European Parliament

Promoting healthy ageing in the EU

Unravelling the interplay between health and socio-demographic factors

STUDY

Panel for the Future of Science and Technology

EPRS | European Parliamentary Research Service

Scientific Foresight Unit (STOA)
PE 765.798 – June 2025

Promoting healthy ageing in the EU

Unravelling the interplay between health and socio-demographic factors

The European population is ageing. The rise in both the number and proportion of people in the higher and highest age groups is already having societal consequences of immediate relevance, including a heightened demand for social services and growing pressure on healthcare and social security systems. The severity of these consequences depends heavily on the health status of the population. This makes improving citizens' health and promoting healthy ageing strategies critical targets in our efforts to reduce the burdens of ageing, goals that can be achieved by focusing on associated socio-demographic inequalities in the EU.

This study addresses the interplay between the health and socio-demographic conditions characterising the EU's ageing population, focused on populations at risk of social inequality, to provide information that policymakers can use to promote healthy ageing.

The study begins by conducting a literature review of existing scientific evidence in the field. It identifies key gaps in this research and the main social priorities for specific vulnerable groups, including women and older people. The project goes on to employ statistical methods to analyse data and to characterise the key socio-demographic determinants of healthy ageing across the EU.

The goal of the study is to compare trends in healthy life years across both populations (countries) and specific populations (by gender and level of education), and to address the social inequalities associated with healthy ageing so that we might promote greater health equity and thereby contribute to the development of effective strategies/measures to support healthy ageing in the EU. Ultimately, the study seeks to help policymakers make informed decisions about the allocation of resources for healthcare, social services, and other programmes aimed at promoting healthy ageing by identifying the population groups most at risk, including women with lower levels of education and older adults. Governments must take steps now to prepare their societies to meet the social and economic challenges of an ageing world.

AUTHORS

This study has been written by Aïda Solé-Auró, DemoSoc Research Group, Department of Political and Social Sciences, Universitat Pompeu Fabra (UPF), Barcelona, Spain; Iñaki Permanyer, ICREA, Centre for Demographic Studies (CED), Universitat Autònoma de Barcelona (UAB), Barcelona, Spain; and Marc Luy, Vienna Institute of Demography, Vienna, Austria, at the request of the Panel for the Future of Science and Technology (STOA), managed by the Scientific Foresight Unit, within the Directorate-General for Parliamentary Research Services (EPRS) of the Secretariat of the European Parliament.

With contributions from:

Madelín Gómez-León, tenure-track Lecturer at Universitat Pompeu Fabra (UPF); Sahar Ahmed, PhD candidate, Centre for Demographic Studies (CED), Universitat Autònoma de Barcelona (UAB); Rafael Serrano García, PhD Candidate, Universidad de Alicante (UA).

ADMINISTRATOR RESPONSIBLE

Jurgita Lekaviciute, Scientific Foresight Unit (STOA)
To contact the publisher, please e-mail stoa@ep.europa.eu

LINGUISTIC VERSION

Original: EN
Manuscript completed in October 2024.

PE 765.798
ISBN: 978-92-848-2708-4
doi: 10.2861/0128820
QA-01-25-093-EN-N

http://www.europarl.europa.eu/stoa (STOA website)
http://www.eprs.ep.parl.union.eu (intranet)
http://www.europarl.europa.eu/thinktank (internet)
http://epthinktank.eu (blog)

Executive summary

Introduction

The European population is undergoing a significant demographic change characterised by an ageing population. This trend has profound implications for society, increasing the demands on social services, healthcare, and social security systems alike. The intensity of this impact depends heavily on the health of the population; thus, improving citizens' health status is essential in mitigating the challenges posed by demographic ageing.

The American Heart Association's 'Life's Essential 8' framework highlights critical lifestyle factors that significantly affect cardiovascular health and overall longevity, and which are especially relevant for older populations. They include a balanced diet, regular physical activity, nicotine avoidance, maintaining a healthy weight, controlling blood pressure, managing cholesterol and blood glucose levels, and ensuring good sleep health. These factors can collectively improve longevity and reduce mortality risks, particularly among older adults.

European Union (EU) policymakers have long recognised the importance of health for ageing populations, as reflected in the 'Europe 2020' strategy, which aimed to extend the average number of healthy life years (HLY) by 2020 by two years. While this target was achieved on an EU-wide level, significant disparities exist between Member States. Indeed, the gap in HLY between the highest (Sweden) and lowest (Latvia) countries was a striking 19.3 years in 2020.

Education plays a pivotal role in these health inequalities, with individuals with higher educational attainment enjoying better health and longer life expectancy. Addressing health disparities through improved education and promoting healthier lifestyles are crucial to increasing overall health and longevity across the EU, particularly in its ageing populations.

This study

Life expectancy (LE) is no longer a sufficient indicator of population ageing. Politicians and individuals today are more broadly concerned with the quality of life. From a planning perspective, we need to know whether healthy life expectancy (HLE) is increasing more or less rapidly than LE. In this study, therefore, we specifically use HLE to document inequalities in healthy ageing.

After a review of relevant literature, the study conducts quantitative analyses aimed at estimating HLY using basic health indicators by education level and age group for men and women in European countries. The study aims to assess how socio-demographic determinants – above all, gender and education – influence healthy ageing, with a specific focus on the most vulnerable groups (i.e. low-educated women and older adults) across Europe. Finally, the study employs population projection estimates for HLY at the age of 30 for each EU country by age, sex, and education.

In particular, we aim to study the population groups that are most vulnerable and are at the highest risk of unhealthy ageing, by studying not only the typical vulnerable groups, that is, single-person, single-parent and low-income households, but also low-educated individuals through the intersection with being unhealthy and with gender. In this regard, women are generally less advantaged as a result of various social, economic, work, and cultural factors.

Aim

The aim of the study is to identify differences in the LE and HLY of populations (EU countries) and specific populations (by gender and level of education) in seeking to address the social inequalities associated with healthy ageing. The target is to promote greater health equity and, thus, contribute to the development of effective strategies/measures to support healthy ageing in the EU. Ultimately, the study seeks to help policymakers make informed decisions about the allocation of resources for healthcare, social services, and other programmes aimed at promoting healthy ageing by identifying the most socially disadvantaged population groups, including individuals at risk due to gender, class, immigration, race/ethnicity, or cultural issues.

Key findings

The findings presented in this report show increases in LE at birth over time (between 2004 and 2020) in all countries included in the analysis. In 2020, on average, individuals could expect to survive to higher ages than they did in 2004. Importantly, those countries that had among the lowest LE in 2004 (like Estonia) made greater improvements in longevity than those with some of the highest initial LE (like Spain and France), thus reducing LE inequality between countries. Additionally, differences in LE across countries were more pronounced among men than they were among women (the latter presenting not only higher values than those presented by men, but values that were also more similar to each other).

When inspecting differences in health outcomes across different education groups, several patterns emerge. First, low-educated individuals tend to experience worse outcomes than their middle-educated peers, who in turn tend to fare worse than their high-educated counterparts. This applies both to LE and HLE at age 30 and above. Second, when examining gaps in health outcomes across these education groups, we find that differences tend to be greater among men than among women (i.e. the differences between high- and low-educated women are not as great as they are between high- and low-educated men), especially when focusing on total longevity indicators (i.e. LE). Third, differences in healthy longevity (i.e. HLE) across education groups tend to be much greater than the corresponding differences in LE. In other words, the gap in HLE between high- and low-educated individuals tends to be much greater than the corresponding gap in total LE.

Policy options

The study offers key insights and presents various policy options for monitoring decision-making in specific social groups. Three policy options are outlined in the report, their relevance being specifically grounded in the research findings.

Policy Option 1: Monitoring and reducing health inequalities

Policy Option 1 stresses the first step to be taken in reducing health inequalities in our ageing societies: namely, an exact diagnosis to determine the extent of these inequalities. The objective is to regularly monitor different dimensions of the health inequalities presented by EU Member States with the ultimate goal of preventing (or at least reducing) them. Improving overall HLE and, thus, reducing the burden of ageing requires risk group-specific measures. This report identifies the gaps in HLE between education groups, for men and women, and makes recommendations to improve healthy ageing. Given the almost universal desirability of living long lives, it is critical to consider not only 'efficiency' – that is, how efficient societies are in generating and sustaining years of life (or how long we live *on average*) – but also 'equity', namely how (un)equally distributed longevity (or any other health outcome) is. Strategies for achieving this policy option include the promotion of health inequality monitoring across Member States as well as the implementation of social programmes to improve the living conditions of lower socioeconomic status groups.

Policy Option 2: Monitoring healthy ageing among vulnerable groups

Policy Option 2 concerns itself with directly enhancing healthy ageing among Europe's most specifically vulnerable groups (including those with low levels of education, those who are unhealthy, and women). Here, our research identifies older women with low levels of education as being especially vulnerable, often experiencing situations that diminish their quality of life and having to face serious challenges, including end-of-life care. This group typically lacks the resources needed to address life's challenges effectively. To address this, Policy Option 2 emphasises targeted measures that actively reduce the inequalities affecting vulnerable populations as they age. As such, the approach involves implementing measures that can alleviate vulnerability while ageing.

Policy strategies are likely to include supporting individuals in building up 'reserves' for later life, minimising the challenges they face in old age, and providing essential compensatory support when needed. Building such reserves over the life course can be achieved by promoting healthy lifestyles,

fostering coping skills, nurturing family and social ties, and encouraging the accumulation of assets and savings. These reserves will enable individuals to face later life with greater resilience and autonomy. Furthermore, interventions aimed at strengthening compensatory support are crucial. These may include access to quality acute care, rehabilitation services, professional social and psychological support during extreme situations, long-term help, and income support. Altogether, these strategies aim to build resilience across the life course, ultimately reducing vulnerability and promoting a more equitable experience of ageing among Europe's most at-risk populations, focusing on vulnerability indicators such as age, health, and economic status.

Policy Option 3: Evaluation and adjustment of the EU's structural health indicator

Policy Option 3 focuses on the definition and use of a reliable health indicator to track health trends within the population of the European Union (EU). The EU employs the 'Healthy Life Years' (HLY) indicator for this purpose, seeking to improve public health through initiatives such as the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA). The HLY indicator is based on self-reported limitations in daily activities due to health, measured by the Global Activity Limitation Indicator (GALI) in the EU Statistics on Income and Living Conditions (SILC) survey. However, HLY has faced challenges, as methodological variations, such as changes to question phrasing in Germany and other countries, led to inconsistencies in data. These modifications have generated significant fluctuations in reported HLY, undermining its reliability as a structural health measure. To address these issues, we suggest simplifying the GALI questionnaire and limiting responses to a yes/no format to improve consistency across languages and cultures. Alternatively, using data on chronic health problems from SILC may provide a more stable basis for HLY. This approach, while not perfect, could offer a more reliable indicator until a refined GALI version is adopted, enabling more accurate assessments of health trends and policy outcomes across EU countries.

Table of contents

List of figures

List of abbreviations

EHLEIS	European Health and Life Expectancy Information System
EU	European Union
EU-SILC	European Union Statistics on Income and Living Conditions
EIP-AHA	European Innovation Partnership on Active and Healthy Ageing
GALI	Global Activity Limitation Indicator
HLY	Healthy Life Years
HLE	Healthy Life Expectancy
ISCED	International Standard Classification of Education
LE	Life Expectancy
MS	Member States
NSO	National Statistical Offices
UHLY	Unhealthy Life Years
UHLE	Unhealthy Life Expectancy
UN SDG	United Nations Sustainable Development Goal
WHO	World Health Organization
WIC	Wittgenstein Centre

1. Introduction

1.1. Context

The European population is ageing, its "old-age dependency ratio"—defined as the ratio of the number of elderly people (65 years and older) and the number of people of working age (15–64 years)—standing at 33.4% on 1 January 2023, having risen by approximately 6 percentage points since 2013 when it stood at 27.7% (Eurostat 2024). Demographic projections reveal that further increases in the proportion of the elderly are unavoidable in all populations of the industrialized world (Lutz et al. 2008; Powell 2010). Increases in both the number and proportion of people in the higher (up to 79 years of age) and highest age brackets (80 years old and over) are already giving rise to many societal consequences of immediate relevance, including a heightened demand for social services and growing pressure on health care and social security systems (Harper 2000). The intensity of these consequences depends heavily on the health status of these populations (Prince et al. 2015; Steptoe et al. 2015; Solé-Auró and Gumà 2023), which makes improving the citizens' health condition a critical target in seeking to reduce the burdens of demographic ageing (Beard and Bloom 2015).

The American Heart Association (AHA) has identified eight essential and closely related lifestyle factors, defined as "Life's Essential 8", that significantly influence cardiovascular health, overall longevity, and mortality (Lloyd-Jones et al. 2022):

1. Diet: a balanced diet supports weight maintenance, cardiovascular health, and overall longevity. Eating nutrient-rich foods like fruit, vegetables, whole grains, and lean proteins reduces the risk of chronic diseases such as heart disease, diabetes, and obesity (Hu 2002). Moreover, healthy nutrition is important in preventing frailty, a key predictor of mortality in older adults (Fried et al. 2001) .
2. Physical activity: regular physical exercise strengthens the heart, improves circulation, and helps control weight. Physical activity also reduces the risk of cardiovascular disease and supports mental health by reducing the risk of depression and anxiety (Warburton et al. 2006). In older adults, staying active prevents frailty and reduces the risk of falls and fractures, which significantly contribute to mortality (Nelson et al. 2007).
3. Nicotine avoidance: avoiding nicotine, whether through smoking or other forms of tobacco use, is crucial for long-term health. Smoking is a leading cause of preventable death, contributing to lung cancer and cardiovascular disease. Quitting smoking leads to immediate improvements in health and reduces the risk of many chronic conditions (Jha 2014).
4. Body weight (BMI): maintaining a healthy weight prevents a range of health problems, including heart disease, type 2 diabetes, and certain cancers. Obesity or being underweight can lead to negative health outcomes (Calle et al. 2003), but adopting a balanced diet and regular exercise helps manage weight effectively (Pi-Sunyer 1993). Gerontological research emphasizes that obesity in older adults exacerbates frailty, mobility issues, and functional decline (Villareal et al. 2005).
5. Blood pressure control: high blood pressure, or hypertension, is a major risk factor for heart disease and stroke. Monitoring and managing blood pressure through lifestyle changes or medication significantly reduces cardiovascular risks (Chobanian et al. 2003, Yusuf et al. 2004). A healthy diet, exercise, and managing stress are key ways to control blood pressure. In older adults, managing blood pressure also lowers the risk of cognitive decline and premature death (Satizabal et al. 2016).
6. Cholesterol management: high levels of low-density lipoprotein (LDL) cholesterol contribute to atherosclerosis and cardiovascular disease. Epidemiological research shows that reducing LDL cholesterol decreases the risk of cardiovascular events (Baigent et al. 2005). Managing

cholesterol through diet, exercise, and medication therefore reduces cardiovascular mortality, in particular in older people (Gordon et al. 1989).

7. Blood glucose control: controlling blood glucose is essential for preventing or managing diabetes. High blood sugar levels increase the risk of heart disease, kidney problems, and nerve damage. Managing glucose through diet, exercise, and medication reduces these risks and improves overall health (Fox et al. 2003).
8. Sleep health: good sleep is important for physical and mental health. Poor sleep quality can lead to obesity, diabetes, and cardiovascular disease. Ensuring adequate, high-quality sleep supports overall health and emotional well-being (Cappuccio et al. 2010). In older adults, sleep disturbances are linked to cognitive decline and higher mortality (Foley et al. 2004).

Optimization of "Life's Essential 8" components (i.e., eat better, be more active, stop smoking, get adequate sleep, manage weight, manage cholesterol, manage blood pressure, and manage diabetes) can contribute to healthy ageing, increased longevity (where life expectancy is an indicator of longevity), and health span. Thus, adopting "Life's Essential 8" improves longevity and reduces mortality. Addressing these prevention targets, moreover, can significantly improve public health outcomes across diverse demographic groups, particularly older adults.

Promoting good health is a high priority issue for policy makers and, indeed, constituted an integral part of "Europe 2020", the EU's 10-year economic-growth strategy for the period 2010–2020 (European Commission 2010). The strategy was underpinned by the "European Innovation Partnership on Active and Healthy Ageing" (EIP-AHA) with a headline target of increasing the average number of healthy life years (HLY) in the EU by 2020 by two years (Jagger 2020; Jagger et al. 2013). These additional life years are considered the essential basis (1) to enable older citizens to lead healthy, active, and independent lives, (2) to improve the sustainability and efficiency of social and healthcare systems, and (3) to boost and improve the competitiveness of the markets for innovative products and services that respond to the ageing challenge both at EU and global levels.

Because of the obvious relevance attached to a population's health, one of the key issues in ageing societies is whether the life years gained due to increasing life expectancy (LE) are spent primarily in good or in poor health. Here, three theoretical scenarios are possible:

1. Longer lives are associated with more years spent in poor health – that is, the "expansion of morbidity hypothesis" (Gruenberg 1977),
2. Longer lives are associated with a delay in the onset of health problems – that is, the "compression of morbidity hypothesis" (Fries 1980), and
3. There is a balanced relationship between health and longevity – that is, the "dynamic equilibrium hypothesis" (Manton 1982).

Empirical evidence to date supports all three hypotheses, depending on the particular health measures considered. Existing research suggests a postponement or stagnation of functional limitations and disabilities, on the one hand (Bardenheier et al. 2016; Crimmins 2015; Freedman et al. 2016; Payne 2022; Shen and Payne 2023), but an increase in morbidity (presence of several biomarkers or physician-assessed health conditions and chronic diseases) on the other (Solé-Auró and Alcañiz 2015; Solé-Auró et al. 2015; Beltrán-Sánchez et al. 2016; Crimmins 2015; Crimmins and Beltrán-Sánchez 2011; Crimmins et al. 2019; Payne 2022; Shen and Payne 2023). These trends were confirmed in recent investigations of HLY in the population of Germany from 2005 to 2019 (Luy 2024). Using the three health indicators of the 'Minimum European Health Module' (MEHM) included in the annual 'European Union Statistics on Income and Living Conditions' (EU-SILC), the study found that trends in overall (self-perceived) health are in line with the 'compression' hypothesis, whereas trends in chronic morbidity are in line with the 'expansion' hypothesis scenario, and trends in disability (activity limitation) most closely match the predictions of the 'dynamic equilibrium' model.

These findings stress that the choice of health indicator is crucial for assessing population health. The World Health Organization (WHO, 2015) has defined healthy ageing as the "ongoing process of developing and maintaining the functional ability that enables wellbeing in older age". Functional ability is a central concept here since it comprises the interaction between physical and mental capacities in a particular environment. The EU's structural indicator of health—"Healthy Life Years" (HLY)—is closely related to the WHO's definition of healthy ageing and can be defined as the average number of years of life remaining that are spent free from activity limitations (Lagiewka 2012). It is generated on the basis of the "Global Activity Limitation Indicator" (GALI), that is, individual's self-ratings of long-term activity limitations due to health problems that are collected annually by the SILC survey.

Given its function as a structural indicator, HLY is also the key instrument for assessing the "Europe 2020" program, whose ambitious goal was actually achieved: HLY increased in the *total* EU-27 population (i.e., women and men together) by 2.2 years between 2010 and 2020 (Eurostat Database). However, this figure conceals enormous differences between EU Member States (MS), both in terms of the number of HLY and their corresponding trends. For example, in 2020, the gap between the country with the highest number of HLY—Sweden with 72.7 years—and the country with the lowest—Latvia with 53.4 years—was 19.3 years. This gap had even widened over the previous ten years: in 2010, the gap had stood at 18.5 years, in this instance between Malta with the highest number (70.7 years) and Slovakia with the lowest (52.2 years). Additionally, only 15 of the 27 EU MS managed to increase their HLY indicator. The other 12 countries experienced a reduction in HLY, with Denmark showing the largest decrease of -4.0 years.

Health inequalities are related to differences in the composition of population groups with their distinct exposures to behaviours and risk factors, notably influenced by individual characteristics, namely socioeconomic conditions, such as education (Wu et al. 2020). The importance of education for adult health varies across individual characteristics such as age and gender, time, and context (rural and urban areas, European countries). Social scientific studies have found that the health of midlife and older adults with lower levels of education differs from that of their peers with higher levels of education and that higher-educated adults are better able to maximize their longevity and to postpone or avoid disease, disability, and premature death (Montez and Brooks 2021; van Raalte et al. 2011). The reasons for this heterogeneity are attributable to the fact that having a low level of education is particularly harmful for these population subgroups, who in turn possess fewer alternative resources for health, such as income and social status. Therefore, while education appears to be more important for postponing the onset of poor health, income and wealth are particularly crucial for slowing the subsequent progression of poor health and death (Herd et al. 2007; Zimmer and House 2002).

Differences in health between education groups can also be found in relation to the aforementioned "Life's Essential 8". For example, epidemiological studies show that poor nutrition contributes to increased mortality, especially in populations with limited access to healthy foods (Drewnowski 2009). Lower-income populations also often have limited access to safe, accessible recreational areas, impacting their physical activity levels (Sallis et al. 2016). Likewise, Thun et al. (2013) highlight higher smoking rates in lower-income groups, correlating with increased mortality. Also, diabetes is especially prevalent among lower-income populations, making blood glucose management critical in these groups (Gregg et al. 2014).

In addition to these differences between EU MS, major variations can be found within countries. Besides the well-documented differences between women and men—which are actually smaller in terms of HLY than they are in overall number of life years—sizeable differences exist between educational groups in each country. These inequalities translate into differences in LE of several years between individuals with low and high educational attainment (Caselli et al. 2014). Lleras-Muney (2005)—using US data from 1960—estimated that one more year of education increased average LE at age 35 by as much as 1.7 years. This strong association between education level and

population health also contributes to changes over time. Luy et al. (2019) have shown that the improvements in LE (of around 20%) between 1990 and 2010 in Italy, Denmark, and the USA can be attributed to an increasing proportion of higher educated individuals. Likewise, Shkolnikov et al. (2006) reported that improvements in the educational structure contributed to a similar increase in LE in Finland and the Czech Republic during the 1990s, and prevented greater declines in LE than those observed in Russia and Estonia.

Recently, Sauerberg (2021) has shown that the effects of education are even greater for HLY than for the total number of life years. His estimates for differences in HLY at age 30 by education for 16 European countries in 2016 yielded a range from 4.9 years in Romania (women) to 15.5 years in Hungary (men). These findings suggest that (i) a reduction of inequalities in HLY by social status and (ii) further increases in education levels would be effective ways to increase the overall level of HLY in each EU MS and the whole EU population.

These results are closely linked to policy option 2, as a possible specific action would be to strengthen reserves, such as promoting healthy lifestyles or fostering coping education skills, over the life course (see section 6 for more details).

1.2. The EU legislative context

The EU is currently promoting legislative frameworks and policies to support society, and particularly older adults, in leading healthy, active, and independent lives. This section explores the legislative and policy context within the EU, highlighting efforts, initiatives, principles and studies conducted to implement strategies that shape the EU's approach to healthy ageing.

In **2010**, the **European Semester**[1], the EU's annual framework, was established to address the need for stronger EU governance and improve coordination among national economic and fiscal policies. This framework includes recommendations to support healthy ageing, such as investing in healthcare and social services, promoting healthy lifestyles, and addressing workforce shortages in the healthcare sector.

The European Innovation Partnership on Active and Healthy Ageing (EIP on AHA)[2], initiated by a European Parliament resolution of **6 February 2013**, fosters collaboration between stakeholders for innovative solutions that address the challenges associated with ageing populations. Since **2021**, the EIP on AHA has stressed the need to scale digital tools for lifelong health promotion and for enhancing the European Silver Economy through initiatives like the community platform "**Active and Healthy Living in the Digital World**". This aligns with the **European Parliament resolution of 7 July 2021**, **"An Old Continent Growing Older — Possibilities and Challenges Related to Ageing Policy Post-2020"**[3] which discusses the prospects and demands of ageing policy in the context of an ageing Europe.

In this same context, **the Green Paper on Ageing**[4], adopted on **27 January 2021**, triggered a debate on Europe's demographic transformation, emphasizing the importance of healthy ageing and lifelong learning. Accompanying briefings, such as the **EPRS study "Demographic Outlook for the**

[1] European Semester https://commission.europa.eu/business-economy-euro/european-semester_en
[2] The European Innovation Partnership on Active and Healthy Ageing: https://digital-strategy.ec.europa.eu/en/policies/eip-aha
[3] Old continent growing older 2021: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2022.099.01.0122.01.ENG&toc=OJ%3AC%3A2022%3A099%3AFULL
[4] Green Paper on Ageing, 2021: https://www.europarl.europa.eu/legislative-train/carriage/green-paper-on-ageing/report?sid=8301

European Union 2021"[5], analysed demographic trends and their impact on poverty, labour market participation, and social exclusion among different age groups and in different geographical areas.

This debate set the stage for the development of the **European Pillar of Social Rights**[6], in May 2021, a framework of 20 principles aimed at building a strong, fair, and inclusive social Europe. **Principle 16** emphasizes the importance of timely access to healthcare (both curative and preventive) and social services, promoting healthy, active, and independent ageing. Additionally**, Principle 18** highlights the need for affordable, high-quality, long-term care services, especially home-care and community-based options. To support these objectives, the **European Care Strategy**[7] was launched in **2022**, focusing on the needs of both caregivers and care receivers.

In **May 2021**, based on the resolution on "**Reversing demographic trends in EU regions using cohesion policy instruments 2020**"[8], the European Commission was tasked with proposing a strategy to address demographic change as part of the cohesion policy plan. In response, the study **"Ageing policies - access to services in different Member States"**[9] was published in **October 2021**, assessing the challenges and trends in active ageing policies across eight EU MS (Austria, France, Germany, Italy, Lithuania, the Netherlands, Poland, and Sweden), particularly in light of the COVID-19 pandemic.

The EU4Health programme 2021–2027[10] was introduced to support MS in tackling public health challenges, particularly those related to ageing populations, and to enhance crisis preparedness following the COVID-19 pandemic. This program includes various initiatives focusing on crisis preparedness, health promotion, healthcare workforce development, and digital health solutions.

In **April 2023**, the EPRS produced the briefing **Cohesion and ageing society in the EU**[11], highlighting the pressures of an ageing EU population on the welfare state, including pensions and healthcare, as well as the demographic challenges facing rural areas and their direct impact on local economies. As part of its efforts to build a stronger Europe and to face the demographic challenges outlined in previous EPRS reports, in October 2023 the Commission presented **a toolbox of EU instruments** to address demographic challenges and their impact on Europe's competitiveness[12]. The toolbox outlines existing EU regulatory, policy, and funding tools under four pillars: parents, young people, older persons, and migration. MS are encouraged to integrate these tools with national and regional policies not only to address demographic challenges but also to empower and support all generations.

In the face of these demographic challenges and still recovering from the COVID-19 pandemic, the European Commission presented **The State of Health in the EU: Synthesis Report 2023**[13]. It provides an analysis of the health systems across EU MS post-COVID-19, focusing on three key themes: addressing mental health challenges, tackling health inequalities exacerbated by the pandemic, and emphasizing the need for sustained investments in resilient and inclusive healthcare systems. The report also highlights cross-country health trends and policy responses, using data

[5] Demographic Outlook for the European Union 2021 (PE 690.528) EPSR Study, March 2021, https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2021)690528

[6] The European Pillar of Social Rights Action Plan, EPSR 2021: https://data.europa.eu/doi/10.2767/89

[7] European Care Strategy 2022:https://ec.europa.eu/commission/presscorner/detail/en/ip_22_5169

[8] https://www.europarl.europa.eu/doceo/document/TA-9-2021-0248_EN.html

[9] https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662940/IPOL_STU(2021)662940_EN.pdf

[10] EU4Health 2021-27: https://health.ec.europa.eu/funding/eu4health-programme-2021-2027-vision-healthier-european-union_en

[11] EPRS 2023 Cohesion and ageing society in the EU: https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747104/EPRS_BRI(2023)747104_EN.pdf

[12] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Demographic change in Europe: a toolbox for action, COM(2023) 577 final

[13] European Commission (2024) State of Health in the EU: Synthesis Report 2023, ISBN 978-92-68-09705-2, doi:10.2875/458883

from country profiles and EU initiatives to guide policymakers towards stronger, more equitable healthcare systems.

More recently, the report **Health at a Glance: Europe 2024**[14] discussed current public health challenges and opportunities, focusing on two key themes: addressing health workforce shortages and promoting healthy longevity amidst demographic changes. The report highlights recent trends in health indicators among older adults in the EU, including LE, HLE, morbidity, and disability. It also examines system performance and policies designed to ensure accessible, high-quality healthcare across the continent. Additionally, it advocates for proactive, life-course prevention strategies to promote healthy longevity and reduce disease burdens.

Through these coordinated efforts and policies, the EU aims to foster an inclusive environment that supports the well-being of older adults across MS.

[14] OECD/European Commission (2024), Health at a Glance: Europe 2024: State of Health in the EU Cycle, OECD Publishing, Paris, https://doi.org/10.1787/b3704e14-en.

2. Study objectives

Great advances in life expectancy have been recorded in most high-income countries over the last 150 years, reflecting improvements in medical technology, better socioeconomic conditions, and healthier lifestyles. However, the fact that these advances are not necessarily accompanied by improvements in the population's health has generated considerable debate. In addition to monitoring progress in the health of individuals, scholars have sought to determine if increasing longevity is associated with sustained country differences in health, particularly at older ages and among the most vulnerable groups (Crimmins et al. 2011).

Life expectancy is no longer sufficient as the sole indicator of population ageing. Individuals and politicians are more concerned about the quality of life. From a planning perspective we need to know whether healthy life expectancy is increasing more or less rapidly than life expectancy. Equally, researchers stress the need to monitor gender and educational inequalities in longevity within populations, since understanding the associated mechanisms could help reduce inequalities between groups and improve a population's overall health.

Therefore, the overall aim of this report is to estimate differences in LE and HLE in an effort to quantify inequalities across different European MS and different subgroups—men and women, at different ages, and by education level—in countries' and the EU's overall levels of HLY. The study comprises a literature review and a number of quantitative analyses that seek to add further insights to the current findings provided by the HLY indicator. The study aims to assess the socio-demographic determinants of healthy ageing focusing on the most vulnerable groups—that is, women with low levels of education and older people—across Europe. In addition, this work will provide levels of HLY by simulating scenarios for the periods 2020–25 and 2025–30.

A list of issues that the study seeks to address includes the following:

1. Description of the technical characteristics of the health expectancy indicators (see section 3.1).
2. The European Health and Life Expectancy Information System (see section 3.2)
3. Healthy life year estimates by level of education across European countries for men and women (see section 3.3 and 4.2).
4. Data projections and estimates of healthy life years by education level in two time periods: 2020–2025 and 2025–2030 (see section 4.3).
5. Conclusions (see section 5).
6. Suggested policy options (see section 6).

3. Data and methods

To understand the health and socio-demographic characteristics of EU's ageing population, with a particular concern for those populations at a higher risk of social inequality, we investigated variations in the life and health expectancy of men and women, including by level of education, across different European countries. Having a detailed breakdown of these differences constitutes the first step towards the development of effective policy options aimed at reducing health inequalities and improving the populations' quality of life.

3.1. Technical characteristics of the health expectancy indicators

Before examining variations in health expectancy (HE), mention should be made of some of the technical characteristics of the health indicators.

In the literature, several indicators are used to estimate the number of years that individuals are expected to live in "good" or "bad" health at a given point in time. Most are based on the highly flexible Sullivan method (Sullivan 1971), which admits many possible definitions of what it means to be in "good" or "bad" health. In this report, we adopt the definition employed by the Global Activity Limitation Indicator (GALI), which asks respondents whether they have been limited in their daily activities because of health problems in recent months. The indicator refers to general restrictions in activity without specifying the type of activity concerned (work, household chores, leisure, personal care etc.)(see below for further details).

Once it is decided how 'health' (or the absence thereof) is to be defined, the estimation of HE indicators typically adheres to several technical computational steps, which are briefly summarized in section A of the Annex. Additional technical details on how to calculate HE indicators have been developed by Carol Jagger and colleagues[15].

In this report, we focus on different ages, that is, at birth, at 30, at 65, etc., in order to recognize the different situations people face in their life course.

3.2. The European Health and Life Expectancy Information System

National and cross-national scientific contributions have been made to examine HLY in European countries. Members of the European Health and Life Expectancy Information System (EHLEIS) project, in particular, have made major efforts to add the quality dimension (HLY) to the number of years lived (LE) by European populations, providing evidence of inequalities between EU MS, and highlighting potential targets for public health strategies both nationally and at the European level. The EHLEIS project set itself various goals: 1) facilitating access to information on health expectancies; 2) developing the capacity to calculate, interpret, and use HLY in policy within EU countries; 3) providing easily understandable country reports to describe differences in trends in HE using harmonised data; and 4) disseminating HLY values and analyses.

The latest study to be completed by the EHLEIS group was published in May 2018 (EHLEIS Country Reports, 2018), which gathered information on different European regions. It provides the life and health expectancy estimates at age 65 for men and women across 27 MS. Although the report was published some years ago (based on data from 2004 to 2015), the estimates provided by the EHLEIS team offer a baseline map of the inequality in the distribution of LE and HLE in Europe.

The EHLEIS group used three health indicators, included among the European Core Health Indicators (ECHI) for each country, to illustrate HLE: that is, activity limitation, self-perceived health,

[15] https://reves.site.ined.fr/en/resources/computation_online/sullivan/

and chronic morbidity. These health indicators derive from the EU-SILC data collection, a European survey coordinated by Eurostat that gathers information about income, poverty, social exclusion, and living conditions. More specifically, disability data provided by the EHLEIS project is used to exemplify what we know about HLY at the European level. Thus, disability (activity limitation) is measured through the GALI, which is a single survey question measuring limitations in usual activities derived from the EU-SILC questionnaire (Berger et al. 2015a).

The GALI serves as an official structural indicator to track levels and trends in population health in the EU. It measures responses to the following question: "*For the past 6 months at least, to what extent have you been limited because of a health problem in activities people usually do?*". We dichotomized responses into limited (coded as 1), which also included the original responses of "limited but not severely" and "severely limited", and not limited (coded as 0). More specifically, the report presents the results of the GALI estimates, aggregating both moderate and severe activity limitation and disaggregating by country and gender. The GALI performs appropriately against other health indicators and appears to reflect long-standing activity limitation associated with both mental and physical conditions (van Oyen et al. 2006). The question was developed by the Euro-REVES project (Robine and Jagger 2003).

However, it should be stressed that the characteristics of the health indicator used to estimate the average number of life years spent in good health, and the way in which information about an individual's state of health is collected, are crucial for the eventual results obtained. Indeed, the methodological sensitivity of the indicator is well illustrated by trends in health expectancy according to Eurostat statistics. Using Europe's structural health indicator, "Healthy Life Years" (HLY)—which is based on the GALI—the ambitious goal of the EIP-AHA program to increase the average healthy lifespan in the EU by two years between 2010 and 2020 was achieved. This, on the surface, would appear to point to the success of EU's development program, especially if this improvement can be considered to represent a steady trend. However, the increase in HLY was far from gradual. Between 2010 and 2013, HLY actually fell by -0.8 years. The decisive shift in the trend did not occur until the years 2015 and 2016, when HLY increased by 1.5 and 1.2 years, respectively. As a result, HLY at this point had increased by 2.2 years on 2010 figures. HLY then remained essentially unchanged in the period up to 2020. A closer look at the data reveals that the increase in HLY in 2015 and 2016 was attributable almost exclusively to two countries: Germany, which was solely responsible for the increase in 2015, and Italy, which accounted for more than half of the increase in 2016. Changes in HLY in these two countries have a particularly strong impact on the development of HLY of the entire EU-27 population given the weight of their respective populations.

More than half the overall increase in HLY from 2010 to 2020 was attributable to Germany, where HLY increased by 10 years between 2014 and 2015. This inordinate gain in the number of life years spent free from activity limitations did not result from an improvement in population health, however. Rather it can be attributed to a change made to the GALI question in the German SILC Survey from the standard single question to a routed, three-question version. Since 2015, participants in the German SILC have been asked "Are you permanently limited by a health problem in activities of normal daily living?" with two answer options: "yes" and "no". Respondents who answer "yes" are then directed to two additional questions: "To what extent are you limited in activities of normal daily living?" (strongly limited/moderately limited) and "How long have your restrictions lasted?" (less than 6 months/6 months or longer). Although the three-question version covers the same aspects as the original single question, it is self-evident that the results for the GALI since 2015 cannot be compared with results from previous waves of the German SILC survey (von der Lippe et al. 2017). Likewise, the marked rise in HLY in Italy in 2016 coincided with a technical variation in the SILC, when the survey technique was changed from CAPI (computer-assisted personal interviewing) to CATI (computer-assisted telephone interviewing). A further bias is attributable to the fact that the subjective assessment of health is likely to be influenced by individual, situational, and cultural factors (Idler et al. 2004, Jylhä 2011) as well as by the use of different languages in international survey programs (Luy et al. 2023).

An awareness of the sensitivity of health indicators for interpreting both time trends and differences between populations is, therefore, critical and there is clearly a need to address this handicap. In policy option 3 at the end of this report we present suggestions as to how the methodological sensitivity, and the associated risk of biases in the indicator, might be reduced.

3.3. Healthy life year estimates by education level across European countries for men and women

Life expectancy (LE), the best known and most explicit indicator of global health is, however, no longer sufficient as the sole indicator of population ageing, since it only quantifies the expected number of years people will live. The quality dimension is needed, making the use of health expectancies pivotal.

There are three factors, addressed earlier in the introduction, that need our attention when examining health inequalities and healthy ageing: **a)** gender; **b)** socioeconomic status (measured by level of education), and **c)** age. First, disaggregating health inequalities separately for males and females is crucial. Women's LE is higher than men's at all ages in all countries of the world. Yet, while it is universally observed that male mortality exceeds that of females, studies examining gender differentials in morbidity generally find that women are in poorer health (Crimmins et al. 2011); however, the morbidity difference between the sexes, referring to illness or disease, seems to be less apparent when studying gender inequalities in unhealthy life expectancy (UHLE). Simply put, the gender health-survival paradox, that is, women's mortality advantage vs their disability disadvantage (women live longer but in a more unhealthy state) (Oksuzyan et al. 2010; van Oyen et al. 2013) might not be universal (see also Di Lego et al. 2020).

Second, education is a social determinant of health. In general, those with higher levels of education present longer LE, lower mortality rates, and lower burdens of disease (Crimmins and Saito 2001; KC and Lentzner 2010). Therefore, higher-educated people are more likely to have better access to the knowledge of healthy lifestyles (e.g., higher quality food) and, at the same time, education reflects the capacity to have access to better health care. It is well documented that European women have experienced the marked expansion of their educational attainment during the second half of the 20th century. However, this achievement does not seem to be reflected in a reduction in gender health inequalities, suggesting that the relationship between education and health differs by gender. For instance, absolute health inequalities by education level are more evident among women (Hu et al. 2016). In addition, women with low education levels are the individuals in the poorest health (Cambois et al. 2016).

Finally, health dynamics varies across ages and, in particular, is gaining importance at older ages. Europeans live longer than ever and spend decades in retirement, but during a significant number of years at the end of their life course they have to live with disease and disability (Solé-Auró and Alcañiz 2015). Surprisingly, Southern Europeans, who enjoy longer life expectancies at very old ages, do not appear to enjoy better health and, indeed, often rank among the worst in terms of indicators of disability. For instance, Spaniards, leaders in terms of LE at birth (HMD 2024), have some of the highest levels of functional problems, including self-reports of difficulty in performing activities of daily living (ability to provide self-care) or instrumental activities of daily living (ability to live independently) (Solé-Auró and Crimmins 2013). Substantial increases in longevity were generally accompanied by improvements in the health of our societies, with a direct impact on survival, particularly, at older ages (Bloom et al. 2010). However, the ageing process and the deterioration in health do not interact in the same way for all individuals.

Data

To complement the results provided by the EHLEIS group (section 3.2), current estimates of life and healthy life years are presented for men and women. Specifically, the comparison of the LE and HLE estimates are obtained from Eurostat data (2024)[16] between 2004 and 2020.

We are also interested here in seeing how estimates of HLE change across different levels of education. Therefore, for each EU country for which the most recent data are available (a total of 14 MS using data from 2017), we computed HLY estimates by gender and education level at age 30 and over. The most recent reports available from Eurostat (2017) were used to examine health and mortality data across Europe, disaggregating by age, sex, and level of education. Educational attainment is classified using the 2011 International Standard Classification of Education (ISCED) framework. Individuals with no more than lower secondary education are categorized as having low education (ISCED levels 0–2). Those with education extending to upper secondary or post-secondary non-tertiary levels fall into the medium education category (ISCED levels 3–4). Meanwhile, individuals with tertiary education are classified as highly educated (ISCED levels 5–6).

To be able to estimate the number of years an individual expects to live in good health (HLY), we need to select a health measure. As discussed previously, the health measure we use here is based on the reported frequency of long-term restrictions in everyday activities, data for which are taken from the EU-SILC database[17] (Eurostat data). From the EU-SILC dataset, we use the GALI from 2017, which serves as an official indicator to track levels and trends in population health in the European Union (section 3.2 reports how the GALI is measured).

> **EU-SILC** is a cross-sectional and longitudinal sample survey, coordinated by Eurostat, based on data from the European Union MS.
>
> **EU-SILC** provides data on income, poverty, social exclusion, and living conditions in the European Union. EU-SILC stands for 'European Union Statistics on Income and Living Conditions'.

Mortality data are typically segmented by age and gender, but it is less common to find them broken down by educational subgroup. There are several methodologies for deriving estimates of mortality specific to educational levels. These methods, however, vary in their practicality and precision, and are dependent on the data collection infrastructure and data quality of each country.

In our analysis, we use age- and gender-specific mortality data linked to education levels from the Eurostat database[18] for 2017. This database permits the estimation of HLE across 14 European nations (Bulgaria, Croatia, Greece, Finland, Hungary, Italy, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, and Sweden), segmented by educational attainment, using standardized and official data for 2017, the most recent year available.

[16] https://ec.europa.eu/eurostat/databrowser/view/hlth_hlye/default/bar?lang=en

[17] https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions

[18] https://ec.europa.eu/eurostat/databrowser/view/DEMO_MLEXPECEDU/default/table?lang=en

Methods

Life tables

Eurostat does not provide complete period life tables by level of education (i.e., age-specific mortality patterns by education), which are needed to estimate education-specific HLE indicators. However, Eurostat does publish single age-specific estimates of remaining LE by gender and educational attainment (as defined by the ISCED) for several European countries.

A (period) life table is a concise way of showing the probabilities of an individual from a particular population living to, or dying at, a particular age.

Remaining life expectancy in a given year indicates the age to which a person will live on average assuming no mortality changes.

Life tables are usually constructed separately for men and women because of their substantially different mortality rates. One of the main strengths of life tables is that thy provide an overall picture of mortality, allowing countries and regions to be compared.

A life table is a table which shows, for a person at each age, the probability of an individual reaching their next birthday (ONS 2023). From this probability, a number of statistics, also included in the table, can be derived:

- the probability of surviving any particular year of age
- the remaining life expectancy for people at different ages
- the proportion of the original birth cohort still alive.

Estimating healthy life years with the Sullivan method

The Sullivan method is the most commonly used approach for extending total LE into the expected numbers of years of life to be spent in a healthy (HLY) or unhealthy (UHLE) state (Sullivan, 1971). The method is based on the idea of applying the age-specific prevalence (proportions) of a population in an (un)healthy state to the age-specific person-years lived from the life table (Lx function). This method is further illustrated in the guide provided by Carol Jagger and colleagues (2014).

3.4. Estimated projections of life and healthy life years by education level

A key method for assessing the health of a population is to ask how long people can expect to live. Life expectancy—usually reported at birth although it can be applied at other ages too—is a commonly used summary measure that can also be used to conduct cross-country comparisons. Health expectancies are calculated by subtracting from an individual's LE a figure calculated as the number of years lived with disability multiplied by a weighting to represent the effect of the disability. Life expectancy is calculated using life tables and health expectancy by applying the Sullivan method (1971) to the life tables.

Here, we present projections because the data available do not allow us to provide current estimates of healthy life years by level of education. One of the assumptions we make when computing the estimated projections is that the health variables used in the results (Global Activity Limitation Index - GALI) remained the same as those employed in 2021 for each group. Technical details on how the estimates of healthy life expectancy across all groups are computed are provided in Annex B.

Data and Methods

To generate the projections and to estimate life and healthy life expectancy for each sex, educational group, and age group, we use mortality and health data.

Mortality information

The mortality data were derived from survival ratios obtained from the *Wittgenstein Centre* (WIC)[19] estimates for the period 2020–2025. The Wittgenstein Centre aspires to be a world leader in the advancement of demographic methods and their application to the analysis of human capital and population dynamics. The Centre combines the partners' strengths in the fields of demography, human capital formation, and analysis of the returns to education. It builds on a highly successful collaboration that has already generated significant scientific advances. The survival ratios are the probability of people surviving between one age and another, or who are still alive for a certain period of time. These survival data are often available by country, sex, age, and education level. The survival rate is often stated as a five-year survival rate, and this is what we use here. Additional technicalities on how to proceed to calculate standard life tables are provided in Annex B.

Health status information

The health data information was obtained from the EU-SILC survey for the year 2021, using the GALI. As discussed, the survey asked individuals whether they had any activity limitations over the previous six months due to health problems. We calculated the proportion of individuals reporting no limitations (i.e., "healthy") for each sex, educational group, and age group.

To align the age intervals with our mortality data, we grouped individuals into 5-year age bands, starting from age 30. The education variable was recoded into three categories:

- **Low**: No education, incomplete primary, primary, or lower secondary education.
- **Medium**: Upper secondary and short post-secondary education.
- **High**: Post-secondary, bachelor's, master's, or higher degrees.

Calculation of healthy life expectancy (HLE)

We used the Sullivan method (1971) to calculate HLE. For each country, sex, and educational group, we calculated the prevalence of those individuals that are healthy and then applied the Sullivan method (technical issues are addressed in Annex B).

Data processing and prevalence calculation

Mortality and prevalence data were combined by country and sex to calculate HLE for each educational group. A function was developed to read and process country-specific health prevalence data files. Prevalence values were then merged with the life table results to calculate HLE. This process was repeated for both males and females from 23 EU countries, and the results were exported for further analysis. Projections were calculated for the following countries: Portugal, Romania, Spain, Austria, Slovakia, Croatia, Latvia, Luxembourg, Italy, Bulgaria, Sweden, Belgium, Lithuania, Hungary, Poland, France, Malta, Denmark, Slovenia, Estonia, Germany, Finland, and Ireland.

[19] https://dataexplorer.wittgensteincentre.org/wcde-v3/

4. Results

4.1. European life and health expectancies

In this section we provide a comparison of the life expectancy and healthy life expectancy estimates at birth provided by Eurostat (2024)[20] between 2004 and 2020. We also provide the latest existing evidence on the percentage of healthy life expectancy at age 65 at the European level in 2017, as a quality measure of the remaining years in good or poor health, summarizing the results obtained from the last EHLEIS country report (EHLEIS, 2018). We provide life and health expectancy estimates by education level. And finally, we provide estimated projections of life expectancy and healthy life expectancy for two time periods: 2020–2025 and 2025–2030.

In terms of the data, our analysis includes several datasets. Total life expectancy and healthy life expectancy were directly obtained from Eurostat. For the estimation of healthy life expectancy for 2017, we use age- and gender-specific mortality data linked to education levels from the Eurostat database. We obtain the healthy status prevalence using the GALI calculated from EU SILC 2018 (which refers to the year 2017). This year, 2017, was the most recent date available for Eurostat mortality data disaggregated by education. Projections of remaining life expectancy and healthy life expectancy at age 30 for both periods 2020–2025 and 2025–2030 by educational group were obtained using two sources:

- Wittgenstein Centre (WIC) estimates of survival ratio by sex and education group for the years 2020–2025 and for the period 2025–2030
- EU SILC survey was used to calculate the prevalence of health status by sex and education levels using the GALI indicator

These estimated projections were produced for the following 23 European countries: Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, Germany, Greece, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Romania, Spain, Serbia, Slovakia, Slovenia, and Sweden.

Regional differences in life expectancy and healthy life expectancy

Regional differences in life expectancy

Between 2004 and 2020, European LE at birth increased across most European countries (Figure 1) (Eurostat, 2024). Figures are ordered from the highest to the lowest number of years of LE at birth in 2004. The greatest improvements were observed in countries that had a relatively low LE in 2004. For example, Estonia showed significant gains in LE, increasing from 72.4 in 2004 to 78.9 years in 2020, while countries with the highest LE in 2004, such as Switzerland and Spain, exhibited more modest growth, typically around 2 years.

Women generally presented a higher LE than men, a trend that persisted over time. On average, women lived 4 to 6 years longer than men across the continent in both 2004 and 2020. The Baltic states of Lithuania, Estonia, and Latvia exhibited the largest gender gaps, with women outliving men by up to 11 years in 2004 and 10 years in 2020. However, elsewhere, in countries that included Malta, Iceland and Norway, the gap was smaller, with women outliving men by around 3 to 4 years in 2004 and in 2020.

In terms of overall improvement in LE, both European men and women saw increases, but European men generally experienced slightly greater gains. For example, European men's LE increased by 3.2

[20] https://ec.europa.eu/eurostat/databrowser/view/hlth_hlye/default/bar?lang=en

years on average, while European women's LE increased by 2.2 years. This suggests a gradual narrowing of the gender gap in LE in Europe as a whole.

Estonia and Latvia, which ranked among the lowest male LE in Europe in 2004, experienced one of the highest growths in LE, moving closer to the EU average. The EU as a whole also showed a consistent increase in LE.

Notably, some countries experienced only minimal changes or, indeed, even saw LE stagnate. Bulgaria, Italy, and Poland, for instance, showed slight improvements in total LE, but their increases were among the smallest in Europe.

These remarkable increases in LE over the last two decades across EU countries, however, mask marked disparities across population groups when we introduce the quality of life domain (explained using a health measure).

Our finding that LE increased more for men than it did for women, resulting in a narrowing of the gender gap in LE in the EU, is in line with other scientific findings (Pinho-Gomes et al. 2022). A possible explanation for this appears to lie in gender equality. LE is influenced by the wider determinants of health, including housing and working conditions, money, and education, but there are stark gender inequalities related to these wider determinants. Therefore, gender equality is strongly correlated with a narrowing of the gender gap in LE, which is explained by the stronger positive correlation between gender equality and LE for men than for women.

Gender equality is far from being a reality even among the high-income, developed EU MS. It is, therefore, crucial that the governments of the EU MS and, by extension, countries across the globe, implement policies that promote gender equality across all domains of the gender equality index, including work and money, knowledge and education, and power. Greater gender equality may not only contribute to a healthier, longer-living society but also lead to economic prosperity.

Regional differences in healthy life expectancy

HLE at birth also increased in many European countries between 2004 and 2020, though the patterns differed significantly from those described above for LE (Figure 2). Figures are ordered from the highest to the lowest number of years of HLE at birth. The change in HLE ranged from a stark drop of 10 years in the case of Danish females, to an 11-year increase in that of Swedish females. Even though the Nordic countries experienced an increase in HLE and, indeed, Sweden led the rankings in 2020, Finland actually ranked last. HLE is calculated using the "Global Activity Limitation Instrument" (GALI), which suggests that cultural differences in how people perceive and rate their own health may lead to variations across countries and may explain these differences.

HLE at birth saw increases for both men and women, but the gender gap in HLE was narrower than that for LE. On average, women lived longer than men but not necessarily in better health. In many countries, the difference in HLE between the sexes was less pronounced, with women typically living on average 0.8 additional years in good health compared to men in 2004. This gap was even smaller in 2020, with women living only 0.2 additional years in good health.

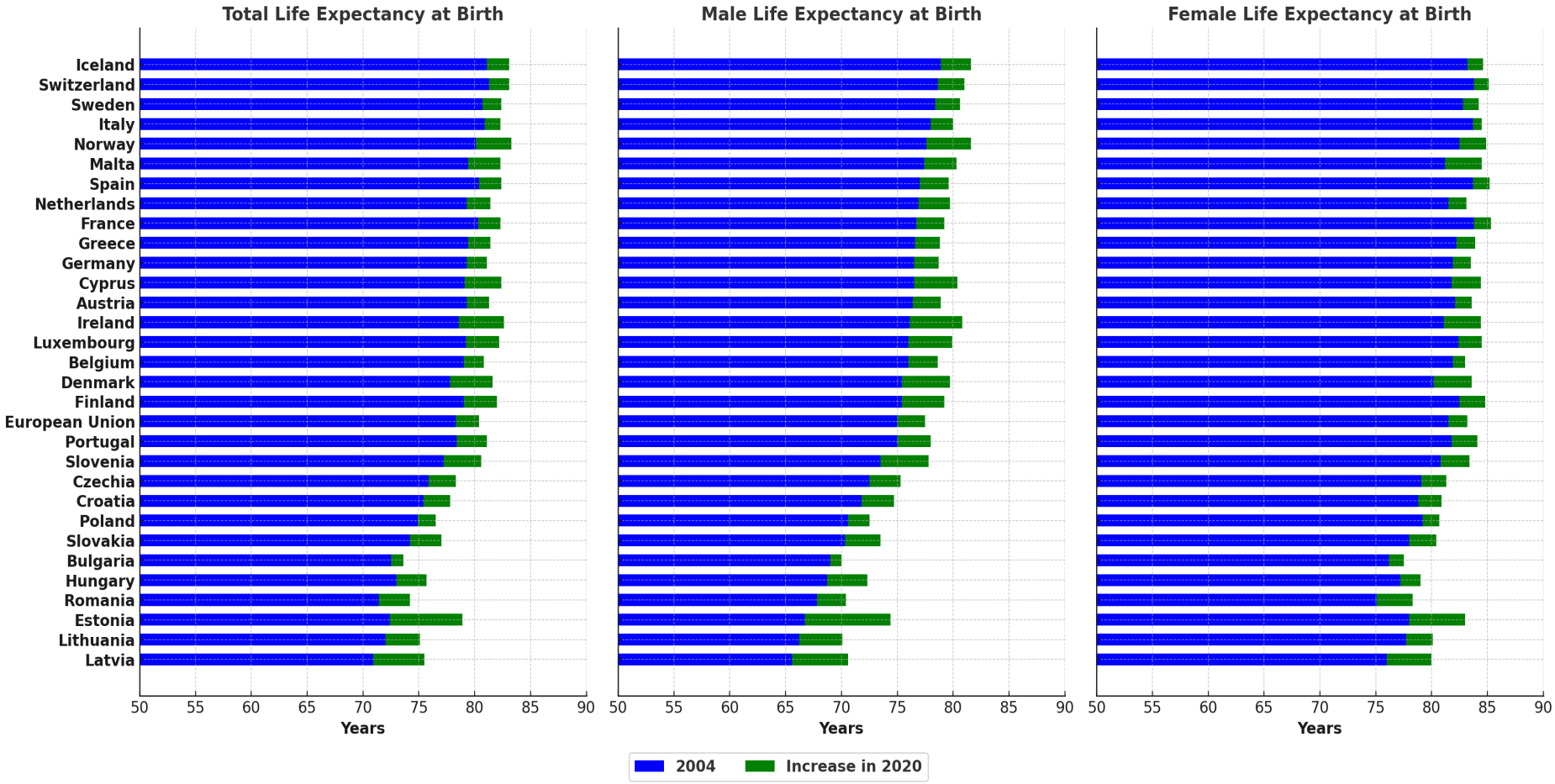
Surprisingly, some countries actually experienced a drop in HLE despite improvements in LE. For example, HLE in Italy and Denmark fell between 2004 and 2020. This suggests that while people may be living longer, the quality of life in later years has not necessarily kept pace.

Danish and Italian women experienced a decline in HLE between 2004 and 2020, and in Denmark, women's HLE declined more notably than men's.

The differences between LE and HLE reveal significant health disparities across Europe. While countries in Northern Europe such as Sweden and Norway (LE in 2020 of 82 and 83 years, respectively, and HLE of 68 in Norway and 73 in Sweden), and in Western Europe such as France

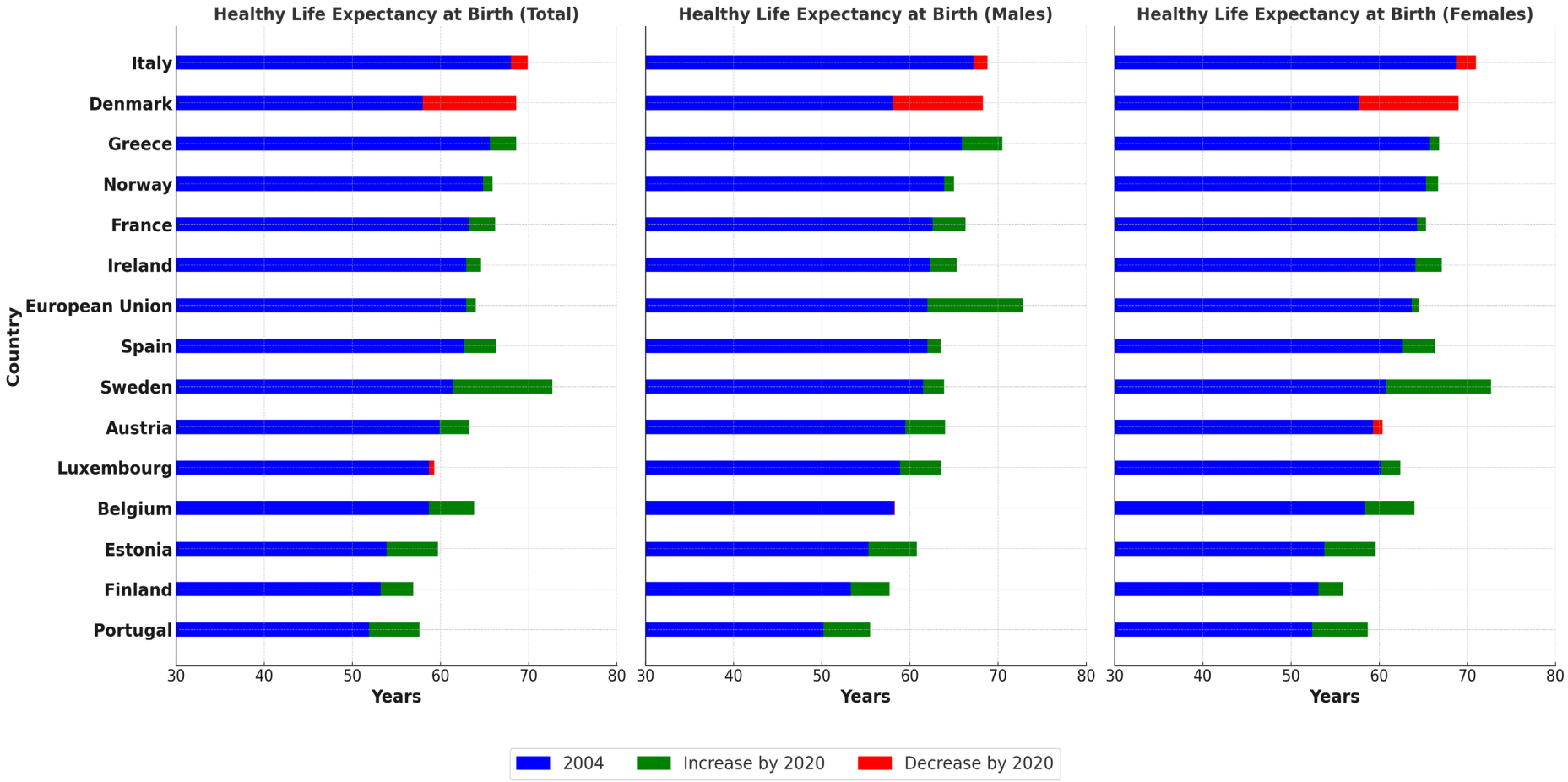
(LE in 2020 of 82, and HLE of 65 , respectively)—tend to lead in terms of both LE and HLE, many Eastern European countries such as Romania and Bulgaria (LE in 2020 of 74 and 73 years, respectively 2020)—continue to lag behind in life expectancy, with gaps of over 9 years compared to countries like Sweden. Similarly, Estonia's HLE (58 years) is around 15 years lower than Sweden's in 2020.

Figure 1 – Total, male and female life expectancy at birth, 2004 and 2020



Source: Eurostat (accessed October 2024)
Note: "x" axis starts at 50 for enhanced visibility, given that all countries have a life expectancy above 50 in both 2004 and 2020

Figure 2 – Total, male and female healthy life expectancy at birth, 2004 and 2020



Source: Eurostat (accessed October 2024)
Note: "x" axis starts at 30 for enhanced visibility, since all countries have a healthy life expectancy above 30 in both 2004 and 2020

Differences in healthy and unhealthy life years at 65 years of age

Visual representations of the regional differences in healthy and unhealthy life expectancy at age 65 (the typical retirement age) from the EHLEIS report (2018) are presented in Figures 3 and 4. The two figures disaggregate the unhealthy life years into moderate and severe activity limitation at the age of 65 across 27 countries for men and women, respectively. The figures are ordered from the highest to the lowest HLE percentage estimates.

Northern countries (i.e., Sweden, Denmark and Ireland), together with Germany, Bulgaria, and Malta (but only Maltese men) present a higher proportion of years lived in good health and a lower UHLY at age 65, both moderate and severe (Figures 3 and 4). Sweden leads the ranking with the highest healthy profile and the lowest unhealthy profile for both men and women. Austria, together with Belgium, France, Germany, Ireland, Luxembourg, and the Netherlands, show a wide range of UHLY. Southern European countries, including Spain, Italy, Cyprus, and Greece spend, in general, between 40 to 50% of their life expectancy in good health and the remaining years of life in an unhealthy state.

Eastern European countries, including Poland, Czech Republic, Slovakia, Hungary, Slovenia, Croatia, and Romania, tend to have a lower HLY and a higher UHLY, particularly in the case of women. Slovakia leads the ranking with the highest unhealthy profile for both men and women. And, finally, the Baltic states of Estonia, Latvia, and Lithuania follow a similar pattern to that of their Eastern European counterparts and are among the countries with the lowest percentage of years spent in good health and the highest percentage of years spent in an unhealthy condition (Figures 3 and 4). The variation across countries points, among others, to the importance of national health policies, the diversity of healthcare systems, the heterogeneous make-up of the populations, and, most likely, the different lifestyles individuals lead.

Gender differences in healthy life years at 65 years of age

The Northern European countries are, in general, those in which people spend more years in good health; nevertheless, gender differences are notable. While women tend to live longer than men at all ages, men at the age of 65, in general, live less but with more years in good health. This trend is not exclusive to Northern Europe, but appears to be common throughout all Europe with few exceptions (Figures 3 and 4). Therefore, the HLY and UHLY patterns we see at the age of 65 indicate that the remaining time for men is generally lived in good health while women generally live a higher number of years in an unhealthy condition.

Among the Nordic countries, Swedish men and women lead the HLY ranking. This contrasts with Danish and Finnish men and women who both present similarly low percentages of HLY (Figures 3 and 4). In Southern Europe, Malta, particularly Maltese men, enjoys the highest percentage of HLY at age 65, followed by Spanish men and women. Portuguese men and women, however, present the lowest proportion of HLY at age 65. In Eastern Europe, Bulgarians clearly exhibit the highest proportion of LE in good health. Among the three Baltic states, Estonia presents the highest proportion of HLY for men and Lithuania for women, while Latvia is ranked the second country with the lowest percentages of years spent in good health for both men and women (Figures 3 and 4).

In short, and in line with the gender health paradox (Oksuzyan et al. 2008), women in most regions are in worse health than men despite their longer longevity. The severity of health limitations tends to be greater in women, particularly in Southern and Eastern Europe followed by the Baltic states. In general, gender differences across countries point to different ageing patterns, which might correlate with the diversity of welfare states and health care systems (Arts and Gelissen 2002).

Women's life expectancy is higher than men's at all ages in all countries analysed. Yet, while it is universally observed that male mortality exceeds that of females, studies examining gender differentials in morbidity generally find that women are in poorer health (Crimmins et al. 2011). However, the morbidity difference is less apparent when studying gender inequalities in unhealthy life expectancy, suggesting that the gender paradox (Oksuzyan et al. 2008), that is, women live longer but in poorer health, might not be universal.

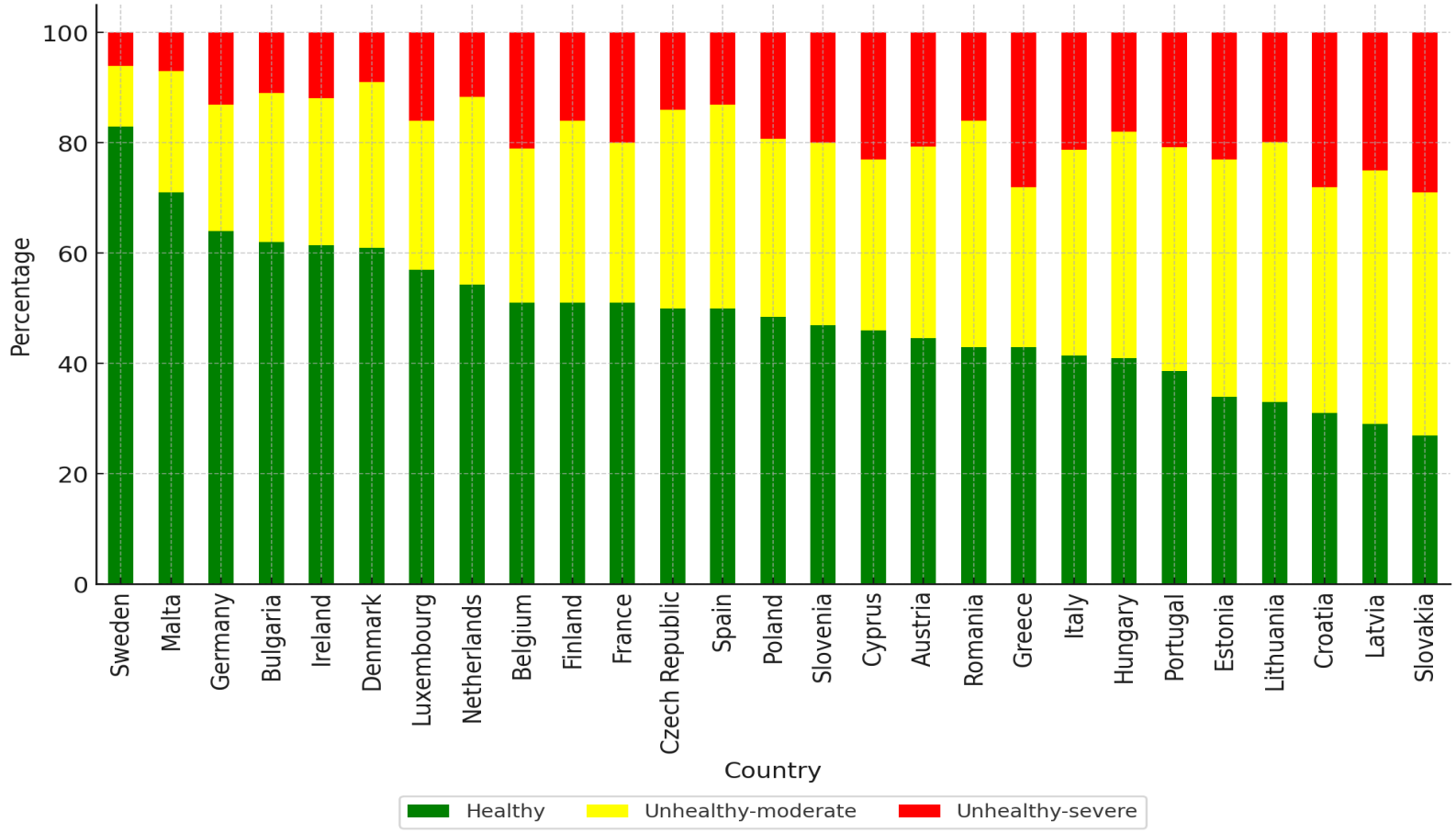
Life expectancy at birth and at 65 years of age in many countries has risen greatly over recent decades, suggesting not only that larger numbers of individuals are reaching old age but also that the elderly are themselves living longer. However, an increasing life expectancy does not necessarily correlate with a healthier population. For this reason, the concepts of health expectancy (HE) and the new EU structural indicator, HLY, were developed to bring a quality-of-life dimension to that of life expectancy.

Moreover, analysing how people live over the life course and being able to identify an individual's quality of life are both essential for promoting healthy ageing—especially in the light of associated inequalities within the EU (for instance, of gender, socio-economic status, and other differences between the MS).

Having a good understanding of a population's health status can significantly lower the cost of long-term care, especially if policy response invests in quality services and infrastructure, as well as in healthcare research and innovation, ensuring access to healthcare, offering attractive working conditions, and exploiting innovative technology to improve efficiency (European Commission 2021[21]). Reducing and/or minimizing these costs requires a comprehensive and coordinated approach that involves professionals, healthcare systems, social care services, researchers (demographers), and other sectors such as employment and housing.

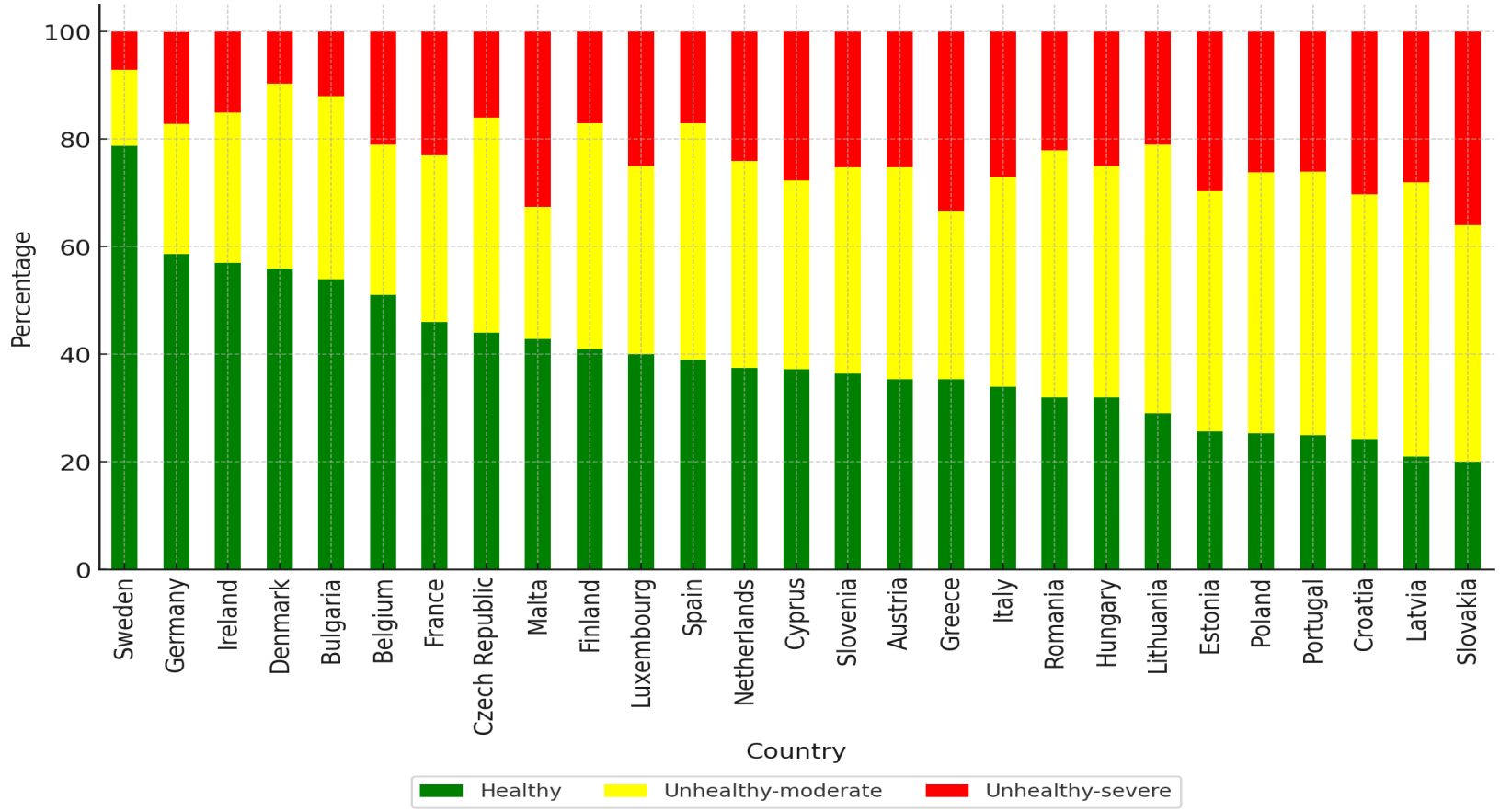
[21] Green Paper on Ageing: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0050

Figure 3 – Percentage of healthy life expectancy and unhealthy life expectancy (moderate and severe) at age 65 across Europe for men



Source: Based on data from the EHLEIS report (2018).

Figure 4 – Percentage of healthy life expectancy and unhealthy life expectancy (moderate and severe) at age 65 across Europe for women



Source: Based on data from the EHLEIS report (2018).

4.2. Healthy life year estimates by education level

As discussed in section 3.3, our findings build on and complement existing knowledge on health inequalities by examining the intersection between health, mortality, and level of education for individuals aged 30 years old and overusing the most recent Eurostat survey data for Europe.

Health inequalities reflect differences in the composition of population groups and their distinct exposure to health behaviours and risk factors, notably influenced by individual characteristics, such as education (Wu et al. 2020). Education as a measure of social class plays a crucial role in defining health inequalities, which are also evident within European regions (Meschi and Scervini 2014). Formal education is acquired relatively early in the life course (education being completed in most instances around the age of 30) but is suitable as an indicator of socioeconomic status even in older age.

Education has been identified as one of the strongest predictors of health and mortality, and a significant factor in shaping adult experiences, as it both mediates and moderates the health consequences of early-life disadvantages (Montez and Hayward 2014). Indeed, the importance of education for adult health has been shown to fluctuate across age groups, time, contexts (rural and urban areas, European countries), gender, ethnicity, and immigration status. Social scientific findings are unequivocal in demonstrating that the health of midlife and older adults with lower levels of education differs from that of their more highly educated peers and that the latter are better able to maximize their longevity and to postpone or avoid disease, disability, and premature death (Montez and Brooks 2021; van Raalte et al. 2011).

Low education is a strong marker of social disadvantage and is especially detrimental in those population subgroups that possess fewer alternative resources for health, including income and social status. This is coherent with the argument that education appears to be more important for postponing the onset of poor health, while income and wealth are critical for slowing the subsequent progression of poor health and death (Herd et al. 2007; Zimmer and House 2003). Here, we need to incorporate the age component, as older people are more susceptible to multimorbidity, higher activity limitations and worse self-assessed health; yet, the speed at which their health deteriorates varies with individual characteristics and contextual factors, such as education (Cezard et al. 2021).

Indeed, disadvantaged adults (including the less educated) experience the onset of health problems at earlier ages than advantaged adults. However, in general, such disparities are hypothesized to narrow in older age because the unhealthy, lower educated are more likely to have died and because the social welfare received at older ages and the health-related risks (such as biological frailty) will have largely equalized across education groups.

Scholars stress the need to monitor gender and educational inequalities in longevity within populations, since understanding the associated mechanisms could help reduce inequalities between groups and improve a population's overall health (Solé-Auró et al. 2022; Solé-Auró et al. 2020). Jasilionis and Shkolnikov (2016) provide an international overview on longevity across educational groups and conclude that those with high levels of education generally have the highest LE and, moreover, are the "vanguards" leading the way towards a lengthening of life for the remaining population groups. In short, educational attainment appears to be a very important indicator of an individual's prospects for long life.

Healthy life expectancy by level of education

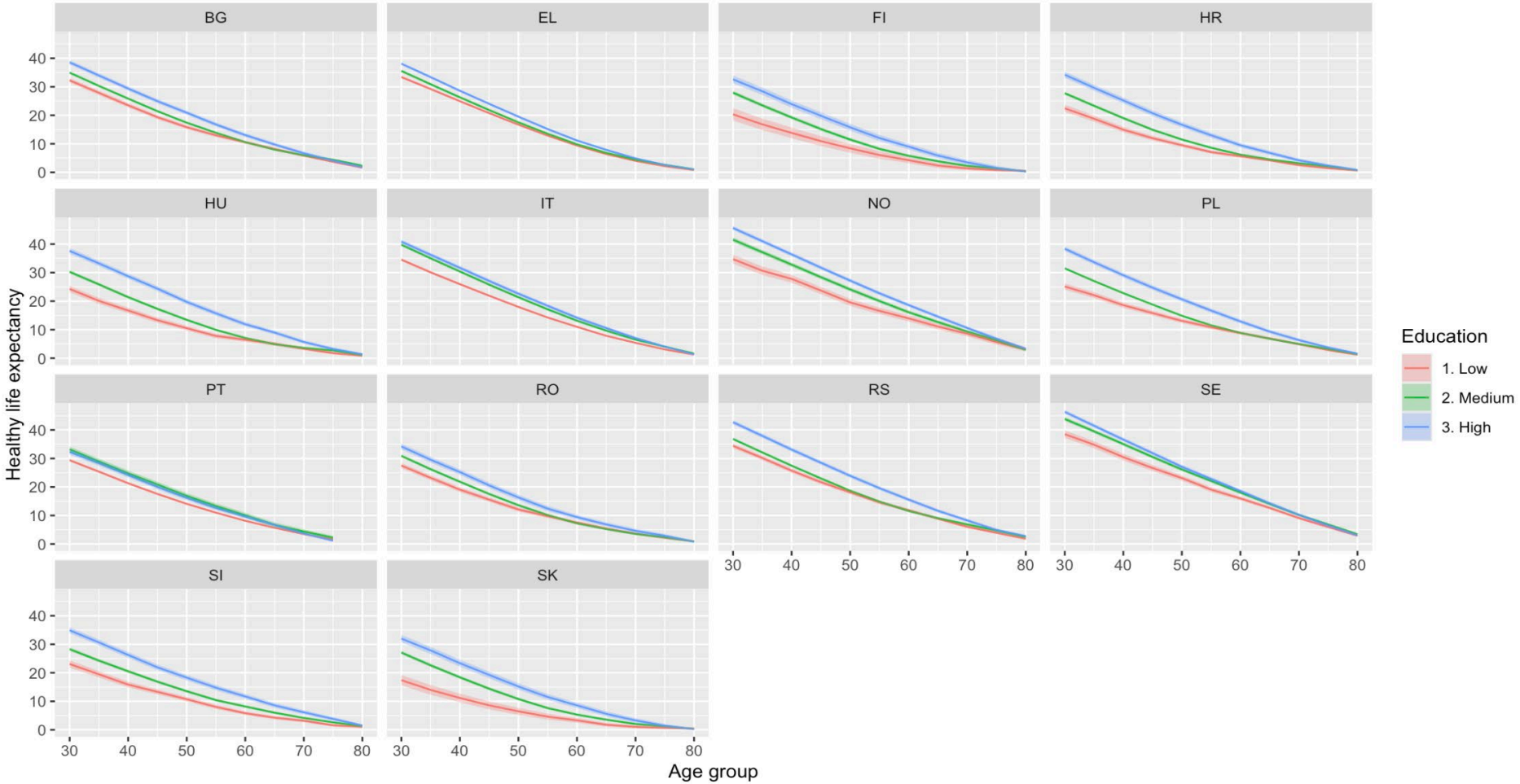
Figures 5 and 6 provide information about healthy life expectancy for men and women, respectively, at each specific age and for each education level. The results for men show that for all European countries, healthy life expectancy was higher among highly educated individuals, followed by those with middle and lower education, though the extent of this inequality varied between countries. The disparity by education level at age 30 was particularly notable in Finland and Slovakia, with higher educated men living 12 and 15 more healthy life years than the lowest educated men, respectively. Additionally, the disparity was more pronounced at earlier ages and healthy life expectancy tended to converge towards higher age groups.

The remaining healthy life expectancy for females showed similar trends to healthy life expectancy for males. However, for women the educational health disparity is especially notable in Slovakia, Finland, and Hungary (Figure 6), where the highest educated women had 11, 10 and 9 more healthy life years at age 30 compared to the lowest educated women, respectively. Figures 5 and 6 also include the 95% confidence intervals for HLE at age 30 that account for the uncertainty in the health data.

Confidence interval is a descriptive statistical measure indicating the range of values that is likely to contain the true population value with some degree of uncertainty (Hazra 2017).

Confidence, in statistics, is another way to describe probability. For example, if you construct a confidence interval with a 95% confidence level, you are confident that 95 times out of 100 the estimate will fall between the upper and lower values specified by the confidence interval.

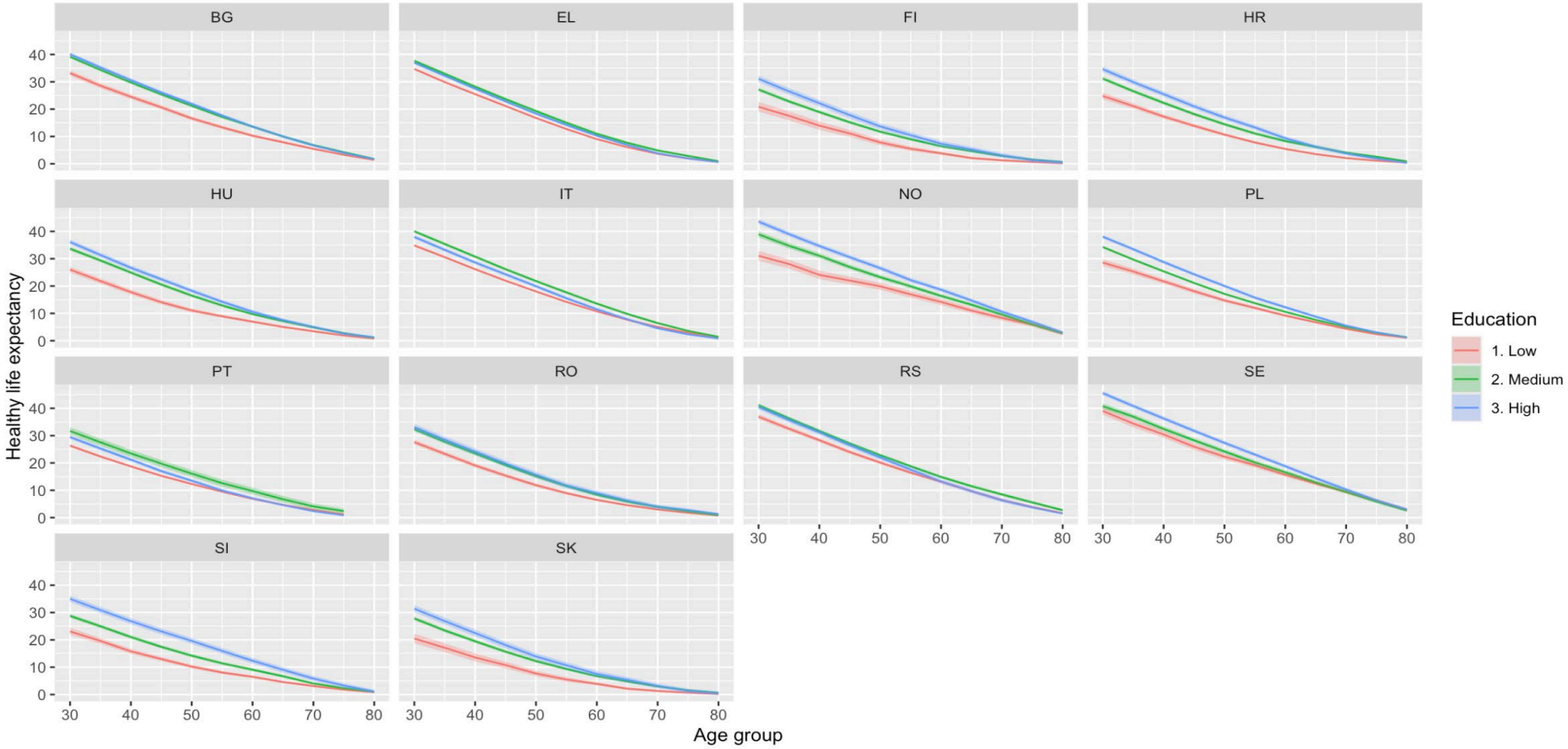
Figure 5 – Healthy life expectancy from age 30 onwards by level of education for males among 14 European countries



Source: Mortality data linked to education levels from Eurostat. The health status prevalences are used from EU-SILC data 2017. The year 2017 was the most recent available mortality data disaggregated by education from Eurostat.

Note: Country acronyms represent the following countries: Bulgaria (BG), Greece (EL), Finland (FI), HR (Croatia), Hungary (HU), Italy (IT), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Serbia (RS), Sweden (SE), Slovenia (SI), and Slovakia (SK)

Figure 6 – Healthy life expectancy from age 30 onwards by level of education for females among 14 European countries



Source: Mortality data linked to education levels from Eurostat. The health status prevalences are used from EU-SILC data 2017. The year 2017 was the most recent available mortality data disaggregated by education from Eurostat.
Note: Country acronyms represent the following countries: Bulgaria (BG), Greece (EL), Finland (FI), HR (Croatia), Hungary (HU), Italy (IT), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Serbia (RS), Sweden (SE), Slovenia (SI), and Slovakia (SK)

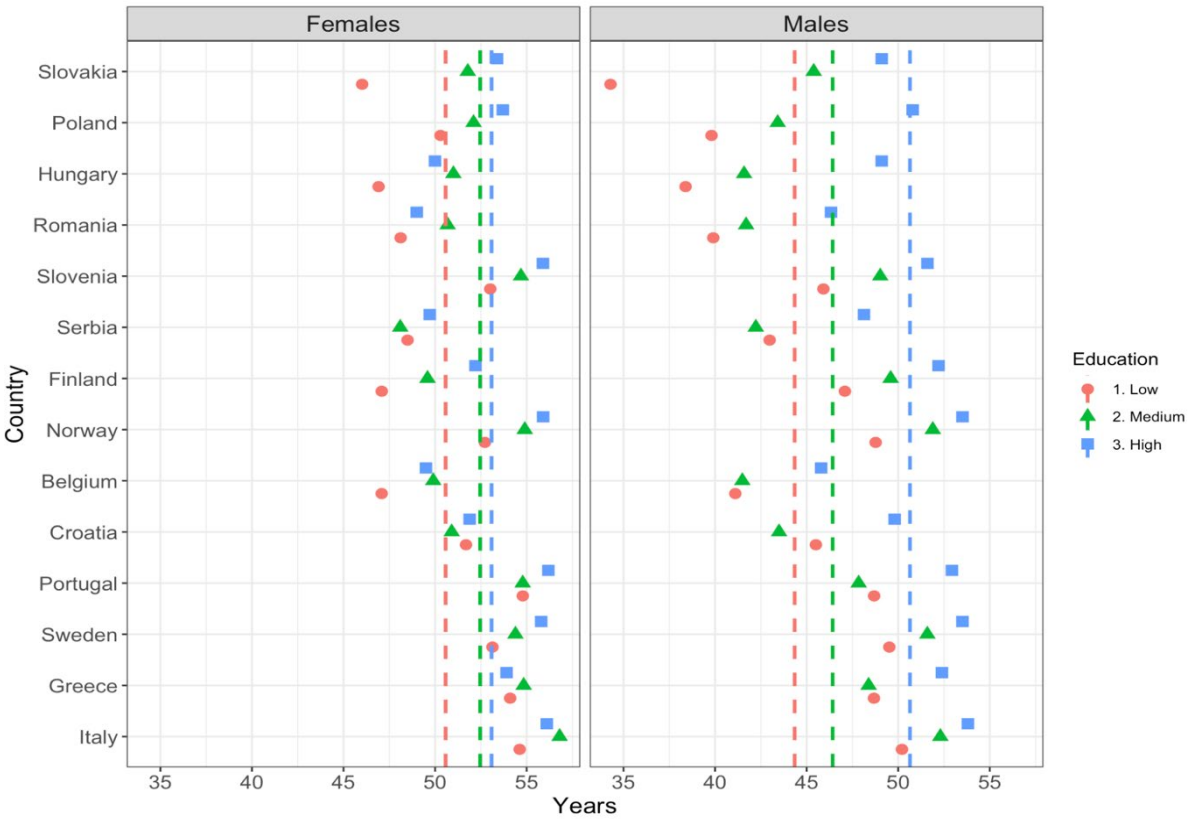
Figures 7 and 8 show LE and HLE at age 30 by country, sex, and education in 2017. Countries are ordered by the difference in life expectancy between the highest and lowest educated males, from the greatest difference at the top to the smallest at the bottom. As shown in these Figures, there is a clear gradient in LE and HLE at age 30 by education. In the vast majority of cases, the highly educated present better outcomes than the middle educated, who in turn perform better than the lower educated – both for women and men. Further, educational inequalities in HLE at age 30 among women were greatest in Norway (12.5 years) (Figure 8) and greatest for men in Slovakia (14.6 years), while the difference between the high- and low-educated was lowest for Greek men (1.8 years) and Portuguese women (2.9 years).

Importantly, inequalities by educational attainment become greater when moving from LE at age 30 to HLE at age 30. That is, the gap in healthy longevity (HLE) between the high- and low-educated tends to be larger than the corresponding gap in longevity. To illustrate this, we find almost no gradient in LE at age 30 among Portuguese, Greek or Croatian women, but the corresponding gap in HLE is large.

In Finland, where life expectancy for all education groups was around the European average, HLE was actually lower than the average. The reason for this is unclear but might be attributable to differences in the way in which the EU SILC question for the GALI is interpreted between countries.

Health inequalities by education tend to be wider among men than among women across all countries examined here (both for LE and HLE at age 30). This is clearly demonstrated in Figure 11, which illustrates the gap in years in healthy life expectancy between the highest and the lowest educated groups, for men and women, and for the periods 2020–25 and 2025–30. The graph shows that in general the gap for women is wider than that for men. It also shows that for both periods, and in both men and women, Belgium is projected to have the widest education gap in healthy life expectancy (15 years in men and 13 years in women in the period 2020–25) while Spain and Italy will have the narrowest gaps, and especially for women (3 years in both Spanish and Italian women in the period 2020–25).

Figure 7 – Remaining life expectancy at age 30 by country, sex, and educational attainment for 14 European countries

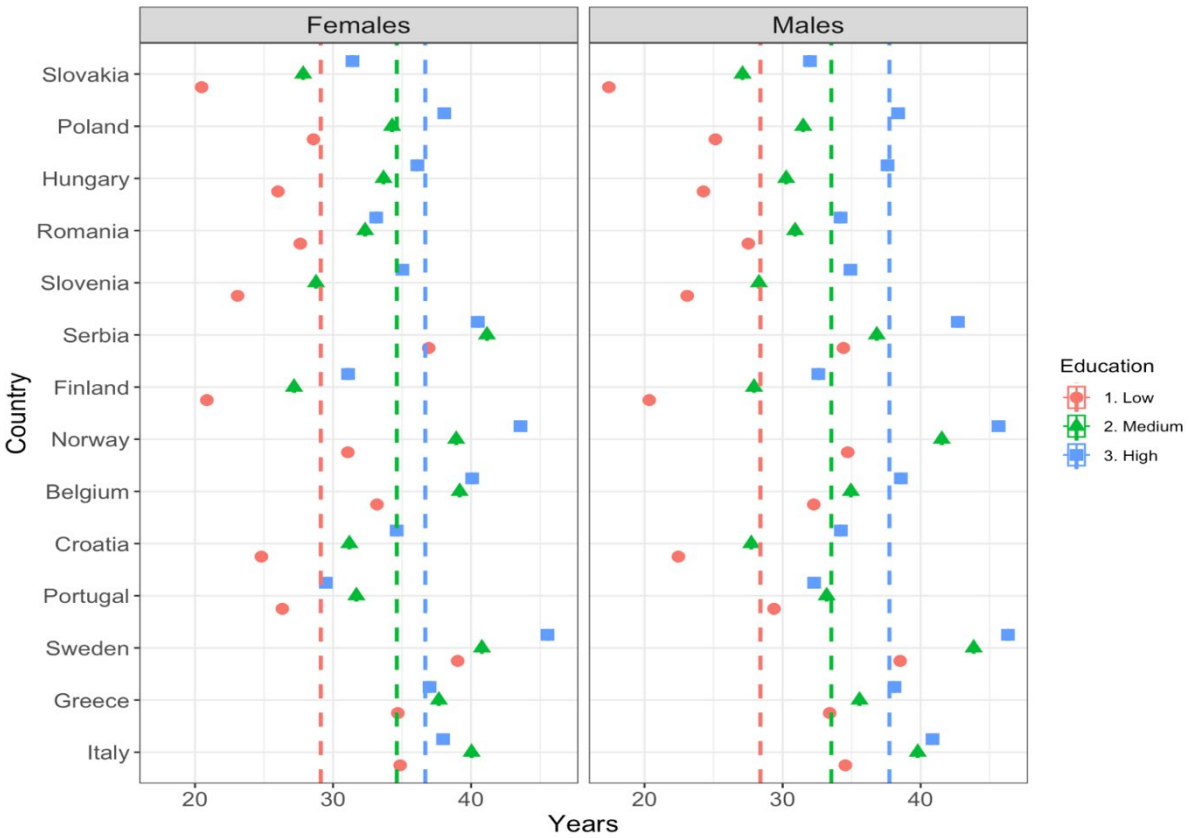


Source: Mortality data linked to education levels from Eurostat. The health status prevalences are used from EU-SILC data 2017. The year 2017 was the most recent available mortality data disaggregated by education from Eurostat.

Note 1: Vertical lines are European averages of remaining life expectancy at age 30 with the countries included in the figure, separately for males and females. In red for the low educated group, in green for the medium educated group, and in blue for the high educated group.

Note 2: Countries are ordered by difference in life expectancy between the highest and lowest educated males, from largest difference at the top to smallest at the bottom.

Figure 8 – Healthy life expectancy at age 30 by country, sex, and educational attainment for 14 European countries



Source: Mortality data linked to education levels from Eurostat. The health status prevalences are used from EU-SILC data 2017. The year 2017 was the most recent available mortality data disaggregated by education from Eurostat.

Note 1: Vertical lines are European averages of remaining life expectancy at age 30 with the countries included in the figure, separately for males and females. In red for the low educated group, in green for the medium educated group, and in blue for the high educated group.

Note 2: Countries are ordered by difference in life expectancy between the highest and lowest educated males, from largest difference at the top to smallest at the bottom.

4.3 Data projections and estimates of healthy life expectancy by level of education

Figures 9 and 10 summarize the results of the projected LE and HLE for men and women at age 30 for 24 European countries in the periods 2020–2025 and 2025–2030, respectively.

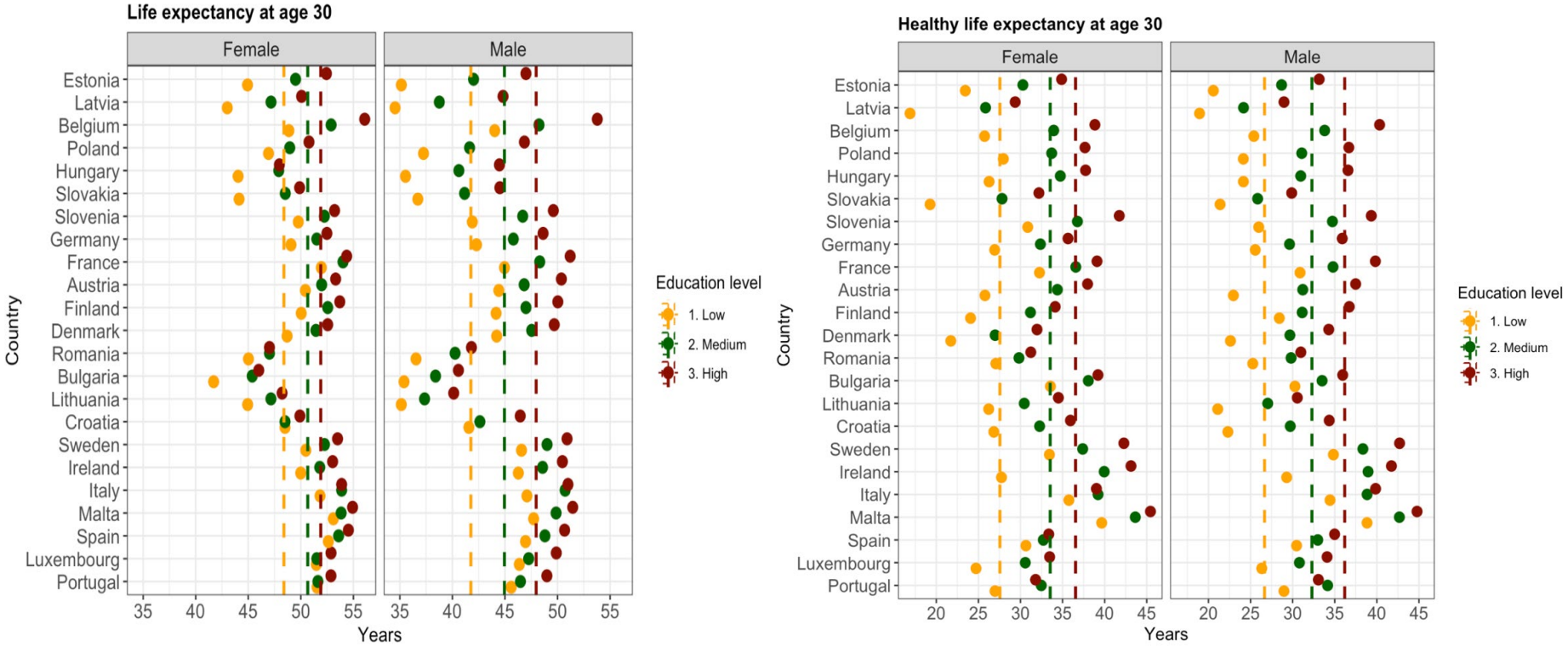
In Sweden, the country with the highest HLE in the period 2020–2025, males in the highest education group at age 30 are expected to live an additional 43 years in a healthy state (Figure 9). This contrasts with a HLE of 30 years for males in the highest educational group in Lithuania and Latvia. These extremes highlight the considerable variation in healthy ageing across Europe.

As observed above when using 2017 data (Figures 7 and 8), for the projected 2020–2025 and 2025–2030 populations, we expect to find a clear gradient whereby individuals with higher education consistently enjoy longer healthy life expectancy than those with lower education. This pattern is

expected to hold true for both males and females. The most notable gaps for males are visible in Belgium and Austria where the difference between higher and lower education groups is expected to be over 14 years in the period 2020–2025 (Figure 9). For females in the period 2020–2025, the widest gaps of 12 years or more are seen in Belgium, Slovakia, Latvia, and Austria. The gaps are slightly wider in the period 2025–30 (Figure 10), when the biggest gaps of 15 years or more are seen between the highest and lowest educated males in Belgium, Austria, and Slovenia, and corresponding gaps of around 14 years are seen for females in Belgium and Slovakia. There are a few countries where the HLE of the highest educated falls below, or is the same as, that of the middle-educated group. This is likely to be due to inconsistencies in the way in which educational levels are measured in SILC surveys between countries.

Again, the gap between the lowest and the highest educated is expected to be greater for HLE than for LE. The widest LE gap for the period 2020–2025 is expected to be 12 years for Estonian males, while in the case of HLE it is expected to be 15 years for Belgian males in the same period (Figure 9). This trend is also seen in the period 2025–30 (Figure 10). In most countries, women tend to have a higher HLE than men of the same educational level. This is despite the greater prevalence of healthy status among males than females and seems likely to be driven by the higher LE of females. The difference in HLE between education levels is expected to be more pronounced for males than for females in some countries: in Lithuania, for example, the education health gap is 9.4 years in males and 8.2 years in females in the period 2020–25. Similarly, in Estonia in the period 2020–2025, the gap is 13 years in males and 11 years in females.

Figure 9 – Life expectancy and healthy life expectancy at age 30 by education level. Projections 2020–2025

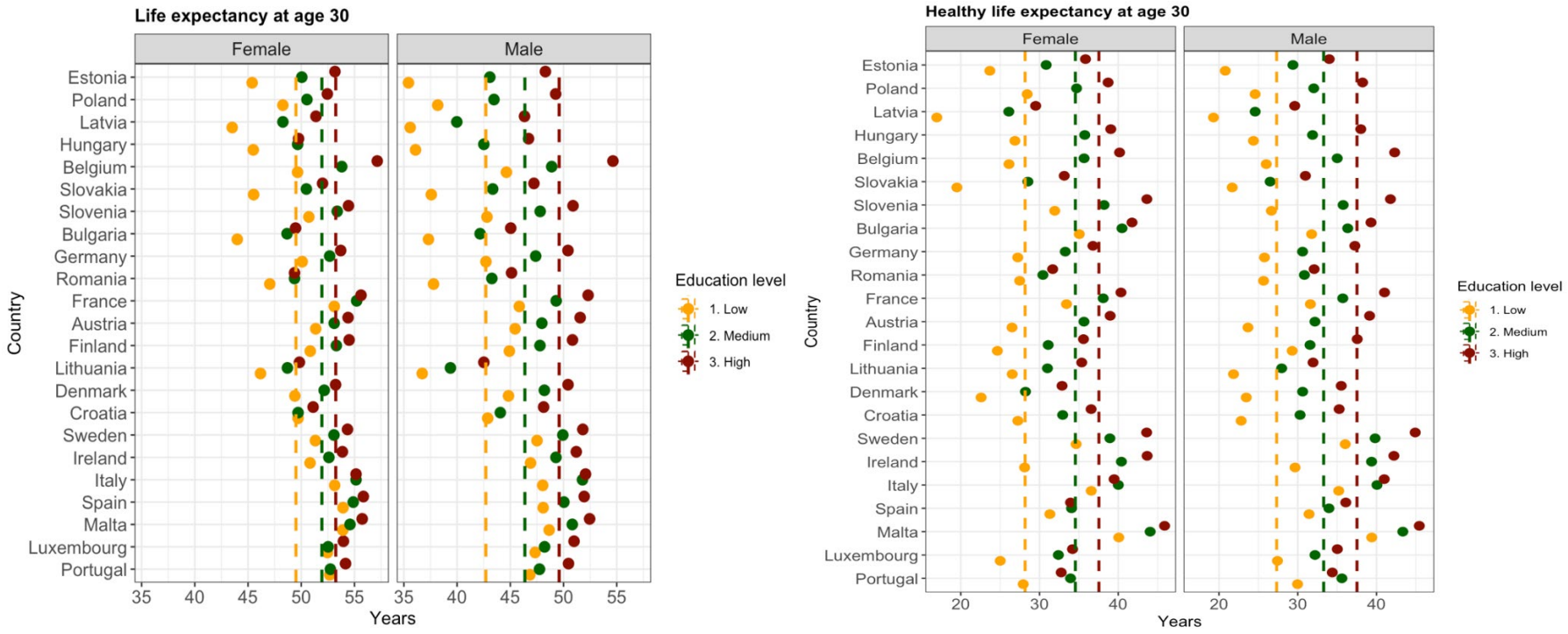


Source: Wittgenstein Centre (WIC) estimates of survival ratio by sex and education. EU-SILC survey for the health measure (GALI) by sex and education.

Note 1: Vertical lines are European averages of remaining life expectancy at age 30 with the countries included in the Figure, separately for males and females. In yellow for the low educated group, in green for the medium educated group, and in red for the high educated group.

Note 2: Countries are ordered by difference in life expectancy between the highest and lowest educated males, from largest difference at the top to smallest at the bottom.

Figure 10 – Life expectancy and healthy life expectancy at age 30 by education level. Projections 2025–2030

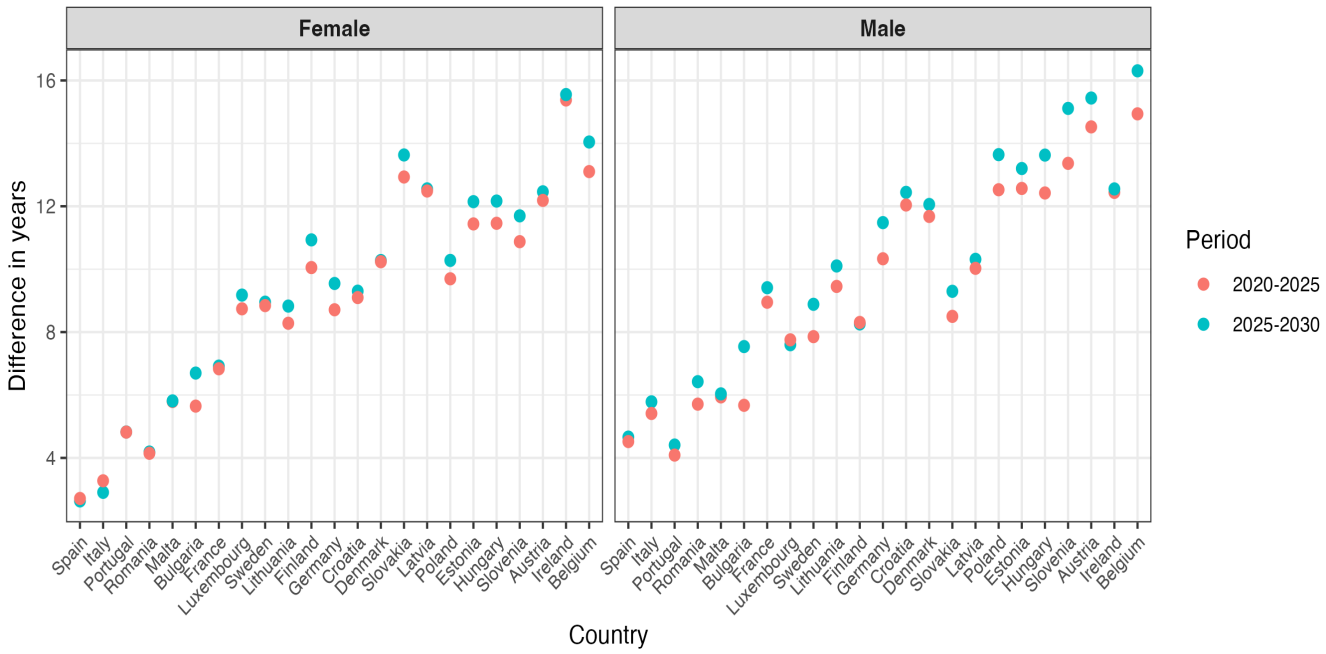


Source: Wittgenstein Centre (WIC) estimates of survival ratio by sex and education. EU-SILC survey for the health measure (GALI) by sex and education.

Note 1: Vertical lines are European averages of remaining life expectancy at age 30 with the countries included in the figure, separately for males and females. In yellow for the low educated group, in green for the medium educated group, and in red for the high educated group.

Note 2: Countries are ordered by difference in life expectancy between the highest and lowest educated males, from largest difference at the top to smallest at the bottom.

Figure 11 – Difference in projected healthy life expectancy at age 30 between the highest and lowest educated groups by sex and country, in two time periods 2020–2025 and 2025–2030



Source: Wittgenstein Centre (WIC) estimates of survival ratio by sex and education. EU-SILC survey for the health measure (GALI) by sex and education.

5. Conclusions

The results presented in this report show that, between 2004 and 2020, life expectancy (LE) at birth increased in all countries included in the analysis. This means that, on average, in the year 2020 individuals survived to higher ages than they did in 2004. Importantly, among those countries that had the lowest LE in 2004 (like Estonia) made greater improvements in longevity than those with the highest initial LE (like Spain and France), resulting in a reduction in LE inequality across countries. Moreover, differences in LE across countries were more pronounced among men than they were among women (the latter presenting not only higher values than the former, but values that were also more similar to each other).

Trends in healthy life expectancy (HLE) at birth also show that most countries included in the analysis improved their healthy survival prospects between 2004 and 2020, but not all. Some countries (such as Italy and Denmark) experienced declines in HLE at birth during this 16-year period. When focusing on healthy survival prospects at age 65, our findings point to considerable variation across countries. While some can expect to spend most of their remaining life in good health (the case, for example, of Sweden, where 80% of the remaining LE at age 65 is expected to be in good health), for others these percentages are much lower (the case, for example, of Slovakia, where the proportion barely rises above 20%). In addition, there are notable differences between women and men. While women tend to live longer than men, they usually spend longer fractions of their life in less-than-good health.

When inspecting health outcome differences across different education groups, several patterns emerge. First, low-educated individuals tend to experience worse outcomes than their middle-educated peers, who in turn tend to fare worse than their high-educated counterparts. This applies both to LE and HLE at age 30 and above. Second, when examining gaps in health outcomes across these education groups, we find that differences tend to be greater among men than among women (i.e., the differences between high- and low-educated women are not as great as they are between high- and low-educated men) – especially when focusing on total longevity indicators (i.e., LE). Third, differences in healthy longevity (i.e., HLE) across education groups tend to be much greater than the corresponding differences in total longevity. In other words, the gap in healthy longevity between high- and low-educated individuals tends to be much greater than the corresponding gap in total longevity.

The above patterns are highly pervasive and well ingrained and, as such, they are not expected to change substantially in the near future. Our projections for 2020–2025 and 2025–2030 suggest that in the coming years there will be no major changes in the gaps in health outcomes across education groups and between women and men. Therefore, up to 2030, the differences in LE across education groups will persist but they are expected to be smaller than the corresponding differences in healthy life expectancy across these groups.

It is imperative that we begin to develop effective healthy ageing strategies because most people can expect to live beyond the age of 60. By 2050, 1 in 5 people will be 60 years old or more (European Commission 2020). This means that more and more people are living longer, which poses new challenges and new opportunities to the broader community. However, there can be little doubt that a person's general health must be considered a key factor among successful ageing strategies if we are to ensure that people can benefit from the extra years of life they have achieved, doing what they value.

6. Policy options

Three policy options are presented here, and specific details concerning their relevance are drawn from our research findings. Demographic shifts across the EU have been far reaching, with the proportion of the population aged 65 and above having increased from 16% in 2000 to over 21% in 2023, with projections indicating a further rise to nearly 30% by 2050 (European Commission, Health at Glance 2024). Despite overall gains in longevity, as measured by life expectancy, the quality of these additional years remains a critical concern. Promoting healthy longevity requires a change in the health system paradigm, moving from reactive to proactive, comprehensive prevention actions implemented across the life course. The actors expected to be involved in these changes at the European and national levels include the European Parliament, the European Commission, Member States, and potential additional European and national actors such as health organisations, research groups, and citizen science networks.

Policy Option 1: Monitoring and reducing health inequalities

Policy Option 1 stresses the first step to be taken in reducing health inequalities in our ageing societies: namely, an exact diagnosis to determine the extent of these inequalities. The objective is to regularly monitor different dimensions of the health inequalities presented by EU Member States with the ultimate goal of preventing (or at least reducing) them. Improving overall HE and, thus, reducing the burden of ageing requires risk group-specific measures. Our report identifies the gaps in HLY between education groups, for men and women, and makes recommendations to improve healthy ageing. Given the almost universal desirability of living long lives, it is critical to consider not only 'efficiency'—that is, how efficient societies are in generating and sustaining years of life (or how long we live *on average*)—but also 'equity'—namely how (un)equally distributed longevity (or any other health outcome) is.

Here, we suggest some specific actions related to Policy Option 1:

- Promote HLY inequality reduction commitments among MS. This could be done on a yearly basis, after Eurostat releases the data required to estimate HLY across countries (i.e., the EU-SILC data).
- Set time goals/targets for HLY inequality reductions across and within Member States. These goals/targets should be agreed upon by all countries, and would be akin to previous targets like the 'European target of a 2-year increase in healthy life years in the next decade' established in 2010.
- Produce the corresponding health inequality reports across Member States on a yearly basis. These could be produced by Eurostat or the corresponding National Statistical Offices (NSOs).
- Promote the prevention, early detection, and treatment of neurodegenerative diseases (e.g., Alzheimer's disease), which are among the main causes of healthy years lost to disability among older people in the EU.
- Prevent cardiovascular disease (the leading cause of death in the EU and throughout the world), focusing on the risk factors that are more prevalent among the lower socioeconomic strata. This might be facilitated through the European Commission's 'Healthier Together[22]' initiative.
- Promote the prevention, early detection, diagnosis and treatment of cancer (the second leading cause of death in the EU), with particular attention to the risk factors affecting the

[22] **Healthier together – EU non-communicable diseases initiative. European Commission 2021**

https://health.ec.europa.eu/non-communicable-diseases/healthier-together-eu-non-communicable-diseases-initiative_en#documents

lower socioeconomic strata (who are more exposed to environmental pollutants and occupational carcinogens). This might be facilitated through the Commission's 'Europe's Beating Cancer Plan', complemented by the EU Cancer Mission.

- Improve housing conditions among low-income individuals and promote social housing. Accessibility to decent and affordable housing would greatly reduce economic strain on these individuals, triggering beneficial effects in other life domains (e.g. mental health).

Table – Policy Option 1: Monitoring and reducing health inequalities

Criterion	Description
Social impact	Monitoring health outcomes promotes accountability and the setting of best practices. Reducing health inequalities in the leading diseases affecting Europeans (i.e. cardiovascular disease, cancer, and neurodegenerative diseases) improves overall (i.e. population-wide) health outcomes.
Economic effects	Healthier individuals reduce the burden on overstrained health systems, increasing productivity and reducing sick leave.
Feasibility	Strategies to reduce inequality already exist in several Member States, so they are feasible (albeit that some are more demanding and holistic than others).
Consistency with EU objectives	Reducing inequalities is at the core of EU (and other international entities') policies, so the suggested policy option is well aligned with these goals (e.g. UN SDG 3, European Parliament resolution 'towards a common European action on care'[23]).
Risks and uncertainties	Health is a complex, multifaceted concept, so some interventions (e.g. population-wide screening programmes and the promotion of social housing) might require holistic approaches potentially involving several actors (e.g. ministry of health, ministry of finance, social protection, and so on).

[23] https://www.europarl.europa.eu/doceo/document/TA-9-2022-0278_EN.html

Policy Option 2: Monitoring healthy ageing among vulnerable groups

Policy Option 2 stresses the second step to be taken in reducing health inequalities in our ageing societies. It concerns itself with directly enhancing healthy ageing among the most vulnerable, that is, those groups that are at greatest risk of unhealthy ageing. This definition of vulnerable groups not only includes single-person, single-parent and low-income households, but also low-educated individuals, the unhealthy, and women, among others. These groups are generally less advantaged as a result of various social, economic, work, health, and cultural factors.

As discussed earlier in this report, the EU population is projected to start falling in forthcoming years, while the number of older people is set to rise, above all relative to the number of people of working age. As a result, the old-age dependency ratio will rise sharply in all MS over the coming decades.

More specifically, our research addresses problems that manifest themselves between gender, age, and education. It highlights older women as systematically experiencing a higher proportion of their remaining time in an unhealthy state than men, and confirms that low-educated individuals are more exposed to health problems. In addition, when we interact education and gender with health, we identify a further vulnerable group in terms of health: namely, women with low levels of education, particularly, older women. This group often experiences situations that erode their quality of life, and they must face various challenges, including accessing end-of-life care, which hinder their attainment of the healthy patterns reached by other groups. Thus, notable inequalities in health exist among older people by gender and education, inequalities that stem from different factors, including greater exposure to various risk factors during their whole life course, more difficult living and working conditions during their working lives, and more limited access to and use of health services, among others.

Everyone is vulnerable to some degree, but old age is associated with greater risks of exposure to specific challenges such as extreme temperatures, air pollution, loneliness and complications from infections, and crucially, of a reduced capacity to respond. In addition, social inequalities are manifest in and exacerbate three key dimensions of vulnerability: the initial level of wellbeing, the degree of exposure to risk, and the capacity to manage risk effectively.

In Europe, quality education has a positive lifelong effect on health through increased employment opportunities and income, better living conditions, positive mental health and resilience, better cognitive skills and (health) literacy. People with lower educational attainment have higher rates of premature mortality, morbidity, and functional and cognitive limitations, making healthy and active ageing difficult to achieve and maintain.

For instance, older women with low levels of education tend to be less protected in terms of health and, typically, lack the resources needed to address life's challenges effectively. To address this, Policy Option 2 emphasizes targeted measures that actively reduce the health inequalities affecting vulnerable populations as they age. As such, this strategy seeks to implement measures that can alleviate vulnerability in health as individuals age.

Here we suggest some specific actions related to Policy Option 2:

- Support for individuals to build up 'reserves' for later life, which reflects a lifetime's accumulation of resources and skills for minimising the health challenges the most vulnerable groups face in old age
- Address health inequalities by promoting healthy lifestyles (e.g. avoid smoking and excessive alcohol consumption, regular exercise, healthy diet), especially among individuals from lower socioeconomic strata. Reducing gaps attributable to social status (education) would be an effective way to increase countries', and the EU's, levels of HLY. A promising approach to improving an individual's risk factors would be to develop measures that specifically target low socioeconomic groups (as opposed to measures that seek to target

the whole population). This might be facilitated through the Commission's 'HealthyLifestyle4All'" initiative[24].

- Ensure good quality education is available for all and encourage cognitively stimulating activities in midlife to protect cognition and improve healthy ageing. This could be facilitated by the EU's 'Digital Education Action Plan (2021–2027)'[25].
- Promote good mental and physical health with interventions to enable people to stay active and physically healthy and socially active in everyday life as they age. This could be facilitated by EU initiatives such as the Communication on a 'Comprehensive approach to mental health'[26].
- Nurture family relationships and social networks and ties, targeting above all the most vulnerable groups, such as older women living alone. The frequency of family visits and contact differ greatly across population subgroups and across European countries. Marital status is closely associated with economic security, living arrangements, psychological wellbeing and the receipt of care, yet many more men than women have a spouse. This action might similarly be facilitated by the Commission's "EU comprehensive approach to mental health"[27].

Altogether, these strategies aim to build resilience across the life course, ultimately reducing vulnerability and inequalities and promoting a more equitable experience of healthy ageing among Europe's populations deemed most at-risk.

Table – Policy Option 2: Healthy ageing for vulnerable people

Criterion	Description
Social impact	This policy option proposes paying greater attention to society's most vulnerable groups in terms of health, including older people, individuals with low levels of education, unhealthy individuals, and women, among others. It seeks to provide transparency regarding its comprehensive societal impact – for example, in relation to access to quality acute care, quality education, better living conditions, rehabilitation services, professional social and psychological support during extreme situations, personalising services for the over-65s receiving informal care in their homes, long-term help, income support, and networking for the common good of social inclusion (e.g. avoiding situations of loneliness).
Economic effects	Improving the health of the vulnerable (i.e. low-educated, older women) will have an economic impact. Society would experience major savings as a result of prevented deaths and diseases, and decreased health care costs and doctors' appointments in later life if centred on users rather than on individual services or organisations.
Feasibility	The adoption of actions to promote healthy ageing is common and is frequent across Member States; as such, they are therefore feasible. Some actions are more effective than others depending on the specific characteristics of each target population, but they can certainly be implemented. Indeed, the implementation of all

[24] https://sport.ec.europa.eu/initiatives/healthylifestyle4all-2021-2023
[25] https://education.ec.europa.eu/focus-topics/digital-education/action-plan
[26] https://health.ec.europa.eu/publications/comprehensive-approach-mental-health_en
[27] https://health.ec.europa.eu/non-communicable-diseases/mental-health_en

	available measures would lead to substantial gains in wellbeing and better quality of life for Europeans.
Consistency with EU objectives	Improving healthy ageing among Europeans is and has been a policy goal of the EU (e.g. 'Europe 2020 – for a healthier EU'[28]), but also of national authorities and regional institutions. The suggested policy therefore aligns with such goals (e.g. UN SDG 3, European Parliament resolution 'towards a common European action on care'[29]) since Europe's ageing society makes specific groups particularly vulnerable to many lifetime risks.
Risks and uncertainties	Healthy ageing is not an equal process as some groups of people are more likely than others to suffer harm from exposure to health risks. Interventions might require approaches that seek to increase learning and problem-solving skills, and to better understand and respond to circumstances that are changeable over a population's life course.

Policy Option 3: Evaluation and adjustment of the EU's structural health indicator

Assessing the progress made by public health programmes, such as the 'European Innovation Partnership on Active and Healthy Ageing' (EIP-AHA), towards their targets requires an appropriate and reliable indicator for tracking levels of and trends in population health. Health expectancy (HE) is generally understood to be a robust indicator for that purpose, and it has recently replaced classic life expectancy (LE) as the central measure of a population's health status. However, it is often overlooked that HE can be influenced much more by a variety of methodological and technical factors than LE, which itself is less readily interpretable than is commonly assumed (Luy et al. 2020). More specifically, levels and trends of HE vary considerably depending on the underlying health indicator employed and the characteristics of the survey from which the indicator is gathered (see also Di Lego 2021; Jagger et al. 2011). This has been shown to be a debilitating problem (e.g., Robine and Ritchie 1991), but one that is widely ignored in its practical applications. The sensitivity of the HE indicator can lead to significant distortions when comparing its values across different points in time or populations. This, in turn, can lead to misconceptions, which may then be incorporated into population policy decisions.

We highlighted this issue in Section 3.2. The EIP-AHA program's goal to increase the healthy life years (HLY) in the EU by two years between 2010 and 2020 was somewhat undermined by changes in the survey questions and survey methodology in some countries that biased outcomes. This suggests that, as currently implemented, the HLY indicator does not serve its purpose as a structural indicator, given that its values do not capture the actual health of the population. Rather, it is overly impacted by technical aspects related to the collection of the GALI, which is the health indicator on which the EU's HLY indicator is based (see Section 3.2). For a fuller discussion see Lagiewka (2012) and Berger et al. (2015b).

Although this situation is unsatisfactory for everyone who has to rely on this indicator, it provides an opportunity to reconsider its definition and estimation. Based on the lessons learned from the first few years working with the structural indicator, and as long as we have to rely on subjective health indicators such as the GALI, two recommendations can be made:

[28] https://health.ec.europa.eu/other-pages/basic-page/europe-2020-healthier-eu_en

[29] https://www.europarl.europa.eu/doceo/document/TA-9-2022-0278_EN.html

1. The survey question should be more straightforward, i.e. less complicated than the current version, and use words that minimise the number of possible meanings when translated into other languages. There is empirical evidence that the complicated nature of the GALI question does not help to make the outcomes more precise (Cambois et al. 2016).
2. The question should be binary and admit only a yes/no answer.

These suggestions would result in a very simple question, such as: **'Are you limited in your daily activities because of your health?' (yes/no).**

Any hesitations about modifying the definition underpinning the structural health indicator might be reduced by the fact that several countries have already changed the GALI question in line with the German modification: the case of Sweden in 2014 and Slovenia in 2019. Given the impact of this change, it is likely that other countries will follow. Thus, changes to the GALI question are ongoing, albeit with some variation in the details and the timing of their introduction. However, the currently available time series of HLY can no longer reliably be used; thus, a change that can reduce the variations between countries and the possibilities for manipulation would be a meaningful step towards developing a health indicator that allows trends to be tracked and populations' progress towards the goals of public health programmes like the EIP-AHA to be evaluated.

Until a new GALI version is agreed to and implemented in SILC, a better alternative might be to use the item about chronic health problems—collected annually in SILC by the binary question 'Do you have any longstanding illness or health problem?' (yes/no)—as the basis for the HLY indicator. The chronic disease question meets most of the criteria for a useful structural indicator, although we would most likely have to accept that it would lead to an increase in morbidity (see section 1.1), rather than the desired reduction. This, however, is not a limitation of the chronic health indicator. The reason for the differences in trends between different health indicators depends on the severity of the illnesses that they cover. This severity is reflected in the relationship between the health indicators and the risk of dying. For example, drawing on German longitudinal data, it has been shown that the risk of mortality is significantly higher for people in poor general health and with limitations in daily activities than for those that report suffering from one or more chronic diseases (Luy 2021). Consequently, different trends in HE make sense. The increase in total LE must originate from the reduction in diseases with a high mortality risk, which accounts for the compressing effect of general health and disability (see section 1.1). Chronic illnesses, on the other hand, are less likely to lead to death, but the risk of suffering from a chronic illness increases with age. We can therefore conclude that the compression of morbidity in general health and disability is one of the causes of the increase in average LE, while—conversely—the increase in LE is the reason for the expansion of morbidity in chronic illnesses.

Table – Policy Option 3: Evaluation and adjustment of the EU's structural health indicator

Criterion	Description
Social impact	The rise in the number of people in the higher and highest age groups is having societal consequences of immediate relevance, including a heightened demand for social services and growing pressure on health care and social security systems. The severity of these consequences depends heavily on the health status of the population. This makes improving the citizens' health condition and promoting healthy ageing strategies critical targets in our efforts to reduce the burdens of ageing. Health policy measures have a major social impact and, therefore, basing these on a reliable indicator is of particular relevance.
Economic effects	The health status of the population has a major impact on its economic productivity. Health policy measures have a considerable economic impact and, therefore, basing these on a reliable indicator is also of particular relevance.
Feasibility	Proposals to modify the EU's structural indicator for population health are likely to be met with the argument that it is impossible to change a formally defined indicator. Any hesitations about modifying the definition underpinning the structural health indicator might be reduced by the fact that several countries have already changed the GALI question. Given the impact of this change, it is likely that other countries will follow.
Consistency with EU objectives	The EU's aim to improve the health of its population requires a reliable and stable structural indicator to track its evolution. The suggested policy option is therefore consistent with the EU's objectives.
Risks and uncertainties	The suggested adjustment to the GALI question in SILC is likely to improve the indicator's reliability, but the extent of this improvement is still unclear.

References

Arts W. and Gelissen J.; 'Three worlds of welfare capitalism or more? A state-of-the-art report'. https://doi.org/10.1177/095287200201200211 4; *Journal of European Social Policy*; Volume 12, Issue 12; May 2002; pp 137-158.

Baigent, C., Keech, A., Kearney, P.M., Blackwell, L., Buck, G., Pollicino, C., Kirby, A., Sourjina, T., Peto, R. and Collins, R.; 'Efficacy and safety of cholesterol-lowering treatment: prospective meta-analysis of data from 90,056 participants in 14 randomised trials of statins', The Lancet, 366(9493): 2005; 1267-1278.

Bardenheier B.H., Lin J., Zhuo X., Ali M.K., Thompson T.J., Cheng Y.J., Gregg E.W.; 'Compression of disability between two birth cohorts of US adults with diabetes 1992–2012: a prospective longitudinal analysis'; https://doi.org/10.1016/S2213-8587(16)30090-0; *The Lancet Diabetes & Endocrinology*; 48; 2016; pp 686-694.

Beard J.R. and Bloom D.E.; 'Towards a comprehensive public health response to population ageing'. *The Lancet*, 385(9968); 2015; pp 658-661

Beltrán-Sánchez H., Jiménez M.P., and Subramanian S.V.; 'Assessing morbidity compression in two cohorts from the Health and Retirement Study'. *Journal of Epidemiology and Community Health*, 70(10); 2016; pp 1011-1016.

Berger N., Van Der Heyden J., and Van Oyen H.; 'The global activity limitation indicator and self-rated health: Two complementary predictors of mortality'; https://doi.org/10.1186/s13690-015-0073-0; *Archives of Public Health*, 73(1); 2015a; pp 25.

Berger N., Van Oyen H., Cambois E., Fouweather T., Jagger C., Nusselder W., and Robine J.-M.; 'Assessing the validity of the Global Activity Limitation Indicator in fourteen European countries'; *BMC Medical Research Methodology*, 15(1); 2015b; p 1 (2015).

Bloom D., Canning D., and Fink G.; 'Implications of population ageing for economic growth'; *Oxford Review of Economic Policy*, 26; 2010; pp583–612.

BRIDGEHEALTH. European Health & Life Expectancy Information System (2018). https://www.bridge-health.eu/sites/default/files/BRIDGE%20Health%20EHLEIS_SHORT.pdf

Calle, E.E., Rodriguez, C., Walker-Thurmond, K. and Thun, M.J. 'Overweight, obesity, and mortality from cancer in a prospectively studied cohort of US adults', New England Journal of Medicine, 348(17): 2003; 1625-1638.

Cambois E., Solé-Auró A., Jeune B., Brønnum-Hansen H., Egidi V., Jagger C., et al.; 'Educational Differentials in Disability Vary across and within Welfare Regimes: A Comparison of 26 European Countries in 2009'; https://doi.org/10.1136/jech-2015-205978; *Journal of Epidemiology and Community Health*, 70(4); 2016; pp 331–338.

Cambois, E., S. Grobon, H. Van Oyen, and J.-M. Robine.; 'Impact of Question Wording on the Measurement of Activity Limitation: Evidence From a Randomized Test in France'; Journal of Aging and Health 28(7); 2016; pp 1315-1338.

Cappuccio, F.P., D'Elia, L., Strazzullo, P. and Miller, M.A.; 'Quantity and quality of sleep and incidence of type 2 diabetes: a systematic review and meta-analysis', Diabetes Care, 33(2): 2010; 414-420.Caselli G., Drefahl S., Wegner-Siegmundt S., and Luy M.; 'Future mortality in low mortality countries. In *World Population and Human Capital in the Twenty-First Century*, edited by Lutz W., Butz W.P., and KC S., Oxford University Press, 2014; pp 226-272.

Cezard G., McHale C.T., Sullivan F., Bowles, J.K.F. and Keenan, K.; 'Studying trajectories of multimorbidity: a systematic scoping review of longitudinal approaches and evidence' *BMJ Open*; 11:e048485. 2021; doi: 10.1136/bmjopen-2020-048485

Chobanian A.V., Bakris, G.L., Black H.R., Cushman W.C., Green L.A., Izzo J.L., Jones D.W., Materson B.J., Oparil S., Wright J.T. and Roccella E.J.; 'Seventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure', Hypertension, 42(6): 2003; 1206-1252.

Crimmins E.M. Lifespan and Healthspan: Past, Present, and Promise. https://doi.org/10.1093/geront/gnv130; *The Gerontologist*, 55(6); 2015; pp 901-911.

Crimmins E.M., Beltrán-Sánchez H. 'Mortality and morbidity trends: is there compression of morbidity?'; https://doi.org/10.1093/geronb/gbq088; *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences*, 66B(1); 2011; pp 75-86.

Crimmins E.M., Kim J.K., and Solé-Auró A. Gender Differences in Health: Results from SHARE, ELSA, and HRS. https://doi.org/10.1093/eurpub/ckq022; *European Journal of Public Health*, 21(1); 2011; pp 81-91.

Crimmins E.M., and Saito Y. 'Trends in Healthy Life Expectancy in the United States 1970-1990: Gender, Racial, and Educational Differences'; https://doi.org/10.1016/S0277-9536(00)00273-2; *Social Science & Medicine*, 52(11); 2001; pp 1629-1641.

Crimmins E.M., Zhang Y.S., Kim J.K., and Levine M.E. 'Changing Disease Prevalence, Incidence, and Mortality - Among Older Cohorts: The Health and Retirement Study'. https://doi.org/10.1093/gerona/glz075; *The Journals of Gerontology: Series A*, 74(Supplement_1); 2019; pp S21-S26.

Drewnowski, A. 'Obesity, diets, and social inequalities'. Nutrition Reviews, 67: 2009; S36-S39. https://doi.org/10.1111/j.1753-4887.2009.00157.x

Di Lego V.; 'Health expectancy indicators: what do they measure?' Cadernos Saúde Coletiva 29; 2021; pp 115-129.

Di Lego V., Di Giulio P., and Luy M.; 'Gender differences in healthy and unhealthy life years', in: Jagger, C.; Crimmins, E.; Saito, Y.; De Carvalho Yokota, R.; Van Oyen H.; Robine, J.-M. (eds.): International Handbook of Health Expectancies, Cham, Springer, 2020; 151-172.

European Commission. *Report on the Impact of Demographic Change*; https://commission.europa.eu/system/files/2020-06/demography_report_2020_n.pdf; 2020

European Semester Framework. 2024. https://commission.europa.eu/business-economy-euro/european-semester_en.

Resolution of 5 July 2022 towards a common European action on care (2021/2253(INI)) 2022. Available at: https://www.europarl.europa.eu/doceo/document/TA-9-2022-0278_EN.html
The European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) 2013. Digital Strategy. European Union, 2013. Available at:

https://digital-strategy.ec.europa.eu/en/policies/eip-aha.

Resolution on an Old Continent Growing Older – Possibilities and Challenges Related to Ageing Policy Post 2020. 7 July 2021, 2020/2008(INI). Official Journal of the European Union, 2022. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2022.099.01.0122.01.ENG&toc=OJ%3AC%3A2022%3A099%3AFULL

Green Paper on Ageing - Fostering Solidarity and Responsibility Between Generations. COM(2021)50. 2021. Available at:
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0050.

EPRS. *Demographic Outlook for the European Union 2021* (PE 690.528). March 2021. Available at: https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2021)690528.

The European Pillar of Social Rights Action Plan. Publications Office, 2021. Available at: https://data.europa.eu/doi/10.2767/89.

European Commission: Directorate-General for Employment, Social Affairs and Inclusion. *European Care Strategy – For Carers and Care Receivers*. Publications Office of the European Union; https://data.europa.eu/doi/10.2767/858795; 2022.

Reversing Demographic Trends in EU Regions Using Cohesion Policy Instruments, 2020/2039(INI). https://www.europarl.europa.eu/doceo/document/TA-9-2021-0248_EN.html; 2021.

European Commission. *EU4Health Programme 2021-2027 – A Vision for a Healthier European Union*. 2021. Available at: https://health.ec.europa.eu/funding/eu4health-programme-2021-2027-vision-healthier-european-union_en

European Commission. Cohesion and ageing society in the EU, European Parliamentary Research Service, PE 747.104 – April 2023. https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747104/EPRS_BRI(2023)747104_EN.pdf

European Commission. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Demographic change in Europe: a toolbox for action, COM(2023) 577 final. https://ec.europa.eu/commission/presscorner/api/files/document/print/en/ip_23_4807/IP_23_4807_EN.pdf

European Commission. *State of Health in the EU: Synthesis Report 2023*. . https://health.ec.europa.eu/publications/synthesis-report-2023-state-health-eu_en; ISBN 978-92-68-09705-2, 2024

European Commission. Health at a Glance: Europe 2024: State of Health in the EU Cycle; https://doi.org/10.1787/b3704e14-en; OECD Publishing, Paris, 2024.

Eurostat. EU median age increased by 2.3 years since 2013. https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20240215-1#:~:text=On%201%20January%202023%2C%20thewhen%20it%20was%2042.2%20years; News article published on 15 February 2024.

Foley, D.J., Ancoli-Israel, S., Britz, P. and Walsh, J.; 'Sleep disturbances and chronic disease in older adults: results of the 2003 National Sleep Foundation Sleep in America Survey', Journal of Psychosomatic Research, 56(5): 2004; 497-502.

Fox, C.S., Coady, S., Sorlie, P.D., Levy, D., Meigs, J.B., D'Agostino, R.B., Wilson, P.W.F. and Savage, P.J.; 'Increasing cardiovascular disease burden due to diabetes mellitus: the Framingham Heart Study', Circulation, 107(5): 2003; 664-670.

Fried, L.P., Tangen, C.M., Walston, J., Newman, A.B., Hirsch, C., Gottdiener, J., Seeman, T., Tracy, R., Kop, W.J., Burke, G. and McBurnie, M.A.; 'Frailty in older adults: evidence for a phenotype', The Journals of Gerontology Series A: Biological Sciences and Medical Sciences, 56(3): 2001; M146-M156.

Freedman V.A., Wolf D.A., and Spillman B.C.; 'Disability-free life expectancy over 30 years: a growing female disadvantage in the US population'; *American Journal of Public Health*, 106(6); 2016; pp 1079-1085.

Gregg E.W., Li Y., Wang J., Burrows N.R., Ali M.K., Rolka D., Williams D.E. and Geiss, L.; 'Changes in diabetes-related complications in the United States, 1990–2010', New England Journal of Medicine, 370(16); 2014; pp. 1514-1523.

Gordon, D.J., Probstfield, J.L., Garrison, R.J., Neaton, J.D., Castelli, W.P., Knoke, J.D., Jacobs, D.R., Bangdiwala, S. and Tyroler, H.A.; 'High-density lipoprotein cholesterol and cardiovascular disease. Four prospective American studies', Circulation, 79(1): 1989; 8-15.

Harper S. 'Ageing 2000—questions for the 21st century'. *Ageing & Society*, 20(1); 2000; pp 111-122

Hazra A.; 'Using the confidence interval confidently'; doi: 10.21037/jtd.2017.09.14; *Journal of Thoracic Disease*; 9(10); 2017; pp 4125-4130.

Herd P., Goesling B., and House J.S. 'Socioeconomic Position and Health: The Differential Effects of Education versus Income on the Onset versus Progression of Health Problems'. https://doi.org/10.1177/002214650704800302; *Journal of Health and Social Behavior*, 48(3); 2007; pp 223-238.

Hu, F.B.; 'Dietary pattern analysis: a new direction in nutritional epidemiology', Current Opinion in Lipidology, 13 (1); 2002; 3-9.

Hu Y., van Lenthe F.J., Borsboom G.J., Looman C.W.N., Bopp M., Burström N., et al. Trends in Socioeconomic Inequalities in Self-Assessed Health in 17 European Countries between 1990 and 2010; https://doi.org/10.1136/jech-2015-206780; *Journal of Epidemiology and Community Health*, 70(7); 2016; pp 644-652.

Human Mortality Database (HMD). . *Available online:* www.mortality.org. University of California Berkeley and Max Planck Institute for Demographic Research (accessed on 23 September 2024).

Idler E, Leventhal H, McLaughlin J, Leventhal E.; 'In sickness but not in health: self-ratings, identity, and mortality'; Journal of Health and Social Behavior 45; 2004; pp 336–356.

Jagger C. 'EU and UK targets for healthy life expectancy—are they achievable?' *Vienna Yearbook of Population Research*; 2020; pp 15-21.

Jagger C., Van Oyen H., and Robine J.-M.; 'Health expectancy calculation by the Sullivan method: A practical guide'. *European Health and Life Expectancy Information System* (4th ed.), Newcastle University Institute for Ageing; 2014.

Jagger C., McKee M., Christensen K., Lagiewka W., Nusselder W., Van Oyen H., Cambois E., Jeune B., and Robine J.-M.; 'Mind the gap - reaching the European target of a 2-year increase in healthy life years in the next decade'; *European Journal of Public Health*, 23(5); 2013; pp 829-833.

Jagger C, Weston C, Cambois E et al.; 'Inequalities in health expectancies at older ages in the European Union: findings from the Survey of Health and Retirement in Europe (SHARE)'. Journal of Epidemiology and Community Health 65; 2011; pp 1030-1035.

Jasilionis D. and Shkolnikov V.; 'Longevity and Education: A Demographic Perspective'; https://doi.org/10.1159/000438901; *Gerontology*, 62; 2016; pp 253–262.

Jha, P.; '21st-century hazards of smoking and benefits of cessation in the United States', New England Journal of Medicine, 368(4): 2014; 341-350.

Jylhä M.; 'Self-rated health and subjective survival probabilities as predictors of mortality. In: Rogers RG, Crimmins EM (Hrsg) International Handbook of Adult Mortality'; Springer Netherlands, Dordrecht; 2011; pp. 329–344.

KC Samir and Lentzner H.; 'The Effect of Education on Adult Mortality and Disability: A Global Perspective'; https://doi.org/10.1553/populationyearbook2010s201; *Vienna Yearbook of Population Research*, 8; 2010; pp 201-236.

Lagiewka K.; 'European innovation partnership on active and healthy ageing: triggers of setting the headline target of 2 additional healthy life years at birth at EU average by 2020'. *Archives of Public Health*, 70(1), 23; 2012.

Lleras-Muney A.; 'The Relationship Between Education and Adult Mortality in the United States'. https://doi.org/10.1111/0034-6527.00329; *Review of Economic Studies*, 72(1); 2005; 189-221.

Lloyd-Jones D.M., Allen N.B., Anderson C.A.M., Black T., Brewer L.C., Foraker R.E., Grandner M.A., Lavretsky H., Perak A.M., Sharma G., Rosamond W.; American Heart Association. 'Life's Essential 8:

Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association'. Circulation. 2022 Aug 2;146(5)

Lutz W., Sanderson W., and Scherbov S.; 'The coming acceleration of global population ageing'; *Nature*, 451(Feb 7); 2008; pp 716–719.

Luy M. Gesunde Lebenserwartung: Ein kritischer Blick auf Nutzen und Potenziale des demographischen Gesundheitsindikators [Healthy life expectancy: a critical look at the benefits and potential of the demographic health indicator]. https://doi.org/10.1007/s00103-024-03874-w; *Bundesgesundheitsblatt - Gesundheitsforschung - Gesundheitsschutz*. 2024

Luy, M.; 'The cross-sectional association between health and mortality: insights from the Cloister Study', in: Luy, Marc (ed.): The male-female health-mortality paradox: research report of the ERC project HEMOX. VID Research Report 40. Vienna: Austrian Academy of Sciences, 2021; pp. 61–82.

Luy M., Di Giulio P., and Minagawa Y.; 'The impact of interpersonal reporting heterogeneity on cross-country differences in Healthy Life Years in Europe'; European Journal of Public Health 33; 2023; pp 1060–1064.

Luy M., Zannella M., Wegner-Siegmundt C., Minagawa Y., Lutz W., and Caselli G.; 'The impact of increasing education levels on rising life expectancy: a decomposition analysis for Italy, Denmark, and the USA'; https://doi.org/10.1186/s41118-019-0055-0; *Genus*, 75(1); 2019; pp 11.

Luy M, Di Giulio P, Di Lego V, Lazarevič P, Sauerberg M.; 'Life expectancy: frequently used, but hardly understood'; Gerontology 66; 2020; pp 95–104.

Meschi E., and Scervini F.; 'Expansion of schooling and educational inequality in Europe: the educational Kuznets curve revisited. *Oxford Economic Papers*, *66*(3), 2014; 660–680. http://www.jstor.org/stable/43773577

Montez J.K. and Hayward MD. 'Cumulative childhood adversity, educational attainment, and active life expectancy among U.S. adults. Demography'; 51(2): 2014; 413-35. doi: 10.1007/s13524-013-0261-x. PMID: 24281740; PMCID: PMC4465758.

Montez J.K. and Brooks J.D.; 'Educational Attainment and Adult Health'. In *Handbook of Aging and the Social Sciences*, edited by Ferraro K.F. and Carr D.; https://doi.org/10.1016/B978-0-12-815970-5.00006-1; Elsevier; 2021; pp 83–98.

Nelson M.E., Rejeski W.J., Blair S.N., Duncan P.W., Judge J.O., King A.C., Macera C.A. and Castaneda-Sceppa, C.; 'Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association', Medicine & Science in Sports & Exercise, 39(8), 2007; pp. 1435-1445.

Oksuzyan A., Brønnum-Hansen H. and Jeune B.; 'Gender gap in health expectancy'. *European Journal of Ageing*, 7, 2010; pp 213–218.

Oksuzyan A., Juel K., Vaupel J.W., and Christensen K.; 'Men: good health and high mortality. Sex differences in health and aging'; *Aging Clinical and Experimental Research*, 20; 2008; pp 91-102.

Office for National Statistics (ONS) released 19 January 2023, ONS website, methodology, Period and cohort life expectancy explained

Payne C.F.; 'Expansion, Compression, Neither, Both? Divergent Patterns in Healthy, Disability-Free, and Morbidity-Free Life Expectancy Across U.S. Birth Cohorts, 1998–2016'. https://doi.org/10.1215/00703370-9938662; *Demography*, 59(3); 2022; pp 949-973.

Pi-Sunyer, F.X.; 'Medical hazards of obesity', Annals of Internal Medicine, 119(7,2):1993; 655-660.

Pinho-Gomes A.C., Vassallo A., Carcel C., Peters S., and Woodward M.; 'Gender equality and the gender gap in life expectancy in the European Union'. https://doi.org/10.1136/bmjgh-2021-008278; *BMJ Global Health*, 7(2); 2022; e008278.

Powell J.L.; 'The power of global ageing'. *Ageing International*, 35(1); 2010; pp 1-14.

Prince M.J., Wu F., Guo Y., Gutierrez Robledo L.M., O'Donnell M., Sullivan R., and Yusuf S.; 'The burden of disease in older people and implications for health policy and practice'. *The Lancet*, 385(9967); 2015; pp 549-562.

Robine J.M., Jagger C., The Euro-REVES Group; 'Creating a coherent set of indicators to monitor health across Europe: The Euro-REVES 2 project'; https://doi.org/10.1093/eurpub/13.suppl_1.6; *European Journal of Public Health*, 13, suppl_1; 2003; pp 6–14.

Robine J.M., Ritchie K.; 'Healthy life expectancy: evaluation of global indicator of change in population health'; British Medical Journal 302(6774); 1991; pp 457-460.

Sallis J.F., Cerin E., Conway T.L., Adams M.A., Frank L.D., Pratt M., Salvo D., Schipperijn J., Smith G., Cain K.L., Davey R., Kerr J., Lai P.C., Mitáš J., Reis R., Sarmiento O.L., Schofield G., Troelsen J., Van Dyck D., De Bourdeaudhuij I., Owen N. 'Physical activity in relation to urban environments in 14 cities worldwide: a cross-sectional study' Lancet. 28; 387(10034): 2016; 2207-17. doi: 10.1016/S0140-6736(15)01284-2. Epub 2016 Apr 1. Erratum in: Lancet. 2016 May 28;387(10034):2198. doi: 10.1016/S0140-6736(16)30193-3. PMID: 27045735; PMCID: PMC10833440.

Satizabal, C.L., Beiser, A.S., Chouraki, V., Chêne, G., Dufouil, C. and Seshadri, S.; 'Incidence of dementia over three decades in the Framingham Heart Study', New England Journal of Medicine, 374(6): 2016; 523-532.

Sauerberg M.; 'The impact of population's educational composition on Healthy Life Years: An empirical illustration of 16 European countries'. https://doi.org/10.1016/j.ssmph.2021.100857; *SSM - Population Health*, 15; 2021; pp 100857.

Shen T. and Payne C.F.; 'Disability and morbidity among US birth cohorts, 1998–2018: A multidimensional test of dynamic equilibrium theory';
https://doi.org/10.1016/j.ssmph.2023.101528; *SSM - Population Health*, 24; 2023; pp 101528.

Shkolnikov V.M., Andreev E.M., Jasilionis D., Leinsalu M., Antonova O.I., and McKee M.; 'The changing relation between education and life expectancy in central and eastern Europe in the 1990s'; *Journal of Epidemiology and Community Health*, 60(10); 2006; pp 875-881.

Solé-Auró A. and Alcañiz M.; 'Are we living longer but less healthy? Trends in mortality and morbidity in Catalonia (Spain), 1994-2011'. *European Journal of Ageing*, 12(1); 2015; pp 61-70.

Solé-Auró A. and Crimmins E.M; 'The oldest old health in Europe and the United States'; *Annual Review of Gerontology and Geriatrics*, 33; 2013; pp 1–33.

Solé-Auró A. and Gumà J.; '(Healthy) aging patterns in Europe: A multistate health transition approach'; https://doi.org/10.1007/s12062-022-09403-4; *Journal of Population Ageing*, 16; 2023; pp 179-201.

Solé-Auró A., Beltrán-Sánchez H., and Crimmins E.M.; 'Are differences in Disability-Free Life Expectancy by gender, race, and Education wider at older ages? 1986-2006'; *Population Research and Policy Review*, 34(1); 2015; pp 1-18.

Solé-Auró A., Martín U., and Domínguez A.; 'Educational inequalities in healthy life expectancy among older people in Spain'. . https://doi.org/10.3390/ijerph17103558; *International Journal of Environmental Research and Public Health*, 17(10) 3558; 2020.

Solé-Auró A., Zueras P., Rentería E., and Lozano M.; 'Gender Gap in Unhealthy Life Expectancy: The Role of Education Among Adults Aged 45+'. https://doi.org/10.3389/ijph.2022.1604946; *International Journal of Public Health*, 67, 1604946; 2022.

Sowa-Kofta, A., Marcinkowska, I., Ruzik Sierdzińska, A., Mackevičiūtė, R. *Ageing Policies – Access to Services in Different Member States*. Publication for the Committee on Employment and Social Affairs, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament, Luxembourg, 2021. Available at: https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662940/IPOL_STU(2021)662940_EN.pdf

Steptoe A., Deaton A., and Stone A.A.; 'Subjective wellbeing, health, and ageing'. *The Lancet*, 385(9968); 2015; pp 640-648

Sullivan D.F. 'A Single Index of Mortality and Morbidity'. Rockville, MD: Health Services and Mental Health Administration; 1971.

Thun M.J., Carter B.D., Feskanich D., Freedman N.D., Prentice R., Lopez A.D., Hartge P., Gapstur S.M. '50-year trends in smoking-related mortality in the United States'. N Engl J Med. 24;368(4): 2013; 351-64. doi: 10.1056/NEJMsa1211127. PMID: 23343064; PMCID: PMC3632080.

van Oyen H., Nusselder W., Jagger C., Kolip P., Cambois E., and Robine J. Gender differences in healthy life years within the EU: An exploration of the "health-survival" paradox. *International Journal of Public Health*, 58; 2013; pp 143-155.

van Oyen H., Van der Heyden J., Perenboom R., and Jagger C.; 'Monitoring population disability: Evaluation of a new Global Activity Limitation Indicator (GALI)'; https://doi.org/10.1007/s00038-006-0035-y; *Sozial- und Präventivmedizin*, 51(3); 2006; pp 153-161.

van Raalte A.A., Kunst A.E., Deboosere P., Leinsalu M., Lundberg O., Martikainen P., Strand B.H., Artnik B., Wojtyniak B., and Mackenbach J.P.; 'More Variation in Lifespan in Lower Educated Groups: Evidence from 10 European Countries'; https://doi.org/10.1093/ije/dyr146; *International Journal of Epidemiology*, 40(6); 2011; pp 1703-1714.

Villareal, D.T., Apovian, C.M., Kushner, R.F. and Klein, S.; 'Obesity in older adults: technical review and position statement of the American Society for Nutrition and NAASO, The Obesity Society', American Journal of Clinical Nutrition, 82(5): 2005; 923-934.

von der Lippe, E., A. Fehr, and C. Lange.; 'Limitations to usual activities due to health problems in Germany' ; Journal of Health Monitoring 2(3); 2017; pp 84-90.

Warburton, D.E., Nicol, C.W. and Bredin, S.S.; 'Health benefits of physical activity: the evidence', Canadian Medical Association Journal, 174(6): 2006; 801-809.

World Health Organization. World Report on Ageing and Health. Geneva: World Health Organization. https://apps.who.int/iris/handle/10665/186463; 2015

Wu Y.T., Daskalopoulou C., Muniz Terrera G., Sanchez Niubo A., Rodríguez-Artalejo F., Ayuso-Mateos J.L., Bobak M., et al.; 'Education and Wealth Inequalities in Healthy Ageing in Eight Harmonised Cohorts in the ATHLOS Consortium: A Population-Based Study'; https://doi.org/10.1016/S2468-2667(20)30077-3; *The Lancet Public Health*, 5(7); 2020; pp 386-394.

Yusuf, S., Hawken, S., Ounpuu, S., Bautista, L., Franzosi, M.G., Commerford, P., Lang, C.C., Rumboldt, Z., Onen, C.L. and Lisheng, L.; 'Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study', The Lancet, 364(9438): 2004; pp 937-952.

Zimmer Z. and House J.S.; 'Education, Income, and Functional Limitation Transitions among American Adults: Contrasting Onset and Progression'. https://doi.org/10.1093/ije/dyg254; *International Journal of Epidemiology*, 32(6); 2003; pp 1089–1097.

Technical Annex – Methodological procedures

A. Technical characteristics of the health expectancy indicators

Linked to the issues addressed in section 3.1 concerning variations in health expectancies, the technical characteristics of health indicators should be highlighted.

Once the decision of how health (or the absence thereof) is to be defined (i.e., selecting the right health measure according to data availability), the estimation of health expectancy indicators typically follows several steps, which are briefly summarized below. These steps are typically used by demographers and social scientists to estimate health expectancies at a particular age.

1. The proportion of individuals living in less-than-good health in each age group $[x, x+n)$ in the population under study is estimated. This proportion is labelled as π_x. By definition, the proportion of individuals in the age group $[x, x+n)$ that are in good health will be $1-\pi_x$. The calculation of these proportions is based on the responses given to the health questionnaires included in household surveys.

2. For each age x, the ${}_nL_x$ values of the life table (i.e., the average person-years lived within the age interval $[x, x+n)$) are multiplied by the proportion of individuals of that age that are in good health (i.e., by $1-\pi_x$).

3. Once the modified ${}_nL_x$ values (as per step 2) have been calculated, the rest of the life table is recalculated accordingly. Technically, the value of a health expectancy indicator at age x is calculated as

$$HE_x = \frac{\sum_x L_x \cdot (1-\pi_x)}{l_x}$$

By definition, the values of the HE indicators are always lower than or equal to those of the traditional LE indicators. Indeed, they would only coincide in a hypothetical scenario in which no one reported being in less-than-good health – an unrealistic scenario that does not occur in practice.

B. Technical characteristics of the projected estimates of life and healthy life years by education level

This annex serves as an extension to section 3.4, in which we explain which data and methods are used for projecting life and health expectancies by level of education for men and women. Projections are required because the data available do not allow us to provide current estimates of healthy life years by level of education. One of the assumptions we make when computing the projected estimates is that the health variables used in the results (Global Activity Limitation Index - GALI) remained the same as in 2021 for each group.

Data and Methods

To estimate LE and HLE for each sex, educational group, and age group, we use both mortality and health information data.

Mortality information

The mortality data were derived from the survival ratios obtained from the Wittgenstein Centre (WIC)[30] estimates for the period 2020–2025. The survival data were available by country, sex, age (in five-year intervals), and education level. For our analysis, we standardized the age variable by setting the upper limit at 100 years. We derived the missing life table function (i.e., the number of person-years lived between age x and x + 1(Lx)) as the main life table function of interest for obtaining HLE based on the Sullivan method (Sullivan, 1971) from their single age specific e_x estimates, using the approach described by Sauerberg (2021). Using a cohort size of 10,000 individuals, we employed the following steps to calculate standard life table functions:

1. **Initialization**: The population cohort size ($l_0 = 10{,}000$) was set for the initial age group.

2. **Survivorship Calculation**: Survivorship (l_x) for subsequent age groups was calculated iteratively using survival probabilities (p_x) from the previous age group:

$$l_x = l_{x-5} \times p_{x-5}$$

where $p_x = \frac{l_{x+5}}{l_x}$.

3. **Person-Years Lived**: The number of person-years lived in each age group (L_x) was computed using the adjusted a_x values to account for the fraction of the age interval lived by those who die within the interval. Specifically, a_x was set as follows:

   - $a_x = 0.5$ for ages below 65,
   - $a_x = 0.3$ for ages 65–79,
   - $a_x = 0.2$ for ages 80–94,
   - for the last open-ended age group (95+), we assume individuals live 5 additional years.

   The formula used for person-years lived is:

$$L_x = (l_x - d_x) + a_x \times d_x$$

where $d_x = l_x \times nqx$ is the number of deaths in the interval.

4. **Survival Ratio**: The survival ratio (S_x) is defined as the ratio of person-years lived in the next age group to person-years lived in the current age group:

$$S_x = \frac{L_{x+5}}{L_x}$$

5. **Total Remaining Years**: For each age group, the total remaining years (T_x) were calculated as the cumulative sum of the person-years lived from the given age onward:

$$T_x = \sum_{i=x}^{\infty} L_i$$

6. **Remaining Life Expectancy**: The remaining life expectancy (e_x) was derived as the total remaining years divided by the number of survivors at the start of each age group:

[30] https://dataexplorer.wittgensteincentre.org/wcde-v3/

$$e_x = \frac{T_x}{l_x}$$

Healthy status information

Healthy status information was obtained from the EU-SILC survey for the year 2022, using the GALI. As commented previously, the survey asked individuals whether they had any activity limitations over the previous six months due to health problems. We calculated the proportion of individuals reporting no limitations (i.e., "healthy") for each sex, educational group, and age group.

To align the age intervals with our mortality data, we grouped individuals into 5-year age bands, starting from age 30. The education variable was recoded into three categories:

- **Lower**: No education, incomplete primary, primary, or lower secondary education.
- **Middle**: Upper secondary and short post-secondary education.
- **Higher**: Post-secondary, bachelor's, master's, or higher degrees.

Calculation of healthy life expectancy (HLE)

We used the Sullivan method to calculate HLE. For each country, sex, and educational group, we calculated the prevalence of healthy individuals, then applied the Sullivan method:

$$HLE_x = \frac{\sum(L_x \times p_x)}{l_0}$$

where HLE_x is the HLE at age x, L_x is the person-years lived in age group x, p_x is the proportion of individuals reporting no activity limitation in age group x, and l_0 is the initial cohort size (10,000).

For ages above the highest reported age group in some countries (e.g., 80+), we assumed the prevalence of healthy individuals in higher age groups to be half of the prevalence among the highest age group available for all countries (75–79).

Confidence intervals for HLE

To account for variability in the prevalence estimates, we calculated the standard error and confidence intervals for HLE. HLE variance was computed as:

$$\text{Var}(HLE_x) = \frac{\sum(L_x^2 \times S^2)}{l_x^2}$$

where S^2 is the variance of the healthy proportion (p_x) for each age group, estimated as:

$$S^2 = \frac{p_x(1-p_x)}{n_x}$$

with n_x representing the sample size for each age group. The 95% confidence intervals were calculated as:

$$CI_{95\%} = HLE_x \pm 1.96 \times \text{SE}(HLE_x)$$

QA-01-25-093-EN-N

This study addresses the interplay between the health and socio-demographic conditions characterising the EU's ageing population, focused on populations at risk of social inequality, to provide information that policymakers can use to promote healthy ageing.

The goal of the study is to compare trends in healthy life years across both populations (countries) and specific populations (by gender and level of education), and to address the social inequalities associated with healthy ageing so that we might promote greater health equity and thereby contribute to the development of effective strategies/measures to support healthy ageing in the EU. Ultimately, the study seeks to help policymakers make informed decisions about the allocation of resources for healthcare, social services, and other programmes aimed at promoting healthy ageing by identifying the population groups most at risk, including women with lower levels of education and older adults. Governments must take steps now to prepare their societies to meet the social and economic challenges of an ageing world.

This is a publication of the Scientific Foresight Unit (STOA)
EPRS | European Parliamentary Research Service

ISBN : 978-92-848-2708-4 | doi: 10.2861/0128820 | QA-01-25-093-EN-N