4%), using LPT (30.8%), driving a private car (22.8%) and cycling (11%). Moreover, they prefer buses to the underground since the stops are closer to each other, and the underground elevators do not continuously operate.

Finally, Mariotti et al. (2021), using a representative sample of older adults in Milan and Genoa in Italy, investigated the motivations not to take trips and activities because of the perceived inadequacy of LPT. The results of the multivariate logistic regression show that conditional on age, gender, and other control variables, the main significant factors affecting the probability of giving up making trips and carrying out activities are the perceived quality of LPT service and the higher satisfaction for the neighbourhoods.

Although the older people represent one of the most susceptible population groups to experience a considerable reduction in mobility, which has negatively affected their physical and mental health, the literature on the effects of the Covid-19 pandemic on older people's mobility is scant. Beauchamp et al. (2021) explored the impact of Covid-19 on mobility and participation of older adults living in Hamilton, Ontario, Canada. They described short-term and medium-term changes to the mobility and participation of older Canadians living in the community rather than retirement facilities during the pandemic. The study by Liu et al. (2021), at least to our knowledge, is the only one exploring

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[2] Istituto Superiore di Formazione e Ricerca per i Trasporti.

the role of mobility in older adults' quality of daily living in China in the first two months of the Covid-19 outbreak, which started at the end of December 2019. The authors surveyed 186 families with a total of 248 older people. It resulted that mobility improves the quality of daily living (e.g., access to grocery shopping), the maintenance of outdoor activities for health cultivation, thus preserving social networks even during the pandemic. Finally, Carney, Long, and Kandt (2022) compared older peoples' demand for bus services before and after Covid-19 using smart card travel data obtained from 152,061 cardholders. The results showed that many older people who rely on public transport for their mobility needs live in areas with low public transport presence, thus, indicating that Covid-19 aggravated transport inequalities.

3. Data and method

3.1. Study context

The paper analyses data from a representative sample of older people living in three Northern Italian cities: Milan, Padua and Varese (see Fig. 1). The selection of the three cities is based on the following characteristics: population and population density (Milan: large; Padua: medium; Varese: small), the concentration of older people, and LPT accessibility.

As shown in Table 1, Milan is a large metropolitan city (1,374,582 inhabitants), the economic and financial centre of the country, and densely populated (7566 inhabitants/square Km). The share of older people is about 23%. Milan is flat, and a more efficient LPT characterises it. The total number of seats-km offered by local public transport (values per inhabitant) in 2019 was 15,853.

Padua is a medium size town (2255 inhabitants/square Km) and the capital of the same province. It is the region's most densely populated area, with 26% of its population over 65 years old. The orography of Padua is entirely flat and crossed by various rivers. At the same time, its transport system is composed of trains, buses and trams with 3909 seats per km/inhabitant.

Varese is a small town (1447 inhabitants/square Km) and the capital of the same province. Its main characteristic is that it lies on seven hills, thus, representing an altimetric spawn of 912 m between the lowest and the highest place. The transport system is served by buses and trains, offering 2704 seats per km/inhabitant.

The sample analysed in this research was stratified based on the city's population (excluding the city centre[3]) concerning gender and two age cohorts (65–74 years old, and over 75 years old), as shown in Table 2. Data were collected in February 2021 through Computer-Assisted Telephone Interviewing (CATI) method, and 1375 older people in all three cities responded to the questionnaire.

The pandemic emergency management has seen the succession of three main phases in Italy.

From the Prime Minister's Decree of 4 March 2020 (Gazzetta Ufficiale Serie Generale n. 55/2020) till May 2020, there was the first strict lockdown, which established the progressive closure of non-essential economic and institutional activities at the national level. Then, from June to October 2020, the so-called "second phase" started, which was characterized by a gradual easing of the previous restrictions and containment measures, and the economic activities reopened. Finally, from November 2020 to March 2021, there was the second lockdown, when there was a progressive closure of specific activities, differentiated across the Italian regions depending on the number of infections. Data collection, therefore, was conducted during the second lockdown

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[3] By excluding the cities' centres from the analysis, we aimed to avoid possible biases in the sample. Indeed, people living in the cities' centres could be considered as outliers, since they have the highest average income and the best accessibility and neighbourhood conditions. Data were collected at the Census Areas' (ACE) statistical level (last available year: 2017).

(Alfano & Ercolano, 2020).

The survey was built following the most recent examples in the literature and is divided into four main sections. The first section collected information about older adults' mobility and transport-related habits before and during the Covid-19 pandemic. The second section contained questions about their satisfaction with their neighbourhood and familiarity with Internet use. The third part was devoted to physical and psychological health conditions and questions forming subjective wellbeing levels. Finally, the last section contained socio-demographic information about age, gender, occupation, etc.

3.2. Data

3.2.1. Subjective wellbeing

This study focuses on subjective wellbeing, while the concepts of wellbeing at the national and regional levels are omitted. Specifically, to measure SWB we have adopted the Personal Wellbeing Index as described by the International Wellbeing Group (2013) (Cummins et al., 2003; Jovanović et al., 2019), where the older adults indicate how satisfied they are with regards to eight different aspects of their life according to the following questions on a Likert-scale (1 = Not satisfied at all; 10 = Very satisfied), *How satisfied are you with…?*

1. *Your standard of living.*
2. *Your personal health.*
3. *What you are achieving in life.*
4. *Your personal relationships.*
5. *How safe you feel.*
6. *Your future security.*
7. *Your spirituality/religion.*
8. *The feeling of being part of the community*

The above eight observable responses extracted the latent variable related to subjective wellbeing and included in the SEM model.

Fig. 2 shows the distribution of these self-assessed answers. Most older people are quite satisfied with all the above affirmations; specifically, the category "8" showed the highest frequency among all the questions. Considering together the scores from 7 to 10, 83.70% of the respondents are satisfied with their standard of living; 77.40% are satisfied with their health conditions; 88.00% are happy with what they have achieved in their life; 90.30% are satisfied with their personal relationships; 84.20% feel safe; 72.90% are confident with future security. Instead, respondents are somehow less happy with the last two aspects investigated: 70% are satisfied with spirituality/religion, and 62% feel part of the community. Looking at the extreme values of the scale, it is worth mentioning that 25% of respondents are very satisfied (score 10) with their personal relationships, while 7.8% are not at all happy with their spirituality/religion.

3.2.2. Satisfaction with neighbourhood infrastructure

To develop a study-specific measure of the living environment, based on the literature linking ageing to the urban context, we selected five key neighbourhood characteristics to be evaluated by the older adults on a Likert scale (1 = Not satisfied at all; 5 = Very satisfied). The participants answered the following questions: *How satisfied are you with…? 1. Quality of the pedestrian paths (e.g., road surface, lighting, etc.), 2. Presence of benches and seats along the pathway, 3. Presence of services (e.g., shops, markets, bars, banks, etc.), 4. Presence of social clubs and green areas, and 5. Safety (absence of crimes).*

The latent variable related to the satisfaction with neighbourhood infrastructure and included in the SEM model is extracted by the above five observable responses.

Fig. 3 shows that older people are satisfied (sum of categories 3, 4 and 5) with their living environment: 85% are happy with the existing services, 71.4% with the presence of social clubs and green areas, and 64.4% with the quality of the pedestrian paths.
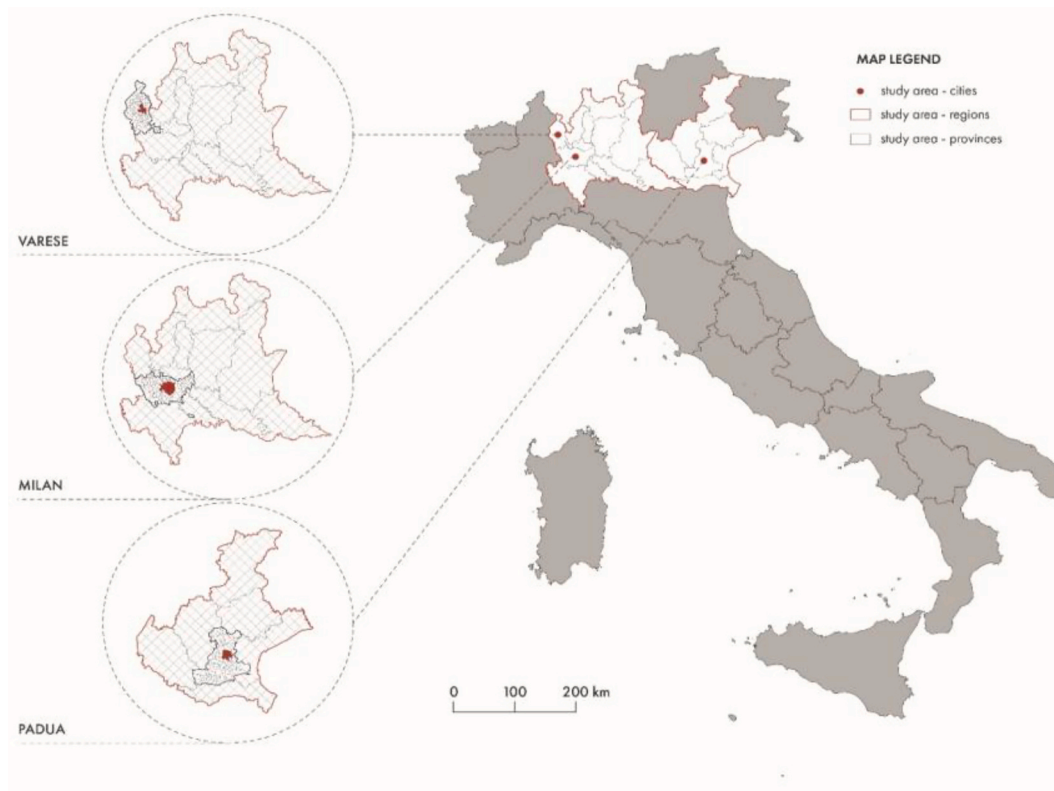
Fig. 1. The location of Milan, Padua and Varese. Source: Authors' elaboration.

Table 1
Main features of the cities of Milan, Padua and Varese. Source: Authors' elaboration of ISTAT data (2021).

	Milan	Padua	Varese
Total population	1374582	209730	79350
Density (pop/Km2)	7566	2255	1447
Population over 65 (%)	22.46%	26.03%	26.75%
Total number of seats-km offered by local public transport (values per inhabitant)	15853	3909	2704

Notes: Total number of seats-km offered by local public transport (values per inhabitant) corresponds to the year 2019 while all the other data to the year 2021.

There are two exceptions: 54% (sum of categories 1 and 2) are unhappy with the presence of benches and seats along the pathway, and 40% (sum of categories 1 and 2) are not satisfied with neighbourhood safety.

3.2.3. Satisfaction with local public transport

As regards the satisfaction with LPT, the older people were asked to answer the following questions on a Likert scale (1 = No satisfaction at all; 4 = Very satisfied): *How satisfied are you with the following LPT characteristics...? 1. Connection with other city areas, 2. Frequency, 3. Punctuality, 4. Cleanness of the vehicles, 5. Comfort in getting on/off the vehicles, 6. Comfort at the stop (e.g., presence of benches), 7. Crowding in the vehicle, 8. Ticket cost, and 9. Possibility to seat during the travel.* The latent variable related to the satisfaction with LPT and included in the SEM model is extracted by the above nine observable responses.

As highlighted in Fig. 4, most older adults are satisfied with the LPT features. Specifically, the characteristics with the highest scores (sum of categories 3 and 4) are the connection with other city areas (85.2%), timing (82.3%), and frequency (78%). Instead, respondents are somehow less happy (sum of categories 1 and 2) with the crowding in the

Table 2
Comparison between the sample and the actual population of Milan, Padua and Varese. Source: Authors' elaboration on sample and ISTAT 2017 data.

Gender	Age cohort	Sample (n.)	Sample (%)	Population (n.)	Population (%)
Milan					
Male	65–74	101	17.94%	55532	18.86%
Male	over 75	120	21.31%	62871	21.36%
Female	65–74	136	24.16%	70357	23.90%
Female	over 75	206	36.59%	105613	35.88%
Padua					
Male	65–74	90	21.84%	49356	23.04%
Male	over 75	86	20.87%	44170	20.62%
Female	65–74	110	26.70%	54591	25.48%
Female	over 75	126	30.58%	66130	30.87%
Varese					
Male	65–74	81	20.25%	4204	19.46%
Male	over 75	84	21.00%	4560	21.11%
Female	65–74	96	24.00%	5242	24.26%
Female	over 75	139	34.75%	7600	35.18%

vehicles (35.6%) and the comfort at the stop (30.8%).

3.2.4. Socio-demographic variables

The last section of the questionnaire is related to the socio-demographic variables: age, gender, education level, living alone or with other people, income reduction due to Covid-19, moving with support, and the city of living of the participants (see Table 3). These variables are included as covariates in the ordered logit model. Overall, there are 39.9% of older adults aged between 65 and 74 years old. Predominantly, they are women (59%), married (62.5%), have attended high school (39.8%) and live with two or more members (72.00%).

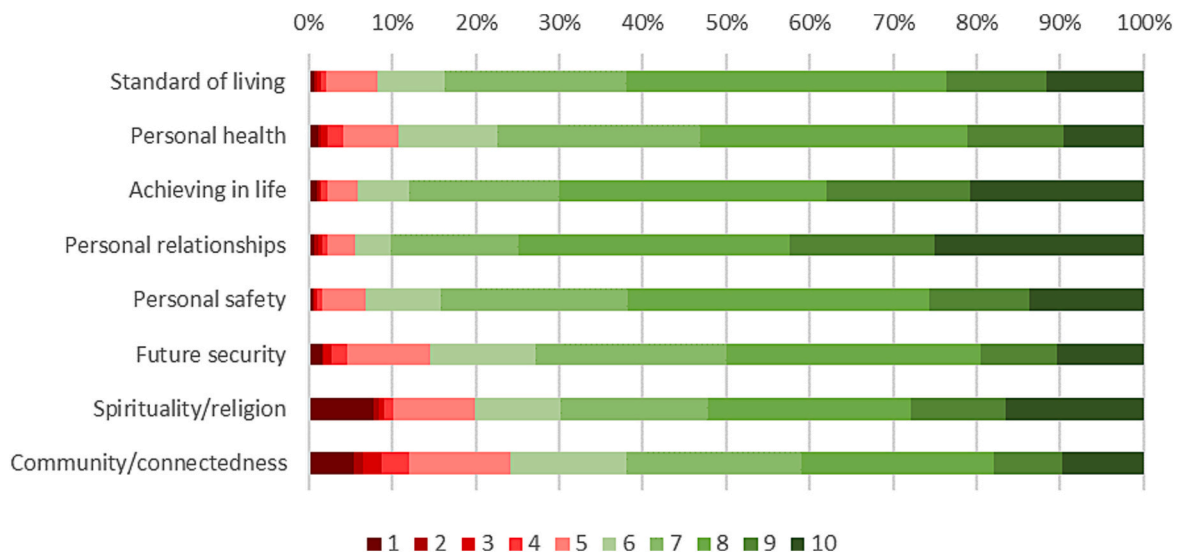Additionally, for a deeper understanding of the differences among

Fig. 2. Frequency levels (%) of responses to Personal Wellbeing Index. Source: Authors' elaboration.
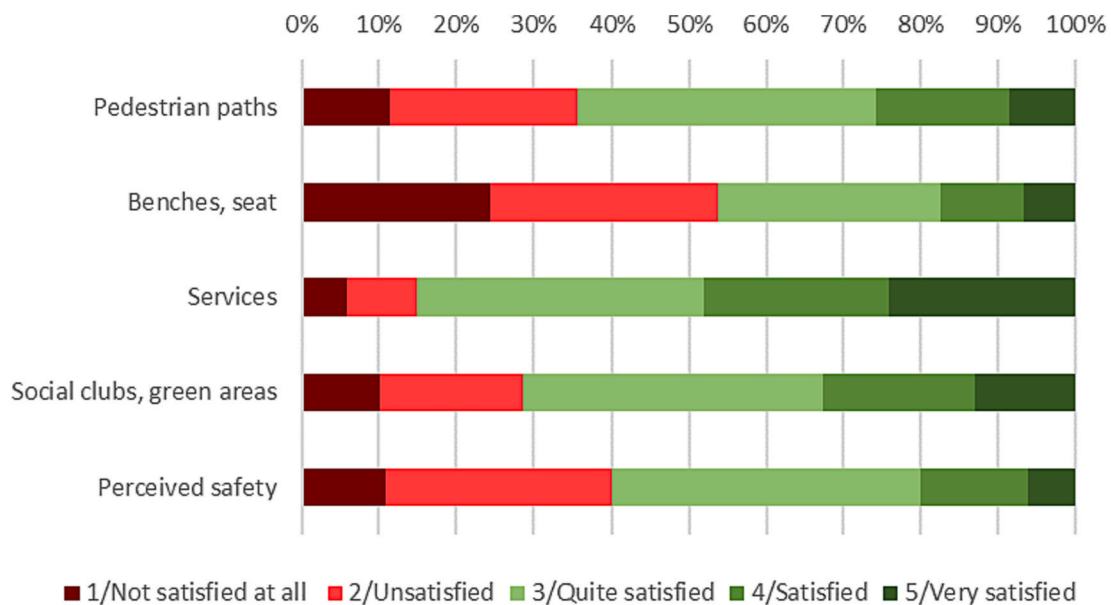

Fig. 3. Frequency levels (%) of responses about satisfaction with neighbourhood infrastructure. Source: Authors' elaboration.

the socio-demographic groups in terms of subjective wellbeing, satisfaction with neighbourhood infrastructure and LPT, we have built three synthetic measures, by averaging the corresponding items described in Sections 3.2.1, 3.2.2 and 3.2.3. As shown in Table 3, older adults living in Padua show higher mean wellbeing (7.65) than those living in the other two cities. People aged over 80 years old reported the highest average scores in subjective wellbeing (7.65), as well as being female (7.63), married (7.66), not living alone (7.62) - probably due to less loneliness - and those without any education certificate (7.80). Also, older adults living in Milan (3.07) reported the highest average scores in satisfaction with the neighbourhood infrastructure, as well as people aged over 80 years old (3.10), men (3.05), divorced (3.02), living alone (3.00) and those without any education certificate (3.10). Looking at the synthetic measure of satisfaction with LPT, it emerges that there are no significant differences across the three considered cities in the reported scores. Instead, older adults aged over 80 years old (2.94), as well as men (2.95), widowed (2.92), those living alone (2.91) and those with primary education (2.91) show the highest satisfaction with LPT.

Finally, older adults moving with the help of a support, and those who have suffered from an income reduction due to the Covid-19 pandemic show lowest means for all the three synthetic measures.

3.3. Methodological framework

To test hypotheses 1 and 2 and based on the literature, we built the theoretical framework as in Fig. 5 to disentangle the relationships between the subjective wellbeing of older adults and satisfaction with neighbourhood infrastructure and LPT. We test whether neighbourhood satisfaction and local public transport directly influence subjective wellbeing. Moreover, the covariances between crowding and possibility to seat indicators and between personal safety and future security indicators are considered (curved arrows in Fig. 5). Finally, we test the existence of covariance between the two latent variables: satisfaction with the neighbourhood infrastructure and satisfaction with LPT.

The theoretical framework has many links to be explored. In the first step, we apply an Exploratory Factor Analysis (EFA), followed by the
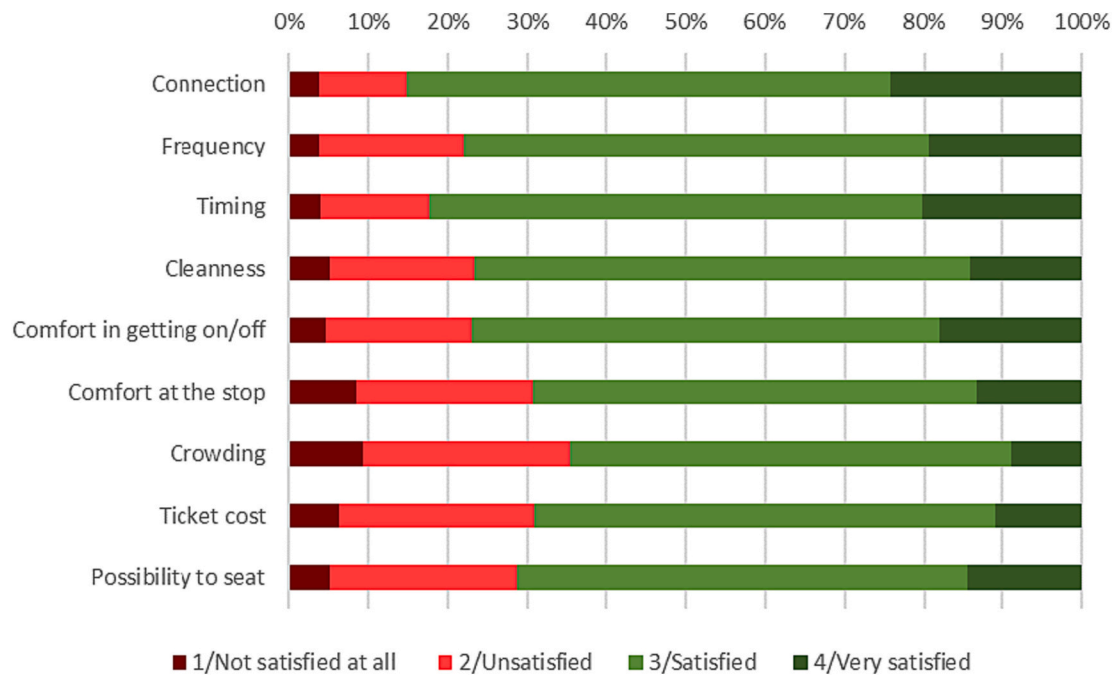
Fig. 4. Frequency levels (%) of responses about satisfaction with local public transport. Source: Authors' elaboration.

estimation of a Structural Equation Model (SEM) (Hoyle, 2014). The SEM model is divided into a measurement model and a structural model. The measurement model links a set of measured and observable variables to an unobservable/latent variable (LV). By using EFA and by computing the composite reliability (CR), the average variance extracted (AVE) and Cronbach's alpha coefficient - which all value the congruence of the indicators - we build the latent variables (Hoyle, 2014). We used the cut-off of ≥0.4 for the estimated loading factors of the observable variables in the latent construct (Stevens, 2012). The higher factor loading shows a higher correlation. Then, the structural model highlights the links between the latent variables (the red lines in Fig. 5).

Then, an ordered logit model is proposed to investigate the role of socio-demographic characteristics and geography in influencing older adults' subjective wellbeing (test hypothesis 3).

Following the work presented by Greene and Hensher (2009), we consider a latent variable y_i^* that captures the older adults' subjective wellbeing. The following latent regression model can describe this phenomenon:

$$y_i^* = \beta' x_i + \varepsilon_{i.}$$

and is observed in a discrete form through a censoring mechanism. In particular, the latent variable is represented by a discrete and ordinal indicator y_i:

$$y_i = j \text{ if } \mu_{j-1} < y_i^* < \mu_j \text{ for } j = 1, \ldots, 10$$

y_i is the self-assessed subjective wellbeing on a 10-point Likert scale (obtained by averaging the observable indicators described in the paragraph 3.2.1). The sample observations (the older adults) are labelled $i = 1, \ldots, n$; the vector x_i contains all the explanatory variables, which are assumed to be strictly exogenous of ε_i and are described in Table 3. The vector of unknown parameters β and the thresholds μ_j (with $j = 1, \ldots, 10$) are the object of estimation and inference.

4. Results and discussion

4.1. Exploratory factor analysis and SEM model

The results of the EFA analysis provide a goodness of fit of the data to the proposed measurement model (Table 4). Specifically, the average variance extracted, the composite reliability, and Cronbach's alpha show values in line with the standards adopted for this type of studies. All the signs of factor loadings are positive and ≥ 0.4. As a result, all the observed variables loaded well within the latent variables.

Moreover, our data show that all seven items of International Wellbeing Group (2013) subjective wellbeing are relevant for Italian older adults.

We included the above latent variables in the SEM model. The model fit indices (Comparative fit index, CFI = 0.905; Root mean squared error of approximation, RMSEA = 0.055) are acceptable and close to the cut-off values of 0.95 (CFI) and 0.06 (RMSEA) suggested by Hu and Bentler (1999). Also, the standardized root mean squared residual (SRMR = 0.05) and the Tucker-Lewis index (TLI = 0.892) confirm the model goodness of fit. As illustrated in Table 5, there is a positive impact of both the older adults' neighbourhood satisfaction (β = 0.12, $p < 0.1$), and LPT satisfaction (β = 0.31, $p < 0.01$) on their overall subjective wellbeing. Also, the covariance between the two latent constructs related to the neighbourhood and LPT is noticeable, with a statistically significant and positive value (β = 0.63, p < 0.01).

The findings show that satisfaction with neighbourhood infrastructure and LPT are associated with older people's subjective wellbeing, and play a vital role in ageing in place, confirming the first two hypotheses. In general, these results are in line with existing literature. In their study conducted in China, Zhang and Zhang (2017) argue that neighbourhood perceptions positively relate to life satisfaction. Researchers support that an age-friendly, safe and cohesive neighbourhood facilitates walking levels (Curl & Mason, 2019), and allows older people to enjoy community facilities (Banister & Bowling, 2004). Moreover, a walkable neighbourhood can be an alliance for transport accessibility and community integration, improving older people's life satisfaction and wellbeing (Ma et al., 2018; Nieboer & Cramm, 2017).

Geographical gerontology emphasises that the outdoor environment is a crucial stress factor for older people (Phillips, Walford, Hockey,

Table 3
Descriptive statistics of the respondents' socio-demographic characteristics.

Variable	N	%	Subjective wellbeing	Neighbourhood satisfaction	LPT satisfaction
			Mean (SD)	Mean (SD)	Mean (SD)
City					
Milan	563	41.00%	7.55 (1.24)	3.07 (0.78)	2.87 (0.56)
Padua	412	30.00%	7.65 (1.16)	2.96 (0.77)	2.88 (0.54)
Varese	400	29.00%	7.59 (1.19)	2.84 (0.83)	2.86 (0.57)
Age (classes)					
65–74	548	39.90%	7.52 (1.17)	2.90 (0.81)	2.81 (0.58)
75–80	390	28.40%	7.63 (1.21)	2.93 (0.80)	2.89 (0.52)
80+	437	31.80%	7.65 (1.23)	3.10 (0.79)	2.94 (055)
Gender					
Female	813	59.00%	7.63 (1.21)	2.92 (0.79)	2.82 (0.57)
Male	562	41.00%	7.53 (1.18)	3.05 (0.81)	2.95 (0.53)
Civil status					
Not married	125	9.10%	7.26 (1.19)	2.95 (0.78)	2.88 (0.51)
Married	859	62.50%	7.66 (1.19)	2.96 (0.80)	2.87 (0.55)
Divorced	51	3.70%	7.04 (1.20)	3.02 (0.76)	2.71 (0.59)
Widowed	340	24.70%	7.62 (1.21)	3.00 (0.81)	2.92 (0.59)
Family members					
Alone	387	28.00%	7.52 (1.26)	3.00 (0.79)	2.91 (0.58)
Two or more	988	72.00%	7.62 (1.18)	2.96 (0.81)	2.86 (0.55)
Education					
None	10	0.70%	7.80 (1.47)	3.10 (0.74)	2.67 (0.50)
Primary school	169	12.3%	7.69 (1.31)	3.08 (0.83)	2.91 (0.59)
Middle school	306	22.3%	7.58 (1.34)	2.94 (0.78)	2.85 (0.55)
High school	547	39.8%	7.54 (1.16)	2.89 (0.81)	2.88 (0.54)
University degree	343	24.9%	7.63 (1.08)	3.07 (0.79)	2.88 (0.58)
Mobility					
Movement without support	1253	91.13%	7.62 (1.18)	2.98 (0.79)	2.88 (0.54)
Movement using a support	122	8.87%	7.31 (1.42)	2.89 (0.84)	2.79 (0.74)
Covid-19 impact					
Income reduction due to Covid-19	192	14.00%	7.34 (1.28)	2.83 (0.84)	2.72 (0.67)
No income reduction	1183	86.00%	7.63 (1.19)	2.99 (0.79)	2.90 (0.53)

Foreman, & Lewis, 2013). Vine, Buys, and Aird (2012) analysed the experiences of neighbourhood walkability of 12 older people in different inner-city high-density areas in Australia. Sharing the urban space between pedestrians and cyclists, the quality of pathways and issues with public transport services e.g., both physical and destination accessibility and inconsistent frequency, hamper older people from living in their surrounding environment. One of the few studies about walkability demonstrated the causal relationship between walkable environments and physical activity levels in later life (Marquet, Hipp, & Miralles-Guasch, 2017). Therefore, a supportive neighbourhood environment that embraces the older people's needs and a perceived accessible public transport system favours community integration and social participation to improve their wellbeing (Lättman, Friman, & Olsson, 2016).

Furthermore, as regards the LPT, our results point out what other researchers have already emphasised. Kim et al. (2020) highlighted that older people embrace public transport as part of their QoL (e.g., contacts with family and relatives (Shergold, 2019)), while Aceves-González et al. (2015) stressed that poorly served public transport services don't allow older people to participate fully in life opportunities. More,

Unsworth et al. (2021) comparing the mobility of drivers and non-drivers older people conclude that car users can more easily remain active and present in community activities. This highlights that applying transport policies that will allow more senior people who are not driving to access alternative transport options (e.g., the free bus pass in the UK (Jackson et al., 2019)) could be an effective measure for the improvement of their wellbeing. The availability of public transport services in urban environments facilitates frequent public transport use (Unsworth et al., 2021). In this context, although public transport is designed to serve the needs of the working populations, Harada, Birtchnell, and Du (2021) show that older people can benefit equally from LPT use in peak hours for medical appointments and for social and leisure activities. Nevertheless, Guida, Carpentieri, and Masoumi (2022) emphasise that accessibility measures are rarely used to guide urban planning for older people an more attention is needed in this aspect.

4.2. Ordered logit model

Table 6 shows the results of four specifications of an ordered logit model, indicating how satisfaction with neighbourhood and LPT could be related to subjective wellbeing after controlling for several covariates. Model (i) shows that older adults who are satisfied with the features of the neighbourhood where they live in are more likely to have higher subjective wellbeing, compared to those who are not satisfied at all (1.11, $p < 0.05$). Similarly, compared to dissatisfied older adults who are happy with the LPT characteristics show higher subjective wellbeing (2.68, $p < 0.001$). These results are robust across all specifications and confirm what was found using the SEM methodology.

In model (ii), we control for some socio-demographic characteristics. It emerges that gender influences the wellbeing perception: men show lower subjective well-being levels. Previous studies remain inconclusive concerning the link between gender and wellbeing in later life. On the one hand, Nieboer and Cramm (2017) argue that women in the Netherlands are more likely to enjoy higher wellbeing. Pinquart and Sörensen (2000) reported that women seem to value the extent of their social network and personal contacts high for their subjective wellbeing.

On the other hand, Matud, Bethencourth, Ibáñez, and Fortes (2020), using a sample of 1201 adults aged 65–94 in Spain - verified that men compared to women scored higher on Ryff's Psychological Wellbeing Scale. Moreover, the authors stressed that women are at higher risk of having less psychological wellbeing (especially women with a lower educational level). Similarly, Gao et al. (2017) underlined gender differences in wellbeing levels in favour of older men.

Considering specification (iii), older adults living alone and those who have suffered from an income reduction due to the Covid-19 pandemic show lower subjective wellbeing, confirming our third hypothesis. As regards this finding, we verify what has already been found by Mao and Han (2018), i.e., living with family and children and receiving a pension rather than being maintained by family, makes older people more satisfied with life. For this last observation, recent research (Rodríguez et al., 2021) underlines the association of loss of economic independence on stress levels during Covid-19.

Our analysis found that education levels and using mobility supports did not appear to be statistically significant. However, Nieboer and Cramm (2017) highlighted that healthier individuals and those with higher education are more likely to live higher wellbeing. Finally, no statistically significant differences emerge among our cities when controlling for the city of living ((iv) specification).

As Gagliardi et al. (2010) very pertinently point out, the knowledge of the main variables that influence older people's wellbeing is essential to better understand their needs and goals and what interventions need to be made to determine domains from the perspective of policy making. On the one side, our results suggest public transport policies for older people and, on the other, towards developing age-friendly environments. Regarding the first part, as shown in different contexts, for example, in Sweden (Willstrand & Levin, 2018), the fruits of the public
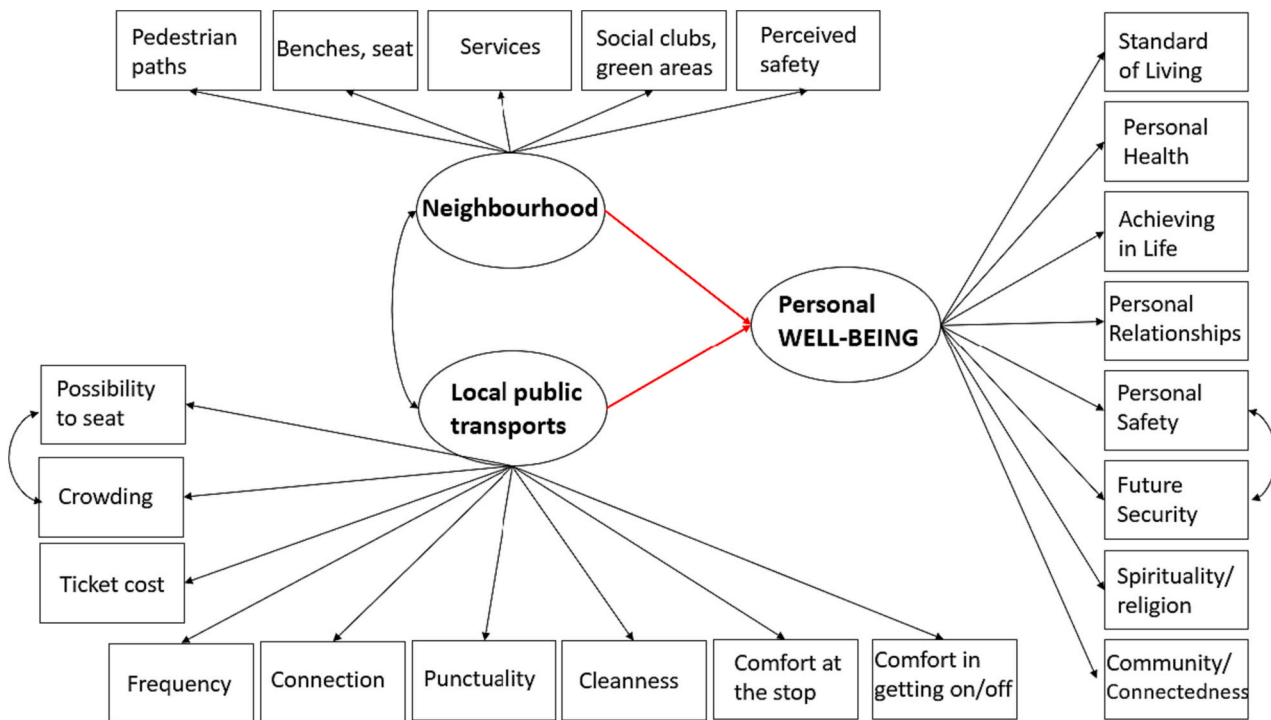
Fig. 5. Conceptual framework. Source: Authors' elaboration.

Table 4
Factor loadings and reliability in the measurement model.

Measured variables	LV: Subjective wellbeing	LV: Neighbourhood satisfaction	LV: LPT satisfaction
Standard of Living	0.81		
Personal Health	0.65		
Achieving in Life	0.66		
Personal Relationships	0.55		
Personal Safety	0.78		
Future Security	0.67		
Spirituality-Religion	0.42		
Community-Connectedness	0.45		
Pedestrian paths		0.64	
Benches, seat		0.65	
Services		0.44	
Social clubs, green areas		0.57	
Perceived safety		0.45	
Frequency			0.67
Connection			0.62
Punctuality			0.69
Cleanness			0.60
Comfort at the stop			0.51
Comfort in getting on/off			0.53
Possibility to seat			0.48
Crowding			0.53
Ticket cost			0.42
Average Variance Extracted	0.41	0.31	0.32
Composite Reliability	0.84	0.69	0.81
Cronbach's alpha	0.83	0.66	0.82

Table 5
Estimates from the SEM model.

	Coefficient	Std error
Neighbourhood satisfaction → Subjective Wellbeing	0.12*	0.07
Local public transport satisfaction → Subjective Wellbeing	0.31***	0.06
Cov (Neighbourhood; LPT)	0.63***	0.04
Cov (Personal Safety; Future Security)	0.42***	0.04
Cov (Possibility to seat; Crowding)	0.34***	0.03

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Notes: Fit indices of the measurement model: $\chi2 = 604.27$ (p<0.01), df = 204; RMSEA (Root mean squared error of approximation) = 0.055 (p = 0.057); CFI (Comparative fit index) = 0.905; TLI (Tucker-Lewis index) = 0.892; AIC (Akaike's information criterion) = 38,830.639; BIC (Bayesian information criterion) = 39,148.831; CD (Coefficient of determination) = 0.931; SRMR (Standardized root mean squared residual) = 0.05. Fitted covariances of latent variables: F.Cov (Neighbourhood; LPT) = 0.18, F.Cov (Neighbourhood; Subjective Wellbeing) = 0.24, F.Cov (LPT; Subjective Wellbeing) = 0.18.

transport policy were enjoyed by a portion of the older people. In Hong Kong (Wong et al., 2018) the requirements of older people were not entirely in line with the actual needs. A good way to deeply comprehend the issues that older people demand is by asking them directly what they want or need. In Salzburg (Austria), a representative of the public

transport operator collects older people's complaints. In this way, their transport requirements can be considered when forming transport policies (Fiedler, 2007). Other researchers underline the same observation regarding neighbourhood characteristics (Gardener & Lemes de Oliveira, 2020). Involving older people in policymaking is vital to fully satisfying their needs. Italy does not have a national framework for active ageing but only a fragmented one (see Barbabella et al., 2022).

5. Conclusions

The paper enriches the recent literature on the social environment, including the neighbourhood and its services (e.g., LPT), and focuses on older people's wellbeing during the Covid-19 pandemic. Specifically, it investigates the association of two key daily life indicators (satisfaction with local public transport and with neighbourhood) on the subjective wellbeing of older adults (over 65 years old) in the Italian cities of Milan, Padua and Varese during the Covid-19 pandemic in February 2021. To the best of our knowledge, this is the first study focusing on the case of

Table 6
Estimates from the ordered logit model.

	(i)	(ii)	(iii)	(iv)
	Ordered logistic regression	Ordered logistic regression	Ordered logistic regression	Ordered logistic regression
Neighbourhood_average = 1	Reference category			
Neighbourhood_average = 2	0.64 (0.40)	0.64 (0.40)	0.54 (0.40)	0.53 (0.40)
Neighbourhood_average = 3	0.91 (0.40)**	0.89 (0.40)**	0.79 (0.40)**	0.79 (0.40)**
Neighbourhood_average = 4	1.35 (0.40)***	1.34 (0.40)***	1.21 (0.40)**	1.22 (0.40)**
Neighbourhood_average = 5	1.11 (0.50)**	1.08 (0.50)**	0.91 (0.50)*	0.91 (0.50)*
LPT_average = 1	Reference category			
LPT_average = 2	1.27 (0.60)**	1.22 (0.60)*	1.06 (0.60)*	1.03 (0.60)*
LPT_average = 3	1.87 (0.60)**	1.86 (0.60)**	1.68 (0.60)**	1.65 (0.60)**
LPT_average = 4	2.68 (0.70)***	2.67 (0.70)***	2.55 (0.70)***	2.51 (0.70)***
Women	Reference category			
Men		−0.28 (0.11)**	−0.33 (0.11)**	−0.33 (0.11)**
65–74 years old	Reference category			
75–80 years old		0.14 (0.12)	0.17 (0.13)	0.17 (0.13)
Over 80 years old		0.14 (0.13)	0.27 (0.14)*	0.28 (0.14)**
High school or lower	Reference category			
University degree		0.10 (0.12)	0.14 (0.12)	0.14 (0.12)
Two or more family members	Reference category			
Living alone			−0.29 (0.13)**	−0.29 (0.13)**
No income reduction	Reference category			
Income reduction due to Covid-19			−0.28 (0.15)*	−0.27 (0.15)*
Movement without support	Reference category			
Movement using support			−0.31 (0.23)	−0.32 (0.23)
Milan	Reference category			
Varese				0.50 (0.13)
Padua				0.19 (0.12)
Pseudo Log-likelihood	−1804.79	−1800.53	−1795.11	−1793.89
Pseudo-R^2	0.029	0.031	0.034	0.034
Prob > chi2	0.00	0.00	0.00	0.00

Notes: Robust std errors in parentheses. Significance levels: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$.

Italy.

The present study enriches the findings of Liu et al. (2021), because it shows that the higher the satisfaction of older adults with their neighbourhood, including LPT, where they live, the higher their subjective wellbeing. Besides, men show lower subjective well-being levels than women, older people living alone, and those suffering from an income reduction due to the Covid-19 pandemic show lower subjective wellbeing. Rather interestingly, no statistically significant differences emerge among the three cities, suggesting that older people show similar life conditions irrespective of their city. Since we collected primary data during the Covid-19 pandemic from a representative sample of three Italian cities, we assume that our findings might apply to similar Italian cities and suggest evidence-based policies to policymakers.

Exploring the social environment where older people live is essential because it influences their wellbeing and can help policy makers better understand their needs and goals. The evidence of these aspects can suggest policy measures and interventions to improve older adults'

quality of life, thus reducing their health problems. Policies should focus on enhancing LPT, and making the neighbourhood age-friendly. As several studies have underlined (e.g., Akhavan et al., 2022), it is essential to improve planning and designing for pedestrians (i.e., pavement, lightning, benches, etc.) and provide pedestrian areas without barriers (i.e., perceptive, sensorial, cognitive, etc.), that will also help in increasing safety. In addition, it is crucial to reach the essential services within a short distance.

An interesting example is the Dutch "Integrated Service Area" (ISA), a neighbourhood or village in which community-based care and support are made available within 400 m of walking distance (Jansen, Pijpers, & de Kam, 2018). Similarly, during the Covid-19 pandemic, a renewed interest has been placed on the 15-min city concept, coined by the French scientist and university professor Carlos Moreno in 2016 (Moreno, Allam, Chabaud, Gall, & Pratlong, 2021), and then applied by the mayor of Paris, Anne Hidalgo, in 2020 (Reid, 2020). Moreno's 15-min city framework focused on the four main dimensions of (a) density, (b) proximity, (c) diversity and (d) digitalization. It has been considered a successful urban planning concept to boost the economy, enhance social cohesion and create sustainable city ecosystems. This framework, which has also been promoted during the pandemic by the city of Milan, within "Milano 2020. Strategia di adattamento", responding to the older people's demand to reach the essential services within 15 min walking.

This study, nevertheless, presents some limitations. First, all the variables used for the empirical analysis were self-assessed, which might hide a sense of over or under-evaluation of the real variable. Moreover, when data were collected, older people had already lived in a period of prolonged social isolation and less movement. This is specifically true in Italy where the pandemic has hit the country severely, at least during the first wave in 2020. This situation might have affected their declarations and perceptions about the requested information. In this study, we conducted CATI interviews, and the criteria for the participants were specific. Apart from the age limit of equal or over 65 years old, we have collected data from older adults who could move in space independently i.e., they were not hospitalised or disabled. The definition by Kenyon, Lyons, and Rafferty (2002) condemns poor mobility for social exclusion, particularly relevant for the older people since mobility capability decreases with ageing. Our study demonstrates an association of the latent variables of satisfaction with public transport and neighbourhood but not a causal direction, for which we would require longitudinal data. Finally, given that the Covid-19 pandemic has reflected on several dimensions of daily life, comparison of that relations before and after the Covid-19 pandemic or comparison with other cultural contexts would be really appreciated and thus left for future research.

CRediT authorship contribution statement

Federica Rossi: Conceptualization, Methodology, Data curation, Formal analysis, Investigation, Writing - original draft, Writing - review & editing. **Ilaria Mariotti:** Conceptualization, Methodology, Supervision, Project administration, Funding acquisition, Writing - original draft, Writing - review & editing. **Evangelia Pantelaki:** Conceptualization, Methodology, Resources, Visualization, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

None.

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