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Ageing and Welfare in Transition

Social, Legal, Economic, and Mobility Perspectives for an Inclusive Society

Transizioni Sociali e Sviluppo Sostenibile

FrancoAngeli

Transizioni Sociali e Sviluppo Sostenibile

L'ampio dibattito, che si articola con forza nel panorama internazionale sui temi dello sviluppo sostenibile e del cambiamento climatico, richiama l'attenzione della comunità scientifica su ciò che potrà delinearsi come la genesi di un innovativo paradigma, base delle società future. A fronte dei molteplici risultati, e a supporto di connessioni scientifiche sotto un comune *éthos*, deriva la necessità di concettualizzare la teoria e la ricerca di una nuova cultura della transdisciplinarietà. Lo scenario contemporaneo presenta molteplici contributi che si snodano nell'ampio spettro di mutamenti legati alle diverse transizioni in atto – ecologiche, energetiche, economiche e sociali – e che richiedono un confronto tra i diversi *saperi* volti verso un unico *télos* per la riduzione delle disuguaglianze.

Le modifiche a cui stiamo assistendo a causa dell'accelerazione del cambiamento climatico generano l'esigenza di analizzare sia le conseguenze sull'ambiente naturale che su quello sociale e di approfondire il nesso delle ricadute sulle persone e sulle società. È necessario che i piani teorici di interpretazione e di analisi di tale complessità, avviino modelli di ricerca improntati ad una delineata conoscenza sociologica nel dibattito scientifico.

Tutti i volumi pubblicati in collana sono sottoposti a una *peer review double blind*.

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Table of Contents

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From the rhetoric of active ageing to inclusive infrastructure

by *Carmine Clemente, Letizia Carrera, Claudia Morgana Cascione* and *Elisabetta Venezia*

Ageing and Welfare in Transition: Social, Legal, Economic, and Mobility Perspectives for an Inclusive Society is an interdisciplinary monograph that treats population ageing as a structural transformation rather than a limited "social issue". Through four contributions, the book returns—each with different disciplinary methods and assumptions—to a single, crucial question: what makes autonomy, participation, and dignity in old age viable at a time when welfare systems, urban environments, and technological systems are themselves in transition?

The book's four chapters—comparative social research, urban studies, legal analysis, and systems thinking on mobility—share a unifying proposition: the ideal of "active ageing" (participation, autonomy, and ongoing engagement) is not achieved primarily through individual will. It depends on the enabling conditions produced by welfare institutions, local environments, legal protections, and mobility systems.

The volume pursues two objectives. First, it clarifies how inequalities in resources and access influence participation in old age and how these inequalities can persist in seemingly universalistic policy contexts. Second, it develops practical interpretative and policy tools: indicators based on surveys and comparative analysis of welfare groups; a typology of "housing proximity" and targeted urban planning measures; a legal mapping of risks and safeguards in digital welfare, eHealth, and artificial intelligence; and a systemic framework for inclusive mobility for older people that connects technology, economics, and planning.

The starting point of the book is the current importance of "active ageing" as an organizing paradigm. In European policy debates, active ageing is often framed as a double dividend: it promises greater well-being for older people while simultaneously supporting the sustainability of welfare states. The book does not dispute that participation, independence, and engagement can

be valuable; Instead, it challenges a more subtle assumption that often accompanies social participation programs: that "activity" is an individual choice equally available to all.

Throughout the monograph, activity is treated as a capacity: it depends on socially distributed resources (education, income security, health, networks), the material and symbolic architecture of urban space, and, increasingly, the design and governance of digital systems through which rights and services are accessed. This perspective gives the book its internal coherence. The themes do not simply coexist; they intensify and migrate.

The analysis begins with social participation as a measurable indicator of inclusion and inequality, and with welfare regimes as macro-contexts that shape opportunities. It then relocates participation to the everyday materialities of proximity and walkability, showing how the city's micro-infrastructures can support autonomy or accelerate withdrawal. From there, the paper moves on to the digitalization of welfare and healthcare services as a legal problem: when access to rights is mediated by platforms, interfaces, and algorithms, exclusion can become systemic even in the absence of an explicit discriminatory intent. The final contribution reframes mobility as a connective capacity linking these domains—participation, services, and urban belonging—through a systems thinking lens that clarifies feedback loops and institutional timescales.

Participation and Inequality: From Individual "Activity" to Stratified Opportunities

The first thematic thread, developed in the first chapter by Carmine Clemente, concerns the social distribution of participation in old age. Using data from a 2025 survey conducted in eight European countries, the analysis compares patterns of social participation in four groups of welfare regimes: Mediterranean (Greece, Italy, Spain), conservative (France, Germany), social democratic (Denmark, Sweden), and liberal (United Kingdom). This regime framework is important because it makes participation understandable not only as an individual attribute, but as an outcome conditioned by macro-institutional environments: how social protection is organized, how inequalities are attenuated or reproduced, and what types of civic and associative life are structurally enabled. Social participation is operationalized through a synthetic Social Participation Index based on organized social activities, measured on a frequency scale ranging from "never" to "every day".

For clarity of interpretation, the analysis distinguishes between those who engage in at least one activity at least once a month and those who do not engage in any of the measured activities. This threshold is not a mere technical choice: it draws a practical dividing line between being connected to

recurring collective practices, however minimal, and being absent from them, with obvious consequences for well-being, recognition, and social inclusion.

The chapter's findings reinforce a central assertion: participation is systematically shaped by resources and health. Education stands out as the most decisive determinant, and the interpretation is explicitly sociological, functioning as a form of "cultural capital" that influences access to information, trust in institutions, and the ability to recognise and manage opportunities for organised engagement. The chapter's logic of inequality is cumulative rather than additive: clusters of advantages (education, economic security, better health) produce significantly higher participation, while clusters of disadvantages reduce opportunities even in contexts where participation is normatively promoted.

A further conceptual and analytical step is to examine participation in relation to social capital and relational networks through a Network Index. Across all national groups, socially active older adults consistently show higher network indices; broader and more diverse networks are associated with greater participation, and these differences are statistically significant. Participation is therefore not simply an "individual behaviour" that generates well-being; it is also a consequence of the integration, reciprocity, and density of social ties that make engagement feasible and meaningful.

Two additional dimensions deepen the topic of capacity, helping the book transition into its urban and governance analyses. First, the chapter identifies significant gender differences, highlighting stronger associations between participation and key resources for women than for men. This suggest that gendered life course trajectories are part of the explanation, as patterns of employment, care, and social expectations influence how resources are translated into engagement. Second, participation varies significantly across welfare contexts: the chapter highlights contrast across countries (for example, relatively high participation in Greece and Spain and relatively lower participation in the United Kingdom), indicating that "activation" is not simply a political message, but a context-dependent outcome.

This aspect serves as a common thread throughout the monograph. Policies that promote participation as a universal good can have a limited redistributive effect if they do not alter the distribution of enabling resources. Worse still, activation can become a form of normativity—implicitly neoliberal—when it frames inactivity as an individual's responsibility, while participation is, empirically, conditional on education, economic security, health, and relational support. This perspective connects with the subsequent chapters of the volume: if participation depends on capabilities, then

infrastructure (urban and digital) becomes crucial, as it can compensate for declining autonomy or amplify disadvantage to the point of pushing people to drop out. Proximity, Walkability, and the Right to Housing: How Cities Produce Autonomy or Retreat

The second chapter presents an ethnographic study—authored by Letizia Carrera—conducted in the metropolitan area of Bari, which defines and analyses the concept of "proximity system" to explain how local urban structures influence the conditions of independence in old age. Proximity is treated not as a vague ideal, but as a practical infrastructure composed of well-developed public spaces, accessible and widespread third-party spaces, walkable routes, safe crossings, rest stops, accessible services, and socially significant destinations. Based on 83 semi-structured interviews with people aged 65 and over, the chapter shows how older adults "act in proximity" through concrete strategies: choosing routes that reduce risk, avoiding areas without rest opportunities, manageing fatigue, and calibrating their movements to the continuity (or fragmentation) of sidewalks and crossings in urban spaces, starting with those closest to their place of residence.

The author questions performance-oriented models of ageing that reduce old age to parameters of productivity or a duality of independence and dependence. Instead, she insists that older people retain rights: to remain present in urban space, to experience meaningful neighborhood life, and to have their vulnerability recognized without turning it into a principle of exclusion. From this perspective, vulnerability is not a private deficit to be "eliminated" or "resolved", but a condition that urban systems must embrace and "normalize" if they are to avoid transforming ordinary frailties into structural exclusion. The chapter explicitly links this to a perspective of the right to the city: the ability to remain in public space, to access "third spaces", and to sustain daily presence becomes a question of urban justice rather than personal resilience.

This argument is discussed starting from a typology of "housing proximity" that maps the relationship between functional autonomy and the quality of urban proximity. Four profiles structure the empirical core. "Pedestrians by choice" combine high functional autonomy with enabling proximity: walking affirms identity, supports belonging, and functions as an infrastructure for social participation. "Selective pedestrians" maintain significant autonomy but live in only partially adequate environments; walking becomes strategically managed, with greater reliance on additional modes. "Anchored to microproximity" captures a condition of reduced autonomy and a limited spatial range in which walking is often the only remaining form of autonomous mobility, making small environmental barriers (steps, uneven

sidewalks) crucial. Finally, "urban retreat" describes very low autonomy combined with insufficient proximity: mobility becomes residual, and the city's relational opportunities diminish with distance.

To move beyond typology as a classification, Chapter 2 develops a "functional quadrilateral" that distinguishes the identity-building, spatial, social, and psychological functions of walking. Under enabling conditions, walking supports identity ("being a walker"), expands spatial belonging, produces spontaneous encounters, and fosters well-being through trust and pleasure. Under conditions of constrained proximity and declining autonomy, these functions risk contracting. Walking becomes instrumental rather than meaningful; unfamiliar spaces evoke anxiety rather than curiosity; social encounters are reduced to predictable or inevitable interactions; and psychological benefits become contingent and fragile. In other words, the "same" behavior—walking—can sustain participation or signal incipient withdrawal depending on how the proximity system is configured. The practical value of the chapter lies in translating these findings into design interventions aimed at reducing friction and supporting the transition to enabling models.

The thematic implication is crucial: while Chapter 1 shows that resources influence participation, Chapter 2 shows how environments can convert declining autonomy into withdrawal or, conversely, compensate for fragility by making daily presence feasible and helping to create functional urban environments for other residents as well. Inclusion is therefore not just a matter of welfare policies; it is also a matter of designing space and neighborhood infrastructure, recognizing how rights are made effective precisely by the materiality of the city and its territories. The third chapter, authored by Claudia Morgana Cascione, analyses demographic ageing in the technological age through three perspectives: access to welfare and digitalised public services, privacy and data protection in digitalised healthcare services, and the risks of manipulation enabled by artificial intelligence. There is substantial continuity with the previous chapters. While urban proximity can include or exclude sidewalks and pedestrian crossings, digital welfare can include or exclude interfaces, identity verification routines, and the availability (or disappearance) of non-digital channels.

The chapter begins by observing that digitalization is often framed as an inevitable modernization, accelerated during the pandemic and reinforced by the transition from paper-based procedures to online platforms and smartphone apps. However, this shift alters the conditions under which social rights are exercised.

When technology becomes an intermediary for essential benefits and services, the inability to interact with digital governance can result in a loss of

effective access. The chapter, therefore, frames digitalisation as a potential conversion of social vulnerability into digital vulnerability, questioning whether digital welfare mitigates inequalities or risks becoming a new mode of discrimination.

A particularly critical component concerns algorithmic tools within administrative systems. The chapter illustrates the experimentation with predictive analytics and algorithmic decision-making in welfare contexts (including monitoring and sanctions) and highlights how such systems can unfairly deprive individuals of benefits. The key point is not that algorithms are inherently illegitimate, but that their use in rights-adjacent contexts intensifies the need for guarantees. Where decisions become opaque and contestation difficult, vulnerability increases, not only due to gaps in digital skills but also because power asymmetries between citizens and institutions widen.

The proposed responses are multilayered and aligned with the different levels of the digital divide. The chapter emphasizes second-level measures aimed at empowering them through training and facilitation, and third-level measures aimed at preventing unequal outcomes even when access and skills appear formally comparable. Concrete proposals include promoting digital literacy throughout the lifecycle; offering targeted offline and digital support services; and promoting inclusive and user-centered service design through co-creation and participatory approaches. In the Italian context, the chapter highlights the "Decreto Anziani", which links dignity and autonomy to initiatives aimed at facilitating access to services provided online by public administrations – an example of how legislative reform can recognize digital access as part of the rights infrastructure.

From access, the analysis shifts to privacy and data protection in digitalized healthcare services. The chapter recognizes the potential benefits of telemedicine, remote monitoring, and IT-based healthcare solutions, particularly in overcoming geographic and mobility barriers and enabling more proactive, person-centered care. However, these benefits depend on trust and legal safeguards to protect sensitive data. Devices and platforms collect vast amounts of information, and older adults may be particularly vulnerable if they are unfamiliar with complex data environments. The chapter, therefore, argues that it is reductive to associate legal vulnerability solely with minors: vulnerability is situational and can affect older people due to disability, illness, or poor literacy. Finally, the chapter addresses issues of vulnerability through artificial intelligence and regulatory risks. The chapter's examples are telling AI systems can target older people with misleading, personalized advertising to induce them to make decisions they would otherwise not make; even assistive robots, designed to support older people, can exploit

relational dependence in ways that risk causing psychological harm. This implication is consistent with the book's broader argument: inclusion is not just about providing tools; it's also about governing the conditions under which tools operate, especially when vulnerabilities can be strategically exploited. The final chapter, by Elisabetta Venezia, addresses mobility as the connective capacity linking participation, access to services, and lived urban inclusion. The author highlights that studies on ageing and mobility remain fragmented across disciplines (gerontology, transportation engineering, urban design, digital studies), limiting the ability to anticipate feedback loops and coherently evaluate interventions. In response, she proposes an age-inclusive mobility paradigm grounded in transportation justice, universal design, and systems thinking. Mobility is reframed as an outcome produced by the interaction of individual skills, infrastructure design, technological mediation, governance, and cost structures, rather than as a mere "transport supply" issue.

Two premises structure this approach. First, ageing is heterogeneous: mobility requirements and constraints vary based on income, gender, health, and life experience. Second, mobility systems evolve on different timescales: digital systems change rapidly, while infrastructure and institutions change more slowly. This temporal discrepancy can generate systemic misalignment—rapidly evolving interfaces overlapping with slowly evolving physical and administrative structures—creating barriers that are not captured by conventional efficiency metrics.

Methodologically, the chapter proposes a mixed-methods strategy that combines institutional analysis, quantitative indicators (drawing on sources such as Eurostat and ISTAT[1]), and qualitative research, including interviews. Its empirical design is comparative and multi-site, following a theoretical sampling logic across metropolitan typologies. It includes large cities with advanced public transportation and digital payment systems (such as Milan, Barcelona, and Vienna), medium-sized cities undergoing digital transformation (including Bologna, Porto, and Ghent), and low-density peri-urban or rural contexts, where inclusive mobility for older people must be conceptualized beyond high-density, transit-oriented environments.

The findings reinforce the volume's emphasis on enabling conditions and cumulative dynamics. The chapter highlights "digital friction" as a recurring obstacle, where participants report cumbersome steps to prove their identity or navigate procedures. The analysis suggests that repeated technological

[1] Italian National statistical Institute.

mediation can trigger negative cycles, in which reduced use compromises access. At the same time, it supports a pragmatic assertion already familiar from proximity analysis: relatively small physical changes—such as continuous sidewalks, improved lighting, and stable human interfaces—can have disproportionate effects on autonomy and participation. Mobility systems, in this perspective, are not neutral backdrops; they actively shape who can remain socially present and how.

The policy implications make the system's logic explicit. Evaluation metrics should go beyond productivity-focused measures, designed for peak-hour commuting and productivity maximization; inclusive mobility for all ages requires outcomes framed in terms of well-being, access, independence, and participation. Digital transformation should follow the dual-channel principle: every digital service should be paired with an analogue access channel, rather than treating analogue offerings as an exception. The chapter also draws attention to fare rules and subsidies, institutional dynamics that eliminate human interfaces (such as ticket office closures), and the need for participation and co-production formats that do not presuppose high digital competence. The broader claim is that inclusive mobility for all ages is a strategic investment, supporting sustainability and equity while strengthening the long-term resilience of welfare, enabling ageing in place, and mitigating downstream social and welfare costs.

Through welfare regimes, neighbourhood proximity, digital welfare governance, and mobility systems, the monograph constructs an integrated argument for inclusion in ageing societies. Active ageing, in this analysis, cannot be reduced to a behavioral exhortation. Participation is stratified based on resources and health; autonomy is produced or compromised by adjacent urban infrastructure; rights are mediated by digital systems that can exclude as easily as they can enable; and mobility emerges from the alignment—or misalignment—of infrastructure, technology, cost structures, and governance.

For an academic and professional audience, the book's distinctive contribution lies in bridging disciplinary perspectives without compromising complexity. It uses comparative quantitative analysis to document stratification, qualitative typologies to make lived mechanisms visible, legal reasoning to clarify regulatory stakes and accountability, and systems thinking to translate inclusion into governance and design requirements. The overall message is both critical and constructive: ageing societies will not become more inclusive by simply invoking "active ageing". Inclusion must be integrated—spatial, institutional, and legal—into the infrastructures through which participation, services, and mobility are organized.

Three themes recur throughout the chapters:

• Equity and stratification: education, economic security, health, and social capital are key determinants of older adults' opportunities.

• Infrastructure as a broad category: proximity urban space, administrative systems, digital interfaces, and mobility networks function as infrastructures of inclusion (or exclusion).

• Context-sensitive policies: Interventions must be adapted to welfare regimes, local urban conditions, and differentiated skills, rather than assuming a uniform capacity to "stay active".

In this sense, the book shifts the analytical lens from "how to motivate older people" to "how to design institutions and environments that do not preselect winners and losers".

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1. Differences in the social participation of older people in different european welfare systems

by *Carmine Clemente*[1]

Abstract

Social participation among older adults is generally considered beneficial and is supported by European active ageing policies. However, efforts to improve the quality of life and enrich the ageing experience may have the unintended effect of widening inequalities in later life.

This study uses data from a survey conducted in eight European countries to illustrate how social participation is structured according to education, financial situation, health status, and relational networks within the context of four European welfare regimes.

Consequently, support for such activities neither strengthens nor reduces inequalities among older adults; rather, it tends to legitimise them, emphasising individual responsibility.

These findings suggest that the active ageing approach and social policy models should become more context-sensitive and follow differentiated directions.

Keywords: active ageing, comparative research, individual characteristics, older adults, social participation.

1.1 Introduction

Population ageing represents one of the most significant social challenges of the contemporary world. It is simultaneously portrayed as a sign of success

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and a potential burden on social and healthcare systems (Timonen, 2008). A wide range of scientific theories and social policy frameworks has been developed in response to this demographic transformation.

Among these, the active ageing approach is probably the most widespread and structured set of principles, recommendations, and practices aimed at manageing population ageing. It is a theoretical approach that has been repeatedly formulated and implemented by various bodies of the World Health Organization (2002) and the Council of the European Union (2012). Active ageing policies constitute a set of official measures designed to address the challenges associated with an ageing population and aim to improve the health and quality of life of older adults (Walker & Maltby, 2012).

Labour market participation, social participation, and independent living represent the three fundamental pillars of these policies (Avramov & Maskova, 2003; Council of the EU, 2012). In this section of the volume, we present the results of a study focusing on social participation, considered the most beneficial form of activity promoted by active ageing policies (Adams et al., 2011; Cattan et al., 2011; Potočnik & Sonnentag, 2013).

Specifically, the study addresses the following research questions:

1. How is participation in social activities in later life structured by macro-contexts and individual resources?
2. What is the relationship between higher or lower social participation and self-rated health?

The research uses data from a 2025 survey conducted in eight European countries, with a total sample of 9,600 participants (1,200 per country). The results provide a comparative description that highlights differences between groups without using control variables, offering valuable insights for both policymakers and researchers unfamiliar with the data source.

1.2 Theoretical framework: active ageing and social participation

Definitions of active ageing are multiple: some are based on theoretical conceptualisations, others on programs and interventions built on the principles of active ageing, and still others on everyday perspectives of what it means to "age actively." Consequently, the concept of active ageing has been defined in different ways by academics, policymakers, and older adults themselves (Timonen, 2016).

As a concept and policy tool, active ageing has its roots in the academic debate of the early 1960s, when gerontologist Robert J. Havighurst (1961), in his article *Successful Ageing*, formulated the "Activity Theory".

According to this theory, older adults who remain socially active and engaged for as long as possible are more likely to age successfully. This is an equilibrium or homeostatic theory, highlighting the idea that an individual should maintain the level of activity achieved in midlife and attempt to preserve it as long as possible, or with minimal downward adjustment.

Activity theory assumes a positive correlation between activity, happiness, and life satisfaction: older adults who remain active in later life can compensate for the loss of certain social roles (e.g., retirement) with other meaningful activities (e.g., grandparenting), which help counteract social pressures toward isolation or reduction of life space.

This theory, which found strong support in socio-psychological sciences, contrasted with the disengagement theory proposed by Cumming and Henry (1961). The latter, primarily gerontological, refers to the natural process of progressive social withdrawal in older adults, suggesting that this withdrawal is beneficial for both society (allowing younger generations to enter) and for the individual, who is no longer obliged to maintain active social roles, particularly professional ones.

Increasing longevity, improvements in health and living conditions, and debates on demographic ageing and its effects on intergenerational solidarity and the welfare state gradually modified these expectations (Mendes, 2013). In the late 20th century, representations of ageing gave rise to a "third age", associated with autonomy, activity, and personal fulfilment, while negative representations of old age were postponed to a "fourth age" (Laslett, 1992). During this period, Rowe and Kahn (1997), creators of the influential *successful ageing* model, emphasised the central role of activity as a factor allowing older adults to overcome losses associated with "normal ageing". In this context, individual well-being emerged as a new political ambition for old age, and the ability to remain active became a condition for achieving it (Collinet & Delalandre, 2014).

On this basis, the concept of "active ageing" was developed, promoting the social participation of older adults and appearing as a comprehensive response to the new realities of ageing (Walker, 2002), offering a "win–win" gain for both individuals and society (van Dyk et al., 2013). According to Walker and Maltby, active ageing "has guided the transition from perceiving older adults as passive recipients of welfare to active participants in social, economic, and political life" (2012: 127), contributing to healthier, more satisfied, and more socially useful older adults.

Indeed, the debate on activity and successful ageing laid the foundation, over recent decades (Timonen, 2016), for a clear orientation by the WHO and the European Union, which in 2002 and 2012 incorporated the goal of

Active Ageing into official documents and policy instruments.

This goal should be achieved through support for three main domains of older adults' lives:

1. Independent living,
2. Labour market participation, and
3. Social participation (Avramov & Maskova, 2003; Council of the EU, 2012).

However, a review of the literature reveals:

a) more evident and better-documented positive effects of social participation (Lakomý, 2021);

b) mixed evidence regarding the positive effects of the other two pillars of active ageing, namely labour participation (Di Gessa & Grundy, 2013; Lakomý, 2019) and informal caregiving (Di Novi et al., 2015; Potočnik & Sonnentag, 2013).

For example, Adams et al. (2011) examined 42 studies published between 1995 and 2009, focusing on the relationship between social and leisure activities and well-being. This review included various conceptualisations of activities and outcomes (well-being measured in terms of affect, satisfaction, health, and survival), but the general trend is clear: "Methodologically more rigorous studies generally find positive associations between activity and well-being" (Adams et al., 2011: 704).

More recent studies have confirmed similar conclusions. Potočnik and Sonnentag (2013), using a sample from 11 European countries, found a positive effect of volunteering, sports, and informal helping, but only among retirees (no significant effect among working older adults). Another study by Cattan et al. (2011), reviewing the impact of volunteering on older adults' quality of life, found positive associations in 27 articles analyzed, while acknowledging difficulties in establishing causal relationships. Overall, this association may be explained by the higher voluntariness and lower intensity of social participation compared to work and caregiving (Di Novi et al., 2015).

Nevertheless, support for social participation alone does not fully achieve the goal of active ageing policies, namely improving the life of the older population as a whole (Walker, 2002). Some older adults benefit more from such policies, while others do not wish or are unable to participate, since opportunities for social engagement are strongly linked to macro-social contexts (Hank, 2011) and individual resources (Serrat et al., 2015; Timonen, 2016; Lakomý, 2021).

Regarding our specific focus on social participation, it can be defined in various ways, but it is generally understood as "the involvement of the person

in activities that entail interactions with others in society or the community" (Levasseur et al., 2010: 2146). It includes different levels of formality (Adams et al., 2011) and can encompass various forms of interaction, recreational activities, and participation in clubs or organisations.

1.3 Social participation between agency and structure

The premises outlined in the previous section could serve as a basic assumption, formulated in the form of a question: If social participation has beneficial effects, does it follow that making these activities accessible—or even mandatory—for all older adults could eliminate the negative aspects of ageing?

In other words, if studies show evidence of improved well-being among older adults engaged in social participation, policies and strategies could be implemented in this direction, thereby achieving the expected outcomes.

However, this would constitute a simplistic view, given the presence of several concrete issues (Council of the EU, 2012; Walker, 2005), which can be grouped into three main areas:

1. The normativity of the approach;
2. Macro-contextual factors determining opportunities for social participation;
3. Individual resources that condition such opportunities.

As Timonen (2016) argues, some older adults are unable, and others unwilling, to participate in these activities; both conditions should be considered legitimate options. Some scholars (Mendes, 2013; Timonen, 2016) have noted that the active ageing approach presents activity as the only path to successful ageing, without fully considering the implications of such a perspective. Other authors describe active ageing as a normative discourse of self-discipline, in which activity becomes more of an obligation than a right, potentially leading to the exclusion of those unable to fulfil this requirement (Mendes, 2013).

Consequently, individuals unable to participate—such as older women, economically disadvantaged persons, or members of ethnic minorities—may become further marginalised (Holstein & Minkler, 2003). Moreover, social participation is closely linked to social capital and its associated habitus (Bourdieu, 1986; Lizardo, 2004; Cockerham, 2005); institutional support for social participation can thus legitimise and exacerbate social inequalities (Mackenbach, 2005).

These criticisms generally pertain to the active ageing paradigm but are fully applicable to social participation, whose unequal distribution

constitutes a specific focus of this study.

A second relevant aspect is that not all contexts provide equal opportunities to promote social participation (Hank, 2011: 536). In this sense, "long-standing cultural elements, such as religious traditions, as well as contemporary welfare state interventions, constitute fundamental references" for older adults' social participation. Similarly, the prevalence of social activities among older adults reflects multiple and diverse social and cultural characteristics (Walker, 2004) and can vary significantly between countries, regions within a country, and economic contexts.

This variability can be illustrated, for example, by the correlation between GDP and the Active Ageing Index (AAI). The AAI measures national levels of active ageing, while per capita GDP indicates average wealth in a country. There is a correlation: countries with higher per capita GDP tend to have better AAI scores, since, through the so-called causality mechanism, wealthier countries have more resources to invest in infrastructure, healthcare, and social programs that support active and healthy ageing, creating a virtuous cycle that reinforces policies and initiatives promoting active ageing and quality of life for older adults.

The influence of macro-contextual conditions on the capacity to undertake active ageing activities—i.e., the extent to which these conditions affect social participation—is also a specific focus of this study. This is why the survey was conducted in eight countries representing the four main European welfare regimes (Esping-Andersen, 1990):

- Group 1 (Mediterranean regime): Greece, Italy, Spain
- Group 2 (Conservative regime): France, Germany
- Group 3 (Social-democratic regime): Denmark, Sweden
- Group 4 (Liberal regime): United Kingdom

Finally, opportunities for social participation—as well as the possibility of not participating—are strongly linked to individual resources (Timonen, 2016; Clemente & Pereiro, 2020). These resources are determined not only by geographic location (Bowling & Stafford, 2007), but also by personal characteristics such as:

- Gender
- Ethnicity
- Age
- Socioeconomic status
- Health status
- Size and quality of social networks (Clemente, 2016)

Once again, research has shown (Hank, 2011; Timonen, 2016) that disadvantaged groups living in less prosperous countries, with reduced social spending

and weak civic norms, have particularly low levels of social participation.

The analysis presented in this study, therefore, considers differences in social participation arising from both individual resources and macro-social contexts over time. Such differences, due to variations in opportunities and preferences (Timonen, 2016), lead to unequal access to beneficial activities and, consequently, inequalities in health and quality of life (Adams et al., 2011; Cattan et al., 2011; Mackenbach, 2005; Walker & Maltby, 2012).

Socioeconomic status (SES), health status, and social (Kawachi, 1999) and relational capital (Network Index) are therefore the variables considered in this investigation, including a gender perspective.

1.4 Research hypotheses

The perspective guiding this study moves beyond the theoretical debate on the historical evolution of the concept of active ageing and primarily refers to the definitions with the greatest social impact. The aim is to assess some potential consequences of active ageing as a dominant paradigm in European social gerontology and social policy.

Consequently, the study also considers social participation in paid work and informal caregiving. For this reason, the sample includes two age cohorts: individuals aged 55–64 and those aged 65–75.

Based on these premises and drawing on the typology of social participation adopted in the Survey of Health, Ageing and Retirement in Europe (SHARE) (Börsch-Supan et al., 2013), social participation was operationalised into four types of activities (Question C1 of the questionnaire):

- participation in voluntary activities;
- participation in education or training courses;
- participation in clubs, associations, and/or social groups;
- participation in political or civic organisations related to the community.

The study ultimately aims to test the following hypotheses:

- Participants with (a) higher educational attainment, (b) a more satisfactory financial situation, and (c) better health report higher levels of social participation.
- Participants with higher social capital and a higher Network Index show higher levels of social participation.
- Accessibility to social participation, as related to these individual characteristics, intersects and mutually reinforces itself.
- Differences in access to social participation vary significantly across European country groups (macro-contexts).

1.5 The social participation survey: data, measurements, methods, and indices

The study utilises data from a quantitative survey conducted in 2025, which included a sample of 9,600 respondents, corresponding to 1,200 cases for each of the eight countries examined. Data collection was carried out through computer-assisted personal interviews (CAPI), and the questionnaire was translated into each of the eight national languages.

As noted above, one of the main objectives of this study is to examine the role of cultural and institutional contexts across European welfare regimes. Accordingly, the final sample includes one or more representative countries for each welfare regime, based on the most widely accepted typology in the literature (Esping-Andersen, 1990). The decision to include or exclude additional countries within the same welfare regime was also influenced by data collection costs, which vary considerably across countries (e.g., Switzerland and Norway).

It is important to note that the selection of one or more countries to represent a welfare regime does not imply statistical representativeness. Rather, these countries are treated as case studies that illustrate European variability in geographical, institutional, and economic contexts (Walker, 2004; Di Novi et al., 2015).

The final sample includes both respondents still active in the labour market (aged 55-64) and those who are no longer active (aged 65–75). However, the larger share of the sample consists of the latter group, since, as previously highlighted, the positive association between social participation and quality of life is stronger and more relevant among retirees (Potočnik & Sonnentag, 2013). Participation in social activities helps individuals adapt to the loss of a central social role, such as employment (Warburton & Winterton, 2010).

Given that retirement rules and options vary substantially across countries and genders (generally between ages 55 and 65), the study follows the SHARE classification: retirees are defined as individuals who are fully, partially, or early retired from paid work (Lakomý, 2021).

1.5.1 Dependent variable: Social Participation Index (SPI)

As anticipated, four variables were used to measure social participation among older adults: participation in voluntary activities, participation in education or training courses, participation in clubs, associations, or social groups, and participation in political or civic organizations related to the

community.

These activities were measured through the question: *"In the last six months, how often have you engaged in any of the following activities?"* The response scale included the following categories:

- never;
- sporadically, one day per month;
- regularly, at least once a week;
- often, more than one day per week;
- always, every day.

A synthetic Social Participation Index (SPI) was constructed to measure the intensity of engagement in social participation activities over the past six months, considering responses from level 2 to level 5 of the scale across the four activities. The index ranges from 0 to 6 and was standardised. Higher values indicate greater social participation, and lower values indicate lesser participation.

The study considers only activities carried out at least once in the past six months, as activities occurring less frequently than once a month do not appear to have a significant effect on social participation.

All four activities fall within the category of formal/organised social participation (Adams et al., 2011). Since some activities were relatively infrequent within the sample, they were recoded into a single binary dependent variable distinguishing between:

- respondents who engaged in at least one of these activities
- respondents who did not engage in any of them

Although this recoding entails some loss of detail, it allows for a more concise and interpretable analysis.

1.5.2 Independent variables

The results first illustrate similarities and differences across countries representing different welfare regimes, which constitute one of the main explanatory variables.

The other three independent variables—health status, educational attainment, and financial situation—are individual characteristics that significantly influence the lifestyles and opportunities of older adults. The latter two are indicators of socioeconomic position (Serrat et al., 2015).

Although the impact of these predictors is often analysed separately, they are closely interconnected and may combine to generate cumulative

advantages or disadvantages, an aspect examined in a specific section of the analysis.

Numerous studies have shown that subjective perceptions of living conditions are often more consequential than objective measures (Walker, 2005). Therefore, both financial situation and health status are assessed through subjective self-evaluation, while educational attainment is coded into a four-level classification (described later).

All three variables were recoded into three categories of similar size to define comparable groups of respondents. In this way, health status, financial situation, and educational level can be interpreted as dimensions of the social field described by Pierre Bourdieu (1986), which is used flexibly as a theoretical framework for interpreting the results.

1.5.3 The Socioeconomic Status Index (ISES)

In addition to the three independent variables mentioned above, the study also employs a Socioeconomic Status Index (ISES). This choice is motivated by the recognition that income alone may be an arbitrary indicator, that classifying social strata solely on income levels may lack sociological relevance, and that previous studies have highlighted inconsistencies between income levels and social status due to occupational prestige (Darmon & Drewnowski, 2008).

To mitigate these issues, the income question—together with occupation, a classic indicator of socioeconomic status—included five monthly income brackets adjusted for household size (below €1,000; €1,000–2,000; €2,000–3,000; €3,000–4,000; above €5,000) and was cross-validated with a question on housing conditions to enhance reliability. Thus, objective economic indicators include both income and housing.

In addition, respondents were asked to assess how adequate they consider their household income to be. This question captures perceived economic well-being and acknowledges that individuals with similar income levels may express different subjective evaluations of their economic situation.

The decision to use the ISES ultimately reflects a conceptualisation of social class that moves beyond a purely stratification-based approach, favouring a Weberian model based on status, social position, and lifestyles. This approach seeks to overcome the limitations of class as an analytical concept in contemporary societies (Antonovsky, 1967; Darmon & Drewnowski, 2008).

Accordingly, the methodological construction of the SES index

(Lazarsfeld, 1969) relied on education, occupation, income, and housing as proxy variables. The index was built through recoding indicators into classes and subsequently computing a normalised and standardised average.

As noted earlier, the study adopts a comparative design using one or more representative countries for each welfare regime. The analysis follows a systematic comparison approach (Smelser, 2003), previously applied in related research (Leopold, 2018; Walker, 2002), comparing a limited number of carefully selected countries to illustrate European variability.

The results, therefore, primarily reflect national differences, while also partially capturing welfare regime differences identified in prior studies.

The analytical procedure consists of three main stages:

1. Prevalence estimation. Proportions of retirees engaged in social participation activities were estimated for each country or group of countries.
2. Inequality analysis. Ratios between proportions of population subgroups defined by health status, income, and educational level were calculated to assess the extent to which social participation depends on these characteristics.
3. Intersection of advantage/disadvantage factors.

Finally, ratios between proportions of retirees engaged in social activities among more and less advantaged groups were examined to identify potential cumulative effects of individual resources (e.g., higher education and good health) on participation opportunities.

1.6 Results

Tables 1 and 1bis (social participation by age cohorts) summarise the main descriptive characteristics of the sample.

Table 1bis (sample divided into two age cohorts) shows that social participation is generally higher in the 65-75 cohort, with the exception of Group 1, where participation is equivalent across cohorts. Furthermore, in the 55–64 cohort (regardless of country group), lower financial status and higher educational attainment prevail. This "more educated" cohort participates more and reports a better financial situation.

This finding is somewhat surprising, as the younger cohort (55-64) is less educated than the 65-75 cohort, contrary to evidence from some longitudinal SHARE panel studies (Lakomy, 2021), which suggests that younger cohorts tend to have higher levels of education. This observation confirms that the endowment of individual resources is a predictive factor for higher social participation.

Table 1 – Socio-demographic characteristics by country group **ALT-TEXT**

Variable	Category	G1	G2	G3	G4
Age group	55-64 years	33.3%	33.3%	33.3%	33.3%
	65-75 years	66.7%	66.7%	66.7%	66.7%
Gender	Male	47.8%	48.0%	50.4%	48.7%
	Female	52.2%	52.0%	49.6%	51.3%
Educational level (re-coded)	Low	11.8%	12.3%	12.0%	23.3%
	Lower-medium	42.3%	52.8%	47.2%	37.3%
	Upper-medium	38.0%	27.0%	32.8%	31.3%
	High	7.8%	8.0%	8.0%	8.2%
Household income perception	Absolutely insufficient	10.5%	6.7%	4.7%	4.4%
	Just sufficient	31.5%	27.2%	16.5%	23.3%
	Sufficient for a decent living	45.2%	52.4%	46.9%	52.1%
	More than sufficient	9.9%	8.3%	21.1%	14.3%
	Good, can afford a comfortable life	2.9%	5.5%	10.8%	5.9%
HSI (banded)	1+2 (poor)	10.3%	14.3%	13.1%	12.8%
	3 (fair)	29.2%	29.3%	38.1%	37.3%
	4+5 (good)	60.5%	56.3%	48.8%	49.9%
SPI (dichotomous)	No	27.3%	35.7%	37.0%	50.5%
	Yes	72.7%	64.3%	63.0%	49.5%
Number of respondents	–	3,600	2,400	2,400	1,200

Table 1 bis – Social Participation by Age Cohorts **ALT-TEXT**

Age group	Variable	Category	G1	G2	G3	G4
55–64	Household, income perception	Absolutely insufficient	12.4%	8.0%	5.9%	6.8%
		Just sufficient	33.5%	28.1%	17.9%	23.5%
		Sufficient	42.0%	50.4%	44.0%	50.8%
		More than sufficient	9.6%	7.6%	20.8%	14.0%
		Good	2.6%	5.9%	11.5%	5.0%
	Educational level (re-coded)	Low	8.8%	12.4%	10.6%	19.5%
		Lower-medium	45.5%	54.5%	50.6%	41.5%
		Upper-medium	38.0%	25.6%	30.3%	30.3%
		High	7.7%	7.5%	8.5%	8.8%

Age group	Variable	Category	G1	G2	G3	G4
	HSI (banded)	1+2 (poor)	9.4%	14.4%	15.8%	14.5%
		3 (fair)	29.2%	28.0%	37.6%	36.3%
		4+5 (good)	61.4%	57.6%	46.6%	49.3%
	SPI **dichotomous**	No	27.3%	37.8%	41.9%	53.3%
		Yes	72.7%	62.3%	58.1%	46.8%
65–75	Household income perception	Absolutely insufficient	9.6%	6.0%	4.1%	3.3%
		Just sufficient	30.5%	26.8%	15.8%	23.3%
		Sufficient	46.7%	53.4%	48.4%	52.8%
		More than sufficient	10.0%	8.6%	21.3%	14.4%
		Good	3.1%	5.3%	10.4%	6.4%
	Educational level (recoded)	Low	13.3%	12.2%	12.7%	25.3%
		Lower-medium	40.7%	51.9%	45.4%	35.1%
		Upper-medium	38.1%	27.8%	34.1%	31.8%
		High	7.9%	8.2%	7.8%	7.9%
	HSI (banded)	1+2 (poor)	10.8%	14.3%	11.8%	12.0%
		3 (fair)	29.1%	30.0%	38.4%	37.8%
		4+5 (good)	60.1%	55.7%	49.8%	50.3%
	ISP **dichotomous**	No	27.3%	34.7%	34.6%	49.1%
		Yes	72.7%	65.3%	65.4%	50.9%

Table 2 presents the correlation coefficients between the dependent variable (Social Participation Index, SPI) and the three main independent variables (Socio-Economic Status Index, SESI, Educational Attainment Index, and Health Status Index, HIS), as well as the correlation between Education and Health Status, and the correlations among the independent variables themselves. Data are shown separately for each country group.

All associations are moderate but highly significant ($p < 0.001$). Social participation is positively correlated with socioeconomic status, educational attainment, and health status, and these independent variables are also positively interrelated. These patterns are consistent across all groups and remain statistically significant at the 99% confidence level.

The association between social participation and socioeconomic status and education is strongest in Group 4, whereas the link with health status is more pronounced in Group 3.

Table 2 – Correlation coefficients (Pearson) of social participation with the key variables of the study

Variabie 1	Variable 2	G1	G2	G3	G4
SPI	ISES	0,130	0,241	0,233	0,250
SPI	EAI	0,115	0,218	0,217	0,229
SPI	HSI	0,139	0,107	0,192	0,161
EAI	HSI	0,128	0,146	0,129	0,082

Table 2 bis presents the same correlation coefficients as Table 2, but disaggregated by gender. All associations are statistically significant. Notably, the relationships among variables 1, 2, and 3 are considerably stronger for women than for men.

Tab. 2 bis – By Gender

Variabile 1	Variabile 2	Male	Female
SPI	EAI	0,196	**0,213**
SPI	ISES	0,168	**0,195**
SPI	HSI	0,161	0,157
EAI	HSI	0,167	**0,192**

Specifically, the association between social participation (SP) and educational attainment is much stronger among women compared to men. Similarly, the links between socioeconomic status (SES) and SP, as well as between education and health status, are also more pronounced for women.

Table 3 – Social participation by country (percentage and cumulative index)

	SPI dichotomous	SPI
Denmark	66,3%	2,36
France	59,4%	1,91
Germany	69,2%	2,02
Greece	74,7%	3,15
Italy	66,0%	2,35
Spain	77,3%	2,84
Sweden	59,7%	1,98
UK	49,5%	1,60

Table 3, as well as the subsequent tables, present cross-country differences in social participation data using a prevalence-based approach. Specifically, this table highlights that the percentage of respondents participating in at least one activity is highest in Spain, whereas considering the total number of activities, the highest value is observed in Greece. In both cases, the lowest values are found in the UK.

This table illustrates the prevalence of social participation among older adults, highlighting variations in both engagement rates and the breadth of activities.

Country	% Participating in at least one activity	Total number of activities
Greece	Moderate	Highest
Italy	High	High
Spain	Highest	High
France	Moderate	Moderate
Germany	Moderate	Moderate
Denmark	Moderate	High
Sweden	Moderate	High
UK	Lowest	Lowest

Table 3a – By country groups

		SPI dichotomous	SP
Male	G1	74,1%	2,79
	G2	67,1%	2,05
	G3	63,6%	2,19
	G4	51,9%	1,61
Female	G1	71,3%	2,78
	G2	61,7%	1,90
	G3	62,4%	2,14
	G4	47,2%	1,59

The following section presents data using an inequality analysis approach: the ratios between the proportions of population subgroups defined by health status, income, and education level were calculated to determine the extent to which social participation depends on these characteristics.

Table 4 shows that those with a high level of education have a percentage

of social participation (in at least one activity) that varies from 1.4 (UK) to 2.76 (Germany) times that of those with a low level of education, while the total number of activities attended is almost four times higher in Germany (3.71).

Table 4 – Ratio of social participation between high and low education

	SPI dichotomous	SPI
Denmark	1,51	2,81
France	2,70	2,26
Germany	2,76	3,71
Greece	1,32	1,24
Italy	2,01	1,50
Spain	1,27	1,25
Sweden	1,60	2,19
UK	1,40	1,78

Educational attainment has a significant impact on social participation from a gender perspective, particularly in group four. Women with high educational attainment in group four have a social participation rate 2.3 times higher than women with low educational attainment, while for men, this ratio is only 1.5. Ultimately, for women in group four, low educational attainment penalises them much more than it does for men.

Table 4 bis – Educational attainment by country groups and gender. High/low educational attainment

		SPI dichotomous	SPI
Male	G1	1,40	1,47
	G2	1,42	1,56
	G3	1,45	1,66
	G4	1,49	1,78
Female	G1	1,34	1,36
	G2	1,35	1,57
	G3	1,94	2,46
	G4	2,28	2,62

A further analysis (Table 5) was carried out by comparing some individual characteristics of the sample with membership in associations. Those who do not belong to associations are characterised, compared to the entire sample, by: lower educational qualifications (higher ones are less frequent), a female predominance, and a younger age. This is confirmed in every group and offers a further interpretation of the reasons given for not belonging to associations.

Table 5 – Differences between those who do not belong to associations and the entire sample

		G1	G2	G3	G4
Can you tell us your educational qualifications?	No qualifications	0,09%	0,10%	0,01%	-0,04%
	Elementary school diploma	0,30%	0,43%	1,98%	0,06%
	Middle school diploma/pre-secondary education	0,85%	0,53%	2,61%	2,22%
	Post-compulsory intermediate qualification (2 or 3 years)	0,11%	3,07%	1,44%	-0,19%
	High school diploma	1,78%	-0,08%	1,70%	1,34%
	University diploma	-0,12%	-0,86%	-1,29%	-0,05%
	Bachelor's degree	-1,89%	-1,35%	-3,64%	-2,15%
	Post-graduate degree	-1,12%	-1,83%	-2,81%	-1,19%
Gender	Male	-1,91%	-2,59%	-3,78%	-1,95%
	Female	1,91%	2,59%	3,78%	1,95%
Age range	55 - 64 anni	1,46%	1,00%	7,30%	1,47%
	65 - 75 anni	-1,46%	-1,00%	-7,30%	-1,47%

Those with a high family income (Table 6) generally have a higher social participation rate than those with a low income; however, the difference in educational attainment appears to be smaller. The country where this difference appears most pronounced is France, both in terms of the percentage of those who participate in at least one activity (more than double) and the total number of activities attended (75% more), while in the UK, the differences, while still consistent, are slight.

Table 6 – Ratio of social participation between high and low family income

	SPI dichotomous	SPI
Denmark	1,19	1,23
France	2,09	1,75
Germany	1,52	1,46
Greece	1,13	1,08
Italy	1,43	1,53
Spain	1,14	1,28
Sweden	1,37	1,33
UK	1,19	1,08

Even in this case, analysing the data by country group and gender (Table 7), women in Group 4 with lower incomes are at a disadvantage compared to women with higher incomes. This ratio is higher for women than for men. In Group 3, the situation is different and opposite, as men with low incomes are more disadvantaged than those with high incomes, as is the case for women.

Table 7 – Groups and gender. Good/insufficient family income

		SPI dichotomous	SPI
Male	G1	1,25	1,25
	G2	1,70	1,66
	G3	1,71	1,76
	G4	0,97	0,86
Female	G1	1,25	1,30
	G2	1,84	1,52
	G3	1,06	1,10
	G4	1,62	1,47

Health status (Table 8) also represents a discriminant with respect to social participation: in each country, those in good health participate more socially than those in poor health. In Sweden, the percentage of those in good health participating in at least one activity is 1.85 times that of those in poor health, while the number of activities attended is 1.77 times higher. Spain is the country where this effect is least noticeable.

Table 8 – Ratio of social participation between good and poor health

	SPI dichotomous	SPI
Denmark	1,33	1,43
France	1,45	1,40
Germany	1,24	1,35
Greece	1,57	1,64
Italy	1,28	1,29
Spain	1,12	1,15
Sweden	1,85	1,77
UK	1,39	1,55

The analysis conducted (Table 9) across the four country groups reveals a gender difference within the group: for example, women in group 4 in good health have a social participation rate 1.51 times that of women in poor health, while among men it is 1.28 times.

Table 9 – Ratio of social participation between good health and poor health by gender

		SPI dichotomous	SPI
Maleo	G1	1,35	1,40
	G2	1,14	1,31
	G3	1,51	1,55
	G4	1,28	1,41
Female	G1	1,21	1,29
	G2	1,22	1,27
	G3	1,53	1,57
	G4	1,51	1,71

The final section of the results presents the survey data using the Intersection of Advantages and Disadvantages approach. Specifically, the combination of education and health as intersecting factors was analysed to answer the question of whether there are cumulative and intersectional effects.

Table 10 – Relationship of social participation between two social groups: advantaged (high educational attainment and good health) and disadvantaged (low educational attainment and poor health)

	SPI dichotomous	SPI
Denmark	---	---
France	1,14	3,76
Germany	3,52	5,60
Greece	1,58	1,04
Italy	2,24	0,93
Spain	1,28	1,15
Sweden	2,59	3,91
UK	2,78	3,28

As illustrated in Table 10, a contrasting situation emerges in this case. Indeed, comparing the advantaged group (those with a high level of education and good health) with the disadvantaged group (those with a low level of education and poor health), we find significant disparities (in Germany, advantaged participants participate more than five times as many activities as disadvantaged participants), but also more balanced situations, and even one case in which disadvantaged participants participate more than advantaged participants (in Italy, advantaged participants participate in 7% fewer activities than disadvantaged participants). In Denmark, the comparison is not calculable because the only individual in the sample who falls into the disadvantaged category does not participate socially.

Although some fluctuations are due to the small size of specific subgroups, the overall model shows that intersectional inequalities exist linked to the combination of individual resources and context.

Looking at Table 10a below, it is clear that, again from a gender perspective, the ratio of the dichotomous PS index value of advantaged women in Group 4 is 4.25 times higher than that of disadvantaged women. Among men, this ratio is 1.72 times higher. Consequently, a worsening of the situation for women is evident. When disadvantaged, with low educational attainment and poor health, they reduce their social participation to a much greater extent than men who are also disadvantaged (low educational attainment and poor health).

Table 10a – Ratio of social participation between two social groups: advantaged (high educational attainment and good health) and disadvantaged (low educational attainment and poor health), by gender

		SPI dichotomous	SPI
Male	G1	1,73	1,46
	G2	1,42	1,83
	G3	2,47	3,05
	G4	1,72	2,14
Female	G1	1,75	1,62
	G2	1,71	2,07
	G3	3,23	3,93
	G4	4,25	3,09

To briefly summarise, the analysis of the three main characteristics—education, financial situation, and health—is positively correlated with social participation. It is worth noting that for better comparability, we decided to focus the analysis on the relationships between the extreme groups of each variable (e.g., tertiary vs. primary education).

• Education. Tables 1bis, 2, and 4 show that the probability of participation is two to four times greater for individuals with tertiary education than for those with primary education. The most pronounced differences are observed in Germany (which also has the highest number of activities attended), Denmark, and Sweden.

• Financial situation. As Tables 1bis, 6, and 7 show, the effect of income remains a predictor of greater social participation, but it is weaker than that of education and even than that of health status. Indeed, as can be seen from the (Health Status) Table XXXX, in all eight countries considered, those in good health participate more socially.

The final Tables 10 and 10bis on advantaged and disadvantaged groups, which complete the analysis, highlight that economic availability has less of an impact on participatory behaviour than cultural level.

1.6.1 Social participation, social capital and relational networks

As previously noted, among the hypotheses explored was that participants with higher social capital and Network Index exhibit higher levels of

participation.

Levasseur et al. (2010) distinguish six levels of social participation, which depend on proximity to others (solitary, parallel, interactive) and the objectives of the activity (satisfying basic needs, socialisation, completing tasks, supporting others or society).

Similarly, Raymond et al. (2008) identify four groups of definitions based on the dynamics of relationships between individuals and their environment.

In its broadest sense, social participation is defined as daily functioning, while in its narrowest sense, it is structured association (formal public participation).

Between these two extremes, researchers place social participation as social interaction (or social connectivity) and social network (personalised interactions related to social capital and informal volunteering). The final explanation focuses on the relational benefits of ageing: meaningful contacts and exchanges resulting from social participation are described as ways to find goals and, consequently, maintain a sense of meaning in life.

Social capital and relational networks (Lizardo, 2004; Shim, 2010; Smith and Christakis, 2008), therefore, appear to be closely related, since the more extensive the network of social ties, the more intense the socio-cognitive feedback the individual receives.

Relationships thus become the fulcrum around which, through mutual recognition or discriminatory denial, a new line of stratification is structured between classes, social classes, and social groups.

Bourdieu considers social capital as a set of more or less institutionalized relational networks that lead to better mutual understanding (Bourdieu, 1986). Pizzorno also offers his scientific contribution to the definition of the concept of social capital, highlighting how it is constituted by the social relationships an individual is able to activate and therefore represents "a set of resources that he or she can use, together with other resources, to better pursue his or her goals" (Pizzorno, 2001: 21). Pizzorno will delve deeper into the topic, distinguishing between solidarity-based social capital and social capital based on reciprocity. The former will be characterised by the type of social relationships that arise, or are sustained, thanks to cohesive groups whose members are strongly and lastingly linked to one another and are therefore expected to act according to the principles of group solidarity (Pizzorno, 2001: 27).

The second, on the other hand, tends to be built "in the relationship between two parties in which one anticipates the help of the other in pursuing its goals, as it hypothesizes that a dyatic relationship of mutual support is established" (Pizzorno, 2001: 27). The second, however, tends to be built "in

the relationship between two parties in which one anticipates the help of the other in pursuing its goals, as it hypothesizes that a dyatic relationship of mutual support is established" (Pizzorno, 2001: 27).

To determine whether social capital, understood as a tool for establishing social relationships, fosters social participation, a Network Index was developed.

The Social Network Extent Index was calculated based on the level of presence of 12 specific professional figures within each interviewee's circle of acquaintances.

By comparing the levels of presence and status of the professionals (as defined in the survey), the following six indices were constructed:

- Global network breadth index: represents the number of professionals known by each respondent, regardless of their level of presence (therefore, it does not matter whether they are relatives, friends, or acquaintances). The theoretical range of the index varies between 0 and 12.
- Global upper network breadth index: represents the number of upper-level professionals known by each respondent, regardless of their level of presence. The theoretical range of the index varies between 0 to 6.
- Global lower network breadth index: represents the number of lower-level professionals known by each respondent, regardless of their level of presence. The theoretical range of the index varies between 0 and 6.
- Weighted network breadth index: represents the number of professionals known by each respondent, based on their level of presence, according to the following scores: 3 if among relatives, 2 if among friends, 1 if among acquaintances. The theoretical range of the index varies between 0 and 72.
- Weighted Upper Network Extent Index: represents the number of Upper-level professionals known to each respondent based on their level of presence. The theoretical range of the index varies between 0 and 36.
- Weighted Lower Network Extent Index: represents the number of Lower-level professionals known to each respondent based on their level of presence. The theoretical range of the index varies between 0 and 36.

All indices have been standardised. Higher index values correspond to larger networks and vice versa.

The following tables show that, in each group, the average of all network extent indicators for participants who socially engage is higher than that of those who do not participate.

For each of these pairs of means (for each network index, that of those who do not participate compared to that of those who participate, for each group: 4 x 6 = 24 pairs) the difference is 99% statistically significant: those who participate socially always have higher network indices than those who do not participate.

Tables 11 and 12 reveal a picture fully consistent with the expected interpretation: those who participate socially show better average levels in terms of socioeconomic status, breadth, and quality of their relational network, while reporting lower levels of loneliness.

In particular, across different combinations of gender, age group, and geographical groupings, differences in network indices are consistently positive and often significant, indicating that social involvement tends to be accompanied by larger networks, both in the "upper" and "lower" components. This finding is consistent across all countries considered, albeit with varying degrees of intensity. For example, in Group 1, the difference in overall network breadth ranges from approximately 2 to 2.5 units, while in Group 3, the differences are sometimes slightly lower among older women. Similarly, the weighted network component is also systematically higher among those who are socially active, with particularly high values among men aged 55-64.

Similarly, the socioeconomic status index shows positive differences across all boxes: those who participate socially have, on average, better economic and housing conditions. The magnitude is moderate but stable (between +0.1 and +0.3 points), with a fair degree of homogeneity across genders and age groups, with women often experiencing slightly higher increases.

Table 11 – Average values of the network breadth indices for those who participate socially and those who do not, in each group

Network breadth indices	Group 1		Group 2		Group 3		Group 4	
	SPI - dichotomous							
	No	Yes	No	Yes	No	Yes	No	Yes
Global	4,45	6,55	2,44	4,34	2,85	4,44	2,12	3,92
Global upper	2,14	3,27	0,94	1,98	1,12	2,02	0,87	1,84
Global lower	2,30	3,28	1,49	2,36	1,73	2,42	1,25	2,07
Weighted	9,38	14,28	5,37	9,52	6,94	10,37	5,21	8,98
Weighted upper	4,65	7,38	1,93	4,12	2,47	4,42	2,03	4,22
Weighted lower	4,74	6,90	3,44	5,40	4,47	5,96	3,18	4,76

Table 12 – Network size indices and t-test

	Network breadth indices	t-test for Equality of Means ("No" vs. "Yes")	
		t	Sig. (2-tailed)
Group 1	Global	-17,42	0,00
	Global upper	-17,11	0,00
	Global lower	-14,05	0,00
	Weighted	-17,11	0,00
	Weighted upper	-15,93	0,00
	Weighted lower	-12,57	0,00

	Network breadth indices	t-test for Equality of Means ("No" vs. "Yes")	
		t	Sig. (2-tailed)
Group 2	Global	-17,66	0,00
	Global upper	-17,39	0,00
	Global lower	-13,18	0,00
	Weighted	-15,72	0,00
	Weighted upper	-15,48	0,00
	Weighted lower	-10,73	0,00
Group 3	Global	-14,45	0,00
	Global upper	-14,45	0,00
	Global lower	-11,04	0,00
	Weighted	-11,64	0,00
	Weighted upper	-12,45	0,00
	Weighted lower	-7,75	0,00
Group 4	Global	-12,13	0,00
	Global upper	-12,28	0,00
	Global lower	-9,24	0,00
	Weighted	-9,79	0,00
	Weighted upper	-11,01	0,00
	Weighted lower	-6,45	0,00

The following is a summary highlighting the relationships between social participation (SP), education, financial situation, health, and social networks. Higher education, better financial situation, and good health are positively correlated with social participation. To ensure comparability, the analysis focused on the extreme groups within each variable (e.g., tertiary education vs. primary education).

Factor	Key findings
Education	Older adults with tertiary education are 2–4 times more likely to participate socially than those with primary education. Differences are most pronounced in Germany, Denmark, and Sweden.
Financial situation	Higher income predicts greater participation but is a weaker factor than education and health. Across all eight countries, good health is associated with higher social participation.
Health	Good health consistently correlates with higher social participation across countries.
Social capital & networks	Social participation is closely linked with social capital and network size. Participants with broader social networks show higher levels of social participation.
Network indices	Six network indices were constructed: global network size (0–12), Upper network size (0–6), Lower network size (0–6), weighted global

Factor	Key findings
	network (0–72), weighted Upper network (0–36), weighted Lower network (0–36). Higher values indicate larger/more connected networks.
Observed patterns	In all groups, average network indices for socially active participants are higher than those for non-participants. Differences are statistically significant at 99%.

Social participation among older adults is positively associated with education, financial resources, health status, and network size. Participation strengthens and is strengthened by social capital, creating a mutually reinforcing relationship between individual resources and engagement in social activities.

The following representation shows the data by country group (G1–G4) and for each network index, comparing participants and non-participants in social participation (SP).

Alt-text: Average social network indices by social participation and country group.

This table shows the mean values of six social network indices for older adults who participate socially versus those who do not, across four European country groups: G1 (Greece, Italy, Spain), G2 (France, Germany), G3 (Denmark, Sweden), and G4 (UK). All differences are statistically significant at 99%. Higher values indicate larger or more connected networks.

Country Group	Network Index	Non-participants (mean)	Participants (mean)
G1	Global network size (0–12)	X1	X2
G1	Upper network size (0–6)	X3	X4
G1	Lower network size (0–6)	X5	X6
G1	Weighted global network (0–72)	X7	X8
G1	Weighted Upper network (0–36)	X9	X10
G1	Weighted Lower network (0–36)	X11	X12
G2	Global network size (0–12)	X13	X14
G2	Upper network size (0–6)	X15	X16
G2	Lower network size (0–6)	X17	X18
G2	Weighted global network (0–72)	X19	X20
G2	Weighted Upper network (0–36)	X21	X22
G2	Weighted Lower network (0–36)	X23	X24

Country Group	Network Index	Non-participants (mean)	Participants (mean)
G3	Global network size (0–12)	X25	X26
G3	Upper network size (0–6)	X27	X28
G3	Lower network size (0–6)	X29	X30
G3	Weighted global network (0–72)	X31	X32
G3	Weighted Upper network (0–36)	X33	X34
G3	Weighted Lower network (0–36)	X35	X36
G4	Global network size (0–12)	X37	X38
G4	Upper network size (0–6)	X39	X40
G4	Lower network size (0–6)	X41	X42
G4	Weighted global network (0–72)	X43	X44
G4	Weighted Upper network (0–36)	X45	X46
G4	Weighted Lower network (0–36)	X47	X48

In this case too, in summary, it is observed that:

- Socially active older adults have consistently higher network indices across all six measures in all country groups.
- Larger and more diverse networks are associated with higher social participation.
- These differences are statistically significant ($p < 0.01$), highlighting the strong relationship between network size, composition, and social engagement.

1.7 Discussion and considerations

This chapter of the volume analyses the social participation of older Europeans from a comparative perspective, using data from a specially developed survey.

The primary objective was to assess the extent to which this participation is equally distributed across different social groups and national contexts.

The results indicate that, although there is a moderate level of overall social participation, significant inequalities in participation persist. These findings confirm data from other studies that, using a longitudinal approach, have observed an increase in active ageing over time (Lakomy, 2021). However, this has not led to a levelling of differences, but rather has consolidated the

existing advantages of certain social groups.

Individuals with higher levels of education, better economic conditions, and superior health participate significantly more than others.

Educational qualification is the most significant discriminatory indicator, more so than income. Mediterranean welfare states (especially Greece and Spain) record the highest levels of social participation, while the United Kingdom, with its liberal welfare state, records the lowest and decidedly modest levels of social participation.

A significant gender difference also emerges, and analysis of the intersections between individual resources (education and health) highlights a cumulative effect: people with greater cultural capital and better health participate up to five to six times more than those with less education and poorer health.

This gap suggests that policies promoting active ageing, while universalistic in intent, do not have real redistributive effects.

These findings support the critical argument that active ageing policies—particularly the promotion of social participation—tend to favor groups already endowed with greater resources and skills, indirectly legitimizing inequalities in later life (Mackenbach, 2005; Timonen, 2016).

Active ageing thus appears to be a form of neoliberal normativity, which places responsibility for the quality of life on older individuals, assuming that they can and should remain socially active.

In reality, the possibility of "actively ageing" depends largely on the institutional context, social opportunities, and available personal resources (Mendes, 2013).

European policies should therefore adopt a more context-sensitive orientation, capable of recognizing the structural differences between countries and social groups.

In summary, the findings confirm that social participation is largely structured by individual and contextual inequalities, and active ageing, while a shared ideal, does not automatically guarantee inclusion and equality.

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2. Cities of proximity. The local system as infrastructure for active ageing

di *Letizia Carrera*[1]

Abstract

Population ageing represents a profound structural transformation of contemporary cities, yet it is still predominantly interpreted through economistic and performance-oriented paradigms that reduce later life to dependency and cost. This article challenges such approaches by reframing active ageing as a matter of rights, self-determination, and full urban citizenship. Drawing on the Capability Approach and on critical urban sociology, the paper conceptualizes urban space as a "passively active" social infrastructure that can either enable or constrain autonomy, participation, and quality of life in older age. In this perspective, proximity, walkability, and the right to dwelling are central analytical dimensions for understanding how ageing is socially and spatially produced within cities.

The empirical section is focused on the quality of "proximity system" and is based on an ethnographic study conducted in the Apulia region (Italy), involving 83 semi-structured interviews with people aged 65 and over. The analysis focuses on everyday mobility practices and on the use of spaces of proximity, understood as relational and infrastructural systems rather than mere spatial closeness. The findings led to the construction of a four-type typology of "dwelling proximity" — Pedestrians by Choice, Selective Pedestrians, Anchored to Micro-Proximity, and Urban Withdrawn — emerging from the intersection between functional autonomy and the quality of urban proximity systems. These typologies describe differentiated ways of inhabiting the city, ranging from enabling configurations that support identity, sociality, and agency, to excluding ones that foster withdrawal and vulnerability.

Building on this typology, the article proposes evidence-based urban

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policy and design guidelines aimed at strengthening proximity as a collective capability. These include pedestrian comfort corridors, safe crossing zones, and neighborhood social anchors as key interventions to expand walkability, reduce inequalities, and prevent age-based segregation. The study also contributed to the development and empirical testing of a proximity system index intended to support and guide urban policy design and decision-making.

The paper argues that investing in proximity-oriented and rights-based urban policies is essential not only for promoting active ageing, but also for advancing more inclusive, equitable, human-centered and people-friendly cities across the entire life course.

Keywords: active ageing; system of urban proximity; walkability; age-friendly cities; ethnographic research; older adults

2.1 Introduction

Older age is central to a decades-long "silent revolution" transforming the global population structure. This shift is evident in the changing demographic shape—from a pyramid to a "ship", and projections that by 2050, more than one in four people on the planet will be over 65 years of age (WHO, 2022). Alongside these quantitative changes, there is a qualitative transformation involving both the theoretical paradigms framing old age and ageing, and the social and self-representations of older adults (Carrera, 2020; 2025b).

Despite the structural nature of the trends that have characterized the progressive ageing of the population as the combined outcome of increasing life expectancy and the decline in fertility choices and birth rates, this phenomenon still appears to be read through an emergency lens that conditions and distorts political-administrative choices, which end up being implemented outside of systemic and multi-actor logics. Even today, the longevity economic shock proposed by the International Monetary Fund (2012) seems to bias the analysis of the phenomenon by relegating it solely to the economic sphere, thereby reducing it to a problem with potential repercussions for the pension and healthcare systems. A neoliberal interpretative key is thus adopted, focusing on the costs borne by those who are not useful to, or within, the economic model of performance. From this perspective, the boundary of the condition of old age is defined not with reference to chronological age but rather to retirement age, implicitly emphasizing the criterion of functionality that has also informed, in some reflections, analyses

concerning the right of older individuals to "active ageing" and the corresponding task of policies to ensure those conditions, interpreted through proposals to raise the retirement age. The performance paradigm has thus given shape and theoretical legitimation to a series of boundaries: between adults and older people, between active and inactive older people, and between self-sufficient and non-self-sufficient older people. And these distinctions are laden with those symbolic and practical implications that Pierre Bourdieu (1979) recognised in the various socially established distinctions that underpin inequalities.

In order not to renounce the use of the definition of active ageing (D'Souza, 1993b) and its potential also in terms of a guiding criterion for policies, it is therefore first necessary to reframe the concept of active ageing by removing it from any logic connected to performance, and instead situating it within the domain of the right of older individuals to choose the contents and modes of their own ageing. This thus entails emphasizing a legally relevant terrain, such as the right to self-determination, and recognizing older people as possessing the quality of full citizenship, which cannot be measured or conceived as deriving from or conditioned by the contribution one makes to society, and therefore as time-bound.

The older individual again becomes the holder of the 'right to rights,' as Hanna Arendt (1951) wrote. This is a right held for their own sake, not because of their productive function. It persists even after crossing the social boundary of active adult life, meaning after work performance ends. The right to self-determination means the freedom to choose what suits one's own life course. It also implies the right to real opportunities for choice, according to Sen's (1985; 1992; 1999; Nussbaum, 2011) Capability Approach. Public policy must ensure older people can truly use these rights.

Demographic ageing and the growing complexity of urban systems are called upon to generate new socio-spatial configurations that challenge traditional paradigms of analysis and intervention in cities. Dynamics of change, the digitalisation of services, the restructuring of welfare systems, the weakening of proximity networks, transformations in mobility, and the growing heterogeneity of life trajectories interact with the ageing process, redefining the conditions through which older subjects can exercise agency in urban space. From a multilevel sociological perspective, an approach that is functional to interpreting the relationship between urban structures, practices of use, and experiences of vulnerability or empowerment is the Capability Approach, which enables distinguishing between available resources, effectively achievable functionings, and substantive freedoms. Integrating this perspective into urban analyses of quality of life requires assessing not

only the physical accessibility of spaces, but also the individual, social, and environmental factors that condition the transformation of urban opportunities into real capabilities for older people. This implies a shift from the mere presence of services and infrastructure to their actual usability, taking into account factors such as perceived safety, social capital, digital literacy, the ecological quality of spaces, configurations of public transport, and intergenerational relations.

At the design level, paradigms such as age-friendly urbanism, Universal Design, and life-course-sensitive planning emerge as essential for designing enabling environments, orienting themselves not only toward the reduction of functional limitations but toward the promotion of urban environments that expand individual capacities to move autonomously, participate in collective life, maintain biographical continuity, access meaningful services, and build social relationships. From the perspective of public policy, the Capability Approach calls for the adoption of governance systems capable of recognising intra-generational differences and of addressing the structural conditions that limit capabilities: territorial inequalities, technological barriers, neighbourhood infrastructural fragilities, and excessive standardisation of services. Urban policies, in order to be effective in governing demographic and technological change, are required to orient themselves toward preventive and evidence-based models, capable of acting on conversion factors and supporting the production of collective capabilities, such as community cohesion, neighbourhood resilience, and equitable access to digital innovations, thereby guiding strategies for the construction of cities that are truly inclusive, enabling, and sensitive to the needs and rights of older populations.

This perspective extends to the right to vulnerability and, therefore, to the right to be different and to see that difference nonetheless protected, without it becoming a principle of exclusion and inequality, but rather an opportunity to diversify the enjoyment of social opportunities according to a logic of specificity (Mills, 1959). Older age thus becomes a laboratory of rights: the right to health, to quality of life, to well-being, to mobility, to full social and political recognition, to an accessible and inclusive public space, to private spaces readapted to changing needs, and to proximate spaces that are infrastructured and functional. These rights find concrete and symbolic form in the right to dwelling, which includes but semantically exceeds the right to housing and takes the shape of the right to live space, indeed spaces: from private ones, rethought in a manner functional to diverse needs, to public ones called upon to be accessible and adequately infrastructured, to third spaces which are, as will be discussed later, places of pause, exchange, and relation (Carrera, 2021a; 2022c; 2024c). The right to dwell in urban space,

understood as a synecdoche of the entire territory, is therefore the principle upon which opposition to any choice of segregation can be founded, to the confinement of older subjects within "dedicated places" precisely on the basis of the recognition of their diversity. This is the great deception: the recognition of the difference of older subjects becomes the poisoned gift that justifies their being placed elsewhere, where it is declared that their specificities will find greater acceptance and greater adequacy. Thus, instead of questioning the monolithic nature of urban space and its being designed for its "paradigmatic subject", the able-bodied and affluent man, different places are imagined and designed to accommodate differences, with the effect of emptying cities of older subjects who are not fully active, autonomous, and self-sufficient, as they are considered problematic subjects.

The right to dwell is also the "right to the city" (Lefebvre, 1968): the right to enjoy and help design urban spaces in unique ways. Both rights are deeply connected.

Thus one arrives at the right of older subjects to *voice* (Hirschman, 1970) and therefore to participate in processes of rethinking and redesigning urban and social space at different territorial scales, and hence to be included in structured and continuous participatory pathways, rather than being activated ad hoc on specific issues because, as Domenico De Masi (2005) writes, participation requires training. It is necessary to avoid what the sociologist defines as "the danger of the tile", namely, the inability to conceive something different from what already exists if one is not included in pathways of education and social and political imagination.

> Asking people with no prior experience what kind of neighbourhood houses they would like means obtaining predictable answers: essentially, the house of the medico condotto of Terni, that is, a dwelling similar to that of a worker, but slightly larger, with more tiles and a few additional comforts (De Masi 2005: 66-67).

Therefore, the right to participate entails an institutional and political responsibility to formally and structurally involve the inhabitants of the entire urban space, as well as to guarantee them the effective conditions of that process. And then, again, the right to inclusion within a complex and deeply differentiated social context, as the theoretical foundation of new urban paradigms, and as the practical foundation of choices in the design of urban space at different levels, from that of general urban plans to that of the fine-grained infrastructure of spaces, in order to ensure their usability by different categories of subjects starting from their specificity.

Within the framework of this right, which gives form both to the

recognition of one's own difference and to ensuring that this does not translate into inequality, lies the "gender issue", still entirely central despite the long path undertaken by feminist thought, which, in the absence of compensatory and corrective interventions in terms of social policies, risks generating the combination and even the reinforcement of those lines of weakness which, intertwining within an intersectional logic, amplify their effects and produce a cumulative impact.

If older subjects are still today "fragilized subjects", a definition preferable to "fragile subjects", since their condition depends to a large extent on deficiencies and social factors (Carrera, 2024b; 2024c), there are some variables that accentuate this condition, such as being women and belonging to other genders, having low levels of functional autonomy, possessing a low level of personal resources, and living in contexts with a high degree of peripherality, characterized by a scarce provision of services and low infrastructural quality. When present in the lives of specific subjects, these characteristics expose them to the risk of having those rights severely limited, if not denied, thereby affecting levels of well-being and quality of life.

2.2 Rights and (to the) urban space

The progressive ageing of European urban populations requires a critical revision of how space and the forms of urban habitat are designed and governed. Contemporary urban planning, traditionally oriented toward regulating land use, is now called upon to confront new social demands deriving from longevity, placing lived space and its capacity to support safety, autonomy, and participation of older people at the center of planning (Carmona et al., 2021). In this regard, urban space does not merely represent a physical container of activities, but a true social determinant of health, capable of shaping lifestyles, relationships, and intergenerational well-being (WHO, 2007; 2018; 2022; Marmot et al., 2010). It is within this perspective that space and the forms of the urban habitat (Carrera, 2020, 2023) can be interpreted as a strategic lever to counter the risks of isolation and its repercussions on quality of life throughout the entire course of ageing. The discourse on the age-friendly city highlights how, particularly for the older population, the material conditions of urban spaces directly influence mobility, access to services, sense of safety, and opportunities for social participation (Buffel & Phillipson, 2018). This calls for an urban planning approach that integrates principles of universal accessibility, functional proximity, and relational continuity. Each of these rights, moreover, can be distinguished from the others

only on an analytical level, since they are deeply interconnected and their effects profoundly intertwined. Moreover, each of these rights calls upon public institutions to assume responsibility for creating the concrete conditions through which they can be given form and guaranteed. Within this framework, territorial administrations have a central role, because it is in the city that rights take shape. Urban space is, as Ash Amin and Nigel Thrift (2002) note, "passively active"; it is socially produced (Lefebvre, 1974) and can shape the material conditions through which rights can be practiced or, conversely, denied. The process of population ageing is in fact connected to that of the increasing urbanization of the older population, which according to a recent UNESCO report will reach 68% of the total by 2050, thus conveying the centrality of cities, the subjects of the twenty-first century, and the need to focus attention on that specific symbolic and concrete space in order to give form to new theoretical categories and to forms of protection and activation of the "right to the city" in the fullness theorized by Henri Lefebvre (1967) and later by David Harvey (2005; 2016). The pressing demand for an advanced city, increasingly evident, is a demand for chances and opportunities and shows how older people themselves increasingly claim the right to a quality urban habitat capable of offering them, through the combination of material and immaterial socio-urban interventions, non-specific and specific, responses to their needs, including newer ones that go well beyond the mere requirement of safeguarding health understood as the simple absence of disease, toward more complex concepts of well-being and quality of life articulated in physical, social, psychological, and contextual dimensions in order to guarantee conditions for active living (Carrera, 2020; 2025b). In this way, the demand for recognition of a right to existential fullness is articulated, thereby also giving form to the right to a differentiated, and even personalized, use of the city itself to realize forms of social and political citizenship. The recognition of the central role of contextual resources and of the quality of urban welfare policies shifts attention from individual factors to socio-urban factors and to the specific endowment of territories in terms of "systems of proximity" (Carrera, 2025b), and thus to an interconnected combination of accessible and well-infrastructure public spaces, widespread and efficient socio-health facilities and service networks, cultural venues and inclusive spaces for meeting and sociality, neighborhood commerce, systems of accessible and above all pedestrian mobility. The presence and quality of these elements in urban space respond to the need for proximity and therefore to living, or rather to dwelling, in the Heideggerian fullness of this term, in urban spaces of material, social, and symbolic quality. The consequence is the recognition of the entirely central role of urban

welfare policies in creating the conditions that support subjects toward the goal of Successful Ageing (Rowe & Kahn, 1998; 2015), but this time by shifting responsibility for outcomes from the individual subject to the territorial and social system, which is called upon to intervene also by compensating for any scarcity of economic, cultural, and social resources possessed by individuals. An integrated urban welfare, therefore, can recognize in the ageing process the traits of a "total social fact"[2], a totalizing event of social experience that cannot be understood without a kaleidoscopic and epistemologically complex approach, and without conceiving it as a necessary collective and social challenge. This perspective gives centrality to the process of constructing the conditions for the right to ageing in the right place, which goes beyond the simple right to choose to remain in the place where one has lived (ageing in place), so as not to disperse the relational capital built over time, toward the right to dwell in that place once it has been made rich in opportunities and high urban quality (ageing in the right place), so that it is a place fully functional not only to needs but also to the forms of individual and collective proneutrality of older subjects (Fang et al. 2021; Canham et al., 2022). It is therefore not merely a matter of allowing individuals to age in their own home, but of ensuring that the places in which one lives—the home, the neighborhood, the city—can support health, autonomy, social participation, and privacy. Canham (2022) emphasize that the "right place" results from a dynamic interaction between personal and environmental factors, while Fang (2021) invites moving beyond a static conception of ageing in place to embrace a more flexible model centered on reciprocal adaptation between individuals and environments. In this way, form is given to the tension toward the affirmation of the right to a full and high-quality urban life, as the outcome of social and urban planning that implements the social and political principle of territorial democracy. Urban policies can thus play a decisive role in creating the structural and relational conditions that sustain forms of "urban happiness", understood sociologically as the outcome of the interaction between subjects, the built environment, institutions, and social practices. The literature on urban quality of life shows that inclusive public

[2] The "total social fact" is a concept introduced by Marcel Mauss in *The Gift* (1925). By this expression, Mauss refers to a social phenomenon in which multiple dimensions of collective life converge simultaneously: economic, legal, religious, political, symbolic, and affective. A total social fact thus mobilizes society as a whole and reveals the interdependence of its institutions. The gift, for Mauss, is the paradigmatic example: it is not merely an economic exchange, but also entails moral obligations, forms of power, legal bonds, ritual beliefs, and collective identities. The concept has been central in anthropology and sociology because it shows how certain phenomena cannot be reduced to a single analytical dimension but must instead be understood in their dynamic totality.

spaces, accessibility, sustainable mobility, and proximity-based infrastructure strengthen social capital, a sense of belonging, and civic participation, which are key factors in subjective well-being (Gehl, 2010; Florida, 2014). At the same time, urban policies oriented toward equity and the "right to the city" contribute to reducing inequalities and vulnerabilities, creating contexts in which happiness is not an individual privilege, but a collective possibility and responsibility (Lefebvre, 1968; Harvey, 2012). In this perspective, cities become social laboratories in which planning, governance, and everyday life intertwine in the production of environments capable of generating diffuse well-being and the capabilities of individual older subjects who are placed in the conditions to make choices and to live a process of fully active ageing. The complexity of this process and of the new forms and new contents that living later life has assumed, and continues to assume, can be grasped through some of its empirically observable manifestations. Among these, a central role is played by the conditions of walking as a practice of reappropriation of space and as an instrument of dwelling in the city. It is therefore a matter of recognizing the centrality of walking in the process of urban ageing in the light of the paradigm of "active/healthy ageing", which interprets old age no longer solely as a phase of decline, but as a set of opportunities to be supported through environments and practices capable of affecting health, participation, and a sense of safety. This is the perspective inaugurated by the WHO Policy Framework on Active Ageing (2022), in which the spatial dimension, such as dwelling in accessible neighborhoods, moving on foot, and maintaining relations of proximity, is explicitly recognized as a determinant of health and autonomy in later life. Similarly, the framework of the Global Age-friendly Cities identifies the quality of open spaces, pedestrian infrastructures, and public transport as three crucial domains for making cities "age-friendly", that is, capable of enabling older people to continue to dwell in and actively traverse the urban context.

2.3 The right to the city and the quality of urban walkability

In this perspective, walking in older age cannot be reduced to a simple motor practice, but becomes a complex socio-spatial device that enables maintaining a capable body, cultivating daily routines, accessing services and relational networks, and experiencing high degrees of inclusivity. International studies on older people's mobility show how walking represents the main form of daily physical activity in later life and how it is strongly dependent on the characteristics of the built environment: continuity and

quality of sidewalks, road safety, the presence of benches and resting places, proximity attractors, and the aesthetic quality of public spaces. Its value, however, exceeds that connected to physical well-being, which is not negligible (Dovey, 2020; Southworth, 2005; Speck, 2012). When these conditions are guaranteed, walking also becomes a practice of "stewardship" and co-production of public space: the older person who walks, stops, meets, observes, crosses, and lives in urban space counters the risks of relational poverty and weaves relationships. At the same time, he or she contributes to making the neighborhood vital. He or she strengthens its social capital, which today is one of the primary buffers against vulnerability in old age. The most recent Italian literature has also begun to systematically read the nexus between ageing, urban accessibility, and walkability starting from the proposal to rethink cities based on older people's access to urban services, introducing tools of spatial analysis that make it possible to map inequalities and barriers in everyday mobility (Colleoni, Caiello, 2017; Colleoni, 2019; Clemente et al., 2020; Colleoni, Caiello, Daconto, 2021; Bernardini, 2023; Colleoni, Daconto, Caiello, 2024; Carrera, 2025b; 2025c; Venezia, 2025). Moreover, by seeking concrete conditions to guarantee full accessibility, such as lighting, safe road crossings, adequate traffic light timings, obstacle-free sidewalks, the presence of greenery and seating, perceived safety, and proximity of services as decisive factors in supporting leaving the home and the frequency of walks (Apolloni & D'Alessandro, 2023; Leonardi et al. 2020; Pulvirenti et al., 2020). Analyses that reaffirm walking as a situated, negotiated practice, dependent on the micro-geography of streets and on the history of relationships with places, but also its strategic function as a constructive practice of the fabric of proximity. Moreover, in this sense, the possibility and the quality of urban walkability can be understood as relevant indicators of the friendly character of cities and therefore of the quality of their inclusivity or, conversely, of their capacity to generate a sort of "soft expulsion", at times invisible but dramatically effective, of older subjects from the public space of the city. Research that, sometimes in a fragmented way, has also generated specific methodological tools to assess and transform urban contexts in a "walkable" key: Garau, Annunziata and Yamu (2020), for example, propose a Walkability Assessment Tool that integrates multicriteria analysis and space syntax to identify, in the historic center of Iglesias, those stretches of public space that discourage walking and those that instead encourage it, indicating the need for targeted interventions to make routes more accessible and inclusive also for older people. Similarly, Eledeisy (2023) uses the Transit-Oriented Development Standard to assess walkability in the San Giovanni neighbourhood in Rome, highlighting critical issues (architectural

barriers, sidewalk discontinuities) and potential for a "healthy" city designed for all ages. Appolloni and D'Alessandro measure the "propensity" of 20 neighbourhoods in five Italian cities to support older people's walking through the Territorial Walking Suitability Index (T-WSI). Inizio modulo Above all, at the international level, the issue is embedded within a broader framework of inclusive urban policies. The HelpAge International report Ageing and the City: Making Urban Spaces Work for Older People (2018) insists on the need for the "reappropriation" of urban spaces through the reduction of hostile traffic, the creation of pleasant and safe streets, and access to green spaces and places for rest, highlighting how everyday walking practices constitute a privileged terrain for inclusion, but can also translate into processes of exclusion of older people in global cities. In the same direction, the analyses by Portegijs et al. (2019), starting from the concept of activity-friendly environments, propose an ecological reading in which physical dimensions (pedestrian infrastructures, access to services), social dimensions (neighborhood relations, perceived safety), and technological dimensions (aids, digital devices supporting mobility) contribute to constructing contexts that make walking possible as an ordinary practice of participation in urban life. Alongside the more technical and design-oriented dimension, a line of inquiry has developed that links walkability, rights, and citizenship, centered on the nexus between the right to dwelling, ageing in place, and the quality of spaces of proximity (Bernardini, 2023). It is thus recognized that the possibility of continuing to live in one's own neighborhood does not depend solely on the dwelling itself, but on the network of pedestrian routes, public spaces, and services that make the use of the city in older age effective. It emerges clearly that the direction to pursue is that of strengthening reflection on the "system of proximity" (Carrera, 2025b), whose quality can affect the conditions for an active ageing that can choose not to renounce maintaining rootedness in the place of life, and of arriving at the "right to walkability" as part of the criteria of age-friendly cities. Pedestrian use must be considered an essential condition for autonomy, sociality, and a sense of inclusion among older people, and, to strengthen the sense of active use of space, improvements in walkability can also be pursued through practices of tactical urbanism (Lydon, Garcia, 2015). These low-threshold experiments reopen public spaces to walking and to intergenerational encounters (Carrera, 2025c). Strategies for ageing cities and for age-friendly cities indicate that guaranteeing safe, continuous, and pleasant pedestrian routes is not a technical detail. However, a political choice that affects the right to the city of older people, the possibility of ageing in place, and the overall quality of urban space and urban life for all categories of citizens.

2.4 The function of spaces

The role of urban space as a "passively active" factor (Amin, Thrift, 2002) thus comes to the fore. As has been observed, once built, cities continue to influence different levels of power and inequality, as well as of freedom and possibility (Greenfield et al., 2019), starting from the conditions and opportunities of access to services and to quality dwelling, albeit outside of any deterministic logic against which Herbert Gans (1968) had already warned. Urban configuration affects the structural conditions of everyday experiences in order to guarantee the full right to an active ageing that is increasingly articulated in social terms and that, as noted, is also able to influence health status and thus the frequency and type of access to the healthcare system (Zajczyk, 2000; 2018). This awareness confirms the foundational error of any vision that holds that "the resources invested in improving the conditions of ageing represent more a drain on the economy than an investment capable of generating both tangible and intangible benefits" (D'Souza, 1993a, p. 342). It is therefore a matter, on the one hand, of recognising the ethical, social, and political dimension of the need to guarantee full citizenship and a high quality of life to older people, and, on the other, of being aware that pursuing these objectives also entails significant economic implications, including savings in resources allocated to healthcare and welfare. While exercising the necessary caution in embracing an economistic logic within an issue of high ethical, moral, and social value, it can be observed that the fullness of everyday life positively affects health, delays the deterioration of autonomy and the consequent recourse to the healthcare system, up to admission to residential and/or long-term care facilities. Rethinking and redesigning the quality of urban space, starting from the most proximate, therefore means investing in people's quality of life and in medium- and long-term savings in public resources. The organization of public space, as well as the adequacy and availability of infrastructures, the quality of the mobility system and, within it, of pedestrian mobility within a city, are fundamental elements for guaranteeing access to services and opportunities present in the territory, and are decisive in defining quality of life, social relations, and the sense of community of different categories of citizens, in particular those that are more socially fragilized, such as older people (Carrera, 2025a; Bonoli, 2004; Emerijck, 2002; Esping-Andersen, 2000; Pavolini, 2001, 2004; Zajczyk, 2018). These characteristics need to be profoundly rethought in order to detach the condition of old age from the individual resources possessed by subjects and to relocate it on the social plane and on that of the resources with which a territory equips itself and can guarantee its

inhabitants. Within this line of thought, and in the analysis of the centrality of public space and proximity in creating conditions and occasions of various kinds for an everyday life rich in opportunities and relationships, the concept of the «third space» assumes particular relevance. Edward Soja (1996; 2007), developing Lefebvre's reflections (1968; 1974) on the social production of space and recognizing their centrality, conceptualizes the third space as a set of new spaces that are partly liminal and interstitial, within which it is possible to create conditions of encounter and mutual recognition. "Third space" is an analytical concept that opens up the possibility of multifunctionality and of the capacity of spaces to be places of aggregation, hospitality, and proneutrality. Such «spaces of pause» (Carrera, 2022a; 2024) may consist of workplaces, schools, universities, youth centers, sports associations, public libraries, museums, or other spaces defunctionalized for this purpose, community social centres or neighbourhood houses that can be conceived and experienced as spaces in which it is possible to develop conditions of recognition and relationship also through shared activities and collaborative planning (Ahmed & Hall, 2016).

> A space of radical openness, a vast territory of infinite possibilities and risks. This space is not located "between" the bipolar worlds of centres and peripheries, nor in their additive combination. It is situated "beyond", in a (third) world that can be explored and traversed through meta philosophy (Soja, 1996, p. 33).

Public space, and in particular third spaces understood as occasions for prolonged and repeated encounter, possess the potential to represent fundamental cultural and social infrastructures. Such infrastructures constitute a strategic element in guaranteeing access to opportunities that strengthen levels of well-being, especially for those individuals who are more closely tied, and sometimes even constrained due to a lack of physical, economic, or social resources, to the specific territory in which they reside. When present, third spaces constitute privileged places where individuals can experience significant improvements in their quality of life, thanks to the strong interrelation among bodily, psychological, and social dimensions. In these contexts, neither fully private nor strictly public or institutional, the body finds opportunities for movement, relaxation, or simple presence in space, while the mind benefits from relational, cognitive, and emotional stimuli that fosters well-being and a sense of belonging. The possibility of stopping, conversing, engaging in dialogue, even conflicting, observing, or participating in diversified activities produces positive effects both on the level of psychophysical balance and on the construction of identities and meaningful relationships.

Third spaces, therefore, not only support an idea of integrated well-being but also help counter isolation, sedentariness, and relational deprivation, acting as true mediators between physical health, emotional vitality, and the overall quality of everyday experience. Starting from the recognition of the quality of public space as a central factor in guaranteeing the right to active ageing, urban welfare policies are called upon to enhance its impact by adopting two fundamental principles as design criteria: that of social justice, in the sense of attention to economic as well as physical accessibility to the opportunities present in the territory, and that of territorial democracy, in the sense of a uniform distribution across the urban territory of those same opportunities, thereby overcoming the limit of cities divided between centers and peripheries, between the city of the rich and the city of the poor (Secchi, 2013), which not only translates social inequalities into spatial inequalities, but reinforces the former through the latter (Moreno, 2020; Carrera, 2020; Slaughter Brown, 2017).

The presence of these and other types of accessible and properly infrastructure public and semi-public spaces, when widespread across the territory, gives concrete form to the right to ageing in place (Wiles et al., 2011; Morganti, 2022; Robison et al., 2012; Pani-Harreman et al., 2000), that is, the right to age while remaining in one's place of residence so as not to disperse the social capital built over time. Moreover, as noted, even to go beyond this in order to guarantee the right to ageing in the right place, which does not end with the mere possibility of continuing to live in one's own residential context, but takes shape in the right for that context to be effectively and fully adequate to meet the needs expressed by older people, their desires, and to allow them levels of future proneutrality (Carrera, 2025b).

The central function of space does not end with reference to its public dimension, and the right to the "right place" also emerges with reference to private space, and in relation to one's own dwelling. If, on the one hand, losing it and being forced to leave it can generate a sense of disorientation capable of profoundly affecting levels of well-being and quality of life, on the other hand one cannot overlook the risk that the home may turn into a trap, both when, in the absence of social networks, individuals find themselves living in conditions of isolation, and when a series of constraints prevent the transformation of that same space so that it may be made functional to changing needs. Alongside policies aimed at redeveloping public space to make it more accessible and usable for older people, those intended to support the redesign of private space and the development of new forms of dwelling therefore assume crucial importance (Carrera, 2026). Going beyond the dichotomy between public and private space and overcoming any rigid

logic of boundaries, it is necessary to rethink urban spaces as network cities, as integrated systems capable of giving form and substance to the right to the dwelling (Boni and Poggi, 2011).

In this perspective, dwelling is configured as an articulated set of material, symbolic, and relational conditions that enable individuals to fully participate in urban life. Network-cities, with their multiple connections and the fluidity of their spaces, can foster equitable access to services, sustainable mobility, the widespread presence of places of sociality, and the construction of inclusive communities. Rethinking dwelling in a network-based key starting from "systems of proximity" (Carrera, 2025) thus means imagining a city capable of integrating domestic space, proximity services, third spaces, and relational infrastructures, guaranteeing conditions of livability that support autonomy, safety, well-being, and social participation. In this way, the right to live in a city that not only welcomes but also connects, supports, and recognizes the plurality of forms of life that pass through and live it. In considering the effects of a deeply interconnected city on older subjects, it is essential to avoid any drift toward paternalistic or stereotyped visions of ageing. Rethinking dwelling in an integrated key does not, in fact, mean designing spaces "for" older people as if they were a fragile and homogeneous category, but rather recognizing the plurality of ways of being and living this phase of life, removing it from ageist prejudices that reduce it to decline, dependence, or marginality. This implies infrastructures that enable autonomy and mobility, third spaces that foster social presence and meaningful relationships, and proximity services that support individual choices rather than imposing predefined life trajectories.

Avoiding ageism also means recognizing older people's complete legitimacy to live in the city in an active, creative, and sometimes unpredictable way: not only as recipients of policies, but as fully fledged urban actors. Network-cities, if designed from an inclusive perspective, can therefore become contexts in which generational differences do not produce hierarchies, margins, and exclusions, but are translated into forms of coexistence capable of enriching both individual lives and collective life. Network-cities are also those that welcome and connect without demanding integrative practices from subjects. In this sense, an inclusive city does not place older subjects at the material. Symbolic margins of urban space do not create suitable places that end up becoming gilded cages, relegating them to an elsewhere, but rather make these subjects, their needs, and their desires the parameters for rethinking and redesigning urban space, allowing differences to inhabit it without the constraints of space and time. Urban space thus becomes not only the place where the conditions for active ageing take shape, but also an

indispensable strategic element of it. In this sense, an inclusive city does not "adapt" older people to urban space, but transforms urban space so that it can welcome later life and all ages, without exceptions or stigmas.

Drawing on a neo-conflictual and neo-materialist perspective, in line with Harvey's (2016) contribution on the right to the city, the quality and material characteristics of public space can significantly influence the practices of use and the concrete opportunities available to individuals. Older people are more exposed to the effects of environmental press (Lawton & Nahemow, 1973), that is, to the interaction between personal capacities and the demands posed by the urban environment (Mollenkopf et al., 2002; Plouffe & Kalache, 2010; Rocha et al., 2021). Poorly maintained public spaces or those lacking adequate infrastructures can generate exclusion, reducing opportunities for autonomous activities, everyday movement, and social interactions (Van Cauwenberg et al., 2014; Mehta, 2013; Jacobs, 1961). Within this framework, the "system of proximity" (Carrera, 2025) assumes a strategic function. This refers to the network of services and facilities available within the radius of everyday life, conceptually akin to the "15-minute city" (Moreno, 2020), and composed of territorial socio-health facilities, neighborhood shops, equipped public spaces, community gardens and allotments, accessible mobility networks, cultural venues, and infrastructures of sociality. This ecosystem of proximity acts as essential and strategic social infrastructure (Klinenberg, 2018), strengthens individual and community resilience, and supports the maintenance of autonomy among older subjects.

2.5 Research design, methodology and sampling. "Acting proximity system. Older age, walkability practices and active ageing"

This study employed a qualitative, ethnographic approach to explore the lived experiences of urban mobility among older adults in the metropolitan area of Bari (Italy). The primary objective was to conduct an in-depth analysis of how older individuals use and perceive spaces of proximity, to develop an analytical model applicable to other contexts and territorial scales. A purposive sampling strategy was utilized to recruit 83 participants aged 65 and over. This non-probability sampling technique was chosen to deliberately select individuals who could provide rich, relevant, and diverse insights into the phenomenon under investigation. The sample was intentionally heterogeneous and included a subset of non-self-sufficient older adults. While acknowledging that non-self-sufficiency is a complex field requiring dedicated inquiry, the inclusion of these participants was a strategic decision to

begin capturing their unique needs and desires regarding urban space, enabling a preliminary comparison with the broader sample.

The primary data collection method was a semi-structured interview. This method was selected for its flexibility, which allows researchers to explore emergent themes and delve deeply into participants' personal choices, motivations, and the meanings they attribute to their mobility practices (Carrera, 2025c; Burlando et al., 2021; Hollands, 2008). The semi-structured format provided a consistent framework of questions while affording the freedom to probe for more detailed responses, thus avoiding the rigid constraints of standardized, quantitative instruments. Each interview was recorded and transcribed, creating a rich dataset of qualitative protocols for analysis.

2.5.1 Data analysis and measures

A thematic analysis approach was applied to the transcribed interview protocols (Braun & Clarke, 2006). This process involved systematically identifying, analyzing, and reporting patterns (themes) within the data. The research team coded the interview data to identify key concepts related to the quality of public space, functional autonomy, and mobility practices. These concepts included the presence and accessibility of public spaces, availability of green areas, perceived safety, availability of street furniture (benches, shaded areas), the quality of social networks, and the interplay between walking and car use. Through the iterative process of coding and theme development, a comprehensive typology emerged that categorizes the different ways older adults experience and navigate their urban environment. This typology serves as the core of the study's findings, illustrating the significant impact of personal and environmental variables on the quality of life and active ageing.

The survey "Acting proximity. Older age, walkability practices and active ageing", conducted within the framework of the activities of the "Age-IT"[3]

[3] The national research project AGE-It "Ageing well in an ageing society" is a national research programme funded by PNRR resources, aimed at reflecting on and developing, through an interdisciplinary approach, proposals for policies capable of supporting and promoting healthy and active ageing. It brings together universities, research institutes, and enterprises to develop biomedical, social, and technological solutions aimed at improving the quality of life of older subjects and at making An ageing society is sustainable. AGE-It has sought to address the complexity of the ageing process by structuring itself into 10 transdisciplinary Spokes, ranging from social policies to demography, from medicine to transport economics, from civil and comparative law to psychology and biology, in turn divided into specific WPs (Work Packages) and Tasks. This complex project structure derives from the awareness that the ageing process is, as noted, a "total social fact" and that, for this very reason,

project and whose results are discussed here, was characterized by the use of a qualitative methodology based on the tool of semi-structured interviews, which make it possible to explore not only observable behaviors, but also the choices, motivations, and meanings that orient them, while at the same time avoiding the excessively rigid constraints typical of standardized instruments[4]. The protocols obtained from interviews conducted on a purposive sample of older subjects over 65 years of age and subjected to thematic analysis made it possible to obtain a typology[5] capable of showing the weight of specific variables and, above all, of serving as guidance for policies that set themselves the objective of guaranteeing high levels of quality of life and widespread conditions for processes of active ageing.

The objective of the survey was not to articulate the complexity of the condition of older age in all its potential forms, but to analyze the practices of use of spaces of proximity enacted by older subjects in order to make them a point of maximum visibility, à la Jhering, with a view to the possibility of creating a sort of analytical model referable to other places and even to other territorial scales.

While fully aware of the specificities associated with low levels of autonomy and conditions of non-self-sufficiency, which require specific investigations that are in any case ongoing, it was decided to include in the sample some non-self-sufficient older subjects. There is full awareness that non-self-

it requires high levels of inter- and transdisciplinary investigation that go beyond traditional representations of ageing and can account for the new frontiers of disciplinary reflection.

[4] This interview model, in fact, combines the flexibility of open dialogue with a predefined thematic guide, allowing the researcher to investigate in depth the subjective interpretation that individuals attribute to their own experiences. Such an approach has enabled the identification not only of explicit elements but also of latent dimensions, decision-making processes, perceptions, and value systems that orient action. Unlike quantitative methodologies, which tend to reduce complexity through standardized procedures, the semi-structured interview enhances subjectivity, contextuality, and the stratified nature of social phenomena, proving particularly effective for the analysis of subtle, interstitial dynamics that are difficult to capture with rigid instruments.

[5] In Max Weber's sociological thought, typification is a fundamental tool for understanding social reality. It is based on the construction of "ideal types" (*Idealtypen*), conceptual models that do not directly describe empirical reality, but emphasize specific traits for analytical purposes. The ideal type is neither a statistical average nor a concrete example, but a logical-formal model, intentionally constructed to highlight causal relations, subjective motivations (the intended meaning of the acting subject), or forms of rationality. It allows the sociologist to compare real cases with the theoretical construct to understand deviations, convergences, or social processes. Weber applies this method, for example, in distinguishing between forms of power (rational-legal, traditional, charismatic) and between types of social action (instrumentally rational, value-rational, affective, traditional). Typification is therefore a heuristic process aimed at interpretive understanding (*Verstehen*) of human action (Weber, 1905; 1922; Berger, Luckmann, 1966).

sufficiency represents a field of research characterized by a peculiar complexity in which biographical, family, institutional, socio-economic, and territorial dimensions overlap and which deserves entirely specific attention6. However, it was decided to include some subjects presenting these characteristics in order to begin to understand needs and desires to be brought into interaction with those that emerge more clearly from the rest of the sample considered.

In conclusion, the reflections proposed here aim to offer a sociological lens capable of grasping the richness and variability of contemporary older-age experience, without claiming exhaustiveness, but with the ambition to trace some significant lines of tendency. The transformations in the practices of spaces of proximity analyzed show that ageing can no longer be read in static terms of traditional models but must be understood as a dynamic social space traversed by practices, desires, vulnerabilities, and heterogeneous potentials. Within this framework, the reference to a more focused analysis of the issue of non-self-sufficiency represents not a withdrawal, but a commitment to addressing it with the depth it deserves. What emerges overall is the image of an older age in profound redefinition, in which new ways of inhabiting urban space, moving, planning, relating, and claiming protagonism in the city and in society are intertwined. Recognizing this plurality does not mean dissolving contradictions, but instead assuming them as an integral part of a historical process still fully underway, toward which social research is called to maintain a critical gaze attentive to its multiple future trajectories. The analysis of the 83 interviews conducted in the metropolitan area of Bari made it possible to define a four-type typology with reference to the relationship between the quality of public space of proximity, the level of functional autonomy, and mobility practices in later life. The typology emerges from the intersection of a set of parameters that include: the presence and accessibility of public spaces, the availability of gardens and green areas, perceived safety along everyday routes, the availability of material devices for resting (benches, shaded areas, drinking fountains, toilets), the quality of relational networks, the support offered by family members and acquaintances, as well as the relationship between walking and car use. These elements, combined

[6] As Giovanni Lamura observes, long-term care, understood well beyond the level of the institutionalization of subjects, "requires conceptual tools capable of grasping multilevel interactions and welfare systems in continuous transformation" (Lamura, 2017). It is therefore necessary to be aware of how difficult it is, and how much caution it requires, to include these subjects in a research project predominantly focused on new forms of agency and participation in later life; for this reason, it was decided to initiate a first line of reflection that will be further articulated and deepened in subsequent research that has already been launched.

with the level of physical autonomy and the ability to orient oneself in urban space, made it possible to outline four forms of "dwelling proximity" that describe in differentiated ways how older people practice the city and which conditions enable or limit their mobility. The combination of these elements made it possible to define a four-entry typology: pedestrians by choice, selective pedestrians, anchored to micro-proximity, and urban withdrawn. Subjects referring to these four types are to be considered as points along a hypothetical continuum, and their typological distribution makes it possible to understand the weight of different personal and territorial resources and the repercussions of these on the quality of the practice of urban space and, through this, on the very quality of life experienced.

2.5.2 Results. The four typologies of dwelling proximity

The thematic analysis of the 83 semi-structured interviews conducted in the metropolitan area of Bari revealed a four-type typology that describes the relationship between the quality of urban proximity, the level of functional autonomy, and the mobility practices of older adults. This typology illustrates the varied ways in which older individuals experience and interact with their urban environment, highlighting the factors that either enable or constrain their mobility and, consequently, their quality of life. The four types are: Pedestrians by Choice, Selective Pedestrians, Anchored to Micro-Proximity, and Urban Withdrawn. These types are not discrete categories but rather represent points along a continuum, reflecting the dynamic interplay between personal resources and the characteristics of the urban landscape.

Table 1 is a summary table with 4 rows and 4 columns that outlines the key characteristics of 4 distinct typologies of older adults based on their mobility and relationship with their urban environment. The columns are: "Typology," "Key characteristics," "Mobility practices," and "Relationship with Proximity."

The four typologies are: (1) *Pedestrians by Choice* - High physical and functional autonomy; walking is an identity-based choice and a way of inhabiting the city. Proximity is enabling and functions as an infrastructure of autonomy. (2) *Selective Pedestrians* - Good but cautious autonomy; selective walking on familiar, safe routes, with avoidance of risky areas. Proximity is partially adequate, with a mix of safe and problematic zones. (3) *Anchored to Micro-Proximity* - Reduced functional autonomy; mobility is constrained to a 100-300-meter radius around the home. Proximity is a constraint, where minor obstacles can determine mobility. (4) *Urban Withdrawn* - Very low

autonomy, physical frailties, and insecurity; walking is for essential activities only, often requiring assistance. Insufficient proximity leads to a progressive withdrawal from the urban environment.

Table 1 – Summary of typologies

Typology	Key characteristics	Mobility practices	Relationship with Proximity
Pedestrians by Choice	High physical and functional autonomy	Walking is an identity-based choice, a way of inhabiting the city	Proximity is enabling, functioning as an infrastructure of autonomy
Selective Pedestrians	Good but cautious autonomy	Selective walking on familiar, safe routes; avoidance of risky areas	Proximity is partially adequate, with a mix of safe and problematic zones
Anchored to Micro-Proximity	Reduced functional autonomy	Mobility is constrained to a 100–300-meter radius around the home	Proximity is a constraint, where minor obstacles can determine mobility
Urban Withdrawn	Very low autonomy, physical frailties, and insecurity	Walking is episodic and for essential activities only, often requiring assistance	Insufficient proximity leads to a progressive withdrawal from the urban environment

1. *Pedestrians by Choice*: enabling proximity and high autonomy

This group consists of individuals with a high level of physical and functional autonomy. For them, walking is not merely a means of transportation or a health-related activity, but a fundamental part of their identity and a way to actively inhabit the city. The urban environment for these individuals is characterized by high-quality proximity, with accessible public spaces, well-maintained gardens, continuous sidewalks, and a sense of safety. This enabling environment supports their daily walking practices, which, in turn, reinforce their self-esteem, social participation, and sense of normalcy. The system of proximity acts as a proper infrastructure of autonomy, fostering social connections and a strong sense of belonging to the neighborhood.

Key qualitative finding: “The first type consists of subjects with a high level of physical and functional autonomy, for whom walking represents a genuine identity-based choice... For these older people, walking is not merely a health-related behavior. Still, it constitutes a way of inhabiting the

city that strengthens self-esteem, the perception of normality in everyday life, and social participation".

2. *Selective Pedestrians*: partially adequate proximity and intermediate autonomy

The second typology includes older adults who, while still possessing a good level of autonomy, exhibit more caution and selectivity in their mobility choices. Their urban environment is perceived as uneven, with safe, well-maintained areas interspersed with problematic zones, such as complex intersections or a lack of resting places. This leads to a more circumscribed use of walking, with individuals sticking to familiar, trusted routes. Perceived safety, particularly regarding traffic, is a key factor in their decision-making. While they may still use a car, its use is often limited or delegated to family members for longer journeys, making it a supplementary rather than a primary mode of transport.

Key qualitative findings:

"This condition generates a circumscribed and conditioned use of walking: subjects willingly walk within familiar routes recognized as safe but avoid movements that would require crossing traffic nodes perceived as risky or that entail the absence of opportunities for rest".

3. *Anchored to Micro-Proximity:* reduced autonomy and proximity as constraint

This group is characterized by reduced functional autonomy, which significantly narrows their mobility radius to a mere 100-300 meters from their homes. For these individuals, the quality of the immediate public space is paramount. Seemingly minor details, such as a single step, an uneven sidewalk, or the absence of a bench, can become insurmountable barriers that prevent them from leaving their homes. Their movements are typically limited to essential destinations like the local shop or pharmacy. Social interactions are also confined to this micro-sphere, with neighbors and local shopkeepers forming the core of their relational network. Walking is a necessity rather than a choice, as it is often the only form of autonomous mobility available to them.

Key qualitative findings:

"Seemingly minor elements, the presence of steps, uneven sidewalks,

stretches without shade, the lack of benches and handrails on sloping sections can heavily influence mobility choices, to the point of determining the possibility or impossibility of leaving the home".

4. *Urban Withdrawn:* insufficient proximity, minimal autonomy, and residual mobility

The final typology comprises individuals with very low autonomy, often compounded by physical frailty, balance issues, or a strong sense of insecurity. For this group, even a partially adequate system of proximity is not enough to encourage mobility. The perception of risk, a lack of familiarity with the external environment, and a reduced capacity for orientation make walking an episodic and often stressful activity, confined to the most essential outings and almost always requiring assistance. Their social networks are typically weak, and they are heavily reliant on family members or caregivers for support. This leads to a progressive withdrawal from the urban environment, marking a growing distance from the city and its social and relational opportunities.

Key qualitative findings:

"In these cases, more than a relationship with proximity, a process of urban withdrawal emerges, marking a growing distance from the city and from its relational opportunities".

2.5.3 Visualizing the typology

The following matrix illustrates the relationships among functional autonomy, proximity quality, and the four typologies of urban mobility among older adults. The typology is structured along two axes: the level of functional autonomy (vertical) and the quality of urban proximity (horizontal). This two-dimensional framework demonstrates how the intersection of personal and environmental factors produces distinct patterns of urban engagement.

Figure 1: 2x2 matrix illustrates the "Typology of Dwelling Proximity Among Older Adults," based on 63 interviews in Bari, Italy. The vertical axis represents the "Level of Functional Autonomy" (from Low to High), and the horizontal axis represents the "Quality of Urban Proximity" (from Low to High). The matrix is divided into four colored quadrants: Top-Right (Green) "Pedestrians by Choice" (High Functional Autonomy, High Urban Proximity); Top-Left (Yellow) "Selective Pedestrians" (High Functional

Autonomy, Low Urban Proximity); Bottom-Right (Orange) "Anchored to Micro-Proximity" (Low Functional Autonomy, High Urban Proximity); Bottom-Left (Red) "Urban Withdrawn" (Low Functional Autonomy, Low Urban Proximity).

Figure 1 – Typology of dwelling proximity among older adults

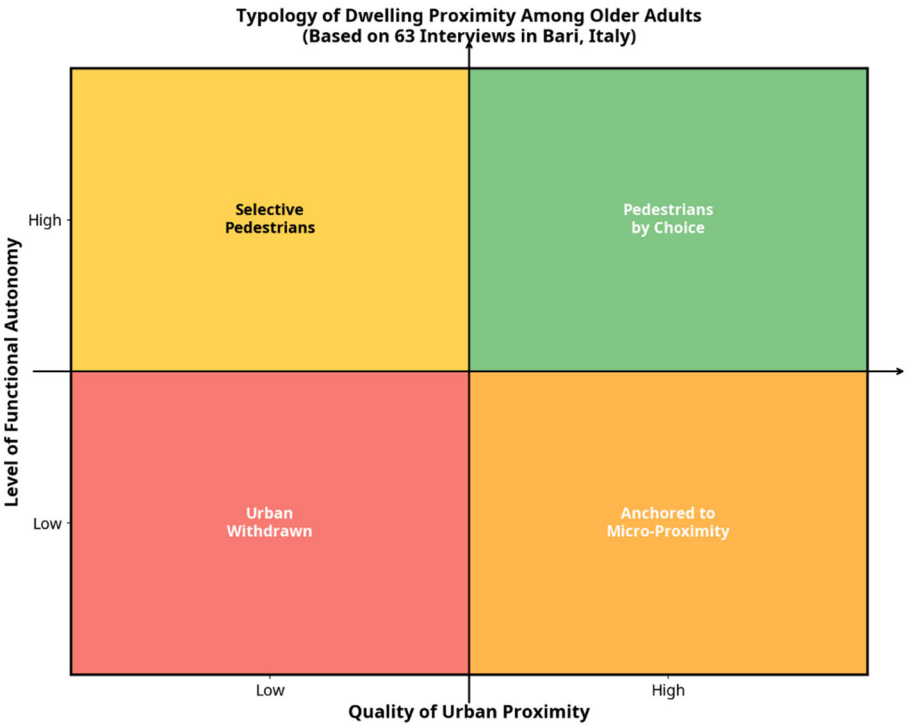
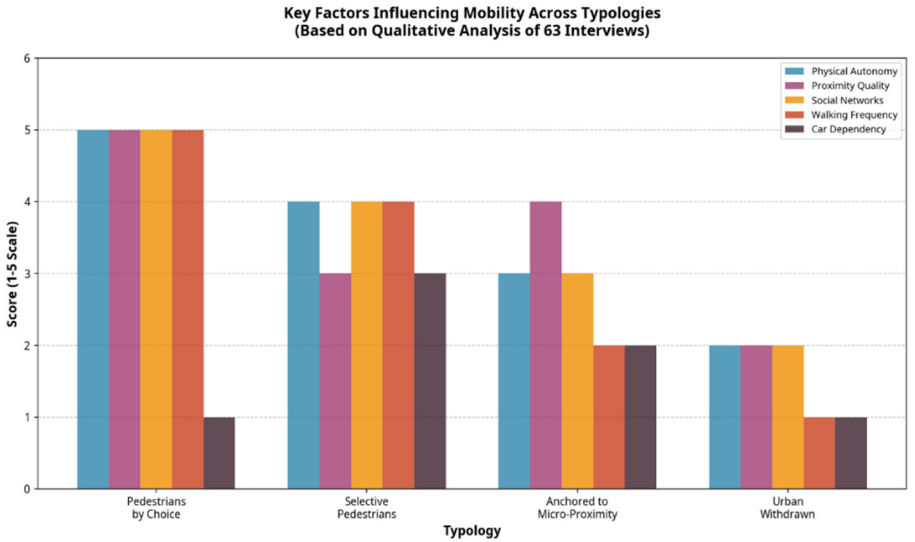


Figure 2. The following figure 2 shows a grouped bar chart titled "Key Factors Influencing Mobility Across Typologies", based on a qualitative analysis of 63 interviews. The chart displays scores on a 1-5 scale for five key factors, compared across the four typologies of older adults. The typologies are represented by different colored bars (blue for Pedestrians by Choice, purple for Selective Pedestrians, orange for Anchored to Micro-Proximity, and red for Urban Withdrawn). The chart demonstrates a transparent gradient from the highly mobile "Pedestrians by Choice" to the "Urban Withdrawn," highlighting the cumulative impact of declining autonomy and inadequate urban proximity.

Figure 2 – Key factors influencing mobility across typologies



2.5.3.1. Comparative analysis: Pedestrians by Choice vs. Selective Pedestrians

The two most mobile typologies, such as Pedestrians by Choice and Selective Pedestrians, represent distinct patterns of urban engagement that merit detailed comparison. Understanding the differences between these groups is essential for developing targeted interventions that can support the transition from cautious, circumscribed walking to confident, identity-affirming urban engagement.

Table 2 shows a comparison table outlining the key differences between "Pedestrians by Choice" and "Selective Pedestrians" across five dimensions. The columns are "Dimension," "Pedestrian by Choice", and "Selective Pedestrians". The dimensions compared are: (1) Autonomy Level - High physical and functional autonomy vs. Good but cautious autonomy; (2) Walking Motivation - Identity-based choice vs. Health and necessity-driven; (3) Perception of Proximity - Enabling infrastructure vs. Partially adequate with safe and problematic zones; (4) Route Selection - Flexible and exploratory vs. Circumscribed and habituated; (5) Car Use - Minimal dependency vs. Supplementary but retained.

Table 2 – Overview of key differences

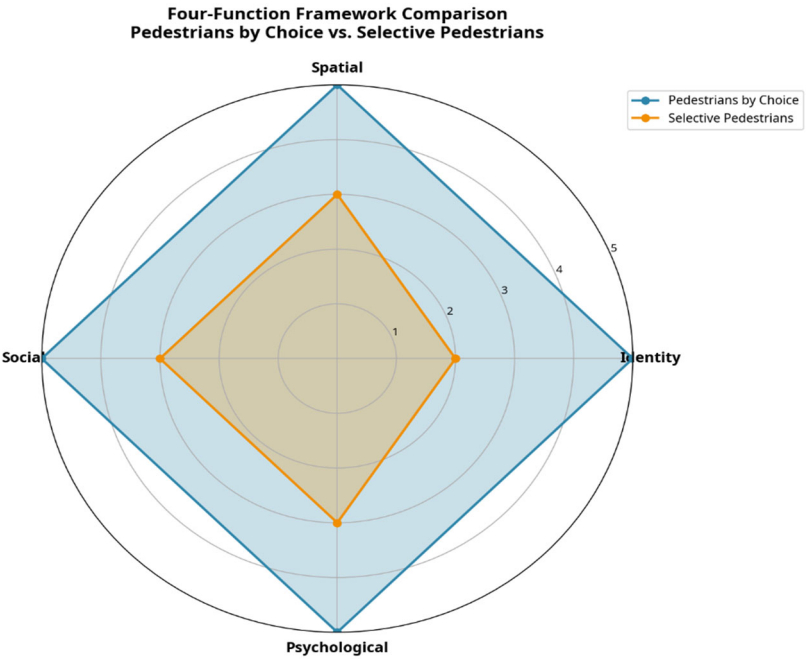
Dimension	Pedestrian by Choice	Selective Pedestrians
Autonomy Level	High physical and functional autonomy	Good but cautious autonomy
Walking Motivation	Identity-based choice; walking as a way of inhabiting the city	Health and necessity-driven; walking within perceived safe boundaries
Perception of Proximity	Enabling infrastructure that supports active engagement	Partially adequate; uneven quality with safe and problematic zones
Route Selection	Flexible and exploratory; confidence in navigating diverse spaces	Circumscribed and habitual; adherence to familiar, trusted routes
Car Use	Minimal dependency: walking is the preferred mode	Supplementary but retained; used for complex or distant journeys

2.5.3.2. The four-function framework: a comparative analysis of motivations

To deepen the understanding of the differences between Pedestrians by Choice and Selective Pedestrians, a four-function framework was developed based on the qualitative findings. This framework examines the Identity, Spatial, Social, and Psychological functions that walking serves for each typology.

Figure 3. The following radar chart, titled “Four-Function Framework Comparison: Pedestrians by Choice vs. Selective Pedestrians”, visually summarizes the motivational differences between the two typologies across the four functions. The chart compares the two typologies across four functions: Spatial, Identity, Psychological, and Social. Two concentric diamonds are shown. The outer, larger blue diamond represents “Pedestrians by Choice”, indicating a holistic, positive engagement with walking across all dimensions. The inner, smaller, orange diamond represents “Selective Pedestrians”, suggesting a more constrained profile, with lower scores across all areas, particularly in the identity domain.

Figure 3 – Four-function framework comparison



Identity function

For the Pedestrians by choice group, walking constitutes a genuine identity-based choice. It is not simply something they do; it is fundamental to who they are. Walking represents an active assertion of their status as autonomous, capable urban citizens. The practice of walking is intertwined with their self-concept, and the ability to walk freely through the city reinforces their sense of being a full participant in urban life. Their identity as "walkers" is a source of pride and personal meaning.

For the Selective Pedestrians group, walking is primarily a functional and instrumental activity rather than an identity marker. They walk because it is necessary for daily tasks and beneficial for health, but their sense of self is not fundamentally tied to their walking practices. Their identity is more likely to be shaped by other factors (family roles, past professional identities, etc.), and walking is viewed as an end rather than a means.

Spatial function

The Pedestrians by Choice experience a strong and expansive sense of spatial belonging. The high quality of their urban proximity generates a sense of

familiarity with the neighborhood that extends across a relatively wide radius. They feel comfortable exploring diverse routes and destinations, and their engagement with urban space is characterized by openness and curiosity. The city is perceived as a welcoming environment that invites exploration.

Meanwhile, for the Selective Pedestrians, spatial belonging is circumscribed and conditional. Their perception of the urban environment as having uneven quality leads to a more defensive spatial engagement. They stick to familiar and trusted routes, avoiding areas perceived as risky. Their sense of belonging is limited to a narrower spatial range, and the unfamiliar regions may evoke anxiety rather than curiosity.

Social function

For Pedestrians by Choice, walking serves as a powerful means of social connection and network expansion; the system of proximity functions as an infrastructure that nourishes relational networks through everyday movements. Spontaneous encounters with neighbors, shopkeepers, and acquaintances during walks reinforce social bonds and create opportunities for new connections. Walking is thus a socially generative activity that combats isolation and strengthens community ties.

For the Selective Pedestrians, walking maintains but does not significantly expand social networks. Because their routes are habitual and predictable, their social interactions tend to occur within a more limited and routine set of spaces. They may encounter the same people regularly, which provides a degree of social continuity, but the selective nature of their walking limits opportunities for spontaneous, novel social encounters.

Psychological function

In the Pedestrians by Choice group, walking provides robust psychological benefits. It strengthens self-esteem by affirming their capacity for independent action. It reinforces a perception of normalcy in everyday life; the ability to walk freely signals that they are still fully functioning members of society. Walking also provides a sense of agency and control over one's own life and movements. The psychological experience of walking is predominantly positive, characterized by confidence, pleasure, and a sense of well-being.

For the Selective Pedestrians, the psychological benefits of walking are conditional and tempered by vigilance. While walking may still provide some sense of accomplishment and health benefits, an undercurrent of caution and awareness of potential risks accompanies these. Perceived safety plays a crucial role in shaping the psychological experience of walking.

When conditions are favorable, walking can be enjoyable; when they are not, walking may evoke anxiety or stress.

2.5.4 Discussion

The findings from this ethnographic study in the metropolitan area of Bari provide a nuanced understanding of how the interplay between individual autonomy and the urban environment shapes the mobility and quality of life of older adults. The four-part typology, Pedestrians by Choice, Selective Pedestrians, Anchored to Micro-Proximity, and Urban Withdrawn, demonstrates that the experience of ageing is far from monolithic. Instead, it is a dynamic process deeply embedded in the city's material and social fabric.

The concept of the "system of proximity" (Carrera, 2025) emerges as a critical determinant of well-being in later life. For "Pedestrians by Choice", a high-quality system of proximity serves as enabling infrastructure, supporting their active engagement with the urban environment. This aligns with the WHO framework for age-friendly cities, which emphasizes the role of the built environment in promoting health and participation (WHO, 2007). Conversely, for the "Urban Withdrawn", the lack of such a system contributes to a form of "soft expulsion" from public life, reinforcing the notion that urban space is not a neutral container but a "passively active" force that can either include or exclude (Amin & Thrift, 2002).

The experiences of the "Selective Pedestrians" and those "Anchored to Micro-Proximity" highlight the significance of micro-level urban design. The presence or absence of benches, the condition of sidewalks, and the perceived safety of street crossings are not minor details but critical factors that can determine an older person's ability to navigate their environment. This supports the argument that urban planning must move beyond a focus on large-scale infrastructure and attend to the fine-grained details of the pedestrian experience (Gehl, 2010). The study's findings also underscore the importance of the "right to walkability" as a fundamental component of the "right to the city" for older adults (Lefebvre, 1968).

The four-function framework analysis reveals that the transition from Selective Pedestrians to Pedestrians by Choice is not simply a matter of physical capacity but involves a fundamental shift in how walking is experienced across identity, spatial, social, and psychological dimensions. This suggests that interventions aimed at supporting older adults' mobility must address not only physical barriers but also the conditions that enable walking to become a meaningful, identity-affirming practice.

2.6 Urban design interventions

Based on the qualitative findings and the four-function framework analysis, three concrete urban design interventions are proposed to facilitate the Selective Pedestrians' transition toward the spatial and social motivations characteristic of Pedestrians by Choice.

Intervention 1: pedestrian comfort corridors with rest stations

The qualitative findings indicate that Selective Pedestrians avoid routes that "entail the absence of opportunities for rest". By guaranteeing predictable rest opportunities, this intervention reduces the perceived risk of fatigue-related incidents and extends the spatial radius within which older adults feel confident walking. The objective is to expand the range of "safe" and comfortable walking routes by creating continuous pedestrian corridors equipped with regular rest opportunities. Table 3 gives an overview of this synthesis.

Table 3 – Summary of pedestrian comfort corridors with rest stations intervention

Element	Specification
Bench spacing	Every 100-150 meters along primary pedestrian routes
Shade structures	Canopy trees or pergolas at rest stations
Seating design	Benches with armrests and backrests; varied heights
Supplementary amenities	Drinking fountains and accessible public toilets at key nodes
Wayfinding signage	Clear indicators showing the distance to the next rest station

Table 3 summarizes the specifications for creating pedestrian comfort corridors with rest stations. The table has two columns: "Element" and "Specification". The elements and their specifications are: Bench spacing - Every 100-150 meters along primary pedestrian routes; Shade structures - Canopy trees or pergolas at rest stations; Seating design - Benches with armrests and backrests, varied heights; Supplementary amenities - Drinking fountains and accessible public toilets at key nodes; Wayfinding signage - Clear indicators showing the distance to the next rest station.

Intervention 2: safe crossing zones with extended pedestrian phases

The study found that "perceived safety, especially about traffic and vehicle speed, plays a crucial role in defining the practicability of spaces" for

Selective Pedestrians. By redesigning crossings to accommodate slower walking speeds and provide mid-crossing rest options, this intervention reconnects previously isolated areas. The objective of this intervention is to reduce the barrier effect of complex intersections and traffic nodes by creating clearly demarcated, senior-friendly crossing zones.

Table 4 – Safe crossing zone pedestrian phases

Element	Specification
Extended signal timing	Pedestrian crossing phases calculated at 0.8 m/s walking speed
Countdown displays	Visual timers showing remaining crossing time
Raised crosswalks	Level with the sidewalk to remove curb negotiation
Refuge islands	
High-visibility markings	Contrasting colors and textures
Audible signals	Acoustic cues for visually impaired users

Table 4 outlines the specifications for creating safe crossing zones with pedestrian phases. The table has two columns: "Element" and "Specification". The elements and their specifications are: Extended signal timing - Pedestrian crossing phases calculated at 0.8 m/s walking speed; Countdown displays - Visual timers showing remaining crossing time; Raised crosswalks - Level with the sidewalk to remove curb negotiation; Refuge islands - Mid-crossing rest options; High-visibility markings - Contrasting colors and textures; Audible signals - Acoustic cues for visually impaired users.

Intervention 3: neighborhood social anchors (Third Spaces)

The study emphasizes that for Pedestrians by Choice, "the system of proximity functions as a true infrastructure of autonomy, also thanks to the presence of relational networks that are nourished through everyday movements". By creating attractive social destinations, this intervention provides "reasons to walk" that extend beyond functional necessity. The objective of this intervention is to create strategically located "third spaces" that serve as social destinations and catalysts for spontaneous interaction.

The study results emphasize that for Pedestrians by Choice, "the system of proximity functions as a true infrastructure of autonomy, also thanks to the presence of relational networks that are nourished through everyday movements". By creating attractive social destinations, this intervention provides "reasons to walk" that extend beyond functional necessity. The

objective here is to create strategically located "third spaces" that serve as social destinations and catalysts for spontaneous interaction.

Table 5 – Neighborhood social anchors

Element	Specification
Location	Within 300-400 meters of residential clusters
Design typology	Small public plazas, pocket parks, or covered community pavilions
Seating arrangements	Clustered seating to facilitate conversation
Activity programming	Low-threshold activities (outdoor chess, community boards, markets)
Microclimate design	Wind protection, shade in summer, sun exposure in winter
Accessibility	Level access, clear sightlines, adequate lighting

2.7 Conclusions. Towards a *long-term* and *age-friendly oriented city*

This ethnographic study of 83 older adults in Bari, Italy, offers valuable insights into the lived experience of ageing in a contemporary urban context. By focusing on walking and the use of proximate spaces, the research highlights the critical role of the urban environment in shaping older individuals' autonomy, social participation, and overall quality of life. The developed typology of "dwelling proximity" serves as a powerful analytical tool for understanding the diverse ways in which older adults navigate their cities and underscores the urgent need for urban policies sensitive to the needs of an ageing population. Urban welfare must, in this sense, assume a more markedly territorial dimension, overcoming the idea of "active ageing" as a set of individual performances and shifting attention toward the spatial, economic, and social conditions that make everyday self-determination possible (Carrera, 2025b; Martin, Williams & O'Neill, 2013). In this sense, policies such as the solidarity neighborhoods, the promotion of senior cohousing, the redevelopment of pedestrian routes and the creation of new neighborhood centralities, tactical urbanism interventions (Carrera, 2025b), targeted urban acupuncture (Lerner, 2003), cultural opportunities for sociality and leisure distributed across the entire urban territory, and functional design constitute examples of integrated interventions capable of promoting ageing in the right place, strengthening social cohesion, and countering the risks of relational poverty. Integrating urban planning and urban welfare policies, therefore,

means adopting a long-term-oriented approach that recognizes longevity as a resource rather than only a challenge.

Cities that invest in proximity, accessibility, high-quality public spaces, and social infrastructures produce not only benefits for the older population but also generate widespread advantages for all their inhabitants, fostering equity, sustainability, and inclusion in the long term. The goal is not a city "for older people", but a city capable of accompanying trajectories of active life, adapting to the needs that emerge with age and restoring to every individual the possibility of fully exercising their right to the city and to dwelling in space. The four-function framework (Identity, Spatial, Social, Psychological) provides a comprehensive lens for understanding the qualitative differences between typologies and for designing interventions that address not only physical barriers but also the conditions that enable walking to become a meaningful, identity-affirming practice. The proposed urban design interventions, namely Pedestrian Comfort Corridors, Safe Crossing Zones, and Neighborhood Social Anchors, offer concrete, evidence-based strategies to support Selective Pedestrians' transition toward the Pedestrians by Choice pattern.

The key performance indicators and diagnostic interpretation matrix provide a robust framework for monitoring intervention effectiveness and adapting policies based on empirical outcomes. This adaptive approach recognizes that urban interventions may have differential effects across the multiple dimensions of mobility experience and that ongoing evaluation is essential for achieving the goal of age-friendly urban environments. Future research should continue to explore the complex interplay between ageing, mobility, and the urban environment. Longitudinal studies could provide valuable insights into how mobility patterns change over time and how both personal and environmental factors influence these changes. By continuing to build a rich evidence base, we can work towards creating cities that are not only age-friendly but also truly inclusive and equitable for all.

In this perspective, without proximity, without continuous and welcoming public spaces, without relational networks and support devices, ageing tends toward forms of vulnerability and withdrawal; with a well-structured proximity, by contrast, it becomes an opportunity for greater urban inclusivity and for a more equitable and healthy redefinition of public space. The proximity system emerges as a territorial public good, indispensable for supporting autonomy, reducing inequalities, promoting active lifestyles, and guaranteeing the right to the city across all phases of life (Gehl, 2010; Speck, 2012). Investing in the quality of systems of proximity, in their material, social, and symbolic components, means investing in the city's capacity to

enable its inhabitants to age well and actively, transforming the extension of life into a resource for rethinking contemporary urbanity in the light of the principles of just and inclusive cities that are friendly to older people and to urban health.

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3. Governing demographic ageing in the technological era: a legal perspective

by *Claudia Morgana Cascione*

Abstract

The essay analyses, from a legal perspective, the complex relationship between demographic ageing and technological progress. Despite the potential benefits that technology can bring to older people, especially in terms of active and healthy ageing, the relationship between ageing and progress is very complex and involves numerous relevant aspects.

Three different profiles that require a legal analysis are investigated: access to digital services, personal data protection and risks of manipulation, especially through the use of artificial intelligence tools.

In terms of access, the digital welfare state brings with it the inevitable paradox that precisely those who would be most in need of services and assistance (such as the older persons) are in fact excluded from it.

Moreover, the digitization of public services, and in particular health services, involves the collection and processing of large amounts of data and information, many of which of a sensitive nature. In the absence of explicit references to advanced age (and vulnerability in general) in the GDPR, there is a problem with the effective protection of the personal data of older people.

Finally, the spread of artificial intelligence technologies multiplies the risks to which older individuals are exposed; in particular, risks of manipulations or deceptive practices enabled by AI through the exploitation of vulnerabilities associated with advanced age.

Aim of the research is to assess if law is able to reconcile, with reference to the issues mentioned, the apparent antinomy between progress and ageing and to evaluate if appropriate measures have been introduced, both at national and international level, to integrate seniors in the digital society.

Keywords: Ageing; technological progress; digital welfare; data protection; AI

3.1 Foreword: a society that ages while technology accelerates

The aim of the present research is to explore the convergence between two of the major phenomena of the 21st century: population ageing and technological progress. These are, of course, two distinct phenomena that characterise, at the same time, contemporary societies which, moreover, will become increasingly older and increasingly digital.

Despite the progressive rise in longevity and the undoubted advantages that technology can bring to promote active ageing, the relationship between ageing and progress is proving to be very complex.

On the one hand, demographic ageing brings with it the need to adapt social and legal structures to qualitative and quantitative changes of the population[1]; consequently, the goal of policy makers and legislators, at national and international level, is to integrate older people into society, guaranteeing respect for their fundamental rights[2] on equality basis.

This is evident, at programmatic level, in Article 25 of the Charter of Nice[3] and in Article 23 of the Revised European Social Charter[4], which obliges states to ensure that older persons remain full members of society and have the right to participate in the various areas of individual and collective life.

On the other hand, the technological progress has accelerated at an unprecedented pace, reshaping nearly every aspect of daily life, from communication and healthcare to work and public services. The benefits that

[1] See Cascione C.M., "Demography and comparative law: tracing a fruitful relationship", in Cardarelli F., Frosini T.E., Poillot E., Resta G., Sica S., Zoppini A. (eds.), *Il valore del dissenso. Riflessioni con Vincenzo Zeno-Zencovich*, Roma Tre Press, Roma, 2025, pp. 1399 - 1429.

[2] Martin C., Rodríguez-Pinzón D., Brown B. (2015), *Human Rights of Older People. Universal and Regional Legal Perspectives*, Springer, Dordrecht, *passim*.

[3] Art. 25 of the Charter of Fundamental Rights of European Union: «The Union recognises and respects the rights of the elderly to lead a life of dignity and independence and to participate in social and cultural life». The rule introduces «if not the representation of a protected class, at least a programmatic commitment – addressed to the Commission, the Council and the Member States – towards a coexistence "for all ages"». See Tamponi M. (2020), *Nel diritto della terza età. Le rughe tra giudizio e pregiudizio*, Rubbettino, Soveria Mannelli, p. 48.

[4] For recent updates on the rule see the new factsheet published by Council of Europe (COE, *Rights of Older people- Article 23 of the Revised European Social Charter*, 2025, https://rm.coe.int/prems-013225-gbr-2005-factsheet-on-older-persons-a5-charter-a5-web-fin/488029ae10).

technological progress entails are undeniable, but it raises significant issues in terms of protection of fundamental rights. Despite the intention to create increasingly *human-centric* technologies[5] and despite the development of an "ethics of technology"[6], many ethical, social and legal issues remain unresolved, especially when it comes to assessing the impact of new technologies on older people.

As a matter of fact, population ageing and technological progress are not progressing in a harmonious and integrated way and, indeed, the growing number of seniors risks being marginalised from the process of development and progress. As the spread of technology risks reinforcing inequalities in ageing, there is an evident need for political and legislative interventions to ensure that digital development remains human-centred, inclusive and equitable, allowing older adults to participate fully in the digital development process, rather than being excluded from it.

Technological innovation holds great potential to address many of the challenges associated with ageing. Digital health technologies, such as telemedicine platforms, wearable devices, and remote monitoring systems, enable older adults to manage chronic conditions, maintain regular contact with healthcare professionals, and reduce the need for hospital visits. Smart home technologies – such as automated lighting, voice-controlled assistants, and fall-detection systems – can enhance safety and support independent living. In addition, communication technologies, including video calls and social media, can help reduce social isolation by allowing older people to stay connected with family members, caregivers, and broader social networks[7].

Despite the potential benefits that the digital revolution can bring to older people, the world of technology is not "senior-friendly" and older people are unable to keep up with the speed and complexity of technological change, due to "generational reluctance", lack of skills or a physiological weakening of intellectual or sensory capacities.

This not only widens the digital divide but also increases inequalities and ageism. For older adults – who are unfamiliar with digital platforms, smartphone applications, remote services – the digitisation of most activities, both public and private, not only deprives them of the opportunity to use these services, but it also fuels a mechanism of marginalisation, which

[5] See, *ex multis*, Shneiderman B. (2022), *Human-Centered AI*, Oxford University Press, Oxford.

[6] AI HLEG, *Ethics Guidelines for Trustworthy AI*, 2019.

[7] Risi E., Olivero N. (2007), *L'adozione dei nuovi media da parte degli anziani: un'opportunità da cogliere e da comunicare*, «Micro e Macro Marketing», 1, pp. 7-32.

appears to be contrary to all national, European and international policies on ageing and inclusion.

The age factor, i.e. the advanced age, is now one of the most examined factors of the *digital divide,* which now becomes the *digital grey divide*: reasoning on the basis of the three levels of the divide, theorised by the literature that has dealt with the topic[8], it can easily be observed that the elderly, in most cases (and without overgeneralising), do not have sufficient IT tools, do not have adequate *digital literacy* and do not have the skills to exploit the opportunities offered by new technologies, as well as expressing scepticism about the benefits that ITC could offer[9]. As a direct consequence, they are often excluded from online activities, find themselves unable to take advantage of services that have rapidly become digitised, and become easy prey to manipulation and scams.

The *digital grey divide* has been amplified during the pandemic: the rapid development of technology during the emergency has highlighted the inability of many older people to keep up with the changes[10]. On the one hand, the rapid shift of most daily activities to the online world has highlighted the difficulty for older people in adapting to the virtual world, whose tools were alien, especially in the early stages of the pandemic, to the mindset and practices of adults, who found themselves struggling to access the wide range of services and activities provided online. While it is true that, in general, technology has helped to reduce the negative effects of isolation for most of the population, it is also true that it has had the opposite effect on older people, resulting in the paradoxical situation in which the population most affected by the lockdown was also the least helped by the digital tools designed to mitigate its negative effects.

Beyond the emergency, the ageing of the population therefore presents a critical challenge for technological development: ensuring that innovation is inclusive and responsive to the needs of older users.

This challenge requires developers and deployers to design accessible and elder-friendly devices (simple interfaces, clear language, adjustable text sizes, and intuitive navigation). It requires a commitment from policy makers to promote digital literacy throughout life and to promote the digital inclusion of older people. It requires legislative efforts to regulate emerging

[8] Ragnedda M., Muschert G. (eds.) (2017), *Theorizing Digital Divides*, Routledge, London.

[9] Melchior C. (2022), *Gli anziani e lo scarso utilizzo (e desiderio) di tecnologia digitale*, «Salute e Società», 3, pp. 106-120.

[10] Cascione C.M., "The treatment of the elderly in time of Covid-19: attempts at protection or a new form of ageism?", in Giannone Codiglione G., Pierdominici L. (eds.) *Comparative law in times of emergencies*, RomaTre Press, Roma, 2022, pp. 473 - 494.

technologies without neglecting their impact on the most vulnerable sections of the population[11].

In this latter perspective, the aim of this research is to verify whether and how the law is able to reconcile the apparent antinomy between progress and ageing, and to take into account the peculiarities of old age in the regulation of new technologies. In this way, with reference to the areas in which the risk of digital exclusion of older people is most evident, regulatory solutions and case law interpretations, best practices and codes of conduct will be highlighted, verifying tools and measures to integrate seniors in digital societies.

3.2 Relevant issues and scope of analysis

Since the interaction between ageing and technological progress involves numerous relevant aspects and since it is not possible to generalize the discourse too much, three different profiles that require a legal analysis will be further examined: access to digital services, personal data protection and risks of manipulation, especially through the use of artificial intelligence tools.

The problematic nature of these profiles emerges in several areas:

1. In terms of access, if it is true that digital technologies create a generalised problem of usability and fruition, the negative effects of exclusion are particularly evident in the *digital welfare state:* the digitalisation of public services brings with it the inevitable paradox that precisely those who would be most in need of welfare assistance (such as the older persons) are in fact excluded from it. The difficulty of using digital services, if it impacts the provision of essential services, creates – from a legal perspective – issues of equality, non-discrimination and effective access to rights[12]. Regarding older people (especially those with low incomes or low levels of education), it exacerbates their personal vulnerabilities, transforming them into digital vulnerabilities[13].

[11] Cascione C.M, Vardi N., "Intelligenza artificiale e soggetti vulnerabili. Le pratiche vietate e lo sfruttamento della vulnerabilità", in Cascione C.M, Vardi N. (eds.), *Fragilità e Innovazione. Rischi e tutele per i soggetti vulnerabili nel diritto dell'intelligenza artificiale*, Giappichelli, Torino, 2025, pp. 1-50, spec. 1-17.

[12] The use of algorithms in public administration raises sensitive questions, especially with regard to discretionary activity. As it will not be possible to analyse them in this article, see Azzena L.M. (2021), *L'algoritmo nella formazione della decisione amministrativa: l'esperienza italiana*, «Revista Brasileira de Estudos Políticos», 123, pp. 503-537.

[13] See *infra* §3.3.

2. With regard to privacy issues, technological tools often collect large amount of personal data, including sensitive data. In general, older persons may be less aware of how their data are collected, processed and shared and may have difficulties understanding information or giving truly informed consent. This profile emerges, particularly, in the health sector: telemedicine, the spread of *gerontechnologies*, the progress of wearable technology, the possibility of using IoT devices and, in general, the spread of AI in care entail the collection and processing of large amounts of data and health data. This circumstance calls for thoughts about the protections afforded to older data subjects, especially considering the lack of references to vulnerability in the GDPR[14]. Therefore, a "*elderly-oriented*" interpretation of some disposition of GDPR will be proposed[15].

3. Finally, the latest frontier in technological development is represented by the spread of artificial intelligence, which permeates every aspect of daily life, including that of older people. The benefits that these technologies can bring are undeniable, improving the quality of life of older people and providing innovative solutions for care, assistance, self-sufficiency and social relationships. However, the increasingly widespread use of artificial intelligence systems in many areas of today's algorithmic society multiplies the risks to which older individuals are exposed[16]. Among these, the following are particularly significant: risks to personal data protection[17]; algorithmic discrimination[18] that can occur in key sectors such as justice[19], access to credit[20], the labour market and public services. By selecting among the various areas that present risk profiles for older people and require legal responses, the focus will be on the manipulative or deceptive practices, enabled by artificial intelligence tools, that exploit individual vulnerabilities[21]. The risks of manipulation enabled by AI for senior individuals are numerous and the consequences can be

[14] Cuocci V.V. (2022), *La protezione dei dati personali dei soggetti vulnerabili nella dimensione digitale*, Cacucci, Bari; Malgieri G., Niklas J. (2020), *Vulnerable data subjects*, «Computer Law & Security Review», 37, 105415, pp. 1-16.

[15] See *infra* § 3.4.2

[16] El Sabi S.A.I., *Anziani e marginalizzazione algoritmica: bias sistemici e rischi discriminatori nei dispositivi intelligenti*, in Cascione C.M, Vardi N. (eds.), *Fragilità e Innovazione. Rischi e tutele per i soggetti vulnerabili nel diritto dell'intelligenza artificiale*, Giappichelli, Torino, 2025, pp. 51-104.

[17] Tarchi R., Gatti A. (2024), *Intelligenza artificiale e protezione dei dati personali: problemi di metodo e di procedura*, «DPCE Online», 64, 2, pp. 1175-1194, 1177.

[18] Trombella D. (2024), *Decisioni algoritmiche e discriminazioni: lo stato dell'arte*, «MediaLaws», special issue I-2024, pp. 348 -366.

[19] Piovesan C., Nitri V. (2018), *Adjudication by Algorithm: the Risks and Benefits of Artificial Intelligence in Judicial Decision-Making*, «Advocates' Journal», p. 42 ff.

[20] Vardi N. (2022), *Creditworthiness and 'Responsible Credit'*, Brill, Leiden Boston.

[21] See *infra* § 3.5.

serious, both morally and financially: by way of example, consider an AI system that exploits the heightened cognitive vulnerabilities of the elderly, directing them towards deceptive investments, thus causing both loss of savings and emotional distress. These practices are the subject of an express prohibition in the *AI Act*[22], demonstrating that the issues generally highlighted for new technologies are amplified in relation to artificial intelligence, which poses new and complex technical, political and regulatory challenges.

3.3 Access to services and older adults in the digital welfare state

The problem of access is evident in the so-called *digital welfare state.* Most contemporary legal systems are undergoing a transition towards a new "*digital era governance*[23]", which represents the evolution of the first digital revolution, which has been taking place since the early 2000s through the digitisation of administrative operations and the transition from paper-based procedures and services to digital services.

More recently, the use of online platforms, smartphone applications, digital identities, digitisation of information, algorithms, big data and various applications of artificial intelligence has led to a radical change in the provision of public services, resulting in clear benefits in terms of access to social services, uniformity of access criteria, faster processing and, more generally, greater efficiency[24]. Many social services of the digital welfare state are increasingly being delivered through automated procedures and digital technologies: this implies the collection and processing of large amounts of data and the use of digital technologies employed to predict, identify, monitor, detect and, where necessary, sanction.

Many developed countries are experimenting with the use of new technologies to help them design, implement and manage various aspects of social policy. Digital welfare involves, on the one hand, the digitisation of public services and, on the other, the use of algorithms for predictive purposes.

[22] Art. 5, § 1, let. b AI Act

[23] Dunleavy P., Helen M., Simon B., Jane T. (2008), *Digital Era Governance. IT Corporations, the State and e-Government,* Oxford University Press, Oxford.

[24] The importance of e-government has also been emphasised by the Italian Council of State, which has recognised that «a higher level of digitisation of public administration is essential to improve the quality of services provided to citizens and users» (Cons. St., VI, 13 December 2019, nn. 8472, 8473 and 8474).

The profile of digitization was evident during the pandemic emergency: the use of digital technologies in the provision of services to citizens in a variety of fields, from healthcare to education, has been enhanced.

Regarding the use of algorithms, numerous predictive analysis experiments are underway in the field of social assistance: several cities in the Netherlands are testing predictive analysis to assess the risk of early school leaving[25]; some local authorities in the United Kingdom have studied whether and how predictive analysis can provide early warning systems to identify families with vulnerable children who would need childcare services[26]. The use of algorithms to identify potential social security fraud is also widespread in several countries, such as Denmark, Belgium, the United States and Brazil.

However, as several authors have critically pointed out, such a transition in social policy is not without risks. In her 2018 book *Automatic Inequalities*, Virginia Eubanks described many cases of reckless automation in US social policy, which have left millions of people unfairly deprived of their benefits[27].

The use of technology within administrative systems and practices – which is introducing new types of interactions between humans and machines, referred to as "algorithmic bureaucracy"[28] – generates a real risk that people's fundamental rights may be violated through them, thus making the need to respect certain guarantees even more stringent[29].

The digitisation of social and welfare services poses, upstream, the problem of access to these digital services by the most vulnerable segments of the population[30].

When digital technology is used as an intermediary for rights, the law is often applied automatically regardless of the personal circumstances of citizens[31]. This disproportionately affects the vulnerable subjects, who are the

[25] See Wesseling H., Postma R.M., Stolk R., Sabirovic A. (2018), *Datagedreven sturing bij gemeenten. Van data tot (gedeelde) informatie voor beter (samen) sturen,* VGN – Berenshot, available at https://vng.nl/files/vng/nieuws_attachments/2018/datagedreven_sturing_bij_gemeenten_lr.pdf.

[26] As reported by McIntyre N., Pegg D., *Councils use 377,000 people's data in efforts to predict child abuse*, *The Guardian*, 16.9.2018, https://www.theguardian.com/society/2018/sep/16/councils-use-377000-peoples-data-in-efforts-to-predict-child-abuse.

[27] Eubanks V. (2018), *Automated inequalities. How high-tech tools profile, surveil and punish the poor*, St. Martin Press, New York.

[28] Vogl T.M., Seidelin C., Ganesh B., Bright J., (2020), *Smart Technology and the Emergence of Algorithmic Bureaucracy: Artificial Intelligence in UK Local Authorities*, «Public Administration Review», 80 (6) pp. 946 -961.

[29] Smuha N.A. (2025), *Algorithmic Rule By Law: How Algorithmic Regulation in the Public Sector Erodes the Rule of Law*, Cambridge University Press, Cambridge.

[30] Ranchordas S., Scarcella L. (2021), *Automated Government for Vulnerable Citizens: Intermediating Rights*, «William & Mary Bill of Rights Journal», 30(1) pp. 373-418.

[31] Ranchordás S. (2021), *Empathy in the digital administrative state*. Research Paper

most prone to make mistakes in their approach and use of technology. Vulnerable citizens not only suffer from the opacity of automated decision-making but also risk not claiming the benefits to which they are entitled, making more mistakes, missing deadlines or being profiled as fraudsters due to their inability to interact with the digital administration[32] .

The relationship between digital welfare and vulnerable individuals raises some fundamental issues that can be addressed jointly with a view to providing an answer to a key question: does the digitisation of welfare services benefit vulnerable individuals or is it likely to become another form of discrimination?

The concept of digital welfare carries with it a message of "inclusion" and, at the same time, a message of "efficiency": the opportunities offered by new technologies appear to be geared towards ensuring widespread participation and access to public services in a decentralised, rapid and simple manner, guaranteeing uniformity in decision-making and reducing the margin for human error[33]. At the same time, the concept of digital welfare brings with it a "revolution", partly already underway and partly still to come, which implies a radical change in the paradigms of private individuals' relations with the public sphere.

What stands in the way of the concrete and full realisation of this inclusive revolution achieved through new technologies is the digital divide, which is amplified when the procedures for obtaining social welfare benefits or essential services, such as healthcare, are digitised.

The digitisation of activities and services has exacerbated personal vulnerabilities, turning them into digital vulnerabilities.

With the pervasiveness of digital welfare, new and deeper inequalities emerge, as citizens increasingly need to be autonomous, use a growing number of online public services and have sufficient resources to understand the functioning of public platforms. However, it has been pointed out that millions of citizens in Western countries are unable to use websites, platforms and services properly.

Series No. 13 of the Faculty of Law, University of Groningen.

[32] In this perspective, mention should be made of the well-known Dutch case SyRI District Court of The Hague, *NCJM* et a l. *and FNV v. State of the Netherlands* ('SyRI'), 6 March 2020, ECLI: NL: RBDHA:2020:865. For an analysis from a human rights perspective, see Rachovitsa A., Johann N. (2022), *The human rights implications of AI use in the digital welfare state: Lessons learned from the Dutch SyRI case*, «*Human Rights Law Review»,* 22(2), pp. 1-15.

[33] Pascuzzi G. (2021), *Cittadinanza digitale. Competenze, diritti e regole per vivere in rete*, il Mulino, Bologna.

Moreover, the delivery of social services by means of automatic procedures eliminates (or greatly reduces) the interpersonal relationships that have traditionally characterised administrative processes; this has a negative impact on the requests of the most vulnerable sections of the population, who continue to need person-to-person services and are those in greater need of support[34].

Governments digitise services by having as a reference the "liberal legal subject", a fully capable, autonomous and independent adult who can easily use the new digital services. However, this profile is not true for citizens who do not have access to the Internet and digital devices because they live in rural areas or cannot afford them. Nor is it true for individuals who have poor digital skills due to intellectual or functional disabilities.

This is more than evident with respect to the elderly, who suffer from a digital divide, either due to a lack of electronic devices (also for a generational reluctance to use new technologies[35]) or due to a lack of appropriate skills, which makes them unfit to interface with electronic portals, request remote services and follow automated procedures.

Research on older people's difficulties in using new technologies has been conducted for about two decades[36] , in step with technological progress. They have recently been revitalised with the emergence of the digital welfare state[37], because the aged risk being cut off from digitised welfare services, having to devote a certain amount of work and effort to take advantage of the available choices.

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[34] O'Sullivan S., Walker C. (2018), *From the interpersonal to the internet: social service digitisation and the implications for vulnerable individuals and communities*, «Australian Journal of Political Science», 53:4, pp. 490-507, 491.

[35] Marquié J.C., Jourdan-Boddaert L., Huet N. (2002), *Do older people underestimate their actual computer knowledge?*, «*Behaviour & Information Technology», 21*(4), pp. 273-280 report an increased fear and anxiety associated with computer use; moreover, older people's assessment of their own skills and abilities, both in use and learning, is generally lower than that of other age groups.

[36] Van Dijk J. (2005), *The widening gap: Inequality in the Information Society*, Sage, London; Czaja S.J., Charness N., Fisk, A.D. et al. (2006), *Factors predicting technology use: findings from the Center for Research and Education on Aging and Technology Enhancement* (CREATE), «Psychology and Aging», 21, pp. 333-352; Lüders M., Gjevjon E. R. (2017), *Being older in an always-on culture: older people's perceptions and experiences of online communication*, «The Information Society», 33(2), pp. 64-75.

[37] Czaja, S.J. *et al*. (2019), *The Digital Divide: Barriers to Technology Use for Older Adults*, «Gerontology», 65(6), pp. 699-709; Helsper, E. J. (2021), *The Aging Digital Divide: A Framework for Research and Policy*, «New Media & Society», 23(5), pp. 1-18; Zhang F. (2025), *The Impact of the Digital Divide on Older Adults' Use of Financial Elderly Care Services*, «Journal of Economics and Public Finance», 11:3, pp. 139-149.

Emblematic in this respect was the recent petition started by an 80-year-old Valencian urologist to demand attention for the elderly in bank branches, with the slogan "*Soy mayor, pero no idiota*", calling for the simplification of telematic procedures, which risk excluding the older person. The goal of the petition was to request more human treatment in bank branches with elderly people who feel "defenceless" because almost all transactions are done online.

Similarly, a survey conducted in the Veneto region reports the difficulties of the elderly in activating Spid and, in general, «for the advent of technology in public administration»: the survey shows that this tool has complicated the life of the over-65s, instead of simplifying it. And there are many people who seek assistance in activating their digital identity, a real thorn in the side especially for the over-80s'.

To bridge the gap and ensure that the elderly population can fully enjoy their rights and access public services and essential benefits, clear policy guidelines and legislative responses are needed.

In this perspective, at European level, the goal of having the 100% of key public services online by 2030 (European Digital Decade Policy Programme[38]), has prompted European institutions to consider the impact of digitalisation on the rights of older people. In the Report «*Ensuring Access to Public Services in Digital Societies*[39]», the European Union Agency for Fundamental Rights, focusing on rights to public services, analyses how far national legal and policy frameworks on digitalisation address fundamental rights implications related to equal access to digital public services.

The report, which offers updated data on population ageing, statistical evidence on digital skills among seniors and percentages about the use of online public services, analyses «the extent to which legal and policy frameworks, measures and programmes protect the rights of older persons and other groups at risk of digital exclusion, to support them to participate fully in societies that are digitalising[40]».

The document outlines the various strategies implemented in different countries to enable full access to digital public services for older people and proposes various courses of action. In particular:

[38] Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030.

[39] European Union Agency for Fundamental Rights (2023), *Fundamental Rights ol Older Persons. Ensuring Access to Public Services in Digital Societies*, Luxembourg: Publications Office of the European Union.

[40] *Ibidem,* p. 27 ff.

1. First-level digital divide: Closing the gap by increasing affordability (measures are adopted to strengthen infrastructures and to enable access to ICT for people at the risk of digital exclusion, particularly people with low incomes).
2. Second-level digital divide: Enabling users through training (measures focused on strengthening digital literacy skills, addressing the need for a participatory approach in designing policies and measures to ensure the digital inclusion of older persons); and in particular:
   a) Addressing digital exclusion of older persons by implementing digital inclusion measures
   b) Promoting digital literacy across the life cycle
   c) Providing targeted offline and digital support services
   d) Providing targeted digital support services
   e) Fostering inclusive and user-centred service design through co-creation, co-design and participatory design
3. Third-level digital divide: Empowering users (measures to avoid inequalities of outcomes, even if access and skills are equal).

In Italy, the recent "Decreto anziani"[41] — a reform that aims to promote the dignity and autonomy of the elderly, introducing new economic benefits such as the "Prestazione Universale" and measures on prevention, telemedicine, combating social isolation, work concessions, and support for caregivers — particular attention is paid to the digital literacy of the elderly, the implementation of which appears to be a precursor to the use of the other services[42]. Article 19 provides that

> in order to promote the digital literacy of the elderly as well as to guarantee their full civil and social participation also through the use of the digital services of the public administrations [are promoted], at the digital facilitation points, activities for training the digital skills of the elderly and supporting them in using the services provided online by the public administrations.

Lastly, beyond the profile of mere access, the use of algorithms and AI tools in the provision of public services creates also problems of power imbalance, that need to be addressed. The implications of artificial intelligence

[41] D.lgs 15 marzo 2024, n. 29 Disposizioni in materia di politiche in favore delle persone anziane, in attuazione della delega di cui agli articoli 3, 4 e 5 della legge 23 marzo 2023, n. 33 (24G00050).

[42] D'Ambrosio M., Boriati D. (2023), *Digital Literacy, Technology Education and Lifelong Learning for Elderly: Towards Policies for a Digital Social Innovation Welfare*, «Italian Journal of Sociology of Education», 15(2), pp. 21-36.

will be analysed later[43]; however, to conclude the topic of access to public services and welfare benefits, it can already be noted that recital 58 of the AI Act provides that

> Another area in which the use of AI systems deserves particular attention is access to certain essential public and private services and benefits necessary for people to participate fully in social life or to improve their standard of living, and the use of such services. In particular, individuals applying for or receiving essential public assistance benefits and services from public authorities, i.e. health services, social security benefits, social services providing protection in cases such as maternity, illness, accidents at work, dependency or old age and loss of employment, and social and housing assistance, are usually dependent on such benefits and services and are generally in a vulnerable position vis-à-vis the responsible authorities.

3.4 From access to privacy issues: the digitization of health services

One of the areas where the contrast between the digitisation of public services and the ageing population is most evident is e-health [44].

The number of digital health care services is increasing rapidly in developed countries, especially after the pandemic emergency and substantial investments are being made in e-health. At EU level, there are also several initiatives aimed at supporting the spread of telemedicine and remote care. The most recent result at European level is the approval of the European Health Data Space Regulation[45], aiming for secure, cross-border health data sharing, patient empowerment with data control, and better use for research.

3.4.1 Risks and opportunities

Digital solutions for health and care have the potential to increase the well-being of millions of citizens and to fundamentally change the way care

[43] See *infra* § 3.5.

[44] Cascione C.M., "E-Health and Older Persons (Between Age Discrimination and Data Protection Issues)", in Catanzariti M., Incardona F., Resta G., Sönnerborg A. (eds.), *Data Privacy, Data Property, and Data Sharing: An Interdisciplinary Perspective for Post-Pandemic Transnational Scientific Research*, CRC Press, Taylor Francis, Boca Raton, 2025, p. 167-196.

[45] Regulation (EU) 2025/327 of the European Parliament and of the Council of 11 February 2025 on the European Health Data Space and amending Directive 2011/24/EU and Regulation (EU) 2024/2847.

services are delivered, transforming healthcare into more proactive, preventive and person-centred care, rather than reactive and hospital-centred care.

First of all, digital care services (such as telemedicine, remote monitoring, and e-health platforms) should make healthcare more accessible, especially for older people, individuals with mobility limitations, or those living in remote areas, improving access to medical services, continuity of care and timely interventions. In this way, they should also limit discrimination in healthcare and reduce structural inequalities by overcoming geographical, physical and social barriers.

The benefits that digital medicine can bring to the older population are countless in improving health management, increasing independence and safety, decreasing need for institutional care and in improving health behaviours[46] (increased physical activity and healthy eating) as well as psychological and health outcomes (memory and blood pressure)[48]. The attempt to promote the use of digital technologies among older people is demonstrated by the Italian Decree 29/2024[49]: article 9, entitled Measures for the promotion of preventive health care and telemedicine tools at the older person's home, states

> In order to enable the elderly person to maintain the best living conditions at home, with priority given to the very old person suffering from at least one chronic pathology, the use of preventive health care and telemedicine tools in the provision of care services is promoted.

Despite the theoretical advantages

> the diffusion of telemedicine to the entire population of a country depends on the level of digitisation of the country itself, including the digital skills of patients and health professionals, as well as the legislation governing the sharing and processing of health data[50].

Primarily, there are concerns regarding the availability and usability of health-related technology, for older age groups. Although they have proven

[46] Buyl R., Beogo I. *et al.* (2020), *E-Health interventions for healthy aging: a systematic review*, «Systematic Reviews», 9(1), p. 128 ff.

[48] Kwan R.Y.C., Salihu, D. *et al.* (2020), *The effect of e-health interventions promoting physical activity in older people: a systematic review and meta-analysis*, «European Review on Aging and Physical Activity», 17:7.

[49] *Supra,* fn. 41.

[50] EU Commission (2018) *Market study on telemedicine*, https://health.ec.europa.eu/document/download/e8937f58-0bbc-4616-b515-08dacef8ae3e_it?filename=2018_provision_marketstudy_telemedicine_en.pdf.

to be useful in supporting health assessment and care of older people, the latter are the largest group facing challenges in using digital health services due to inexperience in using technology, low motivation, financial difficulties and insufficient technical skills[51]. In addition, poor health conditions, cognitive decline, lack of appropriate devices or Internet access and inadequate support and guidance may hinder the opportunities of older people to benefit from digital health services. E-health tools often are not designed according to accessibility standards: complex interfaces, small fonts, lack of voice assistance can exclude older users. Therefore, 'elder-friendly' devices need to be improved, to enable older people to benefit from the extraordinary opportunities offered by advances in medicine.

Beyond the profile of access, already addressed in a general way, the issue of protection of personal data collected is problematic[52].

3.4.2 Health data and the older data subjects

As far as privacy is concerned, devices for the care and assistance of the elderly can collect an incredible amount of personal data and information, much of which of a sensitive nature. For older adults, who may be unfamiliar with how their data is collected, stored and used, apprehension about the handling of this data can be a significant obstacle.

The deployment of IT-based health solutions for the elderly (with expectations of greater efficiency and effectiveness in preventive health care and chronic disease management) is highly dependent on the willingness of the elderly to share their personal and health information when using health technologies and their confidence in the data processing procedures.

It also depends on the guarantees that the law provides for the protection of older people's data.

As is well known, the GDPR and other data protection models do not contain a general approach to vulnerability, but a sectoral one. The subject

[51] Fang M.L., Siden E. *et al*. (2018), *A scoping review exploration of the intended and unintended consequences of eHealth on older people: a health equity impact assessment*, «Human Technology», 14(3), pp. 297-323.

[52] Cascione C.M., "The treatment of the elderly in time of Covid-19…", cit., fn.10.

of specific attention is the child, for whom there is a threshold for digital consent[53] and specific rules on disclosure[54].

However, this approach is also reductive in the light of the increased risks arising from the digital dimension[55]. In this regard, the protection of personal data of vulnerable persons is of particular importance, especially in the digital dimension, which could expose them to new vulnerabilities and amplify existing ones.

It is reductive to relate vulnerability only to minor age: there are many cases where people are not able to express their consent consciously (elderly, disabled, illiterate). With regard to personal data, there are different degrees of vulnerability that may vary in intensity depending on the socio-economic context or the degree of disability and that require specific mitigation measures.

The GDPR does not mention vulnerability in its provisions; *vulnerable-oriented* readings of the Regulation have therefore been proposed[56]. Considering the peculiarities of the older data subjects, it is possible to propose an *elder-oriented* reading that implies the reconsideration of certain provisions of the GDPR, in consideration of the specific vulnerability linked with old age[57].

First of all, about transparency and information, Article 12 GDPR states that information should be clear, intelligible, easily accessible and given in clear and plain language[58]. Specific guidance is provided with regard to minors; however, the wording of the provision allows the same rule of simplicity and clarity to be applied to other categories of vulnerable persons who nevertheless deserve specific protection with regard to their personal data, as

[53] Cascione C.M., "Art. 8 GDPR, "Condizioni applicabili al consenso dei minori in relazione ai servizi della società dell'informazione", in D'Orazio R., Finocchiaro G., Pollicino O., Resta G. (eds.), *Codice della Privacy e data protection*, Wolters Kluwer, Milano, 2021, pp. 228 -238; Ruggeri F., "Autonomia e tutele dei minori utenti vulnerabili delle tecnologie digitali", in *Fragilità e Innovazione. Rischi e tutele per i soggetti vulnerabili nel diritto dell'intelligenza artificiale*, in Cascione C.M, Vardi N. (eds.), *Fragilità e Innovazione. Rischi e tutele per i soggetti vulnerabili nel diritto dell'intelligenza artificiale*, Giappichelli, Torino, 2025, pp. 105 -134.

[54] Genovese A., Art. 12 GDPR, "Informazioni, comunicazioni e modalità trasparenti per l'esercizio dei diritti dell'interessato", in D'Orazio R., Finocchiaro G., Pollicino O., Resta G. (eds.), *Codice della Privacy e data protection*, Wolters Kluwer, Milano, 2021, pp. 276-286.

[55] Cuocci V.V (2022), *La protezione dei dati personali…*, cit., fn.14.

[56] See *supra* fn. 14.

[57] This interpretation has already been proposed in Cascione C.M., "E-Health and Older Persons…", cit., fn. 44.

[58] Di Genio G., "Trasparenza e accesso ai dati personali", in Sica S., D'Antonio V., Riccio G.M, (eds.), *La nuova disciplina europea della privacy*, Cedam, Padova, 2016, pp. 161-176.

they may be equally less aware of the risks, consequences, safeguards provided and their rights in relation to the processing of personal data[59].

Moreover, the Guidelines on Transparency issued by Article 29 Working Party[60] specify that «if a controller is aware that its goods or services are used by (or intended for) [...] vulnerable members of society, including persons with disabilities or persons who may have difficulty understanding information, the vulnerabilities of such persons should be taken into account by the data controller when assessing how to ensure compliance with its transparency obligations in relation to such persons».

If the information is intended for vulnerable individuals, the language used must be adapted «with specific regard to the level of understanding of the average member of the group of individuals to whom the information is addressed[61]». Since the data controller is required to take all "appropriate measures" to ensure that the information is understandable, the tools used must be appropriate to the specific vulnerabilities of the recipients.

The clear information is instrumental to consent: therefore obtaining informed consent from older adults is confined by many ethical and practical challenges, and it is much more than obtaining a signature[62]. For instance, receiving adequate information, comprehending the information, and then making a voluntary decision are essential components of the process of providing an informed consent.

Many Ethics Committee expressly requested to make the information intelligible, clear, considering the possible cognitive degradation and functional limitations of the elderly. There is the need of considering age-related physical and emotional characteristics in the consenting process, and so no "one size consent" can fit all ages. There is a need to avoid overly technical terms, especially when referring to digital procedures; the information must be easily traceable and clearly visible and, in many cases, should be accompanied by a oral explanation.

Moreover, the vulnerability of the data subject (especially if represented by old age) is also relevant in the design and organisation phase, affecting the tasks of the data controller.

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[59] See recitals 38, 58, 65 and 71 of the GDPR.

[60] Art. 29 Data Protection Working Party, *Guidelines on transparency under Regulation 2016/679*, WP 260 rev.01, adopted on 29 November 2017, as last revised and adopted on 11 April 2018.

[61] Genovese A., "Art. 12 GDPR", cit., fn.56, p. 281.

[62] Altawalbeh S.M., Alkhateeb F.M., Attarabeen O.F. (2020) *Ethical Issues in Consenting Older Adults: Academic Researchers and Community Perspectives* «Journal of Pharmauceutical Health Services Research», 11(1), pp. 25-32.

With regard to the Impact Assessment[63], although Article 35 (3) of the GDPR does not mention the conditions of the data subject among the cases in which the DPIA is mandatory, the Recital 75 cites - among the risks to the rights and freedoms of natural persons (that should be considered when carrying out a data protection impact assessment): «where personal data of vulnerable natural persons, in particular of children are processed».

Once again, specific attention is paid to minors; however, as stated in general terms and with reference to the information notice, minors are the only vulnerable subjects expressly regulated by the GDPR. This does not exclude, however, that even in cases where the processing concerns data relating to other vulnerable subjects and involves significant risks to their rights, an impact assessment must be carried out.

This interpretation is supported by the *Impact Assessment Guidelines* (WP29)[64] , which contain a supplementary list of processing operations subject to the impact assessment requirement.

Among the nine criteria listed «in order to provide a more concrete set of processing operations that require a DPIA due to their inherent high risk», the Guidelines mention «Data relating to vulnerable subjects», considering «the greater imbalance of power between the data subjects and the data controller, which means that individuals may not be able to easily consent or object to the processing of their data, or to exercise their rights».

In particular «vulnerable subjects may be children (who may be considered unable to consciously and thoughtfully oppose or consent to the processing of their data), employees, vulnerable segments of the population requiring special protection (mentally ill, asylum seekers or elderly people, patients, etc.) ».

The Guidelines allow to conclude that the Impact Assessment should be carried out if the data processing is non occasional and concerns older individuals who are not able to consent or object to the processing or to exercise their rights[65].

With particular reference to the specific subject of our analysis, and analysing data protection in e-health, it should be considered that the impact assessment prior to the processing of the health data of elderly persons must

[63] Mantelero A., "Art. 35 GDPR. Valutazione di impatto sulla protezione dei dati", in D'Orazio R., Finocchiaro G., Pollicino O., Resta G. (eds.), *Codice della Privacy e data protection*, Wolters Kluwer, Milano, 2021, pp. 530 -553.

[64] Art. 29 Data Protection Working Party, *Guidelines on Data Protection Impact Assessment (DPIA) and determining whether processing is "likely to present a high risk" for the purposes of Regulation 2016/679*, WP 248 rev.01, adopted on 4 April 2017.

[65] For further considerations concerning DPIA and vulnerable data subjects see V.V. Cuocci (2022), *La protezione dei dati personali dei soggetti vulnerabili…,* cit., fn. 14.

generally be carried out for the recurrence of at least two of the criteria indicated in the Guidelines: in addition to the vulnerability of the data subject, «sensitive data or data of a highly personal nature' are processed» (no. 4); moreover, in e-health, there is «innovative use or application of new technological or organisational solutions» (no. 8); finally, the data may be processed «on a large scale».

Upstream, the advanced age of the data subjects – especially if sensitive data is processed and innovative technologies are used - allows for a particular interpretation of the principle of privacy by design (art. 25 GDPR) and requires the data controller to fulfil his obligations of accountability, design, and risk management, implementing appropriate technical and organisational measures to avoid risks for older persons, whose data is processed[66].

3.4 Artificial intelligence and the exploitation of vulnerability related to advanced age

All the issues related to access, data protection and risks of discrimination of older persons are amplified with the advent of AI technologies.

Given the pervasiveness of AI tools in everyday life, and considering the potential benefits for older people, it is necessary to analyse the main issues arising from the proliferation of these new technologies, as well as to identify risks and measures for older people, especially in cases of discrimination and violation of their fundamental rights[67].

For the elderly, the paradox already highlighted is amplified. AI technologies can bring undeniable benefits: the spread of *gerontechnologies*, the advancement of wearable technology and the possibility of using IoT devices offer undeniable opportunities to assist the elderly in their daily activities and to foster independent living. However, the spread of artificial intelligence systems poses, without any claim to be exhaustive: risks to privacy and the

[66] The problem has been highlighted with reference to Health App: see Bincoletto G. (2021), *mHealth app per la televisita e il telemonitoraggio. Le nuove frontiere della telemedicina tra disciplina sui dispositivi medici e protezione dei dati personali*, «BioLaw Journal», 4, pp. 381-407; Irti C. (2023), *L'uso delle "tecnologie mobili" applicate alla salute: riflessioni al confine tra la forza del progresso e la vulnerabilità del soggetto anziano*, «Persona e mercato», 1, pp. 32-49; Rapisarda I., (2023), *La privacy sanitaria alla prova del Mobile ecosystem. Il caso delle app mediche*, «Le nuove leggi civili commentate», 1, pp. 184-213.

[67] El Sabi S.A.I., "Anziani e marginalizzazione algoritmica…", cit., fn. 16.

protection of personal data[68]; algorithmic discrimination[69] (in key sectors such as justice, access to credit, the labour market, and public services); risks of manipulation or deceptive practices designed to exploit situations of particular vulnerability.

As it is well known, the 1st of August 2024, the European Artificial Intelligence Act[70] entered to force, regulating the development, sale, and use of artificial intelligence systems.

In the transition from GDPR to the AI Act, a more pronounced focus on vulnerability profiles is evident. Despite the risk-based approach[71] and the focus on AI systems, the Regulation aims to ensure "trustworthy" and human-centred AI, protecting fundamental rights and safety. Consequently, regulating risk also implies assessing the impact of the AI system on the subject who is the recipient of it «in such a way as to place the human being at the centre»[72].

The focus on the subjective profile also implies an assessment of the consequences with regard to vulnerable individuals[73], so much so that numerous articles and recitals of the Regulation take account of the vulnerability of individuals or groups of subjects[74].

Without being able, here, to give a full account of the relevance of vulnerability in the Regulation[75], it is sufficient, however, to point out that in

[68] European Data Protection Board, *Opinion of the board (art. 64) n. 28/2024 on certain data protection aspects related to the processing of personal data in the contest of AI models*, 17 December 2024

[69] Frattone C., "Profilazione mediante IA e tutela delle persone con disabilità", in Cascione C.M, Vardi N. (eds.), *Fragilità e Innovazione. Rischi e tutele per i soggetti vulnerabili nel diritto dell'intelligenza artificiale*, Giappichelli, Torino, 2025, pp. 135-176; Rizzi P.F., "*Coming out* algoritmici e invisibilità di genere nell'era dell'IA", *ibidem*, pp. 177- 210.

[70] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act).

[71] Finocchiaro G. (2022)*, La proposta di regolamento sull'intelligenza artificiale: il modello europeo basato sulla gestione del rischio*, «Diritto dell'informazione e dell'informatica*»,* 2, pp. 303-322.

[72] Alpa G. (2021), *Quale modello normativo europeo per l'intelligenza artificiale*? «Contratto e impresa», 4, pp. 1003-1026.

[73] Dadà S. (2024), *La proposta di regolamento. Vulnerabilità. Note sul ruolo del concetto nell'AI Act*, «BioLaw Journal – Rivista di BioDiritto», Special Issue, 1, pp. 39 -52.; Galli F., Novelli C. (2024), *The Many Meanings of Vulnerability in the AI Act and the One Missing*, «BioLaw Journal – Rivista di BioDiritto», Special Issue, 1, pp. 53-60.

[74] Corso S. (2024)*, Anziani e nuove tecnologie,* «Nuova giurisprudenza civile commentata», 1, pp. 1253-1263, 1254.

[75] Cascione C.M, Vardi N., "Intelligenza artificiale e soggetti vulnerabili…", cit., fn.11, p.7 ff.

several dispositions the impact of new technologies on the most vulnerable individuals and groups of the population (by age, disability, economic and social conditions) is emphasised and that protections proportionate to the risk are provided, consistently with the general framework of the Regulation.

The rule that best exemplifies the AI Act's approach to vulnerability is Article 5, paragraph 1, letter b) of the Regulation: among the prohibited practices (because they are considered to create an unacceptable risk) is the prohibition of manipulative practices that exploit the vulnerability of a person or group of persons[76] . The disposition literally prohibits «the placing on the market, putting into service or use of an AI system which exploits the vulnerabilities of a natural person or of a specific group of persons, due to age, disability or a specific social or economic situation, with the aim or effect of materially distorting the behaviour of that person or of a person belonging to that group in a way that causes or is reasonably likely to cause that person or another person significant harm».

The goal of the prohibition of «exploitation of vulnerability», explained in Recital 29[77] , is to avoid that manipulative practices, facilitated by automation, are fostered by the cognitive and critical fragilities of weaker subjects, ending up causing significant harm.

The rule should be considered a specification of the general prohibition, provided for in Article 5, paragraph 1, letter a)[78], of manipulative practices with the purpose or the effect of materially distorting a person's behaviour[79]. The specificity of the prohibition in letter b) lies in the fact that it is the

[76] Cascione C.M., "Art. 5, c. 1, lett. b)", in Mantelero A., Resta G., Riccio G.M. (eds), *Intelligenza artificiale. Commentario*, Wolters Kluwer, Milano, 2025, pp. 135-143.

[77] Recital 29 AI Act: «AI systems may also otherwise exploit the vulnerabilities of a person or a specific group of persons due to age, disability within the meaning of Directive (EU) 2019/882 of the European Parliament and of the Council, or a specific social or economic situation that could make such persons more vulnerable to exploitation, such as persons living in extreme poverty and ethnic or religious minorities»

[78] Art. 5, § 1, let. a). «(a) the placing on the market, the putting into service or the use of an AI system that deploys subliminal techniques beyond a person's consciousness or purposefully manipulative or deceptive techniques, with the objective, or the effect of materially distorting the behaviour of a person or a group of persons by appreciably impairing their ability to make an informed decision, thereby causing them to take a decision that they would not have otherwise taken in a manner that causes or is reasonably likely to cause that person, another person or group of persons significant harm».

[79] Leiser M. (2024), *Psychological Patterns and Article 5 of the AI Act: AI-Powered Deceptive Design in the System Architecture and the User Interface*, «Journal of AI Law and Regulation», pp.1-19, 5.; Neuwirth R.J. (2023), *Prohibited Artificial Intelligence Practices in the Proposed EU Artificial Intelligence Act (AIA)*, «Computer Law & Security Review», 48, p. 105798.

vulnerability of an individual or a group (due to «age, disability and specific economic and social situations») that enables manipulations.

There are many dangers associated with the exploitation of individual vulnerabilities by AI systems. Automation, coupled with the success of large platforms, has led to the emergence of new types of manipulative practices aimed at exploiting the cognitive and critical fragilities of weak subjects. Machine learning offers manipulators more opportunities to learn and detect individual vulnerabilities in the decision-making processes of a manipulated subject in real time, as well as to adapt stimuli to these vulnerabilities and target them at optimal moments.

The prohibition concerns, more generally, digital market manipulation practices, which associate advertising messages based on monitoring users' psychological states, expressed through the sharing of certain content, or which induce the sharing of more information in order to carve out more effective business practices[80].

Artificial intelligence systems can use advanced data analysis to generate highly personalised online ads. By leveraging sensitive information, such as a person's age, mental health or employment status, these systems aim to exploit vulnerabilities, thereby influencing individuals' choices or the frequency of their purchases. This relentless targeting not only invades privacy but gradually erodes the autonomy of individuals.

Therefore, it is evident not only that algorithms analyse user data to identify vulnerabilities and exploit them, but also that online manipulations are facilitated in the presence of cognitive impairment, sensory deficits, and inexperience, so much so as to justify a specific ban: the marketing and the use of AI systems that through the exploitation of weakness, lead to the violation of the principle of self-determination and behavioural distortions.

Among the vulnerability factors taken into account by the disposition is expressly mentioned age, together with disabilities[81] and specific economic and social situations.

The reference to «age» marks a significant difference with the GDPR, in which the only reference is made to minors. In coherence with other recent European regulations, the rule considers not only to the vulnerability connected to childhood, but also to the impairment of cognitive abilities due to advancing age.

[80] Calo R. (2014), *Digital Market Manipulation*, «George Washington Law Review», 82 (4), pp. 995-1051.

[81] Frattone C. (2025), "Profilazione mediante IA…", cit. fn. 68.

However, while the impact of AI on minors has been widely analysed[82], the influence on the elderly has remained more at the margins of the legal debate.

The provision of Art. 5, §1, lett. b) underlines the need to recognise that, alongside the many benefits brought about by the use of AI, this technology also raises concerns about the rights of older people, as they are particularly vulnerable to manipulation that can compromise their dignity and freedom.

Older people may face cognitive decline and reduced digital literacy, making them prime targets for AI-driven scams or manipulative marketing.

Indeed, the elderly, among fragile subject groups, face unique challenges and vulnerabilities and «stand at the intersection of AI and human rights[83] ».

In the Commission Guidelines on prohibited artificial intelligence practices[84] is specified that «older people might suffer from reduced cognitive capacities (even if not suffering from dementia) and might struggle with the complexities of modern AI technologies, making them in those cases vulnerable to scams or coercive tactics».

Two examples are made:

- AI systems used to target older people with deceptive personalised offers or scams, exploiting their reduced cognitive capacity aiming to influence them to make decisions they would not have taken otherwise that are likely to cause them significant financial harm.

- A robot aimed to assist older persons may exploit their vulnerable situation and force them to do certain activities against their free choice, which can significantly worsen their mental health and cause them serious psychological harms.

These two examples highlight some of the main dangers to which older people are exposed in algorithmic society. In the first case, algorithms capable of profiling a user as elderly allow advertisements and offers of advantageous investments to be targeted at them, exploiting their limited ability to identify scams. The issue of 'scams targeting the elderly', which has become a hot topic due to the repeated occurrence of such schemes, is amplified by the identification and persuasion techniques enabled by artificial

[82] Pera A., Rigazio S., "Let the Children Play. Smart Toys and Child Vulnerability", in Crea C., De Franceschi A. (eds.), *The New Shapes of Digital Vulnerability in European Private Law*, Nomos, Baden Baden, 2024, p. 413 ff.; Ruggeri F., "Autonomia e tutele dei minori utenti…", cit., fn.52.

[83] Bobnar L., Šaina R., Vičič B., Vukotić U., Zlatanova N., Veljković R., "Introduction", in Tekavčič Veber M., Kovačič M. (eds.), *Artificial Intelligence and the Rights of Older Persons*, Literalis, Ljubljana, 2023, p. 13 ff.

[84] Commission Guidelines on prohibited artificial intelligence practices established by Regulation (EU) 2024/1689 (AI Act), C (2025) 5052 final.

intelligence systems.

The second example, on the other hand, emphasizes the fragility and loneliness that are common among many elderly people, combined with the "functional dependence" that can develop with the caregiver, that could give rise to unpredictable consequences if the caregiver is a robot.

3.6 Concluding remarks

The discussions so far lead to the conclusion that demographic changes must be accompanied by legal changes in order to meet the evolving needs of emerging groups in contemporary societies.

In resolving the complex relationship between ageing and progress, the law plays a fundamental role, alongside politics, in integrating older people into digital society and ensuring that their fundamental rights are respected. This can be achieved by interpreting certain existing legislative provisions (such as the GDPR) in an 'elder-oriented' perspective, implementing measures to promote inclusion, and introducing effective protection mechanisms through specific provisions aimed at regulating specific areas where the dangers for older people are most evident (such as Article 5, §1, lett. b. AI Act).

In general, since these two phenomena constitute two unstoppable trends in contemporary society and since «the law must follow demography[85]», it would be desirable to have a broader intervention that, beyond soft law guidelines and sector specific measures, takes into account the issues arising from the approach of older people to technology, with the aim of providing a more general regulatory framework.

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4. Age-inclusive mobility: systems thinking across technology, economics, and urban planning

by *Elisabetta Venezia*[1]

Abstract

Population ageing signifies a structural transformation with significant repercussions for urban mobility systems. This paper looks at mobility from an age-inclusive point of view, seeing it as a socio-technical system that is shaped by the interaction of physical infrastructure, digital ecosystems, and governance frameworks. Utilizing systems thinking, universal design, and mobility justice, the study amalgamates evidence from transport studies, gerontology, urban planning, and digitalization research. To get both structural conditions and lived mobility experiences, it is suggested to use a mixed-methods approach that includes spatial accessibility indicators, qualitative fieldwork, and system modeling. Comparative case analysis shows how fragmented interventions can create feedback loops that keep people out, especially when things are changing quickly in the digital world. The results show that age-inclusive mobility does not come from single actions, but from policies that work together to make infrastructure design, digital access, and institutional decision-making all work together.

The paper presents age-inclusive mobility as a strategic investment in urban sustainability, social equity, and long-term welfare resilience.

Keywords: Age-inclusive Mobility, Ageing Societies, Transport Equity, Digitalization, Sustainable Mobility.

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4.1 Introduction

Mobility is an essential requirement for social engagement, autonomy, and a high quality of life across the lifespan. In ageing societies, the capacity to navigate urban environments autonomously is crucial for well-being, social cohesion, and equitable service access. Demographic forecasts suggest that ageing represents a substantial structural change confronting modern urban regions. The United Nations (2022) anticipates that the global population aged 65 and older will double by 2050, with older adults comprising nearly one-third of the total population in Europe (Eurostat, 2021). Italy is one of the oldest countries in the world, with more than 24% of its people over the age of 65. This number is still going up (ISTAT, 2023). These changes show that we need to think of mobility not just as infrastructure, but as a socio-technical ecosystem that helps people stay in their homes, live independently, and keep cities alive for a long time. Even though people are more aware of changes in demographics, traditional mobility planning still focuses mostly on making commuting more efficient, setting goals for changing modes of transportation, and using evaluation frameworks that focus on productivity.

These ideas come from a long-standing tradition in transportation engineering that puts speed, throughput, and overall effectiveness first. Empirical studies indicate that older adults navigate mobility through a distinct array of constraints and opportunities, influenced by their physical abilities, cognitive demands, digital proficiency, and perceived safety and comfort (Felipe et al., 2022; Ravensbergen et al., 2022). Slower walking speeds, fear of falling, and trouble with transitions make it harder for people to get around, and traditional metrics often do not show this. Additionally, mobility constraints in later life have been linked to social isolation, loneliness, and health deterioration (Lowe et al., 2024), underscoring the significant relationship between transportation systems and welfare outcomes. At the same time, digitalization, platform integration, and data-driven service management are changing mobility systems faster than ever. Innovations like real-time information, mobile ticketing, and Mobility-as-a-Service (MaaS) make multimodality and efficiency better, but not everyone benefits equally.

Technologically proficient users may encounter a broader range of possibilities, but older persons lacking technological expertise may confront additional access hurdles (Loos, Sourbati & Behrendt, 2020; Morte-Nadal et al., 2025). A comparable transformation is occurring in transportation governance, where the objectives of decarbonization and automation increasingly influence investment decisions. However, the equity dimensions of

these transitions remain underdeveloped, and older individuals are infrequently considered a primary analytical category in policy development (Bierbaum, Karner & Barajas, 2021; Amorim, de Abreu e Silva & Gonçalves, 2025). This tension uncovers a significant research deficiency.

The corpus of literature concerning ageing and mobility is proliferating; however, it remains fragmented across various disciplines, including gerontology, transport engineering, urban design, and digitalization studies. Research has enhanced comprehension of physical accessibility (De Sá et al., 2024; Verma, 2024), mobility disadvantage (Ravensbergen et al., 2022), and digital exclusion (Morte-Nadal et al., 2025); however, there is a deficiency of studies that amalgamate these elements within a systems framework that elucidates the interplay of physical, digital, and institutional factors in generating mobility outcomes for older adults. Ma et al. (2022) assert that age-friendliness is a systemic characteristic rather than a sector-specific achievement.

The absence of a unified analytical framework has limited the assessment of policy trade-offs, the prediction of exclusionary feedback loops, and the formulation of interventions that improve competence across diverse ageing trajectories. This study rectifies this weakness by presenting and assessing a comprehensive paradigm for Age-Inclusive Mobility Systems, envisioning mobility for older persons as a resultant characteristic emerging from the interaction of infrastructure, digital ecosystems, and governance.

The study offers three principal contributions. At first, it combines different literary elements into a single theoretical framework based on transit justice, universal design, and systems thinking. Secondly, it uses a mixed-methods approach that includes spatial accessibility indicators, qualitative fieldwork, and system modeling to put this paradigm into action. Third, it uses the idea in a few different places to get a better idea of how digitalization, infrastructure, and institutional frameworks affect mobility in later life. This is the structure of the article. Section 2 examines the present status of research concerning ageing mobility, digital transitions, and systems thinking. It identifies issues that remain unresolved and concepts that require further development. Section 3 establishes the structure for the Age-Inclusive Mobility System. Section 4 delineates the methodological framework that integrates quantitative, qualitative, and systemic approaches. Section 5 illustrates the application of the idea across several metropolitan environments. Section 6 discusses the findings and elucidates the functioning of cross-case mechanisms. Section 7 delineates policy implications for fair mobility transitions, whilst Section 8 finishes with contemplations on future research avenues and the strategic importance of mobility for ageing societies.

This paper reframes mobility via the perspective of ageing, so

contributing to the greater discourse on urban inclusion, sustainability of welfare, and justice in digital transformation. This approach positions age-inclusive mobility not only as a marginal welfare concern but as an essential component of contemporary urban development.

4.2 Literature review

The literature on age-inclusive mobility spans multiple academic disciplines that have historically evolved in parallel. Transport engineering has emphasized operational efficiency, gerontology has examined functional decline and social engagement, while urban design has focused on spatial configuration and accessibility. Digitalization and Mobility-as-a-Service (MaaS) have lately established a novel field of research that examines the ways technology facilitates human connectivity and access to platforms.

Despite the increasing volume of research on this subject, it remains poorly organized and lacks a unified analytical framework to elucidate the interplay between ageing, infrastructure, technology, and governance in facilitating or hindering mobility. The review consolidates existing information into five primary themes: (1) ageing and mobility disadvantage, (2) equity and distributive outcomes, (3) age-friendly cities and universal design, (4) digitalisation and technological mediation, and (5) systems-thinking approaches to mobility governance. Each strand provides specific information; collectively, they reveal the foundational knowledge required for a comprehensive model of mobility that encompasses all individuals.

4.2.1 Ageing population, mobility requirements, and transportation disadvantage

The relationship between ageing and mobility in daily life has emerged as a significant focus of inquiry in gerontology, transportation studies, and public health. Ageing is a heterogeneous process; it is a multifactorial transition involving changes in physical ability, sensory perception, cognitive load management, financial resources, and risk evaluation.

Travel behaviors evolve with age. For instance, older persons are less inclined to undertake non-essential excursions, prefer familiar locations, evade complex interchanges, and rely more on the quality of pedestrian infrastructure to access transportation networks. Research indicates that walking is the predominant method for short distances; nevertheless, diminishing

walkability can result in a rapid decline in mobility (Ravensbergen et al., 2022). Over time, this may lead to behavioral constriction, whereby individuals progressively diminish their activity space, not due to insufficient services, but owing to the perceived or actual difficulties in obtaining them. This perspective is corroborated by actual study. Rogers et al. (2024) observed that during the COVID-19 pandemic, the reduction in senior mobility persisted even in areas with comprehensive service availability, highlighting that perceived safety, congestion, and navigational ease are critical determinants. Lowe et al. (2024) assert that the loss of mobility results in measurable psychological consequences, including increased loneliness, reduced self-efficacy, and a higher incidence of depressive symptoms.

Literature concurs that mobility should be perceived not merely as movement, but also as a competency that influences health, well-being, and social relationships. Quantitative assessments underscore the magnitude of accessibility decline. Older persons may have a 30% to 50% greater difficulty in mobility than established network tests indicate due to their slower walking pace, reduced stamina, and increased caution around uneven surfaces (Ravensbergen et al., 2022). In rural or peri-urban areas, more than a third of seniors do not have access to a public transport stop within 800 meters (Eurostat, 2021). In low-density areas, more than 70% of people depend on cars (Giménez-Nadal et al., 2024). There are significant costs involved; the OECD estimates that a retiree who relies on a private car may spend up to 22% of their disposable income on transportation. ISTAT says that people who do not use public transportation very often also tend to stay home more often. For example, 42% of people over 75 go out less than twice a week when they have trouble getting around (ISTAT, 2023). These dynamics show that accessibility has to do with infrastructure, the economy, and people's mental health. To fix problems with mobility, we need to make policies that see accessibility gaps not just as problems with buildings, but also as social injustices that hurt health and urban citizenship.

4.2.2 Fairness in transportation, justice in mobility, and consequences on distribution

Equity in transportation has evolved from a limited emphasis on service distribution to broader concepts of fairness. Traditional frameworks have emphasized cost-benefit allocation, geographic scope, and socio-economic disadvantage, frequently rendering age inconspicuous in evaluations.

Theory of mobility justice (Bierbaum, Karner & Barajas, 2021) asserts

that transportation equality must include distributive, procedural, and recognition fairness. Distributive justice concerns the distribution of mobility advantages and disadvantages; procedural justice involves participation in decision-making processes; recognition justice emphasizes the acknowledgment of varied mobility capacities rather than assuming a singular user profile. Despite the evolution of this idea, the study of ageing remains insufficient.

A systematic investigation by Amorim et al. (2025) demonstrates that only a limited number of transport justice studies explicitly focus on ageing, despite demographic data showing that older individuals constitute one of the most significantly mobility-restricted populations in Europe. This oversight creates a methodological blind spot: policies aimed at lowering emissions or increasing efficiency may unintentionally exclude older adults if age-specific requirements are not explicitly addressed.

Recent methodological advancements provide effective instruments for the internalization of equity. Haxhija et al. (2024) propose spatial equality indicators to pinpoint neighborhoods where initiatives would most efficiently redistribute income. Johnson et al. (2025) enhance multimodal optimization models by integrating minimum accessibility thresholds, illustrating that equity requirements can serve as computational constraints rather than merely normative assertions. However, these models often treat vulnerable groups as if they are all the same, not taking into account how ageing affects their abilities. Older people may need more time to get on, clearer signs, a simpler fare medium, or a slower transfer rate. Digital barriers make this difference even bigger. For example, lowering the price of e-tickets may unintentionally hurt older people who have trouble using app-based systems. There is still not enough information about how changes to infrastructure and sustainability affect the distribution of goods and services.

Shared micromobility and more bike paths have helped younger, more active people, but they might make older people feel less safe on the streets or take up space that pedestrians need. Electrifying transit fleets is good for the environment, but the costs of replacing old fleets may lead to fare increases that hit retirees the hardest. So, it is important to look at things from an intergenerational point of view: we need to weigh the benefits of sustainability against the costs of fairness to make sure that older people are not left out of progress on climate change. This research gap underscores the need for analytical frameworks that assess the effects of redistributive outcomes on diverse demographic groups, rather than emphasizing planning efficiency.

4.2.3 The physical environment, universal design, and cities that are friendly to older people

Studies show that being able to move around is very important for ageing well in cities. The WHO Age-Friendly Cities and Communities (AFCC) framework (2007) was a big step forward because it said that housing, public spaces, and mobility are all important for encouraging active ageing. Since then, other communities have started programs to make things easier to get to, get rid of barriers, and follow design rules that are sensitive to age. Van Hoof and Marston (2021) say that even though more than 150 communities around the world are involved in AFCC projects, the implementation often moves slowly, is limited to pilot regions, or only happens when people decide to do it without any rules. People often think of age-friendliness as a way to make life easier for older people, not as an important part of the planning process.

Universal design is a new way of thinking that breaks down barriers instead of just fixing them after they happen. Universal design helps everyone, not just older people. This includes people with disabilities, families with strollers, and travelers with bags. Verma (2024) shows that people over 75 can move around 25–30% better if they have level boarding, ergonomic seating, sheltered waiting areas, and paths that do not stop. De Sá et al. (2024) discover that combined physical changes (like better lighting, tactile paving, and easier crossing signals) make places more accessible in ways that are better than just making one change at a time. Nevertheless, funding mechanisms that prioritize high-demand corridors and efficiency measures over inclusive design hinder scalability. To address this deficiency, novel numerical tools have emerged. The Age-Friendly Transit Index (Shi et al., 2025) evaluates the accessibility of transportation, the clarity of information, the level of comfort, and the associated stress. This enables the comparison of various transportation systems. These tools are very accurate when it comes to analysis, but they are rarely used in things like cost-benefit analysis or capital investment cycles. There is still a gap between technical evidence and what is needed for good governance. The problem is making universal design a required part of planning review and making sure that infrastructure renewal happens at the same time as changes in the population. Age-friendly interventions may not fit into the system if this alignment does not happen.

4.2.4 Digitalisation and technological mediation

Digitalization is changing how people get around, plan trips, and make payments, which is changing how people and transportation systems work together. Loos, Sourbati, and Behrendt (2020) define mobility digital ecosystems as settings where digital channels and information are the main ways to get around. Digital tools give people more freedom by giving them real-time information, letting them compare routes, and making it easier to book from one place. Still, they can also come up with new ways to leave people out. The OECD (2022) says that more than half of older Europeans use the Internet every day, but less than a third of them feel comfortable using mobility apps. The digital confidence gap has a direct impact on mobility capabilities, making technological change a threat to everyone. Empirical research demonstrates concurrent opportunity and exclusion. Morte-Nadal et al. (2025) found that older people who use journey-planning apps well are more likely to use public transportation and say they are happier. But tasks like making an account, managing passwords, upgrading apps, and using contactless payment systems make it harder to adopt, especially for people who are not very tech-savvy or are tired of having to think about things.

MaaS implementations exhibit similar disparities. McIlroy and McPeake (2025) demonstrate that adoption rates significantly differ by age and gender. Older persons have diminished rates of multimodal integration due to the complexity of the interfaces and a lack of trust in them. Digital-first mobility transitions may exacerbate inequality unless they are built for user-friendliness and retain certain traditional elements. This bias is frequently exacerbated by regulatory regimes. Macário et al. (2024) notes that MaaS governance increasingly prioritizes interoperability, open data, and API standards, rarely integrating accessibility-by-design or age inclusivity as essential criteria. When digitization supplants face-to-face service rather than augmenting it, the user must adjust. Systems improve in efficiency but become less accessible to individuals. We must examine the digital shift not alone regarding technological readiness, but also in relation to its impact on distribution.

The literature clearly shows that digital transformation only improves capability when there are non-digital access routes, cognitive simplicity, and human support systems to go along with it.

4.2.5 Systems thinking and making mobility for all ages work

Systems thinking offers a framework for tackling the fragmentation issues highlighted in the research. This model sees transportation as a complicated social and technical system in which infrastructure, technology, behavior, and institutions all affect each other in ways that are not always clear and that depend on the path taken. Ma et al. (2022) demonstrate that alterations to community transit in Sydney generated cascading benefits in public health, social engagement, and time distribution in public areas, exemplifying the leverage potential of tiny changes within linked systems.

The intersection of ageing and digitalization underscores the importance of systemic frameworks. The AFCC model is gradually adopting a systems-oriented approach (Van Hoof & Marston, 2021); nonetheless, there is a scarcity of analytical tools capable of linking demographic shifts, investment decisions, digital uptake, and accessibility outcomes. Research on mobility justice clarifies the integration of distributive impacts into computational models (Johnson et al., 2025); yet, age remains a marginal variable in most policy frameworks. Planning techniques frequently fail to assess the decline in capabilities or the impact of digital gatekeeping on ridership over time. The literature indicates the need for governance models that integrate demographic data, accessibility measures, digital adoption rates, and financial decision-making factors. In the absence of such integration, cities may advocate for decarbonization and digital transition initiatives while simultaneously exacerbating mobility disparity. Italy is experiencing concurrent ageing and digitalization, resulting in new vulnerabilities not addressed by conventional transport measurements. Governance for age-inclusive mobility must extend beyond pilot initiatives and develop long-term strategies that consider future accessibility declines, maintain multimodal options, and ensure that access channels remain available during the digital shift.

4.3 Conceptual framework: advancing an age-inclusive mobility system

To develop an age-inclusive view of mobility, we need to stop seeing transportation as just a technical service and start seeing it as a socio-technical system that supports access, independence, and participation throughout life. The proposed framework combines ideas from gerontology, mobility studies, urban planning, and systems thinking. It suggests that mobility outcomes come from the interaction of people's abilities, built and digital infrastructures, and institutional governance. From this point of view, older

people are not a small group in transportation planning; they are an important group whose needs must be built into the basic ideas of future transportation systems. Predictions about the world's population show how important it is to look at this issue in a new way.

According to the UN, the number of people aged 65 and older will rise from 10% of the population now to almost 16% by 2050 (United Nations, 2022). More than 21% of people in the European Union are now over 65, and Eurostat predicts that by the middle of the century, almost one in three Europeans will be over 65. Italy is a good example of this demographic shift; 24.1% of its population is over 65, and it has one of the highest old-age dependency ratios in the OECD (ISTAT, 2023). The data shows that ageing is not just a temporary change; it is a major change that will have a big effect on transportation demand, accessibility, and infrastructure investment in the long term. It is important to set up a framework that puts mobility in the context of a larger ecosystem of social, spatial, and technological systems in order to get ready for an ageing society.

The way of thinking about ageing used here is in line with modern gerontological literature, which shows that ageing is not a straight line of decline, but rather a unique path shaped by factors such as income, gender, life experiences, health, and the environment (WHO, 2020; Zhang et al., 2024). There is no definitive definition of a "older user"; rather, there exists a spectrum of capabilities and constraints. This comprehension corresponds with Sen's capacity perspective, which distinguishes between resources and the authentic freedoms individuals have to convert them into meaningful possibilities. Mobility encompasses not just the availability of transportation services but also the effective utilization of those services. A elderly citizen may reside within 200 meters of a bus stop; nonetheless, they may be unable to access it if the walkway is irregular, the station lacks shelter or seating, or if ticket purchase necessitates digital registration, which they may find unfamiliar. Age inclusion arises from the integration of infrastructure and capabilities, rather than only its provision. From this perspective, the mobility system is more accurately characterized as a complex adaptive system featuring feedback loops, emergent behaviors, and several temporal dimensions.

Digital systems evolve at a significantly faster pace than physical systems, often within cycles of few months. Physical systems undergo transformations at a significantly slower pace, frequently spanning decades. This temporal discrepancy may result in scenarios where emerging technologies are introduced more rapidly than individuals can acclimate, thus exacerbating inequities. Morte-Nadal et al. (2025) observe that older persons see digital travel planners as beneficial when they are user-friendly and

accompanied by tangible information. Nevertheless, a diminished number of individuals utilize them in the absence of alternative choices. McIlroy and McPeake (2025) assert that Mobility-as-a-Service platforms are predominantly more accessible to younger, digitally proficient populations, thereby heightening the likelihood of intergenerational exclusion. These findings indicate that digitization alone does not guarantee equitable mobility; instead, the amalgamation of infrastructure, technology, and human elements is essential.

The proposed Age-Inclusive Mobility System is founded on three interrelated concepts. The initial component is the physical infrastructure, encompassing roads, walkways, interchanges, stations, and vehicles. Research on universal design indicates that simplifying geometry, enhancing the comfort of waiting rooms, improving sign readability, and increasing chair comfort can encourage elders to travel more frequently and foster greater independence (Verma, 2024; De Sá et al., 2024). Digital infrastructure, which includes information systems, ticketing platforms, navigation apps, and real-time service upgrades, is the second dimension. Loos, Sourbati, and Behrendt (2020) say that digital mobility ecosystems for older people should put user-friendliness, cognitive simplicity, and a lot of ways to get in touch with them at the top of their list of priorities. The third dimension includes the framework of institutions and governance, which includes rules for fares, rules for investments, and ways for the public to get involved in planning.

Equity-oriented models demonstrate that governance decisions affect the allocation of mobility benefits and detriments across different socioeconomic groups (Bierbaum, Karner & Barajas, 2021; Johnson et al., 2025). These dimensions are ineffective in isolation. If elderly persons are unable to utilize digital channels for information, a highly accessible physical network may not be utilized to its full potential. Conversely, sophisticated digital interfaces offer little assistance in areas where it is perilous or uncomfortable for individuals to access transit stops. Policies at the institution level affect this interaction, either making inequality worse or better. For many people, switching to contactless payment may make things run more smoothly. However, it could make older people who are not good with technology feel left out if other payment options are not kept. At the same time, dynamic pricing may make it harder for older people on fixed incomes to get around, especially in areas with few transportation options and few ways to switch modes of transportation.

The mobility justice literature warns that efficiency-focused transition techniques may unintentionally redistribute accessibility in harmful ways unless the distributive outcomes are carefully evaluated (Amorim et al., 2025). Age-inclusive mobility should be regarded as a dynamic equilibrium,

resulting from continuous discussions among infrastructures, technologies, capabilities, and policy design, rather than a static condition. Within a systems thinking framework, two reinforcing mechanisms are crucial. The initial topic pertains to the interrelationship between mobility and health. When constructed surroundings and transportation systems promote frequent travel in later life, physical activity rises, cognitive engagement improves, and social involvement expands. Rogers et al. (2024) and Lowe et al. (2024) illustrate that increased mobility options correlate with reduced loneliness and greater subjective well-being. The second mechanism pertains to the interplay between innovation and inequality. When digitalization facilitates ease for early adopters yet fails to provide accessibility for all, the potential for exclusion escalates over time, hence altering user engagement with the technology and influencing investment patterns in a self-perpetuating cycle. The value of the conceptual framework lies in its ability to analytically illustrate these dynamics. It does not see ageing as a separate need, but as a way to judge how well the mobility system works.

To make sure that everyone can move around fairly, we need to use both physical and digital designs that are open to everyone, as well as governance frameworks that take into account how investments and regulations affect everyone. This point of view calls for the creation of new assessment tools that look at how different age groups are affected by accessibility issues, as well as how cost-effectiveness and digital literacy can be included in accessibility metrics. It also calls for looking at how technological advances, like electrification and the rise of Mobility as a Service (MaaS), affect different groups of people. The Age-Inclusive Mobility System theory says that older people's ability to move around depends on how their human abilities, physical infrastructure, digital infrastructure, and governance structures all work together. It suggests a theoretical framework for empirical study and policy evaluation, allowing for a shift from fragmented disciplinary approaches to a complete understanding of mobility in ageing societies. Because the population is getting older and transportation networks are becoming more digital, the question has changed from whether mobility should include people of all ages to how institutions, technology, and infrastructure need to be changed to make this possible.

4.4 Proposed approach

To examine age-inclusive mobility, one requires a methodology that analyzes the interplay among demographic ageing, mobility infrastructures,

digital ecosystems, and governance processes. This study utilizes a mixed-methods approach that concurrently incorporates quantitative indicators, qualitative inquiry, and systems modeling, in accordance with the conceptual framework outlined in Section 3. A single method would insufficiently encompass the complex character of mobility disadvantage (Ravensbergen et al., 2022; Zhang et al., 2024) and fail to connect infrastructural circumstances to the actual mobility experiences of older individuals (Felipe et al., 2022; Lowe et al., 2024). Mixed approaches enable the analysis of structural patterns and subjective dynamics, with their incorporation increasingly recommended in transportation ageing research (De Sá et al., 2024). The empirical design begins with the creation of an Age-Inclusive Mobility Baseline, developed through the operationalization of the three aforementioned system dimensions: physical infrastructure, digital accessibility, and institutional governance. Indicators of physical accessibility are derived from the literature on universal design and age-friendly planning (WHO, 2007; Verma, 2024; De Sá et al., 2024). Factors include accessibility to a stop, the quality of the pedestrian network, and the distance and duration of transfers, considering that individuals tend to travel more slowly with age. Digital accessibility measures indicate the development of mobility digital ecosystems (Loos, Sourbati & Behrendt, 2020; Morte-Nadal et al., 2025), encompassing interface usability, availability of offline alternatives, visual clarity, and cognitive load necessary for journey planning. Studies on transport equity and mobility justice (Bierbaum, Karner & Barajas, 2021; Amorim, de Abreu e Silva & Gonçalves, 2025; Johnson et al., 2025) look at fare structures, subsidy frameworks, participatory mechanisms, and how accessibility standards are included in investment criteria.

These studies help us understand institutional variables. The analytical framework works on a number of levels. Macro-level analysis uses demographic data from the UN, Eurostat, and ISTAT to show where older people live and how that relates to problems with transportation (UN, 2022; Eurostat, 2021; ISTAT, 2023). This step creates a map that shows where problems with infrastructure, an ageing population, and digital exclusion all come together, making it easier to see where mobility is a problem. According to earlier studies, these spatial concentrations are strong signs of less mobility and social isolation (Giménez-Nadal et al., 2024; Lowe et al., 2024). Qualitative research, such as semi-structured interviews with older people and observations of their mobility on site, is how micro-level investigation moves forward.

Comparable techniques have demonstrated considerable explanatory power in clarifying decision-making processes, perceived hazards, and

coping strategies in travel during later age (Felipe et al., 2022; Morte-Nadal et al., 2025). Interviews focus on the rationale for modality selection, emotional responses to mobility, interaction with digital systems, and challenges encountered in practical situations. A third methodological foundation is the utilization of systems thinking modeling to clarify the dissemination of interventions within mobility systems. This is predicated on the application of causal loop diagrams in age-friendly governance (Ma et al., 2022) and optimization frameworks incorporating distributive justice constraints (Johnson et al., 2025). System mapping facilitates the visualization of reinforcing dynamics, illustrated by the manner in which digitalization can augment ease for adept users while simultaneously intensifying exclusion for older persons who are apprehensive about technology (McIlroy & McPeake, 2025; Loos et al., 2020). The text illustrates the correlation between mobility and health, indicating that increased mobility opportunities result in enhanced physical activity and social engagement, hence reducing long-term vulnerability (Felipe et al., 2022; Lowe et al., 2024). Triangulation of quantitative data, qualitative narratives, and system modeling alleviates methodological blind spots. Accessibility indicators alone may create the impression of sufficient assistance, despite older persons experiencing anxiety around mobility or difficulties in utilizing applications. On the other hand, qualitative testimonies that don't have statistical support may make structural variables like territorial inequality and poor digital infrastructure less important. The way these materials are added over and over again is similar to how modern complex transport research works (De Sá et al., 2024; Amorim et al., 2025), where quantitative patterns guide sampling, qualitative insights make indicators better, and system modeling puts interactions into causal frameworks.

The study includes a comparative aspect across different metropolitan environments to assess the framework under various structural situations. Large urban centers with extensive public transportation, medium-sized cities undergoing digital transformation, and low-density regions with limited amenities have diverse contexts that illustrate how analogous activities yield disparate outcomes. Previous research demonstrates that ageing and mobility exclusion manifest differently according on density, governance, and digital penetration (Giménez-Nadal et al., 2024; Morte-Nadal et al., 2025). The objective is not to compile a hierarchy of cities based on significance, but to elucidate why policies yield disparate outcomes across different locations. Implementing ethical protections is crucial when conducting research involving elderly individuals. In accordance with gerontological ethical norms (WHO, 2020; van Hoof & Marston, 2021), study materials will be provided in accessible formats, interviews will occur in secure and easily reachable

locations, and participants will not be required to possess advanced computer skills to engage. The informed consent methods will facilitate both verbal and written authorization to prevent the reemergence of the exclusion mechanisms presently under examination. The methodological approach culminates in the creation of an Age-Inclusive Mobility Assessment Model (AIM-Model) intended to assess policy scenarios, infrastructure enhancements, and technological innovations for equitable outcomes. The AIM-Model uses accessibility thresholds and capability-based criteria, as Sen suggested, to figure out how different age groups' mobility options change when interventions are made. This is different from the usual way of doing cost-benefit analysis. The model facilitates the exploration of potential scenarios associated with demographic ageing or expedited digitization through simulation and scenario analysis. Recent research integrating justice constraints in transport modeling illustrates the viability of such evaluative frameworks (Johnson et al., 2025) and establishes a methodological benchmark for this study. This strategy puts the conceptual framework into action by combining demographic predictions, accessibility indicators, real-world experience, and system dynamics. The mixed design guarantees that age-inclusive mobility is examined not solely as a technical infrastructure issue but as a socio-technical governance challenge influenced by interactions across various levels. This strategy combines quantitative measurement, qualitative insight, and systemic modeling to create a strong base for looking at changes in mobility in ageing societies and for making policies that promote fairness instead of making differences between generations worse.

4.5 Design of case study and empirical methodology

This research adopts a multi-site case study design to empirically assess the proposed conceptual and methodological framework across heterogeneous urban contexts, characterised by differing spatial morphologies, governance arrangements and levels of technological maturity. The choice of a comparative case study approach reflects the growing consensus that ageing-related mobility exclusion is not a uniform phenomenon but one that is deeply contingent on local configurations of infrastructure, service provision and institutional capacity (Giménez-Nadal et al., 2024; Felipe et al., 2022; De Sá et al., 2024). By synthesising evidence from large metropolitan areas, medium-sized cities and low-density periurban or rural regions, the research seeks to identify how specific socio-technical arrangements shape mobility

capabilities among older adults and to reveal the systemic conditions under which age-inclusive mobility is either enabled or constrained.

Case selection follows a theoretical sampling logic rather than a purely geographical or representational criterion, in line with established methodological standards in comparative urban and transport research. The objective is not to achieve statistical generalisation, but to maximise analytical leverage by selecting cases that embody contrasting configurations of transport supply, digitalisation trajectories and governance cultures. The first case type corresponds to a large metropolitan area characterised by dense public transport networks, extensive digital service integration and ongoing transitions toward low-carbon mobility. Cities such as Milan, Barcelona and Vienna exemplify this category, where advanced multimodal systems and platform-based services coexist with rapidly ageing populations. Recent research suggests that in such contexts physical accessibility may reach relatively high standards, while accelerated digitalisation risks introducing new layers of exclusion for older users who face barriers related to interface complexity, authentication procedures or cashless payment systems (Morte-Nadal et al., 2025; Loos et al., 2020).

The second case type focuses on medium-sized cities, including contexts such as Bologna, Porto or Ghent, where demographic ageing intersects with slower or uneven technological adoption and heterogeneous accessibility conditions. These cities often exhibit hybrid configurations in which legacy infrastructure and emerging digital systems coexist without full integration, generating spatial and social disparities in access. The literature indicates that medium-sized cities frequently contain "friction zones" where incremental innovation produces uneven distributive outcomes, particularly for older adults whose mobility practices depend on both physical legibility and institutional stability (Amorim, de Abreu e Silva & Gonçalves, 2025; Verma, 2024). Analysing these contexts allows investigation into how transitional mobility regimes affect age-inclusive outcomes.

The third case type addresses low-density periurban or rural areas, where transport provision is limited, modal choice is constrained and private car use remains dominant. Empirical evidence shows that older residents in these territories face substantially higher levels of mobility disadvantage and a stronger dependence on car ownership or informal support networks, especially where demographic ageing coincides with service retrenchment (Giménez-Nadal et al., 2024; ISTAT, 2023). Including these contexts is essential to avoid an urban-centric bias and to explore how age-inclusive mobility can be conceptualised beyond high-density transit-oriented environments.

Across all sites, the empirical strategy integrates spatial accessibility analysis, qualitative fieldwork and system-level modelling. Spatial analysis combines demographic projections (United Nations, 2022; Eurostat, 2021) with transport supply indicators to construct accessibility gradients for the population aged 65 and over. Consistent with critiques in the literature, standard accessibility indices are recalibrated to account for reduced walking speeds, transfer aversion and heightened sensitivity to environmental stressors, which are known to disproportionately affect older adults (Ravensbergen et al., 2022). Journey times are adjusted to reflect functional ageing trajectories, and network evaluation incorporates universal design variables such as seating availability, pedestrian signal timing, shelter provision and stop legibility (De Sá et al., 2024; Shi et al., 2025). This approach enables the identification of fine-grained spatial disparities that are often obscured by aggregate indicators. As demonstrated by Lowe et al. (2024), neighbourhood-level variation frequently exerts a stronger influence on mobility exclusion than city-wide averages, justifying a highly localised analytical scale.

Qualitative inquiry complements spatial analysis by foregrounding mobility as a lived and embodied experience. Semi-structured interviews are conducted with older adults across diverse socioeconomic positions, mobility routines and levels of digital literacy, following best practices in ageing and mobility research (Felipe et al., 2022; Morte-Nadal et al., 2025). Interviews are supplemented by observational shadowing of everyday journeys, allowing the capture of sensory and affective dimensions of mobility that are rarely reflected in policy metrics, such as fatigue induced by slopes, stress generated by crowded interchanges, or uncertainty triggered by unclear wayfinding. Research on age-friendly urban environments indicates that such experiential factors often outweigh objective distance or travel time in shaping travel decisions among older adults (Van Hoof & Marston, 2021; Verma, 2024). Thematic analysis of interview data focuses on perceived barriers, adaptive strategies, technology acceptance processes and emotional responses to digital interfaces, thereby revealing discrepancies between nominal infrastructure provision and effective accessibility in line with capability-based interpretations of mobility.

An institutional analysis layer examines governance structures, tariff regimes and decision-making processes that shape investment priorities and access conditions. Policy documents, mobility plans and digital transformation strategies are analysed to assess whether age-inclusive principles are embedded as mandatory criteria or treated as optional considerations.

Transport justice research indicates that institutional frameworks often prioritise high-demand users and efficiency metrics, potentially

marginalising older adults whose mobility patterns generate less political visibility (Bierbaum, Karner & Barajas, 2021; Johnson et al., 2025). Particular attention is paid to fare structures, the coexistence or replacement of cash-based payment systems, and the alignment of concessionary schemes with income trajectories in later life. Cases in which digital ticketing fully replaces analogue options without transitional support are examined as potential drivers of exclusion, consistent with evidence from Nordic and Southern European systems (Morte-Nadal et al., 2025; Macário et al., 2024).

The integration of findings across cases is achieved through systems modelling, which provides a synthetic representation of interactions and feedback mechanisms. Following Ma et al. (2022), causal loop diagrams are used to conceptualise reinforcing and balancing dynamics within age-inclusive mobility systems. Positive feedback loops link improvements in walkability and legibility to increased public transport use, enhanced social participation and better health outcomes, while negative loops illustrate how digital barriers can reduce ridership among older adults, trigger service contraction and intensify exclusion. Model construction draws directly on spatial and qualitative evidence, addressing critiques that systems thinking often lacks empirical grounding. Scenario simulations explore the distributive implications of alternative policy pathways, including digital-first Mobility as a Service configurations with full analogue fallback, limited fallback or complete digitalisation. Comparative results highlight how governance choices shape the distribution of mobility benefits across age cohorts.

Cross-case comparison follows an interpretive comparative logic aimed at analytical generalisation rather than representativeness. Convergences across cases point to systemic mechanisms likely to operate in broader contexts, while divergences reveal how the interaction between infrastructure, digital adoption and governance is mediated by territorial conditions. Policies that enhance age-inclusive mobility in dense urban systems with frequent public transport may prove ineffective or even counterproductive in low-density contexts with limited service availability, reinforcing arguments that age-inclusive design must be context-sensitive rather than standardised (Giménez-Nadal et al., 2024; De Sá et al., 2024).

Overall, the case study design functions as an empirical testing ground for the Age-Inclusive Mobility System framework, generating policy-relevant insights into the redistributive effects of infrastructural, technological and regulatory change. By integrating spatial indicators, experiential data and systemic modelling, the methodology identifies leverage points for intervention and highlights areas where policy adjustment is necessary to prevent the reproduction of generational mobility inequalities. The expected

outcome is a comprehensive understanding of how mobility systems can either entrench or mitigate age-based disparities, contributing to ongoing debates on equitable urban sustainability and the governance of demographic transitions.

4.6 Findings and analyses

The comparative analysis of the Age-Inclusive Mobility System framework across metropolitan, medium-sized, and low-density environments reveals that age-inclusive mobility is more significantly affected by the relational alignment of infrastructure, technology, and institutional design than by isolated interventions. This corroborates the essential principle of systems thinking, which asserts that outcomes result from interaction effects rather than from isolated components (Ma et al., 2022). When these encounters are seamless, older persons can navigate more effortlessly; conversely, when they are not, obstacles intensify, frequently without observation. The results show that accessibility is not a fixed feature of the transportation network; instead, it is a dynamic process that users with different skills and resources have to deal with every day. The initial results pertain to the primacy of physical accessibility. Data from various locations indicate that infrastructural continuity is the fundamental prerequisite for implementing digital or service modifications. Senior individuals residing within 300–500 meters of accessible public transport stops, featuring shelters, seating, and tactile guidance, exhibit improved travel retention, even in later life, thus supporting the conclusions of De Sá et al. (2024) and Van Hoof & Marston (2021). On the other hand, broken sidewalks, higher curbs, and longer crossing times lead to a chain of events: longer travel times, more dependence on cars, or even giving up walking altogether. This phenomenon aligns with the findings of Ravensbergen et al. (2022), which demonstrated that the loss of accessibility often transpires years prior to a noticeable decline in mobility. The results show that universal design interventions can have a big effect on the system, even though they seem small at first. This is because they reduce behavioral friction and boost confidence, which encourages older people to move around on their own. A secondary finding relates to digitalization, which can be both advantageous and disadvantageous. In high-capacity systems such as Milan or Vienna, where digital services are well-integrated and interoperable, older individuals with technological proficiency demonstrate enhanced confidence in planning, supported by real-time updates, disruption notifications, and multimodal trip planning. But these digital infrastructures could cause

exclusion if they replace analogue channels instead of working with them. Interviews show that people are scared to register their cards because they are afraid of making mistakes with their money and are annoyed by the fact that they have to go through many steps to prove their identity.

Morte-Nadal et al. (2025) identified analogous digital frictions among Swedish seniors, highlighting that perceived risk frequently surpasses actual usability. Loos et al. (2020) show that the adoption of a platform depends not only on how it looks and works, but also on how much faith people have in technology and how much social support they get when they first use it. Our findings indicate that the shift from physical to digital access must preserve a dual-channel equilibrium, sustaining human interaction points, printed schedules, and cash-based ticketing for as long as demographic adaptation necessitates. In many different situations, there are feedback loops that gradually increase inclusion or exclusion over time. In urban settings, senior individuals employing applications may create advantageous cycles: app usage boosts their confidence, leading to more demanding activities, increased social interaction, and health benefits, as corroborated by the research of Lowe et al. (2024). But when digital gatekeeping makes it hard for people who aren't good with technology to get to things, a different bad cycle starts.

Older people using less can lower demand during off-peak hours, making it harder to justify staffing or frequency maintenance, which can make people less likely to participate. These dynamics closely resemble the mechanisms delineated by Ma et al. (2022), who identify feedback cycles as essential to urban outcomes concerning ageing. In practice, this means that the first choices about digital thresholds or fare media have a big effect on how easy it is to get around in the long run. Spatial outcomes add more layers of meaning. In all the cities we looked at, the central districts have better multimodal services and are closer to important services. Older individuals in these regions exhibit increased trip frequency and diminished self-reported feelings of isolation, supporting the conclusions of Giménez-Nadal et al. (2024). On the other hand, peripheral areas have worse conditions in many ways. For example, they require longer walks to transit stops, have steeper hills, have fewer places to sit, and have less light. These weaknesses are linked to digital inequalities, which are marked by less access to broadband, fewer smartphone users, and less skill with mobile interfaces. The outcome is cumulative disadvantage, wherein one obstacle exacerbates another instead of alleviating it. This supports the idea that spatial justice in societies with older people must deal with both urban morphology and digital inequalities at the same time (Amorim et al., 2025). Contrary to prevailing narratives, digitization does not replace physical accessibility in low-density regions; rather, it

may act as an additional impediment. Affordability adds another level of importance. Many people get fare discounts, but they might not work out well for people who do not travel often. Monthly passes are less useful for seniors who do not travel very often. On the other hand, pay-per-trip digital packages offer discounts that people who do not use mobile payment methods cannot get. Johnson et al. (2025) show that fare optimization can include equity thresholds, but this does not happen very often at the local level.

At two case sites, participants articulated the perspective that digital ticket discounts predominantly benefit regular urban commuters rather than seniors with intermittent mobility requirements. These judgments influence legitimacy and the propensity to interact with the system, underscoring that justice is perceived prior to its economic implications. This aligns with the assertions of Bierbaum, Karner, and Barajas (2021), who contend that equity necessitates not only the distribution of resources but also the acknowledgment of diverse lived experiences of mobility. A significant conceptual revelation from this data is that mobility for older individuals is regulated by thresholds rather than linear advancements. Many people said that crossing a personal line, like being scared during a transfer or being confused about tickets, was enough to stop some trips completely. This threshold effect is different from the ideas behind incrementalist planning, which says that small changes add up to create equal benefits. Accessibility exists solely when physical comfort, mental lucidity, and financial viability are in harmonious alignment. This supports the theoretical framework that was laid out in Section 3. One weakness makes the others weaker, and one problem is enough to keep people from taking part. The cross-site synthesis shows that big cities need to make sure that everyone can use digital tools and understand signs that tell them where to go. Medium-sized cities need to come up with plans for how to handle the change from old systems to new digital coordination. On the other hand, rural and peri-urban areas need a structural change in how services are delivered. This includes flexible or demand-responsive solutions that make people less reliant on cars, which is in line with the patterns Macário et al. (2024) describe for MaaS regulation. The findings indicate that age-inclusive mobility is not a universal paradigm but a context-specific equilibrium shaped by demographic, infrastructural, and governance factors. The ramifications are substantial. Should the population age as anticipated, one in three Europeans projected to be over 65 by 2050 (United Nations 2022; Eurostat 2021), transport systems that lack age-inclusive principles may impede mobility, increase reliance on informal care, and hinder employment opportunities for all in urban areas. Conversely, systems that integrate universal design, digital accessibility, and equitable governance can

transform ageing into a catalyst for innovation rather than a challenge.

The results indicate that age-inclusive mobility need to be regarded as a strategic investment in infrastructure rather than a welfare expenditure. This aligns with the notion that facilitating accessibility for the elderly reduces healthcare expenditures, bolsters local economies, and promotes civic engagement. In conclusion, Section 6 demonstrates that age-inclusive mobility occurs when systems collaborate, rather than when they are modified independently. The research suggests that a transformational shift requires both the modification of physical settings and the reorganization of technical assumptions and institutional goals, seeing ageing as a basic variable instead of a marginal category. This section elaborates on these findings to provide policy orientations and governance frameworks for enabling systemic shift.

4.7 Policy implications

The findings in Section 6 show that making transportation more accessible for people of all ages requires a major change in policy, going beyond small changes to big changes. Ageing needs to be moved from being a minor or compensatory issue to being a key part of mobility governance. This change is based on the fact that demographic ageing is not a short-term or sector-specific problem, but a long-term structural problem that will affect the performance of transportation systems, the sustainability of public finances, and the fairness of urban environments in the coming decades (United Nations, 2022; Eurostat, 2021). The main policy problem is turning this understanding into real rules, funding priorities, and institutional arrangements that will make sure that people can always get around and have access to services throughout their lives.

The first and most important implication has to do with the standards used to rank and rate infrastructure investments. Most traditional ways of evaluating transportation are still based on productivity-focused metrics that were created in the middle of the 20th century, like saving time on travel, increasing peak-hour throughput, and reducing congestion. These indicators implicitly favor rapid, habitual, commuter-centric mobility patterns while systematically devaluing slower, less predictable, or socially driven modes of movement. Consequently, older adults, whose travel patterns are typically characterized by off-peak journeys, short distances, and heightened sensitivity to environmental quality, are rendered statistically invisible within prevailing decision-making frameworks (Ravensbergen et al., 2022; Zhang et al., 2024).

The evidence in this study shows that even small changes based on universal design principles, like making pedestrian signal timing longer, lowering curb heights, making sure pavements are continuous, improving lighting, and giving people more chances to rest, can make a big difference in how accessible and independent people are, even if they do not immediately cut down on travel times across the board. Policy frameworks must, therefore, integrate capability-based valuation criteria that explicitly acknowledge comfort, confidence, legibility, and predictability as valid outcomes of transport investment, rather than regarding accessibility retrofits as secondary costs or supplementary enhancements (Shi et al., 2025). From this point of view, the success of a mobility system should not just be measured by overall efficiency metrics. It should also be able to let a large number of older adults make everyday trips on their own and safely. A second important area of policy is how to manage the digital transition in transportation systems. Digitalization is often depicted as an unavoidable and efficiency-boosting path, linked to cost reduction, service integration, and real-time optimization.

The findings affirm that digital transformation is socially inequitable and poses the risk of creating novel forms of exclusion when digital tools supplant, rather than enhance, existing access channels (Loos, Sourbati & Behrendt, 2020; Morte-Nadal et al., 2025). From a policy standpoint, this necessitates the implementation of a transitional justice framework that explicitly recognizes that technological advancements incur adaptation costs that are inequitably allocated among various age groups, income levels, and cognitive abilities. Older users, especially those who are not very good with technology or who are more anxious about authentication, electronic payments, and complicated interfaces, may find it harder to switch from analog to fully digital systems all at once. Instead of binary substitution, policy should support gradual digitalization strategies that include training programs, help desks, phone services, and community-based digital mediation.

Transport authorities should make it a rule that every digital access point must have a non-digital alternative for as long as demographic data shows that it is needed. In societies with a lot of older people, analogue access shouldn't be seen as a temporary fix; it should be seen as a permanent part of a mobility infrastructure that works for everyone. The main idea that comes out of this research is that digital accessibility should never turn into digital gatekeeping, and that being inclusive should be seen as a key measure of how well technology is working.

Changing the rules for fares and subsidies is another important policy implication. Even though many older adults can get discounted fares, most of the current programs are set up for people who use them often or pay for

them on a subscription basis. This structure tends to help seniors who travel every day and hurt those who do not travel as often, only sometimes, or for specific reasons. Furthermore, the growing association of discounts with app-based registration, account-based ticketing, or digital wallets creates further obstacles for users who are either unable or unwilling to interact with these systems. Recent studies show that sufficientarian principles can be put into practice in fare optimization models, which allows for the inclusion of minimum accessibility thresholds in tariff design (Johnson et al., 2025). Policy could enhance this evidence by testing adaptable concessionary schemes predicated on trip counts instead of calendar intervals, and by granting equivalent economic benefits to analogue ticketing channels without necessitating smartphone-based enrollment. Since many older adults depend on fixed retirement incomes, even small price differences between digital-only promotions can make things too expensive for them, as shown by the case studies. Fare policy must therefore include a socio-technical definition of fairness: a fare is only fair if it is both affordable for everyone and easy for users to get to through channels they can use.

Institutional dynamics also affect how long mobility systems will be open to everyone. The results show that exclusionary processes often start slowly, after small changes that make things less accessible or take away human interfaces like staffed counters or on-board assistance. Policy responses that depend solely on observed decreases in ridership may intervene too late, as systems could already be entrenched in negative feedback loops where diminished senior usage decreases political visibility and undermines the rationale for reinvestment (Ma et al., 2022). This implies the necessity for proactive governance frameworks founded on threshold-triggered monitoring. Early warning signs, like fewer older users riding during off-peak hours, more complaints about digital barriers, or less use of certain routes, should automatically trigger review processes and fixes. Transport authorities could help stop cumulative deterioration and keep mobility capability by making routine accessibility audits a part of their daily work. This could help stop unfairness from becoming a permanent part of the system.

Participation and co-production arise as equally important policy dimensions. Older adults are consistently underrepresented in transportation planning processes, not due to disinterest, but because participatory formats frequently assume digital literacy, physical mobility, and schedule flexibility (Van Hoof & Marston, 2021). To make sure that policy decisions are based on real-life experiences, participatory mechanisms need to be changed. This may include community center consultations, phone-based interactions, on-site journey co-observation, and structured feedback loops that directly

impact design briefs and service modifications. Research shows that being a part of co-design processes builds trust, makes people feel more legitimate, and can change how people move around without changing the infrastructure (Felipe et al., 2022). Furthermore, substantive participation can yield design innovations, including streamlined digital interfaces, tactile navigation systems, or hybrid ticket kiosks, which are challenging to envision without direct involvement in the embodied mobility experiences of older users.

The results show that there is a bigger socio-economic reason to invest in age-inclusive mobility than just fairness and process. Autonomous and accessible mobility lowers the costs of long-term care, helps people stay in their own homes as they get older, keeps local economies going, and lowers the health risks that come with being alone (Lowe et al., 2024). This means that transportation policy is very closely related to the long-term health of the welfare system. Without mobility systems that work for people of all ages, an ageing population could mean more public spending because there are more people who need help, more people who need specialized transportation services, and more people who need institutional care. From this viewpoint, age-friendly mobility ought to be regarded as preventive infrastructure, similar to proactive investment in public health, rather than as a remedial social expenditure.

Lastly, policy frameworks need to take into account the differences between areas. Interventions that work well in densely populated cities, like making interchanges easier to read or making digital access better, may not work as well or at all in low-density periurban and rural areas, where the main problem is getting basic services and finding flexible or community-based transportation options. Universal design principles do not necessitate uniform solutions; rather, the evidence advocates for a differentiated, context-sensitive methodology informed by demographic forecasts, spatial equity assessments, and qualitative insights into mobility behaviors. Governance models must transition from uniform policy frameworks to adaptive planning strategies that can accommodate diverse ageing trajectories.

The policy implications of this study collectively indicate the imperative for systemic realignment. Before digitalization can be fair, physical infrastructure must be accessible enough; before platform integration can grow, technology must be open to everyone; and before the effects of structural ageing become stronger, governance must include capability and justice frameworks. Age-inclusive mobility does not arise from isolated retrofits or pilot initiatives; it stems from coordinated policy frameworks that acknowledge ageing as a persistent characteristic of modern urban societies. When age is viewed as a regulatory variable instead of a residual user

category, mobility planning transforms into a long-term societal investment, bolstering cities' ability to manage demographic transitions with resilience rather than stress.

4.8 Conclusions and prospective research directions

This paper contends that age-inclusive mobility should be regarded not as a marginal or compensatory issue in transport planning, but as a systemic result arising from the interplay of individual competencies, infrastructure design, technological mediation, and governance frameworks. Demographic data unequivocally indicates that population ageing signifies a structural and enduring transformation rather than a transient welfare concern. By the middle of the century, almost a third of Europe's population will be 65 or older.

Countries like Italy are already seeing the effects of an ageing population (United Nations, 2022; Eurostat, 2021; ISTAT, 2023). In this context, transportation systems designed primarily for throughput maximization, peak-hour commuting, and productivity-oriented metrics are becoming increasingly incompatible with the mobility requirements of ageing populations. These models inadequately promote autonomy, social participation, and well-being throughout the life course, resulting in accessibility gaps that compound over time.

The results strengthen the increasing evidence indicating that mobility in later life is a crucial factor influencing social connectedness, psychological well-being, and health outcomes (Felipe et al., 2022; Lowe et al., 2024). Accessibility cannot be solely defined by spatial coverage or travel time; it must be understood as a multidimensional condition that includes physical exertion, comfort, perceived safety, cognitive clarity, and emotional reassurance. In this regard, the paper proposes a conceptual framework that synthesizes perspectives from gerontology, universal design, transport equity, and systems thinking (WHO, 2007; van Hoof & Marston, 2021; Bierbaum, Karner & Barajas, 2021; Ma et al., 2022). The framework asserts that age-inclusive mobility can solely be realized through the synchronized integration of physical infrastructure, digital services, and institutional regulation, rather than through fragmented interventions aimed at individual system components.

The empirical evidence presented in this paper demonstrates that universal design interventions, including barrier-free pedestrian networks, sheltered and legible stops, level boarding, and continuous sidewalks, significantly improve independent mobility among older adults (De Sá et al., 2024; Verma, 2024). On the other hand, broken or discontinuous infrastructure

makes mobility disadvantage worse, even when service levels are high (Ravensbergen et al., 2022). These findings highlight that accessibility deficiencies frequently stem not from a lack of infrastructure, but from a misalignment between constructed environments and age-related competencies.

The analysis further illustrates the dualistic role of digital innovation in influencing age-inclusive mobility. Digital tools like real-time information systems, mobile ticketing, and integrated Mobility as a Service (MaaS) platforms can make people feel more confident, flexible, and in control when they are part of hybrid access regimes that keep analogue options (Loos, Sourbati & Behrendt, 2020; Morte-Nadal et al., 2025; McIlroy & McPeake, 2025).

However, when digitalization is pursued as a substitute rather than a complement, it may worsen exclusion due to interface complexity, cognitive overload, and unequal digital literacy. The comparative case analysis uncovers feedback dynamics typical of intricate socio-technical systems. When infrastructure is easy to get to, digital tools are available to everyone, and services are cheap, they all work together to create positive feedback loops. This leads to more participation, better health outcomes, and stronger social participation (Felipe et al., 2022; Lowe et al., 2024). Negative feedback loops, on the other hand, happen when digital barriers keep seniors from using public transportation, which leads to service cuts and more exclusion. This is in line with systems-based studies of declining mobility (Ma et al., 2022).

These dynamics affirm that age-inclusive mobility represents a systemic equilibrium condition rather than a direct outcome of individual policy measures. Consequently, policy interventions must be proactive and integrated within planning, evaluation, and regulatory frameworks. The literature on transport equity illustrates that redistributive principles can be implemented within optimization and evaluation models (Johnson et al., 2025), and that acknowledgment of marginalized mobility practices is essential to both procedural and distributive justice (Bierbaum et al., 2021; Amorim, de Abreu e Silva & Gonçalves, 2025). Incorporating age-sensitive criteria into conventional decision-making processes is essential not only for social inclusion but also for the long-term sustainability and legitimacy of transportation systems.

The study also paves the way for further research in multiple directions. Empirical research must evaluate the proposed Age-Inclusive Mobility Assessment Model via longitudinal and multi-city studies, integrating accessibility indicators, capability-based metrics, and measures of technological acceptability. These methods would allow for the analysis of the evolution of mobility trajectories over time and the emergence of cumulative

disadvantage in various urban and institutional settings. Comparative research across welfare regimes could elucidate the influence of governance structures on distributive outcomes, while an intensified focus on periurban and rural areas would rectify notable deficiencies in the existing literature (Giménez-Nadal et al., 2024).

Additional research is required to elucidate the heterogeneity within older populations. Mobility experiences in later life differ significantly based on gender, income, disability status, digital literacy, and migration background; however, these intersecting factors are insufficiently examined in transport research. Simultaneously, digital transition studies ought to extend beyond adoption rates to investigate human–machine interaction, interface simplicity, community-based onboarding practices, and the efficacy of hybrid payment systems. As cities continue to experiment with MaaS, automation, and contactless mobility (Macário et al., 2024; Morte-Nadal et al., 2025), comprehending how these innovations transform accessibility among ageing populations is essential.

Methodological innovation constitutes a significant research frontier. Static accessibility indicators need to be combined with participatory and behavioral methods that can measure the time, sensory, and emotional aspects of daily mobility. Travel diaries, ethnographic shadowing, and sensor-based walking studies present effective methodologies for uncovering friction points that are not apparent in aggregated data. Incorporating these methodologies into mixed-method system models may facilitate the creation of predictive simulation tools designed to assess the long-term distributive impacts of digitalization, electrification, and fare restructuring across various demographic scenarios. These tools would be very useful for predicting when accessibility will drop and stopping the formation of exclusionary feedback loops.

This study ultimately shows that mobility that includes people of all ages is not only a social necessity but also a key part of long-term urban development. Investments in accessibility, digital inclusion, and equitable pricing structures can potentially lower future healthcare and assisted living costs, facilitate ageing in place, and bolster local economies by allowing older adults to remain engaged in civic life (Lowe et al., 2024). The change that needs to happen is not small or surface-level; it requires a complete overhaul of how transportation is managed that takes into account the ageing population as a key planning factor.

Transportation systems made for older people have benefits that go far beyond the people they were made for. Universal design helps families and people with disabilities. Simple digital interfaces help tourists and people

with low literacy. Affordable measures help low-income people. Walkable, safe places help the environment and public health. In this way, mobility that includes people of all ages can help cities become more sustainable in a bigger way.

In conclusion, age-inclusive mobility serves as a solid basis for interdisciplinary research and the formulation of evidence-based policies. It changes the way we think about older adults, seeing them not as leftover beneficiaries of social policy but as important players in the future of cities. The problem now is not finding technical solutions, since many of them already exist, but putting them together into coherent, systemic strategies that bring together infrastructure, technology, and governance. This study provides a cohesive conceptual framework, a multi-faceted methodological approach, and empirical insights into systemic dynamics, establishing a foundation for applied research that can assist cities in managing demographic change with equity, foresight, and institutional accountability.

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The volume advances an integrated argument for inclusion in aging societies, demonstrating that aging cannot be reduced to behavioral exhortation. Participation is stratified by available resources; autonomy is shaped by urban infrastructures; rights are mediated through digital systems that can both enable and exclude; and mobility depends on the alignment of infrastructure, technology, cost structures, and governance.

Three core themes run throughout: equity and stratification, infrastructure understood in a broad sense, and context-sensitive policies. The book's distinctive contribution lies in combining quantitative, qualitative, legal, and systems-based approaches to translate inclusion into concrete governance and design requirements. Its central message is clear: inclusion will not emerge from invoking "active aging," but from embedding it structurally within the institutions and infrastructures that organize participation, services, and mobility.

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