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Review paper / Pregledni znanstveni članak

DOI: <https://doi.org/10.25234/dosd/39220>

# ACTIVE AGEING IN THE EU 27: HOW TO OVERCOME DIGITAL (LANGUAGE) DIVIDE\*

## Abstract

Contemporary European societies are facing a growing ratio of older people within the overall demographic structure of the European Union, a trend affecting societal changes in aspects of personal, family and social life with shifts in individual needs related to healthcare and social welfare services, transformations in cultural and social participation, and significant transitions in family structures. In order to maintain quality of life, older people can remain engaged, healthy and socially connected through active ageing, while fostering intergenerational relationships. However, in light of contemporary social and technological developments, such outcomes are difficult to achieve without digital literacy. Access to digital technologies and skills required to use them have become key prerequisites for sustaining active ageing. Beyond their instrumental value, digital technologies represent a major civilisational

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This review paper is based on a revised and substantially expanded Master's thesis by Evelin Čanji, defended at the Faculty of Law, Josip Juraj Strossmayer University of Osijek on 10 July 2025, titled (Active) Ageing in Perspective of the Global Sustainable Development Goals, under the supervision of Katarina Marošević, Ph.D., Associate Professor, and co-supervision of Dubravka Papa, Ph.D., Associate Professor.

achievement and a significant source of opportunities for both individuals and societies. The aim of this paper is twofold: (a) to analyse population ageing in Croatia in comparison with other EU27 countries, and to examine the Active Ageing Index (AAI) across the EU27 using the most recent available data (AAI 2018); and (b) to provide a theoretical analysis of the economic and social challenges associated with active ageing, with particular emphasis on the digital (linguistic) divide as a key contemporary challenge for older people. Rather than treating digital and linguistic exclusion as an additional or peripheral issue, the paper conceptualises it as a cross-cutting structural factor that shapes participation, inclusion, and policy outcomes in the context of active ageing. The analysis is situated within the broader framework of the Sustainable Development Goals.

**Keywords:** *active ageing, Croatia, digital (language) divide, older people, Sustainable Development Goals*

## 1. INTRODUCTION

The rapid ageing of the world's population has become one of the most prominent demographic and social challenges of recent decades. Within the European Union (hereinafter: EU), population ageing has profound implications for labour markets, social protection systems, healthcare provision, and social cohesion. Similar demographic dynamics are evident in Croatia, where ageing trends are accompanied by structural economic and regional disparities. In response to these developments, the concept of active ageing has emerged as a key policy framework aimed at promoting participation, autonomy, health, and social inclusion among older people.

At the same time, contemporary societies are undergoing accelerated digital transformation. Access to public services, information, social participation, lifelong learning, and even healthcare is increasingly mediated through digital platforms. As a result, the effectiveness of active ageing policies can no longer be analysed independently of digital accessibility. In digitalised societies, active ageing presupposes not only physical and social participation, but also the ability of older people to access, understand, and use digitally mediated environments.

In this context, the digital divide represents a structural constraint on the implementation of active ageing policies. Importantly, this divide extends beyond questions of access or technical skills. Language plays a critical role in shaping digital inclusion, particularly for older people, for whom digital services are often not available in their mother tongue or are presented through linguistically complex and exclusionary interfaces. This phenomenon, conceptualised in this paper as the *digital language divide*, limits effective access to digital services and participation opportunities, thereby undermining the core objectives of active ageing. Consequently, active ageing in digitalised

societies cannot be meaningfully analysed without considering digital and linguistic accessibility as a constitutive condition rather than an auxiliary issue.

Against this background, the aim of this paper is to analyse active ageing in Croatia in comparison with other EU27 countries, with particular attention to demographic trends and the economic and social challenges of ageing societies. The paper further examines how the digital divide, specifically the digital language divide, conditions, access to and the effectiveness of active ageing policies and programmes. Rather than treating digital and linguistic exclusion as an additional topic, the paper conceptualises it as a cross-cutting structural factor that shapes participation, inclusion, and policy outcomes in the context of active ageing. The analysis is situated within the broader framework of the Sustainable Development Goals (hereinafter: SDGs).

Methodologically, the paper employs a combination of comparative analysis, analysis and synthesis, induction and deduction, and historical analysis. Comparative methods are used to examine demographic ageing trends and active ageing policies in selected EU27 countries, with a specific focus on Croatia. Drawing on digital divide research and sociolinguistic approaches, the paper further conceptualises the digital language divide as a mechanism of exclusion that intersects with age-related inequalities. By integrating demographic, economic, social, and digital-linguistic perspectives, the paper seeks to provide a coherent analytical framework for understanding the conditions under which active ageing policies can be effective in digitalised societies.

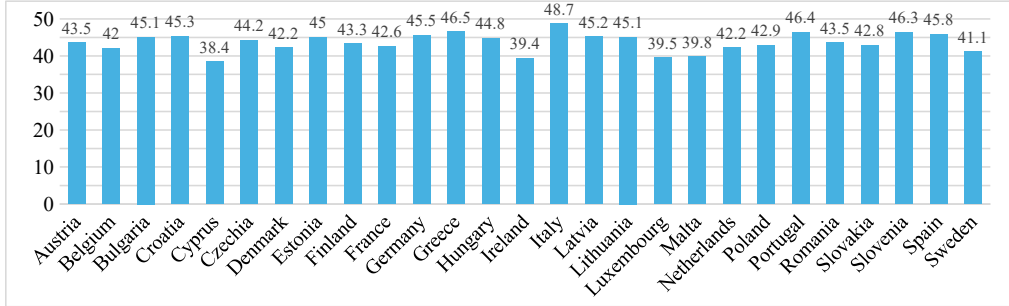
The paper is structured as follows. The second section presents ageing trends in the EU27, with an emphasis on Croatia. The third section analyses the economic and social challenges of ageing societies, introduces the concept of active ageing and examines the Active Ageing Index (hereinafter: AAI). Building on these analyses, the fourth section conceptualises the digital divide, focusing on its linguistic and age-related dimensions, as a structural constraint on active ageing, and discusses digital and linguistic inclusion in the context of the 2030 Agenda. The final section summarises the main findings and outlines implications for policy and future research.

## 2. AGEING TRENDS IN THE EU27 WITH AN EMPHASIS ON CROATIA

The rapid ageing of the population is an irreversible global trend, which has led to 1 in every 10 people worldwide aged 65 years or older (United Nations Department of Economic and Social Affairs, 2023). According to Eurostat (2025), the population of the EU in January 2024 was estimated at almost 450 million people with more than one fifth of the population, approximately 22%, was aged 65 years and over. Considering the

median age of the population across EU27 in 2024, Italy had the highest median age at 48.7 years. The lowest median age during 2024 was recorded in Cyprus, sitting at 38.4 years (Figure 1), while Croatia's median age was 45.3 years.

Figure 1 Median age of population in the EU in 2024



Source: Eurostat (2025)

As a result of the gradually growing median age and the rise in the population aged 85 years and over, there is a growing number of individuals dependent on others for support. The old-age dependency ratio is often used to assess the level of support that can potentially be given to older people by the working-age population. This ratio also helps express the relative size of older population compared to the working-age population. The old age dependency ratio in EU countries was 25.9% in 2001, which means that there were slightly fewer than four people of working age for every person aged 65 or over. However, by 2019 the old age dependency ratio was over 34%, meaning that there were fewer than three working-age individuals for every older person. In 2024, the old-age dependency ratio was still 34% for the countries of the EU; however, globally this ratio amounts to nearly 57% (Eurostat, 2025). Moreover, the European Commission's population projections suggest that the old-age dependency ratio across EU countries will reach 56.7% by 2050, meaning that there will be fewer than two people of working age sustaining each older person (European Commission, 2020). By 2050, more than two thirds of the EU countries are projected to record an old-age dependency ratio above 50%, with seven Member States, in which the ratio is projected to reach 60% at a minimum. The highest rates are projected to be in Italy with 66.5%, followed by Greece with 68.1% and lastly Portugal with 68.8% old-age dependency rates (European Commission, 2020). Following all relevant data outlined above, it is evident why, in 2017, the European Parliament, the Council and the Commission proclaimed European Pillar of Social Rights built upon 20 key principles at the Gothenburg Summit (European Commission, n. d.). As stated by Bežovan and Baturina (2019), establishing the European Pillar of Social Rights is a part of broader effort in building a more inclusive and sustainable growth model with a fair labour market and a welfare state.

Demographic trends in Croatia are not any different than the European trend. Croatia is becoming one of the European countries with extremely unfavourable demographic processes and structures (Peračković and Pokos, 2015). According to the 2021 population census, the percentage of those aged 65 years or over within the overall population in Croatia is 22.45% (Croatian Bureau of Statistics, 2023) and according to the projections of the European Commission, by 2050, Croatia is expected to have over 30% of the population aged 65 or older (European Commission, 2020). The median age of the population in 2010 was 41 years, which raised to 44.2 over the course of a decade and by 2050 the median age in Croatia may reach 49 years (United Nations, 2024). Moreover, migration trends, natural and mechanical, in Croatia are dynamic and rather concerning, as mentioned by Marošević (2021). These migration trends in Croatia align with trends observed in the vast majority of other Central and Eastern European national economies. These EU countries are also experiencing long-term negative trends in natural population changes, as well as negative trends regarding mechanical population movement. In Croatia, trends of mechanical population loss have been particularly emphasized after joining the EU in 2013 – due to citizens' freedom of movement. One of the largest negative population changes in Croatia was recorded in 2017, with 16,921 more deaths than live births. Similar data exists for 2019, with the negative natural increase reaching 15,659. This population decline has been especially evident in the Croatia's less developed counties (Marošević, 2021). Therefore Croatia also marks an ageing trend. The percentage of older people in the overall population was 17.7% in 2011 and it increased to 22.5% within a single decade (Croatian Bureau of Statistics, 2023) and country's population is among the ten oldest populations globally (Jedvaj *et al.*, 2014). The rapidly increasing share of older people, most of whom are economically inactive or retired, poses a significant threat for the country's financial security. This demographic shift increases demand for healthcare, as well as medical and social services. Older people often face challenges such as living alone, poverty, social marginalisation and dependency on other people's help for sustaining daily activities (Peračković and Pokos, 2015). Additionally, they are often perceived as a burden on society, with health conditions often cited as the main obstacle to their active inclusion into the society, as well as their economic independence and involvement in various aspects of social life (Obadić *et al.*, 2021). In line with demographic ageing trends in Croatia, in 2025 an important strategic document – the Operational Plan for the Development of Integrated Long-Term Care in the Republic of Croatia from 2025 to 2030 was presented (Ministry of Health and Ministry of Labour, Pension System, Family and Social Policy, 2025), offering an analytical study on long-term care in the Republic of Croatia and the main challenges and opportunities for strengthening long-term care, such as assessment of long-term care needs, assessment of long-term care management in the Republic of Croatia, assessment of long-term care provision, long-term care workforce assessment and assessment of long-term care financing in Croatia. In light of these considera-

tions, population ageing should be viewed as a potential created out of contemporary better health conditions and therefore also adjusted for these new trends were digital environment should be perceived as one potential solution for policy implementations. Since Croatia is among the countries facing projections indicating further ageing in the coming decades, the labour force, the financial sustainability of pension systems, healthcare services accessibility, the social inclusion of older people as well as financial literacy in context of adapting to new technologies important for everyday activity, it must be carefully designed.

### 3. ECONOMIC AND SOCIAL CHALLENGES OF AGEING SOCIETIES

The increase in the life expectancy over the past couple of decades is a result of greatly improved living standards, better access to healthcare, higher quality services, healthier dietary habits, advancements in the field of medicine, preventive measures, and increased focus on physical health and regular exercise (Vuletić *et al.*, 2018). Ageing is a natural process in every person's life with a vast number of changes – overall health, social status, psychological and physiological functions and a necessity to adapt to these changes (Marinović Glavić *et al.*, 2020). Unfortunately, the rights of the elderly are not specially codified at international level (Roksandić and Šikoronja, 2022, 13). A multi-disciplinary science that studies the aging process and old age in the broadest sense – gerontology, as stated by Rusac and Štambuk (2024) – from 60's and 70's of the 20<sup>th</sup> century began to include interdisciplinary approaches and it will in future be developed as multidisciplinary scientifically discipline with aim of understanding complexity of ageing and efficient intervention development and policies for improving the quality of life of the elderly and society as a whole. Therefore, this chapter is not limited to one, but both, economic and social challenges of ageing societies.

Older people of the same age can have a dramatic variation in health status, participation and levels of independence (WHO, 2002), but age and the process of ageing are not synonyms. The term age refers to the passage of chronological time, whereas ageing is a process that generally increases the likelihood of adverse outcomes over time. Older age is a significant risk factor for many diseases and health issues, but it does not necessarily lead to such complications (Gordon and Hubbard, 2022). In other words, ageing is the accumulation of changes in a human being over an extended period, consisting of physical, psychological, and social transitions (Prakash, 1997). It is often associated with significant life transitions, retirement or the loss of friends and partners and may cause diversity in population of older people – older people that age naturally over time (primary ageing), while others experience premature ageing due to outside factors, such as external factors, including pathological changes caused by disease, environmental

and behavioural factors (secondary ageing). The same author categorizes four different groups of older people based on their chronological age: a) younger-old individuals, aged 65 to 74 years; b) older-old individuals, aged 75 to 84 years; c) oldest-old individuals, aged 85 and above; d) the centenarians are individuals who are 100 years or older (Vuletić *et al.*, 2018). From the psychological and social perspectives, Schaie and Willis (2001) categorized older people into four distinct groups: a) the “non-old” group (individuals who view their chronological age as nothing more than a number, remaining socially engaged and active); b) the “active old”, includes those over the age of 65 (despite some biological hardships and issues, lead fulfilling lives and have many hobbies, interests and social connections); c) the “withdrawn” (older people who accept ageing without perceiving it as a limitation or a disadvantage, using their free time for personal joy and fulfilment); d) the “marginalized” (due to health issues, financial difficulties and social isolation, align with the traditional image of old age, gradually becoming increasingly dependent on other people’s help). We might say that ageing is a complex process influenced by biological, psychological, social and environmental factors, rather than just chronological age. Due to its complexity and the multitude of different factors having an impact on the ageing process, population of older people is highly diverse. Bakotić and Vulić (2022) emphasize that older workers may have different abilities and needs compared to their younger counterparts, with potentially reduced physical abilities impacting their levels of productivity and may have less flexibility and adaptability to the labour market, new technologies and modern working conditions.

When speaking of economic challenges of the population ageing, Maresova *et al.* (2014) state expectance of lowering labour-force participation and savings rates that could slow future economic growth and the need of developing the healthcare expenditure in the context of ageing population as well as needed investment in innovation in health care due to the ageing population. There are existing difference in the relationship between gender, marital status and level of education with the subjective assessment of the health of older people and their functional ability (Marinović Glavić *et al.*, 2021). Health issues among older people could contribute to the healthcare systems becoming overloaded, leading to longer waiting times for necessary medical services and higher healthcare costs (Bakotić and Vulić, 2022). The affordability and accessibility of healthcare services among the Member States are inadequate, making it harder for older people to prevent the development of health complications, get the treatments they need and live healthy lives (European Economic and Social Committee, 2024). Population ageing as a part of demographic changes have a strain on the pension system. Most pension systems in the EU operate on a “pay-as-you-go” approach, meaning that due to the increased life expectancy, pensions are paid out for a longer duration (European Economic and Social Committee, 2024, 4). Intergenerational solidarity in the context of the pension system is one of the key principles of sustainability, where wealthier segments of society contribute more to finance pensions for more deprived

or less wealthy residents (Puljiz, 2007). In order to stabilize the financial sustainability of pension systems, many Member States have either raised the retirement age in the recent decades alongside the changes in life expectancy or are considering doing so (European Economic and Social Committee, 2024), but often the only solution to the sustainability issue of the pension system is seen in increasing the retirement age (Grady, 2016).

As a part of social challenges in retirement, older people living in communities lack social capital and connection, known as social detachment phenomenon, as the typical modern family structure provides less intergenerational support (Sander *et al.*, 2015). The feeling of loneliness can have a meaningful impact on a person's quality of life and health condition. Across the EU, over 18% of older people reported a frequent feeling of loneliness in 2016 (Sandu *et al.*, 2021). Ågotnes *et al.* (2022) explores the need of older people for social interaction through the lens of community, as a concept and as a lived experience. The dominant policy discourse was given to 'ageing in place' where the attention is given to communities of peers and arenas for everyday interaction. Tomek-Roksandić *et al.* (2005) emphasize gerontological centres implementation for direct non-institutional care for the elderly in the local community in order to help in loneliness of the elderly, healthy activism and productive aging and to keep the elderly as long as possible in their place of residence in the local community in which they live. Besides, organized activities provide intergenerational connection between young and elderly people with the necessary application of the potential of the elderly in the transfer of knowledge, skills and abilities by providing gerontoservices, in which functionally older people actively participate in the transfer of experience from their fields of expertise to younger age groups.

### 3.1. THE CONCEPT OF ACTIVE AGEING

Older people could and should have possibility to remain active and independent members of society and receive appropriate care and live in dignity (Marošević *et al.*, 2024). With development of more inclusive message to the older people and approaching the ageing process based on the recognition of the human rights of older people, as well as the United Nations principles of independence, participation, dignity and care, the term active ageing was developed by WHO (Liotta *et al.*, 2018). Husain presents a positive experience of ageing by the active ageing concept that was introduced by WHO in 2002, emphasizing that "the increase in longevity must be simultaneously accompanied by an increase in opportunities for health, participation and security" (Husain, 2020, 25). It is a response to the needs of older people in modern society for various policies, development strategies and their corresponding action in order to improve the quality of life while extending the lifespan of older people and ensuring

they remain in their own communities, have access to healthcare and social services, are socially active and equal and can contribute to community life for as long as possible, serving as a mechanism for protecting human rights (Rešetar and Balog, 2024). Contemporary academic literature has become richer in active ageing as a topic and from different perspectives and most of them focus on engagement, health and quality of life of older people and most of them emphasize that it refers to the process of remaining healthy in cognitive and physical sense and active in older age while assuring quality of life as a central aim realizing their fully potential.

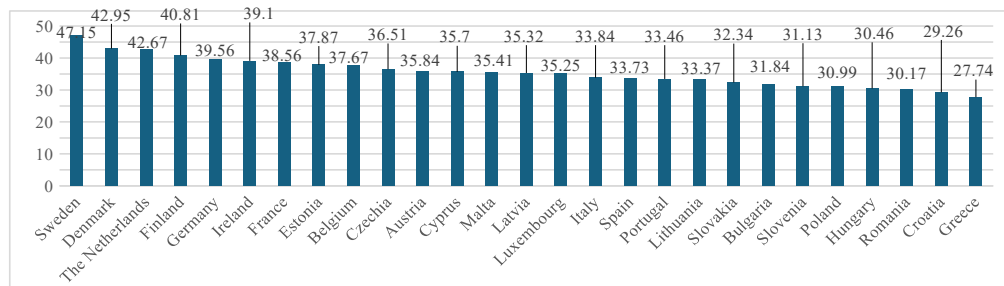
The promotion of the active ageing concept and gaining a deeper understanding of the ageing process and old age are key factors in facilitating social and demographic sustainability (Fernández-Mayoralas and Rojo-Pérez, 2021). Zrinščak and Lawrence (2014; according to Boudiny, 2013) speak of the challenge for policy-makers to transform active ageing into a dynamic concept being inclusive for all and therefore active ageing should be extended to engagement in all arenas of life and not only economic and physical activities.

Active ageing is often also used as an equal term to successful ageing – crucial for older people is to be at peace with themselves, perceive their relationships in a positive light, have autonomy, a purpose in life and be able to achieve personal growth despite their age. Active ageing is multidimensional, meaning a low probability of disease and disease-related disability, while also referring to a high cognitive and physical functional capacity and the ability to actively engage in social and productive activities, and not just the absence of disease and disability (Fernández-Ballesteros *et al.*, 2021). Husain (2020) mentions four different factors comprising key aspect of active ageing: autonomy, independence, quality of life and healthy life expectancy. Some other influential factors are the state of the labour market and employment opportunities, education, healthcare and social policies, as well as the existence of programmes that support the full participation of older people in all cultural, social and spiritual activities made within their needs, capacities and personal preferences, allowing them to make a productive contribution to society. WHO's active ageing framework includes six main determinants to successful ageing: healthcare and social services, different behaviour of older people, personal factors, physical environment, social environment and economic surroundings of older people. Two more are considered important – the cultural surroundings and the gender of the person (WHO, 2002). The older people's quality of life that could significantly improve their living standards are the social welfare and healthcare systems and need for an inclusive society through the work and active engagement of local communities and the family relationship (Marošević *et al.*, 2024). There are additionally a number of key components to active and healthy ageing that include physical and mental activity, social inclusion, a balanced nutrition, disease prevention and regular medical check-ups, adapting to new technologies and overall psychological well-being and regular

physical activity and maintaining mental sharpness. Developing habits that contribute to achieving health – practicing flexibility exercises, aerobics, strength training, reading, learning new skills or participating in lessons and courses, a balanced and proper nutrition, monitoring health and preventing diseases, and additionally, learning to use smart devices, social media, and other technological innovations can greatly contribute to active ageing. Combining personal and external factors, active ageing encourages autonomy, independence and social engagement, while enhancing the quality of life of older people (Liotta *et al.*, 2018).

In measuring active ageing, AAI is being used. The AAI monitors and compares the active ageing outcomes at international, national and subnational levels, while the main benefits of the AAI is that it “enables credible comparisons between EU countries by quantifying the differential extent to which older people have realised and can further realise their potential in distinct domains that determine their active ageing experiences” (Zaidi *et al.*, 2018, 3). It reflects multidimensional aspects of ageing, since according to the European Commission and the United Nations Economic Commission for Europe (hereinafter: UNECE), the AAI project emphasizes out of four different domains – capacity and the enabling environment for active ageing as a capacity to actively age and employment, social participation and independent, healthy and secure living as actual experiences of active ageing (UNECE/European Commission, 2015). Sweden was the country with the highest AAI in 2010 (42.30) and in 2016, while Croatia was ranked among the bottom few in 2010 (27.49) and in 2016 (29.26) (European Commission, JRC Indicators, n. d.). There was the overall increase across nearly each EU 27 country between 2010 and 2016 and for 2018, results of AAI overall trends in the EU have been positive, but some Eastern and Southern European countries still lag behind, achieving under 30.0 points, e.g., Greece, Croatia (Figure 2).

Figure 2 AAI across the EU 27 in 2018



Source: European Commission. JRC Indicators (n. d.)

Besides in-between domains, differences can also be found between genders. According to Olivera (2018), older females are the most at risk of poverty, as they have a

higher life expectancy, less time in the labour market, fewer social security contributions and a higher probability of living alone. Since the AAI is strongly correlated with life satisfaction (as measured by the European Quality of Life Survey), its measurement becomes even more important for managing a fulfilling life (UNECE/European Commission, 2015). For older people, digital literacy may play an important way of improving their loneliness or connections with members of their family and therefore the upcoming part is dedicated more to the mentioned challenge.

#### 4. DIGITAL DIVIDE – A THEORETICAL OVERVIEW IN THE CONTEXT OF ACTIVE AGEING POLICIES

Active ageing policies are structurally dependent on digital accessibility since access to welfare services, health information, lifelong learning, civic participation, and labour market opportunities is increasingly mediated through digital infrastructures. Consequently, active ageing can no longer be conceptualised independently of the digital conditions under which older people participate in social, economic and cultural life. Digital accessibility thus constitutes a structural condition of possibility for active ageing policies, rather than a secondary or supportive dimension. According to Hartnett (2019), the concept of the digital divide emerged in the 1990s in the United States to describe inequalities in access, first to computers and later to the Internet, information and other digital technologies. The term referred initially to physical access, distinguishing populations with access to technology from those without. However, over time a more complex representation of the phenomenon has developed since then. Other factors, such as differences in motivation, intention to use digital technology, digital skills, and social support gave rise to the second-level digital divide, while disparities in the outcomes of internet use constitute the third level (Hartnett, 2019). While early digital divide research was largely technocentric, subsequent theoretical developments shifted towards sociocultural, communicative and structural dimensions of digital inequality. Since 2014, the term postdigital has been applied in social sciences, education and linguistics as a concept that helps explain contemporary relationship between technology, language, society and knowledge. The focus is on research how algorithms, artificial intelligence, and digital platforms reproduce linguistic and cultural hierarchies and how power and access to knowledge are redistributed in a postdigital society (Fawns *et al.*, 2023). Postdigital refers to a broader social, research, and philosophical understanding of a world in which digital technologies are already fully integrated into everyday life and comprises a social condition lacking a clear boundary between analogue and digital. Moreover, this research approach and critical perspective treats digital as a common part of social reality, and a worldview based on the assumption that technology is not separated from but organically connected with culture, language, and social relations.

In this regard, Hartnett (2019) notes that the research into the phenomenon of digital divide resulted in the identification of various sociodemographic factors dividing certain groups as regards usage and outcomes of digital technologies. These factors include age, income, education, employment status, and geographic location (e.g., urban/rural area). Concepts such as digital inclusion/exclusion and digital capital increasingly highlight how sociodemographic disadvantage reflects and reinforces existing social inequalities. Research on the digital divide shows that while gaps in access have narrowed, inequalities in use and outcomes have deepened, particularly in societies where digital technologies are widely available. Hartnett (2019) states further that research has identified different user groups ranging from non-users to experts, alongside the ongoing development of digital divide theories tested through large-scale international data. Moreover, Hartnett (2019) states that contemporary studies show that the digital divide is dynamic, evolving with increased device use, growing technological complexity and changing social contexts. Analyses of digital inclusion initiatives further indicate that there is no universal solution and that public policies play a key role in ensuring that investments in digital infrastructure and technological development are evenly distributed across society.

According to Hartnett (2019), the history of digital divide research encompasses more than three decades of theoretical development and can be systematically presented through several theoretical directions that reflect changes in the understanding of the relationship between technology, society, and language, from early techno centric approaches to contemporary sociocultural and critical sociolinguistic perspectives. Hartnett (2019) adds that diachronically speaking, the development of theories on digital divide start from a technological-deterministic approach in the 1990s, through a socio-economic and competence approach in the early 2000s, towards cultural-communicative and inclusive perspectives in the mid-2000s, to end in a global-critical framework in the 2010s, which views the digital divide as a multi-layered phenomenon rooted in the structures of social inequalities. Such developments indicate a gradual transformation from a quantitative to a qualitative understanding of how people of different languages, cultures and social positions use and shape digital technologies. Concerning the themes in digital divide research, they are addressed in different dimensions of access, usage and social consequences of information and communication technologies (hereinafter: ICT) (Hartnett, 2019). Thus, Norris (2001) studies the digital divide between industrialised and developing countries at the global level and Songan *et al.* (2008) use the term *community informatics* to describe the use of ICT in reducing the digital divide. Songan *et al.* (2008) state that the success of such initiatives depends on infrastructure costs, connectivity and continuous use of technology, the language of educational materials, especially in countries where English is a second language, and on a coordinated and professional approach to implementation. Peters (2006) highlights the role of digital technologies in empowerment but stresses that policy decisions determine access to

their benefits, and Unwin and De Bastion (2019) point to the social, geographical and economic dimensions of the digital divide, calling for coordinated international and national action. Warschauer and Matuchniak (2010) indicate that, despite the rapid spread of digital technologies over the past two decades, digital inequalities still exist in all parts of the world. In developed countries, the digital divide no longer refers primarily to physical access, but to different ways of using technology, while in developing countries, limited physical access to infrastructure, computers and the Internet, must be balanced with other social priorities. Castree *et al.* (2013, 176) use the term to describe inequalities in access to the Internet and other digital technologies. The authors distinguish between two different types of gaps i.e. the social gap based on income, gender, and age, whereas the spatial gap refers to differences between urban and rural areas, regions within a country or different parts of the world. Thus, the authors define the digital divide as spatial and social inequality in access to technologies. Similarly, Kady and Vadeboncoeur (2024) define the digital divide as the difference between those who have access to technology and those who do not, noting that differences in access arise from variations in income, education, place of residence, age, and ethnicity. Kady and Vadeboncoeur (2024) further conclude that income and education are the most significant in determining the level of access. Furthermore, they state that, with the increase in the prevalence of ICT, a new gap arises from differences in technological skills, which may further deepen existing inequalities. Finally, Mayhew (2015, 136) defines the digital divide as differences in access to devices, information, and the Internet at different geographic, regional, and national levels emphasizing that it can result in unequal access to resources and education. Strategies to reduce the gap, according to Mayhew, are often based on the use of new technologies adapted to local socioeconomic conditions. Van Dijk (2020) builds on this perspective and defines digital access as the full adoption of technology by users. In his view, digital access is more than the physical availability of hardware, software, and the Internet, and introduces the notion of a second-level digital divide. This gap includes differences in motivation, attitudes towards technology, intention to use and available social support for different groups of users (van Dijk, 2017). Finally, Bhatt (2023) discusses the concept of post-digital literacies, as those taking place within the so-called post-digital ecological literacy systems, literacy practices that no longer take place in the “digital” v. “analogue” world, since these are intertwined. The post-digital approach facilitates transdisciplinary research into language, technological, social, and cultural processes. This framework is particularly useful for understanding new forms of digital inequality that are not based solely on physical access to technology, but on opportunities to participate in digital ecosystems of meaning. Such an understanding goes beyond the classic theories of the “digital divide” by van Dijk (2017) and Warschauer *et al.* (2004) and introduces the dimensions of linguistic, cognitive and semiotic involvement. Besides, the phenomenon of the digital divide has been explored through different but related topics such as the role of communities and languages in

digital inclusion by Songan *et al.* (2008), and the potential of digital technologies for social empowerment by Peters (2006). One of the topics additionally emphasized the need for globally coordinated action to reduce inequalities in access and use of technology (Unwin and De Bastion, 2009). Digital divide has been further researched from an infrastructural approach by Castree *et al.* (2013), Warschauer and Matuchniak (2010), strategic approaches adapted to local contexts by Mayhew (2015), and socio-economic factors and skills in the application of digital technologies by Kady and Vadeboncoeur (2024) and van Dijk (2017).

#### 4.1. SOCIOLINGUISTIC DIMENSIONS OF THE DIGITAL DIVIDE

Digital accessibility cannot be reduced to technical access to devices or internet connectivity. It necessarily includes linguistic accessibility, that is, the availability of digital environments, services and information in forms that are linguistically comprehensible to their users. From this perspective, digital participation presupposes not only access to technology, but also access to meaning. Language therefore emerges as a key mediating factor between digital infrastructures and social inclusion in later life. Within this framework, the digital (and specifically digital linguistic) divide does not merely add another layer to the analysis of active ageing policies; rather, it defines the analytical boundaries and determines policy outcomes. This part of the paper builds on previous research on digital inequality and expands it by introducing a sociolinguistic perspective that emphasizes the role of language as a fundamental assumption of digital inclusion. In accordance with the recommendations of the UNECE (2021) and the European Commission (2021), linguistic accessibility of digital tools is a prerequisite for reducing the digital divide between generations. This confirms that digital transformation cannot be considered socially sustainable without the simultaneous development of language and communication policies that enable equal access to all age and language groups. Van Dijk (2017) develops a theoretical framework for the analysis of digital inequality, which includes a causal chain from categorical inequalities to unequal social participation. It starts from the assumption that categorical inequalities in society, personal (age, gender, ethnicity, intellectual abilities, and health condition) and positional (level of education, employment, social status, belonging to a developed, or developing country) produce unequal distribution of resources, which in turn results in uneven access to digital technologies. Furthermore, this approach also depends on the structural characteristics of the technologies themselves (e.g. interface complexity, language accessibility), and the unequal possibility of their use leads to different levels of digital and social participation. In this way, according to van Dijk, the digital divide is a dynamic social process that reproduces existing forms of social inequality through digital participation. Van Dijk (2020) also points out that the key challenge is in the competencies required for effective use of digital tools, among which language and communication literacy stand out, i.e.

knowledge of English as the dominant language of the Internet and digital technology. Obstacles that limit the successful digital participation are most clearly recognized in the dimensions of skills. Among the main factors contributing to these differences are age, insufficient digital literacy and poor knowledge of the English language, which together shape patterns of digital exclusion in the modern information society. Warschauer (2003) sees digital inequality as a reflection of existing social inequalities that are present in age, language, geography, and education, and technology often mirrors or deepens them. He also proposes a broader approach that includes factors such as digital skills, socio-cultural context, and opportunity to use technology and the content and language of digital tools (Warschauer, 2002).

#### 4.2. DIGITAL DIVIDE AS DIGITAL LANGUAGE DIVIDE AND DIGITAL AGEISM

The results of the research conducted by Zlomislić *et al.* (2022) point to obstacles in the digital inclusion of older people, especially those over 60, which opens up space for new research focused on the link between ageing and the digital divide, as emphasized by authors. According to Zlomislić *et al.* (2022) the main challenges are the lack of IT knowledge, limited knowledge of the English language and poor navigation in the Internet environment. Future research should be aligned with the SDGs, especially with Goal 4 (Quality education), Goal 10 (Reducing inequalities) and Goal 11 (Sustainable cities and communities), in order to enable the development of policies and programmes that promote the digital inclusion of older people, strengthen their participation in society, and contribute to the creation of a fairer and more sustainable digital society (Zlomislić *et al.*, 2022, 641). The findings by Zlomislić *et al.* (2022) support the theoretical framework set by van Dijk (2017), according to which categorical inequalities, including age, education and socioeconomic status produce unequal access to digital resources and different levels of digital participation. Older people, who for the most part did not have systematic training in informatics or the language of new technologies, are at a disadvantage compared to younger generations who grew up in a digitised environment (Zlomislić *et al.*, 2022, 626–628). The digital divide in this context is not only a technical issue of access to technology (the first-level gap), but also a question of the skills and competencies required for the purposeful use of digital tools (the second-level gap) and the ability to create concrete benefits through their application (the third-level gap). In this sense, the research can serve as a relevant starting point for a deeper understanding of the relationship between digital inequality and the ageing of the population. It is especially important to point out that older users (61+) “do not search for terms/articles in English and are largely dependent on content in Croatian” (Zlomislić *et al.*, 2022, 633–634). This language barrier limits access to information and services that are dominantly available in the English language in the global digital space, thereby deepening the existing social inequality. In addition to language

limitations, the research by Zlomislić *et al.* (2022) also indicates a weaker understanding of the visual-linguistic elements of digital interfaces (multimodal icons), which makes it even more difficult for older people to navigate independently in the digital environment. The authors conclude that bridging the digital divide requires a multidimensional approach: strengthening digital literacy through formal and informal education, improving network infrastructure and promoting the digital inclusion of older people. The research represents a valuable contribution to further studies on the digital inclusion of the older people and provides an empirical basis for research that would contribute to the development of national policies that recognize older people as an important, but often neglected, segment of the digital society. Marošević *et al.* (2025) state that the synergistic approach involving technical experts, researchers, policymakers, and digital platforms is essential to ensure inclusive digital participation of older people, free from linguistic barriers. To bridge the age and digital (language) divides, local initiatives should focus on financial literacy workshops, use of local languages, intergenerational digital mentorship, and the creation of age-inclusive digital content. These results point to the need to redefine research priorities in the field of the digital divide to include the dimension of ageing. Future research should examine how cognitive, social, and emotional changes associated with ageing affect digital participation and how educational policies can more effectively engage older people in the digital society. In addition, research into the effectiveness of targeted digital education programmes that would integrate English language learning with practical digital skills should be conducted. Such programmes could play a key role in bridging the gap between the second and third levels, as they enable not only the technical use of technology, but also active involvement in digital communities and access to information of public importance.

#### 4.3. LINGUISTIC AND DIGITAL INCLUSION OF OLDER PEOPLE IN THE CONTEXT OF THE 2030 AGENDA

When digital content, user instructions and interface are predominantly in English or in a highly technical register, older people remain excluded not only in technological but also in a communicative sense. Digital ageism is a new form of discrimination according to Manor and Herscovici (2021). In the context of Agenda 2030 and the goals of sustainable development, the issue of digital and linguistic inclusion of the older people has become important because it encompasses the dimensions of education, equality, and social participation. This phenomenon can be understood in an interdisciplinary approach that connects demographic changes, social policies, digital transformation processes, and sustainable development concepts. From a sociolinguistic perspective, an additional level of social inequality is produced by the digital language gap, which limits the ability of older people to be active, informed, and equal participants in the digital society.

The analytical focus in this context is not exclusively on the economic aspects of active ageing, but also on the linguistic, communicative, and social dimensions of the participation of older age groups in the digital age. The concept of the digital language divide thus becomes a central analytical category, as it shows how language differences and digital technologies together shape the patterns of social inclusion and exclusion of older people. Such reflection enables a deeper understanding of the connection between language, technology, and social justice within the digital society, thereby contributing to the development of inclusive policies that support the achievement of sustainable development goals. Therefore, the language and digital inclusion of older people is directly linked to the SDG's outlined in the 2030 Agenda (United Nations, 2015). Within the framework of the 2030 Agenda and the SDG, several goals directly or indirectly connect the issue of language and digital inclusion of the older people with the concepts of lifelong learning, equality, and participation. First, SDG 4 (Quality Education) emphasizes the importance of lifelong learning, which includes the development of digital and language competences. For older people, this means the need for accessible digital literacy and language learning programmes in their mother tongues, which enables their active participation in the digital society and reduces the risk of exclusion (United Nations Development Programme, n. d., a). On the other hand, SDG 10 (Reducing Inequality) directly relates to digital and linguistic equality, since access to information, education, and public services largely depends on linguistic and technological competencies. Older people who have limited access to digital tools or do not know the dominant languages of the Internet (e.g. English) often remain excluded from online communication and services, which deepens existing social inequalities (United Nations Development Programme, n. d., b). Finally, SDG 16 (Peace, Justice and Strong Institutions) links language, and digital access to democratic participation and social justice. Access to information, e-government systems, and public institutions must be linguistically accessible and digitally inclusive, so that older people/citizens can participate equally in social and political life (United Nations Development Programme, n. d., c). Thus, language and digital inclusion become prerequisites for exercising fundamental human rights and social sustainability (United Nations, 2015). In the context of the sustainable development goals (SDG 4, 10, 16), language, and communication play a key role in social cohesion, access to knowledge and participation in society. However, digital transformation has been changing the way language is used and experienced, creating a new type of linguistic inequality, especially among older speakers of lesser-used languages, such as Croatian.

## 5. CONCLUSION

Ageing is a phenomenon present among the EU 27 countries and within EU 27 Croatia is unfortunately not an exception. Demographic and social changes present a

pressing challenge to all societies in terms of ensuring the rights, needs and well-being of the older people are addressed appropriately. Economic aspects are the one most visible ones – labour force shrinkages, fiscal pressures of increased pensions and healthcare services. There are the social aspects as well – insufficient of social capital, loneliness, hard to maintain ‘ageing in place’, need of gerontology centres development. Therefore, it is crucial to resolve misconceptions about the older people and work towards the goal of ensuring that older people remain active and independent members of society, receive appropriate care, and live independently within their community, within contemporary context of development where digital equals contemporary.

Another aspect that influences much to maintain active ageing is sociolinguistic one and digital participation. The language policy of the EU formally supports multilingualism, but the dominance of the main languages and the unequal technological support of “lesser-used languages” indicate not only the presence of a digital but also of a digital language divide. The Croatian language has a formal position, but technology and digital tools still do not reach the full level of support as with the dominant languages, which is an additional language and digital barrier in active ageing of the older people. Therefore, active ageing should be observed not only as an approach to society and health, but also as a language-digital dimension, in which older people have the right and the opportunity to use their language in the digital world. The inclusion of language technology, the adaptation of digital content, and language and digital literacy among the older people represent crucial steps towards the goals of inclusive and sustainable development. Digital presence, the availability of tools, and content in Croatian support to the language inclusion, and the participation of the older people in the digital society by using their own language. For older users, this is a key challenge. If a digital service (e.g. e-service, healthcare and other digital platforms) is not available in Croatian or if the language, style, terminology and technological support make it difficult to access the digital service, then the level of a language divide increases due to insufficient digital literacy skills. From the perspective of sociolinguistics, older people in Croatia face several challenges. First, the linguistic capital formed by professional and digital registers, language terminology and language styles in the digital environment are often adapted to younger users, users of the English language or dominant language groups. Older people who use Croatian in traditional contexts may feel excluded if digital texts and tools do not match their language practices. Second, a combination of insufficient digital literacy and a language barrier is present in older people who often have less developed digital skills, and if the content is not accessible in their mother tongue or in the language of their age and style, then their inclusion is limited. Digital services, although technically available (e.g. e-platforms for citizens, e-health, e-administration), are not necessarily adapted to the language and communication needs of older users. In particular, “linguistic adaptation” means that the content and interface of these services must be designed so that older people can easily read, understand and use them. If these

services are available but not technically and linguistically adapted, the older people may be digitally and linguistically excluded. Thus, the digital language divide appears as a specific obstacle to active ageing. Older people are excluded not only physically and socially, but also linguistically and digitally. Ageing should not be viewed as a threat and an explicitly biological process that will inevitably lead to a person's physical and emotional downfall and isolation, but as one of the naturally occurring stages of life in which older people can still greatly contribute to society. Whilst biological, psychological, social and environmental factors all play a role in active ageing – improved living conditions, accessible healthcare and social inclusion are all key factors in enabling active and healthy lifestyles for older people. Consequently, the promotion of the active ageing concept with an emphasis on sustainability is essential to address the challenges resulting from the large number of older people in contemporary society.

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## FIGURES:

Figure 1 Median age of population in the EU in 2024.

Figure 2 AAI across the EU 27 in 2018.

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## AKTIVNO STARENJE U EU-27: KAKO PREVLAĐATI DIGITALNI (JEZIČNI) JAZ

### Sažetak

Suvremena europska društva suočavaju se s rastućim udjelom starijih osoba u ukupnoj demografskoj strukturi Europske unije kao trendom koji utječe na društvene promjene u brojnim aspektima osobnog, obiteljskog i društvenog života s promjenama u individualnim potrebama za zdravstvenu skrb i sustav socijalne skrbi, kulturnim i društvenim aktivnostima s važnim promjenama u obiteljskim strukturama. Kako bi održale kvalitetu života, starije osobe mogu ostati aktivne, zdrave i društveno povezane kroz koncept aktivnog starenja, istodobno potičući međugeneracijske odnose. Međutim, u skladu sa suvremenim razvojem, navedeno bi se teško moglo postići bez digitalne pismenosti. Naime, pristup digitalnoj tehnologiji i vještine te znanja potrebne za njihovu uporabu – postali su preduvjet aktivnog starenja. Tako digitalne tehnologije predstavljaju važno civilizacijsko postignuće i izvor prilika za pojedince i društva. Cilj ovog rada je dvostruk: a) analizirati starenje stanovništva u Hrvatskoj u usporedbi s drugim zemljama EU-27 i analizirati indeks aktivnog starenja na razini EU-27 prema posljednjem dostupnom Indeksu aktivnog starenja (AAI) 2018; b) teorijski analizirati ekonomske i društvene izazove povezane s aktivnim starenjem, s posebnim naglaskom na digitalni (jezični) jaz kao ključan suvremeni izazov za starije osobe. Umjesto da digitalnu i jezičnu isključenost promatra kao dodatnu temu, rad je konceptualiziran kao međusektorski strukturni čimbenik koji oblikuje sudjelovanje, uključenost i ishode politika u kontekstu aktivnog starenja. Analiza je smještena unutar šireg okvira Ciljeva održivog razvoja (GCOR).

**Ključne riječi:** *aktivno starenje, Hrvatska, digitalni (jezični) jaz, stariji ljudi, ciljevi globalnog održivog razvoja*