



Late Work in Sweden: Exit Pathways Express Unequal Exclusion Risks¹

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ABSTRACT

Based on Swedish National Registry Data, this paper investigates the social structure of exclusion risks in late working life in Sweden by analyzing exit from working life, employment breaks, and late employment trajectories according to gender and education. Individuals born in 1950 ($n = 107,830$) are followed between the years 2010 and 2018. Results show that women with low education exit working life earlier and have a higher risk of employment breaks due to reduced working ability, while men with low education have a higher risk of employment breaks due to unemployment. Men in general and people with high education have a higher probability of moving to self-employment in late working life. We conclude that research and social policies require an understanding of multifarious late work trajectories to unearth the inequality of exclusion risks in the late phases of working life and the potential for interventions towards equal and inclusive prolongation.

KEYWORDS

Gender / inequality / late working life / older workers / sociodemographic differences / Sweden

Introduction

Older workers participation in the labor market has a central role for the sustainability of pension systems, the supply of qualified labor (Foster & Walker 2015), as well as for explaining inequality and exclusion in later life (Myck et al. 2017). Therefore, participation in late working life and retirement pathways have been well studied for many years (Czaja 2019; Nilsson 2016; Wang & Shultz 2010). However, there are still substantial knowledge gaps about late working life participation, exit patterns, and how these differ by age, gender, and education, as late working lives have proven to be increasingly complex and difficult to comprehend.

Although working life exit is often explained by retirement processes and receipt of pensions, there are many alternative pathways for exiting from working life, such as

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through sickness and disability benefits (Boeri & Ours 2008); involuntary exit due to unemployment; or difficulties in finding alternative jobs (Solem et al. 2016; Wanberg et al. 2016). Moreover, receipt of pension does not always correspond to exit from working life. For example, König et al. (2022) shows that large proportions of individuals in Sweden continue to work while receiving some sort of pension.

Investigating different types of exits is important for understanding the potential disadvantages that certain groups experience in working life. Moreover, it is essential for implementing interventions towards its equal and inclusive prolongation, in particular after policy changes in working life, such as increases in retirement age, which might lead to exclusion and disadvantages for some groups (Kamasheva et al. 2013).

Nordic countries are successful in terms of high and rising participation rates for older workers, early retirement postponement, and small participation differences between men and women (Halvorsen 2021). These are due to pension reforms undergone since the 1990s, a universal welfare state regime and active and inclusive labor market policies (Aidukaite et al. 2022; Halvorsen 2021). Increased retirement age has recently been linked with longer life expectancy, prolonging working life (Von Nordheim & Kvist 2022). However, a postponed retirement or receipt of pension does not necessarily prolong working life for all social groups when considering alternative exit pathways and precarious work with employment discontinuities.

Stricter eligibility for disability and sickness benefits is another reform recently introduced in the Nordic countries (Hemmings & Prinz 2020; Jensen et al. 2019; Mittag et al. 2018). Palme and Laun (2018) argue that the rise of participation among older workers in Sweden coincides with reforms for more stringent eligibility rules in disability insurance rather than pension reforms. On the other hand, Nilsson et al. (2016) show that while stricter disability rules decreased receipts of disability benefits, it increased receipts of early pensions. Even with stricter eligibility for disability and unemployment benefit receipts, vulnerable groups are more likely to exit working life or have systematic employment discontinuities through disability and unemployment due to various degrees of health and risk of unemployment associated with life course and occupations (Jensen et al. 2019; Kadefors et al. 2019). Therefore, observing various exit types and employment discontinuities, and distinguishing between exit, discontinuity and work with pension receipts are important to evaluate the degree of inequality and exclusion in paid work late in working life.

It is the aim of this paper to contribute to the understanding of diversity and exclusion in late working life. It describes levels and trajectories of participation in paid work and examines non-work and labor market exit types, presenting analyses on the differences in employment type trajectories between genders and educational levels. The paper demonstrates the relevance of a differential analytical approach to inequality- and exclusion-sensitive research on late-in-life work and delivers needed groundwork for analyses on diversity in exclusion risks by answering three specific research questions:

- How do types of employment, non-employment, and employment trajectories in late working life vary by gender and education?
- How do risks, timing, and types of employment breaks vary by gender and education?
- How do risks, timing, and types of exit vary by gender and education?

To address these questions, we analyzed all individuals born in 1950 who were registered in Sweden during the period 2010–2018, which allows for a detailed assessment of late working life trajectories based on unselected longitudinal data.

Late working life

Late working life is a life phase involving various risks and opportunities. These risks and opportunities are either specific to late working life such as, for example, age discrimination (Sargeant 2016; Solem 2016) or social security rights (Duncan 2017), or similar to those in other phases of working life but with different mechanisms or heterogeneous outcomes, for example, low qualification (Brunello & Wruuck 2019), accumulated experience and wealth (Bruce et al. 2000), social security, or pension rights. Further, the same or similar working life event or status can be both voluntary and involuntary and may constitute a risk or an opportunity depending on the context. For example, exit from the labor market, reducing working time or changing employment type in late working life might be easier due to the accumulated wealth or pension benefits (Bruce et al. 2000), while the same factors might be the outcomes from age discrimination or limited job opportunities (Charni 2021).

In addition to risks and opportunities in late working life, the diverse characteristics of individuals might lead to heterogeneous working life trajectories, especially in combination with increasingly flexible retirement arrangements (Cahill et al. 2015). These differences in pathways are not only caused by individual characteristics and life events, such as unemployment or health problems (Chen 2019), but they are also the result of socio-structural contexts that impact the unequal accumulation of (dis)advantages (Hoven et al. 2018; Von Bonsdorff et al. 2009).

There are a variety of possible pathways in late working life described by the intensity of work, employment types, occupations, sectors, employment breaks, and, finally, exits from working life. This paper focuses on the distribution of complex employment trajectories until exit from work, including types, timing, and breaks.

Employment type

It is important to observe changes in employment type (wage- or self-employed) in late working life, as these changes could mirror effects of labor market structures, work environments, and motivations. Steps into self-employment, for example, could be explained by desired changes in psycho-social work environments and autonomy, discrimination in the labor market or earning prospects (Taylor 2004). However, prior job characteristics and wealth or liquidity constraints can affect the opportunities of individuals to move into self-employment (Zissimopoulos & Karoly 2009).

Employment discontinuities

Employment discontinuities are of specific importance in late working life, as reemployment chances are poorer than in earlier life phases (Wanberg et al. 2016), and



discontinuities potentially lead to exits from working life before, at, or after the onset of retirement pension receipt. Older individuals, who experience discontinuity, are more likely to be long-term unemployed compared to younger workers and end up exiting working life (Ojala et al. 2018). Discontinuity can be due to job loss, sickness, disability, informal care responsibilities, or even intended career changes. It may, for example, lead to new employment, temporary unemployment phases before new or re-employment, alternative activities such as self-employment, household or voluntary work, and even an exit from work, directly or indirectly related to the receipt of a retirement pension (Katz & Krueger 2017; Sullivan & Al Ariss 2019). However, conceptualizing the employment discontinuity that concludes with the exit from working life only as a part of the retirement process, and not as a part of late working life activity, leads to an underestimation of late working life inhomogeneity, plurality, and, finally, inequality.

Exit from working life

Retirement and exit from work are prominent topics in research on late working life, and these dominate collective knowledge. While retirement is marked by the receipt of a retirement pension, exit from work is indicated by the end of gainful activity in the work life course. From a sociological and gerontological perspective, they both constitute significant and critical, but often not simultaneous, events in the individual's life course with consequences for later life outcomes (Kuitto et al. 2021). From an economic perspective, retirement and exit from work, as well as their forms and timing, are of importance for societies considering economic productivity and welfare systems (Foster & Walker 2015). It is especially exit timing that depends on a variety of individual and structural factors, including life histories and decision making, labor market conditions and employers' decisions, as well as retirement systems, where institutional barriers can both delay and accelerate exits and transitions into retirement (Von Bonsdorff et al. 2009). Statutory pension ages and even age borders for mandatory retirement are the common examples (Rabaté 2019). With the increasing formal flexibility in pension systems, working decisions as well as exit and retirement decisions have become more individualized over recent decades (OECD 2017). However, pension systems and statutory retirement ages (or age ranges as in Sweden) still have a strong impact on age norms and individual decision making (Berglund et al. 2017). Income continuity is one of the most important incentives for work, and the level as well as eligibility for pension impact that incentive (Duval 2003). On the other hand, individuals can use alternative pathways to exit depending on the social security systems and the availability of further resources. For example, an increase in statutory pension ages not only leads to later pension onsets, but it also tends to increase the use of disability and sickness benefits (Boeri & Ours 2008). Moreover, inability to find a job in late working life can lead to a rise in the usage of unemployment benefits as the statutory pension age is increasing. Therefore, pension systems play a central role in work and exit decision making.

Due to the key role of pension systems, late working life pathways are often discussed in terms of retirement status or transitions. However, since the present paper is on inclusion/exclusion and the labor market attachment, we focus on working life activity status and attachment to the labor market independent of retirement status, and by that, placing work activities centrally.

Pension systems are a part of the structural condition factors that affect working life activities and participation. There are further features that also affect exit behavior, such as psycho-social work environments, employers, labor markets, individual resources, partners and social networks as well as lifestyles and alternative opportunities, which may further expand the gap between exit from work and retirement pension receipt (van Erp et al. 2014); (OECD 2017).

Late working life in Sweden

Sweden has one of the highest labor force participation rates of all OECD countries among male and female older workers, with a labor force participation rate of 70% (women) and 77% (men) in the age group of 60–64 as of 2019. However, Sweden's ranking is lower for the age group 65–69 compared with age group 60–64, with 21% for women and 30% for men (OECD 2021b).

As in many other OECD countries, participation rates among older people have been increasing in Sweden since the mid-1990s (OECD 2021a), even though the increase over time was lower in Sweden than the OECD average. Sweden's higher participation rate is often explained by active labor market policies and incentives provided to keep people working (Jensen 2021; McAllister et al. 2019). High participation rates in Sweden are explained by pension reforms in the 1990s (Qi et al. 2019), increased stringency in disability insurance programs, and a higher composition of higher educated and healthier groups (Laun & Palme 2020). However, it looks as if participation rates have reached a kind of ceiling, although there is still room for improvement in increasing participation and further upsurges would require efforts such as shifts in pension systems, improvements in work conditions, and investments in lifelong learning at the state, branch, and employer levels (Halvorsen 2021; Laun & Palme 2019).

Social insurance and financial security for all inhabitants throughout the whole life course as well as social equity are overall goals for the Swedish welfare state (Försäkringskassan 2019) and key issues for Swedish economic policies (Palme & Svensson 1999). However, there persist inequalities among different gender, age, education, ethnic, occupational, and sectoral groups (Kadefors et al. 2019). Women are more likely to be in precarious work compared with men (Rasmussen et al. 2019). Moreover, the sectoral segregation between men and women contributes to heterogeneous employment between men and women (Bettio et al. 2009). Moreover, lower educated and blue-collar occupation groups exit earlier (Kadefors et al. 2018).

In addition to retirement pensions, sickness, disability, and unemployment benefits are the main income sources for a large share of individuals who leave working life in Sweden (Palme & Svensson 2004). Hence, social insurance benefits are good instruments to understand mechanisms in late working life. Accordingly, in this paper, unemployment benefit, sickness compensation, and pensions are investigated.

Unemployment compensation

In Sweden, there are two different types of systems for unemployment benefit: basic compensation and income loss insurance. Everyone working in Sweden is covered by



the basic unemployment compensation system, which provides benefits on a minimum income level to those who are not eligible for any other income compensation. To receive unemployment benefits from the more generous income loss insurance, individuals need to be a member of one of the unemployment funds, which are organized by the Swedish trade unions. Individuals are covered by the Swedish unemployment compensation system until one month before age 65 (Riksdag 2009).

Everyone working in Sweden is covered by unemployment insurance. However, unemployment insurance for those who are not a member of a voluntary unemployment fund (A-kassa) is lower. Eligibility criteria for unemployment insurance is either to have been working 80 hours per month at least 6 months, to have been working 480 hours during 6 consecutive months, or have been working at least 50 hours during each month in the past year. This applies for those who register at the Swedish Public Employment Service (Arbetsförmedlingen) and are ready to accept a job. Therefore, this excludes people on a sick leave or a parental leave (European Commission 2022).

Sickness compensation

Individuals living or working in Sweden are insured for inability to continue to work due to illness, injury, or disability. Sickness compensation requires permanent reduction in the ability to work with no possibility for rehabilitation. Therefore, it differs from temporary sick leave benefits. Sickness compensation is often referred to as disability pension. The criteria for those who are older than 30 years are being unable to work at any job or having a diminished working capacity of at least one-fourth. Individuals can receive 25%, 50%, 75%, or 100% compensation until one month before the age of 65. Försäkringskassan makes the assessment whether individuals meet the criteria for the compensation depending on the doctor's statement (Försäkringskassan 2021). Försäkringskassan renews the assessment every three years. Moreover, individuals who want to work can suspend their compensation without application (Hemmings & Prinz 2020).

The pension system

The Swedish pension system is based on three pillars. These are the national public pension system, the system of occupational pensions and private savings (Pensionsmyndigheten 2020b). The national public pension system has again three main elements: Income-related, premium, and guarantee pension. While income-related and premium pensions are based on your previous contributions from earning, guarantee pension are the minimum pension for those with low pension entitlements (Barr 2013). Occupational pensions are handled by private companies depending on the employer agreement, while private pensions consist of personal savings. Therefore, pension receipts not only vary by income throughout the life course, but also by the employer agreements, depending on the sector, as well as individual savings. Moreover, the age of the first pension receipt differs in the pillars, which contributes to the diversity in retirement timing. For national public pensions, those born in 1958 or earlier can receive the income and premium pensions at age 61 or later. In 2020, the entry age was increased to age 62 for the birth cohorts 1959 and later. Nevertheless, it is still possible to receive retirement

pensions before age 61 from occupational and private pensions by individual agreement with the companies. Access to a guaranteed pension is possible from age 65 onwards (Pensionsmyndigheten 2021), and there is no upper age limit for initial pension receipt in Sweden. However, employment protection is only available until age 67.

Data and method

Data and study population

The analyses in this paper apply Swedish registry data from several national registers, such as the Swedish register of the total population, the Swedish register of education, the job registers as well as the health insurance and labor market studies, compiled into one database by Statistics Sweden (SCB) on behalf of Linköping University. The analyses include all individuals born in 1950 who were registered in Sweden during the years 2010–2018 (Table 1). Cases with missing information on education ($n = 607$) have been excluded from the analyses, and the final study population consists of 107,830 individuals.

2018 is the most recent year of the study of the data, which is the underlying reason of the selection of this year. To be able to follow individuals from one year before the age of eligibility of public pension to the one year after the end of employment protection, we selected the 1950 cohort. In other words, 1950 is the most recent cohort that we are able to follow between the ages 60 and 68 years.

Data structure and indicators

Individuals' employment information is based on the registry of employers' income reports (kontrolluppgift) within the calendar year. The data includes information about which months an employee has income reports within a calendar year. However, for self-employed, the employment information can only be identified yearly. Individuals who were registered at least one month by an employer or have a self-employment registry within a calendar year are classified as employed. Using information about the type of income, three employment types are identified: Individuals with wage records but no self-employment records are classified as wage-employed; individuals with both wage and self-employment records are classified as wage and self-employed; and individuals who have only self-employment records are categorized as self-employed. A break is defined as having no income reports at a given time followed by employment at a later time.

Different sources of individuals' income are kept during the calendar year. Unemployment benefit, sickness compensation, and pensions are used in this study. Pensions include the sum of public, occupational, and private pensions.

Education groups are defined based on the education variable in Swedish registry data. Seven categories of this variable are merged into three categories. These seven categories are as follows: primary education including pre-secondary education shorter than 9 years; pre-secondary education 9 years; secondary education including high school education maximum 2-years; high school education 3 years; higher education including post-secondary education shorter than 3 years; post-secondary education 3 years or longer (excluding postgraduate education); and postgraduate education.

Table 1 The number of individuals born in 1950 who were registered in Sweden between 2010 and 2018, by gender and education (% in parentheses)

	Men	Women	Total
Primary educated	13,441 (12)	10,245 (10)	23,686 (22)
Secondary educated	23,146 (21)	25,263 (23)	48,409 (45)
Higher educated	16,638 (15)	19,097 (18)	35,735 (33)
Total	53,225 (49)	54,605 (51)	107,830 (100)

Note: The table is generated using Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018. The number of observations is 107,830.

Methods

First, we describe the proportion of individuals in different employment statuses/types with the share of unemployment benefits, sickness compensation, and pension receipts by age, gender, and education.

Second, we estimate and present predicted probabilities of exit from working life in different age groups by gender and education groups using multinomial probit models. The exit categories in different age groups are as follows:

- Less than 61: Individuals who exit before the calendar year they turn age 61.
- 61–64: Individuals who exit in the calendar year they turn between ages 61 and 64.
- 65: Individuals who exit in the calendar year they turn age 65.
- 66–67: Individuals who exit in the calendar year they turn between ages 66 and 67
- 68+: Individuals who exit after the calendar year they turn age 67.

Exit is defined as not having any income statement until the end of 2018, and the exit time is the last calendar year that a person has an income statement or self-employment.

Third, we demonstrate the marginal probability of different types of benefit receipt or pension receipt for those who exit between the ages 61 and 64 years by gender and education using a multinomial probit model.

The categories are as follows:

- Unemployment: Individuals who have received unemployment benefit in the calendar year they exit.
- Sickness comp.: Individuals who have not received unemployment benefit and received sickness compensation in the year they exit.
- Pension: Individuals who neither received unemployment benefit nor sickness compensation and receive their pension in the year they exit.
- None: Individuals have not received unemployment benefit, sickness compensation, and receive their pension in the year they exit.

Fourth, we present the marginal probability of experiencing employment breaks between the ages 61 and 64 years for those who exit at the age 65 or later by gender and education using a probit model. An employment break is defined as being unemployed at least

one month before the exit time during the calendar years the individuals turn between ages 61 and 64 years.

For those who experienced employment breaks, we calculated marginal probabilities of receiving unemployment benefit, sickness compensation as well as pension by gender and education using a multinomial probit model. The definitions of categories are as follows:

- Unemployment: individuals who have received unemployment benefit in the calendar year they have an employment break.
- Sickness comp.: individuals who have not received unemployment benefit and received sickness compensation in the year they have an employment break.
- Individuals who neither received unemployment benefit nor sickness compensation and receive their pension in the year they have an employment break.
- None: Individuals who have not received unemployment benefit, sickness compensation, and receive their pension in the year they have an employment break.

Finally, we present the marginal probabilities of having various employment type trajectories over 9 years (over the ages 60 and 68 years) for those who exit at the age 65 or later by gender and education using a multinomial probit model. These employment type trajectory categories are listed in Table 2.

Table 2 Employment-type trajectory categories

Name	Definition	Example sequences
1 W	Individuals employed only as wage-employed until they exit	WWWWWWWWWWW, WWWWWWWWNN
2 S	Individuals employed only as self-employed until they exit	SSSSSSSS, SSSSSSSN
3 B	Individuals employed as both wage and self-employed at the same time until they exit	BBBBBBBBB, BBBBBBNN
4 BS	Individuals both wage and self-employed in the beginning of the 9 years and then only self-employed before they exit.	BBBBBSSS, BBBBBSSN
5 BW	Individuals both wage and self-employed in the beginning of the 9 years and then only wage-employed before they exit.	BBBBBBBWW, BBBBBBWWN
6 WS	Individuals wage-employed in the beginning of the 9 years and then only self-employed before they exit.	WWWWWWWWWSS WWWWWWSSN
7 WB	Individuals wage-employed in the beginning of the 9 years and then both wage and self-employed before they exit.	WWWWWWWWWB WWWWWWWBBN
8 SW	Individuals who are self-employed in the beginning of the 9 years and then only wage-employed before they exit.	SSSSSSWWN, SSSSSSSW
9 SB	Individuals who are self-employed in the beginning of the 9 years and then both wage and self-employed before they exit.	SSSSSSBBB, SSSSSSBN
10 M	Individuals who are in both wage and self-employment after the age 61 across 9 years but not included in those patterns listed above.	WWSBBWBN, SWWBBWWSS

Notes: W represents wage-employed, S represents self-employed, B represents both wage and self-employed, and N represents not employed. The years in the sequences are as follows: 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018.

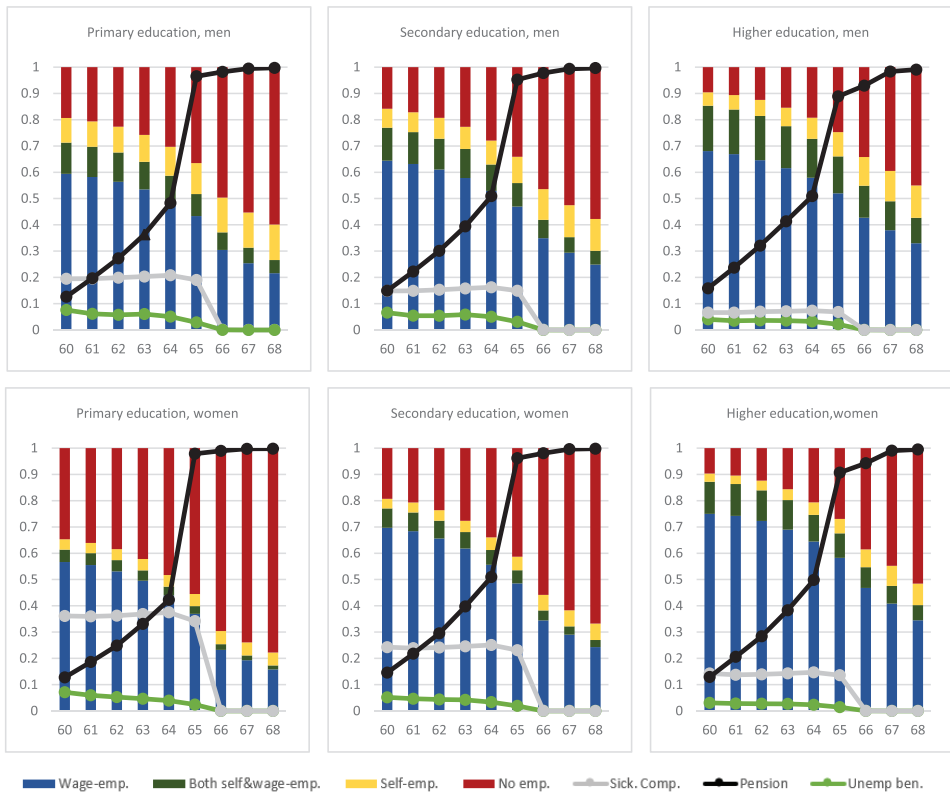


Results

The results show that participation in working life is higher among younger age groups, among men compared to women, and among people with a higher level of education (Figure 1). Participation in self-employment increases for older age groups, while participation in wage-employment or in both wage and self-employment decreases by age for all groups. Part of the participation increase in self-employment may come from those who work as both wage- and self-employed and exit from wage-employment, as shown later in Table 6. More men than women are self-employed, but educational differences in self-employment are less prominent. Gender differences in participation and type of participation are greater among people with a low level of education compared with people with a higher level of education.

Further, sickness compensation is more common among people with low education and among women, and in addition, the gender difference is less pronounced among

Figure 1 Proportion of individuals in different types of employment; shares of individuals with unemployment, sickness compensation and pension receipt by age, gender; education for the 1950 birth cohort



Note: The figure is generated using Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018. The number of observations is 107,830.



those with higher education. Few differences are found between the groups regarding unemployment benefits. At the age of 65, a sharp increase in the receipt of pensions could be observed, and this increase was higher for lower educated groups.¹

Similar to the employment rates in Figure 1, marginal probabilities of exit in different age groups show that a higher share of primary and secondary educated individuals exit earlier and gender differences in exit are smaller for higher educated people (Table 3). Marginal probability of exiting before age 61 is 0.32 for primary educated women. This is more than twice the average probability of exit before age 61, which is 0.15. Primary and secondary educated people have higher percentages of probabilities of exit in the categories before age 66. Higher educated men have the probability of 0.55, while higher educated women have the probability of 0.48 for exiting working life after 68. There is a 7-percentage point difference between higher educated men and women. However, there is an 18-percentage point difference in the probability of exit after 68 between primary educated men and women (men 0.40; women 0.22).

Table 3 Predicted probabilities of exit from working life in different age categories by gender and education

	-61	61-64	65	66-67	68+
Average probability	0.15	0.17	0.12	0.14	0.41
Men	0.12	0.16	0.11	0.15	0.46
Women	0.18	0.19	0.13	0.14	0.36
Primary educated	0.25	0.19	0.14	0.12	0.31
Secondary educated	0.16	0.19	0.13	0.14	0.38
Higher educated	0.08	0.14	0.10	0.16	0.52
Primary educated, men	0.17	0.16	0.13	0.13	0.40
Secondary educated, men	0.14	0.17	0.12	0.15	0.42
Higher educated, men	0.08	0.13	0.09	0.15	0.55
Primary educated, women	0.32	0.21	0.14	0.11	0.22
Secondary educated, women	0.18	0.21	0.14	0.14	0.33
Higher educated, women	0.08	0.16	0.11	0.16	0.48
Number of observations (for the outcome = 1)	16,070	18,669	13,337	15,522	44,232

Note: The probabilities are generated using a multinomial probit model (see Appendix table A1) based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018. The number of observations is 107,830.

We analyzed the benefit and pension receipt of individuals who exit between ages 61 and 64 years (Table 4). Receiving only a pension in the exit year is the most common exit path for all groups. However, men and women with high education have higher probability of having pension receipts as opposed to unemployment benefit or sickness compensation receipts compared to primary and secondary educated individuals. While men are more likely to receive unemployment benefit in the exit year, women are more

likely to have sickness compensation. A higher education level decreases the likelihood of receiving unemployment or sickness compensation for men, but for women, the probability of sickness compensation receipt does not differ much across education groups.

The probability of experiencing an employment break between ages 61 and 64 years is slightly higher for secondary educated men compared with other groups (Table 5). Women and higher educated individuals have a lower probability for an employment break. The probability of benefit and pension receipt during the employment break differs more across education and gender groups compared with the risk of experiencing a break. Similar to the benefit receipt in the exit year, women are more likely to receive sickness compensation receipt during the break, while men tend to have an unemployment benefit receipt or only pension. Higher education decreases the probability of receipt of both benefits for men and women.

Table 4 Predicted probabilities of receipt of unemployment, sickness compensation, pension, or none of them among those who exit between ages 61 and 64 years, by gender and education

	Unemployment	Sickness comp.	Pension	None
Average probability	0.13	0.14	0.62	0.11
Men	0.16	0.10	0.62	0.12
Women	0.11	0.17	0.62	0.10
Primary educated	0.17	0.15	0.56	0.11
Secondary educated	0.14	0.14	0.62	0.10
Higher educated	0.09	0.12	0.67	0.11
Primary educated, men	0.19	0.12	0.58	0.11
Secondary educated, men	0.17	0.10	0.61	0.11
Higher educated, men	0.11	0.07	0.68	0.13
Primary educated, women	0.16	0.18	0.55	0.11
Secondary educated, women	0.11	0.17	0.63	0.09
Higher educated, women	0.07	0.17	0.66	0.10
Number of observations (for the outcome = 1)	2,464	2,606	11,618	1,981

Note: The probabilities are generated using a multinomial probit model (see Appendix table A2) based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life between ages 61 and 64 years. The number of observations is 18,669.

Results from the employment type trajectories show that women are more likely to be only wage-employed and less likely to change employment type (Table 6). Although it is more common among people with low education to work as self-employed in late working life, moving to self-employment from wage employment (or a combination of wage and self-employment) is more common among men and higher educated people.

To sum up, the results show that participation in working life was lower among older age groups, people with lower education, and women compared with men. While participation in wage-employment decreased by age, participation in self-employment

increased, especially among men. Women and primary educated have a higher likelihood of exit, and gender differences are less pronounced among people with higher education. One-third of primary educated women have a risk of leaving working life before the public pension age of 61. This is followed by secondary educated women, with the probability of 0.18. These groups are important in terms of the inequality in participation and unlikely to be affected by further public pension age increase.

Table 5 Probabilities of having employment breaks and type of the employment break between the ages 61 and 64 years for those who exit at age 65 or later, by gender and education

	Probit model	Multinomial Probit			
	Breaks	Unemp.	Sick. Comp.	Pension	None
Average probability	0.21	0.21	0.14	0.49	0.16
Men	0.23	0.23	0.10	0.50	0.18
Women	0.19	0.19	0.19	0.48	0.14
Primary educated	0.23	0.26	0.18	0.38	0.18
Secondary educated	0.22	0.23	0.15	0.47	0.15
Higher educated	0.20	0.16	0.10	0.58	0.16
Primary educated, men	0.23	0.27	0.13	0.42	0.19
Secondary educated, men	0.24	0.25	0.11	0.47	0.17
Higher educated, men	0.21	0.17	0.07	0.59	0.17
Primary educated, women	0.22	0.24	0.24	0.34	0.18
Secondary educated, women	0.20	0.20	0.20	0.47	0.13
Higher educated, women	0.18	0.14	0.14	0.57	0.15
Number of observations (for the outcome = 1)	15,322	3,205	2,090	7,559	2,468

Note: Column 1: The probabilities are generated using a probit model (see Appendix table A3) based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life at the age 65 or later. The number of observations is 73,091. Columns 2–5: The probabilities are generated using a multinomial probit model (see Appendix table A4) based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life after the age 65 and experienced employment break between ages 61 and 64. The number of observations is 15,322.

Among those who exit between ages 61 and 64 years, men are more likely to have unemployment receipts, and women are more likely to have sickness compensation receipts. Higher educated men and women, on the other hand, are more likely to receive only their pension. This signals two mechanisms. First, men and women have different exit mechanisms from working life. Second, exit before age 65 seems to be more voluntary for those higher educated, while it can be due to more involuntary events such as being unable to gain reemployment or reduced working ability for primary educated.

Primary educated individuals are slightly more likely to experience employment breaks compared with their higher educated counterparts. While women are more likely



to have sickness compensation receipts during employment breaks, men are more likely to have unemployment benefit receipts. On the other hand, higher educated people are more likely to have only pension receipts during employment break. Therefore, different education and gender groups have different underlying mechanisms of experiencing employment breaks as in exit.

Higher educated compared with lower educated individuals, and men compared with women, have a higher likelihood of changing employment type in late working life, specifically moving to self-employment. The differences in the likelihood of moving to self-employment may constitute another form of inequality in late working life, as self-employed have more flexibilities and opportunities to remain in working life compared with wage-employed (Hoven et al. 2018; Nilsson 2012). The higher chances for moving to self-employment could be due to structural differences among gender and education groups such as differences in sectors, occupations as well as accumulated financial or human capital (Berggren & Olofsson 2021). Moving to self-employment can be involuntary or voluntary and be necessity or opportunity- driven, depending on different conditions or preferences (Velilla et al. 2018). Moreover, Grødem and Kitterød (2022) find that men in general are more likely to plan on bridge employment and worry on free time in Norway. This may also influence higher self-employment participation among men after the retirement age.

Table 6 Probabilities of having various employment type trajectories by gender and education among those who exit after the age at the age 65 or later

	1	2	3	4	5	6	7	8	9	10
Average probability	0.71	0.05	0.04	0.07	0.03	0.03	0.02	0.01	0.01	0.03
Men	0.65	0.07	0.05	0.09	0.03	0.03	0.02	0.01	0.01	0.04
Women	0.78	0.04	0.03	0.06	0.03	0.02	0.01	0.00	0.00	0.03
Primary educated	0.72	0.08	0.03	0.07	0.02	0.02	0.01	0.01	0.01	0.03
Secondary educated	0.73	0.06	0.03	0.07	0.03	0.03	0.01	0.01	0.01	0.03
Higher educated	0.68	0.03	0.05	0.07	0.04	0.03	0.03	0.01	0.01	0.04
Primary educated, men	0.65	0.10	0.04	0.09	0.03	0.02	0.01	0.01	0.01	0.03
Secondary educated, men	0.67	0.07	0.04	0.09	0.03	0.03	0.02	0.01	0.01	0.04
Higher educated, men	0.63	0.04	0.07	0.08	0.04	0.04	0.03	0.01	0.01	0.05
Primary educated, women	0.81	0.06	0.02	0.04	0.02	0.02	0.01	0.01	0.00	0.02
Secondary educated, women	0.79	0.04	0.02	0.05	0.03	0.02	0.01	0.00	0.00	0.02
Higher educated, women	0.74	0.03	0.04	0.06	0.04	0.03	0.02	0.00	0.00	0.03
Number of observations (for the outcome = 1)	51,766	3,967	2,975	5,299	2,325	2,017	1,289	510	504	2,439

Note: The probabilities are generated using a multinomial probit model (see Appendix table A5) based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and who exit working life at the age 65 or later. The number of observations is 73,091. The definition of categories as follows: 1. Only wage-employed; 2. Only self-employed; 3. Both wage and self-employed in all years; 4. Move from both to only self-employment; 5. Move from both to only wage-employed; 6. Move from wage-employed to self-employed ;7. Move from wage-employed to both; 8. Move from self-employed to wage-employed; 9. Move from self-employed to both wage and self-employed; 10. Mixes.

Conclusion

This paper analyzes diversity and exclusion in late working life. It examines non-work and labor market exit types and presents analyses on the differences in employment type trajectories between genders and educational levels. It does so from a differential perspective focusing on differences according to gender and qualification. We observe patterns that contribute to the discussion on possible reasons behind the exclusion risk of different social groups in late working life. The paper's findings are relevant for policies toward the equal and inclusive prolongation of working life in contemporary Sweden, with implications for the Nordic and European discussion on late working life. By this, we contribute to the understanding of different structures of attachment and exclusion among different age, gender, and educational groups in Sweden.

Results show that exclusion structures and conditions in late working life are complex and differ between social groups. Followed by primary educated older men, primary educated older women are the most excluded group, if exclusion were simply defined as non-participation in working life at a certain point in time. However, while primary educated men have a higher probability of unemployment in case of employment breaks and exit, the situation of primary educated women is characterized by the receipt of sickness compensation if they are not gainfully employed. Moreover, higher educated individuals and men tend to have only pension receipts in the employment break and exit and change employment type more in late working life compared with lower educated and women. This implies strong differences in the voluntary-unvoluntary structure of non-participation and the accumulation of economic inequalities across groups, although they show similar exclusion patterns in terms of participation in late work.

These results provide several implications for active aging policies toward the equal and inclusive prolongation of work in an aging society. On the one hand, participation in late working life among people with low education will not be increased significantly by plain changes in the pension system, such as increasing statutory pension ages. Instead, changes in the accessibility of sickness and unemployment benefits may decrease early exit more efficiently (Lammers et al. 2013). In fact, analyses show that more strict disability insurance rules coincide with a rise in labor force participation among older people in Sweden (Laun & Palme 2020). However, these types of policies bear the risk to have adverse effects and, for example, worsen the quality of life and chances for social participation among people who rely on social benefits (Qi et al. 2019). Moreover, late work inequality might itself increase if these people are unable to find a suitable job or forced into lower paid employments with problematic working conditions. As health conditions are one of the main drivers behind exit from the labor market and socio-economic inequalities in working life (McAllister et al. 2020), stricter rules for sickness compensation will widen the gap between social groups. Hence, a key implication of this study is that overall policies that impact different groups with similar participation patterns differently may deepen late work inequalities instead of contributing to an equal activation of older workers. Consequently, differential policies are needed that must take into account structural conditions on the demand side, such as work environment, training, or discrimination – conditions which are associated with age, gender, and education groups. For example, Nielsen and Midsundstad (2021) show that disability leave among older women is reduced after introducing workplace health-promotion interventions in Norway. Moreover, Midsundstad and Nielsen (2019) conclude that continued



formal education opportunities among older workers can contribute to extending working lives.

Having this said, we want to point to the strengths and limitations of this study in explaining employment patterns of different groups. One of the main assets of our approach is that it provides a detailed description of the employment patterns of different groups, including not only participation but also different employment type trajectories, exits, and employment break types in late working life. By this, it is possible to observe heterogenous trajectories and their connection to social structures. In addition, the dataset of this register-based study allows for unselected longitudinal analyses based on complex data. Nevertheless, we would like to mention some limitations of this study as well. The dataset does not contain information on non-standard employment such as part-time employment or fixed-term employment, which could lead to neglecting the most vulnerable work conditions and situations of people with lower working life attachment (Visser et al. 2018). Moreover, not considering part-time employment could lead to underestimating the participation gap across genders, as the high participation of women in Sweden compared with other countries is often explained by part-time employment (Wadensjö 2006), especially in the public sector.

In addition, there are limitations considering data structure: while we can access wage-employment information monthly, self-employment can be identified only yearly, which causes underestimation of employment breaks and the exit of self-employed individuals. Finally, register data analyses do not take the motives and specific reasons of individuals into account and thus can only target them through participation patterns.

This paper gives insights on inequality and exclusion in late working life by examining the diversity in non-work and exit types as well as employment-type trajectories among different gender and education groups. However, this paper does not capture earlier working life trajectories that lead to various non-work and exit types in late working life. For this, further studies can complement and extend our analysis capturing earlier working life trajectories during the life course. Moreover, this paper studies the 1950 birth cohort. As these patterns may differ for different cohorts, further studies should analyze whether these patterns apply also for younger cohorts.

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References

- Aidukaite, J., Hort, S. & Ainsaar, M. (2022). Current trends in social welfare policies toward the older people in the Baltic and Nordic countries: an explorative study, *Journal of Baltic Studies* 53(2): 147–167. doi: <https://doi.org/10.1080/01629778.2021.1998166>
- Barr, N. (2013). *The Pension System in Sweden*, Report: Ministry of Finance.



- Berggren, C. & Olofsson, A. (2021). A societal perspective on self-employment—Sweden as an example, *Studies in Higher Education* 46(7): 1436–1448. doi: <https://doi.org/10.1080/3075079.2019.1688285>
- Berglund, T., Seldén, D. & Halleröd, B. (2017). Factors affecting prolonged working life for the older workforce: the Swedish case, *Nordic Journal of Working Life Studies* 7(1): 19–36. doi: <https://doi.org/10.18291/njwls.v7i1.81396>
- Bettio, F., Verashchagina, A., Mairhuber, I., et al. (2009). *Gender segregation in the labour market: Root causes, implications and policy responses in the EU*: Publications Office of the European Union Luxembourg.
- Boeri, T. & Ours, J. v. (2008). *The Economics of Imperfect Labor Markets*, Princeton: Princeton University Press.
- Bruce, D., Holtz-Eakin, D. & Quinn, J. (2000). *Self-employment and labor market transitions at older ages*, Boston College Center for Retirement Research Working Paper 13: 1–30.
- Brunello, G. & Wruuck, P. (2019). Skill shortages and skill mismatch in Europe: A review of the literature, *IZA Discussion Papers No. 12346*. doi: <https://doi.org/10.2139/ssrn.3390340>
- Cahill, K. E., Giandrea, M. D. & Quinn, J. F. (2015). Retirement patterns and the macroeconomy, 1992–2010: The prevalence and determinants of bridge jobs, phased retirement, and reentry among three recent cohorts of older Americans, *The Gerontologist* 55(3): 384–403. doi: <https://doi.org/10.1093/geront/gnt146>
- Charni, K. (2021). Do employment opportunities decrease for older workers?, *Applied Economics*: 1–22. doi: <https://doi.org/10.1080/00036846.2021.1970711>
- Chen, W.-H. (2019). Health and transitions into nonemployment and early retirement among older workers in Canada, *Economics & Human Biology* 35: 193–206. doi: <https://doi.org/10.1016/j.ehb.2019.06.001>
- Czaja, S. J. (2019). *Setting the Stage: Workplace and Demographic Trends*. In: Czaja S. J., Sharit J. and James J. B. (eds) *Current and Emerging Trends in Aging and Work*. Switzerland: Springer Nature, pp. 3–10.
- Duncan, C. (2017). *Ageism, early exit, and the rationality of age-based discrimination*. Ageism in Work and Employment Routledge, pp.
- Duval, R. (2003). *The retirement effects of old-age pension and early retirement schemes in OECD countries*, OECD Economics Department Working Papers 370.
- Försäkringskassan (2019). *Social Insurance in Figures 2019*, Report.
- Försäkringskassan (2021). *Sickness compensation*. Available at: <https://www.forsakringskassan.se/english/sick/sick-for-one-year-or-longer/sickness-compensation>
- Foster, L. & Walker, A. (2015). Active and successful aging: A European policy perspective, *The Gerontologist* 55(1): 83–90. doi: <https://doi.org/10.1093/geront/gnu028>
- Grødem, A. S. & Kitterød, R. H. (2022). Retirement anticipation-gendered patterns in a gender-equal society? a study of senior workers in Norway, *Journal of Women & Aging* 34(3): 372–393. doi: <https://doi.org/10.1080/08952841.2021.1944753>
- Halvorsen, B. (2021). High and rising senior employment in the Nordic countries, *European Journal of Workplace Innovation* 6(2): 130–146. doi: <https://doi.org/10.46364/ejwi.v6i2.817>
- Hemmings, P. & Prinz, C. (2020). *Sickness and disability systems: comparing outcomes and policies in Norway with those in Sweden, the Netherlands and Switzerland*, OECD Economics Department Working Papers No. 1601. doi: <https://doi.org/10.1787/c768699b-en>
- Hoven, H., Dragano, N., Blane, D., et al. (2018). Early adversity and late life employment history—A sequence analysis based on SHARE, *Work, Aging and Retirement* 4(3): 238–250. doi: <https://doi.org/10.1093/workar/wax014>



- Jensen, N. K., Brønnum-Hansen, H., Andersen, I., et al. (2019). Too sick to work, too healthy to qualify: a cross-country analysis of the effect of changes to disability benefits, *Journal of Epidemiology and Community Health* 73(8): 717–722. doi: <https://doi.org/10.1136/jech-2019-212191>
- Jensen, P. H. (2021). On how different combinations of conditions produce different early exit/retirement outcomes: a qualitative (case-oriented) comparison of Denmark and Sweden, *Ageing & Society* 41(10): 2335–2355. doi: <https://doi.org/10.1017/S0144686X2000029X>
- Kadefors, R., Nilsson, K., Östergren, P.-O., et al. (2019). Social inequality in working life expectancy in Sweden, *Zeitschrift für Gerontologie und Geriatrie* 52(1): 52–61. doi: <https://doi.org/10.1007/s00391-018-01474-3>
- Kadefors, R., Nilsson, K., Rylander, L., et al. (2018). Occupation, gender and work-life exits: a Swedish population study, *Ageing & Society* 38(7): 1332–1349. doi: <https://doi.org/10.1017/S0144686X17000083>
- Kamasheva, A., Kolesnikova, J., Karasik, E., et al. (2013). Discrimination and Inequality in the Labor Market, *Procedia Economics and Finance* 5: 386–392. doi: [https://doi.org/10.1016/S2212-5671\(13\)00046-4](https://doi.org/10.1016/S2212-5671(13)00046-4)
- Katz, L. F. & Krueger, A. B. (2017). The role of unemployment in the rise in alternative work arrangements, *American Economic Review* 107(5): 388–392. doi: <https://doi.org/10.1257/aer.p20171092>
- König, S., Kelfve, S., Motel-Klingebiel, A., et al. (2022). Development of healthcare use across contemporary retirement pathways: results from a register based cohort study, *Scandinavian Journal of Public Health* 50(4): 440–447. doi: <https://doi.org/10.1177/1403494821998901>
- Kuitto, K., Kuivalainen, S. & Möhring, K. (2021). Inequalities in pensions and retirement from a life course perspective: An introduction, *Social Policy & Administration: SP&A* 55(3): 403–408. doi: <https://doi.org/10.1111/spol.12663>
- Lammers, M., Bloemen, H. & Hochguertel, S. (2013). Job search requirements for older unemployed: Transitions to employment, early retirement and disability benefits, *European Economic Review* 58: 31–57. doi: <https://doi.org/10.1016/j.eurocorev.2012.11.003>
- Laun, L. & Palme, M. (2019). Kan seniorer arbeta längre? (Can seniors work longer?). Delegationen för senior arbetskraft, Rapport.
- Laun, L. & Palme, M. (2020). The Recent Rise of Labor Force Participation of Older Workers in Sweden. In: Courtney C. C., Kevin M. and David A. W. (eds) *Social Security Programs and Retirement around the World: Working Longer*. University of Chicago Press, pp. 231–266.
- McAllister, A., Bentley, L., Brønnum-Hansen, H., et al. (2019). Inequalities in employment rates among older men and women in Canada, Denmark, Sweden and the UK, *BMC Public Health* 19(1): 1–11. doi: <https://doi.org/10.1186/s12889-019-6594-7>
- McAllister, A., Bodin, T., Brønnum-Hansen, H., et al. (2020). Inequalities in extending working lives beyond age 60 in Canada, Denmark, Sweden and England—By gender, level of education and health, *PLoS One* 15(8): e0234900. doi: <https://doi.org/10.1371/journal.pone.0234900>
- Midtsundstad, T. & Nielsen, R. A. (2019). Lifelong learning and the continued participation of older Norwegian adults in employment, *European Journal of Education* 54(1): 48–59. doi: <https://doi.org/10.1111/ejed.12322>
- Mittag, O., Kotkas, T., Reese, C., et al. (2018). Intervention policies and social security in case of reduced working capacity in the Netherlands, Finland and Germany: a comparative analysis, *International Journal of Public Health* 63(9): 1081–1088. doi: <https://doi.org/10.1007/s00038-018-1133-3>
- Myck, M., Ogg, J., Aigner-Walder, B., et al. (2017). Economic aspects of old age exclusion: A scoping report, ROSEnet Economic Working Group, Knowledge Synthesis Series (1).

- Nielsen, R. A. & Midtsundstad, T. I. (2021). Do workplace health-promotion interventions targeting employees with poor health reduce sick-leave probability and disability rates?, *Scandinavian Journal of Public Health* 49(2): 219–227. doi: <https://doi.org/10.1177/1403494820946543>
- Nilsson, K. (2012). Why work beyond 65? Discourse on the Decision to Continue Working or Retire Early, *Nordic Journal of Working Life Studies* 2(3): 7. doi: <https://doi.org/10.19154/njwls.v2i3.2361>
- Nilsson, K. (2016). Conceptualisation of ageing in relation to factors of importance for extending working life—a review, *Scandinavian Journal of Public Health* 44(5): 490–505. doi: <https://doi.org/10.1177/1403494816636265>
- Nilsson, K., Östergren, P.-O., Kadefors, R., et al. (2016). Has the participation of older employees in the workforce increased? Study of the total Swedish population regarding exit from working life, *Scandinavian Journal of Public Health* 44(5): 506–516. doi: <https://doi.org/10.1177/1403494816637262>
- OECD (2017). Pensions at a Glance 2017, Report.
- OECD (2021a). Labour force participation rate. Available at: <https://data.oecd.org/emp/labour-force-participation-rate.htm#indicator-chart>
- OECD (2021b). LFS by sex and age – indicators. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=lfs_sexage_i_r
- Ojala, S., Nätti, J. & Lipiäinen, L. (2018). Types of temporary employment: an 8-year follow-up of labour market attachment, *Social Indicators Research* 138(1): 141–163. doi: <https://doi.org/10.1007/s11205-017-1648-7>
- Palme, M. & Laun, L. (2018). Social Security Reforms and the Changing Retirement Behavior in Sweden, *Social Security Programs and Retirement around the World: Reforms and Retirement Incentives*: 373.
- Palme, M. & Svensson, I. (1999). Social Security, Occupational Pensions, and Retirement in Sweden, i Gruber, J. och DA Wise (Red.) *Social security and retirement around the world*. NBER Conference Report Series, University of Chicago Press.
- Palme, M. & Svensson, I. (2004). Income Security Programs and Retirement in Sweden, *Social Security Programs and Retirement around the World*. Micro-Estimation. The University of Chicago Press, Chicago and London.
- Pensionsmyndigheten (2021). Höjd pensionsålder (Increased retirement age). Available at: <https://www.pensionsmyndigheten.se/ga-i-pension/planera-din-pension/hojd-pensionsalder>
- Qi, H., Scott, K. & Bengtsson, T. (2019). Extending working life: experience from Sweden 1981–2011, *Vienna Yearbook of Population Research* 17: 99–120. doi: <https://doi.org/10.2307/26928905>
- Rabaté, S. (2019). Can I stay or should I go? Mandatory retirement and the labor-force participation of older workers, *Journal of Public Economics* 180: 104078. doi: <https://doi.org/10.1016/j.jpubeco.2019.104078>
- Rasmussen, S., Nätti, J., Larsen, T. P., et al. (2019). Nonstandard employment in the Nordics toward precarious work?, *Nordic Journal of Working Life Studies* 9(S6): 7–32. doi: <https://doi.org/10.18291/njwls.v9iS6.114689>
- Riksdag (2009). Lag (1997:238) om arbetslöshetsförsäkring (Unemployment Insurance Act). In: Arbetsmarknadsdepartementet (ed).
- Sargeant, M. (2016). *Age Discrimination in Employment*, London: Routledge.
- Solem, P. E. (2016). Ageism and age discrimination in working life, *Nordic Psychology* 68(3): 160–175. doi: <https://doi.org/10.1080/19012276.2015.1095650>
- Solem, P. E., Syse, A., Furunes, T., et al. (2016). To leave or not to leave: retirement intentions and retirement behaviour, *Ageing & Society* 36(2): 259–281. doi: <https://doi.org/10.1017/S0144686X14001135>



- Sullivan, S. E. & Al Ariss, A. (2019). Employment after retirement: A review and framework for future research, *Journal of Management* 45(1): 262–284. doi: <https://doi.org/10.1177/0149206318810411>
- Taylor, M. P. (2004). Self-employment in Britain: when, who and why?, *Swedish Economic Policy Review* 11(2004): 139–173.
- van Erp, F., Vermeer, N. & van Vuuren, D. (2014). Non-financial determinants of retirement: a literature review, *De Economist* 162(2): 167–191. doi: <https://doi.org/10.1007/s10645-014-9229-5>
- Velilla, J., Molina, J. A. & Ortega, R. (2018). Why older workers become entrepreneurs? International evidence using fuzzy set methods, *The Journal of the Economics of Ageing* 12: 88–95. doi: <https://doi.org/10.1016/j.jeoa.2018.03.004>
- Visser, M., Gesthuizen, M., Kraaykamp, G., et al. (2018). Labor market vulnerability of older workers in the Netherlands and its impact on downward mobility and reduction of working hours, *Work, Aging and Retirement* 4(3): 289–299. doi: <https://doi.org/10.1093/workar/wax017>
- Von Bonsdorff, M. E., Shultz, K. S., Leskinen, E., et al. (2009). The choice between retirement and bridge employment: A continuity theory and life course perspective, *The International Journal of Aging and Human Development* 69(2): 79–100. doi: <https://doi.org/10.2190/AG.69.2.a>
- Von Nordheim, F. & Kvist, J. (2022). Regulating the retirement age—Lessons from Nordic pension policy approaches, *Regulation & Governance*. doi: <https://doi.org/10.1111/rego.12475>
- Wadensjö, E. (2006). Part-time pensions and part-time work in Sweden, *IZA Discussion Papers* 2273. doi: <https://doi.org/10.2139/ssrn.928825>
- Wanberg, C. R., Kanfer, R., Hamann, D. J., et al. (2016). Age and reemployment success after job loss: An integrative model and meta-analysis, *Psychological Bulletin* 142(4): 400. doi: <https://doi.org/10.1037/bul0000019>
- Wang, M. & Shultz, K. S. (2010). Employee retirement: A review and recommendations for future investigation, *Journal of Management* 36(1): 172–206. doi: <https://doi.org/10.1177/0149206309347957>
- Zissimopoulos, J. M. & Karoly, L. A. (2009). Labor-force dynamics at older ages: Movements into self-employment for workers and nonworkers, *Research on Aging* 31(1): 89–111. doi: <https://doi.org/10.1177/0164027508324642>

Note

¹ We described the same proportions for the age groups between 60 and 68 (individuals born between 1950 and 1958) that were registered in Sweden in the calendar year 2018 in order to observe whether these proportions are specific to the 1950 cohort. The 1950 birth cohort shows similar patterns of employment type/status and the receipt of benefits and pension as the study population in 2018.

Appendix

Table A1 Multinomial probit model for exit working life in different age groups (base: 68+)

Variables	-61	61-64	65	66-67
Gender (reference: men)				
Women	0.906*** (0.027)	0.601*** (0.028)	0.504*** (0.029)	0.301*** (0.030)
Education (reference: primary educated)				
Secondary educated	-0.193*** (0.023)	-0.017 (0.023)	-0.083*** (0.024)	0.027 (0.023)
Higher educated	-0.777*** (0.026)	-0.417*** (0.024)	-0.493*** (0.026)	-0.204*** (0.025)
Interaction of gender and education (reference: women##primary educated)				
Women## Secondary educated	-0.540*** (0.033)	-0.277*** (0.033)	-0.207*** (0.035)	-0.145*** (0.036)
Women##Higher educated	-0.745*** (0.037)	-0.374*** (0.036)	-0.268*** (0.038)	-0.122*** (0.037)
Constant	-0.628*** (0.018)	-0.654*** (0.018)	-0.804*** (0.019)	-0.787*** (0.019)
Observations	107,830	107,830	107,830	107,830

Standard errors in parentheses

***p < 0.01, **p < 0.05, *p < 0.1

Note: The results are based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018.



Table A2 Multinomial probit model for receipt of unemployment, sickness compensation, pension, or none of them for those who exit working life between the ages 61 and 64 years (base outcome: pension receipt)

Variables	Unemployment	Sickness comp.	None
Gender (reference: men)			
Women	-0.108* (0.062)	0.311*** (0.064)	0.061 (0.068)
Education (reference: primary educated)			
Secondary educated	-0.141*** (0.054)	-0.152** (0.059)	-0.025 (0.060)
Higher educated	-0.522***	-0.480***	-0.051
Interaction of gender and education (reference: women##primary educated)			
Women## Secondary educated	-0.199*** (0.077)	0.001 (0.079)	-0.236*** (0.084)
Women## Higher educated	-0.151* (0.091)	0.244*** (0.092)	-0.199** (0.093)
Constant	-0.869*** (0.042)	-1.185*** (0.047)	-1.248*** (0.048)
Observations	18,669	18,669	18,669

Standard errors in parentheses
 ***p < 0.01, **p < 0.05, *p < 0.1

Note: The results are based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life between ages 61 and 64 years.

Table A3 Probit model for experiencing employment breaks between the ages 61 and 64 years for those who exit working life at the age 65 or later

Variables	Breaks
Gender (reference: men)	
Women	-0.022 (0.025)
Education (reference: primary educated)	
Secondary educated	0.018 (0.018)
Higher educated	-0.055*** (0.019)
Interaction of gender and education (reference: women##primary educated)	
Women## Secondary educated	-0.115*** (0.029)
Women##Higher educated	-0.116*** (0.030)
Constant	-0.739*** (0.015)
Observations	73,091

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ *Note:* The results are based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life at the age 65 or later.



Table A4 Multinomial probit model for having employment breaks and the type of employment breaks between the ages 61 and 64 years for those who exit working life at the age 65 or later (base outcome is pension receipt)

Variables	Unemployment	Sickness comp.	None
Gender (reference: men)			
Women	0.071 (0.074)	0.589*** (0.078)	0.122 (0.078)
Education (reference: primary educated)			
Secondary educated	-0.155*** (0.053)	-0.209*** (0.061)	-0.159*** (0.056)
Higher educated	-0.635*** (0.057)	-0.724*** (0.069)	-0.348*** (0.059)
Interaction of gender and education (reference: women##primary educated)			
Women## Secondary educated	-0.229*** (0.088)	-0.204** (0.093)	-0.315*** (0.094)
Women## Higher educated	-0.166* (0.094)	-0.069 (0.101)	-0.213** (0.097)
Constant	-0.343*** (0.042)	-0.850*** (0.049)	-0.609*** (0.045)
Observations	15,322	15,322	15,322

Standard errors in parentheses
 ***p < 0.01, **p < 0.05, *p < 0.1

Note: The results are based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life at age 65 or later and experienced employment break between ages 61 and 64 years.

Table A5 Multinomial probit model for having employment-type trajectories among those who exit working life at the age 65 or later (base outcome is I W)

Variables	2 S	3 B	4 BS	5 BW	6 WS	7 WB	8 SW	9SB	10 M
Gender (reference: men)									
Women	-0.578*** (0.045)	-0.709*** (0.062)	-0.668*** (0.049)	-0.387*** (0.062)	-0.433*** (0.066)	-0.502*** (0.088)	-0.482*** (0.087)	-0.692*** (0.103)	-0.644*** (0.066)
Education (reference: primary educated)									
Secondary educated	-0.259*** (0.031)	-0.074** (0.038)	-0.042 (0.031)	0.070* (0.042)	0.114*** (0.043)	0.115** (0.055)	-0.099* (0.058)	-0.103* (0.059)	0.002 (0.040)
Higher educated	-0.486*** (0.034)	0.263*** (0.037)	-0.014 (0.032)	0.230*** (0.043)	0.308*** (0.043)	0.491*** (0.053)	-0.194*** (0.064)	-0.077 (0.062)	0.236*** (0.040)
Interaction of gender and education (reference: women##primary educated)									
Women## Secondary educated	0.099* (0.054)	0.233*** (0.072)	0.191*** (0.056)	0.046 (0.072)	-0.066 (0.077)	0.075 (0.100)	-0.234*** (0.110)	0.120 (0.121)	0.150*** (0.076)
Women## Higher educated	0.164*** (0.058)	0.255*** (0.070)	0.346*** (0.057)	0.161** (0.072)	-0.001 (0.076)	0.147 (0.097)	0.118 (0.110)	0.227* (0.123)	0.268*** (0.074)
Constant	-1.371*** (0.024)	-1.864*** (0.030)	-1.463*** (0.025)	-2.114*** (0.034)	-2.168*** (0.036)	-2.502*** (0.045)	-2.497*** (0.045)	-2.532*** (0.046)	-1.999*** (0.032)
Observations	73,091	73,091	73,091	73,091	73,091	73,091	73,091	73,091	73,091

Standard errors in parentheses

***p < 0.01, **p < 0.05, *p < 0.1

Note: The results are based on Swedish registry data. The population covers individuals born in 1950 and registered in Sweden during all years between 2010 and 2018 and exit working life at the age 65 or later.