Mapineq

Navigating late career paths: Understanding the macro level factors shaping late career and health impacts of retirement timing

Marge Unt
Tallinn University

Jelena Helemäe
Tallinn University

Mapineq deliverable D6.1 November 2023

Funded by the European Union

Suggested citation:

Unt, M. & Helemäe, J. (2023). Navigating late career paths: Understanding the macro level factors shaping late career and health impacts of retirement timing. Mapineq deliverables. Turku: INVEST Research Flagship Centre / University of Turku. DOI: 10.5281/zenodo.10401286

Summary history		
Version	Date	Comments
1.0	06.11.2023	Draft submitted for review
1.1	10.11.2023	Outlaid manuscript for review
2.0	30.11.2023	Revised manuscript for submission
2.1	18.12.2023	DOI from Zenodo

Mapineq – Mapping inequalities through the life course– is a three-year project (2022-2025) that studies the trends and drivers of intergenerational, educational, labour market, and health inequalities over the life course during the last decades. The research is run by a consortium of eight partners: University of Turku, University of Groningen, National Distance Education University, WZB Berlin Social Science Center, Stockholm University, Tallinn University, Max Planck Gesellschaft (Population Europe), and University of Oxford

Website: www.mapineq.eu

The Mapineq project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement No. 101061645.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union, the European Research Executive Agency, or their affiliated institutions. Neither the European Union nor the granting authority can be held responsible for them.

Acknowledgement:

This document was reviewed by Jan-Paul Heisig (WZB Berlin Social Science Center) and Markus Jäntti (Stockholm University) as part of Mapineq quality assurance procedures. The content of the document, including opinions expressed and any remaining errors, is the responsibility of the authors.

Publication information:

Executive summary

This report provides a comprehensive analysis of the evolving retirement policies in Europe, particularly focusing on the shift from early retirement to policies encouraging extended working lives. It is structured into two primary sections: the first part examines the policies affecting retirement and late-career labor market participation, and the second part investigates the effects of these policies on individual health and well-being.

Key Findings:

1. **Policy Dynamics:** The report explores EU-level initiatives and employs the *push, pull,* and *stay* framework to analyze retirement policies. It finds that while policy reforms aimed at extending working lives are motivated by fiscal sustainability, they inadvertently contribute to widening social inequalities.
2. **Health and Well-being Impacts:** The health outcomes of late-career trajectories are complex. Although there is a push to increase the statutory retirement age, the actual health effects of such reforms are not uniformly understood. Health outcomes depend heavily on socio-economic status, job conditions, and the nature of retirement.
3. **Policy Recommendations:** Future policies should address next to intention to extend the working life also health and gender inequalities. There is a need for coherent policies that make extending working life an appealing choice rather than a punitive imposition.
4. **Future Research:** The report calls for continued research into the differential impacts of retirement reforms, especially in the post-pandemic era.

In conclusion, this report highlights the need for retirement policy reforms that balance the sustainability of pension systems with the goal of achieving social equity, advocating for policies that are inclusive and sensitive to the complexities of an aging workforce.

Funded by the European Union

Content

EXECUTIVE SUMMARY 3

INTRODUCTION 6

1. REVIEW OF INSTITUTIONAL FACTORS SHAPING LATE CAREER 6

1.1. FROM EARLY EXIT TO EXTENDING WORKING LIVES IN THE EU 7
1.2. HOW POLICIES SHAPE RETIREMENT AND LATE CAREER 8

2. SPILLOVER EFFECTS BETWEEN LATE-CAREER TRAJECTORIES AND PHYSICAL AND MENTAL HEALTH/WELLBEING 15

2.1. GENERAL FRAMEWORK: LIFE COURSE ECOLOGICAL MODEL AND VOLUNTARINESS OF RETIREMENT, WORKING CONDITIONS AND ACCESS TO RESOURCES AND MAIN METHODOLOGICAL CHALLENGES 16
2.2. RETIREMENT/EXTENDED WORKING LIFE AND HEALTH: TIMING IN INSTITUTIONAL-NORMATIVE CONTEXT 19
2.3. RETIREMENT/EXTENDED WORKING LIFE AND HEALTH: MICRO LEVEL 22

3. CONCLUSIONS 26

REFERENCES 28

APPENDIX 1. PAPERS REVIEWING DIFFERENCES IN HEALTH OUTCOMES DEPENDING ON HETEROGENEITY OF OLDER PEOPLE (ALL FOCUSED ON RETIREMENT) 37

APPENDIX 2. EFFECT ON SELF-REPORTED HEALTH OF RETIREMENT AND EXTENDED WORKING LIFE 38

APPENDIX 3. EFFECT ON DEPRESSION OF RETIREMENT AND EXTENDED WORKING LIFE 39

APPENDIX 4. HEALTH TRAJECTORIES ACROSS THE WORK EXIT 41

APPENDIX 5. EMPLOYMENT TRAJECTORIES AND HEALTH 42

APPENDIX 6. EMPLOYMENT AND HEALTH TRAJECTORIES 43

Tables

TABLE 1. THEORIES ON HEALTH OUTCOMES OF RETIREMENT 22
TABLE 2. SUMMARY OF CONCLUSIONS: REVIEWS REGARDING SELF-RATED HEALTH ASSOCIATED WITH RETIREMENT 24
TABLE 3. SUMMARY OF CONCLUSIONS: REVIEWS REGARDING DEPRESSION ASSOCIATED WITH RETIREMENT 24

Funded by the European Union

Navigating late career paths: Understanding the macro level factors shaping late career and health impacts of retirement timing

This report investigates the institutional factors shaping late-career trajectories in the EU and their subsequent health effects. It assesses the transition from early retirement policies to policies aimed at extending working lives and the resultant implications for health, particularly in terms of inequalities among older workers. The study conducts a literature review, analysing the impact of retirement policies through push, pull, and stay factors, and how the late career relates to physical and mental health outcomes. Findings indicate that the consequences of extended working lives and retirement experiences are influenced by individual circumstances, job conditions, and wider welfare contexts, with significant heterogeneity across socioeconomic groups. The report suggests that cumulative (dis)advantages throughout one's life course significantly affect health outcomes in later life. There is need for evidence of developing policies that not only facilitate longer working lives but also address health disparities and prevent increasing social inequality is highlighted. This underscores the need for equitable approaches that consider the varying health capacities of individuals in the context of extended working careers.

European retirement policies have evolved from supporting early retirement to encouraging longer working lives, driven by demographic shifts and fiscal sustainability needs. This transition, while bolstering pension system viability, has inadvertently heightened inequalities.

Although there is a push to increase the statutory retirement age, the actual health effects of such reforms are scarce. Drawing from micro level analysis, the extension of working life influences health outcomes in a nuanced manner, varying with socio-economic status and job conditions.

Balancing pension system sustainability with social equity is crucial for a retirement landscape. There is a need for coherent policies that make extending working life an appealing choice rather than a punitive imposition.

Funded by the European Union

Introduction

As Europe approached the close of the 20th century, it witnessed a marked transformation—shifting from a culture of early retirement to policies favouring extended working lives. This strategic shift, necessitated by demographic changes and the imperative of fiscal sustainability, has sparked a re-evaluation of the impact of retirement policies. The era facilitating early exits has yielded to new policy imperatives aimed at reconciling the retirement age with increased longevity and ensuring the viability of pension systems in a demographically evolving landscape.

The twofold aim of this report is to provide an examination of the policies affecting retirement and late-career labour market participation (Part I), as well as to investigate the spillover effects of late-career trajectories on individual health and well-being (Part II). The significance of this inquiry is underscored by the continuing political momentum toward enhancing working lives in the face of an aging population. It becomes crucial to assess the impact of these policies comprehensively and to consider potential trade-offs—balancing the extension of working life with the risk of increasing inequality among older workers.

This report is structured to unpack the intricate web of policies and macro-level determinants that shape the late career and retirement. It navigates through three critical dimensions: the pull factors that incentivize retirement, the push factors that force workforce exit, and the stay factors that encourage continued employment among older workers. It acknowledges the socio-demographic factors interwoven with these forces, recognizing that retirement decisions are embedded within a complex interplay of economic, institutional, workplace, and individual factors.

Concurrently, this report takes a magnified look at the late career consequences on physical and mental health. By synthesizing research across disciplines such as sociology, epidemiology, psychology, and health economics, we aim to elucidate the multifaceted impacts of extended working lives and retirement on health outcomes. This includes a focus on self-rated health and depression, the most frequently studied indicators of general and mental health, respectively.

1. Review of institutional factors shaping late career

In this section, we examine the existing body of literature pertaining to institutional factors influencing late-career stages. Given the scarcity of comprehensive reviews on the topic, our analysis primarily relies on comparative research papers. Our focus is on scholarly articles and books, thereby not aiming to give a comprehensive overview of unpublished “grey” literature.

The first part of the overview begins by presenting relevant EU-level Initiatives, shedding light to overarching policies and strategies towards retirement and the late career. This section distils the essence of policy impacts into three discernible strands, each with its own set of drivers and outcomes, still also interrelated. We use the widely accepted push, pull, and stay framework to dissect the policies influencing retirement decisions. The

Funded by the European Union

discussion concludes with a critical examination of the possible inequalities stemming from these policies.

1.1. From early exit to extending working lives in the EU

From the 1970s to the millennium's end, European labour markets witnessed a pronounced trend towards early retirement. Initially introduced as a cushion against global shocks like the 1970s oil crises, policies promoting early exits gained lasting traction. This period saw the rise of an 'early retirement culture', making early exits a normative expectation in individual and corporate planning, further reinforced by prevailing age stereotypes (Hofäcker & Unt, 2013).

Efforts to raise the retirement age and counteract the trend towards early exit from the labour market gained momentum in all welfare states after the first plans had been formulated in the USA in 1983. The appeal of raising the retirement age lies mainly in its dual impact on the sustainability of pensions: it increases revenues by keeping older workers in the labour force and reduces expenditures by reducing the cohort of beneficiaries (Bonoli, 2000). The basis for these shifts can be found in key EU documents. The Treaty on European Union, both in its original 1992 version (Maastricht Treaty) and in its amended 2007 version (Lisbon Treaty), plays a central role. The Lisbon Treaty has further strengthened the EU's role in coordinating employment policies between Member States. While direct responsibility for employment policy remains with individual countries, the EU can promote cooperation, exchange best practice and make recommendations. In 2001, the European Council's Lisbon Strategy set targets for increasing employment rates and reversing the trend towards early exit from the labour market. Other international institutions, including the OECD, subsequently endorsed such targets. In addition, the EU Charter of Fundamental Rights (2000) and the subsequent European Pillar of Social Rights proclaimed in November 2017 and its further development into the European Pillar of Social Rights Action Plan in December 2020 are documents that highlight demographic change in the world of work as a specific challenge, with the Action Plan particularly highlighting this in its key objectives (see detailed overview in Motel-Klingebiel & Naegele, 2022).

While the practical approaches to addressing these challenges varied across Member States, there were common themes, particularly during the initial 'problem formulation and agenda setting phase', mostly around the turn of the millennium. The first and most common measures included increasing the statutory retirement age as a widely adopted strategy to bring retirement ages into line with increasing life expectancy. Secondly, in conjunction with raising the retirement age to counteract the trend towards early retirement, many countries have either restricted or closed down early retirement schemes. In addition, there has been a move to restrict disability and unemployment pathways to retirement, which have traditionally been used as alternative exit routes. Thirdly, the implementation of flexible retirement options was another common measure, recognizing and accommodating the diverse needs of ageing populations. These options allow individuals to combine work with pension benefits, providing greater autonomy in the transition to retirement (Ebbinghaus, 2006, 2012).

While recent pension reforms have been essential to ensure the sustainability of pension systems, they have inadvertently introduced challenges that can exacerbate inequalities. While changes to pension systems have often been incremental rather than radical, they have shifted the reliance for adequate retirement income more towards steady employment and earnings throughout the career, especially in the later stages. This structural shift has exacerbated pre-existing inequalities (Kuitto & Helmdag, 2021).

1.2. How policies shape retirement and late career

While looking at late career dynamics, we take as a starting point the Martin Kohli's approach to the institutionalization of the life course (2007), which emphasizes how social institutions shape individual life trajectories. He posits that life stages, such as late career and retirement, are socially constructed and heavily influenced by institutional frameworks like pension systems, labour policies, and cultural norms. This approach underlines that retirement is not just an individual decision but is significantly dictated by broader societal structures. Kohli's perspective highlights the importance of understanding these institutional forces to grasp how individuals navigate their late career and transition into retirement.

Given the strong emphasis on extended working lives in recent pension reforms, there's an expanding body of research exploring retirement, late-career employment, and the overarching macro-level influences that shape them (Axelrad & Luski, 2022; Bennet & Möhring, 2015; De Breij, 2020; De Preter et al., 2013; Duval, 2003; Ebbinghaus & Hofäcker, 2013; Ebbinghaus & Radl, 2015; Ebbinghaus, 2006; Fleischmann et al., 2013; Geppert et al., 2019; Gruber & Wise, 2002; Heisig, 2015; Hofäcker, 2010; Hofäcker et al., 2016; Jansen, 2018; Jurek, 2023; Kuitto & Helmdag, 2021; König et al., 2016; Mäcken et al., 2022; Radl, 2013; Riedel et al., 2015; Scharn et al., 2018; Schmidthuber et al., 2020; Stiemke & Hess, 2022; van Oorschot & Jensen, 2009). While some of these studies focus on comparing only a handful of countries, others adopt a broader perspective. However, it is noteworthy that the majority of this research is concentrated on Europe and the US, with limited exploration beyond these regions. When delving into the macro determinants within this field, scholars aiming to capture the whole picture typically categorize these factors into three main dimensions: push, pull and stay or maintain.

1.2.1. The pull dimension in the late career: economic incentives

A significant portion of economic literature delves into the determinants of a worker's retirement age choice. Central to these findings is the worker's evaluation of anticipated wage streams and pension payments from both public and private sources. Their objective is to select a retirement date that maximizes their future expected utility, retirement is the chosen path when its perceived benefits outweigh the costs (Blöndal & Scarpetta, 1999; Dorn & Sousa-Poza, 2010; Gruber & Wise, 2002; Hechter & Kanazawa, 1997).

Rational choice theory, a predominant framework in this literature, posits that retirement decisions are informed, rational choices. Individuals, when considering retirement, juxtapose life course transitions against the perceived pros and cons of extended leisure time (Moen, Sweet, & Swisher, 2005; Ruhm, 1996; Szinovacz & Deviney, 2000). Older workers face the complex decision of balancing the need for labour market income to

maintain their consumption levels with the leisure benefits of retirement. They are theorized to evaluate the financial implications of continued work against the benefits of early labour force withdrawal, typically opting for the option with higher (financial and non-financial) returns. Thus, if early retirement programmes compensate for a large part of foregone wages and future pension benefits, individuals will tend to exit early rather than continue to work up to formal retirement age. This shift can pull individuals towards retirement, especially when financial provisions are sufficient. This financial logic is complemented by the insights from socioemotional selectivity theory.

According to **the socioemotional selectivity theory** (Carstensen, Fung, & Charles, 2003), as people age, they become more conscious of the limited "time remaining" in their lives. This awareness leads to a change in their motivations, shifting from professional objectives like skill enhancement to emotional pursuits such as spending time with grandchildren or meeting friends. In essence, the theory suggests that as one grows older, there's a transition from career-centred aspirations to emotion-driven goals (Kubicek et al., 2010). This shift could be a reason why older employees lean towards retirement, even if their job prospects are promising or their work conditions are favourable, provided they have adequate financial security (Illmarinen, 2006; Salthouse, 1999; Skirbekk, 2003, De Preter et al., 2013). This emotional perspective provided by socioemotional selectivity theory thus complements the rational approach of the rational choice theory, offering a more holistic understanding of the retirement decision-making process.

The incentive frameworks of public pension systems and other welfare programs significantly influence early retirement tendencies. Notably, one primary attribute of these systems is the age at which pension benefits become accessible. Historically, this age was in line with the formal retirement age defined by national laws. However, beginning in the 1970s many European nations introduced early retirement programs, permitting older workers to avail benefits already before the standard retirement age. These retirement ages, both standard and early, have a strong influence on employment and retirement decisions, particularly when combined with attractive financial incentives. (Hofäcker & Unt, 2013).

Despite widespread European pension reforms since the 1990s, which have restricted early retirement routes and raised public pension eligibility ages, specific benchmark ages, either defined at the country or at institutional level, continue to play a crucial role in shaping retirement decisions. These benchmarks, varying from public pension eligibility ages to tax-free pension fund access points, significantly influence when individuals choose to retire. These factors include changes in retirement ages, pension rules, and taxation policies, all aiming to stabilize pension systems and increase actual retirement age. (Axelrad & Luski, 2022).

Thus, previous research has shown that **early retirement ages** coupled with **generous pension benefits** have been main drivers of the early retirement trend. A strong relationship was detected between retirement incentives of social security programs in different countries and the proportions of older people outside of the labour force (Blöndal and Scarpetta 1999; Duval 2003; Gruber & Wise, 2004; Hofäcker & Radl, 2016; Schils 2008). That has been especially pronounced for labour market participation of older men

(Foden & Jepsen, 2002; OECD, 2006). Most studies have examined **replacement rates**, a measure of how generously a pension system provides income after work exit to replace earnings, which were the main source of income prior to work exit (Korpi & Palme, 2007). Higher **implicit taxes on continued work** also act as a *pull factor* by making early retirement financially more attractive than continuing work (Blöndal & Scarpetta 1999; De Preter et al., 2013; Duval, 2003). There is an implicit tax on continued work when the change in pension wealth from working one additional year is less than the value of contributions paid to the pension (Duval, 2003), which means that if the extra money one gets in her pension for working one more year is less than what she is putting into her pension that year, it's like she is being taxed for working longer. Especially when pension replacement rate is high, it might feel like one is losing more than gaining by continuing to work. In similar logic, the higher the minimum pensionable age, the lower is the implicit tax on continued work before this age, which means that one is encouraged to continue working (Duval, 2003).

Next to it, a high unemployment replacement rate, which measures the extent to which unemployment benefits replace previous earnings, acts as a significant *pull factor*, providing a financially attractive alternative to continuing work and being in 'bridging' function to reach eligibility age for retirement benefits. Thus, unemployment benefits play another crucial role in facilitating early exits from the labour force in case offering a substantial portion of an individual's previous income. This has been empirically measured by the **expenditure on passive labour market policies** (PLMP) (De Preter et al., 2013). A high expenditure on PLMP, consisting of expenditure on unemployment benefits and early retirement bridging schemes, may make early work exit more attractive, acting as a *pull factor* (De Breij et al., 2020).

To reverse the early labour market exit trend, many countries have introduced reforms of their pension schemes in 1990s (European Commission, 2012). Many countries increased their official retirement age, changed the rules concerning minimum and basic pensions, and changed the income and means testing rules of the pension system, to relax the income test for combining work and pension. Contribution rates were also changed in many countries like increased minimum contribution rates paid by both employers and employees; as well as tax rules were altered in some countries to encourage people to prolong their working life and increase their pension contributions (Axelrad & Luski, 2022; see details OECD, 2019). The effect of such measures was often amplified by a shift in occupational and private schemes from defined benefit to defined contributions schemes that set significantly less incentives for early retirement (Banks & Smith, 2006).

1.2.2. The push dimension in late career: structural constraints and labour market dynamics

A frequent criticism challenges the key underlying assumption of *pull approach* in economic literature that individuals are supposed freely to choose the optimal retirement age. Thus, beyond economic considerations, sociological research (for example, Blossfeld et al., 2006; Ebbinghaus, 2006; Kohli et al., 1991) highlights the broader societal factors that influence retirement decisions. Since the 1970s, factors like accelerated technological change and global competition have pushed older workers out of

employment. The decision to retire or continue working is influenced not just by financial considerations but also by the actual opportunities available to continue working.

Strict **Employment Protection Legislation (EPL)** can act as a significant *push* factor. While designed to protect employees, these regulations might inadvertently make it harder for older workers to remain employed, pushing them towards early retirement. In a study by Blossfeld and colleagues (2006), it was highlighted that older employees are becoming more expensive to retain, and their enhanced labour costs might not align with their output. Firms may adopt the strategy of encouraging early retirement as a means to streamline their workforce, particularly in countries with stringent Employment Protection Legislation (EPL) (De Preter et al., 2013; Ebbinghaus & Radl, 2015). This approach often involves offering older employees an attractive exit incentive, commonly known as a 'golden handshake.' This term refers to a generous severance package, which can include a substantial lump-sum payment, continued health benefits, and/or possibly additional retirement benefits. Such packages are designed to make the prospect of early retirement financially appealing to employees, thereby facilitating a voluntary departure from the workforce. This tactic is especially prevalent in industries or sectors where reducing staff numbers through layoffs or dismissals is challenging due to strong labour laws and protections. Next to strict EPL, technological changes leading to restructuring of occupational structure or skills needed, can further threaten the position of older workers if they are concentrated in sectors most affected by automatisation. This **perceived or actual productivity mismatch** can push older workers out of labour market (Dorn & Sousa-Poza, 2005; OECD, 2006).

In general, employers play a pivotal role in retirement decisions and ‘filtering’ the impact of institutions. This is particularly evident in "coordinated market economies," as described by Hall & Soskice (2001). These economies, characterized by initial-phase education, strict labour regulations, strong dismissal protections, and well-defined seniority pay structures, include countries like Germany and the Netherlands. Consequently, policymakers in such economies often collaborated with employers to devise ways for these older workers to leave their jobs in a socially acceptable manner, as observed by Ebbinghaus (2006). Moreover, **public benefits like unemployment or disability insurance** have commonly acted as transitional tools to early retirement for those without jobs. Such pressures for older workers to exit are notably reduced in "liberal market economies" typified by an emphasis on market mechanisms and deregulation. Education in liberal market economies tends to focus more on general skills as opposed to the industry-specific training seen in coordinated economies. This reflects the flexible nature of these labor markets, where job mobility is higher and labor regulations are less stringent compared to coordinated market economies. As there is a lesser focus on seniority, more varied job structures, and a malleable labour market, this facilitates easier adaptation and movement for older employees (Blossfeld et al., 2006; Hofäcker & Unt, 2013).

Economic downturns, labour demand shocks, and rising unemployment rates can diminish employment opportunities for older workers, increasing the likelihood of an early work exit. For instance, Great recession starting in 2008 has shown to reduce older workers’ employment rates, especially in countries with less regulated labour markets such as the

Baltic countries and Ireland. In regions like Southern Europe, employment rates for older workers have also shown a marked decrease due to these economic challenges.

Still, empirical evidence for *push factors* is mixed according to Mäcken et al. (2021). Some studies showed that low levels of economic growth measured with the gross domestic product and high unemployment rates are associated with involuntary work exit (Ebbinghaus & Radl, 2015; Hutchens, 1999). In addition, employment protection regulations seem to have a weak positive effect on involuntary work exit. Other studies found no evidence of the influence of *push factors* on work exit (De Preter et al., 2013; Ebbinghaus & Hofäcker, 2013).

Consensus has been reached that both incentives in terms of *pull factors* and constraints in terms of *push factors* exert a significant influence on retirement timing (Schils, 2008; Vickerstaff & Cox, 2005). Debate has however not produced a clear winner (De Preter et al., 2013; Radl, 2013).

1.2.3. The stay dimension in late career: policies and pressures extending employment

From the 1970s to the 1990s, the dynamics of retirement transitions were largely driven by a combination of push and pull factors. Europe's aging demographic has heightened the importance of policies that promote extended working lives (Scherger, 2019; Hofäcker & Naumann, 2015; Zaidi & Unt, 2019). This shift in focus necessitates a reassessment of the factors influencing these transitions. Recent policy initiatives, as referenced by Hofäcker & Unt (2013) and Mäcken et al. (2021), have foregrounded stay factors aimed at encouraging older workers to prolong their participation in the labour force. Thus, while analysing the dynamics of late career, it is crucial to recognize that the macro-level factors influencing the extended working lives may differ from those impacting early labour market exits. Building on this premise, it is imperative to distinguish the macro-level factors influencing extended working lives from those affecting early labour market exits. Contrary to the assumption that these factors operate identically across both contexts, it is likely that a unique constellation of macro-level indicators specifically modulates decisions to prolong working lives, diverging from those influencing retirement decisions.

Delving into the concept of stay factors, such as lifelong learning and active labour market policies (ALMP), it becomes evident that these strategies are pivotal in enhancing the employability of senior workers, thus augmenting their competitiveness in the labour market (European Employment Observatory, 2012; Ebbinghaus and Hofäcker, 2013; Street & Ní Léime, 2020; Unt et al. 2020). These approaches encompass next to training opportunities also strategies against ageism and incentives for firms to employ or retain senior staff.

Economic downturns often lead to reforms encouraging longer working durations. The Great Recession fast-tracked these changes throughout Europe, driven by its fiscal challenges (Banks et al., 2010). In a similar vein, the economic disruptions from the COVID-19 pandemic underscored the importance of policies supporting active aging and the viability of public pension systems (Bristow et al., 2021). Active labour market policies and social services, with the intent of enhancing labour market attachment for older workers, have been key elements in these reform strategies. A high investment in ALMPs, for

instance, can offer more opportunities for older individuals to stay employed (Mäcken et al., 2021). Engelhardt (2011) empirical analysis using SHARE data has shown that the share of population participating in CET measures is significantly correlated with labour participation but not with transition to retirement. Such policies often include job-related non-formal education, like workshops and on-the-job training, and rehabilitation programs to improve health and employability (OECD, 2019b).

The OECD's 2023 report, 'The Midcareer Opportunity: Meeting the Challenges of an Ageing Workforce,' builds on previous research about stay factors and translates these lessons into practice. It underscores the importance of information and career guidance, funding training programs focused on digital skills, and utilizing models like individual learning accounts and training subsidies. Additionally, the report emphasizes the need for targeted job-search support with a focus on long-term impact. Recommendations also include lowering barriers to geographic mobility, revising labour market regulations and tax policies, and facilitating entrepreneurship to discourage early retirement and encourage continued workforce participation. These recommendations should be seen in light of the holistic approach advocated by the OECD Council's December 2015 Recommendation, which encompasses a broader perspective, including life-course policies and the need to accommodate diverse needs due to health circumstances and family responsibilities.

1.2.4. Interplay of push, pull, and stay factors: welfare regime approach

The interplay *of push, pull,* and *stay factors* plays a pivotal role in understanding the retirement decisions of older workers, and these dimensions cannot be considered in isolation. The configurations of the welfare state and labour market intricately weave together, reflecting a holistic integration of country-specific factors, including societal norms and welfare regimes that envelop cultural nuances (Hofäcker & Unt, 2013).

The "Varieties of Capitalism" approach underscores that there is a symbiotic relationship between public pension incentives and company retirement policies (Hall & Soskice, 2001). These complementary forces between different dimensions mutually reinforce one another, influencing retirement decisions (Ebbinghaus, 2006; Dorn & Sousa-Poza, 2010). In similar vein, Ebbinghaus and Hofäcker (2013) stress that *push, pull,* and *stay factors* are complementary explanations and must be simultaneously considered for a comprehensive understanding of early retirement trends and their reversals. In essence, multiple institutional factors work in tandem to create either "early" or "late" retirement regimes. Historically, rigid labour markets combined with early retirement programs in Central and Southern European countries exerted a strong push towards early retirement (Blossfeld et al., 2006; Blossfeld, Buchholz, & Kurz, 2011). By contrast, regions like Scandinavia and Anglo-Saxon countries utilized active labour-market policies or market flexibility to encourage older workers to remain employed longer (Hofäcker & Unt, 2013).

1.2.5. The regional level drivers of late career dynamics

Previous section outlined the framework to analyse macro level moderators of retirement dynamics. The structural opportunity structure may differ by regions making it important to consider not only national, but also regional level while analysing the late career dynamics. There is a notable gap in research, especially in comparative research examining regional factors at a subnational level. National level evidence suggests

regional variations do affect retirement decisions and workforce exit. Studies in France (Korsu & Wenglenski, 2010), Norway (Krokstad et al., 2004; Reime & Claussen, 2013), and Great Britain (Fieldhouse & Gould, 1998) have linked local unemployment and deprivation levels to retirement rates, indicating a relationship between regional economic conditions and retirement behaviour. For instance, Murray et al. (2016) found that higher local area unemployment was associated with an increased likelihood of workforce exit. This suggests that regional economic conditions, particularly unemployment rates, plays a significant role in influencing late-career trajectories. Moreover, Shelton et al. (2018) and Reime & Claussen (2013) further reinforce the importance of regional socio-economic factors, including housing tenure and municipal typologies, in shaping late career choices. These findings imply that policies aimed at extending working lives might be more effective if they are tailored to specific regional contexts, especially in areas with high unemployment or unique socio-economic characteristics.

1.2.6. The Interplay of Socio-Demographic Factors and Retirement Decisions

The evolving landscape of pension reforms has incrementally, rather than radically, altered the design of the pension system. As a result, the assurance of a decent income in old age is now increasingly linked to one's employment trajectory and earnings, particularly in the later stages of their career.

Moreover, the feasibility of older individuals extending their work years is not merely a matter of personal choice. It is intricately tied to available job opportunities and individual capabilities, both of which are unevenly distributed across socio-economic groups (Boudiny, 2013; Walker & Maltby, 2012; Lindemann & Unt, 2016). Consequently, limiting early retirement pathways has occasionally prompted a rise in alternative avenues, especially disability pensions (Riekhoff, Kuitto, & Palomäki, 2020; Unt & Saar, 2016).

Thus, retirement policies and practices, while seemingly universal, manifest in diverse ways, often accentuating existing inequalities. The interplay between individual characteristics and public policies results in retirement outcomes that vary significantly based on factors such as education, gender, health, and occupation (Dingemans & Henkens, 2014; Engelhardt & Schmidt, 2011; Naegele et al., 2020; Radl, 2013).

This transition toward extended working career have exacerbated existing gender disparities. Women, often juggling work with caregiving roles and typically earning less than men, now face an intensified need to prolong their working years to ensure reasonable pensions (Bettio, Tinios, & Betti, 2013; European Commission, 2015).

Furthermore, the education profile of the aging workforce of a country can tilt the balance between early and late retirement. Older workers with advanced educational qualifications tend to have a competitive edge, making them more inclined to extend their professional journeys. Higher-educated workers, thanks to potentially more favourable working conditions and better pension prospects, often have the 'luxury' to opt for early retirement. In contrast, lower-educated workers, grappling with challenging work conditions and limited financial resources, find early retirement increasingly elusive (Radl, 2013; Blossfeld et al., 2011).

In essence, the maintain factors as opportunities for re-skilling and upskilling over the life-course aim to prolong working lives. These policies have a potential narrow the

employment rate gap between the higher- and lower-educated as the lower educated could benefit more from training initiatives and active labour market policies, enhancing their employability (Hess et al., 2016).

However, as there is well-documented evidence, that low-educated adults report the lowest need for training to exercise their job (Van Nieuwenhove & De Wever, 2021). Analyses reveal that adults with lower educational attainment exhibit the minimal perceived necessity for job-related training and express the least hindrance in pursuing further training due to perceived barriers. Among non-participants, those with medium and high educational levels predominantly cited occupational and familial obligations as impediments, whereas their low-educated counterparts predominantly selected 'other', with familial responsibilities being a secondary consideration. Notably, the primary barrier for low-educated adults remains indeterminate, in contrast to those with higher educational attainment. This ambiguity may stem from dispositional barriers, such as negative educational experiences or diminished self-esteem, which were not encapsulated within the survey's predefined categories (ibid.).

A crucial area needing attention in this context is the connection between health and work. If the effective retirement age is to ascend, this relationship demands reconsideration. The correlation between work and health is evident in the context of healthy life expectancy; workers in countries with sub-par health standards would naturally face challenges in extending their working years due to health constraints.

In conclusion, it is imperative to recognize that retirement policies do not operate in similar ways for all. Retirement policies and reforms have heterogeneous impacts that are likely to vary according to both individual- and family-level characteristics as well as the broader economic and institutional context. Addressing retirement inequalities demands a nuanced understanding of these interconnected dynamics and a commitment to crafting policies that are equitable and just.

2. Spillover effects between late-career trajectories and physical and mental health/wellbeing

Shift of policies from support of older workers' early exit to their motivation to extend working lives has considerable debate about the influence of timing of retirement on people's health (Street & Ni Leime, 2020). As mentioned above, one of justifications for such policies is linked to claims that a population that is living longer has greater capacity to work to older (Angel & Mudrazija, 2011; Harper et al., 2011). However, according to Eurostat (2019) data, in European Union average healthy life expectancy at birth is 64.2 years for women and 63.2 years for men. Street and Ni Leime (2020) argue that against this backdrop, setting retirement ages at 67 or more, as advocated by the OECD, is very high, offering little or no time for healthy years in retirement for many older workers. Compelling evidence points to lower life expectancies and poorer health for workers in low-paid, physically demanding occupations and lower socio-economic status (Majer et al., 2011; Marmot & Bell, 2012). Among workers 55+, there are clear differences in proportion of those who report that they are able to work at age 60 between higher and lower status

occupational groups (Eurofound, 2015). Accordingly, it is been argued that increasing the age of retirement may have unintended negative consequences in terms of perceived fairness and associated societal cohesion given the stark inequalities in life and healthy life expectancy at retirement according to social position (Marshall & Nazroo, 2016). In addition, it is feared that increasing the statutory retirement age may exacerbate the extent of health inequalities between social groups and areas at the older ages (Bellaby, 2006; Marshall & Norman, 2013; Harper et al., 2011; Angel & Mudrazija 2011).

In this section, we present results of literature review aimed to get insights into the results of research on the health outcomes associated with extension of working life.

To gain a comprehensive understanding of the developments in the literature regarding the health outcomes of retirement and extended working lives, our approach primarily involves consulting existing systematic reviews on this subject. Additionally, to ensure that our report includes the most recent findings, we supplement these reviews with recent studies not previously covered in them.

Reviews on health outcomes associated with retirement/extended working lives explore a wide variety of health outcomes. Because different health measures may yield different outcomes, in this review we focus on most often studied of them – self-rated health as widely recognized adequate measure of general health1 and depression as the dimension most often used to characterize mental health conditions.

2.1. General framework: Life course ecological model and voluntariness of retirement, working conditions and access to resources and main methodological challenges

Change in the institutional context of retirement as it described in section 1 of current report, have important consequences for older people retirement behaviour. Thus, prior to the 1970s and 1980s, most older workers had little choice regarding retirement. The company retired them as they reached retirement age, or they were forced to leave the labour force at an earlier age for health reasons (Hardy, 2002). The introduction of early retirement schemes in most western countries as well as the abolition of mandatory retirement in some others has resulted in a deinstitutionalization of the retirement transition (Kohli & Rein, 1991; Williamson & McNamara, 2003). The variation in retirement timing has grown, suggesting that individual choice has increased (Guillemard & Van Gunsteren, 1991). It has been argued that recent changes in retirement systems brought about developments in opposite direction: certain work force segments, in more recent cohorts have less choice and control over their retirement transition and their retirement timing has become more involuntary (Hofäcker et al., 2016).

Health differences between certain groups of older workers associated with the changes in the institutional context of retirement can be explained by the life course ecological model that is meant to understand socioeconomic inequalities in health (Corna, 2013; Kim & Moen, 2002). Overall, within the life-course approach (LCA) macro-micro linkages

[1] Self-perceived health is a suitable measure to explore the effect of retirement on health in general, because it provides a summary of the diverse components of health. It shows to be a subjective measure of health and closely linked to quality of life, predicts objective health measures, (see Rijs 2012).

are essential. LCA's key premise is that life transitions do not occur in isolation but rather are shaped by various influences from the social context (Settersten, 2003). One way to conceptualize the important role of social context for socioeconomic position and to situate individual experiences of older people in their broader contexts is to draw on the comparative welfare states literature. More explicit attention to the role of the welfare state provides a framework for thinking about the role of social context. To understand inequalities in health outcomes shaped by retirement policies, scholars situate their research in a comparative framework to address questions concerning the interplay between context and individual outcomes and anticipating differences between more and less generous welfare states.

According to this life course ecological model, linking individual experiences that shape socioeconomic position to the social policy contexts that influence resources and shape opportunities, is of special importance, otherwise we at best, assume that they have similar implications for different social groups within and across contexts (Corna, 2013). This runs the risk of over attributing life course outcomes to individual choices or preferences, placing emphasis on the proximal determinants of health inequalities, rather than the broader, institutional factors that are consequential for socioeconomic position and health over time (Siddiqi & Hertzman, 2007).

At the meso- and micro-level, life course ecological model seems to be well suited to complement Retirement Adjustment Theory (Atchley, 1976), which forms the basis of much of the literature on the impact of retirement on health. According to Retirement Adjustment Theory, involuntariness of transition to retirement has important implications for health. The argument goes as follows: effect of retirement on health depends on the level of adjustment difficulties. The level of adjustment difficulties experienced by retirees, if any, is strongly patterned according to individual and contextual characteristics. According to van Solinge (2007), context of transition is formed by the characteristics of the transition to retirement, the characteristics of the job, and access to resources. Voluntariness of **transition to retirement** is one of its characteristics, so is coincidence of retirement with changes in other domains of life. Such **characteristics of the job** as physical demands, job pressure, working conditions, also intrinsic value of a job or its prestige matter for the impact of retirement on health. Access to **social and financial resources** might mitigate or neutralize the negative consequences of retirement on health. Regarding an **individual's** appraisal, negative expectations and fears about retirement are expected to contribute to deterioration in health following retirement, while confidence in one's ability to cope with change might mitigate health risks. Accordingly, adjustment might have both positive and negative consequences for health and result in the health inequalities. Thus, if an individual is involved in work that is particularly stressful or unrewarding there is a good reason to expect retirement to offer a positive adjustment with the potential for improved health through the removal of these aspects of work that are harmful to health (Mein et al., 2003). On the other hand, an individual might find the adjustments to life after retirement stressful with negative health consequences, especially if retirement is associated with a loss identity or income or if they simply struggle to cope with a new way of life involving less structure and purpose (Reitzes et al., 1996).

In ramification of life course ecological model, i.e. acknowledging importance of socioeconomic differences, Retirement Adjustment Theory suggests that under changing pension regulations, those groups of older workers that are at increasing risk of the involuntary retirement choice (e.g., workers with harmful working conditions; in precarious employment; in term of individual characteristics poor, lower-educated, women, individuals living as a couple - see section 2) are also at higher risk of poor post-retirement health.

There are number of challenges in conducting research on the impact of retirement or prolonging working life on health outcomes.

1. Definition and measurement of retirement (age) might have an impact on the results. It is of special importance, given our interest in inequality of health outcomes as relating to retirement timing. With the closer look on literature, it became clear, that only very general overview is possible. In reviews, papers are not usually differentiated according to definition of retirement, except reviews having this focus. We also had an idea to distinguish between reviews on retirement and reviews presented themselves as focused on extended working life, i.e. dealing with those who postpone their retirement transition. We hope in this way to get any additional – very general - idea about peculiarities of this retirement-postponing group. Unfortunately, results turn to be rather inconclusive within both respective stream of literature and consequently, difficult to interpret differences between streams (see Appendixes 2 and 3). The very fact, that nature of retirement has changed from the prototypical view as an abrupt and complete withdrawal from paid working life to a current view as a complex process unfolding over time and varying across individuals (Szmovacz, 2013; Henkens & Spolinge, 2021), further complicate issues, Increasing heterogeneity of individual pathways to retirement constitutes a major challenge for researchers and policymakers (Eyjolfsdottir et al., 2021).
2. Study design: There are several important methodological challenges concerning research on retirement and its influence on health. One is to verify the direction of causality and another to control for the unobserved heterogeneity. The adaptation of a correlational or a causal design may have an impact on the direction of the association between retirement and health. Prior health and socio-economic status are crucial confounding factor influencing both the retirement transition and subsequent health. Thus, 'who retires and when' might for a large extent be induced by selection: individuals with poor health are more likely to live the labour market early ("healthy worker effect"). Second challenge is to control for unobserved heterogeneity. Thus, in terms of methodology, studies are split between those that followed individuals through retirement within a longitudinal design and those that compare a group of retirees with a control group. A key issue in terms of the studies that compare the health outcomes of retired and an employed group is the omitted variable problem; i.e. the retired and employed groups are different according to a range of characteristics, many of which, are unobservable and so it is difficult to claim a difference that is driven by retirement rather than some omitted variable. Longitudinal study designs that compare measures of health before and after retirement are thought to be more informative in determining whether the retirement process is likely to cause change in health (Oksnanen & Virtanen, 2012) with such studies selected as the gold standard by van der Heide et al. (2013) in their review of the literature on retirement and health.

2.2. Retirement/extended working life and health: timing in institutional-normative context

Although population ageing is occurring everywhere, efforts to extend working lives take place in national contexts, where demographic processes occur at different rates, and within distinctive economic and labour market conditions, policy legacies, and political climates (Street & Ni Leime, 2020). Comparative studies are essential to explore how the broader institutional context in which individuals are embedded moderates the association between employment status and health (Baumann et al., 2022:2). According to life course ecological model, welfare regimes as holistic integrations of country-specific factors (see also section 2.2.4) are considered as particularly important macro-context for investigation the relationships between late careers and health outcomes (Madero-Cabib et al., 2020; Wahrendorf et al., 2020; Baumann et al., 2022). With regard to employment attachment in later life, the role of welfare states is to shape labour market policy. **Access to and generosity of pensions** as key resources in retirement are also determined by the welfare state. The way that social and labour market policies affect health may be twofold: Firstly, labour market policies may shape employment histories, and thus, the likelihood to experience certain health-related consequences associated with such kind of histories. Secondly, it is also likely that these policies affect the extent to which certain histories and health are related, and thus, likely that social and labour market policies moderate associations between histories and health. For example, in the case of well-developed unemployment protections in a country (e.g., high levels of unemployment benefits) associations between discontinuous careers and poor health may be less pronounced, because of the financial security that employees can rely on (Lundberg et al., 2008).

Socially accepted pension age, i.e. **normative pension age** is also important country-specific feature that influence the meaning and consequences of retirement (van der Heide et al., 2013). Social norms of ageing are embedded in country-specific institutions such as pension system and labour market regulation (Radl, 2012). Thus, emergence of an 'early-exit culture' is frequently attributed to the incentives established by early retirement policies (Mortimer et al., 2005). Research shows that trend towards early exit from work during last decades makes itself noticeable in social norms against working beyond the age of 65 (Radl, 2012). When specific age become defined as normative, it can serve as blueprint for decision-making. Hence, social norms of retirement age might be approached as the important link between institutions, policies and culture (as macro-context) and decision-making and its' consequences at micro-level. According to "cultural-institutional" approach (see Table 1 below), perception of voluntariness of retirement is the main mechanism which links policies aimed at change of retirement age (retirement timing) with the health outcomes (Calvo et al., 2013): discrepancy between new regulation and social norm might give rise to perceptions of involuntary retirement and accordingly to adverse health outcomes (Van Solinge & Henkens, 2007)[2].

[2] Interestingly enough, results of European Social Survey show that in 2018/2019 Europeans still often prefer to retire earlier than permitted by their country's retirement policies, meaning that 'early-exit culture' is still in place. At the same, Europeans have in the last decade (i.e. compared with results of previous survey in 2006/2007) raised their ideal retirement ages, suggesting that they are adapting to changing economic

Unfortunately, to our best knowledge, there is scarce literature assessing the effect of policies aiming to extend work career on health. Only Pilipiec et al. (2021) reviewed papers that estimated the effect of an increase in the statutory retirement age on a range of outcomes, including mental and physical health. Among papers reviewed by Pilipiec et al, one paper (Bellaby, 2006) studied effect of the public pension reform that increased the statutory retirement on the health inequality. Pilipiec et al. considered it problematic, because especially the health of the disadvantaged and lower-paid workers appeared to be sensitive to later retirement (Bellaby, 2006).

Study of van der Noordt et al. (2023) exactly aimed to test the hypothesis that due to the increase in actual age of exit, health trajectories across the work exit transition between workers exposed to higher versus lower levels of work demands and resources have started to diverge. They expected that workers exposed to higher physical and psychosocial demands and lower psychosocial resources have increasingly unfavourable health trajectories relative to their counterparts with lower work demands and higher resources. Based on the data of the Longitudinal Aging Study Amsterdam, that includes baseline samples in 1992/1993, 2002/2003 and 2012/2013, pre-post-exit trajectories were modelled with outcomes of self-rated health and physical limitations. According to the results of this study, on average, self-rated health decreased somewhat over successive periods and did not show pre-post-exit changed to poorer pre- and post-exit health.

Using European data from 13 countries, Warhendorf et al. (2021) in their recent paper investigate associations between adverse employment histories over an extended period and health functioning in later life, and explore whether national labour market policies moderate the association. They distinguish between “protective (expenditure on active) labour market policies and expenditure on life-long learning)” and “integrative” (expenditure on active labour market policies and workplace training) labour market policies. Warhendorf et al. (2021) found that associations between career characteristics and health was not moderated by labour market policies, meaning that association between employment histories and health functioning is not as straightforward as authors expected are. They conclude that while national employment policies may be important in shaping employment histories, their role in moderating the associations between working conditions and health is less clear. This study also illustrates the importance of extending the rather static concepts of stressful work to approaches that consider adverse characteristics over the course of an extended time.

Study of Baumann et al. (2022) provides evidence that association between late-life employment and health is shaped by institutional factors. Based on data from 12 countries, they construct typology of timing of retirement and health status and show that it largely depends on social security measure, to what category older people belong (partial retirement associated with good health, partial retirement associated with intermediate health or late retirement in poor health).

Based on results of comparative study, Madero-Cabib et al. (2020) report that the high prevalence of the conventional retirement pathway and its positive association with health

and demographic realities (European Social Survey), Unfortunately, results across age groups are not presented to have an idea whether it is “generational shift”.

may be explained by the social norm of retirement age. This association exist in corporatist, social-democratic and Southern countries, indicating, that especially in these countries, individuals who are able to stay in „standard“ occupational careers with full-time employment and few interruptions, are rewarded in terms of their health outcomes.

Li et al. (2021) and Mukku et al. (2018) find that the transition to retirement is associated with higher risk of depression, and this association varied by the type of retirement and country. These reviews take a very general approach, grouping studies based on the surveyed population according to two dimensions: Western vs Eastern (or Asian), also developed vs developing countries[3]. Both reviews report significant differences in the association between employment status and depression across countries, suggesting that the impact of retirement on mental health might depend on **social culture**[4] and **levels of pension protection**. Thus, Mukku et al. (2018) show that studies from most Western developed countries, including the United States, European countries, Canada, and Australia, mostly report that retirement is beneficial to mental health and well-being, while studies from developed Asian countries, such as Japan and Singapore, tend to find that retirement worsens mental health. The review of Staudinger et al. (2016) is country-centred in a sense that it presents results of research according to covered countries, not by health outcomes studied. They conclude that there seems to be converging evidence documenting the longer-term benefits of employment for older adults. They make a distinction between countries with inadequate and comprehensive old-age income support and identify promising policy options for facilitating healthy labour force participation for each group. For developed countries with comprehensive old-age income support, they consider three main strands of policies: modifying social protection programs, encouraging employers to hire older adults and enhancing employability of older workers.

The impact of macro-level factors on the association between work exit and health is the explicit focus of van der Noordt et al. (2023) study. Using the data of the Longitudinal Aging Study Amsterdam that includes baseline samples in 1992/1993, 2002/2003 and 2012/2013, they tested the hypothesis that due to the increase in actual age of exit (that resulted from the series of policy measures aimed at extending working lives, i.e. growing impact of *push* and *stay factors*) health trajectories across the work exit transition between workers exposed to higher versus lower levels of work demands and resources have

[3] Li et al. (2021) distinguished Eastern developing (China); Eastern developed (Japan, Korea); Western developing (Mexico); Western developed (United States, Australia, Denmark, Ireland, Switzerland, France, United Kingdom, and other European nations), i.e. such a broad grouping is justified by very different macro-context of compared countries.

[4] Comparison with Asian and developing countries might help to recognize common features of macro context prevailing in developed Western countries and taken as granted. Thus, Western societies often see retirement as the best and last chance for individuals to realize their value and attain personal fulfilment. However, in Eastern Confucian countries, retirement means the inheritance of responsibilities, less participation in family decisions, and less social responsibility and social support. The literature shows that Japanese persons tend to find their purpose in life from work, so retirement is more likely to lead to a loss of meaning, and participating in voluntary activities or continuing to work can reduce social isolation, increase social support, and reduce the negative effects of retirement. In addition, Western countries also tend to have better social security and pension systems, while Eastern countries tend to have lower pension coverage. Pension coverage can improve mental health, and low pension coverage might be one of the reasons for the negative impact of retirement on mental health in Eastern developed countries. There is relatively less evidence from developing countries, and more relevant empirical studies are needed in developing countries in the future.

started to diverge. They expected that workers exposed to higher physical and psychosocial demands and lower psychosocial resources have increasingly unfavourable health trajectories relative to their counterparts with lower work demands and higher resources. Pre-post-exit trajectories were modelled with outcomes of self-rated health and physical limitations. According to the results of this study, on average, self-rated health decreased somewhat over successive periods and did not show pre-post-exit changed to poorer pre- and post-exit health, suggesting greater health care costs in the near future.

Given high political and economic relevance of research on health outcomes of recent reforms of public pension systems and concern about aggravation of health inequalities they might brought about, scarcity of research on this topic is surprising. The most general conclusion that might be drawn based on few studies are in line with already existing evidence: both institutions and norms matter, vulnerable groups are exposed to higher risks of poor health and these risks tend to cumulate during long periods. Research is necessary to obtain knowledge enabling to make concrete policy recommendations.

2.3. Retirement/extended working life and health: micro level

2.3.1. Approaches

An extensive literature from different disciplines (e.g. sociology, epidemiology, psychology and health economics) is focused on possible influence of retirement and extended working lives on health of older workers. All these disciplines approach retirement as an important change that results in social and psychological transformations (Bosse et al., 1991) and might potentially influence health.

Calvo et al. (2013) propose three approaches through which the association between timing of retirement and health might be interpreted. The **psycho-materialist approach**[5] stresses the positive aspects of work. Work is considered as a key component of the identity of older adults, providing them with financial, social and psychological resources. Accordingly, working longer (rather than retirement) is suggested to promote health (in addition to social and psychological resources providing financial ones). The **Psychosocial-environmental approach**[6] to work emphasizes job-related stress and occupational risks. Work is considered as limiting the opportunities to enjoy leisure time and healthy activities, and being potentially harmful for health. In this case, the positive effect of retirement on health is expected to occur, especially in case of early retirement.

According to the biopsychological approach, health is strongly affected by genes and personality, and older people tend to maintain their behaviour and lifestyles across time and transitions. Accordingly, neither retirement nor longer working per se are expected to have significant health consequences.

Table 1. Theories on health outcomes of retirement

Theory	Suggestions
Cultural-institutional approach - retirement as social norm: the closer the person's retiring time to that of one's peers (likely to statutory retirement ages) the better his/her health outcomes	
Life course approach (Dannefer, 2011)	When applied to retirement, it emphasizes the role of norms and policies in shaping the health effects of retirement timing

[5] Cheng et al. (2023) call this perspective health promotion.
[6] Health aggravation perspective according to Cheng et al. (2023).

Psychosocial-materialist approach – work as health promotion: arguments in favour of working longer/postponing retirement	
Role theory (George, 1993)	Work as a source of identity, while retirement is a disruption in social identity
The stress and coping theory (Lazarus & DeLongis, 1983)	Work provides with social contacts, usual daily activities, behaviours and lifestyles, while retirement is disruptive of them
Social capital theory (Bourdieu, 1986; Coleman, 1990)	Work provides with social networks, retirement as the loss of them
Social support theory	Working people have higher levels of social support and more opportunities for social engagement compared to retirees
Psychosocial-environment approach – work as health aggravation, retirement as relief: arguments in favour of early retirement	
Activity theory (Lemon et al., 1972)	Retirees will aim at pursuing life satisfaction by dedicating more time to their social contacts and to other leisure activities in order to keep active and replace former roles with other alternatives.
Biopsychological approach – health is affected neither by work nor by retirement (or its timing)	
Continuity theory (Atchley, 1989; Atchley, 1999)	Individuals are regularly guided by existing internal mental frameworks, which make them more likely to maintain similar patterns of behaviour or lifestyle across time and transitions (including that to retirement)

Note: Based on Ardito & Fleischmann (2023), van der Heide et al. (2013), Garrouste & Perdrix (2022), Odone et al. (2021), Eyjólfsdóttir et al. (2019) and Calvo (2013).

In framework of life course ecological model (Calvo et al. 2013) the socioeconomic differences with regard to retirement are taken into account. Given that people who occupy lower socioeconomic positions often enter the labour force at a younger age, spend the majority of their working lives in poorer working conditions, have fewer financial resources, experience worse health, and have a shorter life expectancy than people who occupy higher socioeconomic positions (Ravesteijn et al., 2013; Eyjolsdottir et al., 2019), one might expect that reasons for retirement decision and consequently its health outcome might have social gradient.

2.3.2. Empirical findings

Self-rated health associated with retirement

Several systematic reviews presented in Table 2 conclude that according to results presented in reviewed papers, retirement is generally good for self-rated health.[7] However, with regard to later retirement, Garroste & Perdrix (2021) come to a different conclusion; they find that later retirement has mainly negative or non-significant impact on self-reported health. Moreover, Van der Heide et al. (2013) reported conflicting evidence for retirement having an effect on perceived general health was found.

[7] According to Rijs (2014), self-rated health is a suitable measure to explore the effect of retirement on health in general, because it provides a summary of the diverse components of health. It shows to be a subjective measure of health (Deeg & Bath, 2003; Jylha, 2009). Self-rated health predicts objective health measures, such as mortality (DeSalvo et al., 2006; Idler & Benyamini, 1997), physical disability (Idler & Kasl, 1995), and health-care utilisation (DeSalvo et al., 2005; Wolinsky et al., 1994). Various studies have addressed the general effect of retirement on self-rated health, showing either no effect (Ekerdt & Bosse, 1982; Ekerdt, Bosse, & LoCastro, 1983; Mojon-Azzi, Sousa-Poza & Widmer, 2007) or a positive effect (Gall, Evans & Howard, 1997; Van Solinge, 2007).

Table 2. Summary of conclusions: reviews regarding self-rated health associated with retirement

	Good for health	Bad for health	Neutral/non-significant	Conflicting evidence
Garrouste & Perdrix 2021 – generally	X			
Garrouste & Perdrix 2021 - later retirement		X	X	
Nishimura et al. 2018	X			
Bassanini & Caroli 2015	X			
Van der Heide 2013				X

Depression associated with retirement

As for mental health, evidence for beneficial effects of retirement on, i.e. support for Psychosocial-environment hypothesis, seems to dominate, but not without reservations. Li et al. (2021) conclude based on meta-analyses that the transition to retirement was associated with higher risk of depression. In addition, the positive overall result of the meta-analysis of Odone et al. (2021) is based on studies with heterogeneous conclusions.

Table 3. Summary of conclusions: reviews regarding depression associated with retirement

	Good for health	Bad for health	Neutral/non-significant	Conflicting evidence
Odone et al. 2021	X[8]			
Garrouste & Perdrix 2021	X		X	
Nishimura et al. 2018	X			
Bassanini & Caroli 2015	X			
Van der Heide 2013	X			
Li et al. 2021		X		
Kanade 2023				X
Zhai 2022 – Involuntary retirement		X		

Timing of retirement. Among reviews presented in tables, only Garrouste & Perdrix (2021) distinguished between later and earlier retirement. They conclude that later retirement exerts mainly non-significant impact on self-rated health, decrease or a non-significant impact on depression. According to Garrouste & Perdrix (2021), studies on the impact of an earlier retirement on health are scarce.

Voluntariness of retirement was addressed in reviews of Bassanini & Caroli (2015), Filomena & Picchio (2023), Li et al. (2021), Kanade (2023), Odone et al. (2021) and Van Der Heide (2013) . Reviews infer that adverse health effects more likely arise when individuals are forced to stop working rather than choose it. Zhai (2022) focused on involuntary retirement and in line with above-mentioned reviews concludes that involuntary retirement is significantly associated with increased risk of depression, but the mechanisms underlying this association are still not fully understood. Zhai (2022) suggests, "One underlying explanation for our findings is that involuntary retirement may

[8] Result on quantitative meta-analysis, while heterogeneity among the included studies is considerable

lead to changes in life patterns and social support, which has been important predictors of depression" (Zhai, 2022:6).

Working conditions were in the focus of Ardito & Fleischmann's (2023) review. They conclude that according to reviewed studies, not just having work in general, but having good work is an important determinant of individuals' health and retirement decisions. Mostly positive working conditions (job resources, especially job control, and social support) appear to contribute to individuals' later retirement, but adverse working conditions do not necessarily push older workers into earlier retirement. Reviewed studies seem to indicate that the influence of adverse working conditions is buffered when they become combined with the high job control, job resources or social support.

Socioeconomic differences in association between retirement and health

Only few reviews address the issue of socioeconomic differences in association between retirement and health (Filomena & Picchio, 2023, Van der Heide et al., 2013, Garrouste & Perdrix, 2021, Ardito & Fleischmann, 2023). To our knowledge, Schaap et al. (2018) published the only review specifically focused on this issue. Despite the low number of studies distinguishing between socioeconomic groups (e.g., between blue- and white-collar workers, as in Filomena & Picchio, 2023), conclusions of reviewers are rather consistent in terms of existence of a socio-economic gradient: the spillover effects of labour market exit and post-retirement work on health tend to be different for different group of workers (see Appendix 1). However, when it comes to identifying "winners" (or "losers") in terms of health outcomes, reviews point to different groups. Schaap et al. (2018) conclude that the positive effects of exit from work on health are mainly present in higher socioeconomic groups, while according to Ardito & Fleischmann (2023) retirement was found to exert positive effects on various health outcomes for those workers who were exposed to more physically and psychologically demanding jobs. The authors of the reviewed reviews underline an urgent need for further research and suggest to study influence of occupation, working conditions, but also gender, geography and educational level on possible spillover effects of the transition to retirement on health (Li et al., 2021; Odone et al., 2021).

Authors of reviews we drawn upon in this report, attribute inconsistencies of results in studies on health outcomes associated with retirement/extended working lives to the following sources:

1. Heterogeneity of older people (in terms of both categories, but also – according to holistic approach – previous life-course, including spillover between work and family domains).
2. Health effect of retirement/extended working life varies across countries, institutional and cultural contexts (see Li et al., 2021; Mukku et al., 2018; Nishimura et al., 2018; Staudinger et al., 2016).
3. Studies are often focused on different time windows (short- vs long-term outcomes; employment changes across the whole work life course or during old ages, etc) (see e.g., Halleröd et al., 2013).
4. Study design: the adaptation of a correlational or a causal design may have an impact on the results. Thus, 'who retires and when' might for a large extent be induced by selection. Therefore, health and socioeconomic status are potential

confounders and may produce artificially reduced morbidity among workers retiring later.

5. Understanding of retirement as complex and increasingly de-standardised process contributes to the growing interest towards the dynamic approach to the study of late career and associated health.
6. Both employment and health are increasingly conceptualised as dynamic or time variant factors that mutually affect each other and thus both need to be examined longitudinally. "Accordingly, there is a need to better understand how changes in individuals' employment status may be intertwined with changes in their health status in later life" (Baumann et al., 2022).

3. Conclusions

In light of the challenges posed by an aging workforce and the imperative for social equity, there is a pressing need to reform retirement policies. These reforms must be sensitive to the diverse needs of older workers. When evaluating the impact of such policies, it is crucial to consider multiple outcomes simultaneously. On the one hand, the sustainability of pension systems necessitates finding ways to motivate the extension of working lives. However, these efforts must be counterbalanced with the objective of achieving social equity, ensuring that impact studies examine the effectiveness of policies promoting extended working lives from both perspectives.

This report has undertaken a critical exploration of the multifaceted determinants influencing retirement and late-career labour market participation within the European Union (Part I) and their subsequent spillover effects on health and well-being (Part II).

In the first part, the report illuminated the complex interplay of policies at the macro level that shape the retirement landscape, influenced by *pull, push,* and *stay factors*. The evidence presented underscores the legacy of early retirement schemes and the recent shift towards policy reforms aimed at extending working lives. These changes, while motivated by the need for fiscal prudence in the face of demographic shifts, have also inadvertently widened social inequalities. The empirical findings suggest that higher-educated workers are better positioned to benefit from late-career employment opportunities and flexible retirement options, whereas lower-educated individuals face significant barriers, highlighting the persistent structural inequalities within the labour market.

In the second part, we transitioned into a systematic examination of how these late-career trajectories have spillover effect on physical and mental health. Although many countries have increased the statutory retirement age, only a few studies have investigated the health-related effect of such public pension reform on older workers. Therefore, there does not seem to exist a solid understanding of the causal relationship of such a reform and health-related outcomes of older people. The literature review revealed a complex relationship between work, retirement, and health outcomes, influenced by socio-economic status and the broader welfare context. The nuances of this relationship suggest that the effects of extended working lives on health are far from uniform and depend on

individual circumstances, job conditions, and the nature of retirement—whether it is voluntary or involuntary.

As we converge the insights from both parts of the report, it becomes evident that the relationship between retirement policies, labour market participation, and health outcomes is intricate and context-dependent. The general trend supports the thesis of cumulative (dis)advantage, suggesting that the balance between positive and negative health outcomes in later life is influenced by previous life course as well as the broader macro-context, including the type of welfare state and labour market conditions. Thus, similarly to research by Kuitto & Helmdag (2021), we underscore the significance of social policies that support labour market participation throughout the life course, with social investment in human capital and public services aiding in extending working lives.

Future research should continue to unravel the differential impacts of retirement reforms across various socio-demographic groups, with an emphasis on understanding the long-term effects on the economic and health well-being of individuals. This is particularly pressing in a post-pandemic era, where the labour market dynamics may have shifted even further. Therefore, there is a call for coherent and imaginative policies, developed through collaboration between employers, trade unions, government, and workers. These policies should focus on addressing occupational health and gender equalities in pension building across the life course. The goal is to ensure that extending working life becomes an appealing choice rather than a punitive imposition (see also Street & Ní Léime (2020)).

The overarching message of this report advocates for retirement policy reforms that are sensitive to the complexities of an ageing workforce and the diverse needs of older workers. The sustainability of pension systems must be balanced with the goal of achieving social equity. It is through such informed and inclusive policymaking that the European Union can strive towards a retirement landscape that is resilient, just, and adaptable to the changing nature of work and longevity.

Funded by the European Union

References

Ardito, C., & Fleischmann, M. (2023). Health, working conditions and retirement. In N. Burnay, C. Krekula, J. Ogg, & P. Vendramin (Eds.), *Older workers and exclusion processes on the labour market: A life course perspective* (pp. 161–176). Springer.

Atchley , R.C. (1976). *The Sociology of Retirement*. John Wiley, New York.

Atchley, R. C. (1989). A continuity theory of normal aging. *Gerontologist, 29*(2), 183–190.

Atchley, R. C. (1999). *Continuity and adaptation in aging: Creating positive experiences*. The John Hopkins University Press.

Axelrad, H., & Luski, I. (2022). Actual retirement age: A European cross-country analysis. *Ageing International, 47*, 534–558. https://doi.org/10.1007/s12126-021-09435-9

Bassanini, A., & Caroli, E. (2015). Is work bad for health? The role of constraint versus choice. *Annals of Economics and Statistics, (119/120),* 13–37. https://doi.org/10.15609/annaeconstat2009.119-120.13

Baumann, I., Froidevaux, A., & Cabib, I. (2022). Health among workers retiring after the state pension age: a longitudinal and comparative study. *BMC Geriatrics, 22*. https://doi.org/10.1186/s12877-022-03690-4

Baxter, S., Blank, L., Cantrell, A., & Goyder, E. (2021). Is working in later life good for your health? A systematic review of health outcomes resulting from extended working lives. *BMC Public Health, 21,* 1–11.

Bellmann, L., & Janik, F. (2007). Firms and early retirement: offers that one does not refuse. *IZA Discussion Paper No. 2931.* http://dx.doi.org/10.2139/ssrn.1004484

Bennet, J., & Möhring, K. (2015). Cumulative (dis)advantage? The impact of labour market policies on late career employment from a life course perspective. *Journal of Social Policy, 44*(2), 213–233. https://doi.org/10.1017/S0047279414000816

Bettio, F., Tinios, P., & Betti, G. (2013). *The gender gap in pensions in the EU.* EU Publications Office. https://data.europa.eu/doi/10.2838/43810

Blossfeld, H.-P., Mills, M., & Bernardi, F. (2006). *Globalization, uncertainty and men's careers: an international comparison.* Edward Elgar.

Blossfeld, H.P., Buchholz, S., Kurz, K. (Eds) (2011). *Aging populations, globalization and the labor market: comparing late working life and retirement in modern societies*. Edward Elgar. https://doi.org/10.4337/9781849805858

Blöndal, S., & Scarpetta, S. (1999). The retirement decision in OECD countries. *OECD economics department working paper no. 202*. OECD. https://doi.org/10.1787/565174210530

Bonoli, G. (2000). *The politics of pension reform. Institutions and policy change in Western Europe.* Cambridge University Press.

Boudiny K. (2013). 'Active ageing': from empty rhetoric to effective policy tool. *Ageing and society, 33*(6), 1077–1098. https://doi.org/10.1017/S0144686X1200030X

Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.

Bosse, R., Aldwin, C.M., Levenson, M.R., & Workman-Daniels, K. (1991). How stressful is retirement? Findings from the normative aging study. *Journal of Gerontology 46*, P9–14. https://doi.org/10.1093/geronj/46.1.P9

Börsch-Supan, A. & Jürges, H. (2009). Early retirement, social security, and well-being in Germany. In D. A. Wise (Ed.), *Developments in the economics of aging* (pp. 173–202). University of Chicago Press.

Cabib, I., Budnevich-Portales, C., & Azar, A. (2022). Adulthood employment trajectories and later life mental health before and after the onset of the COVID-19 pandemic. *International Journal of Environmental Research and Public Health, 19*(21), 13936. https://doi.org/10.3390/ijerph192113936

Calvo, E., Sarkisian, N., & Tamborini, C.R. (2013). Causal effects of retirement timing on subjective physical and emotional health. *The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences, 68*, 73–84.

Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion, 27*(2), 103–123. https://doi.org/10.1023/A:1024569803230

Coleman, J. S. (1990). *Foundations of social theory.* The Belknap Press of Harvard University Press.

Dannefer, D. (2011). Age, the life course, and the sociological imagination: Prospects for theory. In R. H. Binstock, & L. K. George (Eds.), *Handbook of aging and the social sciences* (pp. 3–16). Academic Press

de Breij, S., Huisman, M., & Deeg, D. J. H. (2020). Educational differences in macro-level determinants of early exit from paid work: a multilevel analysis of 14 European countries. *European Journal of Ageing, 17*(2), 217–227.

De Preter, H., Van Looy, D., & Mortelmans, M. (2013). Individual and institutional push and pull factors as predictors of retirement timing in Europe: A multilevel analysis. *Journal of Aging Studies, 27*(4), 299–307. https://doi.org/10.1016/j.jaging.2013.06.003

Di Gessa, G., Corna, L., Price, D., & Glaser, K. (2020). Lifetime employment histories and their relationship with 10-Year health trajectories in later life: Evidence from England. *European Journal of Public Health, 30*(4), 793–799.

Dingemans, E., & Henkens, K. (2014). Involuntary retirement, bridge employment, and satisfaction with life: A longitudinal investigation. *Journal of Organizational Behavior, 35*(4), 575–591. https://doi.org/10.1002/job.1914

Dorn, D., & Sousa-Poza, A. (2005). Early retirement: Free choice or forced decision? *CESifo Working Paper Series No. 1542*. http://dx.doi.org/10.2139/ssrn.831486

Dorn, D., & Sousa-Poza, A. (2010). 'Voluntary' and 'involuntary' early retirement: an international analysis. *Applied Economics, 42*(4), 427–438.

Duval, R. (2003). The retirement effects of old-age pension and early retirement schemes in OECD countries. *OECD Economics Department Working Papers 370*. OECD Publishing.

Ebbinghaus, B. (2006). *Reforming early retirement in Europe, Japan, and the USA.* Oxford University Press.

Ebbinghaus, B. (2012). Europe's transformations towards a renewed pension system. In G. Bonoli, & D. Natali (Eds.), *The politics of the new welfare state* (pp. 182–205). Oxford University Press.

Ebbinghaus, B., & Hofäcker, D. (2013). Reversing early retirement in advanced welfare economies: A paradigm shift to overcome push and pull factors. *Comparative Population Studies, 38*(4), 807–840.

Ebbinghaus, B. & Radl, J. (2015). Pushed out prematurely? Comparing objectively forced exits and subjective assessments of involuntary retirement across Europe. *Research in Social Stratification and Mobility, 41,* 115–130. https://doi.org/10.1016/j.rssm.2015.04.001

Engelhardt, H. (2011). Late Careers in Europe: Effects of Individual and Institutional Factors. *European Sociological Review, 28*(4), 550-563. doi:10.1093/esr/jcr024

Engelhardt, H., & Schmidt, C. (2011). Late careers and socio-economic structures in Europe. *Discussion Paper Series No. DP 10/2011.* Chair of Population Studies at the University of Bamberg.

Eyjólfsdóttir, H. S., Baumann, I., Agahi, N., Fritzell, J., & Lennartsson, C. (2019). Prolongation of working life andits effect on mortality and health in older adults: Propensity score matching. *Social Science & Medicine, 226*, 77–86.

Eyjólfsdóttir, H. S., Baumann, I., Agahi, N., & Lennartsson, C. (2021). How to measure retirement age? A comparison of survey and register data. *J Popul Ageing, 14*(2), 143–161.

Fischer, J.A.V., & Sousa-Poza, A. (2006). The institutional determinants of early retirement in Europe. *University of St. Gallen Department of Economics working paper series 2006 2006-08*. Department of Economics, University of St. Gallen.

Fieldhouse, E. A., & Gould, M. I. (1998). Ethnic minority unemployment and local labour market conditions in Great Britain. *Environment & Planning A, 30*(5), 833–853. https://doi.org/10.1068/a300833

Filomena, M., & Picchio, M. (2022). Retirement and health outcomes in a meta-analytical framework. *Journal of Economic Surveys*, 1–36. https://doi.org/10.1111/joes.12527

Fleischmann, M., Koster, F., Dykstra, P., & Schippers, J. (2013). Hello pension, goodbye tension? The impact of work and institutions on older workers' labor market participation in Europe. *International Journal of Ageing and Later Life, 8*(2), 33–67. https://doi.org/10.3384/ijal.1652-8670.13215

Foden, C., & Jepsen, M. (2002). Active strategies for older workers in the European Union: A comparative analysis of recent experiences. In M. Jepsen, D. Foden, & M. Hutsebaut (Eds.), *Active strategies for older workers in the European Union* (pp. 437–460). European Trade Union Institute.

Galama, T., Kapteyn, A., Fonseca, R., & Michaud, P.-C. (2013). A health production model with endogenous retirement: Health and retirement. *Health Economics, 22*(8), 883–902

Garrouste C., & Perdrix, E. (2021) Is there a consensus on the health consequences of retirement? A literature review. *J Econ Surv, 36*(4), 841–879. https://doi.org/10.1111/joes.12466.

George, L. K. (1993). Sociological perspectives on life transitions. *Annual Review of Sociology, 19*, 353–373. https://doi.org/10.1146/annurev.so.19.080193.002033

Geppert, C., Guillemette, Y., Morgavi, H., & Turner, D. (2019). Labour supply of older people in advanced economies: the impact of changes to statutory retirement ages. *ECONOMICS DEPARTMENT WORKING PAPER No. 1554.* OECD.

Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political Economy, 80*(2), 223–255.

Gruber, J., & Wise, D. A. (2002). Social security programs and retirement around the world: Micro estimation. *Working paper 9407.* National Bureau of Economic Research.

Hall, P. A., & Soskice, D. (2001). *Varieties of capitalism: The institutional foundations of comparative advantage*. Oxford University Press.

Halleröd B., Örestig J., & Stattin M. (2013). Leaving the labour market: The impact of exit routes from employment to retirement on health and wellbeing in old age. *European Journal of Ageing, 10,* 25–35.

Hechter, M., & Kanazawa, S. (1997). Sociological rational choice theory. *Annual Review of Sociology, 23*, 191–214.

Heisig, J. P. (2015). *Late-career risks in changing welfare states. Comparing Germany and the United States since the 1980s.* Amsterdam University Press.

Henkens, K., & van Solinge, H. (2021). The changing world of work and retirement. In K. Ferraro, & D. Carr (Eds.), *Handbook of aging and the social sciences* (pp. 269–285). Elsevier.

Hess, M., König, S., & Hofäcker, D. (2016). Retirement transitions under changing institutional conditions: Towards increasing inequalities? Comparing evidence from 13 countries. In D. Hofäcker, M. Heß, & S. König (Eds.), *Delaying retirement: Progress and challenges of active ageing in Europe, the United States and Japan* (pp. 363–378). Palgrave Macmillan.

Hofäcker, D. (2010). *Older workers in a globalizing world: an international comparison of retirement and late-career patterns in Western industrialized countries*. Doctoral thesis.

Hofäcker, D. Heß, M., & König, S. (Eds.) (2016). *Delaying retirement: Progress and challenges of active ageing in Europe, the United States and Japan*. Palgrave Macmillan.

Hofäcker, D. & Naumann, E. (2015). The emerging trend of work beyond retirement age in Germany. *Zeitschrift für Gerontologie und Geriatrie, 48*, 473–479.

Hofäcker, D. & Radl, J. (2016). Retirement transitions in times of institutional change: theoretical concept. In D. Hofäcker, M. Heß, & S. König (Eds.), *Delaying retirement: Progress and challenges of active ageing in Europe, the United States and Japan* (pp.1–21). Palgrave Macmillan.

Hofäcker, D., & Unt, M. (2013). Exploring the 'new worlds' of (late?) retirement in Europe. *Journal of International and Comparative Social Policy, 29*(2), 163–183. doi:10.1080/21699763.2013.836979

Hutchens, R. (1999). Social security benefits and employer behavior: Evaluating social security early retirement benefits as a form of unemployment insurance. *International Economic Review, 40*(3), 659–678.

Ilmarinen, J. (2006). *Toward a longer working life: Aging and quality of working life in the European Union.* Finnish Institute of Occupational Health.

Jansen, A. (2018). Work–retirement cultures: A further piece of the puzzle to explain differences in the labour market participation of older people in Europe? *Ageing & Society, 38*(8), 1527–1555. doi:10.1017/S0144686X17000125

Jurek, Ł. (2023). The impact of (in)stability of pension system on retirement timing: Macro-level analysis based on "certainty effect". *Journal of Social Policy*, 1-21. doi:10.1017/S004727942300020X

Kanade, A., Strother-Garcia, K., & Rogers, N.L. (2023). Retirement and mentak health: A contemporary review of the literature. *Perspectives of the ASHA Special, 8*, 1121–1130.

Kohli, M. (1986). The world we forgot: A historical review of the life course. In V. W. Marshall (Ed.), *Later life: The social psychology of ageing* (pp. 271–303). Sage.

Kohli, M. (2007). The Institutionalisation of the life course: Looking back to look ahead. *Research in Human Development, 4*(3–4), 253–271.

Kohli, M., Rein, M., Guillemard, A.-M., & Van Gunsteren, H. (1991). *Time for retirement: Comparative studies on early exit from the labor force.* Cambridge University Press.

Korsu, E., & Wenglenski, S. (2010). Job accessibility, residential segregation and risk of long-term unemployment in the Paris region. *Urban Studies, 47*(11), 2279–2324. https://doi.org/10.1177/0042098009357962

Krokstad, S., Magnus, P., Skrondal, A., & Westin, S. (2004). The importance of social characteristics of communities for the medically based disability pension. *European Journal of Public Health, 14*(4), 406–412. https://doi.org/10.1093/eurpub/14.4.406

Kubicek, B., Korunka, C., Hoonakker, P., & Raymo, J. M. (2010). Work and family characteristics as predictors of early retirement in married men and women. *Research on Aging, 32*(4), 467–498.

Kuitto, K., & Helmdag, J. (2021). Extending working lives: How policies shape retirement and labour market participation of older workers. *Social Policy & Administration, 55*(3), 423–439. doi:10.1111/spol.12717

König, S., Hess, M., & Hofäcker, D. (2016). Trends and determinants of retirement transition in Europe, the USA and Japan: A Comparative Overview. In D. Hofäcker, M. Hess, & S. König (Eds.), *Delaying Retirement* (pp. 23–51). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-56697-3_2

Lazarus, R. S., & DeLongis, A. (1983). Psychological stress and coping in aging. *American Psychologist, 38*(3), 245–254. https://doi.org/10.1037/0003-066X.38.3.245

Lemon, B. W., Bengtson, V. L., & Peterson, J. A. (1972). An exploration of the activity theory of aging: Activity types and life satisfaction among in-movers to a retirement community. *Journal of Gerontology, 27*(4), 511–523.

Li, W., Ye, X., Zhu, D., & He, P. (2021). The longitudinal association between retirement and depression: A systematic review and meta-analysis. *American Journal of Epidemiology, 190*(10), 2220–2230.

Lindemann, K., & Unt, M. (2016). Trapped in 'involuntary' work in the late career? Retirement expectations versus the 'desire to retire' in Estonia. *Studies of Transition States and Societies, 3*(2), 60-77.

Madero-Cabib, I., Azar, A., & Guerra, J. (2022). Simultaneous employment and depressive symptom trajectories around retirement age in Chile. *Aging & Mental Health, 26*, 1143–1152.

Madero-Cabib, I., Corna, L., & Baumann, I. (2020). Aging in different welfare contexts: a comparative perspective on later-life employment and health. *Journals of Gerontology: Psychological Sciences and Social Sciences, 75B,* 1515–1526.

Maimaris, W., Hogan, H., & Lock, K. (2010). The impact of working beyond traditional retirement ages on mental health: implications for public health and welfare policy. *Public Health Reviews, 32,* 532–548.

McDonough, P., Worts, D., Corna, L.M., McMunn, A., & Sacker, A. (2017). Later-life employment trajectories and health. *Adv Life Course Res, 34*, 22–33. https://doi.org/10.1016/j.alcr.2017.09.002.

Moen, P., Sweet, S., & Swisher, R. (2005). Embedded career clocks: The case of retirement planning. *Advances in Life Course Research, 9,* 237–265.

Motel-Klingebiel, A., & Naegele, G. (2022). Exclusion and inequality in late working life in the political context of the EU. *EIWO Working Paper No. 6.* Linköping University.

Mukku, S.S.R., Harbishettar, V., & Sivakumar, P.T. (2018). Psychological morbidity after job retirement: a review. *Asian J Psychiatr, 37,* 58–63.

Murray, E., Head, J., Shelton, N., Hagger-Johnson, G., Stansfeld, S., Zaninotto, P., & Stafford, M. (2016). Local area unemployment, individual health and workforce exit: ONS Longitudinal Study. *European Journal of Public Health, 26*(3), 463–469.

Mäcken, J., Präg, P., Hess, M., & Ellwardt, L. (2022). Educational Inequalities in Labor Market Exit of Older Workers in 15 European Countries. *Journal of Social Policy, 51*(2), 435–459. https://doi.org/10.1017/S0047279421000258

Naegele, G. et al. (2003). *A new organisation of time over working life.* Office for Official Publications of the European Communities.

Nishimura, Y., Oikawa, M., & Motegi, H. (2018). What explains the difference in the effect of retirement on health? Evidence from global aging data. *Journal of Economic Surveys, 32*(3), 792–847

Odone, A., Gianfredi, V., Vigezzi, G. P., Amerio, A., Ardito, C., d'Errico, A., Stuckler, D., & Costa, G. (2021). Does retirement trigger depressive symptoms? A systematic review and meta-analysis. *Epidemiology and Psychiatric Sciences, 30,* E77. https://doi.org/10.1017/S2045796021000627

OECD (2019), *Working Better with Age, Ageing and Employment Policies*. OECD Publishing. https://doi.org/10.1787/c4d4f66a-en.

Pilipiec, P., Groot, W., & Pavlova, M. (2021). The effect of an increase of the retirement age on the health, well-being, and labor force participation of older workers: a systematic literature review. *Journal of Population Ageing*, *14,* 271–315.

Radl, J. (2013). Labour market exit and social stratification in western Europe: The effects of social class and gender on the timing of retirement. *European Sociological Review, 29*(3), 654–668.

Ravesteijn, B., van Kippersluis, H., & van Doorslaer, E. (2013). The contribution of occupation to health inequality. *Res. Econ. Inequal. 21,* 311–332. https://doi.org/10. 1108/S1049-2585(2013)0000021014

Reime, L. J., & Claussen, B. (2013). Municipal unemployment and municipal typologies as predictors of disability pensioning in Norway: A multilevel analysis. *Scandinavian Journal of Public Health, 41*(2), 158–165. https://doi.org/10.1177/1403494812472004

Riedel, M., Hofer, H., & Wögerbauer, B. (2015). Determinants for the transition from work into retirement in Europe. *IZA Journal of European Labor Studies 4,* 1–19. https://doi.org/10.1186/s40174-014-0027-5

Riekhoff, A.-J., Kuitto, K. & Palomäki, L.-M. (2020). Substitution and spill-overs between early exit pathways in times of extending working lives in Europe. *International Social Security Review, 73*(2), 27–50.

Rijs, K. J., Cozijnsen, R., & Deeg, D. J. H. (2012). The effect of retirement and age at retirement on selfpercieved health after three years of follow-up in Dutch 55–64 year-olds. *Ageing and Society, 32*(2), 281–306.

Rohwedder, S., & Willis, R. J. (2010). Mental retirement. *The Journal of Economic Perspectives, 24*(1), 119–138.

Ruhm, C.J. (1996). Do pensions increase the labor supply of older men? *Journal of Public Economics, 59*(2), 157–175.

Salthouse, T. A. (1999). Pressing issues in cognitive aging. In N. Schwarz, D. C. Park, B. Knaüper, & S. Sudman (Eds.), *Cognition, aging, and self-reports* (pp. 185–198). Taylor & Francis.

Schaap, R., de Wind, A., Coenen, P., Proper, K., & Boot, C. (2018). The effects of exit from work on health across different socioeconomic groups: a systematic literature review. *Soc Sci Med. 198,* 36–45. https://doi.org/10.1016/j.socscimed.2017.12.015

Scharn, M., Sewdas, R., Boot, C.R.L., Huisman, M., Lindeboom, M., & Van der Beek, A.J. (2018). Domains and determinants of retirement timing: A systematic review of longitudinal studies. *BMC Public Health, 18*, 1–14. https://doi.org/10.1186/s12889-018-5983-7

Schils, T. (2008). Early retirement in Germany, the Netherlands, and the United Kingdom: A longitudinal analysis of individual factors and institutional regimes. *European Sociological Review, 24*(3), 315–329.

Schmidthuber, L., Fechter, C., Schröder, H., & Hess, M. (2020). Active ageing policies and delaying retirement: comparing work-retirement transitions in Austria and Germany. *Journal of International and Comparative Social Policy, 37*(2), 176–193. https://doi.org/10.1017/ics.2021.1

Settersten, R. A. (1998). Time, age, and the transition to retirement: New evidence on life course flexibility? *International Journal of Aging and Human Development, 47,* 177–203. doi:10.2190/ QHDK-R21F-RDK6-PMAG

Settersten, R. (2003). Age structuring and the rhythm of the life course. In J.T. Mortimer & M.J. Shanahan (Eds.). *Handbook of the Life Course* (pp. 81–98). Springer.

Shelton, N., Head, J., Carr, E., Zaninotto, P., Hagger-Johnson, G., & Murray, E. (2019). Gender differences and individual, household, and workplace characteristics: Regional geographies of extended working lives. *Popul Space Place, 25*(2), e2213. https://doi.org/10.1002/psp.2213

Skirbekk, V. (2003). Age and individual productivity: A literature survey. *Vienna Yearbook of Population Research, 2,* 133–153.

Smyer, M.A., & Pitt-Catsouphes, M. (2007). The meanings of work for older workers. *Generations: Journal of the American Society on Aging, 31*(1), 23–30.

Szinovacz, M. E. (2013). A multilevel perspective for retirement research. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 152–173). Oxford University Press.

Szinovacz, M. E., & DeViney, S. (2000). Marital characteristics and retirement decisions. *Research on Aging, 22,* 470–498. https://doi.org/10.1177/0164027500225002

Staudinger, U.M., Finkelstein, R., Calvo, E., & Sivaramakrishnan, K. (2016). A global view on the effects of work on health in later life. *Gerontologis, 56*, 281–292. https://doi.org/10.1093/geront/gnw032.

Stenholm, S., Virtanen, M., Pentti, J., Oksanen, T., Kivimäki, M., & Vahtera, J. (2020). Trajectories of self-rated health before and after retirement: Evidence from two cohort studies. *Occupational and Environmental Medicine, 77*(2), 70–76. doi:10.1136/oemed-2019-106026

Stiemke, P., & Hess, M. (2022). Determinants of (in-)voluntary retirement: A systematic literature review. *Journal of European Social Policy, 32*(3), 348–358. https://doi.org/10.1177/095892872210

Street, D., & Ní Léime, Á. (2020). Problems and prospects for current policies to extend working lives. In Á. Ní Léime, J. Ogg, M. Rašticová, D. Street, C. Krekula, M. Bédiová, & I. Madero-Cabib (Eds.), *Extended Working Life Policies: International Gender and Health Perspectives* (pp. 85–113). Springer Open.

Zaidi, A., & Unt, M. (2019). The active aging index. Measuring successful aging at population level. In Fernández Ballesteros, R. et al. (Eds.), *The Cambridge Handbook of Successful Aging* (pp. 594-609). Cambridge University Press.

Zhai, L., Wang, J., Liu, Y., & Zhang, H. (2022). Involuntary retirement and depression among adults: A systematic review and meta-analysis of longitudinal studies. *Front Psychiatry, 13,* 747334. doi: 10.3389/fpsyt.2022.747334

Unt, M., Kazjulja, M., & Krönsrtöm, V. (2020). Estonia. In Á. Ní Léime et al. (Eds.), Extended Working Life Policies: International gender and health perspective (pp. 241-249). Springer.

Unt, M., & Saar, E. (2016). Determinants of retirement and late careers in Estonia. In D. Hofäcker, M. Hess & S. König (Eds.), *Delaying Retirement* (pp. 53-72). Palgrave Macmillan.

Vickerstaff, S., & Cox, J. (2005). Retirement and risk: The individualisation of retirement experiences? *The Sociological Review, 53*(1), 77–95.

van der Heide, I., van Rijn, R., Robroek, S., Burdorf, A., & Poper, K. (2013). Is retirement good for your health? A systematic review of longitudinal studies. *BMC Public Health, 13*(1), 1–11.

van der Noordt, M., van Tilburg, T.G., van der Pas, S., Wouterse, B., & Deeg D. J. H. (2023). Health trajectories across the work exit transition in the 1990s, 2000s, and 2010s: the role of working conditions and policy. *Archives of Public Health, 81*, 16. https://doi.org/10.1186/s13690-022-01008-9

Van Nieuwenhove, L., & De Wever, B. (2021). Why are low-educated adults underrepresented in adult education? Studying the role of educational background in expressing learning needs and barriers. *Studies in Continuing Education, 44*, 189–206.

Van Rijn, R.M., Robroek, S.J.W., Brouwer, S., & Burdorf, A. (2014). Influence of poor health on exit from paid employment: a systematic review. *Occupational and environmental medicine, 71*(4), 295–301. https://doi.org/10.1136/oemed-2013-101591

van Solinge, H. (2007) Health change in retirement: a longitudinal study among older workers in the Netherlands. Research on Aging, 29(3), 225–256. https://doi.org/10.1177/0164027506298223

van Solinge, H., & Henkens, K. (2007). Involuntary retirement: The role of restrictive circumstances, timing, and social embeddedness. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences, 62*(5), S295–S303. https://doi.org/10.1093/geronb/62.5.S295

van Oorschot, W., & Jensen, P. H. (2009). Early retirement differences between Denmark and The Netherlands. *Journal of Aging Studies, 23*(4), 267–278.

Van Ours, J C (2022). How retirement affects mental health, cognitive skills and mortality; An overview of recent empirical evidence. *De Economist, 170*, 375–400 https://doi.org/10.1007/s10645-022-09410-y

Walker, A., & Maltby, T. (2012). Active ageing: A strategic policy solution to demographic ageing in the European Union. *International Journal of Social Welfare*, 21(s1), s117–s130. https://doi.org/10.1111/j.1468-2397.2012.00871.x

Westerlund, H., Kivimäki, M., Singh-Manoux, A., Melchior, M., Ferrie, J.E., Pentti, J., et al. (2009). Self-rated health before and after retirement in France (GAZEL): A cohortstudy. *Lancet, 374,* 1889–1896.

Funded by the European Union

Appendix 1. Papers reviewing differences in health outcomes depending on heterogeneity of older people (all focused on retirement)

Paper	Health outcome	Groups	Results
Schaap et al. 2018	General health	High vs low socioeconomic groups	Of 4: 1- in favour of high SES 1 - favour of low SES 2 – no difference
	Physical health		Of 8: 3 - in favour of high SES 0 - favour of low SES 5 - no difference
	Mental health		Of 8: 5 - in favour of high SES 0 - favour of low SES 3 - no difference
	Health behavior		Of 6: 3 - in favour of high SES 0 - favour of low SES 3 - no difference
	Conclusion: The **positive effects of exit from work on health are mainly present in higher socioeconomic groups**		
Van der Heide et al.2013	Perceived health	Blue-collar vs white-collar workers	Of 3 with sufficient data: 3 – no difference
	Mental health		Insufficient information
	Physical health		Of 2 with sufficient data: 2 - no difference
	Conclusion: **Few studies examined the difference between blue- and white-collar workers.** Although **no clear differences between these groups were found** regarding the health effect of retirement, some studies demonstrated associations with certain job characteristics (e.g., in 1 study a poor work environment and high job demands, both physical and psychological, were associated with greater benefit from retirement in terms of improved self-rated health after retirement; another study found that a decline in health was only present among those in the highest level of the civil service).		
Garrouste & Perdrix 2021	Conclusion: The literature highlights **the existence of heterogeneous effects, mainly according to occupation** and gender. The effects are rarely significant for women, and **retirement would be beneficial for physical and cognitive health of blue-collar workers and those less educated**. However, there are still few studies focusing on heterogeneity by education and working group, and more research on this question would be necessary to build more conclusive statements.		
Filomena & Picchio 2023	Conclusion: **Health effect of retirement is independent** of the previous type of occupation. … it should be taken into account that the number of study distinguishing between blue- and white-collar workers is fairly low		
Ardito & Fleischmann (2023)	Conclusion: The results regarding the health effect of retirement clearly seem **to point to a socio-economic gradient**. Overall retirement was found to exert **positive effects on various health outcomes for those workers who were exposed to more physically and psychologically demanding jobs** while null or even negative effects were found among workers exposed to high quality jobs, in particular on cognitive health outcomes.		

Funded by the European Union

Appendix 2. Effect on self-reported health of retirement and Extended working life

Retirement		Extended working life	
Good for health or neutral	Bad for health	Good for health or neutral	Bad for health
Garrouste& Perdrix p.841: "Retirement leads to better self-reported health…"	Garrouste & Perdrix p.841: Later retirement …has a negative or non-significant impact on self-reported health."	Baxter – no conclusions concretely regarding SRH: Seven studies measured overall health effects (described as self-assessed health, self-rated health status, somatic health, or general health) using self-reported questionnaires. BUT regarding overall health effects „By volume there are greater indications of positive rather than neutral or negative effects of extended working life on health (Fig. 2)."	
Nishimura et al. (2018): „We find that the effects of retirement on self-report of health, depression, and ADL are positive in many of these [for SRH in USA, England, France, Germany BUT South Korea] countries.		H.S. Eyjólfsdóttira et al.(2019)for Sweden:„Using longitudinal, nationally representative Swedish data and PSM, we found no significant average effects of working to age 66 or above on mortality, the ability to climb stairs without difficulty, self-rated health, ADL limitations,mus-culoske-letal pain an average of 12 years after retirement	
Van der Heide: p.8:„. Meta-analyses suggest that retirement has no univocal effect on perceived general health and physical health (i.e. chronic illnesses, serious health problems), since the confidence intervals around the mean difference included both positive and negative values. Best evidence synthesis also indicated conflicting evidence for retirement having an effect on perceived general health and physical health and strong evidence for retirement having a beneficial effect on mental health (i.e. depression, distress and well-being).			
Bassanini and Caroli (2015): p.21 „Overall, most of the evidence regarding the health effects of retirement rather goes in the direction of a positive impact both on phy-sical and mental dimensions of health."[9] So that retirement is also found to improve self-assessed health			

[9] P.21 also" It improves self-assessed health and the ability to perform activities of daily life, it raises standard measures of physical health stocks and reduces mortality and inpatient care. It is also found **to reduce the probability of depression**. The only pervasive exception has to do with cognitive abilities which seem to decrease following retirement. Overall, these findings suggest that, at the extensive margin too, not working could be good for health or, alternatively, that work can be a threat to health."

Funded by the European Union

Appendix 3. Effect on depression of retirement and Extended working life

Retirement		Extended working life	
Good for health or neutral	Bad for health	Good for health or neutral	Bad for health
Odone et al. 2021 Results of quantitative meta-analysis[10]: retirement or transition to retirement reduce by nearly 20% the risk of depression or depressive symptoms; such estimates remain consistent when limiting the analysis to longitudinal and high-quality studies. NB! the considerable heterogeneity among the included studies[11].	Li et al. 2021: The meta-analysis results [of 25 longitudinal studies] showed that retirement was associated with more depressive symptoms (d = 0.044, 95% confidence interval (CI): 0.008, 0.080).	Maimaris: general conclusion for MH:p.542 „no studies showed a significant negative effect of working beyond retirement age on mental health“ holds true for depression as well [checked based on the description of results by outcome on p.541[12]] , with all 3 longitudinal studies [all of them measured depression scores] of the total ten studies reporting that post-retirement employment has a statistically significant positive effect on mental health outcomes.“	
Garrouste & Perdrix 2022: Studies on the causal impact of retirement on depression are consistent: all studies show either that retirement causes significantly less depression or that there is a non-significant effect of retirement on depression		Baxter 2021: [Based on checking, whether „mental health outcome“ reported in review meant concretely depression; results for depression turned to be:] The volume and direction of evidence for depression outcome was mixed, with one study finding a positive effect, two a neutral effect, and one an adverse effect for some workers . [I would suggest, that just as in case of „mental health outcome“, reviewers would conclude based on these results, that they „indicated neutral or positive effects for most workers“	
Van der Heide: p.10 „Strong evidence was found for retirement having a beneficial effect on mental health“ –	Sahlgren- 2013:p.7 „Retirement increases probability of suffering from		

[10] Based on Pooled data from 41 original studies and more than half a million subjects

[11] The reasons behind the high level of heterogeneity among the included studies are to be explored in light of, on one side, the wide variety of studies' designs, settings and populations, definitions and methodological quality and, on the other side, of the complex, multi-determinant and multi-mediator relationship between the process of retirement and mental health and wellbeing (Pesaran et al., 1999; Rabe-Hesketh & Skrondal, 2008; Behncke, 2012; Oksanen & Virtanen, 2012; Insler, 2014; Eibich, 2015).

[12] So that among 10 studies, for depression lower depression scores=benefit were reported as non-significant in 2 cross-sec studies, stat significance was not reported in 1 cross-sect, 1 cross-sect study reports neither positive nor negative effect

Funded by the European Union

according to text on p.5, among Twelve studies reported on the mental health effects of retirement, 3 reported results on depressive symptoms and 1 on antidepressant use. All 4 of them indicated that retirement is beneficial.	clinical depression by about 40 per cent“		
Bassanini and Caroli (2015): p.21 „Overall, most of the evidence regarding the health effects of retirement rather goes in the direction of a positive impact both on physical and mental dimensions of health.“[13] So that retirement is also found to reduce the probability of depression			
Nishimura et al. (2018): when they fix their analysis method in all 4 countries (for which they had data to analyse: USA, England, Denmark, Korea) effect of retirement was positive		Pilipiec et al. (2021): p.294: the group of articles that examined the outcomes of working beyond the retirement age reported both a positive and negative outcome for mental health[14]. „Empirical evidence on the effects of an increase of the retirement age on the health and wellbeing of older workers remains scarce and inconclusive. A major limitation is that studies often operationalize health and well-being differently. Each study investigated one or more aspects of health and well-being, instead of the entire concept. Indeed, this raises the question how these entire concepts should be measured. Consequently, some aspects of health and well-being may be affected differently by an increase of the retirement age, which may explain these different effects.“	

[13] P.21 also “It improves self-assessed health and the ability to perform activities of daily life, it raises standard measures of physical health stocks and reduces mortality and inpatient care. It is also found **to reduce the probability of depression**. The only pervasive exception has to do with cognitive abilities which seem to decrease following retirement. Overall, these findings suggest that, at the extensive margin too, not working could be good for health or, alternatively, that work can be a threat to health.“

[14] These differences may be explained by selection bias in the descriptive studies. Specifically, workers may leave the workforce prior to retirement due to decreased health. Consequently, predominantly healthier workers remain active in the labor force.

Funded by the European Union

Appendix 4. Health trajectories across the work exit

Authors	Aims	Time horizon	Trajectories	Measure of health	Heterogeneity	Country/context
Van der Noordt et al. 2023	To examine health trajectories of Dutch older workers across their exit from the workforce in the 1990s, 2000s, and 2010s, testing the hypothesis that pre-post-exit health trajectories of workers with favourable and unfavourable working conditions increasingly diverged over time due to policy measures to extend working life.	Later-life (50+) work exit	Changes in health pre-post exit from the workforce	Self-rated health, physical limitations	Working conditions, historical periods	Netherlands
Stenholm et al. 2019	To identify trajectories of self-rated health over retirement transition; to examine which preretirement factors predicted membership to each trajectory.	Up to 10 years before and up to 10 years after retirement	Sustained good health; From good to suboptimal health; From suboptimal to good health; Sustained suboptimal health	Self-rated health	Gender, occupational status, work-related stress factors	Finland
Westerlund et al. 2009	To determine how people's perceived health is affected when they retire from work.	from the 7th year preceding retirement to the 7th after retirement	Changes in health pre-post exit from the workforce	Self-rated health	Gender, occupational grade, psychological and physical job demands, and job satisfaction	France

Funded by the European Union

Appendix 5. Employment trajectories and health

Authors	Aims	Time horizon	Trajectories	Measure of health	Heterogeneity	Country/context
McDonough et al. 2017	To examine the relationship between long-term labour market involvement in later life and self-rated health of men and women	Later-life	Full-time throughout (52-69) Part-time throughout (52-69) Full-time,part-time 65 Full-time,part-time 62 Full-time,exit 65 Full-time,part-time 57,exit 65 Part-time, exit 65 Full-time,exit 62 Part-time, exit 62 Full-time,exit 57 Part-time, exit 57 Non-employed throughout Other	Self-rated health	Gender	USA
Madero-Cabib et al. 2020	to assess the labor market experiences of older adults in the years leading up to and beyond the full pension age (FPA) and their association with health in diverse welfare state contexts	Later-life	Early retirement Conventional retirement Predominantly part-time Not in the labor market Partial retirement	(Poor) Self-rated health, chronic conditions	Welfare regimes	Corporatist (Austria, Belgium, France, and Germany); liberal, (Chile and the United States); liberalcorporatist (England - the biggest country in the United Kingdom- and Switzerland); Southern (Italy and Spain); and social-democratic (Denmark and Sweden)
Cabib et al. 2022	-to explore how diverse employment trajectories across adulthood are related to older people's mental health in Chile; -to analyze these associations before and after the onset of the COVID-19 pandemic	Adulthood Employment trajectories, later-life mental health	Conventional work life cycle Out of the LF Full-time self-employed not contributing into social security Wage-earners not contributing Full-time self-employed contributing Part-time self-employed not contributing Part-time wage-earners contributing	Depression	Before and after COVID-19 pandemic	**Chile** as developing country where during their lives, many older individuals in the 20th century have faced inadequate welfare state provisions, economic and pension systems with intense fiscal pressures, weak public healthcare services, and, importantly, large informal sectors in the labor market that prevent individuals from having access to benefits such as unemployment insurance, better social health insurance, and higher pensions in old age

Funded by the European Union

Appendix 6. Employment and health trajectories

Authors	Aims	Time horizon	Trajectories	Measure of health	Heterogeneity	Country/context
Baumann al 2022	-to examine simultaneous employment and health trajectories over 11 years in 12 countries from Europe and the Americas, -study how these trajectories differ by welfare state regime and level of old-age pension redistribution	11 years (from 2004)	-early/on-time retirement in good health; -early/on-time retirement in intermediate health; -early/on-time retirement in poor health; -early death; partial retirement in good health; partial retirement in intermediate health; late retirement in poor health; out of the labot force in heterogeneous health	(Poor) Self-rated health, chronic conditions	Welfare regimes, Old-age pensions redistribution	Corporatist (Austria, Belgium, France, and Germany); liberal, (Chile and the United States); liberalcorporatist (England - the biggest country in the United Kingdom- and Switzerland); Southern (Italy and Spain); and social-democratic (Denmark and Sweden)
Madero-Cabib 2022	to examine simultaneous trajectories in the employment and depressive symptom domains among two age groups of Chileans before and after the standard retirement age	2016, 2017, 2018, 2019	56-65: Permanent employment, no depression; Permanent employment, mild depression; Permanent retirement, no depression; Permanent retirement, intermittent depression; Permanent inactivity, no depression; Permanent inactivity, intermittent depression; 66-75: Permanent employment, no depression; Permanent employment, mild depression; In/out employment, mild-no depression; Permanent retirement, no depression; Permanent retirement, mild depression; Permanent retirement, increasing depression; Permanent retirement, decreasing depression;	Depression	Age groups (56-65; 66-75)	Chile

Funded by the European Union

			Permanent inactivity, intermittent depression			
Di Gessa et al. 2020	To assess how lifetime labour market experiences are associated with health trajectories over a 10-year period among men and women who are at or beyond the SPA	Lifetime employment histories up to state pension age (64 for men and 59 for women)	**Men:** Continuous work mostly FT up to SPA Weak labour market attachment Mostly non-employed throughout Full-time very early exit (at about age 49) Full-time early exit (at about age 60) Late start at about age 23, early exit (at about 60) **Women**: Continuous work FT or PT up to SPA Mostly part-time throughout to SPA Mostly full-time throughout to SPA Weak labour market attachment Mostly non-employed throughout/family carer Early exit (at about age 48) Long Break (about ages 26–41) to PT up to SPA Medium Break (about 26–34) to FT up to SPA Short Break (about 26–30)	Depression, somatic health	Gender	England

Funded by the European Union